GRUVLOK® Mechanical Piping

www.anvilintl.com

ANVIL® INTERNATIONAL
Building Connections That Last

JULY 2016
For the most current product/pricing information on Anvil products, please visit our website at **www.anvilintl.com**

BUILDING CONNECTIONS THAT LAST

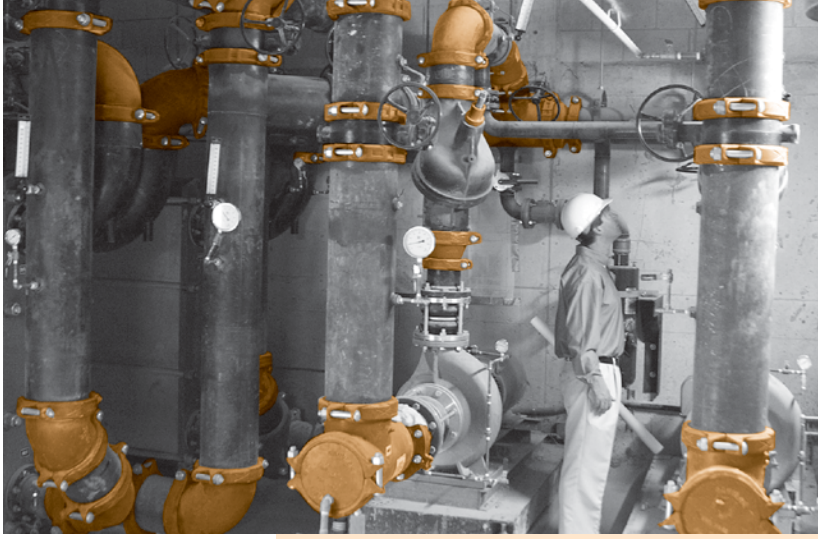
For over 160 years, Anvil has worked diligently to build a strong, vibrant tradition of making connections — pipe to pipe and people to people.

We pride ourselves in providing the finest-quality pipe products and services with integrity and dedication to superior customer service at all levels.

We provide expertise and product solutions for a wide range of applications, from plumbing, mechanical, HVAC, industrial and fire protection to mining, oil and gas. Our comprehensive line of products includes: grooved pipe couplings, grooved and plain-end fittings, valves, cast and malleable iron fittings, forged steel fittings, steel pipe nipples and couplings, pipe hangers and supports, channel and strut fittings, mining and oil field fittings, along with much more.

As an additional benefit to our customers, Anvil offers a complete and comprehensive Design Services Analysis for mechanical equipment rooms, to help you determine the most effective and cost-efficient piping solutions.

At Anvil, we believe that responsive and accessible customer support is what makes the difference between simply delivering products — and delivering solutions.



GRUVLOK®

Mechanical Piping Products

Durable. Flexible. Safe. Easy to install. Easy to maintain. That's Anvil's Gruvlok® product line. Gruvlok gives your building the toughest, simplest, and most adaptable piping system possible.

Through a combination of roll-grooving and two-bolt coupling design, this innovative product line joins piping and other components into a single rugged yet flexible system. This makes Gruvlok products ideal for a variety of applications — particularly in tight spaces such as subfloors, UFAD systems, crawlspaces, trenches, and tunnels.

Gruvlok products eliminate the need for traditional expansion joints, allowing your system to expand and contract with your needs. With a Gruvlok union at every joint, you have the freedom to make on-site tweaks without altering the overall design of your system.

Maintenance is as simple and flexible as installation. Every component in a Gruvlok system is easily replaceable and easily accessed, so that you can make repairs without resorting to a total shut-down.

3-D CAD Library

Anvil's Gruvlok product line is now available in 3-D CAD Models, as well as the standard 2-D drawings, at www.anvilintl.com. Anvil also offers downloadable Master Format 3 Part Specifications.

Building Green with Anvil

Anvil manufactures an extensive line of products composed of 90% recycled materials, visit www.anvilintl.com for current certificates related to recycled material. Anvil is a member of the United States Green Building Council.

Products include:

- Gruvlok® Couplings, Fittings, and Flanges
- Anvil® Cast and Malleable Threaded Fittings
- Anvil Cast Iron Flanged Fittings
- Anvil Pipe Hangers and Supports
- Merit® Tee-Lets and Drop Nipples
- Beck Welded Pipe Nipples

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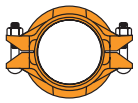
Rigidlok® Coupling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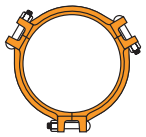
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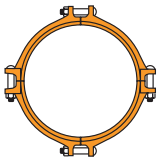
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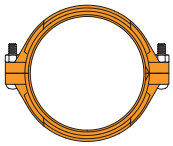
Size Range: 14" - 24"



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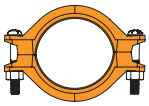

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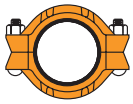
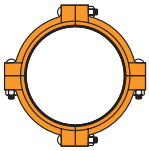
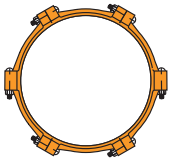
Flexible Coupling


Size Range: 1" - 14"


Size Range: 16" - 24"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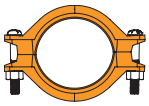
SlideLOK® Ready for Installation Coupling
Size Range: 2" - 8"



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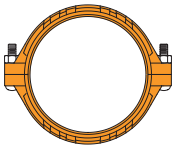
Size Range: 14" - 24"



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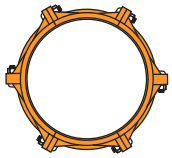

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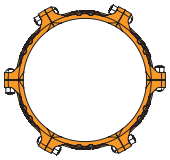

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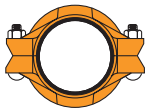

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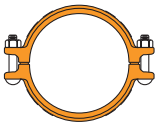

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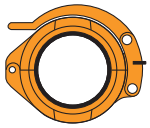
Hingelok® Coupling
Size Range: 1" - 4" and 5" - 8"



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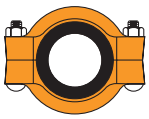
Reducing Coupling
Size Range: 2" x 1½" thru 8"x 6"



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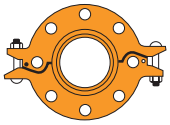
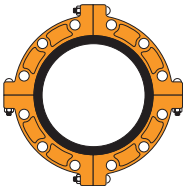
Gruvlok Flanges


Size Range: 2" - 12"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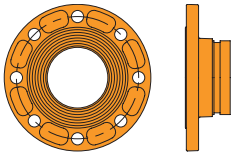
Size Range: 2" - 12"



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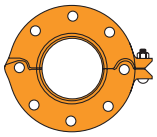
Size Range: 2" - 12"



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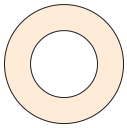
Size Range: 2" - 24"



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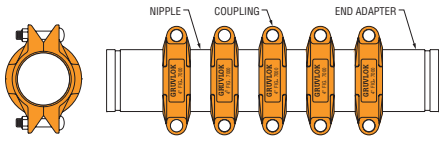
Expansion Joints
Size Range: 2" - 12"



BRANCH OUTLETS

Fig. 7042 *Pages 52-53*

Outlet Coupling
Size Range: 1 1/2" - 6"

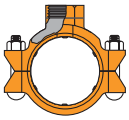


Fig. 7042F
Female IPS Outlet

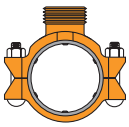


Fig. 7042M
Male IPS Outlet

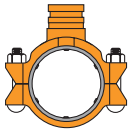


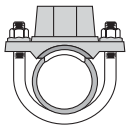
Fig. 7042G
Grooved Outlet

Fig. 7045 *Pages 54-56*

Clamp-T, FPT Branch
Size Range: 3" x 1 1/4" thru 8" x 4"

(U-Bolt)
Size Range: 2 1/2" x 1/2" thru 4" x 1"

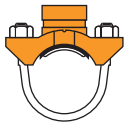
Fig. 7043 *Page 60*



Branch Outlet
Size Range: 1 1/4" x 1/2" thru 2 1/2" x 1"

Fig. 7046 *Pages 57-58*

Clamp-T, Grooved Branch
Size Range: 3" x 1 1/4" thru 8" x 4"



(U-Bolt)
Size Range: 2 1/2" x 1 1/4" thru 2 1/2" x 1 1/2"

Fig. 7047, Fig. 7048 & Fig. 7049 *Page 59*

Clamp-T Cross
Size Range: 2" x 1/2" thru 8" x 4"

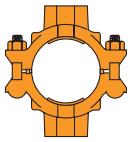


Fig. 7047
Thread x Thread

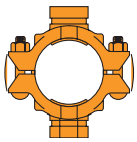


Fig. 7048
Groove x Groove

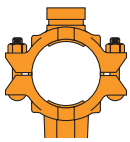


Fig. 7049
Groove x Thread

GROOVED FITTINGS

Fig. 7050 *Page 62*

90° Elbow
Size Range: 1" - 24"

Fig. 7051 *Page 62*

45° Elbow
Size Range: 1" - 24"

Fig. 7052 *Page 62*

22 1/2° Elbow
Size Range: 1" - 24"

Fig. 7053 *Page 63*

11 1/4° Elbow
Size Range: 1" - 24"

Fig. 7050LR *Page 63*

90° Long Radius Elbow
Size Range: 1" - 24"

Fig. 7051LR *Page 63*

45° Long Radius Elbow
Size Range: 1" - 24"

Fig. 7060 *Page 64*

Tee
Size Range: 1" - 24"

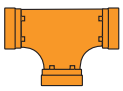


Fig. 7061 *Page 64*

Reducing Tee Standard
Size Range: 1 1/4" x 1 1/4" x 1" thru 24" x 24" x 20"

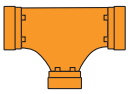


Fig. 7063 *Page 65*

Tee with Threaded Branch
Size Range: 1" - 12"

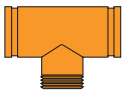


Fig. 7064 *Page 65*

Reducing Tee with Threaded Branch
Size Range: 2" x 2" x 3/4" thru 24" x 24" x 12"

Fig. 7073 & Fig. 7097 *Page 66*

Eccentric Reducers
Size Range: 1 1/4" x 1" thru 24" x 20"

Fig. 7073
Groove x Groove

Fig. 7097
Groove x Thread

Fig. 7076 *Page 66*

Gr x Thd Concentric Reducer
Size Range: 1 1/2" x 1" thru 6" x 4"

Fig. 7077, 7078 & 7079 *Page 67*

Swaged Nipples
Size Range: 2" x 1" thru 6" x 5"

Fig. 7077
Groove x Groove

Fig. 7078
Groove x Thread

Fig. 7079
Groove x Bevel

Fig. 7072 *Page 67*

Gr x Gr Concentric Reducer
Size Range: 1 1/4" x 1" thru 24" x 20"

Fig. 7070 *Page 68*

45° Reducing Lateral
Size Range: 3" x 3" x 2" thru 24" x 24" x 20"

Fig. 7069 *Page 68*

45° Lateral
Size Range: 1" - 24"

Fig. 7071 *Page 69*

True Wye
Size Range: 1" - 24"

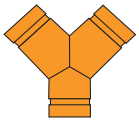


Fig. 7066 *Page 69*

Tee Wye
Size Range: 2" x 2" x 2" thru 12" x 12" x 12"

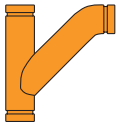


Fig. 7067 *Page 69*

Reducing Tee Wye
Size Range: 4" x 3" x 3" thru 8" x 6" x 8"

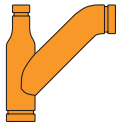


Fig. 7087 *Page 70*

Female Thread Adapter
Size Range: 1" - 4"

Fig. 7055 *Page 70*

90° Adapter Elbow
Size Range: 1" - 6"

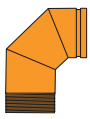


Fig. 7056 *Page 70*

45° Adapter Elbow
Size Range: 1" - 6"

GROOVED FITTINGS

Fig. 7050RF *Page 70*
Reducing Base Support Elbow
Groove x 150# Flange (GxF)
Size Range: 5" x 4" thru 12" x 10"

Fig. 7072GF *Page 71*
Gr x Flange Concentric Reducer
Size Range: 3" x 2" thru 8" x 6"

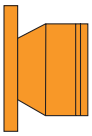


Fig. 7084 *Page 71*
Groove x Class 150 Flange Nipple
Size Range: 1" - 24"

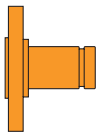


Fig. 7085 *Page 71*
Groove x Class 300 Flange Nipple
Size Range: 1" - 24"

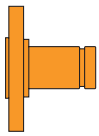


Fig. 7074 *Page 72*
Cap
Size Range: 1" - 24"

Fig. 7075 *Page 72*
Bull Plug
Size Range: 2" - 6"

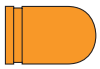


Fig. 7068 *Page 72*
Cross
Size Range: 1" - 24"

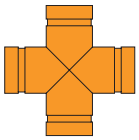


Fig. 7086 *Page 73*
Groove x Hose Nipple
Size Range: 1" - 12"

Fig. 7065 *Page 74*
Standpipe Tee (Gr x Gr x FPT)
Size Range: 4" x 4" x 2½" thru 6" x 6" x 2½"

Fig. 7062 *Page 74*
Bullhead Tee Specialty Tees (Gr x Gr x FPT)
Size Range: 5" x 5" x 8" thru 6" x 6" x 8"

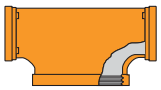


Fig. 7050DR *Page 74*
90˚ Drain Elbow
Size Range: 1¼" - 12"

Fig. 7080, Fig. 7081 & Fig. 7082 *Page 73*
Nipples
Size Range: ¾" - 12"

Fig. 7080
Groove x Groove

Fig. 7081
Groove x MPT

Fig. 7082
Groove x Bevel

Fig. 7450 *Page 75*
90˚ Short Pattern Elbow
Size Range: 2" - 8"

Fig. 7460 *Page 75*
Short Pattern Tee
Size Range: 2" - 8"

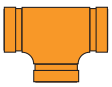


Fig. 7050-3D *Page 76*
Long Radius Elbows
Size Range: 2" - 24"

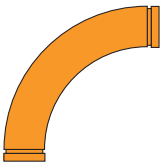


Fig. 7050-3D
90˚ Elbow

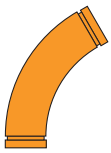


Fig. 7057-3D
60˚ Elbow

Fig. 7051-3D
45˚ Elbow

Fig. 7058-3D
30˚ Elbow

Fig. 7052-3D
22½˚ Elbow

Fig. 7053-3D
11¼˚ Elbow

Fig. 7050-5D *Page 77*
Long Radius Elbows
Size Range: 2" - 24"

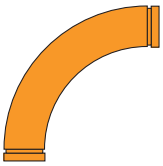


Fig. 7050-5D
90˚ Elbow

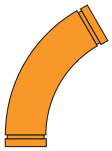


Fig. 7057-5D
60˚ Elbow

Fig. 7051-5D
45˚ Elbow

Fig. 7058-5D
30˚ Elbow

Fig. 7052-5D
22½˚ Elbow

Fig. 7053-5D
11¼˚ Elbow

Fig. 7050-6D *Page 78*
Long Radius Elbows
Size Range: 2" - 24"

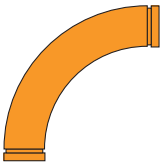


Fig. 7050-6D
90˚ Elbow

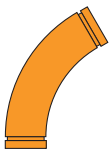


Fig. 7057-6D
60˚ Elbow

Fig. 7051-6D
45˚ Elbow

Fig. 7058-6D
30˚ Elbow

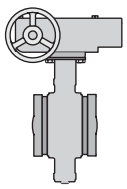
Fig. 7052-6D
22½˚ Elbow

Fig. 7053-6D
11¼˚ Elbow

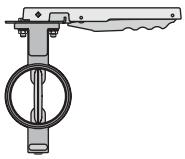
VALVES & ACCESSORIES

Series 7700 *Pages 79-83*

Butterfly Valve
Size Range: 2" - 12"



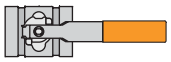
AN-7722-3
Series 7700 Butterfly Valve
with Gear Operator



AN-7721-3
Series 7700 Butterfly Valve
with 10 Position Lever Lock

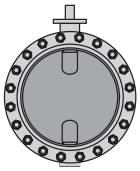
Series 7600 *Page 84*

Butterfly Valve
Size Range: 2" - 6"



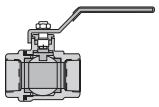
Series 8000GR *Pages 85-87*

Butterfly Valve
Size Range: 14" - 24"



Series 161N LF & 1615 LF *Page 88*

Low Lead Brass Ball Valve
161N LF – Size Range: 1/4" - 4"
1615 LF – Size Range: 1/2" - 3"



Series 7500 *Pages 89-90*

Ball Valve
Size Range: 2" - 6"

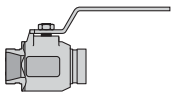


Fig. 90G *Pages 91-92*

Check Valve for use in
Grooved-End Piping Systems
Size Range: 2" - 4"

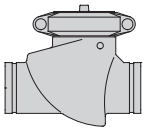
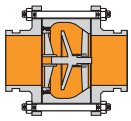


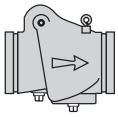
Fig. 400G *Page 93*

Grooved-End
Silent Check Valve
Size Range: 2" - 10"



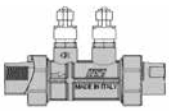
Series 7800 *Pages 94-96*

Check Valve for use in
Grooved-End Piping
Systems
Size Range: 2" - 12"



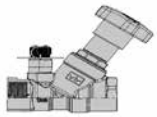
ABV-9900V Series *Pages 97-99*

Straight DZR Brass
Automatic Balancing Valve
Solder (ABV-S-9909)
Threaded (ABV-T-9907)
Size Range: 1/2" - 2 1/2"



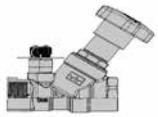
MBV-9510 Series *Pages 100-103*

Fixed Orifice Double
Regulating Valve
Solder (MBV-S-9519)
Threaded (MBV-T-9517)
Size Range: 1/2" - 2"



MBV-9510AB Series *Pages 104-107*

Fixed Orifice Double
Regulating Low Lead Valve
Solder (MBV-S-9519AB)
Threaded (MBV-T-9517AB)
Size Range: 1/2" - 2"



CSV-9520AB Series *Pages 108-112*

DZR Brass On/Off Terminal
Low Lead Balancing Valve
Solder (CSV-S-9529AB)
Threaded (CSV-T-9527AB)
Size Range: 1/2" - 1"

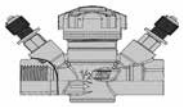


Fig. Anvil 92ST *Pages 114-115*

DZR Brass Ball Valve
with Strainer
Size Range: 1/2" - 2"

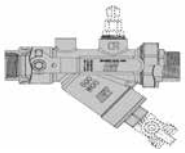


Fig. Anvil 92BPC *Pages 116-117*

DZR Brass Ball Valve
with Bypass
Size Range: 1/2" - 2"

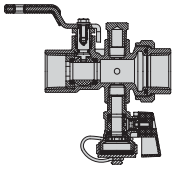


Fig. Anvil 99IBV *Pages 118-119*

Ball Valve with Nut for
9900V Series Valves
Size Range: 1/2" - 2 1/2"

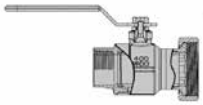


Fig. Anvil 92UN *Pages 120-121*

DZR Brass Union Body
with Air Vent and Test Point
Size Range: 1/2" - 2"

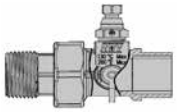
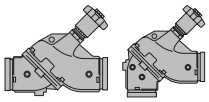


Fig. Anvil 92HS *Page 122*

Stainless Steel Braided Hose
Size Range: 1/2" - 2"

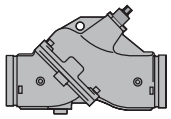
GBV-A & GBV-G *Pages 123-124*

Balancing Valve
Ductile Iron, Grooved-End
Straight or Angle
Size Range: 2 1/2" - 12"



FTV-S *Pages 125-126*

Tri-Service Valve (Straight)
Size Range: 2 1/2" - 12"



FTV-A *Pages 125-126*

Tri-Service Valve
(Angle Body)
Size Range: 2 1/2" - 12"

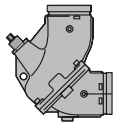


Fig. 7260 *Pages 127-128*

Gruvlok Tee Strainer
Size Range: 2" - 18"

Model 758G *Page 129*

Grooved-End
"Wye" Strainer
Size Range: 2" - 12"

Model 768G *Page 130*

Grooved-End
"Wye" Strainer
Size Range: 2" - 12"

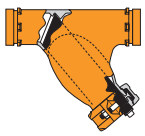
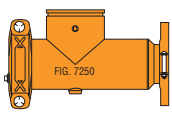


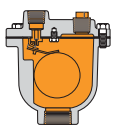
Fig. 7250 *Pages 131-132*

Suction Diffuser
Size Range: 2 1/2" x 2 1/2"
thru 16" x 14"



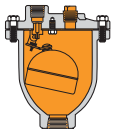
Model GAV-15 *Page 133*

Automatic Air Vent
for Ultimate Performance
Size Range: 1/2" - 1"



Model GAV-30 *Page 134*

Automatic Air Vent
for Ultimate Performance
Size Range: 1/2" - 3/4"



VALVES & ACCESSORIES

AnvilFlex® AF-21 Series *Pages 135-138*

Flex Connectors
Size Range: 2" - 12"

Fig. AF-21-GG
Grooved Ends

Fig. AF-21-GF
Grooved x Class 150 Flanged

Fig. AF-21-FF
Class 150 Flanged x
Class 150 Flanged

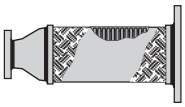


Fig. AF-21-RFF
Reducing Class 150 Flanged x
Class 150 Flanged

Fig. AF-21-RGF
Reducing Grooved x
Class 150 Flanged

HIGH PRESSURE SYSTEMS

Fig. 7050 EG *Page 145*
High Pressure 90˚ LR Elbow
Size Range: 2" - 12"

Fig. 7051 EG *Page 145*
High Pressure 45˚ LR Elbow
Size Range: 2" - 12"

Fig. 7662 EG *Page 146*
High Pressure Header Tee
Size: 2"

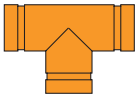


Fig. 7060 EG *Page 146*
High Pressure Tee
Size Range: 2" - 12"

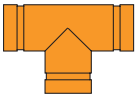


Fig. 7068 EG *Page 146*
High Pressure Cross
Size Range: 2" - 12"

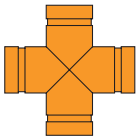


Fig. 7004
Pages 140-141
Coupling
Size Range: 2" - 12"

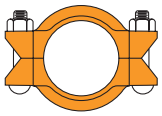


Fig. 7004 with EG® Gasket
Pages 142-143
Coupling with EG Gasket
Size Range: 2" - 12"

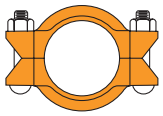
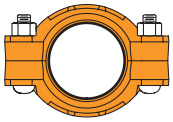


Fig. 7377
Page 144
Double Groove Coupling
Size Range: 6" - 10"



CTS COPPER SYSTEM

Fig. 6402 *Pages 148-149*
CTS SlideLOK® Rigid Coupling
Size Range: 2" - 4"

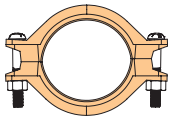


Fig. 6400 *Page 150*
Rigid Coupling
Size Range: 2" - 8"

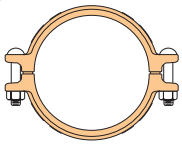


Fig. 6050 *Page 151*
90˚ Elbow
Size Range: 2" - 8"

Fig. 6051 *Page 151*
45˚ Elbow
Size Range: 2" - 8"

Fig. 6060 *Page 151*
Tee
Size Range: 2" - 8"

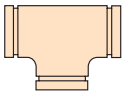


Fig. 6061 *Page 152*
Reducing Tee (Gr x Gr x Gr)
Size Range: 2½" x 2½" x 2" thru 6" x 6" x 5"

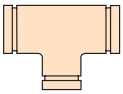


Fig. 6064 *Page 152*
Reducing Tee (Gr x Gr x Cup)
Size Range: 2" x 2" x ¾" thru 4" x 4" x 1½"

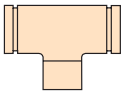


Fig. 6074 *Page 151*
End Cap
Size Range: 2" - 6"

Fig. 6072 *Page 153*
Concentric Reducer (Gr x Gr)
Size Range: 2½"x 2" thru 8" x 6"

Fig. 6075 *Page 153*
Reducing Adapter (Gr x Cup)
Size Range: 2" x 1" thru 4" x 2"

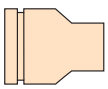
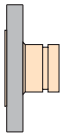
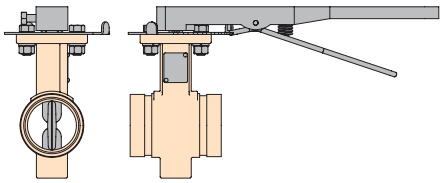


Fig. 6084 *Page 153*
Flange Adapter
Size Range: 2" - 6"



Series 6700 CTS Copper Butterfly Valve *Pages 154-155*
Size Range: 2½" - 6"



DI-ELECTRIC NIPPLES

Fig. 7088 *Page 156*
Di-Electric Pipe Connection
Thread x Groove
Size Range: 1" - 4"

Fig. 7089 *Page 156*
Di-Electric Pipe Connection
Groove x Groove
Size Range: 2" - 4"

Fig. 7090 *Page 156*
Di-Electric Pipe Connection
Thread x Thread
Size Range: 1/2" - 3"

Fig. 7091 *Page 157*
Gruvlok DI-LOK® Nipple
Di-Electric Pipe Connection
CTS Groove x IPS Groove
Size Range: 2" - 8"

HDPE COUPLINGS

Fig. 7305 *Pages 163-164*
HDPE Coupling
Size Range: 2" - 18"

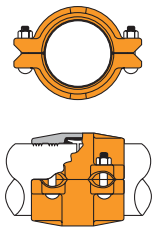


Fig. 7307 *Pages 165-166*
HDPE Transition Coupling
Size Range: 2" - 12"

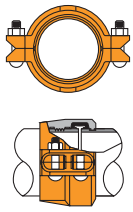
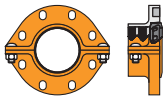


Fig. 7312 *Pages 167-168*
HDPE Flange Adapter
Size Range: 4" - 8"



PLAIN-END FITTINGS

Fig. 7005 *Page 158*
Roughneck® Coupling
Size Range: 2" - 16"

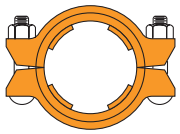


Fig. 7050P, Fig. 7051P & Fig. 7060P *Page 159*
Gruvlok Plain-End Fittings
Size Range: 2" - 8"

Fig. 7050P
90° Elbow

Fig. 7051P
45° Elbow

Fig. 7060P
Tee

Fig. 7061P *Page 160*
Reducing Tee
Size Range: 3" x 3" x 2" thru 12" x 12" x 10"

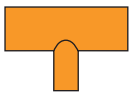


Fig. 7080P, Fig. 7081P & Fig. 7082P *Page 162*
Adapter Nipples
Size Range: 2" - 8"

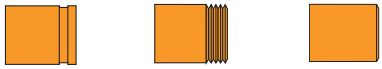


Fig. 7080P
Plain x Groove

Fig. 7081P
Plain x Thread

Fig. 7082P
Plain x Bevel

Fig. 7050LRP *Page 160*
90° LR Elbow
Size Range: 2" - 8"

Fig. 7051LRP *Page 161*
45° LR Elbow
Size Range: 2" - 8"

Fig. 7071P *Page 160*
90° True Wye
Size Range: 2" - 8"

Fig. 7068P *Page 160*
Cross
Size Range: 2" - 8"

Fig. 7069P *Page 160*
45° Lateral
Size Range: 2" - 8"

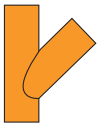
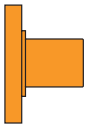


Fig. 7077P *Page 162*
Swaged Nipple
Size Range: 2 1/2" x 2" thru 8" x 6"

Fig. 7075P *Page 161*
Bull Plug
Size Range: 2" - 8"

Fig. 7084P & Fig. 7085P *Page 161*
Flange Nipples
Plain-End x Class 150
Size Range: 2" - 8"
Plain-End x Class 300
Size Range: 2" - 8"



SOCK-IT® METHOD

Fig. 7100 *Page 169*
90° Elbow
(Sock-It x Sock-It)
Size Range: 1" - 2"

Fig. 7101 *Page 170*
90° Reducing Elbow
(Sock-It x NPT)
Size Range: 1" x 1/2" thru 1 1/2" x 1"

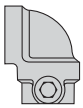


Fig. 7103 *Page 170*
Straight Tee
(Sock-It x Sock-It x Sock-It)
Size Range: 1" - 2"

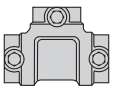


Fig. 7105 *Page 171*
Reducing Outlet Tee
(Sock-It x Sock-It x NPT)
Size Range: 1" x 1" x 1/2" thru 2 1/2 x 2 1/2 x 1"

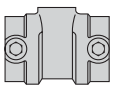


Fig. 7106 *Page 171*
Reducing Tee
(Sock-It x Sock-It x NPT)
Size Range: 1 1/4" x 1" x 1/2" thru 2 x 1 1/2 x 1"

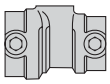
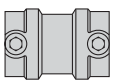


Fig. 7107 *Page 170*
Coupling
(Sock-It x Sock-It)
Size Range: 1" - 2"



STAINLESS STEEL METHOD

SS TYPE 304 FITTINGS

Fig. 7074-SS04
Page 174
Stainless Steel Cap
Size Range: 1¼" - 12"

Fig. 7050-SS04
Page 174
90° Stainless Steel Elbow
Size Range: 1¼" - 12"

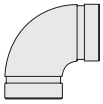


Fig. 7051-SS04
Page 174
45° Stainless Steel Elbow
Size Range: 1¼" - 12"

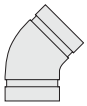


Fig. 7060-SS04
Page 174
Stainless Steel Tee
Size Range: 1¼" - 12"

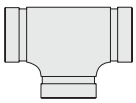


Fig. 7061-SS04
Page 175
Stainless Steel Reducing Tee
Size Range: 1½" x 1¼" thru 12" x 10"

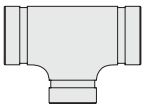
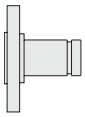


Fig. 7072-SS04
Page 175
Stainless Steel Concentric Reducer
Size Range: 1½" x 1¼" thru 12" x 10"

Fig. 7084SS
Page 175
Stainless Steel Flange Adapter
Size Range: 2" - 12"



SS TYPE 316 FITTINGS

Fig. 7074SS
Page 176
Stainless Steel Cap
Size Range: 1¼" - 12"

Fig. 7050SS
Page 176
90° Stainless Steel Elbow
Size Range: 1¼" - 12"

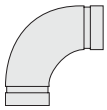


Fig. 7051SS
Page 176
45° Stainless Steel Elbow
Size Range: 1¼" - 12"

Fig. 7060SS
Page 176
Stainless Steel Tee
Size Range: 1¼" - 12"

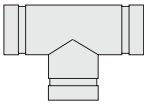


Fig. 7061SS
Page 177
Stainless Steel Reducing Tee
Size Range: 1½" x 1½" x ¾" thru 8" x 8" x 6"

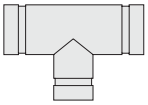
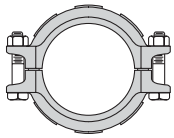


Fig. 7072SS
Page 177
Stainless Steel Concentric Reducer
Size Range: 1½" x 1" thru 8" x 6"

Fig. 7073SS
Page 177
Stainless Steel Eccentric Reducer
Size Range: 1½" x 1" thru 8" x 6"

Fig. 7400SS *Page 172*
Rigidlite® Coupling
Size Range: 1¼" - 8"



ROLL GROOVERS

Gruvlok roll grooving technology is protected by
U.S. Patents 5450738, 5570603, 5778715 and others pending.

Model 1007 *Pages 178-179*
Roll Groover
Groover Capability: 2" - 16"

Model 3007 *Pages 178-179*
Roll Groover
Groover Capability: 2" - 16"

Model 3006 *Pages 180-181*
Roll Groover
Groover Capability: 2" - 12"

PRODUCTS FOR GROOVED PIPING SYSTEM

The Gruvlok® System has been manufactured since the late 1960's. The Gruvlok product line has grown from standard couplings and fittings to today's extensive range of grooved product, plain-end product, butterfly valves, check valves, pump protection components, pipe preparation tools and various accessories.

Gruvlok is part of our overall commitment to provide today's piping industry with tomorrow's products.

c UL us LISTED
FM APPROVED
LPCB
VdS
UPC FOUNDED 1926 IAPMO®
DNV
U.S. GREEN BUILDING COUNCIL MEMBER
Certified to ANSI/NSF 61

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

ISO 9001:2008

INDUSTRY & GOVERNMENT STANDARDS & APPROVALS

ANSI	American National Standards Institute
API	American Petroleum Institute: API Std. 5L, Sect. 7.5
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers: Power Piping, B 31.1; Chemical Plant and Petroleum Refinery Piping, B 31.3; Refrigeration Piping, B 31.5; Building Services Piping, B 31.9; Slurry Pipelines, B 31.11
ASTM	American Society of Testing and Materials: F 1476, F 1387
AWWA	American Water Works Association: C 606
BV	Bureau Veritas
CDF	California State Fire Marshal
COE	Corps of Engineers: CEGS 15000
CSA	Canadian Standards Association: B 242
DNV	Det Norske Veritas
	Hong Kong Fire Services Board
	New Zealand Insurance Council
	New Zealand Building Act. (1991)
FAA	Federal Aviation Administration: HVAC, Plumbing, Fire Protection
FHA	Federal Housing Administration
FM	Factory Mutual Engineering Corp.
GSA	General Services Administration: 15000 Series
IAPMO	International Association of Plumbing & Mechanical Officials
LPC	Loss Prevention Council
MEA	Materials & Equipment Acceptance
MIL	Military Specifications: MILP-10388 Fittings; MIL-C-10387 Couplings; MIL-P-11087A(CE) Steel Pipe, Grooved MIL-I-45208 Inspection Procedure
NASA	National Aeronautics and Space Administration: 15000 Series
NAVFAC	Naval Facilities Engineering Command: NFGS 15000 Series
NFPA	National Fire Protection Association
NIH	National Institute of Health (Dept. of Health): 15000 Series
NSF	NSF International
NY-BSA	New York Board of Standards and Appeals
NYC	New York City
TVA	Tennessee Valley Authority: Fire protection, storm drains
UL	Underwriter's Laboratories, Inc.
ULC	Underwriter's Laboratories of Canada
	Bureau of Marine Inspection: Salt and fresh water, oil transfer
	Bureau of Public Roads; Div. of Bridges: Drain lines and bridge crossings
	Canadian Coast Guard
	U.S. Coast Guard –Approves each vessel individually
USGBC	United States Green Building Council
VA	Veterans Affairs : 15000 Series
VdS	Verband der Sachversicherer e.V.

Note: Please refer to product specific pages for exact listings and approvals related to a specific size for a specific product.

GRUVLOK® – THE ENGINEERED COUPLING

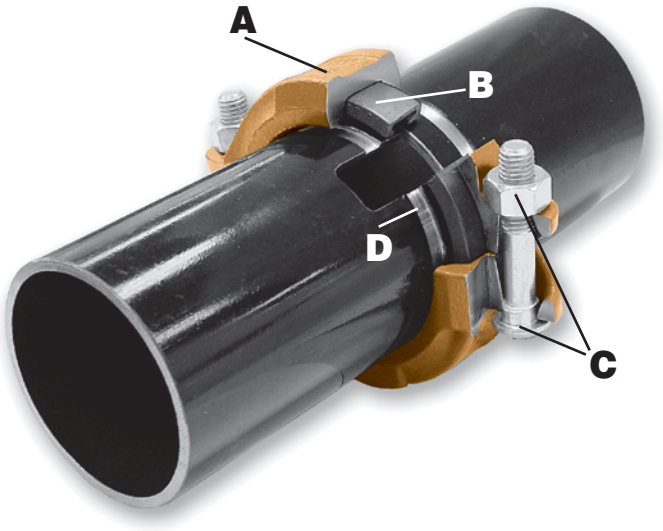
HOUSING (A) FLEXIBLE OR RIGID

The Gruvlok Coupling housing is designed to self-center around the pipe. The housing encircles and retains the gasket against the application of internal system pressure or vacuum.

The housing key sections fit into and engage the pipe-end grooves around the entire pipe circumference, thus restraining the pipe ends from separation due to the application of internal pressure.

Flexible Couplings provide designed-in clearances between the housing key sections and the pipe grooves to permit both angular and longitudinal movement of the pipe. Rigid couplings grip the pipe and lock the joint into position.

All housings are coated with paint for general service applications. The paint serves to provide protection against normal atmospheric corrosion. However, for couplings used in corrosive environments, hot-dip galvanizing, and stainless steel are available.

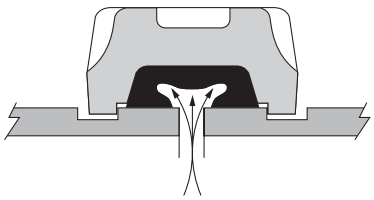


GASKET (B)

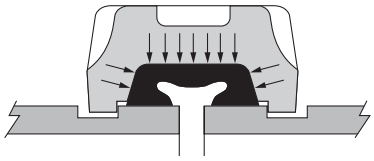
The unique single piece "C" style design of the gasket has been engineered to provide a pressure responsive, leak-tight seal in both pressure and vacuum applications without the aid of external forces. The "lips" of the gasket are molded so that upon installation onto the pipe ends they provide compression against the pipe surface to establish the leak-tight seal.

The gasket cavity functions as a "pressure reservoir". Pressure within the pipe system is applied to the internal surfaces of the gasket which increases the sealing force and enhances the leak-tight seal. In vacuum systems, non-pressure-responsive seals tend to "lift off" the pipe, producing leak paths. However, the Gruvlok gasket reacts to the negative pressure (higher outside atmospheric pressure) as to improve the sealing capability of the gasket.

Gasket Reaction to Pressure



Gasket Reaction to Vacuum



BOLTS AND NUTS (C)

Heat treated oval neck track head bolts serve to connect and secure the housing segments together. The oval neck design prevents turning of the bolt while tightening the hex nut with a single wrench. The bolt size and corresponding wrench (or socket) size for the hex nuts are shown in the chart below.

ANSI

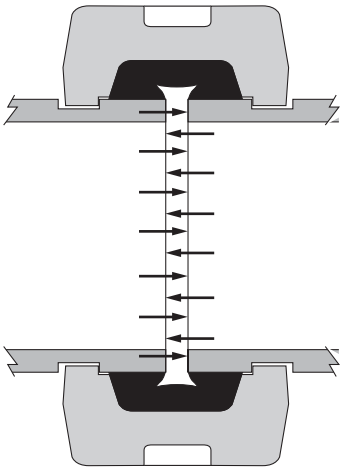
Bolt Size	3/8	1/2	5/8	3/4	7/8	1	1 1/4
Wrench Size	11/16	7/8	1 1/16	1 1/4	1 7/16	1 5/8	2

METRIC

Bolt Size	M10	M12	M16	M20	M22
Wrench Size	16	22	24	30	34

GROOVED PIPE ENDS (D)

The ends of the pipe must have a groove in them which may be either cut grooved or roll grooved. The grooved pipe ends engage the coupling keys, thus, providing a self-restraining, mechanical joint capable of resisting the separation of the pipe ends due to the application of system pressure. The groove diameters must be dimensionally accurate to obtain the maximum benefit of the Gruvlok Coupling.



THE GRUVLOK® PIPING METHOD

Gruvlok couplings and grooved-end fittings are widely used for joining pipe in a wide variety of piping systems. Gruvlok couplings for grooved-end pipe are designed to provide a self-centering joint which accommodates the application of pressure, vacuum and other external forces, while limiting the burdensome need for special supports, expansion joints, etc.

The Gruvlok piping method offers many mechanical design features which benefit the design engineer, the contractor, and the end user. Utilization of the functional characteristics of the Gruvlok coupling will aid in pipe system design and must be considered for proper installation, assembly and performance.

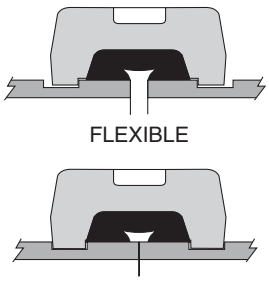
The design factors presented in the Gruvlok technical data section should always be referenced to when designing any grooved piping system to obtain the maximum benefit of the Gruvlok piping method.

GRUVLOK FEATURES

RIGIDITY OR FLEXIBILITY

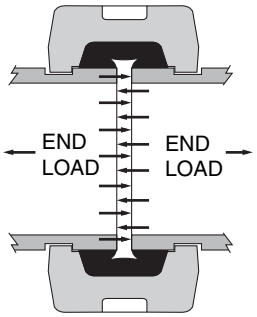
Couplings are available where rigid connections are required. Rigid couplings are clearly marked with an "X" for identification.

Couplings with flexible design allow for pipe expansion and contractions with temperature changes. The need for an expansion joint is minimized or eliminated.



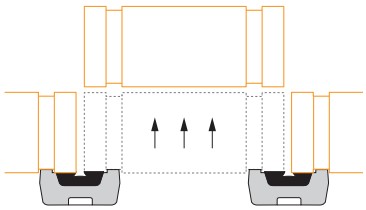
SELF RESTRAINED JOINT

The couplings engage the pipe around the entire circumference and restrain the pipe ends from separation due to pressure and other forces, up to the maximum coupling rated working pressure.



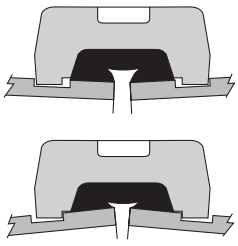
UNION AT EVERY JOINT

Gruvlok couplings can be disassembled easily permitting maintenance and servicing of the piping system. It will facilitate periodic rotation of pipe to distribute internal wear from slurries or other abrasive media.



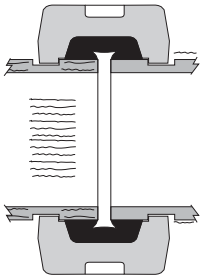
STRESS-FREE SYSTEM

Flexibility designed in the Gruvlok coupling absorbs and eliminates stress from settlement of buried pipe or those induced by seismic tremors.



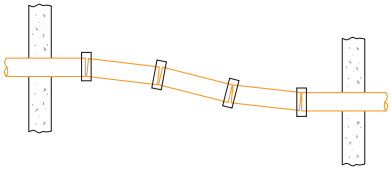
MINIMIZES NOISE & VIBRATION

The resilient elastomeric gasket and pre-designed gap of the Gruvlok coupling help isolate and absorb noise and vibration, this minimizes vibration transmission.



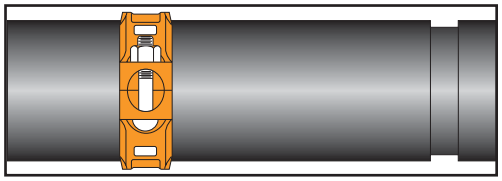
ACCOMMODATES MISALIGNMENT AND JOINT DEFLECTION

The flexibility designed into the Gruvlok coupling will accommodate misalignments caused by imprecise location of pipe opening through walls and floors, will provide pitch for drainage piping systems and facilitate laying pipe on uneven terrain, thus permitting deflection in any direction.



GRUVLOK® COUPLINGS FOR GROOVED-END PIPE

Gruvlok couplings for grooved-end pipe are available in nominal pipe sizes 1" thru 60" and metric sizes. The variety of coupling designs provide a universal means for the connection of pipe, fittings and pipe system components. The wide assortment of Gruvlok couplings and gaskets permit selection of the most suitable combination for a specific application, thus providing the most versatile and economical pipe system installation.



MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are available for the Fig. 7001, 7401, 7401-2, 7001-2, 7004, 7000 and 7400 couplings in standard 304SS, (316SS available as special order)

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

GRADE "EP" EPDM (Green/Red color code) NSF-61 Certified
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

GRADE "E" EPDM (Green color code) NSF-61 Certified
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

GRADE "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

GRADE "O" Fluoro-Elastomer (Blue color code)
Size Range: 1" - 12" (C style only)
20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants

GRADE "L" Silicone (Red color code)
Size Range: 1" - 12" (C style only)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services

GASKET TYPE:
Standard C Style
Flush Gap: 1" - 24"
End Guard: 1" - 12" (Fig. 7004 and 7377)
SlideLOK: 2" - 8"

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE:
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. Pressure ratings for light wall, stainless steel, aluminum, and ISO pipe available. See technical data section.

COUPLING DATA CHART NOTES

COUPLING DATA CHART NOTES														
Nominal Size	O.D.	Max. Work. Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Coupling Bolts		Specified Torque		Approx. Wt. Ea.
					Per Coupling	of Pipe	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-m*		*Lbs./kg*
1	2	3	4	5	6		7			8		9		10

1 Gruvlok Couplings are identified by either the nominal ANSI pipe size in inches or pipe O.D. in millimeters (see column 2).

2 Nominal Outside Diameter of Pipe.

3 Maximum line pressure, including surge, to which a joint can be subjected. Working pressure ratings are based on standard wall steel pipe with standard cut or roll grooves in accordance with Gruvlok specifications. For Performance Data on other than standard wall pipe, refer to Technical data section. **NOTE: For one time field test only, the maximum joint working pressure may be increased to 1.5 times the figure shown unless otherwise noted.**

4 Maximum end load from all interior and/or exterior forces to which the joint can be subjected are based on standard wall steel pipe with standard cut or roll grooves in accordance with Gruvlok specifications.

5 Range of pipe end separation for roll grooved pipe, Double values shown when using cut groove pipe; see page 222 for details.

6 Maximum allowable angular deflection values from centerline when using standard roll grooved pipe; Double values shown when using cut groove pipe; see page 222 for details.

7 "X", "Y", and "Z" are external dimensions for reference purposes only.

8 The quantity of bolts per coupling.

9 Nuts must be tightened alternating and evenly to the specified bolt torque. See individual product installation instructions for additional important information.

10 Approximate weight for a fully assembled coupling with gasket, bolts, and nuts.

FIG. 7401

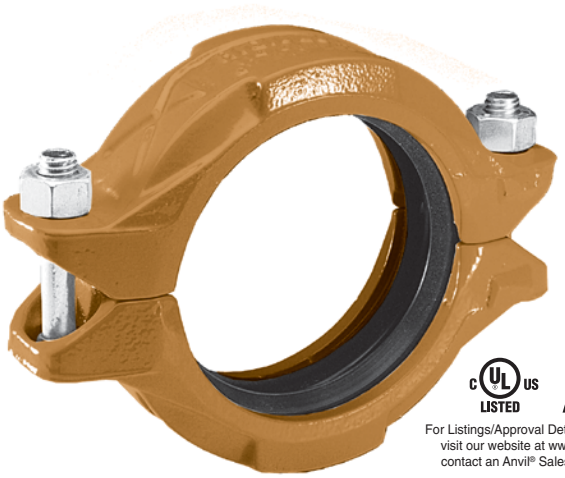
Rigidlok® Coupling

The Fig. 7401 Rigidlok Coupling is an ideal connector for service and applications that require a rigid connection.

The Fig. 7401 Rigidlok coupling utilizes a technologically advanced housing design that conforms to and grips the pipe.

Coupling installation is fast and easy, remove only one nut and swing the housing over the gasket and into the grooves. The exclusive Guidelok® feature automatically separates the grooved pipe ends and guides the coupling into position as the bolts are tightened. Precisely sized and oriented tines in the housing key section firmly grip the pipe. The combination of these designed in features produce a secure, rigid pipe joint connection.

The Fig. 7401 Rigidlok Coupling is designed for use with roll grooved or cut grooved standard weight and roll grooved lightweight pipe, as well as with grooved-end fittings and valves. The Rigidlok Coupling provides a rigid pipe connection allowing pipe hanging practices per ASME B31 pipe codes.



c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

The Fig. 7401 Rigidlok Coupling allows for a maximum working pressure of 750 psi (51.7 bar) when used on standard wall roll or cut grooved pipe.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

STAINLESS STEEL BOLTS & NUTS:
304SS bolts and nuts are available as a standard option.
(316SS are available for special order).

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
Size Range: 1" - 12" (C style only)
20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

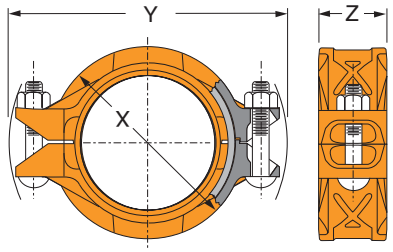
Grade "L" Silicone (Red color code)
Size Range: 1" - 12" (C style only)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services. Contact an Anvil Representative for availability.

GASKET TYPE:
C Style (1" - 24")
Flush Gap (1" - 24")

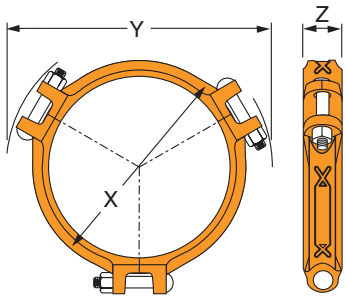
LUBRICATION:
Standard
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7401

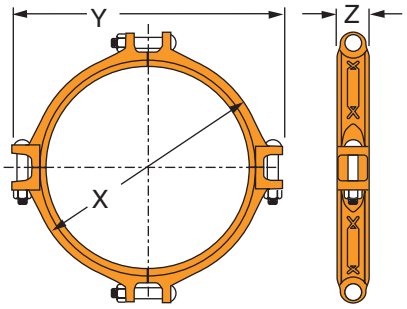
Rigidlok® Coupling



SIZES 1 1/2" - 14"



SIZE 16"



SIZES 18" - 24"

FIGURE 7401 RIGIDLOK COUPLING

Nominal Size	O.D.	Max. Working Pressure†	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts*		Specified Torque §		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-M*		*Lbs./kg*
1½	1.900	750	2,126	0-1/32	3	5⅛	1⅞	2	⅜ x 2¼	30	45	1.8
40	*48.3*	*51.7*	*9.46*	*0-0.79*	*76*	*130*	*48*		*M10 x 57*	*40*	*60*	*0.8*
2	2.375	750	3,323	0-1/32	3½	5⅝	1⅞	2	⅜ x 2½	30	45	2.4
50	*60.3*	*51.7*	*14.78*	*0-0.79*	*89*	*143*	*48*		*M10 x 63*	*40*	*60*	*1.1*
2½	2.875	750	4,869	0-1/32	4	6⅛	1⅞	2	⅜ x 2½	30	45	2.9
65	*73.0*	*51.7*	*21.66*	*0-0.79*	*102*	*156*	*48*		*M10 x 63*	*40*	*60*	*1.3*
3 O.D.	*2.996*	*750*	*5,207*	*0-1/32*	*4⅛*	*6⅛*	*1⅞*	*2*	*⅜ x 2½*	*80*	*100*	*3.4*
76.1	76.1	51.7	23.52	0-0.79	105	156	48		M10 x 63	110	150	1.5
3	3.500	750	7,216	0-1/32	4¾	7¼	1⅞	2	½ x 3	80	100	3.6
80	*88.9*	*51.7*	*32.10*	*0-0.79*	*121*	*184*	*48*		*M12 x 76*	*110*	*150*	*1.6*
4	4.500	750	11,928	0-3/32	5⅞	8⅜	2⅛	2	½ x 3	80	100	5.0
100	*114.3*	*51.7*	*53.06*	*0-2.38*	*149*	*213*	*54*		*M12 x 76*	*110*	*150*	*2.3*
5½ O.D.	*5.500*	*750*	*17,819*	0-3/32	*7*	*9¼*	*2⅛*	*2*	*⅝ x 3½*	*100*	*130*	*6.9*
139.7	139.7	51.7	79.26	*0-2.38*	178	248	54		M16 x 85	135	175	3.1
5	5.563	750	18,229	0-3/32	7	10	2⅛	2	⅝ x 3½	100	130	6.9
125	*141.3*	*51.7*	*81.09*	*0-2.38*	*178*	*254*	*54*		*M16 x 85*	*135*	*175*	*3.1*
6½ O.D.	*6.500*	*750*	*24,887*	*0-3/32*	*8*	*11*	*2⅛*	*2*	*⅝ x 3½*	*100*	*130*	*7.6*
165.1	165.1	51.7	110.70	0-2.38	203	279	54		M16 x 85	135	175	3.4
6	6.625	750	25,854	0-3/32	8⅛	11⅛	2⅛	2	⅝ x 3½	100	130	7.9
150	*168.3*	*51.7*	*115.00*	*0-2.38*	*206*	*283*	*54*		*M16 x 85*	*135*	*175*	*3.6*
8	8.625	600	35,056	0-3/32	10½	14⅛	2⅝	2	¾ x 4½	130	180	15.9
200	*219.1*	*41.4*	*155.94*	*0-2.38*	*267*	*359*	*67*		*M20 x 110*	*175*	*245*	*7.2*
10	10.750	500	45,381	0-3/32	12⅞	17½	2⅝	2	1 x 6	200	250	25.6
250	*273.1*	*34.5*	*201.87*	*0-2.38*	*327*	*445*	*67*		*M24 x 150*	*270*	*340*	*11.6*
12	12.750	400	51,070	0-3/32	15	19½	2⅝	2	⅞ x 6	180	220	30.5
300	*323.9*	*27.6*	*227.17*	*0-2.38*	*381*	*495*	*67*		*M22 x 150*	*245*	*300*	*13.8*
14	14.000	300	46,181	0-3/32	16¼	19¾	3	2	⅞ x 5½	180	220	36.1
350	*355.6*	*20.7*	*205.43*	*0-2.38*	*413*	*502*	*76*		*M22 x 140*	*245*	*300*	*16.4*
16	16.000	300	60,319	0-3/32	18⅛	22¼	3	3	⅞ x 5½	180	220	42.0
400	*406.4*	*20.7*	*268.31*	*0-2.38*	*460*	*565*	*76*		*M22 x 140*	*245*	*300*	*19.1*
18	18.000	300	76,341	0-3/32	20½	24⅜	3⅛	4	1 x 4	200	250	51.6
450	*457.2*	*20.7*	*339.58*	*0-2.38*	*521*	*619*	*79*		*M24 x 100*	*270*	*340*	*23.4*
20	20.000	300	94,248	0-3/32	23	26⅞	3⅛	4	1 x 4	200	250	68.3
500	*508.0*	*20.7*	*419.23*	*0-2.38*	*581*	*683*	*79*		*M24 x 100*	*270*	*340*	*31.0*
24	24.000	250	113,097	0-3/32	27⅛	30⅞	3⅛	4	1 x 4	200	250	89.3
600	*609.6*	*17.2*	*503.08*	*0-2.38*	*689*	*784*	*79*		*M24 x 100*	*270*	*340*	*40.5*

NOTE:

Range of Pipe End Seperation values are for roll grooved pipe and may be doubled for cut groove pipe.

†Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

For additional details see "Coupling Data Chart Notes" on page 17.
* Available in ANSI or metric bolt sizes only as indicated.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on page 183.
Not for use in copper systems.

FIG. 7401-2

Rigidlok® Coupling

Gruvlok® introduces new 2-piece large diameter standard groove couplings in both rigid and flexible styles

- Uses standard grooves (conforming to AWWA C-606)
- No special grooves or grooving tools needed
- Pressures to 350 P.S.I. on cut or roll grooved pipe with a wall thickness of 0.250" or greater
- No special fittings needed
- No special valves needed
- Up to 23% less weight than competitive models
- Sizes: 14" through 24" in Rigid: Figure 7401-2

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated

STAINLESS STEEL BOLTS & NUTS:
304SS bolts and nuts are available as a standard option.
(316SS are available for special order).

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

GASKET TYPE:
Flush Gap (Standard)

LUBRICATION:
Standard
Gruvlok Xtreme™

WORKING PRESSURE, END LOAD & PIPE END SEPARATION:
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

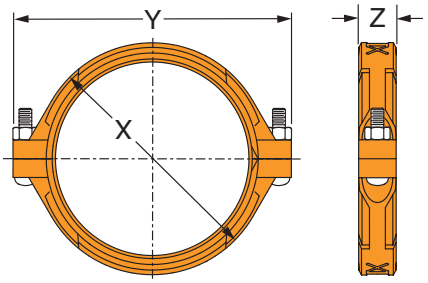


FIGURE 7401-2 RIGIDLOK COUPLING

Nominal Size	O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts*		Specified Torque §		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-M*		*Lbs./kg*
14 *350*	14.000 *355.6*	350 *24.1*	53,878 *239.66*	0-3/32 *0-2.38*	16 1/4 *413*	19 3/4 *502*	3 *76*	2	7/8 x 5 1/2 –	180 *245*	220 *300*	36.5 *16.6*
16 *400*	16.000 *406.4*	350 *24.1*	70,372 *313.03*	0-3/32 *0-2.38*	18 5/16 *465*	22 *558*	3 *76*	2	1 x 5 1/2 –	250 *340*	300 *408*	46.0 *20.9*
18 *450*	18.000 *457.2*	350 *24.1*	89,064 *396.18*	0-3/32 *0-2.38*	20 3/4 *527*	24 1/4 *615*	3 1/8 *79*	2	1 x 5 1/2 –	250 *340*	300 *408*	62.5 *28.3*
20 *500*	20.000 *508.0*	350 *24.1*	109,956 *489.11*	0-3/32 *0-2.38*	23 *582*	27 1/8 *691*	3 1/8 *79*	2	1 1/8 x 5 1/2 –	375 *510*	425 *578*	73.5 *33.3*
24 *600*	24.000 *609.6*	350 *24.1*	158,336 *704.31*	0-3/32 *0-2.38*	27 1/4 *688*	31 1/8 *791*	3 3/16 *81*	2	1 1/8 x 5 1/2 –	375 *510*	425 *578*	90.5 *41.1*

Range of Pipe End Separation values are for roll grooved pipe and may be doubled for cut groove pipe.
See Installation & Assembly directions on page 189.

FIG. 74

SlideLOK® Ready for Installation Coupling

Patent D680629, D680630, D696751

SlideLOK Pressure Responsive Gasket

The SlideLOK coupling is the most rigid ready for installation coupling designed to reduce installation time. The slide action eases assembly and reduces installation time. The patented gasket provides four separate sealing surfaces for added protection.

The SlideLOK coupling is designed to be used with roll groove or cut groove steel pipe, grooved light wall pipe, Gruvlok® grooved-end fittings, and valves.

The SlideLOK coupling allows for a maximum working pressure of 750 psi on roll or cut grooved carbon steel standard wall pipe. Contact an Anvil representative for light wall and stainless steel pipe pressure ratings. The SlideLOK coupling provides a rigid connection allowing pipe hanging practices per ASME B31 Pipe Codes.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

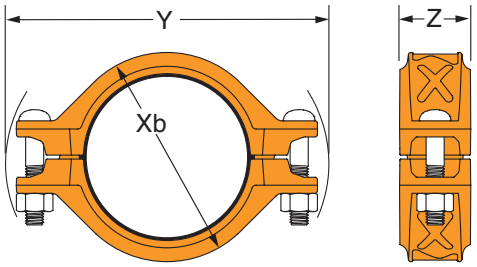
Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

GASKET TYPE:
SlideLOK (2" - 8")

LUBRICATION:
Standard
Gruvlok Xtreme™

FIG. 74

SlideLOK® Ready for Installation Coupling



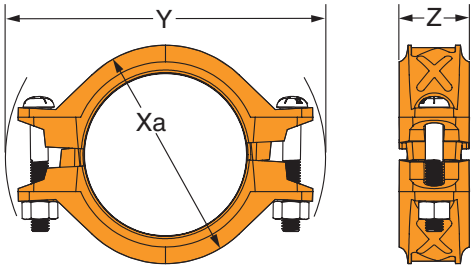


FIGURE 74 SLIDELOK COUPLING

Nominal Size	O.D.	Max. Working Pressure †	Max. End Load	Range of Pipe End Separation	Coupling Dimensions				Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
					Xa	Xb	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-M*		*Lbs./kg*
2 *50*	2.375 *60.3*	750 *51.7*	3,323 *14.78*	0-1/32 *0-0.79*	3¾ *95*	3⅜ *86*	6 *152*	2 *51*	2	½ x 2¾ *M12 x 70*	80 *110*	100 *150*	2.9 *1.3*
2½ *65*	2.875 *73.0*	750 *51.7*	4,869 *21.66*	0-1/32 *0-0.79*	4⅝ *117*	4¼ *108*	6⅜ *163*	2 *51*	2	½ x 2¾ *M12 x 70*	80 *110*	100 *150*	3.1 *1.4*
3 *80*	3.500 *88.9*	750 *51.7*	7,216 *32.10*	0-1/32 *0-0.79*	5⅕ *132*	4 11/16 *119*	7 *178*	2 *51*	2	½ x 3½ *M12 x 89*	80 *110*	100 *150*	3.6 *1.6*
4 *100*	4.500 *114.3*	750 *51.7*	11,928 *53.06*	0-3/32 *0-2.38*	6½ *165*	6 *152*	8 5/16 *212*	2 *51*	2	½ x 3½ *M12 x 89*	80 *110*	100 *150*	4.9 *2.2*
5 *125*	5.563 *141.3*	750 *51.7*	18,229 *81.09*	0-3/32 *0-2.38*	7¾ *196*	7⅛ *181*	9¾ *248*	2 *51*	2	⅝ x 3½ *M16 x 89*	100 *135*	130 *175*	6.1 *2.8*
6 *150*	6.625 *168.3*	700 *48.3*	24,130 *107.34*	0-3/32 *0-2.38*	8⅞ *224*	8⅕ *208*	10⅘ *274*	2 *51*	2	⅝ x 3½ *M16 x 89*	100 *135*	130 *175*	6.8 *3.1*
8 *200*	8.625 *219.1*	600 *41.4*	35,056 *155.94*	0-3/32 *0-2.38*	11⅜ *289*	10⅝ *270*	13⅜ *340*	2½ *64*	2	¾ x 4½ *M20 x 115*	130 *175*	180 *245*	10.9 *4.9*

NOTES:

Range of Pipe End Separation values are for roll grooved pipe and may be doubled for cut groove pipe.

†Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

Impact gun can be used for installation, verify that the output of the impact gun is within the required torque range.

Not for use on "EG" rolled or cut grooved pipe ends.

Contact an Anvil Representative for use on light wall and SS pipe applications.

For additional details see "Coupling Data Chart Notes" on page 17.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on pages 184-185.
Not for use in copper systems.

FIG. 7402

SlideLOK® Ready for Installation Coupling

Patent D680629, D680630, D696751

SlideLOK Pressure Responsive Gasket

The SlideLOK coupling is a ready for installation coupling designed to reduce installation time. The slide action allows for greater flexibility during installation. The patented gasket provides four separate sealing surfaces for added protection. The engineered metal-to-metal installation requirement is a quick and easy indication of proper assembly.

The SlideLOK is designed to be used with roll groove or cut groove steel pipe, as well as with grooved light wall pipe, Gruvlok® grooved-end fittings, and valves. The SlideLOK coupling produces a secure, rigid pipe joint connection.

The SlideLOK coupling allows for a maximum working pressure of 750 psi on roll or cut grooved standard wall pipe. Contact an Anvil representative for light wall pipe pressure ratings. The SlideLOK coupling maintains a rigid connection with support and hanging in conformance with applicable ANSI B31.1 Power Piping Code, ANSI B31.9 Building Service Pipe Code.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

GASKET TYPE:
SlideLOK (2" - 8")

LUBRICATION:
Standard
Gruvlok Xtreme™

FIG. 7402

SlideLOK® Ready for Installation Coupling

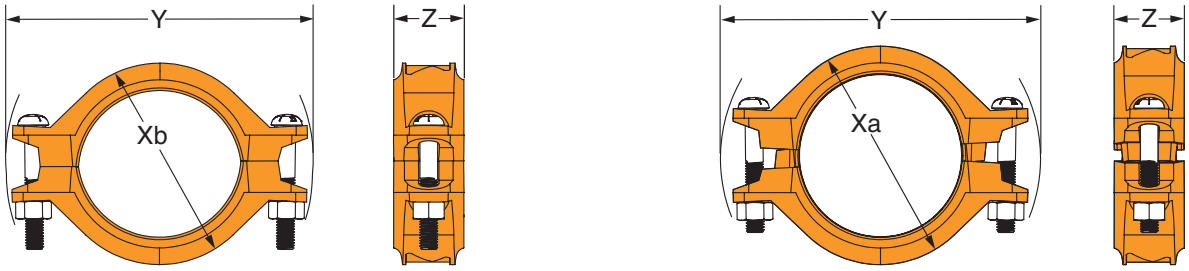


FIGURE 7402 SLIDELOK COUPLING

Nominal Size	O.D.	Max. Working Pressure †	Max. End Load	Range of Pipe End Separation	Coupling Dimensions				Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
					Xa	Xb	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-M*		*Lbs./kg*
2 *50*	2.375 *60.3*	750 *51.7*	3,323 *14.78*	0-1/32 *0-0.79*	3¾ *95*	3⅜ *86*	6 *152*	2 *51*	2	½ x 2¾ *M12 x 70*	80 *110*	100 *150*	2.9 *1.3*
2½ *65*	2.875 *73.0*	750 *51.7*	4,869 *21.66*	0-1/32 *0-0.79*	4⅝ *117*	4¼ *108*	6⅜ *163*	2 *51*	2	½ x 2¾ *M12 x 70*	80 *110*	100 *150*	3.1 *1.4*
3 *80*	3.500 *88.9*	750 *51.7*	7,216 *32.10*	0-1/32 *0-0.79*	5⅕ *132*	4 11/16 *119*	7 *178*	2 *51*	2	½ x 3½ *M12 x 89*	80 *110*	100 *150*	3.6 *1.6*
4 *100*	4.500 *114.3*	750 *51.7*	11,928 *53.06*	0-3/32 *0-2.38*	6½ *165*	6 *152*	8 5/16 *212*	2 *51*	2	½ x 3½ *M12 x 89*	80 *110*	100 *150*	4.9 *2.2*
5 *125*	5.563 *141.3*	750 *51.7*	18,229 *81.09*	0-3/32 *0-2.38*	7¾ *196*	7⅛ *181*	9¾ *248*	2 *51*	2	⅝ x 3½ *M16 x 89*	100 *135*	130 *175*	6.1 *2.8*
6 *150*	6.625 *168.3*	700 *48.3*	24,130 *107.34*	0-3/32 *0-2.38*	8⅞ *224*	8⅕ *208*	10⅘ *274*	2 *51*	2	⅝ x 3½ *M16 x 89*	100 *135*	130 *175*	6.8 *3.1*
8 *200*	8.625 *219.1*	600 *41.4*	35,056 *155.94*	0-3/32 *0-2.38*	11⅜ *289*	10⅝ *270*	13⅜ *340*	2½ *64*	2	¾ x 4½ *M20 x 115*	130 *175*	180 *245*	10.9 *4.9*

NOTES:

Range of Pipe End Separation values are for roll grooved pipe and may be doubled for cut groove pipe.

†Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

Impact gun can be used for installation, verify that the output of the impact gun is within the required torque range.

Not for use on "EG" rolled or cut grooved pipe ends.

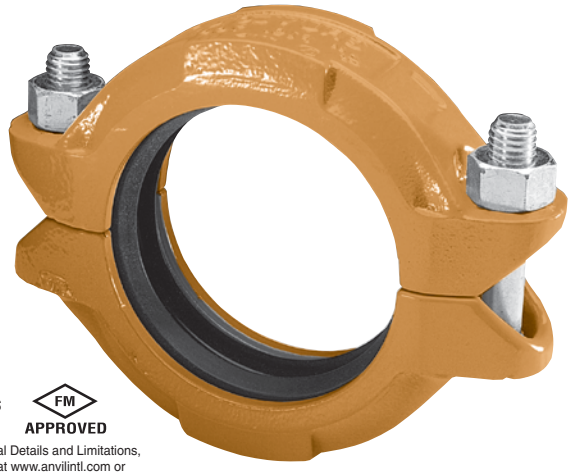
Contact an Anvil Representative for use on light wall and SS pipe applications.

For additional details see "Coupling Data Chart Notes" on page 17.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on pages 186-187.
Not for use in copper systems.

FIG. 7001
Flexible Coupling

The Gruvlok® Fig. 7001 Coupling forms a flexible grooved end pipe joint connection with the versatility for a wide range of applications. Services include mechanical and plumbing, process piping, mining and oil field piping, and many others. The coupling design supplies optimum strength for working pressures to 1000 PSI (69 bar) without excessive casting weight.

The flexible design eases pipe and equipment installation while providing the designed-in benefit of reducing pipeline noise and vibration transmission without the addition of special components. To ease coupling handling and assembly and to assure consistent quality, sizes 1" through 14" couplings have two 180° segment housings, 16" have three 120° segment housings, and 18" through 24" sizes have four 90° segment housings, while the 28" O.D. and 30" O.D. couplings have six 60° segment housings. The 28" O.D. and 30" O.D. are weld-ring couplings.



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For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

STAINLESS STEEL BOLTS & NUTS:
304SS bolts and nuts are available as a standard option.
(316SS are available for special order).

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
Size Range: 1" - 12" (C style only)
20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

Grade "L" Silicone (Red color code)
Size Range: 1" - 12" (C style only)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services. Contact an Anvil Representative for availability.

GASKET TYPE:
C Style (1" - 30")
Flush Gap (1" - 24")

LUBRICATION:
Standard
Gruvlok Xtreme™ (Do Not use with Grade "L")

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE:
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

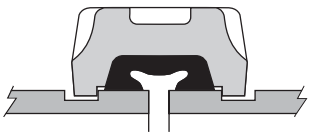


Fig. 7001 with Standard Gasket

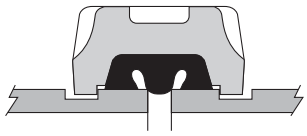
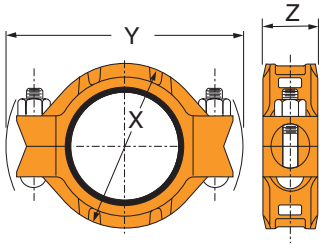


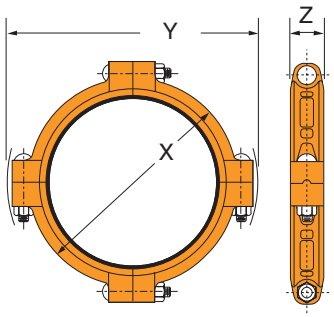
Fig. 7001 with Flush Gap Gasket

FIG. 7001

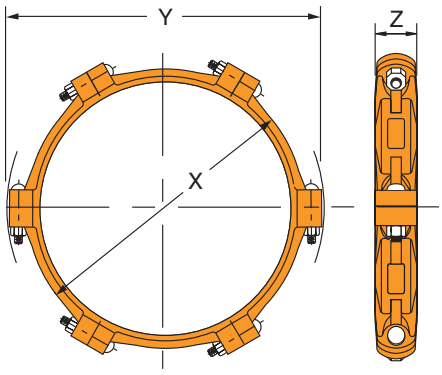
Flexible Coupling



SIZES 1" - 14"



SIZES 16" - 24"



SIZES 28" - 30"

FIGURE 7001 FLEXIBLE COUPLING

Nominal Size	O.D.	Max. Work. Pressure†	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Bolt Dimensions*		Specified Torque §		Approx. Wt. Ea.
					Per Coupling	of Pipe	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-m*		*Lbs./kg*
1 *25*	1.315 *33.4*	1000 *68.9*	1,358 *6.04*	0-1/32 *0-0.79*	1° 22'	0.29 *23.8*	2½ *64*	4½ *114*	1⅞ *48*	2	⅜ x 2¼ *M10 x 57*	30 *40*	45 *60*	1.3 *0.6*
1¼ *32*	1.660 *42.2*	1000 *68.9*	2,164 *9.63*	0-1/32 *0-0.79*	1° 5'	0.23 *18.8*	2¾ *70*	4½ *114*	1⅞ *48*	2	⅜ x 2¼ *M10 x 57*	30 *40*	45 *60*	1.4 *0.6*
1½ *40*	1.900 *48.3*	1000 *68.9*	2,835 *12.61*	0-1/32 *0-0.79*	0° 57'	0.20 *16.5*	3 *76*	4⅝ *117*	1⅞ *48*	2	⅜ x 2¼ *M10 x 57*	30 *40*	45 *60*	1.5 *0.7*
2 *50*	2.375 *60.3*	1000 *68.9*	4,430 *19.71*	0-1/32 *0-0.79*	0° 45'	0.16 *13.1*	3⅝ *92*	6⅛ *156*	1⅞ *48*	2	½ x 3 *M12 x 76*	80 *110*	100 *150*	3.1 *1.4*
2½ *65*	2.875 *73.0*	1000 *68.9*	6,492 *28.88*	0-1/32 *0-0.79*	0° 37'	0.13 *10.9*	4¼ *108*	6½ *165*	1⅞ *48*	2	½ x 3 *M12 x 76*	80 *110*	100 *150*	3.7 *1.7*
3 O.D. 76.1	*2.996* 76.1	*1000* 68.9	*7,050* 31.36	*0-1/32* *0-0.79*	*0° 36'*	*0.13* 10.4	*4¼* 108	*6¾* 171	*1⅞* 48	*2*	*½ x 3* M12 x 76	*80* 110	*100* 150	*4.3* 2.0
3 *80*	3.500 *88.9*	1000 *68.9*	9,621 *42.80*	0-1/32 *0-0.79*	0° 31'	0.11 *8.9*	4⅞ *124*	7⅛ *181*	1⅞ *48*	2	½ x 3 *M12 x 76*	80 *110*	100 *150*	4.3 *2.0*
3½ *90*	4.000 *101.6*	1000 *68.9*	12,566 *55.90*	0-1/32 *0-0.79*	0° 27'	0.09 *7.8*	5¼ *133*	8¼ *210*	1⅞ *48*	2	⅝ x 3½ *M16 x 89*	100 *135*	130 *175*	5.1 *2.3*
4 *100*	4.500 *114.3*	1000 *68.9*	15,904 *70.75*	0-3/32 *0-2.38*	1° 12'	0.25 *20.8*	6¼ *159*	8¾ *222*	2 *51*	2	⅝ x 3½ *M16 x 89*	100 *135*	130 *175*	6.8 *3.1*
5 *125*	5.563 *141.3*	1000 *68.9*	24,306 *108.12*	0-3/32 *0-2.38*	0° 58'	0.20 *16.8*	7¼ *184*	11¼ *286*	2 *51*	2	¾ x 4½ *M20 x 110*	130 *175*	180 *245*	9.6 *4.4*
6½ O.D. 165.1	*6.500* 165.1	*1000* 68.9	*33,183* 147.61	*0-3/32* *0-2.38*	*0° 50'*	*0.17* 14.4	*8¼* 210	*11¾* 298	*2* 51	*2*	*¾ x 4½* M20 x 110	*130* 175	*180* 245	*11.8* 5.4
6 *150*	6.625 *168.3*	1000 *68.9*	34,472 *153.34*	0-3/32 *0-2.38*	0° 49'	0.17 *14.1*	8⅝ *219*	11¾ *298*	2 *51*	2	¾ x 4½ *M20 x 110*	130 *175*	180 *245*	11.8 *5.4*
8 *200*	8.625 *219.1*	800 *55.2*	46,741 *207.91*	0-3/32 *0-2.38*	0° 37'	0.13 *10.9*	11 *279*	14⅜ *365*	2⅜ *60*	2	⅞ x 5½ *M22 x 140*	180 *245*	220 *300*	21.7 *9.8*
10 *250*	10.750 *273.0*	800 *55.2*	72,610 *322.99*	0-3/32 *0-2.38*	0° 30'	0.11 *8.7*	13⅛ *333*	16⅝ *422*	2⅝ *67*	2	⅞ x 5½ *M22 x 140*	180 *245*	220 *300*	27.0 *12.2*
12 *300*	12.750 *323.9*	800 *55.2*	102,141 *454.35*	0-3/32 *0-2.38*	0° 25'	0.09 *7.3*	15½ *394*	18⅝ *473*	2⅝ *67*	2	⅞ x 6 *M22 x 150*	180 *245*	220 *300*	35.0 *15.9*
14 *350*	14.000 *355.6*	300 *20.7*	46,181 *205.43*	0-3/32 *0-2.38*	0° 23'	0.08 *6.7*	16⅛ *410*	20½ *521*	3 *76*	2	⅞ x 5½ *M22 x 140*	180 *245*	220 *300*	37.0 *16.8*
16 *400*	16.000 *406.4*	300 *20.7*	60,319 *268.31*	0-3/32 *0-2.38*	0° 20'	0.07 *5.9*	18⅛ *460*	22⅞ *581*	3 *76*	4	1 x 4 *	200 -	250 -	50.0 *22.7*
18 *450*	18.000 *457.2*	300 *20.7*	76,341 *339.58*	0-3/32 *0-2.38*	0° 18'	0.06 *5.2*	21⅛ *537*	25⅜ *645*	3⅛ *79*	4	1 x 4 *	200 -	250 -	72.0 *32.7*
20 *500*	20.000 *508.0*	300 *20.7*	94,248 *419.23*	0-3/32 *0-2.38*	0° 16'	0.06 *4.7*	23 *584*	28¼ *718*	3⅛ *79*	4	1⅛ x 4½ *	225 -	275 -	82.0 *37.2*
24 *600*	24.000 *609.6*	300 *20.7*	135,717 *603.70*	0-3/32 *0-2.38*	0° 13'	0.05 *3.9*	27 *686*	32⅜ *822*	3⅛ *79*	4	1⅛ x 4½ *	225 -	275 -	90.0 *40.8*
28" I.D. *733.4*	28.875 *733.4*	150 *10.3*	98,226 *436.93*	0-3/32 *0-2.38*	0° 11'	0.04 *3.2*	33½ *851*	35½ *902*	3⅛ *79*	6	1 x 5½ *	200 -	250 -	105.0 *47.6*
30" I.D. *787.4*	31.00 *787.4*	150 *10.3*	113,215 *503.61*	0-3/32 *0-2.38*	0° 10'	0.04 *3.0*	33¾ *857*	38¼ *972*	3⅝ *92*	6	1 x 5½ *	200 -	250 -	137.0 *62.1*

NOTES:

Range of Pipe End Separation and Angular Deflection values are for roll grooved pipe and may be doubled for cut groove pipe. See page 222 for details. Refer to page 228 for Misalignment & Deflection Calculations and page 229 for Curve Layout Calculations.

†Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

* Available in ANSI or metric bolt sizes only as indicated.
For additional details see "Coupling Data Chart Notes" on page 17.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on page 188.
Not for use in copper systems.

FIG. 7001-2
Flexible Coupling

Gruvlok® introduces new 2-piece large diameter standard groove couplings in both rigid and flexible styles

- Uses standard grooves (conforming to AWWA C-606)
- No special grooves or grooving tools needed
- Pressures to 350 P.S.I. on cut or roll grooved pipe with a wall thickness of 0.250" or greater
- No special fittings needed
- No special valves needed
- Up to 23% less weight than competitive models
- Sizes: 14" through 24" in Flexible: Figure 7001-2

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated

STAINLESS STEEL BOLTS & NUTS:
304SS bolts and nuts are available as a standard option.
(316SS are available for special order).

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

GASKET TYPE:
Flush Gap (14" - 24")

LUBRICATION:
Standard
Gruvlok Xtreme™

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE:
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

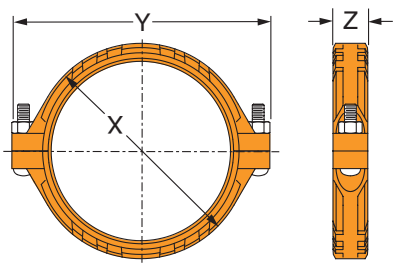


FIGURE 7001-2 FLEXIBLE COUPLING

Nominal Size	O.D.	Max. Work. Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Bolt Dimensions*		Specified Torque §		Approx. Wt. Ea.
					Per Coupling	of Pipe	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-m*		*Lbs./kg*
14 *350*	14.000 *355.6*	350 *24.1*	53,878 *239.66*	0-3/32 *0-2.38*	0° 23'	0.08 *6.7*	16¼ *413*	19¾ *502*	3 *76*	2	⅞ x 5½ –	180 *245*	220 *300*	36.0 *16.3*
16 *400*	16.000 *406.4*	350 *24.1*	70,372 *313.03*	0-3/32 *0-2.38*	0° 20'	0.07 *5.9*	18 5/16 *465*	22 *558*	3 *76*	2	1 x 5½ –	250 *340*	300 *408*	45.0 *20.4*
18 *450*	18.000 *457.2*	350 *24.1*	89,064 *396.18*	0-3/32 *0-2.38*	0° 18'	0.06 *5.2*	20¾ *527*	24¼ *615*	3⅛ *79*	2	1 x 5½ –	250 *340*	300 *408*	60.0 *27.2*
20 *500*	20.000 *508.0*	350 *24.1*	109,956 *489.11*	0-3/32 *0-2.38*	0° 16'	0.06 *4.7*	23 *582*	27⅛ *691*	3⅛ *79*	2	1⅛ x 5½ –	375 *510*	425 *578*	72.5 *32.9*
24 *600*	24.000 *609.6*	350 *24.1*	158,336 *704.31*	0-3/32 *0-2.38*	0° 13'	0.05 *3.9*	27¼ *688*	31⅛ *791*	3 3/16 *81*	2	1⅛ x 5½ –	375 *510*	425 *578*	90.0 *40.8*

Range of Pipe End Separation and Angular Deflection values are for roll grooved pipe and may be doubled for cut groove pipe.
See Installation & Assembly directions on page 189.

FIG. 7011
Standard Coupling

The Gruvlok® Figure 7011 Standard Coupling is a flexible coupling designed to join roll grooved or cut grooved 30" O.D. pipe for a wide range of applications, including Commercial/Industrial Construction, Mining, Process Piping and many others. This coupling's operating temperature ranges from –40°F to 230°F (-40°C to 110°C) with the Grade E EPDM gasket and –20°F to 180°F (-29°C to 82°C) with the Grade T Nitrile gasket. The operating pressure ranges 15" of Hg. vacuum to 300 psig on standard wall steel pipe.

MATERIAL SPECIFICATIONS

HOUSING DESIGN:
This six-segment coupling housing is cast in ductile iron per ASTM A 536 Grade 65-45-12. Each housing segment is machined to assure a close dimensional fit with pipe ends that are prepared in accordance with Gruvlok "Large Diameter Roll and Cut Groove Specifications."

GASKET DESIGN:
The gasket design is a "C" Style cross section and features a larger cross section to provide optimal sealing throughout the range of pipe dimensional variations and operating conditions. The gasket is available in EPDM and Nitrile, to facilitate use in a wide range of applications. For Gruvlok gasket material recommendations see the Gruvlok catalog.

BOLTS:
SAE J429, Grade 5, Zinc Electroplated

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated

PIPE END PREPARATION:
Pipe grooving is simple, easy and quick. It is critical that the pipe ends be prepared in accordance with the Gruvlok "Large Diameter Roll and Cut Groove Specifications." **For roll grooved pipe, grinding the weld seam on the interior and exterior of the pipe may be required. Not performing this operation may result in improper assembly of the coupling, gasket leakage and damage to the roll grooving machine.**

FIG. 7011
Standard Coupling

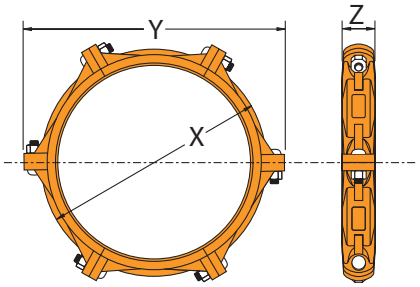
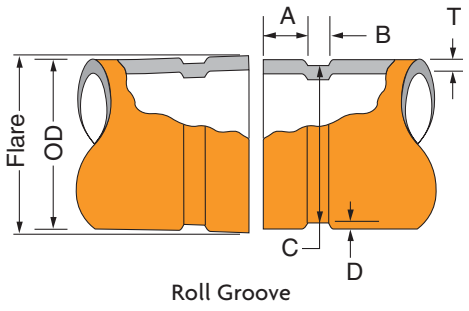


FIGURE 7011 STANDARD COUPLING

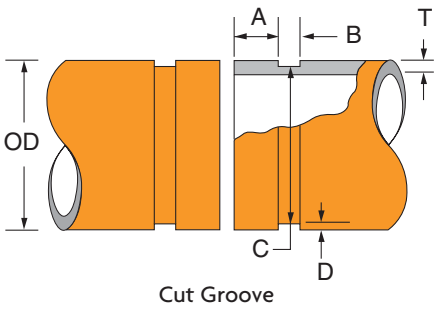
Nominal Size	O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Coupling Bolts*		Specified Torque §		Approx. Wt. Ea.
					Per Coupling	of Pipe	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-m*		*Lbs./Kg*
30 O.D. *750*	30.000 *762.0*	300 *20.7*	212,058 *943.2*	0-9/64 *0-3.57*	0° 16'	0.06 *4.7*	34 *864*	39½ *1003*	5 *127*	6	1¼ x 4⅜ –	600 -	800 -	200 *90.9*

NOTE:
Working pressure and end load values are for standard wall pipe.
Range of pipe end separation values are for cut grooved pipe.
Roll and Cut Grooving Specifications can be found in the technical data section.

For additional details see "Coupling Data Chart Notes" on page 17.
* Available in ANSI or metric bolt sizes only as indicated.
§ – For additional Bolt Torque information,see page 222.
See Installation & Assembly directions on page 190.



Roll Groove



Cut Groove

LARGE DIAMETER PIPE ROLL & CUT GROOVE SPECIFICATIONS

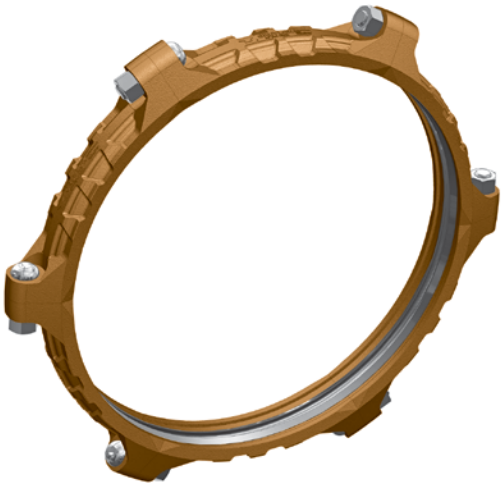
Nominal IPS Pipe Size	O.D.			Gasket Seat "A" +.030/-.060 +.77/-1.54	Groove Width "B" ±.030 ±.77	Groove Diameter "C"		Groove Depth "D" (Ref. Only)	Min. Wall Thickness "T"		Max. Flare Dia.
	Actual	Tolerance				Actual	Tol +0.000		Roll Groove	Cut Groove	
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
30 O.D.	30.000	0.093	0.031	1.750	0.625	29.500	0.063	0.250	0.250	0.625	30.200
750	*762.0*	*2.36*	*0.79*	*44.45*	*15.88*	*749.30*	*1.60*	*6.35*	*6.35*	*15.88*	*767.1*

- Pipe O.D. must be within specified dimensions.
- Gasket Seat must be free from scores, seams, chips, rust or other scale, which may interfere with proper sealing of the gasket. Gasket Seat width, dimension A, is to be measured from the pipe end to the vertical flank in the groove.
- Groove width, dimension B, is to be measured between the vertical flank of the groove side walls.
- Groove depth must be uniform depth around the entire pipe circumference. (Reference column 6.)
- Maximum Flare Diameter is to be measured at the most extreme pipe end.
- **Out of Roundness:** Difference between the maximum and minimum pipe O.D. measured at 90° must not exceed the total pipe O.D. tolerance listed (Reference column 2).
- The maximum allowable tolerance from square cut ends is .125" measured from a true square line.
- Beveled end pipe in conformance with ANSI B16.25 (37½°) is acceptable, however square cut is preferred.

SPECIAL ROLL GROOVING INSTRUCTION:
- Weld seams must be ground flush with the pipe O.D. and I.D. prior to roll grooving. Failure to do so may result in damage to the roll grooving machine and unacceptable roll grooves may be produced.

FIG. 7022

Weld Ring Gruv-Ring Coupling



The Gruvlok® Figure 7022 coupling with Gruv-Ring forms a flexible grooved end pipe joint for use on steel pipe. Services for this versatile connection include large O.D. mining applications such as process, tailings and slurries. The coupling's multi-segment design supplies optimum strength for working pressures to 175 PSI.

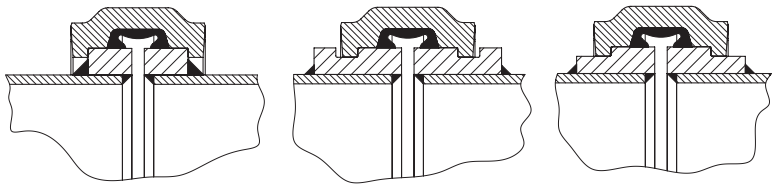


Fig. 7022 with Type C Ring

Fig. 7022 with Type D Ring

Fig. 7022 with Type E Ring

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated

STAINLESS STEEL BOLTS & NUTS:
304SS bolts and nuts are available as a standard option.
(316SS are available for special order).

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications, air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

GASKET TYPE:
C Style cross section featuring an enhanced larger cross section to provide optimal sealing throughout the range of pipe dimensional variations and operating conditions.

LUBRICATION:
Standard
Gruvlok Xtreme™

FIG. 7022

Weld Ring Gruv-Ring Coupling

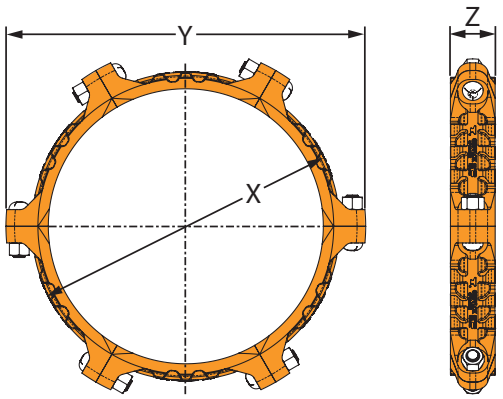


FIGURE 7022 WELD RING GRUV-RING COUPLING

Nominal Size	Pipe O.D. Range	Applied Gruv-Ring O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Number of Segments	Coupling Bolts		Approx. Wt. per Segment	Total Assembly Weight
						Per Coupling	of Pipe	X	Y	Z		Qty.	Size		
In.	*In./mm*	*In./mm*	*PSI/kPa*	*Lbs./N*	*In./mm*	*Degrees(°)*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*			*In./mm*	*Lbs./kg*	*Lbs./kg*
30	28.00 - 32.00 *711.2 - 812.8*	33.75 *857*	175 *1207*	156,558 *696,405*	0-½ *0-12.7*	0.85	0.18 *15.0*	37.00 *940*	43.25 *1099*	5.375 *137*	6	6	1½ x 5¾	42 *19.1*	250 *113.4*
36	34.00 - 38.00 *863.6 - 965.2*	40.19 *1021*	175 *1207*	221,978 *987,407*	0-½ *0-12.7*	0.72	0.15 *12.5*	43.47 *1104*	50.00 *12.70*	5.375 *137*	6	6	1½ x 5¾	48 *21.8*	290 *131.5*
42	40.00 - 44.00 *1,016.0 - 1,117.6*	46.63 *1184*	175 *1207*	298,790 *1,329,084*	0-½ *0-12.7*	0.62	0.12 *10.0*	49.84 *1266*	56.50 *1435*	5.375 *137*	8	8	1¾ x 6	46 *20.8*	345 *156.5*
48	46.00 - 50.00 *1,168.4 - 1,270.0*	53.13 *1350*	175 *1207*	387,905 *1,725,488*	0-½ *0-12.7*	0.53	0.11 *9.2*	57.16 *1452*	62.50 *1588*	5.500 *140*	8	16	1⅜ x 5¾	73 *32.9*	580 *263.1*
54	52.00 - 56.00 *1,320.8 - 1,422.4*	59.69 *1516*	175 *1207*	489,660 *2,178,116*	0-½ *0-12.7*	0.48	0.10 *8.3*	63.60 *1615*	69.28 *1760*	5.625 *143*	8	16	1½ x 5¾	81 *36.7*	650 *294.8*
60	58.00 - 64.00 *1,473.2 - 1,625.6*	66.19 *1681*	175 *1207*	602,116 *2,678,346*	0-½ *0-12.7*	0.43	0.09 *7.5*	70.00 *1778*	75.71 *1923*	5.750 *146*	10	20	1½ x 5¾	76 *34.3*	750 *340.2*

NOTE:
Impact gun can be used for installation, verify that the output of the impact gun is within the required torque range.

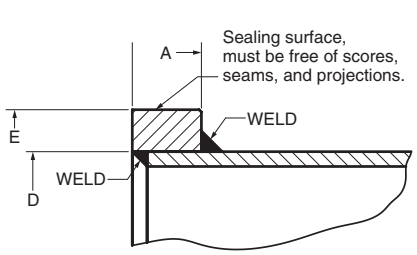
For additional details see "Coupling Data Chart Notes" on page 17.
For additional Bolt Torque information, contact an Anvil Representative.

GRUV-RING WELDED SHOULDER RINGS

For use with Fig. 7022 Couplings

MATERIAL: ASTM A105
Additional material options available upon request.

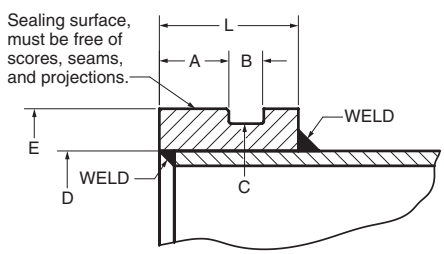
TYPE C



D - Ring I.D. based on Pipe O.D. Dimensions.

GRUV-RING TYPE C		
Size	Gasket Seat	Ring O.D.
	A	E
In./mm	*In./mm*	*In./mm*
30 *750*	1.75 *44.5*	33.75 *857.3*
36 *900*	1.75 *44.5*	40.19 *1020.8*
42 *1050*	1.75 *44.5*	46.63 *1184.3*
48 *1200*	1.75 *44.5*	53.13 *1349.4*
54 *1375*	1.75 *44.5*	59.69 *1516.1*
60 *1500*	1.75 *44.5*	66.19 *1681.2*

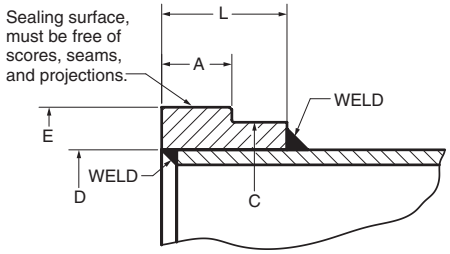
TYPE D



D - Ring I.D. based on Pipe O.D. Dimensions.

GRUV-RING TYPE D					
Size	Gasket Seat	Groove Width	Groove Diameter	Ring O.D.	Ring Width
	A	B	C	E	L
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
30 *750*	1.75 *44.5*	0.88 *22.2*	33.00 *838.2*	33.75 *857.3*	3.50 *88.9*
36 *900*	1.75 *44.5*	0.94 *23.8*	39.44 *1001.7*	40.19 *1020.8*	3.50 *88.9*
42 *1050*	1.75 *44.5*	1.00 *25.4*	45.81 *1163.6*	46.63 *1184.3*	3.62 *91.9*
48 *1200*	1.75 *44.5*	1.06 *27.0*	52.19 *1349.4*	53.13 *1349.4*	3.88 *98.4*
54 *1375*	1.75 *44.5*	1.13 *28.6*	58.63 *1489.1*	59.69 *1516.1*	3.88 *98.4*
60 *1500*	1.75 *44.5*	1.13 *28.6*	65.06 *1652.6*	66.19 *1681.2*	3.88 *98.4*

TYPE E



D - Ring I.D. based on Pipe O.D. Dimensions.

GRUV-RING TYPE E				
Size	Gasket Seat	Groove Diameter	Ring O.D.	Ring Width
	A	C	E	L
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*
30 *750*	1.75 *44.5*	33.00 *838.2*	33.75 *857.3*	3.50 *88.9*
36 *900*	1.75 *44.5*	39.44 *1001.7*	40.19 *1020.8*	3.50 *88.9*
42 *1050*	1.75 *44.5*	45.81 *1163.6*	46.63 *1184.3*	3.62 *91.9*
48 *1200*	1.75 *44.5*	52.19 *1349.4*	53.13 *1349.4*	3.88 *98.4*
54 *1375*	1.75 *44.5*	58.63 *1489.1*	59.69 *1516.1*	3.88 *98.4*
60 *1500*	1.75 *44.5*	65.06 *1652.6*	66.19 *1681.2*	3.88 *98.4*

Gruv-Rings are not to be considered as pipe reinforcement. Additional provision must be provided by the piping system designer if reinforcement is required.

GRUV-RING WELDED SHOULDER RINGS

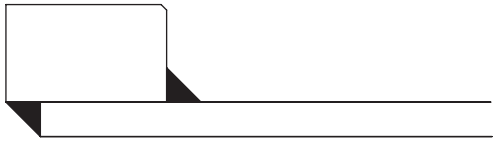
For use with Fig. 7022 Couplings

When ordering, please provide the required information below to your Anvil Representative.

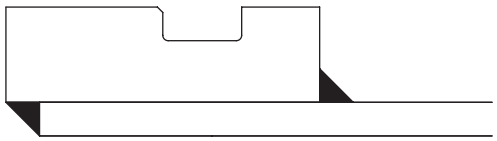
JOINT TYPE
❑ Pipe to Pipe (Two Rings Required)
❑ Pipe to Shoulder (One Ring Required)
APPLICATION
Fluid Media:
Working Pressure:
Test Pressure:
Temperature: Minimum: Maximum:
PIPE SPECIFICATION
Pipe Material:
Nominal Pipe Size:
Measured Pipe OD:
Pipe Schedule:
Wall Thickness:
COUPLING CONFIGURATION
Size:
Number of Joints:
Gasket Materials: ❑ Grade "E" EPDM (Green color code) ❑ Grade "T" Nitrile (Orange color code)
Coupling Finish: ❑ Rust inhibiting paint – Color: Orange (standard) ❑ Hot Dipped Zinc Galvanized (optional) ❑ Other Colors Available (IE: RAL3000 and RAL9000)
LINED PIPE (optional)
❑ Abrasive ❑ Corrosive
Lined Thickness:
Lined Material:

GRUV-RING TYPE

❑ Type C



❑ Type D



❑ Type E

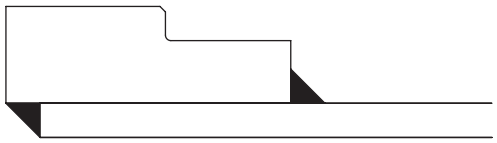


FIG. 7000

Lightweight Flexible Coupling

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

The Fig. 7000 Lightweight Flexible Coupling is designed for applications where system flexibility is desired.

The Fig. 7000 Coupling is approximately 30% lighter in weight than the Fig. 7001 Coupling, and allows for working pressure ratings up to 600 psi (41.4 bar).

The Figure 7000 Lightweight Flexible Coupling is intended for use in several applications. See Gasket Grade Index for gasket recommendations.

See technical data section for design factors.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

STAINLESS STEEL BOLTS & NUTS:
304SS bolts and nuts are available as a standard option.
(316SS are available for special order).

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
Size Range: 1" - 8" (C style only)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

Grade "L" Silicone (Red color code)
Size Range: 1" - 8" (C style only)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services.

GASKET TYPE:
Standard C Style (1" - 8")
Flush Gap (1" - 8")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7000

Lightweight Flexible Coupling

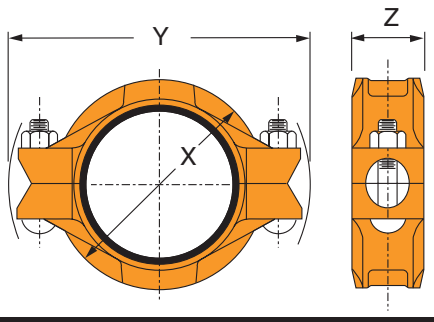


FIGURE 7000 COUPLING

Nominal Size	O.D.	Max. Working Pressure†	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
					Per Coupling	of Pipe	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-m*		*Lbs./Kg*
1 25	1.315 33.4	600 41.4	815 3.62	0-1/32 0-0.79	1° 22'	0.29 23.8	2 3/8 60	4 1/4 108	1 3/4 44	2	3/8 x 2 1/4 M10 x 57	30 40	45 60	1.3 0.6
1 1/4 32	1.660 42.2	600 41.4	1,299 5.78	0-1/32 0-0.79	1° 5'	0.23 18.8	2 3/4 70	4 3/8 111	1 3/4 44	2	3/8 x 2 1/4 M10 x 57	30 40	45 60	1.4 0.6
1 1/2 40	1.900 48.3	600 41.4	1,701 7.57	0-1/32 0-0.79	0° 57'	0.20 16.5	3 76	4 5/8 117	1 3/4 44	2	3/8 x 2 1/4 M10 x 57	30 40	45 60	1.5 0.7
2 50	2.375 60.3	600 41.4	2,658 11.82	0-1/32 0-0.79	0° 45'	0.16 13.1	3 1/2 89	5 1/2 140	1 3/4 44	2	3/8 x 2 1/4 M10 x 57	30 40	45 60	1.7 0.8
2 1/2 65	2.875 73.0	600 41.4	3,895 17.33	0-1/32 0-0.79	0° 37'	0.13 10.9	4 102	5 3/4 146	1 3/4 44	2	3/8 x 2 1/4 M10 x 57	30 40	45 60	1.9 0.9
3 O.D. 76.1	*2.996* 76.1	*600* 41.4	*4,230* 18.82	*0-1/32* *0-0.79*	*0° 36'*	*0.13* 10.4	*4* 102	*6 1/8* 156	*1 3/4* 44	*2*	*3/8 x 2 1/4* M10 x 57	*30* 40	*45* 60	*2.3* 1.0
3 80	3.500 88.9	600 41.4	5,773 25.68	0-1/32 0-0.79	0° 31'	0.11 8.9	4 5/8 117	6 3/4 171	1 3/4 44	2	1/2 x 2 3/4 M12 x 70	80 110	100 150	2.9 1.3
3 1/2 90	4.000 101.6	600 41.4	7,540 33.54	0-1/32 0-0.79	0° 27'	0.09 7.8	5 1/8 130	7 5/8 194	1 3/4 44	2	1/2 x 3 M12 x 76	80 110	100 150	3.1 1.4
4 1/4 O.D. 108.0	*4.250* 108.0	*600* 41.4	*8,512* 37.86	*0-3/32* 0-2.38	*1° 16'*	*0.26* 22.0	*5 1/2* 140	*7 3/4* 197	*2* 51	*2*	*1/2 x 3* M12 x 76	*80* 110	*100* 150	*4.0* 1.8
4 100	4.500 114.3	600 41.4	9,543 42.45	0-3/32 0-2.38	1° 12'	0.25 20.8	5 7/8 149	8 1/8 206	2 51	2	1/2 x 3 M12 x 76	80 110	100 150	4.6 2.1
5 1/4 O.D. 133.0	*5.236* 133.0	*500* 34.5	*10,766* 47.89	*0-3/32* 0-2.38	*1° 2'*	*0.21* 17.9	*6 1/2* 165	*9 1/8* 232	*2* 51	*2*	*5/8 x 3 1/2* M16 x 85	*100* 135	*130* 175	*5.7* 2.6
5 1/2 O.D. 139.7	*5.500* 139.7	*500* 34.5	*11,879* 52.84	*0-3/32* 0-2.38	*0° 59'*	*0.20* 17.0	*6 3/4* 171	*9 3/8* 238	*2* 51	*2*	*5/8 x 3 1/2* M16 x 85	*100* 135	*130* 175	*6* 2.7
5 125	5.563 141.3	500 34.5	12,153 54.06	0-3/32 0-2.38	0° 58'	0.20 16.8	7 178	9 5/8 244	2 51	2	5/8 x 3 1/2 M16 x 85	100 135	130 175	6.1 2.8
6 1/4 O.D. 159.0	*6.259* 159.0	*500* 34.5	*15,384* 68.43	*0-3/32* 0-2.38	*0° 51'*	*0.18* 14.9	*7 1/2* 191	*10 3/8* 264	*2* 51	*2*	*5/8 x 3 1/2* M16 x 85	*100* 135	*130* 175	*6.7* 3.0
6 1/2 O.D. 165.1	*6.500* 165.1	*500* 34.5	*16,592* 73.80	*0-3/32* 0-2.38	*0° 50'*	*0.17* 13.1	*7 3/4* 197	*10 3/4* 273	*2* 51	*2*	*5/8 x 3 1/2* M16 x 85	*100* 135	*130* 175	*7.0* 3.2
6 150	6.625 168.3	500 34.5	17,236 76.67	0-3/32 0-2.38	0° 49'	0.17 14.1	8 203	11 279	2 51	2	5/8 x 3 1/2 M16 x 85	100 135	130 175	8.1 3.7
8 200	8.625 219.1	500 34.5	29,213 129.95	0-3/32 0-2.38	0° 37'	0.13 10.9	10 1/2 264	12 13/16 337	2 1/2 60	2	3/4 x 4 1/2 M20 x 110	130 175	180 245	14.2 6.4

NOTES:

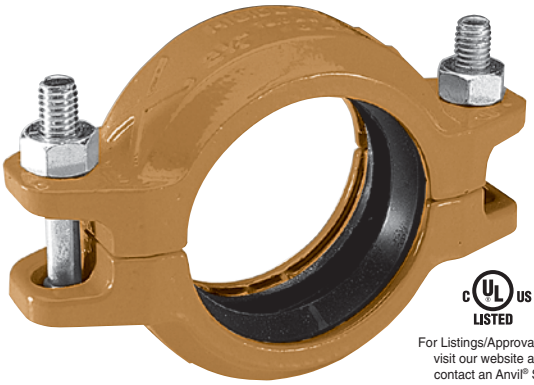
Range of Pipe End Separation and Angular Deflection values are for roll grooved pipe and may be doubled for cut groove pipe. See page 222 for details. Refer to page 228 for Misalignment & Deflection Calculations and page 229 for Curve Layout Calculations.

†Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

For additional details see "Coupling Data Chart Notes" on page 17.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on page 191.
Not for use in copper systems.

FIG. 7400

Rigidlite® Coupling



VdS

DN 50 and DN 200 sizes are VdS approved.

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The Fig. 7400 Rigidlite Coupling from Gruvlok is specially designed to provide a rigid, locked-in pipe connection to meet the specific demands of rigid design steel pipe systems. Fast and easy swing-over installation of the rugged lightweight housing produces a secure, rigid pipe joint.

The Fig. 7400 Rigidlite Coupling is UL/ULC Listed and FM Approved for 300 psi (20.7 bar) with roll grooved or cut grooved steel pipe prepared in accordance with Gruvlok grooving specifications.

The galvanized Fig. 7400 is ideal for stainless steel piping application where the external corrosion properties of stainless steel is not required. For Gruvlok coupling pressure ratings on stainless steel pipe, please refer to page 232.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

STAINLESS STEEL BOLTS & NUTS:
304SS bolts and nuts are available as a standard option.
(316SS are available for special order).

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
Size Range: 1" - 8" (C style only)
20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

Grade "L" Silicone (Red color code)
Size Range: 1" - 8" (C style only)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services.

GASKET TYPE:
Standard C Style (1" - 8")
Flush Gap (1" - 8")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7400

Rigidlite® Coupling

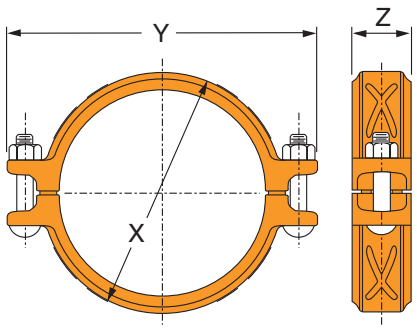


FIGURE 7400 RIGIDLITE COUPLING

Nominal Size	O.D.	Max. Wk. Pressure†	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-m*		*Lbs./Kg*
1 *25*	1.315 *33.4*	300 *20.7*	407 *1.81*	0-1/32 *0-0.79*	2 1/4 *57*	4 1/2 *114*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.2 *0.5*
1 1/4 *32*	1.660 *42.2*	300 *20.7*	649 *2.89*	0-1/32 *0-0.79*	2 5/8 *67*	4 3/4 *121*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.3 *0.6*
1 1/2 *40*	1.900 *48.3*	300 *20.7*	851 *3.78*	0-1/32 *0-0.79*	2 7/8 *73*	4 7/8 *124*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.4 *0.6*
2 *50**	2.375 *60.3*	300 *20.7*	1,329 *5.91*	0-1/32 *0-0.79*	3 1/4 *83*	5 1/2 *140*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.6 *0.7*
2 1/2 *65*	2.875 *73.0*	300 *20.7*	1,948 *8.66*	0-1/32 *0-0.79*	3 7/8 *98*	6 *152*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.9 *0.9*
3 O.D. 76.1	*2.996* 76.1	*300* 20.7	*2,115* 9.41	*0-1/32* 0-0.79	*4* 102	*5 7/8* 149	*1 3/4* 44	*2*	*3/8 x 2 1/4* M10 x 57	*30* 40	*45* 60	*1.9* 0.9
3 *80*	3.500 *88.9*	300 *20.7*	2,886 *12.84*	0-1/32 *0-0.79*	4 1/2 *114*	6 3/4 *171*	1 3/4 *44*	2	3/8 x 2 3/4 *M10 x 70*	30 *40*	45 *60*	2.1 *1.0*
4 *100*	4.500 *114.3*	300 *20.7*	4,771 *21.22*	0-3/32 *0-2.38*	5 5/8 *143*	7 3/4 *197*	1 7/8 *48*	2	3/8 x 2 3/4 *M10 x 70*	30 *40*	45 *60*	3.1 *1.4*
5 1/2 O.D. 139.7	*5.500* 139.7	*300* 20.7	*7,127* 31.70	*0-3/32* 0-2.38	*6 3/4* 171	*9 1/4* 235	*2* 51	*2*	*1/2 x 3* M12 x 76	*80* 110	*100* 150	*4.5* 2.0
5 *125*	5.563 *141.3*	300 *20.7*	7,292 *32.44*	0-3/32 *0-2.38*	6 7/8 *175*	9 1/4 *235*	2 *51*	2	1/2 x 3 *M12 x 76*	80 *110*	100 *150*	4.6 *2.1*
6 1/2 O.D. 165.1	*6.500* 165.1	*300* 20.7	*9,955* 44.28	*0-3/32* 0-2.38	*7 3/4* 200	*10 3/8* 264	*2* 51	*2*	*1/2 x 3* M12 x 76	*80* 110	*100* 150	*5.5* 2.5
6 *150*	6.625 *168.3*	300 *20.7*	10,341 *46.00*	0-3/32 *0-2.38*	7 7/8 *200*	10 3/8 *264*	2 *51*	2	1/2 x 3 *M12 x 76*	80 *110*	100 *150*	5.5 *2.5*
8 *200**	8.625 *219.1*	300 *20.7*	17,528 *77.97*	0-3/32 *0-2.38*	10 1/4 *260*	12 3/4 *324*	2 3/8 *60*	2	1/2 x 3 *M12 x 76*	80 *110*	100 *150*	8.4 *3.8*

NOTE:

Range of Pipe End Seperation values are for roll grooved pipe and may be doubled for cut groove pipe.

†Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

Other sizes available, contact an Anvil Representative for more information.

For additional details see "Coupling Data Chart Notes" on page 17.

* DN 50 and DN 200 sizes are VdS approved.

§ – For additional Bolt Torque information, see page 222.

See Installation & Assembly directions on page 192.

FIG. 7003

Hingelok® Coupling

SIZES 1" - 4"

SIZES 5" - 8"

The Fig. 7003 Hingelok Coupling is specially designed for applications requiring a quick connection and/or disconnection of a pipe joint. The Fig. 7003 Hingelok Coupling is ideal for those applications where frequent pipe removal is required for maintenance or any other reason. Fig. 7003 Hingelok Coupling provides for system working pressure ratings up to 300 psi (20.7 bar).

The Fig. 7003 Hingelok Coupling halves are permanently hinged to provide an assembly that eases handling and installation. The two coupling halves are hinged for ease of handling and are secured by a cam-action handle. Sizes 1" to 4" use toggle link plates and sizes 5" to 8" use a toggle bolt to attach the cam-action handle to the housings. The cam-action locking handle permits rapid installation without the need for additional tools and maintains secure closure of the coupling into the pipe grooves. Final assembly of the locking pin to the Hingelok Coupling adds an extra measure of security required in critical pipe joint applications.

MATERIAL SPECIFICATIONS

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

HANDLE:
Sizes 1" - 4": Cold Rolled Carbon Steel Handles
Sizes 5" - 8": Cast Ductile Iron Handles

LINKS:
Sizes 1" - 4": Cold Rolled Carbon Steel Links
Sizes 5" - 8": Heat Treated Steel Links

LOCKING PIN:
Locking Pin: Spring Steel

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

Grade "O" Fluoro-Elastomer (Blue color code)
Size Range: 1" - 8" (C style only)
20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

Grade "L" Silicone (Red color code)
Size Range: 1" - 8" (C style only)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services. DO NOT USE GRUVLOK XTREME LUBRICANT WITH GRADE "L" SILICONE GASKET.

GASKET TYPE:
Standard C Style (1" - 8")
Flush Gap (1" - 8")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7003

Hingelok® Coupling

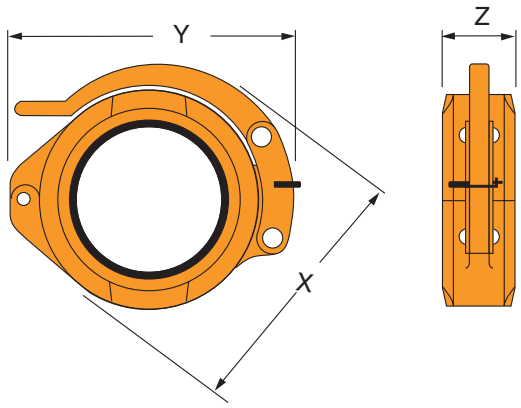


FIGURE 7003 HINGELOK COUPLING

Nominal Size	O.D.	Max. Wk. Pressure†	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Approx. Wt. Ea.
					Per Coupling	of Pipe	X	Y	Z	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1*	1.315	300	407	0-1/32	1° 22'	0.29	3	4	1 3/4	1.4
25	*33.4*	*20.7*	*1.81*	*0-0.79*		*23.8*	*76*	*101*	*44*	*0.6*
1 1/4*	1.660	300	649	0-1/32	1° 5'	0.23	3 7/16	4 7/16	1 7/8	1.5
32	*42.2*	*20.7*	*2.89*	*0-0.79*		*18.8*	*87*	*113*	*48*	*0.7*
1 1/2	1.900	300	851	0-1/32	0° 57'	0.20	3 5/8	4 1/4	1 7/8	1.7
40	*48.3*	*20.7*	*3.78*	*0-0.79*		*16.5*	*92*	*108*	*48*	*0.8*
2	2.375	300	1,329	0-1/32	0° 45'	0.16	4 1/4	4 7/8	1 7/8	2.2
50	*60.3*	*20.7*	*5.91*	*0-0.79*		*13.1*	*108*	*124*	*48*	*1.0*
2 1/2	2.875	300	1,948	0-1/32	0° 37'	0.13	5 1/4	5 7/8	1 7/8	3.2
65	*73.0*	*20.7*	*8.66*	*0-0.79*		*10.9*	*133*	*149*	*48*	*1.5*
3	3.500	300	2,886	0-1/32	0° 31'	0.11	5 5/8	6 1/2	1 7/8	3.6
80	*88.9*	*20.7*	*12.84*	*0-0.79*		*8.9*	*143*	*165*	*48*	*1.6*
4	4.500	300	4,771	0-3/32	1° 12'	0.25	7	7 3/4	2	5.1
100	*114.3*	*20.7*	*21.22*	*0-2.38*		*20.8*	*178*	*197*	*51*	*2.3*
5	5.563	300	7,292	0-3/32	0° 58'	0.20	8 5/8	9 1/2	2 1/8	9.5
125	*141.3*	*20.7*	*32.44*	*0-2.38*		*16.8*	*219*	*241*	*54*	*4.3*
6	6.625	300	10,341	0-3/32	0° 49'	0.17	9 7/8	10 7/8	2 1/8	11.2
150	*168.3*	*20.7*	*46.00*	*0-2.38*		*14.14*	*251*	*276*	*54*	*5.1*
8	8.625	300	17,528	0-3/32	0° 37'	0.13	12	13 1/8	2 1/2	18.1
200	*219.1*	*20.7*	*77.97*	*0-2.38*		*10.9*	*305*	*333*	*64*	*8.2*

NOTES:

* 1" and 1 1/4" are import products.

Range of Pipe End Separation and Angular Deflection values are for roll grooved pipe and may be doubled for cut groove pipe. See page 222 for details. Refer to page 228 for Misalignment & Deflection Calculations and page 229 for Curve Layout Calculations.

†Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

For additional details see "Coupling Data Chart Notes" on page 17.
See Installation & Assembly directions on page 196.
Not for use in copper systems.

SPECIAL NOTE:

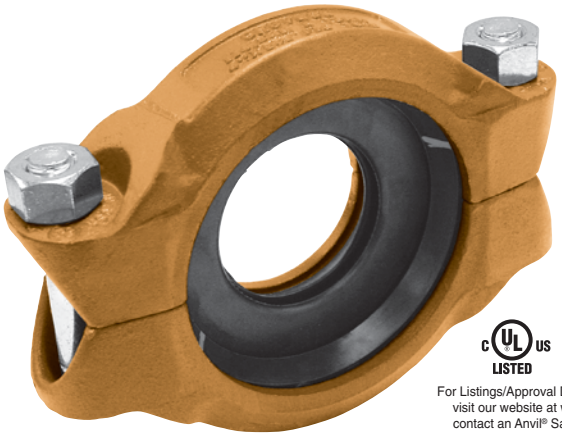
Fig. 7003 Hingelok Couplings are not designed for eccentric loading and therefore are not recommended for use at the end of concrete pumping booms or vertical risers above 30 feet (9.1 meters). Shockload must be considered and is to be included in the maximum working pressure listed above. Coupling keys, gasket cavity, and pipe grooves must be kept free of all foreign matter. Proper anchoring practice must always be exercised.

CAUTION:

Hammering or banging on the handle or coupling housing could cause serious damage to the locking device and coupling assembly. The result may be an unsuitable pipe joint and unusable coupling assembly.

When re-using, always check for gasket damage, housing hinge and handle for looseness, distortion, bending or any other damage.

FIG. 7010
Reducing Coupling



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The Fig. 7010 Reducing Coupling makes it possible to directly connect two different pipe sizes, eliminating the need for two couplings and a reducing fitting. The specially designed reducing coupling gasket with a center rib assures proper positioning of the gasket and prevents the smaller pipe from telescoping into the larger during assembly. Fig. 7010 Reducing Coupling allows for working pressure ratings up to 500 PSI (34.5 bar). Not recommended for vacuum applications.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12, or
Malleable Iron conforming to ASTM A 47, Grade 32510.

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7010
Reducing Coupling

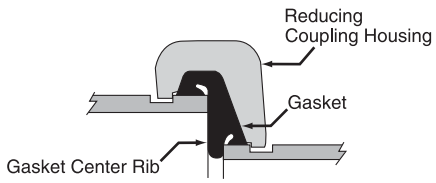


Fig. 7010
Coupling with Gasket

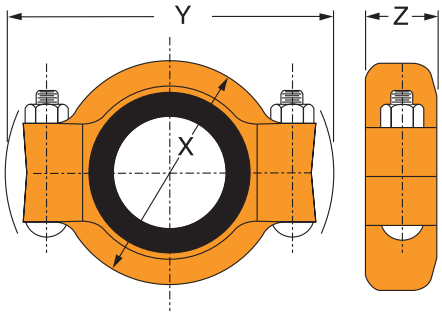


FIGURE 7010 REDUCING COUPLING

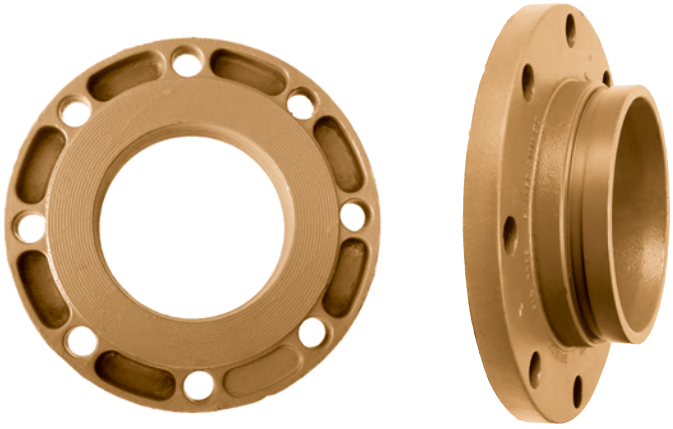
Nominal Size	Larger O.D.	Smaller O.D.	Max. Working Pressure†	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
						Per Coupling	of Pipe	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees(°)-Minutes(')*	*In./ft-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-m*		*Lbs./Kg*
2 x 1½	2.375	1.900	500	2,215	0-1/32	0° 45'	0.16	3 5/8	5 7/8	1 7/8	2	½ x 2¾	80	100	2.0
50 x 40	*60.3*	*48.3*	*34.5*	*9.85*	*0-0.79*		*13.1*	*92*	*149*	*48*		*M12 x 76*	*110*	*150*	*0.9*
2½ x 2	2.875	2.375	500	3,246	0-1/32	0° 37'	0.13	4¼	6 3/8	1 7/8	2	½ x 2¾	80	100	3.5
65 x 50	*73.0*	*60.3*	*34.5*	*14.44*	*0-0.79*		*10.9*	*108*	*162*	*48*		*M12 x 76*	*110*	*150*	*1.6*
3 x 2	3.500	2.375	500	4,811	0-1/32	0° 31'	0.11	4 7/8	7 1/8	1 7/8	2	½ x 2¾	80	100	4.4
80 x 50	*88.9*	*60.3*	*34.5*	*21.40*	*0-0.79*		*8.9*	*124*	*181*	*48*		*M12 x 76*	*110*	*150*	*2.0*
3 x 2½	3.500	2.875	500	4,811	0-1/32	0° 31'	0.11	4 7/8	7 1/8	1 7/8	2	½ x 2¾	80	100	4.1
80 x 65	*88.9*	*73.0*	*34.5*	*21.40*	*0-0.79*		*8.9*	*124*	*181*	*48*		*M12 x 76*	*110*	*150*	*1.9*
4 x 2	4.500	2.375	500	7,952	0-3/32	1° 12'	0.25	6¼	8 7/8	2	2	5/8 x 3½	100	130	8.9
100 x 50	*114.3*	*60.3*	*34.5*	*35.37*	*0-2.38*		*20.8*	*159*	*225*	*51*		*M16 x 95*	*135*	*175*	*4.0*
4 x 2½	4.500	2.875	500	7,952	0-3/32	1° 12'	0.25	6¼	8 7/8	2	2	5/8 x 3½	100	130	7.9
100 x 65	*114.3*	*73.0*	*34.5*	*35.37*	*0-2.38*		*20.8*	*159*	*225*	*51*		*M16 x 95*	*135*	*175*	*3.6*
4 x 3	4.500	3.500	500	7,952	0-3/32	1° 12'	0.25	6¼	8 7/8	2	2	5/8 x 3½	100	130	6.7
100 x 80	*114.3*	*88.9*	*34.5*	*35.37*	*0-2.38*		*20.8*	*159*	*225*	*51*		*M16 x 95*	*135*	*175*	*3.0*
5 x 4	5.563	4.500	500	12,153	0-3/32	1° 58'	0.20	7¼	10 5/8	2 1/8	2	¾ x 4½	130	180	11.4
125 x 100	*141.3*	*114.3*	*34.5*	*54.06*	*0-2.38*		*16.8*	*184*	*270*	*54*		*M20 x 115*	*175*	*245*	*5.2*
6 x 4	6.625	4.500	500	17,236	0-3/32	0° 49'	0.17	8¼	11 5/8	2 1/8	2	¾ x 4½	130	180	13.4
150 x 100	*168.3*	*114.3*	*34.5*	*76.67*	*0-2.38*		*14.1*	*210*	*295*	*54*		*M20 x 115*	*175*	*245*	*6.1*
6 x 5	6.625	5.562	500	17,236	0-3/32	0° 49'	0.17	8½	11 5/8	2 1/8	2	¾ x 4½	130	180	13.5
150 x 125	*168.3*	*141.3*	*34.5*	*76.67*	*0-2.38*		*14.1*	*216*	*295*	*54*		*M20 x 115*	*175*	*245*	*6.1*
8 x 6	8.625	6.625	500	29,213	0-3/32	0° 37'	0.13	10½	14	2¼	2	¾ x 4½	130	180	17.7
200 x 150	*219.1*	*168.3*	*34.5*	*129.95*	*0-2.38*		*10.9*	*267*	*356*	*57*		*M20 x 115*	*175*	*245*	*8.0*

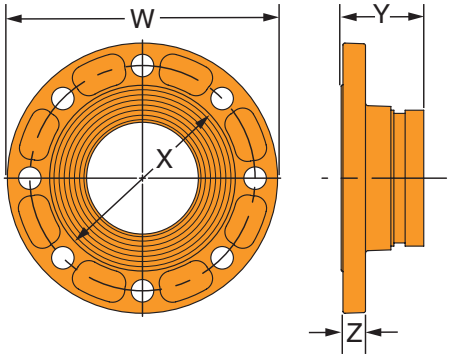
NOTES:
Fig. 7010 Reducing Coupling should not be used with end caps in systems where a vacuum may be developed. Contact your Anvil Representative for details.
Range of Pipe End Separation and Angular Deflection values are for roll grooved pipe and may be doubled for cut groove pipe. See page 222 for details.
Refer to page 228 for Misalignment & Deflection Calculations and page 229 for Curve Layout Calculations.
†Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

For additional details see "Coupling Data Chart Notes" on page 17.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on page 197.
Not for use in copper systems.

FIG. 7788

Gruvlok® Flange Adapter





The Gruvlok Fig. 7788 Flange Adapter allows for direct connection of Class 125 or Class 150 flanged components to a grooved piping system. The Gruvlok Flange Adapter provides an alternative method of connecting to flanged components than the traditional Fig. 7012 Gruvlok Flange. The Gruvlok Flange Adapter provides a raised serrated face flange connection with a shorter overall length than Anvil's Fig. 7084 Flange x Groove Nipple.

MATERIAL SPECIFICATIONS

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

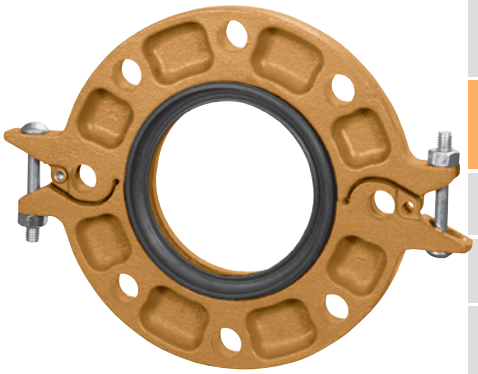
COATINGS:
Rust inhibiting paint – Color: ORANGE (standard), Red (optional)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other coating requirements, contact an Anvil Representative for more information.

FIGURE 7788 GRUVLOK FLANGE ADAPTER

Nominal Size	O.D.	Max. Working Pressure	Dimensions				Mating Flange Bolts						Approx. Wt. Ea.
			W	X	Y	Z	Qty.	Size	Bolt Circle Diameter	Bolt Hole Diameter	Specified Torque Min.	Specified Torque Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*PN(10) (16)*	*In. (ISO)/mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-M*		*Lbs./kg*
2 *50*	2.375 *60.3*	300 *20.7*	6 *152.4*	3⅝ *91.9*	2½ *63.5*	11/16 *17.5*	4 *4*	⅝ x 2¾ *M16 x 70*	4¾ *120.7*	¾ *19.1*	110 *149*	140 *190*	4.39 *2.0*
2½ *65*	2.875 *73.0*	300 *20.7*	7 *177.8*	4⅛ *104.6*	2½ *63.5*	¾ *19.1*	4 *4*	⅝ x 2¾ *M16 x 70*	5½ *139.7*	¾ *19.1*	110 *149*	140 *190*	6.17 *2.8*
3 *80*	3.500 *88.9*	300 *20.7*	7½ *190.5*	5 *127.0*	2½ *63.5*	¾ *19.1*	4 *4*	⅝ x 2¾ *M16 x 70*	6 *152.4*	¾ *19.1*	110 *149*	140 *190*	7.19 *3.3*
4 *100*	4.500 *114.3*	300 *20.7*	9 *228.6*	6 3/16 *157.2*	2¾ *69.9*	¾ *19.1*	8 *8*	⅝ x 2¾ *M16 x 70*	7½ *190.5*	¾ *19.1*	110 *149*	140 *190*	10.68 *4.9*
5 *125*	5.563 *141.3*	300 *20.7*	10 *254.0*	7 5/16 *185.7*	2¾ *69.9*	⅞ *22.1*	8 *8*	¾ x 2⅞ *–*	8½ *215.9*	⅞ *22.2*	220 *298*	250 *339*	13.99 *6.4*
6 *150*	6.625 *168.3*	300 *20.7*	11 *279.4*	8½ *215.9*	2¾ *69.9*	⅞ *22.1*	8 *8*	¾ x 3⅛ *M20 x 80*	9½ *241.1*	⅞ *22.2*	220 *298*	250 *339*	16.47 *7.5*
8* *200*	8.625 *219.1*	300 *20.7*	13½ *342.9*	10⅝ *269.7*	3 *76.2*	61/64 *24.1*	8 *8*	¾ x 3¼ *M20 x 80*	11¾ *298.5*	⅞ *22.2*	220 *298*	250 *339*	24.79 *11.3*
10* *250*	10.750 *273.1*	300 *20.7*	16 *406.4*	12¾ *323.9*	3⅜ *85.7*	1 *25.4*	12 *12*	⅞ x 3½ *M20 x 90*	14¼ *362.0*	1 *25.4*	320 *439*	400 *542*	36.75 *16.7*
12* *300*	12.750 *323.9*	300 *20.7*	19 *482.6*	15 *381.0*	3½ *88.9*	1 13/64 *30.5*	12 *12*	⅞ x 3¾ *–*	17 *431.8*	1 *25.4*	320 *439*	400 *542*	56.31 *25.6*

NOTE: 8", 10" and 12" Flange Adapters have a machined raise face. 2" through 6" Flange Adapters have a cast raised face.

FIG. 7012
Gruvlok Flanges



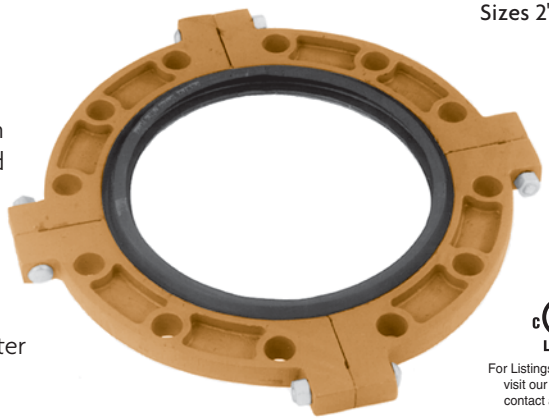
Sizes 2" - 12"

The Gruvlok® Fig. 7012 Flange allows direct connection of Class 125 or Class 150 flanged components to a grooved piping system. The two interlocking halves of the 2" thru 12" sizes of the Gruvlok Flange are hinged for ease of handling, and are drawn together by a latch bolt which eases assembly on the pipe. Precision machined bolt holes, key and mating surfaces assure concentricity and flatness to provide exact fit-up with flanged, lug, and wafer styles of pipe system equipment. A specially designed gasket provides a leak-tight seal on both the pipe and the mating flange face.

The 14" thru 24" sizes of the Gruvlok Fig. 7012 Flange are cast in four segments. A sleek profile gasket design allows quick and easy assembly of the Gruvlok Flange onto the pipe.

All Gruvlok Fig. 7012 Flanges have designed-in anti-rotation tines which bite into and grip the sides of the pipe grooves to provide a secure, rigid connection.

The Gruvlok Fig. 7012 Flange requires the use of a steel adapter insert when used against rubber faced surfaces, wafer/lug design valves and serrated or irregular sealing surfaces. In copper systems a phenolic adapter insert is required, in place of the steel adapter insert. (See Installation and Assembly Instructions Section or contact your Anvil Rep. for details.)



Sizes 14" - 24"

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

MATERIAL SPECIFICATIONS

LATCH BOLT (2" - 12"), SEGMENT BOLT (14" - 24"):
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

LATCH NUT (2" - 12"), SEGMENT NUT (14" - 24"):
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard), Red (optional)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

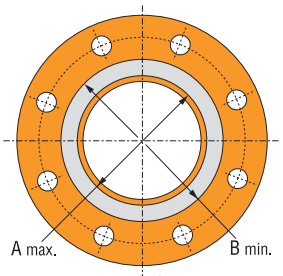
Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER.

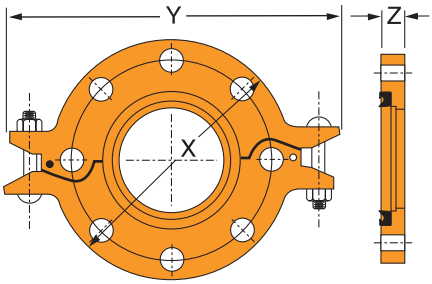
LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7012

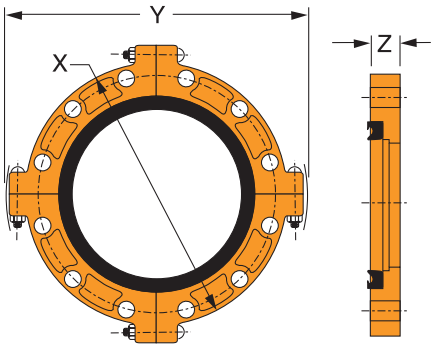
Gruvlok Flanges



Mating Flange



2"-12" sizes



14"-24" sizes

GRUVLOK FIGURE 7012 FLANGE: ANSI CLASS 150 OR ISO PN10 OR PN16 BOLT PATTERNS

Nominal Size	O.D.	Max. Working Pressure†	Max. End Load▼	Latch Bolt			Dimensions			Sealing Surface		Mating Flange Bolts						Approx. Wt. Ea.
				Latch Bolt Size*	Specified Torque §		X	Y	Z	A Max.	B Min.	Mating Flange Bolts		Bolt Circle Diameter	Bolt Hole Diameter	Specified Torque §		
					Min.	Max.						Qty. ANSI	Size (ANSI)			Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Ft.-Lbs/N-m*		*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*PN10 (16)*	*in. (ISO) mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-m*		*Lbs./Kg*
2	2.375	300	1,329	⅜ x 2¾	30	45	6¼	8⅜	¾	2⅜	3⁷⁄₁₆	4	⅝ x 2¾	4¾	¾	110	140	4.2
50	*60.3*	*20.7*	*5.91*	*M10 x 70*	*40*	*60*	*159*	*213*	*19*	*60*	*87*	*4*	*M16 x 70*	*120.7*	*19.1*	*149*	*190*	*1.9*
2½	2.875	300	1,948	⅜ x 2¾	30	45	7	9½	¾	2⅞	4	4	⅝ x 2¾	5½	¾	110	140	4.6
65	*73.0*	*20.7*	*8.66*	*M10 x 70*	*40*	*60*	*178*	*241*	*19*	*73*	*102*	*-*	*M16 x 70*	*139.7*	*19.1*	*149*	*190*	*2.1*
3 O.D.	*2.996*	*300*	*2,115*	*-*	*30*	*45*	*7¼*	*9¾*	*¾*	*3*	*4⅛*	*-*	*-*	*-*	*-*	*110*	*140*	*4.8*
76.1	76.1	20.7	9.41	M10 x 70	40	60	184	248	19	76	105	4	M16 x 70	-	-	149	190	2.2
3	3.500	300	2,886	⅜ x 2¾	30	45	7⅞	10½	¾	3½	4⁹⁄₁₆	4	⅝ x 2¾	6	¾	110	140	6.0
88.9	*88.9*	*20.7*	*12.84*	*M10 x 70*	*40*	*60*	*200*	*267*	*19*	*89*	*116*	*8*	*M16 x 70*	*152.4*	*19.1*	*149*	*190*	*2.7*
4	4.500	300	4,771	⅜ x 2¾	30	45	9	11½	¾	4½	5⁹⁄₁₆	8	⅝ x 2¾	7½	¾	110	140	6.3
100	*114.3*	*20.7*	*21.22*	*M10 x 70*	*40*	*60*	*229*	*292*	*19*	*114*	*141*	*8*	*M16 x 70*	*190.5*	*19.1*	*149*	*190*	*2.9*
5½ O.D.	*5.500*	*300*	*7,127*	*-*	*30*	*45*	*9⅞*	*12⅞*	*⅞*	*5⁹⁄₁₆*	*6¾*	*-*	*-*	*-*	*-*	*220*	*250*	*15.6*
139.7	139.7	20.7	31.70	M10 x 70	40	60	251	327	22	141	171	8	M16 x 75	-	-	298	339	7.1
5	5.563	300	7,292	⅜ x 2¾	30	45	10	12½	⅞	5⁹⁄₁₆	6¾	8	¾ x 2⅞	8½	⅞	220	250	8.8
125	*141.3*	*20.7*	*32.44*	*M10 x 70*	*40*	*60*	*254*	*318*	*22*	*141*	*171*	*-*	*-*	*215.9*	*22.2*	*298*	*339*	*4.0*
6½ O.D.	*6.500*	*300*	*9,955*	*-*	*30*	*45*	*11¼*	*14*	*⅞*	*6⅝*	*7¹³⁄₁₆*	*-*	*-*	*-*	*-*	*220*	*250*	*9.7*
165.1	165.1	20.7	44.28	M10 x 70	40	60	286	356	22	168	198	8	M20 x 80	-	-	298	339	4.4
6	6.625	300	10,341	⅜ x 2¾	30	45	11	14	⅞	6⅝	7¹³⁄₁₆	8	¾ x 3⅛	9½	⅞	220	250	9.6
150	*168.3*	*20.7*	*46.00*	*M10 x 70*	*40*	*60*	*279*	*356*	*22*	*168*	*198*	*8*	*M20 x 80*	*241.1*	*22.2*	*298*	*339*	*4.4*
8	8.625	300	17,528	⅜ x 2¾	30	45	13½	16½	1	8⅝	10	8	¾ x 3¼	11¾	⅞	220	250	15.6
200	*219.1*	*20.7*	*77.97*	*M10 x 70*	*40*	*60*	*343*	*419*	*25*	*219*	*254*	*8 (12)*	*M20 x 80*	*298.5*	*22.2*	*298*	*339*	*7.1*
10	10.750	300	27,229	⅜ x 2¾	30	45	16	19	1	10¾	12⅛	12	⅞ x 3½	14¼	1	320	400	18.2
250	*273.1*	*20.7*	*121.12*	*M10 x 70*	*40*	*60*	*406*	*483*	*25*	*273*	*308*	*12*	*M20 x 90*	*362.0*	*25.4*	*439*	*542*	*8.3*
12	12.750	300	38,303	⅜ x 2¾	30	45	19	21¾	1¼	12¾	14⅛	12	⅞ x 3¾	17	1	320	400	29.9
300	*323.9*	*20.7*	*170.38*	*M10 x 70*	*40*	*60*	*483*	*552*	*32*	*324*	*359*	*12*	*-*	*431.8*	*25.4*	*439*	*542*	*13.6*
14	14.000	300	46,181	⅝ x 4¼	100	130	21	24	1½	14	16	12	1 x 4¼	18¾	1⅛	360	520	52.5
350	*355.6*	*20.7*	*205.43*	*-*	*136*	*176*	*533*	*610*	*38*	*356*	*406*	*-*	*-*	*476.3*	*28.6*	*488*	*705*	*23.8*
16	16.000	300	60,319	⅝ x 4¼	100	130	23½	26½	1½	16	18	16	1 x 4¼	21¼	1⅛	360	520	67.0
400	*406.4*	*20.7*	*268.31*	*-*	*136*	*176*	*597*	*673*	*38*	*406*	*457*	*-*	*-*	*539.8*	*28.6*	*488*	*705*	*30.4*
18	18.000	300	76,341	¾ x 5	130	180	25	29	1⅝	18	20	16	1⅛ x 4¾	22¾	1¼	450	725	82.5
450	*457.2*	*20.7*	*339.58*	*-*	*176*	*244*	*635*	*737*	*41*	*457*	*508*	*-*	*–*	*577.9*	*31.8*	*610*	*983*	*37.4*
20	20.000	300	94,248	¾ x 5	130	180	27½	31½	1¾	20	22	20	1⅛ x 4¾	25	1¼	450	725	106.5
500	*508.0*	*20.7*	*419.23*	*-*	*176*	*244*	*699*	*800*	*44*	*508*	*559*	*-*	*–*	*635.0*	*31.8*	*610*	*983*	*48.3*
24	24.000	250	113,097	⅞ x 5½	180	220	32	36½	1⅞	24	26	20	1¼ x 5½	29½	1⅜	620	1,000	138.5
600	*609.6*	*17.2*	*503.08*	*-*	*244*	*298*	*813*	*927*	*48*	*610*	*660*	*-*	*-*	*749.3*	*34.92*	*841*	*1,356*	*62.8*

NOTES:

†Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

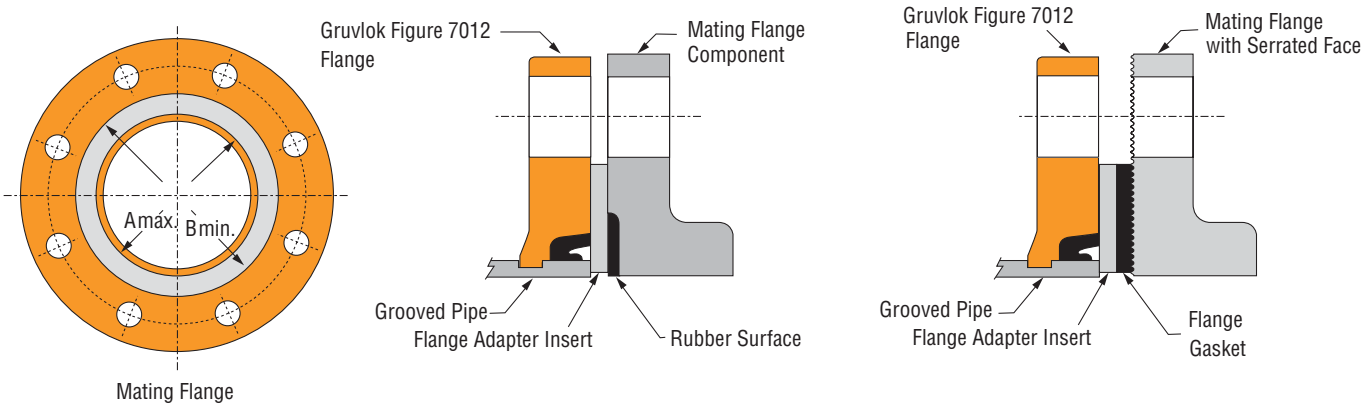
The Gruvlok Flange bolt hole pattern conforms to ANSI Class 150 and Class 125 flanges.

To avoid interference issues, flanges cannot be assembled directly to Series 7700 butterfly valve. Flange can be assembled to one side of series 7500 and 7600 valve only.

Mating flange bolts must be at least Intermediate Strength Bolting per ASME B16.5. Bolts with material properties equal or greater than SAE J429 Grade 5 are acceptable.

For additional details see "Coupling Data Chart Notes" on page 17.
+ PN 16 uses M24 x 90 (PN) Dimensions for bolt circle PN 10 & 16 Flange.
* Available in ANSI or metric bolt sizes only as indicated.
▼ Based on use with standard wall pipe.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on page 198-200.

FIG. 7012
Gruvlok Flanges



A. The sealing surfaces A Max. to B Min. of the mating flange must be free from gouges, undulations and deformities of any type to ensure proper sealing of the gasket.

B. Gruvlok Flanges are to be assembled on butterfly valves so as not to interfere with actuator or handle operation.

C. Do not use Gruvlok Flanges within 90 degrees of one another on standard fittings because the outside dimensions may cause interference.

D. Gruvlok Flanges should not be used as anchor points for tierods across non-restrained joints.

E. Fig. 7012 Gruvlok Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a Gruvlok Flange Adapter Insert is required for applications against rubber faced valves or other equipment. The Gruvlok Flange Adapter Insert is installed between the Gruvlok Flange sealing gasket and the mating flange or surface to provide a good sealing surface area.

F. Gruvlok Flanges are not recommended for use against formed rubber flanges.

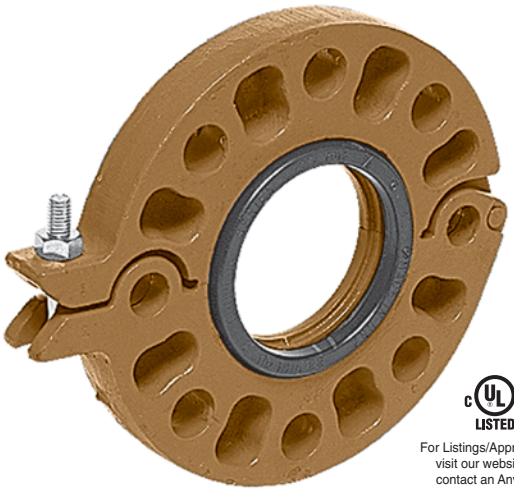
G. Contact an Anvil Representative for Di-Electric Flange connections.

Applications which require a Gruvlok Flange Adapter Insert (page 49):

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruvlok Flange Adapter Insert between the valve and the Gruvlok flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard full-faced flange gasket is installed against the serrated flange face and the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the standard Flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.

FIG. 7013

Gruvlok Flanges (300# Flange)



The Gruvlok Fig. 7013 300# Flange allows direct connection of Class 250 or Class 300 flanged components to a Gruvlok piping system. The two halves of the 2" thru 12" sizes of both Gruvlok Flanges are drawn together by a latch bolt which eases assembly on the pipe. A specially designed gasket provides a leak-tight seal on both the pipe and the mating flange face.

Gruvlok Flanges have designed-in anti-rotation tines which bite into and grip the side of the pipe groove to provide a secure, rigid connection.

Gruvlok flange adapter insert required when mating to rubber surfaces or serrated faced mating flanges.

*** The 7013 Gruvlok adapter flange should not be used with the 78FP or 7800 check valve.**

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

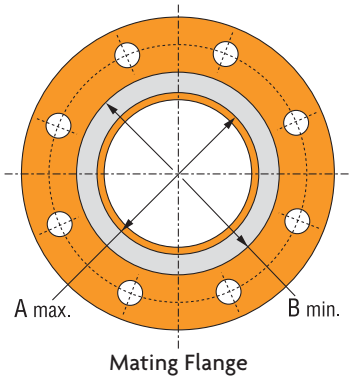
Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

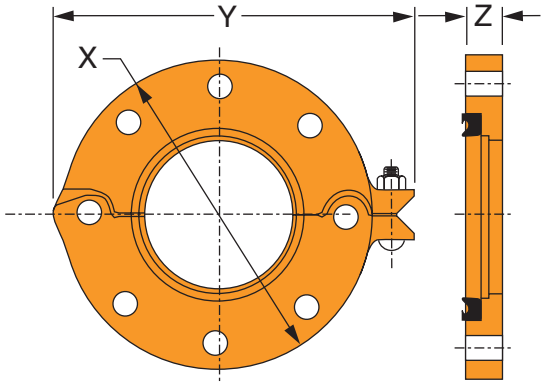
Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use for Grade "L")

FIG. 7013

Gruvlok Flanges (300# Flange)





GRUVLOK FIGURE 7013 FLANGE: ANSI CLASS 250 AND 300 BOLT PATTERN

Nominal Size	O.D.	Max. Wk. Pressure†	Max. End Load ▼	Latch* Bolt Size	Specified Torque §		Dimensions			Sealing Surface		Mating Flange Bolts				Approx. Wt. Ea.
					Min.	Max.	X	Y	Z	A Max.	B Min.	Qty. ANSI	Size (ANSI) in.	Bolt Circle Dia.	Bolt Hole Dia.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In.*	*Ft.-Lbs/N-m*		*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*(ISO) mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 50	2.375 60.3	750 51.7	3,323 14.78	⅜ x 2½ -	30 -	45 -	6½ 165	8 203	1 25	2⅜ 60	3 7/16 87	8 -	⅝ x 3 -	5 127.0	¾ 19.1	5.0 2.3
2½ 65	2.875 73.0	750 51.7	4,869 21.66	⅜ x 2½ -	30 -	45 -	7½ 191	9⅛ 232	1 25	2⅞ 73	4 102	8 -	¾ x 3¼ -	5⅞ 149.2	⅞ 22.2	6.9 3.1
3 80	3.500 88.9	750 51.7	7,216 32.10	⅜ x 2½ -	30 -	45 -	8¼ 210	9⅞ 251	1⅛ 29	3½ 89	4 9/16 116	8 -	¾ x 3½ -	6⅝ 168.3	⅞ 22.2	9.4 4.3
4 100	4.500 114.3	750 51.7	11,928 53.06	⅜ x 2½ -	30 -	45 -	10 254	11⅜ 289	1¼ 32	4½ 114	5⅝ 143	8 -	¾ x 3¾ -	7⅞ 200.0	⅞ 22.2	14.4 6.5
5 125	5.563 141.3	750 51.7	18,229 81.09	⅜ x 2½ -	30 -	45 -	11 279	12⅝ 321	1⅜ 35	5 9/16 141	6¾ 171	8 -	¾ x 4½ -	9¼ 235.0	⅞ 22.2	18.3 8.3
6 150	6.625 168.3	750 51.7	25,854 115.00	⅜ x 2½ -	30 -	45 -	12½ 318	14⅛ 359	1½ 38	6⅝ 168	7 13/16 198	12 -	¾ x 4½ -	10⅝ 269.9	⅞ 22.2	24.9 11.3
8 200	8.625 219.1	750 51.7	43,820 194.92	½ x 3½ -	80 -	100 -	15 381	16⅞ 429	1⅝ 41	8⅝ 219	10 254	12 -	⅞ x 4¾ -	13 330.2	1 25.4	35.4 16.1
10 250	10.750 273.1	750 51.7	68,072 302.80	½ x 3½ -	80 -	100 -	17½ 445	19⅜ 492	1⅞ 48	10¾ 273	12⅛ 308	16 -	1 x 5 -	15¼ 387.4	1⅛ 28.6	54.0 24.5
12 300	12.750 323.9	600 41.4	76,605 333.79	½ x 3½ -	80 -	100 -	20½ 521	22½ 572	2 51	12¾ 324	14 3/16 360	16 -	1⅛ x 5¾ -	17¾ 450.9	1¼ 31.8	74.8 33.9

NOTES:

†Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

Effective sealing area of mating flange must be free from gouges, undulations or deformities of any type to ensure proper sealing of the gasket.

Flange cannot be assembled directly to Series 7700 butterfly valve. Flange can be assembled to one side of series 7500 and 7600 valve.

For additional details see "Coupling Data Chart Notes" on page 17.

* Available in ANSI or metric bolt sizes only as indicated.

▼ Based on use with standard wall pipe.

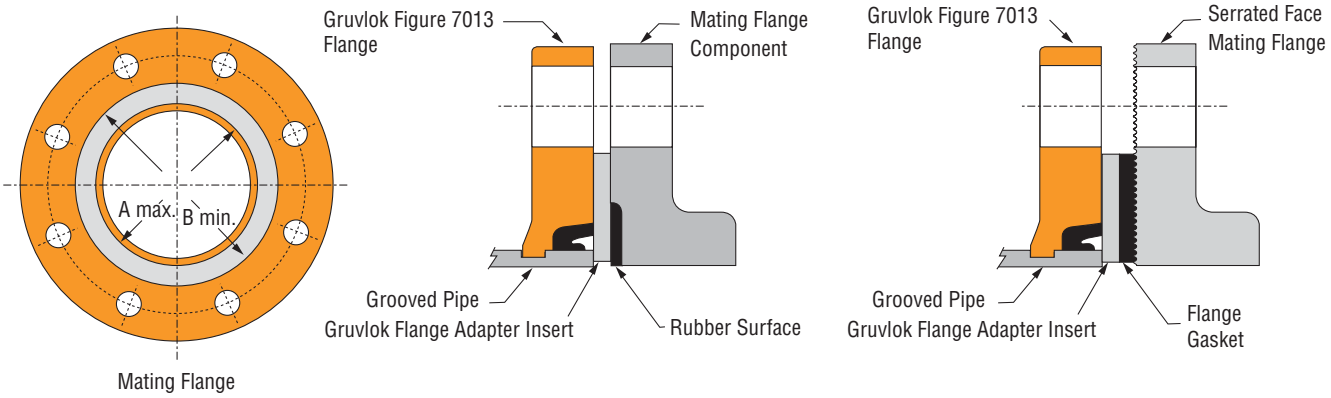
§ – For additional Bolt Torque information, see page 222.

See Installation & Assembly directions or contact your Anvil Representative

Not for use with copper systems.

FIG. 7013

Gruvlok Flanges (300# Flange)



A. The sealing surfaces A Max. to B Min. of the mating flange must be free from gouges, undulations and deformities of any type to ensure proper sealing of the gasket.

B. Gruvlok Flanges are to be assembled on butterfly valves so as not to interfere with actuator or handle operation.

C. Do not use Gruvlok Flanges within 90 degrees of one another on standard fittings because the outside dimensions may cause interference.

D. Gruvlok Flanges should not be used as anchor points for tierods across non-restrained joints.

E. Fig. 7013 Gruvlok Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a Gruvlok Flange Adapter Insert is required for applications against rubber faced valves or other equipment. The Gruvlok Flange Adapter Insert is installed between the Gruvlok Flange sealing gasket and the mating flange or surface to provide a good sealing surface area.

F. Gruvlok Flanges are not recommended for use against formed rubber flanges.

G. Contact an Anvil Representative for Di-Electric Flange connections.

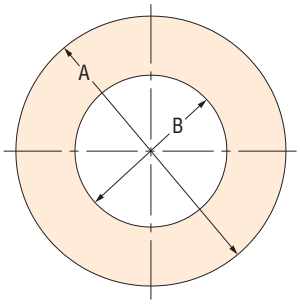
Applications which require a Gruvlok Flange Adapter Insert (page 49):

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruvlok Flange Adapter Insert between the valve and the Gruvlok flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard fullfaced flange gasket is installed against the serrated flange face and the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the standard Flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.

FLANGED SEAL RINGS

Flange Adapter Inserts for use with Fig. 7012/7013 Flanges

The Gruvlok flange adapter insert is designed for use with the Gruvlok 7012 & 7013. The flange adapter is required when mating the Gruvlok 7012 & 7013 to a rubber line valve or serrated face flange surface. The flange adapter ring is used in combination with a rubber lined valve or flange gasket to provide a smooth sealing surface for the 7012 & 7013 flange gasket.



MATERIAL SPECIFICATIONS

Carbon steel conforming to ASTM A 1011
Carbon steel rings come zinc electroplated standard
Ring thickness: 0.120" (all sizes and styles)

FLANGED SEAL RINGS

Nominal Size	O.D.	Fig. 7012 ANSI		Fig. 7012 PN 10/16			Fig. 7013 ANSI	
		A	B	PN	A	B	A	B
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	–	*In./mm*	*In./mm*	*In./mm*	*In./mm*
2 *50*	2.375 *60.3*	4 *102*	2¼ *57*	10/16	*4 11/64* 106	*2¼* 57	4⅛ *105*	100 *150*
2½ *65*	2.875 *73.0*	4¾ *121*	2¾ *70*	–	– –	– –	5 *127*	100 *150*
3 O.D. 76.1	*2.996* 76.1	– –	– –	10/16	*4 31/32* 126	*2⅞* 73	– –	– –
3 *88.9*	3.500 *88.9*	5¼ *133*	3⅜ *86*	10/16	*5 5/64* 141	*3⅜* 89	5¾ *146*	100 *150*
4 *100*	4.500 *114.3*	6¾ *171*	4⅜ *111*	10/16	*6 1/32* 161	*4⅜* 111	7 *178*	130 *175*
5½ O.D. 139.7	*5.500* 139.7	– –	– –	10/16	*7 35/64* 191	*5⅜* 137	– –	– –
5 *125*	5.563 *141.3*	7⅝ *194*	5 7/16 *138*	–	– –	– –	8⅜ *213*	130 *175*
6½ O.D. 165.1	*6.500* 165.1	– –	– –	10/16	*8 33/64* 216	*6⅜* 162	– –	– –
6 *150*	6.625 *168.3*	8⅝ *219*	6½ *165*	10/16	*8 33/64* 216	*6⅜* 162	9¾ *248*	6½ *165*
8 *200*	8.625 *219.1*	10⅞ *276*	8½ *216*	10/16	*10 31/32* 272	*8½* 216	12 *305*	8½ *216*
10 *250*	10.750 *273.1*	13¼ *337*	10⅝ *270*	10/16	*12⅞* 327	*10⅝* 270	14⅛ *359*	8½ *216*
12 *300*	12.750 *323.9*	16 *406*	12⅝ *321*	–	– –	– –	16½ *419*	8½ *216*
12 (PN10) 300	*12.750* 323.9	– –	– –	10	*14 21/32* 377	*12⅝* 321	– –	– –
12 (PN16) 300	*12.750* 323.9	– –	– –	16	*15 5/64* 383	*12⅝* 321	– –	– –
14 *350*	14.000 *355.6*	17⅝ *448*	13¾ *349*	–	– –	– –	– –	– –
16 *400*	16.000 *406.4*	20⅛ *511*	15¾ *400*	–	– –	– –	– –	– –
18 *450*	18.000 *457.2*	21½ *546*	17¾ *451*	–	– –	– –	– –	– –
20 *500*	20.000 *508.0*	23¾ *603*	19¾ *502*	–	– –	– –	– –	– –
24 *600*	24.000 *609.6*	28⅛ *714*	23¾ *603*	–	– –	– –	– –	– –

FIG. 7240

Expansion Joints

NOTE: Expansion joint shown with shipping support. Contact an Anvil representative for proper installation support requirements.

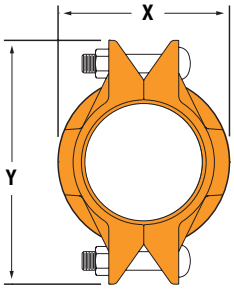
The Gruvlok® Figure 7240 Expansion Joints take advantage of the axial expansion capabilities of the Gruvlok flexible couplings to produce a reliable grooved end expansion joint. The expansion joints are comprised of the Gruvlok Figure 7000 or 7001 flexible couplings and precision machined grooved end pipe nipples. Ties are used to custom preset the expansion joints in the expanded, compressed or intermediate position to provide for the desired expansion and/or contraction compensation.

Installation is easy, simply follow the Gruvlok coupling installation and assembly instructions to install the expansion joint in the system and after installation is complete, remove the ties.

The expansion joints can be used as flexible connectors, however, they will not simultaneously provide for full axial expansion and angular deflection. Expansion joints require pipe anchoring capable of restraining the maximum system pressure end load.

The service conditions are the same as the service conditions for coupling and gasket used in the expansions joint. Unless otherwise requested, this product will contain a silicone based lubricant. Refer to the Gruvlok catalog for coupling performance capabilities and material specifications. To order please provide the order form on the next page.

NOTE: The Gruvlok Figure 7240 Expansion Joint is also available in stainless steel.



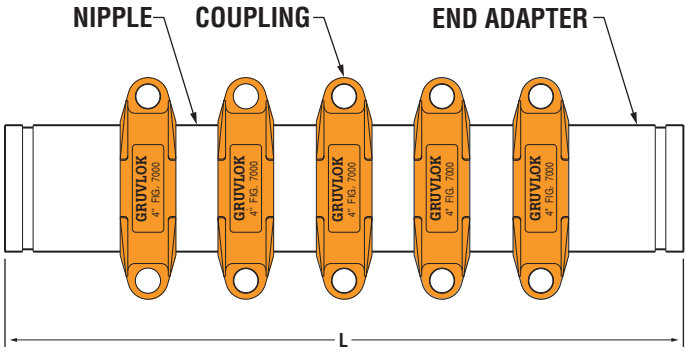


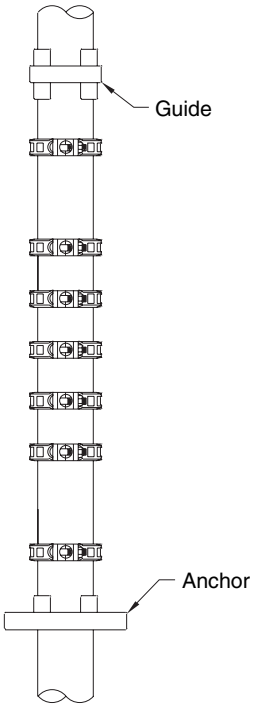
FIGURE 7240 PERFORMANCE DATA (INCHES)

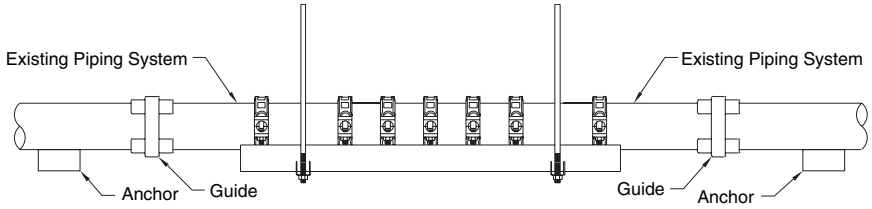
Nominal Size	O.D.	Coupling Figure	X	Y	Compressed Length L	Expanded Length L	Coupling Movement Capability	Number of Couplings	Total Movement Capability
In./DN(mm)	*In./mm*		*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*
2 *50*	2.375 *60.3*	7000	3½ *89*	5½ *125*	30 *762*	31¼ *794*	⅛ *3.2*	10	1¼ *31.8*
2½ *65*	2.875 *73.0*	7000	4 *100*	5¾ *146*	30 *762*	31¼ *794*	⅛ *3.2*	10	1¼ *31.8*
3 *80*	3.500 *88.9*	7000	4⅝ *117*	6¾ *171*	30 *762*	31¼ *794*	⅛ *3.2*	10	1¼ *31.8*
4 *100*	4.500 *114.3*	7000	5⅞ *149*	8⅛ *206*	17½ *445*	18¾ *476*	¼ *6.4*	5	1¼ *31.8*
5 *125*	5.562 *141.3*	7000	7 *178*	9⅝ *244*	19 *483*	20¼ *514*	¼ *6.4*	5	1¼ *31.8*
6 *150*	6.625 *168.3*	7000	8 *200*	11 *279*	19 *483*	20¼ *514*	¼ *6.4*	5	1¼ *31.8*
8 *200*	8.625 *219.0*	7000	10⅜ *264*	13¼ *337*	22½ *572*	23¾ *603*	¼ *6.4*	5	1¼ *31.8*
10 *250*	10.750 *273.1*	7001	12⅞ *327*	17½ *445*	23½ *597*	24¾ *629*	¼ *6.4*	5	1¼ *31.8*
12 *300*	12.750 *323.9*	7001	15 *381*	19½ *495*	23½ *597*	24¾ *629*	¼ *6.4*	5	1¼ *31.8*

FIG. 7240
Expansion Joints

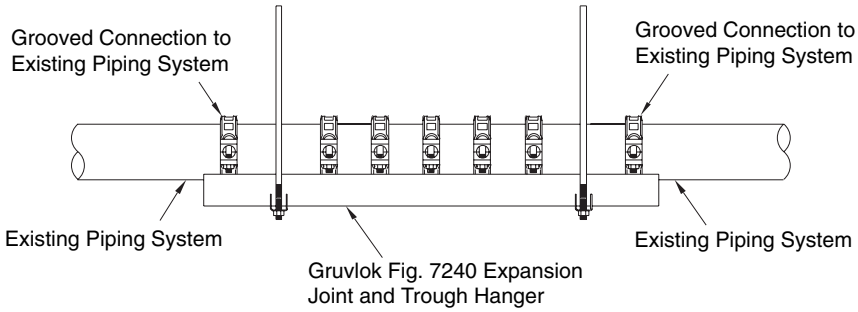
HANGER DETAILS

Vertical Support





Horizontal Support



Trough and Hanger

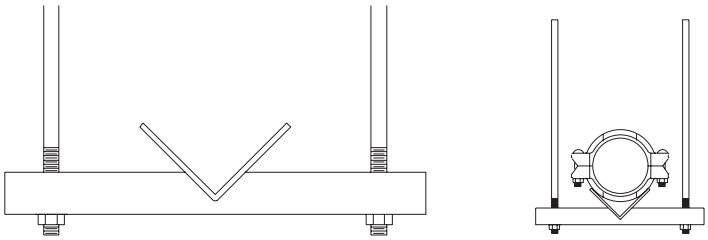


FIG. 7240 – ORDER FORM

When requesting a quotation or placing an order, please complete the following form.

1) Size and material of pipe to which the Expansion Joint will be connected _____

2) Total overall movement capability: _____ inches

3) Factory to preset the Expansion Joint to (select one): ☐ Full Expansion ☐ Full Contraction ☐ Intermediate

4) Pipe material for Expansion Joint (standard is sch. 40 steel): _____

5) Finish on pipe (standard is black): _____

6) Finish on couplings (standard is painted): _____

7) Gasket material (standard is Grade E EPDM): _____

8) Connecting pipe ends if different than standard roll or cut groove: _____

9) Are there any silicone restrictions for the application? ☐ Yes ☐ No

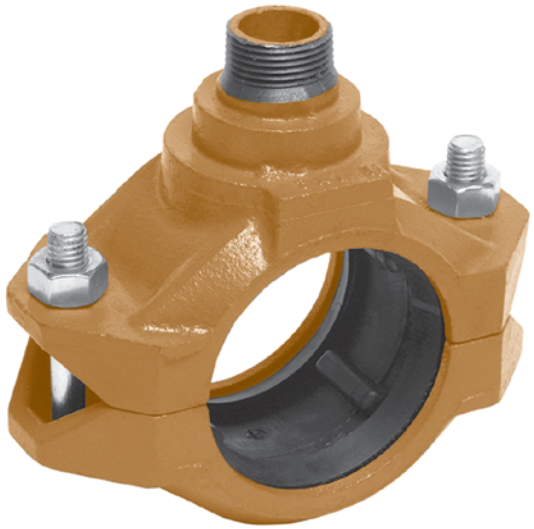
FIG. 7042
Outlet Coupling

The Gruvlok Fig. 7042 Outlet Coupling is designed to join two sections of grooved end pipe and form a reducing outlet connection. The outlet couplings are available for the 1 1/2" through 6" IPS or ISO run pipe sizes with the outlet pipe sizes ranging from 1/2" through 2".

Assembly of the coupling will create a gap between the pipe ends allowing the space required for the introduction of an outlet connection. The outlet connections are available grooved (Fig. 7042G), FPT (Fig. 7042F) and MPT (Fig. 7042M).

The gaskets are available in EPDM and Nitrile to suit a wide range of applications. The gasket design is a unique pressure responsive design that provides a higher sealing force as pressure is increased. The outlet gasket seal is reinforced by a steel ring and is mated to a machined housing surface to assure a leak-tight outlet seal. Center ribs inside the gasket ease positioning of the pipe during installation and provide additional support to the gasket. The outlet couplings are NOT recommended for vacuum applications or for use with beveled end pipe.

The Figure 7074 Cast Cap and gruvlok fittings are **NOT** recommended for use on run connections. Contact an Anvil Representative for additional details. Figure 7075 Bull Plugs must be used on end of line run connections. Figure 7074 Cast Caps may be used on Figure 7042G outlet connections. Flow into the outlet connection of the Figure 7042 Outlet Couplings must not exceed 7 ft./sec.



MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

STAINLESS STEEL BOLTS & NUTS:
304SS Stainless Steel bolts and nuts are available as a standard option. (316SS are available for special order).

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

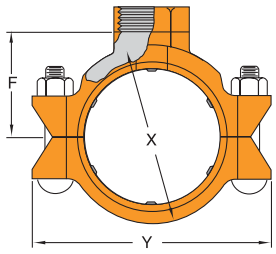
Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapor and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

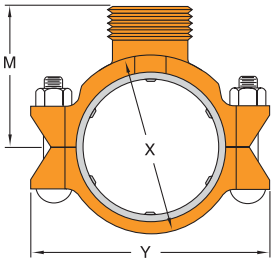
LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™(Do Not use with Grade "L")

FIG. 7042

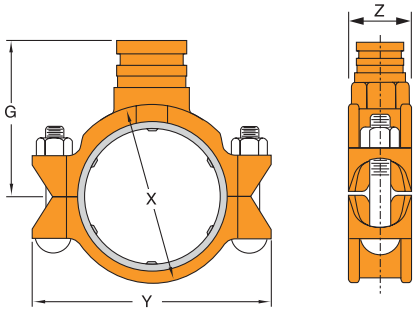
Outlet Coupling



Female IPS Outlet- 7042F



Male IPS Outlet - 7042M



Grooved Outlet - 7042G

FIGURE 7042 - OUTLET COUPLING

Nominal Pipe Size			Working Pressure	Max. Run End Load	Range of Pipe End Separation	Coupling Dimensions						Bolt Size	Approx. Wt. Each
Run	Outlet					X	Y	Z	FPT F	MPT M	Grv. G		
	FPT F	MPT/Grv. M/G											
In./DN(mm)	*In./mm*	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
	½	—	500	1418	¾-1 1/16	2 15/16	4¾	2¾	2 1/16	—	—	⅜ x 2⅛	2.6
	15	—	*34.5*	*6.31*	*19-27*	*75*	*121*	*70*	*52*	—	—	-	*1.2*
1½	¾	—	500	1418	¾-1 1/16	2 15/16	4¾	2¾	2 1/16	—	—	⅜ x 2⅛	2.6
40	*20*	—	*34.5*	*6.31*	*19-27*	*75*	*121*	*70*	*52*	—	—	-	*1.2*
	1	—	500	1418	¾-1 1/16	2 15/16	4¾	2¾	1 15/16	—	—	⅜ x 2⅛	2.9
	25	—	*34.5*	*6.31*	*19-27*	*75*	*121*	*70*	*49*	—	—	-	*1.3*
	½	—	500	2215	1 1/16-1	3 7/16	5¼	2¾	2 5/16	—	—	⅜ x 2⅛	3.1
	15	—	*34.5*	*9.85*	*17-25*	*87*	*133*	*70*	*59*	—	—	-	*1.4*
2	¾	—	500	2215	1 1/16-1	3 7/16	5¼	2¾	2 5/16	—	—	⅜ x 2⅛	3.1
50	*20*	—	*34.5*	*9.85*	*17-25*	*87*	*133*	*70*	*59*	—	—	-	*1.4*
	1	1	500	2215	1 1/16-1	3 7/16	5¼	2¾	2 3/16	2⅞	3½	⅜ x 2⅛	3.3
	25	*25*	*34.5*	*9.85*	*17-25*	*87*	*133*	*70*	*56*	*73*	*89*	-	*1.5*
	½	—	500	3246	1 3/16-1½	4 3/16	6½	3¼	2 9/16	—	—	½ x 2⅜	4.8
	15	—	*34.5*	*14.44*	*30-38*	*106*	*165*	*83*	*65*	—	—	-	*2.2*
	¾	—	500	3246	1 3/16-1½	4 3/16	6½	3¼	2 9/16	—	—	½ x 2⅜	4.6
	20	—	*34.5*	*14.44*	*30-38*	*106*	*165*	*83*	*65*	—	—	-	*2.1*
2½	1	—	500	3246	1 3/16-1½	4 3/16	6½	3¼	2 7/16	—	—	½ x 2⅜	4.4
65	*25*	—	*34.5*	*14.44*	*30-38*	*106*	*165*	*83*	*62*	—	—	-	*2.2*
	—	1¼	500	3246	1 3/16-1½	4 3/16	6½	3¼	—	3⅝	3⅝	½ x 2⅜	5.1
	—	*32*	*34.5*	*14.44*	*30-38*	*106*	*165*	*83*	—	*92*	*92*	-	*2.3*
	—	1½	500	3246	1 3/16-1½	4 3/16	6½	3¼	—	3⅝	3⅝	½ x 2⅜	5.9
	—	*40*	*34.5*	*14.44*	*30-38*	*106*	*165*	*83*	—	*92*	*92*	-	*2.4*
	¾	—	500	4811	1 3/16-1½	4¾	7¼	3¼	2 13/16	—	—	½ x 3	5.9
	20	—	*34.5*	*21.40*	*30-38*	*121*	*184*	*83*	*72*	—	—	-	*2.7*
3	1	1	500	4811	1 3/16-1½	4¾	7¼	3¼	2¾	3⅜	4	½ x 3	6.2
80	*25*	*25*	*34.5*	*21.40*	*30-38*	*121*	*184*	*83*	*70*	*86*	*102*	-	*2.8*
	—	1½	500	4811	1 3/16-1½	4¾	7¼	3¼	—	4	4	½ x 3	6.4
	—	*40*	*34.5*	*21.40*	*30-38*	*121*	*184*	*83*	—	*102*	*102*	-	*2.9*
	¾	—	500	7952	1 9/16-1⅞	6 3/16	8⅞	3⅝	3 11/16	—	—	⅝ x 3½	9.2
	20	—	*34.5*	*35.37*	*40-48*	*157*	*225*	*92*	*94*	—	—	-	*4.2*
	1	—	500	7952	1 9/16-1⅞	6 3/16	8⅞	3⅝	3 9/16	—	—	⅝ x 3½	9.5
4	*25*	—	*34.5*	*35.37*	*40-48*	*157*	*225*	*92*	*91*	—	—	-	*4.3*
100	—	1½	500	7952	1 9/16-1⅞	6 3/16	8⅞	3⅝	—	4⅞	4⅞	⅝ x 3½	9.5
	—	*40*	*34.5*	*35.37*	*40-48*	*157*	*225*	*92*	—	*124*	*124*	-	*4.3*
	—	2	500	7952	1 9/16-1⅞	6 3/16	8⅞	3⅝	—	4⅞	4⅞	⅝ x 3½	9.9
	—	*50*	*34.5*	*35.37*	*40-48*	*157*	*225*	*92*	—	*124*	*124*	-	*4.5*
	1	—	500	17236	1⅝-1 15/16	8⅛	11¼	3 11/16	4¾	—	—	⅝ x 3½	13.2
	25	—	*34.5*	*76.66*	*41-51*	*206*	*286*	*94*	*121*	—	—	-	*6.0*
6	1½	1½	500	17236	1⅝-1 15/16	8⅛	11¼	3 11/16	4¾	6	6	⅝ x 3½	13.6
150	*40*	*40*	*34.5*	*76.66*	*41-51*	*206*	*286*	*94*	*121*	*154*	*152*	-	*6.2*
	—	2	500	17236	1⅝-1 15/16	8⅛	11¼	3 11/16	—	6	6	⅝ x 3½	14.3
	—	*50*	*34.5*	*76.66*	*41-51*	*206*	*286*	*94*	—	*154*	*152*	-	*6.5*

NOTES:

Pipe ends must be prepared in accordance with Gruvlok "Roll or Cut Groove Specifications for Steel and Other IPS or ISO size Pipe". Not recommended on beveled pipe.

Pressure and end load ratings are for use with standard wall steel pipe.

For a one-time field test only, the maximum working pressure may be increased 1½ times the figure shown.

For additional details see "Coupling Data Chart Notes" on page 17.
See Installation & Assembly directions on page 201.
Not for use in copper systems.

FIG. 7045

Clamp-T, FPT Branch

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

The Gruvlok Clamp-T provides a quick and easy outlet at any location along the pipe. A hole drilled or cut in the pipe to receive the locating collar of the Clamp-T is all that is required. The full, smooth outlet area provides for optimum flow characteristics.

The Clamp-T housing is specially engineered to conform to the pipe O.D. and the Clamp-T gasket providing a leak tight reliable seal in both positive pressure and vacuum conditions. The maximum working pressure for all sizes is 500 PSI (34.5 bar) when assembled on standard wall steel pipe.

The Gruvlok Clamp-T provides for a branch or cross connection in light wall or standard wall steel pipe.

The Fig. 7045 Clamp-T female pipe thread branch is available with NPT or ISO 7/1 connection and the Fig. 7046 Clamp-T has grooved-end branch connection.

Clamp-T cross connections are available in various sizes allowing greater versatility in piping design.

NOTE: Variable End Configurations are Possible — Thd x Thd and Gr. x Thd.
Sizes — 2" x 1/2" through 8" x 4"

CLAMP-T FLOW DATA (FRICTIONAL RESISTANCE)

Branch Size Inches	Fig. 7045 Threaded Branch	
	C.V. Value	Equiv. Pipe Length Feet
DN/mm		*Meters*
1/2 *15*	22 -	1.0 *0.3*
3/4 *20*	25 -	2.0 *0.6*
1 *25*	44 -	2.0 *0.6*
1 1/4 *32*	76 -	2.5 *0.8*
1 1/2 *40*	89 -	4.0 *1.2*
2 *50*	164 -	3.5 *1.1*
2 1/2 *65*	152 -	12.5 *3.8*
3 *80*	318 -	8.5 *2.6*
4 *100*	536 -	8.0 *2.4*

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

U-BOLT:
Cold drawn steel and zinc plated.

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements Contact an Anvil Representative for more information.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7045

Clamp-T, FPT Branch

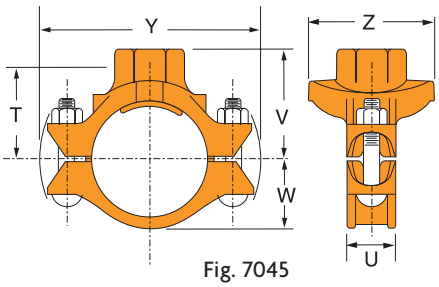


Fig. 7045

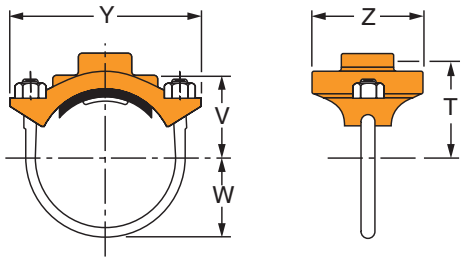


Fig. 7045 (U-Bolt)

FIGURE 7045-FPT BRANCH (TABLE CONTINUES TO NEXT PAGE)

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions						Bolt Size	Specified Torque §		Approx. Wt. Each
		Min. Diameter	Max. Diameter		T	U	V Threaded	W	Y	Z		Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-m*		*Lbs./Kg*
2 x ½ *50 x 15*	2.375 x 0.840 *60.3 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	2 3/16 *56*	9/16 *14*	2⅝ *67*	½ *12*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.3 *1.0*
2 x ¾ *50 x 20*	2.375 x 1.050 *60.3 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 1/16 *52*	9/16 *14*	2⅝ *67*	1½ *38*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.3 *1.0*
2 x 1 *50 x 25*	2.375 x 1.315 *60.3 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	1 15/16 *51*	9/16 *14*	2⅝ *67*	1½ *38*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.6 *1.2*
2 x 1¼ *50 x 32*	2.375 x 1.660 *60.3 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	2 3/16 *55*	9/16 *14*	2⅞ *73*	1½ *38*	5½ *140*	3½ *89*	½ U-Bolt -	30	40	2.7 *1.2*
2 x 1½ *50 x 40*	2.375 x 1.900 *60.3 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	2 3/16 *55*	9/16 *14*	2⅞ *73*	1½ *38*	7 *178*	3½ *89*	½ U-Bolt -	30	40	2.5 *1.1*
2½ x ½ *65 x 15*	2.875 x 0.840 *73.0 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	2 7/16 *62*	9/16 *14*	2⅞ *73*	1¾ *44*	5½ *140*	3 *76*	½ U-Bolt -	30	40	3.0 *1.4*
2½ x ¾ *65 x 20*	2.875 x 1.050 *73.0 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 5/16 *59*	9/16 *14*	2⅞ *73*	1¾ *44*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.9 *1.3*
2½ x 1 *65 x 25*	2.875 x 1.315 *73.0 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 3/16 *55*	9/16 *14*	2⅞ *73*	1¾ *44*	6⅛ *156*	3 *76*	½ U-Bolt -	30	40	2.9 *1.3*
2½ x 1¼ *65 x 32*	2.875 x 1.660 *73.0 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	2 7/16 *62*	9/16 *14*	3⅛ *79*	1¾ *44*	6⅛ *156*	3⅜ *86*	½ U-Bolt -	30	40	3.4 *1.5*
2½ x 1½ *65 x 40*	2.875 x 1.900 *73.0 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	2 7/16 *62*	9/16 *14*	3⅛ *79*	1¾ *44*	6⅛ *156*	3⅜ *86*	½ U-Bolt -	30	40	3.4 *1.5*
3 x ½ *80 x 15*	3.500 x 0.840 *88.9 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	2 9/16 *65*	9/16 *14*	3 *76*	2⅛ *54*	7 *178*	3¾ *95*	½ U-Bolt -	30	40	2.8 *1.2*
3 x ¾ *80 x 20*	3.500 x 1.050 *88.9 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 7/16 *62*	9/16 *14*	3 *76*	2⅛ *54*	7 *178*	3¾ *95*	½ U-Bolt -	30	40	2.7 *1.2*
3 x 1 *80 x 25*	3.500 x 1.315 *88.9 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 5/16 *59*	9/16 *14*	3 *76*	2⅛ *54*	7 *178*	3¾ *95*	½ U-Bolt -	30	40	2.7 *1.2*
3 x 1¼ *80 x 32*	3.500 x 1.660 *88.9 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	2 11/16 *68*	1½ *38*	3⅜ *86*	2⅛ *54*	6⅞ *175*	3¾ *95*	½x 2¾ -	80	100	3.4 *1.5*
3 x 1½ *80 x 40*	3.500 x 1.900 *88.9 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	2 11/16 *68*	1½ *38*	3⅜ *86*	2⅛ *54*	6⅞ *175*	3¾ *95*	½ x 2¾ -	80	100	4.4 *2.0*
3 x 2 *80 x 50*	3.500 x 2.375 *88.9 x 60.3*	2½ *64*	2⅝ *67*	500 *34.5*	2 11/16 *68*	1½ *38*	3⅜ *86*	2⅛ *54*	6⅞ *175*	4⅛ *105*	½ x 2¾ -	80	100	4.6 *2.1*
4 x ½ *100 x 15*	4.500 x 0.840 *114.3 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	3 1/16 *76*	9/16 *14*	3½ *89*	2⅝ *67*	7¾ *197*	3¾ *95*	½ U-Bolt -	30	40	2.9 *1.3*
4 x ¾ *100 x 20*	4.500 x 1.050 *114.3 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	3 1/16 *78*	9/16 *14*	3½ *89*	2⅝ *67*	7¾ *197*	3¾ *95*	½ U-Bolt -	30	40	2.8 *1.3*
4 x 1 *100 x 25*	4.500 x 1.315 *114.3 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 13/16 *73*	9/16 *14*	3½ *89*	2⅝ *67*	7¾ *197*	3¾ *95*	½ U-Bolt -	30	40	2.7 *1.2*
4 x 1¼ *100 x 32*	4.500 x 1.660 *114.3 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	3 3/16 *81*	1⅞ *48*	3⅞ *98*	2⅝ *67*	7½ *191*	3¾ *95*	½ x 2¾ -	80	100	4.5 *2.0*
4 x 1½ *100 x 40*	4.500 x 1.900 *114.3 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	3 3/16 *81*	1⅞ *48*	3⅞ *98*	2⅝ *67*	7½ *191*	3¾ *95*	½ x 2¾ -	80	100	4.6 *2.1*
4 x 2 *100 x 50*	4.500 x 2.375 *114.3 x 60.3*	2½ *64*	2⅝ *67*	500 *34.5*	3 5/16 *84*	1⅞ *48*	4 *102*	2⅝ *67*	7½ *191*	4⅛ *105*	½ x 2¾ -	80	100	7.7 *3.5*
4 x 2½ *100 x 65*	4.500 x 2.875 *114.3 x 73.0*	2¾ *70*	2⅞ *73*	500 *34.5*	3 11/16 *78*	1⅞ *48*	4 *102*	2⅝ *67*	7½ *191*	4⅜ *111*	½ x 2¾ -	80	100	5.2 *2.4*
4 x 3 O.D. 100 x 80	*4.500 x 2.996* 114.3 x 76.1	*2¾* 70	*2⅞* 73	*500* 34.5	*3* 76	*1⅞* 48	*4* 102	*2⅝* 67	*7½* 191	*4⅜* 111	*½ x 2¾* -	*80*	*100*	*5.2* 2.4
4 x 3 *100 x 80*	4.500 x 3.500 *114.3 x 88.9*	3½ *89*	3⅝ *92*	500 *34.5*	3¼ *83*	1⅞ *48*	4¼ *108*	2⅝ *67*	7½ *191*	5¼ *133*	½ x 3½ -	80	100	6.5 *2.9*

NOTE:
2½", 5" and 6" Nom. Run pipe size Clamp-T may be used on 3" O.D., 5½" O.D. and 6½" O.D. pipe.

(Additional larger sizes on next page.)

▼ Based on use with standard wall pipe.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on page 202.
Not for use with copper systems.

FIG. 7045

Clamp-T, FPT Branch

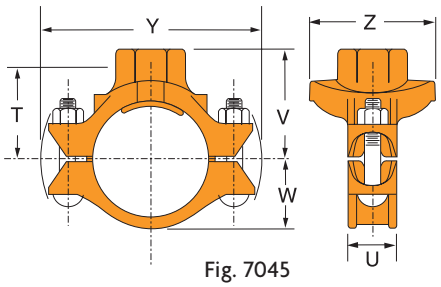


Fig. 7045

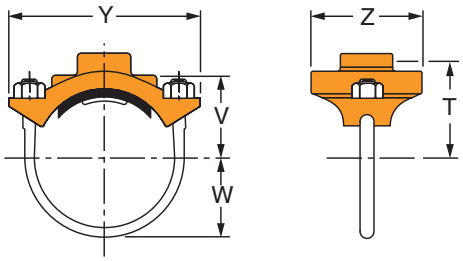


Fig. 7045 (U-Bolt)

FIGURE 7045-FPT BRANCH (CONTINUED FROM PREVIOUS PAGE)

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions						Bolt Size	Specified Torque §		Approx. Wt. Each
		Min. Diameter	Max. Diameter		T	U	V Threaded	W	Y	Z		Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-m*		*Lbs./Kg*
5 x 1¼	5.563 x 1.660	2	2⅛	500	3 1/16	1⅞	4⅜	3¼	9⅛	3¾	⅝ x 3¼	100	130	5.4
125 x 32	*141.3 x 42.4*	*51*	*54*	*34.5*	*94*	*48*	*111*	*83*	*232*	*95*	-			*2.4*
5 x 1½	5.563 x 1.900	2	2⅛	500	3 1/16	1⅞	4⅜	3¼	9⅛	3¾	⅝ x 3¼	100	130	5.5
125 x 40	*141.3 x 48.3*	*51*	*54*	*34.5*	*94*	*48*	*111*	*83*	*232*	*95*	-			*2.5*
5 x 2	5.563 x 2.375	2½	2⅝	500	3 3/16	1⅞	4½	3¼	9⅛	4⅛	⅝ x 3¼	100	130	5.7
125 x 50	*141.3 x 60.3*	*64*	*67*	*34.5*	*97*	*48*	*114*	*83*	*232*	*105*	-			*2.6*
5 x 2½	5.563 x 2.875	2¾	2⅞	500	3 3/16	1⅞	4¾	3¼	9⅛	4⅜	⅝ x 3¼	100	130	7.0
125 x 65	*141.3 x 73.0*	*70*	*73*	*34.5*	*97*	*48*	*121*	*83*	*232*	*111*	-			*3.2*
5 x 3 O.D.	*5.563 x 2.996*	*2¾*	*2⅞*	*500*	*3¾*	*1⅞*	*4¾*	*3¼*	*9⅛*	*4⅜*	*⅝ x 3¼*	*130*	*180*	*7.0*
125 x 80	141.3 x 76.1	70	73	34.5	95	48	121	83	232	111	-			3.2
5 x 3	5.563 x 3.500	3½	3⅝	500	4	1⅞	5	3¼	9⅛	5¼	⅝ x 3¼	100	130	8.7
125 x 80	*141.3 x 88.9*	*89*	*92*	*34.5*	*102*	*48*	*127*	*83*	*232*	*133*	-			*3.9*
6 x 1¼	6.625 x 1.660	2	2⅛	500	4 3/16	2	4⅞	3⅞	10⅛	3¾	⅝ x 4¼	100	130	7.8
150 x 32	*168.3 x 42.4*	*51*	*54*	*34.5*	*106*	*51*	*124*	*98*	*257*	*95*	-			*3.5*
6 x 1½	6.625 x 1.900	2	2⅛	500	4 3/16	2	4⅞	3⅞	10⅛	3¾	⅝ x 4¼	100	130	7.8
150 x 40	*168.3 x 48.3*	*51*	*54*	*34.5*	*106*	*51*	*124*	*98*	*257*	*95*	-			*3.5*
6 x 2	6.625 x 2.375	2½	2⅝	500	4 3/16	2	4⅞	3⅞	10⅛	4⅛	⅝ x 4¼	100	130	7.8
150 x 50	*168.3 x 60.3*	*64*	*67*	*34.5*	*106*	*51*	*124*	*98*	*257*	*105*	-			*3.5*
6 x 2½	6.625 x 2.875	2¾	2⅞	500	4 3/16	2	5⅛	3⅞	10⅛	4⅜	⅝ x 4¼	100	130	8.4
150 x 65	*168.3 x 73.0*	*70*	*73*	*34.5*	*106*	*51*	*130*	*98*	*257*	*111*	-			*3.8*
6 x 3 O.D.	*6.625 x 2.996*	*2¾*	*2⅞*	*500*	*4⅛*	*2*	*5⅛*	*3⅞*	*10⅛*	*4⅜*	*⅝ x 4¼*	*100*	*130*	*8.4*
150 x 80	168.3 x 76.1	70	73	34.5	105	51	130	98	257	111	-			3.8
6 x 3	6.625 x 3.500	3½	3⅝	500	4⅜	2	5⅜	3⅞	10⅛	5¼	⅝ x 4¼	100	130	9.6
150 x 80	*168.3 x 88.9*	*89*	*92*	*34.5*	*111*	*51*	*137*	*98*	*257*	*133*	-			*4.4*
6 x 4	6.625 x 4.500	4½	4⅝	500	4⅜	2	5½	3⅞	10⅛	6½	⅝ x 4¼	100	130	10.5
150 x 100	*168.3 x 114.3*	*114*	*117*	*34.5*	*111*	*51*	*140*	*98*	*257*	*165*	-			*4.8*
8 x 2	8.625 x 2.750	2½	2⅝	500	5 3/16	2¼	5⅞	5	12¾	4⅛	¾ x 4¼	130	180	11.3
200 x 50	*219.1 x 70.0*	*64*	*67*	*34.5*	*132*	*57*	*149*	*127*	*324*	*105*	-			*5.1*
8 x 2½	8.625 x 2.875	2¾	2⅞	500	5 5/16	2¼	6¼	5	12¾	4⅜	¾ x 4½	130	180	11.1
200 x 65	*219.1 x 73.0*	*70*	*73*	*34.5*	*134*	*57*	*159*	*127*	*324*	*111*	-			*5.0*
8 x 3 O.D.	*8.625 x 2.996*	*2¾*	*2⅞*	*500*	*5¼*	*2¼*	*6¼*	*5*	*12¾*	*4⅜*	*¾ x 4½*	*130*	*180*	*11.1*
200 x 80	219.1 x 76.1	70	73	34.5	133	57	159	127	324	111	-			5.0
8 x 3	8.625 x 3.500	3½	3⅝	500	5⅜	2¼	6⅜	5	12¾	5¼	¾ x 4½	130	180	13.0
200 x 80	*219.1 x 88.9*	*89*	*92*	*34.5*	*137*	*57*	*162*	*127*	*324*	*133*	-			*5.9*
8 x 4	8.625 x 4.500	4½	4⅝	500	5⅜	2¼	6½	5	12¾	6½	¾ x 4½	130	180	16.2
200 x 100	*219.1 x 114.3*	*114*	*117*	*34.5*	*137*	*57*	*165*	*127*	*324*	*165*	-			*7.3*

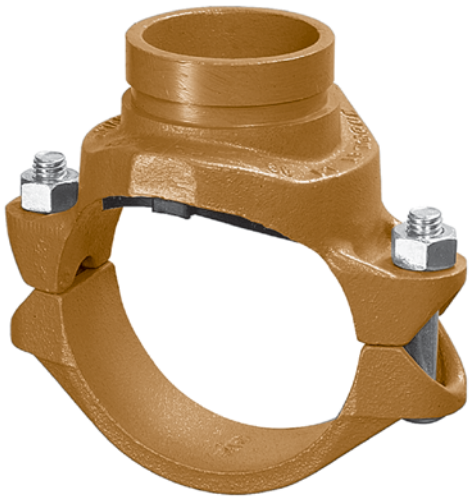
NOTE:
2½", 5" and 6" Nom. Run pipe size Clamp-T may be used on 3" O.D., 5½" O.D. and 6½" O.D. pipe.

(Additional smaller sizes on previous page.)

▼ Based on use with standard wall pipe.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on page 202.
Not for use with copper systems.

FIG. 7046

Clamp-T, Grooved Branch



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The Gruvlok Clamp-T provides a quick and easy outlet at any location along the pipe. A hole drilled or cut in the pipe to receive the locating collar of the Clamp-T is all that is required. The full, smooth outlet area provides for optimum flow characteristics.

The Clamp-T housing is specially engineered to conform to the pipe O.D. and the Clamp-T gasket providing a leak-tight reliable seal in both positive pressure and vacuum conditions. The maximum working pressure for all sizes is 500 PSI (34.5 bar) when assembled on standard wall steel pipe.

The Gruvlok Clamp-T provides for a branch or cross connection in light wall or standard wall steel pipe.

Clamp-T cross connections are available in most sizes allowing greater versatility in piping design.

CLAMP-T FLOW DATA (FRICTIONAL RESISTANCE)

Branch Size	Fig. 7046 Grooved Branch	
	C.V. Value	Equiv. Pipe Length
In./DN/mm		*Ft./Meters*
1¼ *32*	5.4	5.0 *1.5*
1½ *40*	95	3.5 *1.1*
2 *50*	148	4.5 *1.4*
2½ *65*	205	7.0 *2.1*
3 *80*	294	9.5 *2.9*
4 *100*	571	7.0 *2.1*

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

U-BOLT:
Cold drawn steel and zinc plated.

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative for more information.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7046

Clamp-T, Grooved Branch

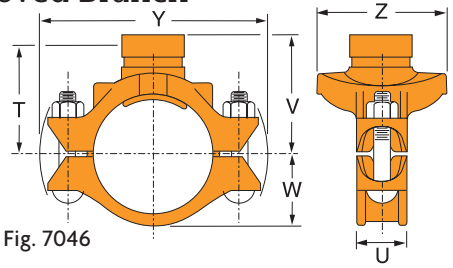

Fig. 7046

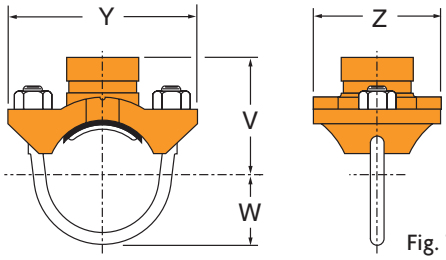

Fig. 7046 (U-Bolt)

FIGURE 7046-GR BRANCH

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions					Bolt Size	Specified Torque §		Approx. Wt. Each
		Min. Diameter	Max. Diameter		U	V Grooved	W	Y	Z		Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-m*		*Lbs./Kg*
2½ x 1¼•	2.875 x 1.660	2	2⅛	500	9/16	3⅛	1¾	6⅛	3½	½ U-Bolt	30	40	3.4
65 x 32	*73.0 x 42.4*	*51*	*54*	*34.5*	*14*	*79*	*44*	*156*	*89*	-			*1.5*
2½ x 1½	2.875 x 1.900	2	2⅛	500	9/16	3⅛	1¾	6⅛	3½	½ U-Bolt	30	40	3.4
65 x 40	*73.0 x 48.3*	*51*	*54*	*34.5*	*14*	*79*	*44*	*156*	*89*	-			*1.5*
3 x 1¼	3.500 x 1.660	2	2⅛	500	1½	3½	2⅛	6⅞	3¾	½ x 2¾	80	100	3.4
80 x 32	*88.9 x 42.4*	*51*	*54*	*34.5*	*38*	*89*	*54*	*175*	*95*	-			*1.5*
3 x 1½	3.500 x 1.900	2	2⅛	500	1½	3½	2⅛	6⅞	3¾	½ x 2¾	80	100	4.4
80 x 40	*88.9 x 48.3*	*51*	*54*	*34.5*	*38*	*89*	*54*	*175*	*95*	-			*2.0*
3 x 2	3.500 x 2.375	2½	2⅝	500	1½	3½	2⅛	6⅞	4⅛	½ x 2¾	80	100	4.6
80 x 50	*88.9 x 60.3*	*64*	*67*	*34.5*	*38*	*89*	*54*	*175*	*105*	-			*2.1*
4 x 1¼	4.500 x 1.660	2	2⅛	500	1⅞	4	2⅝	7½	3¾	½ x 2¾	80	100	4.2
100 x 32	*114.3 x 42.4*	*51*	*54*	*34.5*	*48*	*102*	*67*	*191*	*95*	-			*1.9*
4 x 1½	4.500 x 1.900	2	2⅛	500	1⅞	4	2⅝	7½	3¾	½ x 2¾	80	100	4.3
100 x 40	*114.3 x 48.3*	*51*	*54*	*34.5*	*48*	*102*	*67*	*191*	*95*	-			*2.0*
4 x 2	4.500 x 2.375	2½	2⅝	500	1⅞	4	2⅝	7½	4⅛	½ x 2¾	80	100	4.6
100 x 50	*114.3 x 60.3*	*64*	*67*	*34.5*	*48*	*102*	*67*	*191*	*105*	-			*2.1*
4 x 2½	4.500 x 2.875	2¾	2⅞	500	1⅞	4	2⅝	7½	4⅜	½ x 2¾	80	100	5.0
100 x 65	*114.3 x 73.0*	*70*	*73*	*34.5*	*48*	*102*	*67*	*191*	*111*	-			*2.3*
4 x 3 O.D.	*4.500 x 2.996*	*2¾*	*2⅞*	*500*	*1⅞*	*4*	*2⅝*	*7½*	*4⅜*	*½ x 2¾*	*80*	*100*	*5.0*
100 x 80	114.3 x 76.1	70	73	34.5	48	102	67	191	111	-			2.3
4 x 3	4.500 x 3.500	3½	3⅝	500	1⅞	4	2⅝	7½	5¼	½ x 3½	80	100	5.6
100 x 80	*114.3 x 88.9*	*89*	*92*	*34.5*	*48*	*102*	*67*	*191*	*133*	-			*2.5*
5 x 1¼	5.563 x 1.660	2	2⅛	500	1⅞	4¼	3¼	9⅛	3¾	⅝ x 3¼	80	100	5.6
125 x 32	*141.3 x 42.4*	*51*	*54*	*34.5*	*48*	*108*	*83*	*232*	*95*	-			*2.5*
5 x 1½	5.563 x 1.900	2	2⅛	500	1⅞	4¼	3¼	9⅛	3¾	⅝ x 3¼	100	130	5.6
125 x 40	*141.3 x 48.3*	*51*	*54*	*34.5*	*48*	*108*	*83*	*232*	*95*	-			*2.5*
5 x 2	5.563 x 2.375	2½	2⅝	500	1⅞	4¼	3¼	9⅛	4⅛	⅝ x 3¼	100	130	5.5
125 x 50	*141.3 x 60.3*	*64*	*67*	*34.5*	*48*	*108*	*83*	*232*	*105*	-			*2.5*
5 x 2½	5.563 x 2.875	2¾	2⅞	500	1⅞	4¼	3¼	9⅛	4⅜	⅝ x 3¼	100	130	5.8
125 x 65	*141.3 x 73.0*	*70*	*73*	*34.5*	*48*	*108*	*83*	*232*	*111*	-			*2.6*
5 x 3	5.563 x 3.500	3½	3⅝	500	1⅞	4⅝	3¼	9⅛	5¼	⅝ x 3¼	100	130	7.1
125 x 80	*141.3 x 88.9*	*89*	*92*	*34.5*	*48*	*117*	*83*	*232*	*133*	-			*3.2*
6 x 1¼	6.625 x 1.660	2	2⅛	500	2	5	3⅜	10⅛	3¾	⅝ x 4¼	100	130	7.2
150 x 32	*168.3 x 42.4*	*51*	*54*	*34.5*	*51*	*127*	*98*	*257*	*95*	*			*3.3*
6 x 1½	6.625 x 1.900	2	2⅛	500	2	5	3⅜	10⅛	3¾	⅝ x 4¼	100	130	7.2
150 x 40	*168.3 x 48.3*	*51*	*54*	*34.5*	*51*	*127*	*98*	*257*	*95*	*			*3.3*
6 x 2	6.625 x 2.375	2½	2⅝	500	2	5	3⅜	10⅛	4⅛	⅝ x 4¼	100	130	7.8
150 x 50	*168.3 x 60.3*	*64*	*67*	*34.5*	*51*	*127*	*98*	*257*	*105*	*			*3.5*
6 x 2½	6.625 x 2.875	2¾	2⅞	500	2	5⅛	3⅜	10⅛	4⅜	⅝ x 4¼	100	130	7.6
150 x 65	*168.3 x 73.0*	*70*	*73*	*34.5*	*51*	*130*	*98*	*257*	*111*	*			*3.4*
6 x 3 O.D.	*6.625 x 2.996*	*2¾*	*2⅞*	*500*	*2*	*5⅛*	*3⅜*	*10⅛*	*4⅜*	*⅝ x 4¼*	*100*	*130*	*7.6*
150 x 80	168.3 x 76.1	70	73	34.5	51	130	98	257	111	*			3.4
6 x 3	6.625 x 3.500	3½	3⅝	500	2	5⅛	3⅜	10⅛	5¼	⅝ x 4¼	100	130	8.0
150 x 80	*168.3 x 88.9*	*89*	*92*	*34.5*	*51*	*130*	*98*	*257*	*133*	*			*3.6*
6 x 4	6.625 x 4.500	4½	4⅝	500	2	5¼	3⅜	10⅛	6½	⅝ x 4¼	100	130	10.4
150 x 100	*168.3 x 114.3*	*114*	*117*	*34.5*	*51*	*133*	*98*	*257*	*165*	*			*4.7*
8 x 2	8.625 x 2.375	2½	2⅝	500	2¼	6⅛	5	12¾	4¼	¾ x 4½	130	180	10.4
200 x 50	*219.1 x 60.3*	*64*	*67*	*34.5*	*57*	*156*	*127*	*324*	*108*	-			*4.7*
8 x 2½	8.625 x 2.875	2¾	2⅞	500	2¼	6⅛	5	12¾	4⅜	¾ x 4½	130	180	10.6
200 x 65	*219.1 x 73.0*	*70*	*73*	*34.5*	*57*	*156*	*127*	*324*	*111*	*M20 x 110*	*175*	*245*	*4.8*
8 x 3	8.625 x 3.500	3½	3⅝	500	2¼	6⅛	5	12¾	5¼	¾ x 4½	130	180	11.5
200 x 80	*219.1 x 88.9*	*89*	*92*	*34.5*	*57*	*156*	*127*	*324*	*133*	*M20 x 110*	*175*	*245*	*5.2*
8 x 4	8.625 x 4.500	4½	4⅝	500	2¼	6¼	5	12¾	6½	¾ x 4½	130	180	16.2
200 x 100	*219.1 x 114.3*	*114*	*117*	*34.5*	*57*	*159*	*127*	*324*	*165*	*M20 x 110*	*175*	*245*	*7.3*

NOTES:
2½", 5" and 6" Nom. Run pipe size Clamp-T may be used on 3" O.D., 5½" O.D. and 6½" O.D. pipe.
• Cannot be used in cross configuration.

▼ Based on use with standard wall pipe.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on page 202.
Not for use with copper systems.

FIG. 7047, FIG. 7048 & FIG. 7049

Clamp-T, Cross

Fig. 7047

Fig. 7048

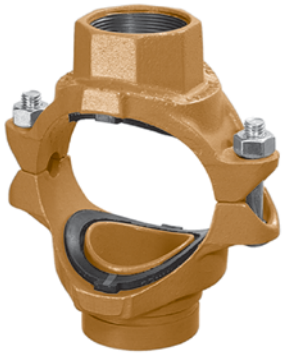

Fig. 7049

The Gruvlok Clamp-T provides a branch or cross connection in light wall or standard wall steel pipe.

The Fig. 7045 Clamp-T female pipe thread branch is available with NPT or ISO 7/1 connection and the Fig. 7046 Clamp-T has grooved-end branch connection.

Clamp-T cross connections are available allowing greater versatility in piping design.

NOTE: 2 1/2" x 1 1/4" Figure 7046 cannot be used in cross configuration.

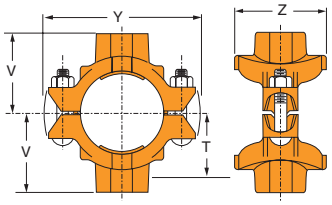

Fig. 7047 - Thread x Thread

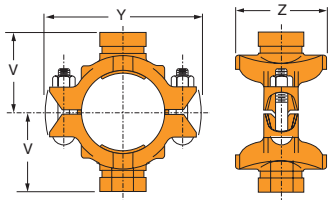

Fig. 7048 - Groove x Groove

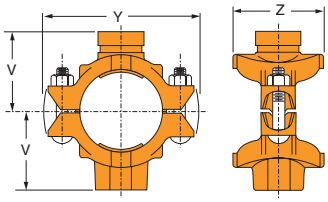

Fig. 7049 - Groove x Thread

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MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12 or Malleable Iron conforming to ASTM A 47, Grade 32510.

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative for more information.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

Not for use in copper systems.

FIG. 7043
Branch Outlet

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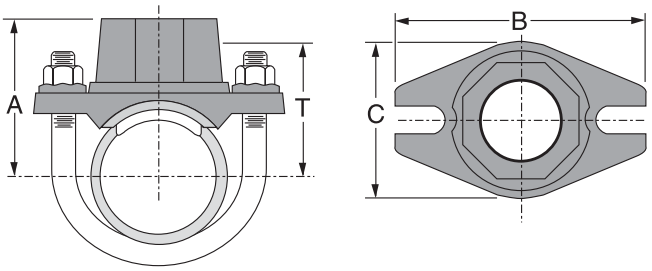
The Gruvlok Figure 7043 Branch Outlet is for direct connection of sprinkler heads and drop nipples. Just cut a hole, saddle up and fasten it with the U-bolt. The branch outlet provides an economical, quick, and easy outlet at any location along a pipe. Specially engineered to conform to the pipe O.D., the Fig. 7043 provides a leak tight reliable seal in both positive pressure and vacuum conditions. Ductile iron housings with Grade E gasket and carbon steel U-bolt (3/8" dia.) with flanged nuts. Ductile iron housing is available painted or galvanized .

The maximum working pressure for all sizes is 175 PSI (12.1 bar).



MATERIAL SPECIFICATIONS

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "E" EPDM (Green color code)
-40°F to 150°F (Service Temperature Range)
(-40°C to 66°C) Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)

U-BOLT:
Plated U-bolt conforming to ASTM A 307 with plated hex nuts conforming to ASTM A 563.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™

FIGURE 7043 BRANCH OUTLET

Nominal Size	O.D.	Hole Diameter		Dimensions				Specified Torque §		Approx. Wt. Each
		Min. Dia.	Max. Dia.	A	B	C	Take-out T	Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Ft.-Lbs./N-m*		*Lbs./Kg*
1¼ x ½	1.660 x 0.840	1 3/16	1¼	2 1/16	3½	2 7/32	1 3/8	27	33	0.8
32 x 15	*42.4 x 21.3*	*30*	*32*	*53*	*89*	*56*	*35*	-	-	*0.4*
1¼ x ¾	1.660 x 1.050	1 3/16	1¼	2 1/16	3½	2 7/32	1 3/8	27	33	0.8
32 x 20	*42.4 x 26.7*	*30*	*32*	*53*	*89*	*56*	*35*	-	-	*0.4*
1¼ x 1	1.660 x 1.315	1 3/16	1¼	2 3/16	3½	2 7/32	1½	27	33	0.9
32 x 25	*42.4 x 33.7*	*30*	*32*	*56*	*89*	*56*	*38*	-	-	*0.4*
1½ x ½	1.900 x 0.840	1 3/16	1¼	2 5/32	3½	2 7/32	1 3/8	27	33	0.8
40 x 15	*48.3 x 21.3*	*30*	*32*	*55*	*89*	*56*	*35*	-	-	*0.4*
1½ x ¾	1.900 x 1.050	1 3/16	1¼	2 5/32	3½	2 7/32	1 3/8	27	33	0.8
40 x 20	*48.3 x 26.7*	*30*	*32*	*55*	*89*	*56*	*35*	-	-	*0.4*
1½ x 1	1.900 x 1.315	1 3/16	1¼	2 3/32	3½	2 7/32	1½	27	33	0.9
40 x 25	*48.3 x 33.7*	*30*	*32*	*58*	*89*	*56*	*38*	-	-	*0.4*
2 x ½	2.375 x 0.840	1 3/16	1¼	2½	3 7/8	2 7/32	1 5/8	27	33	0.8
50 x 15	*60.3 x 21.3*	*30*	*32*	*64*	*98*	*56*	*42*	-	-	*0.4*
2 x ¾	2.375 x 1.050	1 3/16	1¼	2½	3 7/8	2 7/32	1 5/8	27	33	0.8
50 x 20	*60.3 x 26.7*	*30*	*32*	*64*	*98*	*56*	*42*	-	-	*0.4*
2 x 1	2.375 x 1.315	1 3/16	1¼	2 5/8	3 7/8	2 7/32	1¾	27	33	0.9
50 x 25	*60.3 x 33.7*	*30*	*32*	*67*	*98*	*56*	*45*	-	-	*0.4*
2½ x ½	2.875 x 0.840	1 3/16	1¼	2 11/16	4 3/8	2 7/32	2	27	33	0.8
65 x 15	*73.0 x 21.3*	*30*	*32*	*69*	*111*	*56*	*51*	-	-	*0.4*
2½ x ¾	2.875 x 1.050	1 3/16	1¼	2 11/16	4 3/8	2 7/32	2	27	33	0.9
65 x 20	*73.0 x 26.7*	*30*	*32*	*69*	*111*	*56*	*51*	-	-	*0.4*
2½ x 1	2.875 x 1.315	1 3/16	1¼	2 13/16	4 3/8	2 7/32	2 1/8	27	33	1.0
65 x 25	*73.0 x 33.7*	*30*	*32*	*72*	*111*	*56*	*54*	-	-	*0.5*

§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on page 203.
Not for use with copper systems.

GRUVLOK FITTINGS FOR GROOVED-END PIPE

Gruvlok fittings are available through 24" nominal pipe size in a variety of styles. Use the Fitting Size Table to convert nominal pipe size to corresponding pipe O.D.

These fittings are designed to provide minimum pressure drop and uniform strength.

Depending on styles and size, Gruvlok fittings are provided in various materials including ductile iron, forged steel or fabricated steel.

Pressure ratings of Gruvlok standard fittings conform to those of Fig. 7001 Gruvlok coupling.

Not for use in copper systems.

NSF/ANSI 61 UPC

Galvanized Gruvlok Fittings are NSF-61 and Low Lead Approved

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FLOW DATA – FRICTIONAL RESISTANCE (EXPRESSED AS EQUIVALENT STRAIGHT PIPE)

Nom. Size	O.D.	Pipe Wall Thickness	Elbow		Tee	
			90°	45°	Branch	Run
In./DN(mm)	*In./mm*	*In./mm*	*Ft./m*	*Ft./m*	*Ft./m*	*Ft./m*
1 *25*	1.315 *33.4*	0.133 *3.4*	1.7 *0.5*	0.9 *0.3*	4.4 *1.3*	1.7 *0.5*
1¼ *32*	1.660 *42.2*	0.140 *3.6*	2.3 *0.7*	1.2 *0.4*	5.8 *1.8*	2.3 *0.7*
1½ *40*	1.900 *48.3*	0.145 *3.7*	2.7 *0.8*	1.3 *0.4*	6.7 *2.0*	2.7 *0.8*
2 *50*	2.375 *60.3*	0.154 *3.9*	3.4 *1.0*	1.7 *0.5*	8.6 *2.6*	3.4 *1.0*
2½ *65*	2.875 *73.0*	0.203 *5.2*	4.1 *1.2*	2.1 *0.6*	10.3 *3.1*	4.1 *1.2*
3 O.D. 76.1	*2.996* 76.1	*0.197* 5.0	*4.3* 1.3	*2.2* 0.7	*10.8* 3.3	*4.3* 1.3
3 *80*	3.500 *88.9*	0.216 *5.5*	5.1 *1.6*	2.6 *0.8*	12.8 *3.9*	5.1 *1.6*
4¼ O.D. 108.0	*4.250* 108.0	*0.220* 5.6	*6.4* 2.0	*3.2* 1.0	*16.1* 4.9	*6.4* 2.0
4 *100*	4.500 *114.3*	0.237 *6.0*	6.7 *2.0*	3.4 *1.0*	16.8 *5.1*	6.7 *2.0*
5¼ O.D. 133.0	*5.236* 133.0	*0.248* 6.3	*8.0* 2.4	*4.0* 1.2	*20.1* 6.1	*8.0* 2.4
5½ O.D. 139.7	*5.500* 139.7	*0.248* 6.3	*8.3* 2.5	*4.2* 1.3	*20.9* 6.4	*8.3* 2.5
5 *125*	5.563 *141.3*	0.258 *6.6*	8.4 *2.6*	4.2 *1.3*	21.0 *6.4*	8.4 *2.6*
6¼ O.D. 159.0	*6.259* 159.0	*0.280* 7.1	*9.7* 3.0	*4.9* 1.5	*24.3* 7.4	*9.7* 3.0
6½ O.D. 165.1	*6.500* 165.1	*0.280* 7.1	*10.0* 3.0	*5.0* 1.5	*24.9* 7.6	*10.0* 3.0
6 *150*	6.625 *168.3*	0.280 *7.1*	10.1 *3.1*	5.1 *1.6*	25.3 *7.7*	10.1 *3.1*
8 *200*	8.625 *219.1*	0.322 *8.2*	13.3 *4.1*	6.7 *2.0*	33.3 *10.1*	13.3 *4.1*
10 *250*	10.750 *273.1*	0.365 *9.3*	16.7 *5.1*	8.4 *2.6*	41.8 *12.7*	16.7 *5.1*
12 *300*	12.750 *323.9*	0.375 *9.5*	20.0 *6.1*	10.0 *3.0*	50.0 *15.2*	20.0 *6.1*
14 *350*	14.000 *355.6*	0.375 *9.5*	22.2 *6.8*	17.7 *5.4*	64.2 *19.6*	22.9 *7.0*
16 *400*	16.000 *406.4*	0.375 *9.5*	25.5 *7.8*	20.4 *6.2*	73.9 *22.5*	26.4 *8.0*
18 *450*	18.000 *457.2*	0.375 *9.5*	28.9 *8.8*	23.1 *7.0*	87.2 *26.6*	31.1 *9.5*
20 *500*	20.000 *508.0*	0.375 *9.5*	32.2 *9.8*	25.7 *7.8*	97.3 *29.7*	34.8 *10.6*
24 *600*	24.000 *609.6*	0.375 *9.5*	38.9 *11.9*	31.1 *9.5*	113.0 *34.4*	40.4 *12.3*

For the reducing tee and branches, use the value that is corresponding to the branch size. For example: for 6" x 6" x 3" tee, the branch value of 3" is 12.8 ft (3.9).

MATERIAL SPECIFICATIONS

CAST FITTINGS:

Ductile iron conforming to ASTM A 536, Grade 65-45-12
Malleable iron conforming to ASTM A 47

FABRICATED FITTINGS:

1-12" Carbon steel, Schedule 40, conforming to ASTM A 53, Grade B
14-24" Carbon steel, 0.375 wall, conforming to ASTM A 53, Grade B

COATINGS:

Rust inhibiting paint – Color: ORANGE (standard)
Hot Dipped Zinc Galvanized conforming to ASTM A 153 (optional)
Other Colors Available (IE: RAL3000 and RAL9000)

FITTING SIZE

Nominal Size	O.D.	Nominal Size	O.D.
In./DN(mm)	*In./mm*	*In./DN(mm)*	*In./mm*
1 *25*	1.315 *33.4*	5 *140*	5.563 *141.3*
1¼ *32*	1.660 *42.4*	*6¼ O.D.* 159.0	*6.259* 159.0
1½ *40*	1.900 *48.3*	*6½ O.D.* 165.1	*6.500* 165.1
2 *50*	2.375 *60.3*	6 *150*	6.625 *168.3*
2½ *65*	2.875 *73.0*	8 *200*	8.625 *219.1*
3 O.D. 76.1	*2.996* 76.1	10 *250*	10.750 *273.0*
3 *80*	3.500 *88.9*	12 *300*	12.750 *323.9*
3½ *90*	4.000 *101.6*	14 *350*	14.000 *355.6*
4¼ O.D. 108.0	*4.250* 108.0	16 *400*	16.000 *406.4*
4 *100*	4.500 *114.3*	18 *450*	18.000 *457.2*
5¼ O.D. 133.0	*5.236* 133.0	20 *500*	20.000 *508.0*
5½ O.D. 139.7	*5.500* 139.7	24 *600*	24.000 *609.6*

The Fitting Size Chart is used to determine the O.D. of the pipe that the fittings is to be used with. Gruvlok Fittings are identified by either the Nominal size in inches or the Pipe O.D. in/mm.

FIG. 7050

90° Elbow*

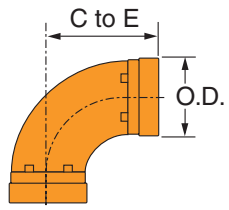

FIGURE 7050 90° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ C *57*	0.6 *0.3*
1¼ *32*	1.660 *42.2*	2¾ C *70*	1.0 *0.5*
1½ *40*	1.900 *48.3*	2¾ C *70*	1.2 *0.5*
2 *50*	2.375 *60.3*	3¼ C *83*	1.7 *0.8*
2½ *65*	2.875 *73.0*	3¾ C *95*	2.6 *1.2*
3 O.D. 76.1	*2.996* 76.1	*4 C* 102	*3.6* 1.6
3 *80*	3.500 *88.9*	4¼ C *108*	4.0 *1.8*
3½ *90*	4.000 *101.6*	4½ C *114*	5.5 *2.5*
4¼ O.D. 108.0	*4.250* 108.0	*4¾ C* 121	*7.7* 3.5
4 *100*	4.500 *114.3*	5 C *127*	7.7 *3.5*
5¼ O.D. 133.0	*5.236* 133.0	*5¼ C* 133	*10.4* 4.7
5½ O.D. 139.7	*5.500* 139.7	*5¼ C* 133	*10.9* 4.9
5 *125*	5.563 *141.3*	5½ C *140*	11.1 *5.0*
6¼ O.D. 159.0	*6.259* 159.0	*6 C* 152	*15.2* 6.9
6½ O.D. 165.1	*6.500* 165.1	*6½ C* 165	*17.4* 7.9
6 *150*	6.625 *168.3*	6½ C *165*	16.5 *7.5*
8 *200*	8.625 *219.1*	7¾ C *197*	30.6 *13.9*
10 *250*	10.750 *273.1*	9 C *229*	53.5 *24.3*
12 *300*	12.750 *323.9*	10 C *254*	82 *37.2*
14* *350*	14.000 *355.6*	21 *533*	169.0 *76.7*
16* *400*	16.000 *406.4*	24 *610*	222.0 *100.7*
18* *450*	18.000 *457.2*	27 *686*	280.0 *127.0*
20* *500*	20.000 *508.0*	30 *762*	344.0 *156.0*
24* *600*	24.000 *609.6*	36 *914*	490.0 *222.3*

FIG. 7051

45° Elbow*

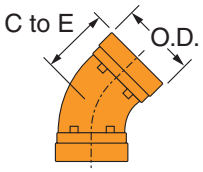

FIGURE 7051 45° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	1¾ C *44*	0.5 *0.2*
1¼ *32*	1.660 *42.2*	1¾ C *44*	0.7 *0.3*
1½ *40*	1.900 *48.3*	1¾ C *44*	0.9 *0.4*
2 *50*	2.375 *60.3*	2 C *51*	1.5 *0.7*
2½ *65*	2.875 *73.0*	2¼ C *57*	1.9 *0.9*
3 O.D. 76.1	*2.996* 76.1	*2½ C* 64	*2.2* 1.0
3 *80*	3.500 *88.9*	2½ C *64*	3.3 *1.5*
3½ *90*	4.000 *101.6*	2¾ C *70*	4.3 *2.0*
4¼ O.D. 108.0	*4.250* 108.0	*2⅞ C* 83	*4.4* 2.0
4 *100*	4.500 *114.3*	3 C *76*	5.4 *2.4*
5¼ O.D. 133.0	*5.236* 133.0	*3¼ C* 83	*7.3* 3.3
5½ O.D. 139.7	*5.500* 139.7	*3¼ C* 83	*7.8* 3.5
5 *125*	5.563 *141.3*	3¼ C *83*	9.0 *4.1*
6¼ O.D. 159.0	*6.259* 159.0	*3½ C* 89	*10.1* 4.6
6½ O.D. 165.1	*6.500* 165.1	*3½ C* 89	*11.1* 5.0
6 *150*	6.625 *168.3*	3½ C *89*	11.2 *5.1*
8 *200*	8.625 *219.1*	4¼ C *108*	19.8 *9.0*
10 *250*	10.750 *273.1*	4¾ C *121*	34.3 *15.6*
12 *300*	12.750 *323.9*	5¼ C *133*	50.0 *22.7*
14* *350*	14.000 *355.6*	8¾ *222*	92.0 *41.7*
16* *400*	16.000 *406.4*	10 *254*	117.0 *53.1*
18* *450*	18.000 *457.2*	11¼ *286*	146.0 *66.2*
20* *500*	20.000 *508.0*	12½ *317*	179.0 *81.2*
24* *600*	24.000 *609.6*	15 *381*	255.0 *115.7*

FIG. 7052

22 ½° Elbow

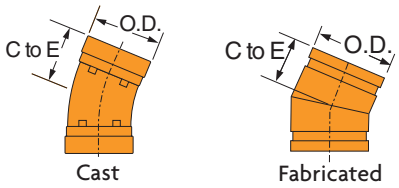

FIGURE 7052 22½° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3¼ *83*	0.5 *0.2*
1¼ *32*	1.660 *42.2*	1¾ *44*	0.7 *0.3*
1½ *40*	1.900 *48.3*	1¾ *44*	0.8 *0.4*
2 *50*	2.375 *60.3*	1⅞ C *48*	1.5 *0.7*
2½ *65*	2.875 *73.0*	2 *51*	1.9 *0.9*
3 *80*	3.500 *88.9*	2¼ C *57*	3.2 *1.5*
3½ *90*	4.000 *101.6*	2½ *64*	4.0 *1.8*
4 *100*	4.500 *114.3*	2⅝ C *67*	5.3 *2.4*
5 *125*	5.563 *141.3*	2⅞ *73*	7.2 *3.3*
6 *150*	6.625 *168.3*	3⅛ C *79*	8.2 *3.7*
8 *200*	8.625 *219.1*	3⅞ C *98*	17.8 *8.1*
10 *250*	10.750 *273.1*	4⅜ *111*	30.0 *13.6*
12 *300*	12.750 *323.9*	4⅞ *124*	40.4 *18.3*
14 *350*	14.000 *355.6*	5 *127*	46.0 *20.9*
16 *400*	16.000 *406.4*	5 *127*	52.2 *23.7*
18 *450*	18.000 *457.2*	5½ *140*	65.0 *29.5*
20 *500*	20.000 *508.0*	6 *152*	80.0 *36.3*
24 *600*	24.000 *609.6*	7 *178*	112.0 *50.8*

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For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

C - Cast ductile iron, all others are fabricated steel.

* 14"-24" Standard Radius 90° & 45° Elbows are 1½ Long Radius.

Center to end dimensions and weights may differ from those shown in chart, contact an Anvil Representative for more information.

FIG. 7053

11 ¼° Elbow

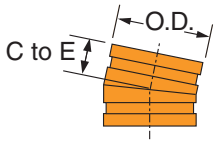

FIGURE 7053
11¼° ELBOW

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	1⅜ *35*	0.3 *0.1*
1¼ *32*	1.660 *42.2*	1⅜ *35*	0.5 *0.2*
1½ *40*	1.900 *48.3*	1⅜ *35*	0.7 *0.3*
2 *50*	2.375 *60.3*	1⅜ *35*	0.9 *0.4*
2½ *65*	2.875 *73.0*	1½ *38*	1.5 *0.7*
3 *80*	3.500 *88.9*	1½ *38*	2.0 *0.9*
3½ *90*	4.000 *101.6*	1¾ *44*	2.8 *1.3*
4 *100*	4.500 *114.3*	1¾ *44*	3.3 *1.5*
5 *125*	5.563 *141.3*	2 *51*	5.0 *2.3*
6 *150*	6.625 *168.3*	2 *51*	6.5 *2.9*
8 *200*	8.625 *219.1*	2 *51*	10.0 *4.5*
10 *250*	10.750 *273.1*	2⅛ *54*	14.5 *6.6*
12 *300*	12.750 *323.9*	2¼ *57*	18.7 *8.5*
14 *350*	14.000 *355.6*	3½ *89*	32.1 *14.6*
16 *400*	16.000 *406.4*	4 *102*	42.0 *19.1*
18 *450*	18.000 *457.2*	4½ *114*	53.2 *24.1*
20 *500*	20.000 *508.0*	5 *127*	65.7 *29.8*
24 *600*	24.000 *609.6*	6 *152*	96.0 *43.5*

FIG. 7050LR

90° Long Radius Elbow

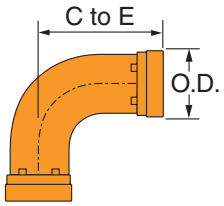

FIGURE 7050 LR
LONG RADIUS 90° ELBOW

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3½ *89*	0.9 *0.4*
1¼ *32*	1.660 *42.2*	3⅞ *98*	1.3 *0.6*
1½ *40*	1.900 *48.3*	4¼ *108*	1.7 *0.8*
2 *50*	2.375 *60.3*	4⅜ *136*	2.5 *1.1*
2½ *65*	2.875 *73.0*	5¾ *146*	4.9 *2.2*
3 *80*	3.500 *88.9*	5⅞ *181*	6.5 *2.9*
3½ *90*	4.000 *101.6*	7¼ *184*	9.7 *4.4*
4 *100*	4.500 *114.3*	7½ *191*	11.5 *5.2*
5 *125*	5.563 *141.3*	9½ *241*	20.9 *9.5*
6 *150*	6.625 *168.3*	10¾ *273*	29.1 *13.2*
8 *200*	8.625 *219.1*	15 *381*	59.2 *26.9*
10 *250*	10.750 *273.1*	18 *457*	104.0 *47.2*
12 *300*	12.750 *323.9*	21 *533*	147.0 *66.7*
14 *350*	14.000 *355.6*	21 *533*	169.0 *76.7*
16 *400*	16.000 *406.4*	24 *610*	222.0 *100.7*
18 *450*	18.000 *457.2*	27 *686*	280.0 *127.0*
20 *500*	20.000 *508.0*	30 *762*	344.0 *156.0*
24 *600*	24.000 *609.6*	36 *914*	490.0 *222.3*

FIG. 7051LR

45° Long Radius Elbow

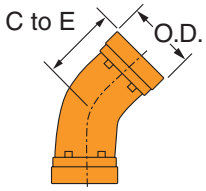

FIGURE 7051 LR
LONG RADIUS 45° ELBOW

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2½ *64*	0.7 *0.3*
1¼ *32*	1.660 *42.2*	2½ *64*	1.0 *0.5*
1½ *40*	1.900 *48.3*	2½ *64*	1.2 *0.5*
2 *50*	2.375 *60.3*	2¾ *70*	1.7 *0.8*
2½ *65*	2.875 *73.0*	3 *76*	2.9 *1.3*
3 *80*	3.500 *88.9*	3⅜ *86*	4.3 *2.0*
3½ *90*	4.000 *101.6*	3½ *89*	5.3 *2.4*
4 *100*	4.500 *114.3*	4 *102*	7.2 *3.3*
5 *125*	5.563 *141.3*	5 *127*	12.2 *5.5*
6 *150*	6.625 *168.3*	5½ *140*	17.4 *7.9*
8 *200*	8.625 *219.1*	7¼ *184*	34.0 *15.4*
10 *250*	10.750 *273.1*	8½ *216*	57.4 *26.0*
12 *300*	12.750 *323.9*	10 *254*	82.6 *37.5*
14 *350*	14.000 *355.6*	8¾ *222*	92.0 *41.7*
16 *400*	16.000 *406.4*	10 *254*	117.0 *53.1*
18 *450*	18.000 *457.2*	11¼ *286*	146.0 *66.2*
20 *500*	20.000 *508.0*	12½ *317*	179.0 *81.2*
24 *600*	24.000 *609.6*	15 *381*	255.0 *115.7*

C - Cast ductile iron, all others are fabricated steel.
Center to end dimensions and weights may differ from those shown in chart, Contact an Anvil Representative for more information.

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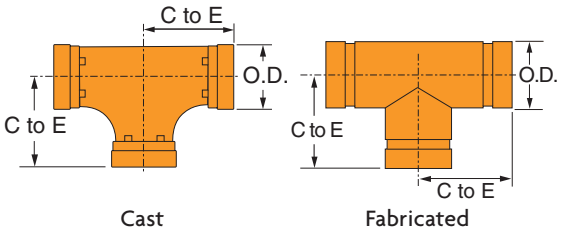
FIG. 7060

Tee



Cast Fabricated

FIGURE 7060 TEE

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ C *57*	0.9 *0.4*
1¼ *32*	1.660 *42.2*	2¾ C *70*	1.5 *0.7*
1½ *40*	1.900 *48.3*	2¾ C *70*	1.8 *0.8*
2 *50*	2.375 *60.3*	3¼ C *83*	2.4 *1.1*
2½ *65*	2.875 *73.0*	3¾ C *95*	4.0 *1.8*
3 O.D. 76.1	*2.996* 76.1	*4 C* 101	*4.6* 2.1
3 *80*	3.500 *88.9*	4¼ C *108*	5.8 *2.6*
3½ *90*	4.000 *101.6*	4½ C *114*	9.8 *4.4*
4¼ O.D. 108.0	*4.250* 108.0	*4¾ C* 121	*9.3* 4.2
4 *100*	4.500 *114.3*	5 C *127*	10.3 *4.7*
5¼ O.D. 133.0	*5.236* 133.0	*5¼ C* 133	*14.1* 6.4
5½ O.D. 139.7	*5.500* 139.7	*5½ C* 140	*16.1* 7.3
5 *125*	5.563 *141.3*	5½ C *140*	16.2 *7.3*
6¼ O.D. 159.0	*6.259* 159.0	*6 C* 152	*20.8* 9.4
6½ O.D. 165.1	*6.500* 165.1	*6½ C* 165	*24.4* 11.1
6 *150*	6.625 *168.3*	6½ C *165*	25.7 *11.7*
8 *200*	8.625 *219.1*	7¾ C *197*	41.1 *18.6*
10 *250*	10.750 *273.1*	9 C *229*	74.5 *33.8*
12 *300*	12.750 *323.9*	10 C *254*	94.7 *43.0*
14 *350*	14.000 *355.6*	11 *279*	118.0 *53.5*
16 *400*	16.000 *406.4*	12 *305*	146.0 *66.2*
18 *450*	18.000 *457.2*	15½ *394*	218.0 *98.9*
20 *500*	20.000 *508.0*	17¼ *438*	275.0 *125*
24 *600*	24.000 *609.6*	20 *508*	379.0 *172*

C - Cast ductile iron, all others are fabricated steel.

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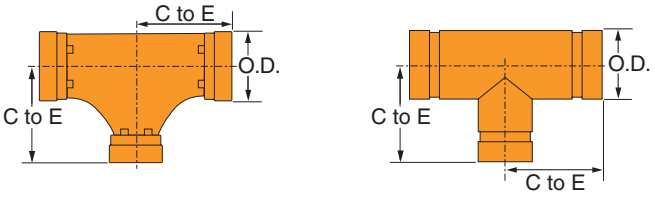
FIG. 7061

Reducing Tee Standard



Cast Fabricated

FIGURE 7061 STANDARD REDUCING TEE

Nominal Size	Center to End	Approx. Wt. Ea.	Nominal Size	Center to End	Approx. Wt. Ea.	Nominal Size	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*	*In./DN(mm)*	*In./mm*	*Lbs./Kg*	*In./DN(mm)*	*In./mm*	*Lbs./Kg*
1¼ x 1¼ x 1 *32 x 32 x 25*	2¾ *70*	1.5 *0.7*	5 x 5 x 2 *125 x 125 x 50*	5½ *140*	14 *6.4*	10 x 10 x 8 *250 x 250 x 200*	9 *229*	64.7 *29.3*
1½ x 1½ x 1 *40 x 40 x 25*	2¾ *70*	1.8 *0.8*	5 x 5 x 2½ *125 x 125 x 65*	5½ *140*	14.3 *6.5*	12 x 12 x 4 *300 x 300 x 100*	10 *254*	75.1 *34.1*
1½ x 1½ x 1¼ *40 x 40 x 32*	2¾ *70*	1.8 *0.8*	5 x 5 x 3 *125 x 125 x 80*	5½ *140*	14.6 *6.6*	12 x 12 x 5 *300 x 300 x 125*	10 *254*	75.6 *34.3*
2 x 2 x 1 *50 x 50 x 25*	3¼ C *83*	2.6 *1.2*	5 x 5 x 4 *125 x 125 x 100*	5½ C *140*	17.9 *8.1*	12 x 12 x 6 *300 x 300 x 150*	10 *254*	76.2 *34.6*
2 x 2 x 1¼ *50 x 50 x 32*	3¼ *83*	1.7 *0.8*	6 x 6 x 1 *150 x 150 x 25*	6½ *165*	20.5 *9.3*	12 x 12 x 8 *300 x 300 x 200*	10 *254*	76.3 *34.6*
2 x 2 x 1½ *50 x 50 x 40*	3¼ C *83*	2.7 *1.2*	6 x 6 x 1¼ *150 x 150 x 32*	6½ *165*	20.7 *9.4*	12 x 12 x 10 *300 x 300 x 250*	10 *254*	77.6 *35.2*
2½ x 2½ x 1 *65 x 65 x 25*	3¾ *95*	4.1 *1.9*	6 x 6 x 1½ *150 x 150 x 40*	6½ *165*	21.0 *9.5*	14 x 14 x 6 *350 x 350 x 150*	11 *279*	101 *45.8*
2½ x 2½ x 1¼ *65 x 65 x 32*	3¾ *95*	4.2 *1.9*	6 x 6 x 2 *150 x 150 x 50*	6½ C *165*	26.4 *12.0*	14 x 14 x 8 *350 x 350 x 200*	11 *279*	103 *46.7*
2½ x 2½ x 1½ *65 x 65 x 40*	3¾ *95*	4.3 *2.0*	6 x 6 x 2½ *150 x 150 x 65*	6½ C *165*	26.5 *12.0*	14 x 14 x 10 *350 x 350 x 250*	11 *279*	104 *47.2*
2½ x 2½ x 2 *65 x 65 x 50*	3¾ *95*	4.4 *2.0*	6 x 6 x 3 *150 x 150 x 80*	6½ C *165*	26.5 *12.0*	14 x 14 x 12 *350 x 350 x 300*	11 *279*	105 *47.6*
3 x 3 x 1 *80 x 80 x 25*	4¼ C *108*	7.0 *3.2*	6 x 6 x 4 *150 x 150 x 100*	6½ C *165*	26.5 *12.0*	16 x 16 x 10 *400 x 400 x 250*	12 *305*	129 *58.5*
3 x 3 x 1¼ *80 x 80 x 32*	4¼ *108*	5.8 *2.6*	6 x 6 x 5 *150 x 150 x 125*	6½ C *165*	28.0 *12.7*	16 x 16 x 12 *400 x 400 x 300*	12 *305*	130 *59.0*
3 x 3 x 1½ *80 x 80 x 40*	4¼ *108*	5.9 *2.7*	8 x 8 x 2 *200 x 200 x 50*	7¾ *197*	32.7 *14.8*	16 x 16 x 14 *400 x 400 x 350*	12 *305*	132 *59.9*
3 x 3 x 2 *80 x 80 x 50*	4¼ C *108*	5.5 *2.5*	8 x 8 x 2½ *200 x 200 x 65*	7¾ *197*	33.0 *15.0*	18 x 18 x 10 *450 x 450 x 250*	15½ *394*	194 *88.0*
3 x 3 x 2½ *80 x 80 x 65*	4¼ *108*	6.3 *2.9*	8 x 8 x 3 *200 x 200 x 80*	7¾ *197*	33.5 *15.2*	18 x 18 x 12 *450 x 450 x 300*	15½ *394*	196 *88.9*
4 x 4 x 1 *100 x 100 x 25*	3¾ *95*	7.0 *3.2*	8 x 8 x 4 *200 x 200 x 100*	7¾ C *197*	50.0 *22.7*	18 x 18 x 14 *450 x 450 x 350*	15½ *394*	201 *91.2*
4 x 4 x 1¼ *100 x 100 x 32*	5 *127*	9.6 *4.4*	8 x 8 x 5 *200 x 200 x 125*	7¾ *197*	34.7 *15.7*	18 x 18 x 16 *450 x 450 x 400*	15½ *394*	203 *92.1*
4 x 4 x 1½ *100 x 100 x 40*	5 *127*	10.2 *4.6*	8 x 8 x 6 *200 x 200 x 150*	7¾C *197*	54.0 *24.5*	20 x 20 x 12 *500 x 500 x 300*	17¼ *438*	246 *111.6*
4 x 4 x 2 *100 x 100 x 50*	5 C *127*	10.2 *4.6*	10 x 10 x 2 *250 x 250 x 50*	9 *229*	52.2 *23.7*	20 x 20 x 14 *500 x 500 x 350*	17¼ *438*	248 *112.5*
4 x 4 x 2½ *100 x 100 x 65*	5 C *127*	11.2 *5.1*	10 x 10 x 2½ *250 x 250 x 65*	9 *229*	52.6 *23.9*	20 x 20 x 16 *500 x 500 x 400*	17¼ *438*	250 *113.4*
4 x 4 x 3 *100 x 100 x 80*	5 C *127*	11.4 *5.2*	10 x 10 x 3 *250 x 250 x 80*	9 *229*	53.0 *24.0*	20 x 20 x 18 *500 x 500 x 450*	17¼ *438*	252 *114.3*
5 x 5 x 1 *125 x 125 x 25*	5½ *140*	13.6 *6.2*	10 x 10 x 4 *250 x 250 x 100*	9 *229*	53.6 *24.3*	24 x 24 x 16 *600 x 600 x 400*	20 *508*	342 *155.1*
5 x 5 x 1¼ *125 x 125 x 32*	5½ *140*	13.7 *6.2*	10 x 10 x 5 *250 x 250 x 125*	9 *229*	54.2 *24.6*	24 x 24 x 18 *600 x 600 x 450*	20 *508*	345 *156.5*
5 x 5 x 1½ *125 x 125 x 40*	5½ *140*	13.8 *6.3*	10 x 10 x 6 *250 x 250 x 150*	9 *229*	55.0 *24.9*	24 x 24 x 20 *600 x 600 x 500*	20 *508*	347 *157.4*

Center to end dimensions and weights may differ from those shown in chart, contact an Anvil Representative for more information.

See Fitting Size chart on page 61 for O.D.

FIG. 7063

Tee w/ Threaded Branch

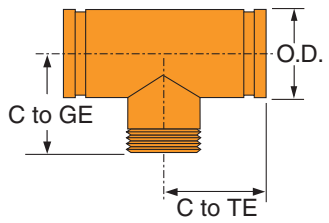


FIGURE 7063
TEE WITH THREADED BRANCH

Nominal Size	O.D.	C to GE	C to TE	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ *57*	2¼ *57*	0.9 *0.4*
1¼ *32*	1.660 *42.2*	2¾ *70*	2¾ *70*	1.4 *0.6*
1½ *40*	1.900 *48.3*	2¾ *70*	2¾ *70*	1.7 *0.8*
2 *50*	2.375 *60.3*	3¼ *83*	4¼ *108*	2.9 *1.3*
2½ *65*	2.875 *73.0*	3¾ *95*	3¾ *95*	4.7 *2.1*
3 *80*	3.500 *88.9*	4¼ *108*	6 *152*	8.1 *3.7*
4 *100*	4.500 *114.3*	5 *127*	7¼ *184*	13.5 *6.1*
5 *125*	5.563 *140*	5½ *140*	5½ *140*	16.7 *7.6*
6 *150*	6.625 *168.3*	6½ *165*	6½ *165*	25.6 *11.6*
8 *200*	8.625 *219.1*	7¾ *197*	7¾ *197*	45.0 *20.4*
10 *250*	10.750 *273.1*	9 *229*	9 *229*	73.0 *33.1*
12 *300*	12.750 *323.9*	10 *254*	10 *254*	98.0 *44.5*

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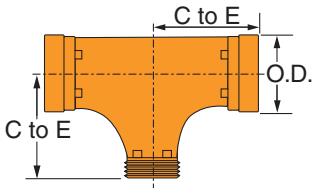
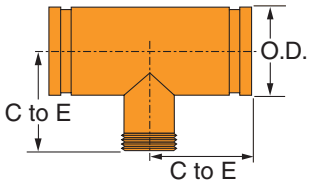
FIG. 7064

Reducing Tee w/ Threaded Branch



Cast



Fabricated

FIGURE 7064 REDUCING TEE WITH THREADED BRANCH

Nominal Size	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs/Kg*
2 x 2 x ¾ *50 x 50 x 20*	3¼ *83*	1.6 *0.7*
2 x 2 x 1 *50 x 50 x 25*	3¼ C *83*	2.6 *1.2*
2 x 2 x 1¼ *50 x 50 x 32*	3¼ *83*	1.7 *0.8*
2 x 2 x 1½ *50 x 50 x 40*	3¼ C *83*	2.7 *1.2*
2½ x 2½ x 1 *65 x 65 x 25*	3¾ *95*	4.1 *1.9*
2½ x 2½ x 1¼ *65 x 65 x 32*	3¾ *95*	4.2 *1.9*
2½ x 2½ x 1½ *65 x 65 x 40*	3¾ *95*	4.3 *2.0*
2½ x 2½ x 2 *65 x 65 x 50*	3¾ *95*	4.4 *2.0*
3 x 3 x ¾ *80 x 80 x 20*	4¼ *108*	5.7 *2.6*
3 x 3 x 1 *80 x 80 x 25*	4¼ C *108*	7.0 *3.2*
3 x 3 x 1¼ *80 x 80 x 32*	4¼ *108*	5.2 *2.4*
3 x 3 x 1½ *80 x 80 x 40*	4¼ *108*	5.3 *2.4*
3 x 3 x 2 *80 x 80 x 50*	4¼ *108*	5.5 *2.5*
3 x 3 x 2½ *80 x 80 x 65*	4¼ *108*	5.8 *2.6*
4 x 4 x ¾ *100 x 100 x 20*	3¾ *95*	7.2 *3.3*
4 x 4 x 1 *100 x 100 x 25*	3¾ *95*	7.0 *3.2*
4 x 4 x 1¼ *100 x 100 x 32*	5 *127*	9.1 *4.1*
4 x 4 x 1½ *100 x 100 x 40*	5 *127*	9.2 *4.2*
4 x 4 x 2 *100 x 100 x 50*	5 *127*	10.2 *4.6*
4 x 4 x 2½ *100 x 100 x 65*	5 *127*	11.2 *5.1*
4 x 4 x 3 *100 x 100 x 80*	5 *127*	11.4 *5.2*
5 x 5 x 2 *125 x 125 x 50*	5½ *140*	14.5 *6.6*
5 x 5 x 2½ *125 x 125 x 65*	5½ *140*	17.5 *7.9*
5 x 5 x 3 *125 x 125 x 80*	5½ *140*	16.1 *7.3*
5 x 5 x 4 *125 x 125 x 100*	5½ *140*	17.9 *8.1*
6 x 6 x 2 *150 x 150 x 50*	6½ *165*	26.4 *12.0*
6 x 6 x 2½ *150 x 150 x 65*	6½ *165*	26.5 *12.0*
6 x 6 x 3 *150 x 150 x 80*	6½ *165*	26.5 *12.0*
6 x 6 x 4 *150 x 150 x 100*	6½ *165*	26.5 *12.0*
6 x 6 x 5 *150 x 150 x 125*	6½ *165*	28.0 *12.7*
8 x 8 x 2 *200 x 200 x 50*	7¾ *197*	37.5 *17.0*
8 x 8 x 2½ *200 x 200 x 65*	7¾ *197*	38.0 *17.2*
8 x 8 x 3 *200 x 200 x 80*	7¾ *197*	38.7 *17.6*
8 x 8 x 4 *200 x 200 x 100*	7¾ *197*	50.0 *22.7*
8 x 8 x 5 *200 x 200 x 125*	7¾ *197*	41.0 *18.6*
8 x 8 x 6 *200 x 200 x 150*	7¾ *197*	54.0 *24.5*
10 x 10 x 2 *250 x 250 x 50*	9 *229*	61.8 *28.0*
10 x 10 x 3 *250 x 250 x 80*	9 *229*	63.0 *28.6*
10 x 10 x 4 *250 x 250 x 100*	9 *229*	64.0 *29.0*
10 x 10 x 5 *250 x 250 x 125*	9 *229*	65.1 *29.5*
10 x 10 x 6 *250 x 250 x 150*	9 *229*	55.0 *24.9*
10 x 10 x 8 *250 x 250 x 200*	9 *229*	64.7 *29.3*
12 x 12 x 3 *300 x 300 x 80*	10 *254*	84.9 *38.5*
12 x 12 x 4 *300 x 300 x 100*	10 *254*	85.8 *38.9*
12 x 12 x 5 *300 x 300 x 125*	10 *254*	87.0 *39.5*
12 x 12 x 6 *300 x 300 x 150*	10 *254*	88.3 *40.1*
12 x 12 x 8 *300 x 300 x 200*	10 *254*	91.2 *41.4*
12 x 12 x 10 *300 x 300 x 250*	10 *254*	94.8 *43.0*
14 x 14 x 8 *350 x 350 x 200*	11 *279*	110.0 *49.7*
14 x 14 x 10 *350 x 350 x 250*	11 *279*	114.0 *51.5*
14 x 14 x 12 *350 x 350 x 300*	11 *279*	117.0 *52.8*
16 x 16 x 8 *400 x 400 x 200*	12 *305*	135.0 *61.2*
16 x 16 x 10 *400 x 400 x 250*	12 *305*	139.0 *63.0*
16 x 16 x 12 *400 x 400 x 300*	12 *305*	142.0 *64.4*
18 x 18 x 10 *450 x 450 x 250*	15½ *394*	204.0 *92.5*
18 x 18 x 12 *450 x 450 x 300*	15½ *394*	209.0 *94.8*
18 x 18 x 14 *450 x 450 x 350*	15½ *0*	211.0 *95.7*
18 x 18 x 16 *450 x 450 x 400*	15½ *0*	216.0 *98.0*
24 x 24 x 8 *600 x 600 x 200*	20 *508*	334.0 *152*
24 x 24 x 10 *600 x 600 x 250*	20 *508*	342.0 *155*
24 x 24 x 12 *600 x 600 x 300*	20 *508*	349.0 *158*

C - Cast ductile iron, all others are fabricated steel.

See Fitting Size chart on page 61 for O.D.

FIG. 7076

Gr x Thd Concentric Reducers

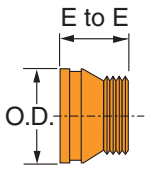


FIGURE 7076 – CONCENTRIC REDUCER GROOVE BY THREAD

Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1½ x 1 *40 x 25*	2½ *6 4*	0.6 *0.3*
2 x ¾ *50 x 80*	2½ *64*	1.0 *0.5*
2 x 1 *50 x 25*	2½ *64*	0.8 *0.4*
2 x 1¼ *50 x 32*	2½ *64*	1.3 *0.6*
2 x 1½ *50 x 40*	2½ *64*	1.3 *0.6*
2½ x 1 *65 x 25*	2½ *64*	1.0 *0.5*
2½ x 1¼ *65 x 32*	2½ *64*	1.0 *0.5*
2½ x 1½ *65 x 40*	2½ *64*	1.3 *0.6*
2½ x 2 *65 x 50*	2½ *64*	1.2 *0.5*
3 x ¾ *80 x 80*	2½ *64*	1.2 *0.5*
3 x 1 *80 x 25*	2½ *64*	1.2 *0.5*
3 x 1¼ *80 x 32*	2½ *64*	1.3 *0.6*
3 x 1½ *80 x 40*	2½ *64*	1.3 *0.6*
3 x 2 *80 x 50*	2½ *64*	1.3 *0.6*
3 x 2½ *80 x 65*	2½ *64*	1.5 *0.7*
4 x 1 *100 x 25*	3 *76*	2.2 *1.0*
4 x 1¼ *100 x 32*	3 *76*	2.3 *1.0*
4 x 1½ *100 x 40*	3 *76*	2.3 *1.0*
4 x 2 *100 x 50*	3 *76*	2.3 *1.0*
4 x 2½ *100 x 65*	3 *76*	2.3 *1.0*
4 x 3 *100 x 80*	3 *76*	2.6 *1.2*
5 x 4 *125 x 100*	3½ *89*	4.5 *2.0*
6 x 1 *150 x 25*	4 *102*	6.0 *2.7*
6 x 1¼ *150 x 32*	4 *102*	6.0 *2.7*
6 x 1½ *150 x 40*	4 *102*	6.0 *2.7*
6 x 2 *150 x 50*	4 *102*	6.0 *2.7*
6 x 3 *150 x 80*	4 *102*	6.0 *2.7*
6 x 4 *150 x 100*	4 *102*	5.9 *2.7*

All are Fabricated Steel.
See Fitting Size chart on page 61 for O.D.

FIG. 7073 & FIG. 7097

Eccentric Reducers

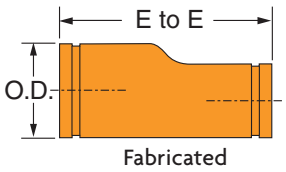


Fig. 7073– Gr. x Gr.

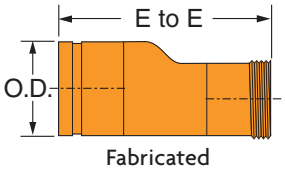


Fig. 7097 – Gr. x Thd.

FIGURE 7073 & 7097 ECCENTRIC REDUCER

Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ x 1 *32 x 25*	8½ *216*	1.5 *0.7*
1½ x ¾ *40 x 20*	8½ *216*	1.6 *0.7*
1½ x 1 *40 x 25*	8½ *216*	1.7 *0.8*
1½ x 1¼ *40 x 32*	8½ *216*	4.5 *2.0*
2 x ¾ *50 x 80*	9 *229*	2.1 *1.0*
2 x 1 *50 x 25*	9 *229*	2.2 *1.0*
2 x 1¼ *50 x 32*	9 *229*	2.4 *1.1*
2 x 1½ *50 x 40*	9 *229*	2.5 *1.1*
2½ x 1 *65 x 25*	9½ *241*	3.2 *1.5*
2½ x 1¼ *65 x 32*	9½ *241*	3.4 *1.5*
2½ x 1½ *65 x 40*	9½ *241*	3.6 *1.6*
2½ x 2 *65 x 50*	9½ *241*	4.0 *1.8*
3 x 1 *80 x 25*	9½ *241*	4.0 *1.8*
3 x 1¼ *80 x 32*	9½ *241*	4.3 *2.0*
3 x 1½ *80 x 40*	9½ *241*	4.5 *2.0*
3 x 2 *80 x 50*	9½ *241*	4.8 *2.2*
3 x 2½ *80 x 65*	9½ *241*	5.6 *2.5*
3½ x 3 *90 x 80*	9½ *241*	6.6 *3.0*
4 x 1 *100 x 25*	10 *254*	5.9 *2.7*
4 x 1½ *100 x 40*	10 *254*	6.4 *2.9*
4 x 2 *100 x 50*	10 *254*	6.7 *3.0*
4 x 2½ *100 x 65*	10 *254*	7.3 *3.3*
4 x 3 *100 x 80*	10 *254*	7.9 *3.6*
5 x 2 *125 x 50*	11 *279*	9.3 *4.2*
5 x 2½ *125 x 65*	11 *279*	9.9 *4.5*
5 x 3 *125 x 80*	11 *279*	10.7 *4.9*
5 x 4 *125 x 100*	11 *279*	11.9 *5.4*
6 x 1 *150 x 25*	11½ *292*	12.0 *5.4*
6 x 1½ *150 x 40*	11½ *292*	12.1 *5.5*
6 x 2 *150 x 50*	11½ *292*	12.2 *5.5*
6 x 2½ *150 x 65*	11½ *292*	12.8 *5.8*
6 x 3 *150 x 80*	11½ *292*	13.6 *6.2*
6 x 4 *150 x 100*	11½ *292*	14.9 *6.8*
6 x 5 *150 x 125*	11½ *292*	16.2 *7.3*
8 x 3 *200 x 80*	12 *305*	17.9 *8.1*
8 x 4 *200 x 100*	12 *305*	19.7 *8.9*
8 x 5 *200 x 125*	12 *305*	21.4 *9.7*
8 x 6 *200 x 150*	12 *305*	23.2 *10.5*
10 x 4 *250 x 100*	13 *330*	29.7 *13.5*
10 x 5 *250 x 125*	13 *330*	31.7 *14.4*
10 x 6 *250 x 150*	13 *330*	34.0 *15.4*
10 x 8 *250 x 200*	13 *330*	34.4 *15.6*
12 x 6 *300 x 150*	14 *356*	45.2 *20.5*
12 x 8 *300 x 200*	14 *356*	47.7 *21.6*
12 x 10 *300 x 250*	14 *356*	52.0 *23.6*
14 x 6 *350 x 150*	13 *330*	78 *35.4*
14 x 8 *350 x 200*	13 *330*	80 *36.3*
14 x 10 *350 x 250*	13 *330*	84 *38.1*
14 x 12 *350 x 300*	13 *330*	88 *39.9*
16 x 8 *400 x 200*	14 *356*	91 *41.3*
16 x 10 *400 x 250*	14 *356*	96 *43.5*
16 x 12 *400 x 300*	14 *356*	99 *44.9*
16 x 14 *400 x 350*	14 *356*	104 *47.2*
18 x 10 *450 x 250*	15 *381*	110 *49.9*
18 x 12 *450 x 300*	15 *381*	113 *51.3*
18 x 14 *450 x 350*	15 *381*	117 *53.1*
18 x 16 *450 x 400*	15 *381*	121 *54.9*
20 x 10 *500 x 250*	20 *508*	145 *65.8*
20 x 12 *500 x 300*	20 *508*	149 *67.6*
20 x 14 *500 x 350*	20 *508*	152 *68.9*
20 x 16 *500 x 400*	20 *508*	156 *70.8*
20 x 18 *500 x 450*	20 *508*	160 *72.6*
24 x 12 *600 x 300*	20 *508*	179 *81.2*
24 x 14 *600 x 350*	20 *508*	184 *83.5*
24 x 16 *600 x 400*	20 *508*	189 *85.7*
24 x 18 *600 x 450*	20 *508*	194 *88*
24 x 20 *600 x 500*	20 *508*	199 *90.3*

Fabricated Steel *Figure 7097 is available in sizes 1¼ x 1 through 12 x 10.
Center to end dimensions may differ from those shown above. Contact an Anvil Representative for more information.
See Fitting Size chart on page 61 for O.D.

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FIG. 7077, FIG. 7078 & FIG. 7079

Swaged Nipples

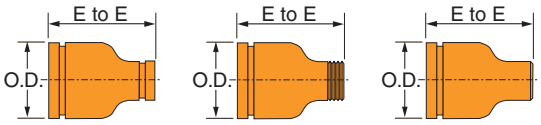

Fig. 7077 Gr x Gr | Fig. 7078 Gr x Thd | Fig. 7079 Gr x Bev

FIGURE 7077, 7078 & 7079 SWAGED NIPPLES

Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	Lbs./Kg
2 x 1 50 x 25	6½ C 165	2.0 0.9
2 x 1¼ 50 x 32	6½ 165	2.0 0.9
2 x 1½ 50 x 40	6½ 165	2.0 0.9
2½ x 1 65 x 25	7 178	3.5 1.6
2½ x 1¼ 65 x 32	7 178	3.5 1.6
2½ x 1½ 65 x 40	7 178	3.5 1.6
2½ x 2 65 x 50	7 178	3.5 1.6
3 x 1 80 x 25	8 203	5.0 2.3
3 x 1¼ 80 x 32	8 203	5.0 2.3
3 x 1½ 80 x 40	8 203	5.0 2.3
3 x 2 80 x 50	8 203	5.0 2.3
3 x 2½ 80 x 65	8 203	5.0 2.3
3½ x 3 90 x 80	8 203	7.0 3.2
4 x 1 100 x 25	9 229	8.0 3.6
4 x 1¼ 100 x 32	9 229	8.0 3.6
4 x 1½ 100 x 40	9 229	8.0 3.6
4 x 2 100 x 50	9 229	8.0 3.6

Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	Lbs./Kg
4 x 2½ 100 x 65	9 229	8.0 3.6
4 x 3 100 x 80	9 229	8.0 3.6
4 x 3½ 100 x 90	9 229	8.0 3.6
5 x 2 125 x 50	11 279	12.0 5.4
5 x 2½ 125 x 65	11 279	12.0 5.4
5 x 3 125 x 80	11 279	12.0 5.4
5 x 4 125 x 100	11 279	12.0 5.4
6 x 1 150 x 25	12 305	19.0 8.6
6 x 1¼ 150 x 32	12 305	19.0 8.6
6 x 1½ 150 x 40	12 305	19.0 8.6
6 x 2 150 x 50	12 305	19.0 8.6
6 x 2½ 150 x 65	12 305	19.0 8.6
6 x 3 150 x 80	12 305	19.0 8.6
6 x 3½ 150 x 90	12 305	17.0 7.7
6 x 4 150 x 100	12 305	19.0 8.6
6 x 5 150 x 125	12 305	19.0 8.6

This product is not ULC Listed.
See Fitting Size chart on page 61 for O.D.

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FIG. 7072

Gr x Gr Concentric Reducer

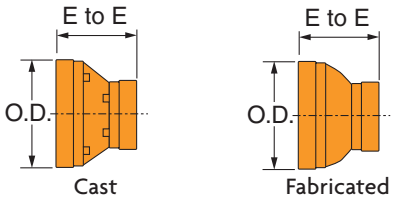

FIGURE 7072 CONCENTRIC REDUCER

Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	Lbs/Kg
1¼ x 1 32 x 25	2½ 64	0.6 0.3
1½ x 1 40 x 25	2½ 64	0.6 0.3
1½ x 1¼ 40 x 32	2½ 64	0.6 0.3
2 x 1 50 x 25	2½ 64	0.8 0.4
2 x 1¼ 50 x 32	2½ C 64	1.3 0.6
2 x 1½ 50 x 40	2½ C 64	1.3 0.6
2½ x 1 65 x 25	2½ 64	1.0 0.5
2½ x 1¼ 65 x 32	2½ 64	1.0 0.5
2½ x 1½ 65 x 40	2½ 64	1.3 0.6
2½ x 2 65 x 50	2½ C 64	1.6 0.7
3 x 1 80 x 25	2½ 64	1.2 0.5
3 x 1¼ 80 x 32	2½ 64	1.3 0.6
3 x 1½ 80 x 40	2½ 64	1.3 0.6
3 x 2 80 x 50	2½ C 64	1.4 0.6
3 x 2½ 80 x 65	2½ C 64	1.5 0.7
3½ x 3 90 x 80	3 76	1.8 0.8
4 x 1 100 x 25	3 76	2.2 1.0
4 x 1¼ 100 x 32	3 76	2.2 1.0
4 x 1½ 100 x 40	3 76	2.3 1.0
4 x 2 100 x 50	3 C 76	2.4 1.1
4 x 2½ 100 x 65	3 C 76	2.6 1.2
4 x 3 100 x 80	3 C 76	3.2 1.5
4 x 3½ 100 x 90	3 76	3.6 1.6

Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	Lbs/Kg
5 x 2 125 x 50	3½ 89	4.6 2.1
5 x 2½ 125 x 65	3½ 89	4.5 2.0
5 x 3 125 x 80	3½ 89	4.4 2.0
5 x 4 125 x 100	3½ C 89	4.5 2.0
6 x 1 150 x 25	4 102	6.8 3.1
6 x 1½ 150 x 40	4 102	6.9 3.1
6 x 2 150 x 50	4 C 102	6.0 2.7
6 x 2½ 150 x 65	4 102	6.0 2.7
6 x 3 150 x 80	4 C 102	5.4 2.4
6 x 4 150 x 100	4 C 102	5.6 2.5
6 x 5 150 x 125	4 C 102	6.0 2.7
8 x 3 200 x 80	5 127	12.0 5.5
8 x 4 200 x 100	5 C 127	9.0 4.1
8 x 5 200 x 125	5 127	11.5 5.2
8 x 6 200 x 150	5 C 127	10.6 4.8
10 x 4 250 x 100	6 152	20 9.1
10 x 5 250 x 125	6 152	20 9.1
10 x 6 250 x 150	6 C 152	20 9.1
10 x 8 250 x 200	6 152	23.9 10.8
12 x 4 300 x 100	7 178	25 11.3
12 x 6 300 x 150	7 178	29 13.2
12 x 8 300 x 200	7 178	29 13.2
12 x 10 300 x 250	7 178	32.4 14.7

Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	Lbs/Kg
14 x 6 350 x 150	13 330	54.3 24.6
14 x 8 350 x 200	13 330	54.5 24.7
14 x 10 350 x 250	13 330	55.7 25.3
14 x 12 350 x 300	13 330	57.3 26.0
16 x 8 400 x 200	14 356	65.4 29.7
16 x 10 400 x 250	14 356	66.7 30.3
16 x 12 400 x 300	14 356	68.1 30.9
16 x 14 400 x 350	14 356	71.0 32.2
18 x 10 450 x 250	15 381	82.3 37.3
18 x 12 450 x 300	15 381	83.6 37.9
18 x 14 450 x 350	15 381	86.2 39.1
18 x 16 450 x 400	15 381	87.2 39.6
20 x 10 500 x 250	20 508	123.0 55.8
20 x 12 500 x 300	20 508	125.0 56.7
20 x 14 500 x 350	20 508	129.0 58.5
20 x 16 500 x 400	20 508	131.0 59.4
20 x 18 500 x 450	20 508	133.0 60.3
24 x 10 600 x 250	20 508	147.0 66.7
24 x 12 600 x 300	20 508	149.0 67.6
24 x 14 600 x 350	20 508	152.0 68.9
24 x 16 600 x 400	20 508	153.0 69.4
24 x 18 600 x 450	20 508	154.0 69.9
24 x 20 600 x 500	20 508	155.0 70.3

C - Cast ductile iron, all others are fabricated steel.

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FIG. 7069

45° Lateral

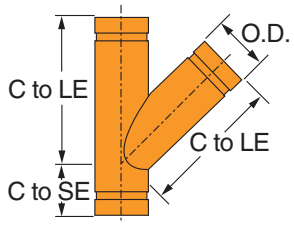

FIGURE 7069 LATERAL

Nominal Size	O.D.	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	5 *127*	2¼ *57*	1.5 *0.7*
1¼ *32*	1.660 *42.2*	5¾ *146*	2½ *64*	2.5 *1.1*
1½ *40*	1.900 *48.3*	6¼ *159*	2¾ *70*	3.5 *1.6*
2 *50*	2.375 *60.3*	7 *178*	2¾ *70*	4.5 *2.0*
2½ *65*	2.875 *73.0*	7¾ *197*	3 *76*	10.0 *4.5*
3 *80*	3.500 *88.9*	8½ *216*	3¼ *83*	11.0 *5.0*
3½ *90*	4.000 *101.6*	10 *254*	3½ *89*	14.0 *6.4*
4 *100*	4.500 *114.3*	10½ *267*	3¾ *95*	18.3 *8.3*
5 *125*	5.563 *141.3*	12½ *318*	4 *102*	30.0 *13.6*
6 *150*	6.625 *168.3*	14 *356*	4½ *114*	46.6 *21.1*
8 *200*	8.625 *219.1*	18 *457*	6 *152*	82.8 *37.6*
10 *250*	10.750 *273.1*	20½ *521*	6½ *165*	127 *57.4*
12 *300*	12.750 *323.9*	23 *584*	7 *178*	165 *74.8*
14 *350*	14.000 *355.6*	26½ *673*	7½ *191*	215 *97.5*
16 *400*	16.000 *406.4*	29 *737*	8 *203*	345 *157*
18 *450*	18.000 *457.2*	32 *813*	8½ *216*	425 *193*
20 *500*	20.000 *508.0*	35 *889*	9 *229*	517 *235*
24 *600*	24.000 *609.6*	40 *1016*	10 *254*	940 *426*

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FIG. 7070

45° Reducing Lateral

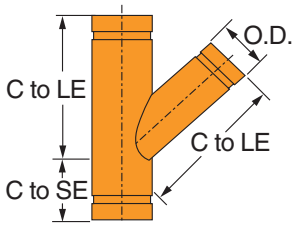

FIGURE 7070 REDUCING LATERAL

Nominal Size	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
3 x 3 x 2 *80 x 80 x 50*	8½ *216*	3¼ *83*	9.8 *4.4*
3 x 3 x 2½ *80 x 80 x 65*	8½ *216*	3¼ *83*	11.5 *5.2*
4 x 4 x 2 *100 x 100 x 50*	10½ *267*	3¾ *95*	15.5 *7.0*
4 x 4 x 2½ *100 x 100 x 65*	10½ *267*	3¾ *95*	17.0 *7.7*
4 x 4 x 3 *100 x 100 x 80*	10½ *267*	3¾ *95*	18.5 *8.4*
5 x 5 x 2 *125 x 125 x 50*	12½ *318*	4 *102*	22.5 *10.2*
5 x 5 x 3 *125 x 125 x 80*	12½ *318*	4 *102*	26.5 *12.0*
5 x 5 x 4 *125 x 125 x 100*	12½ *318*	4 *102*	30.5 *13.8*
6 x 6 x 2 *150 x 150 x 50*	14 *356*	4½ *114*	33.0 *15.0*
6 x 6 x 3 *150 x 150 x 80*	14 *356*	4½ *114*	37.0 *16.8*
6 x 6 x 4 *150 x 150 x 100*	14 *356*	4½ *114*	40.0 *18.1*
6 x 6 x 5 *150 x 150 x 125*	14 *356*	4½ *114*	45.0 *20.4*
8 x 8 x 4 *200 x 200 x 100*	18 *457*	6 *152*	59.6 *27.0*
8 x 8 x 5 *200 x 200 x 125*	18 *457*	6 *152*	68.0 *30.8*
8 x 8 x 6 *200 x 200 x 150*	18 *457*	6 *152*	75.0 *34.0*
10 x 10 x 4 *250 x 250 x 100*	20½ *521*	6½ *165*	83.0 *37.6*
10 x 10 x 5 *250 x 250 x 125*	20½ *521*	6½ *165*	100.0 *45.4*
10 x 10 x 6 *250 x 250 x 150*	20½ *521*	6½ *165*	105.0 *47.6*
10 x 10 x 8 *250 x 250 x 200*	20½ *521*	6½ *165*	116.0 *52.6*
12 x 12 x 4 *300 x 300 x 100*	23 *584*	7 *178*	137.0 *62.1*
12 x 12 x 5 *300 x 300 x 125*	23 *584*	7 *178*	138.0 *62.6*
12 x 12 x 6 *300 x 300 x 150*	23 *584*	7 *178*	140.0 *63.5*
12 x 12 x 8 *300 x 300 x 200*	23 *584*	7 *178*	147.0 *66.7*

Nominal Size	Center to Long End	Center to Short End	Approx. Wt.Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
12 x 12 x 10 *300 x 300 x 250*	23 *584*	7 *178*	168 *76.2*
14 x 14 x 4 *350 x 350 x 100*	26½ *673*	7½ *191*	173 *78.5*
14 x 14 x 6 *350 x 350 x 150*	26½ *673*	7½ *191*	185 *83.9*
14 x 14 x 8 *350 x 350 x 200*	26½ *673*	7½ *191*	195 *88.5*
14 x 14 x 10 *350 x 350 x 250*	26½ *673*	7½ *191*	223 *101*
14 x 14 x 12 *350 x 350 x 300*	26½ *673*	7½ *191*	240 *109*
16 x 16 x 6 *400 x 400 x 150*	29 *737*	8 *203*	235 *107*
16 x 16 x 8 *400 x 400 x 200*	29 *737*	8 *203*	250 *113*
16 x 16 x 10 *400 x 400 x 250*	29 *737*	8 *203*	263 *119*
16 x 16 x 12 *400 x 400 x 300*	29 *737*	8 *203*	283 *128*
16 x 16 x 14 *400 x 400 x 350*	29 *737*	8 *203*	307 *139*
18 x 18 x 6 *450 x 450 x 150*	32 *813*	8½ *216*	275 *125*
18 x 18 x 8 *450 x 450 x 200*	32 *813*	8½ *216*	306 *139*
18 x 18 x 10 *450 x 450 x 250*	32 *813*	8½ *216*	321 *146*
18 x 18 x 12 *450 x 450 x 300*	32 *4813*	8½ *216*	333 *151*
18 x 18 x 14 *450 x 450 x 350*	32 *813*	8½ *216*	358 *162*
18 x 18 x 16 *450 x 450 x 400*	32 *813*	8½ *216*	382 *173*
20 x 20 x 12 *500 x 500 x 300*	35 *889*	9 *229*	390 *177*
20 x 20 x 14 *500 x 500 x 350*	35 *889*	9 *229*	410 *186*
20 x 20 x 16 *500 x 500 x 400*	35 *889*	9 *229*	440 *200*
24 x 24 x 16 *600 x 600 x 400*	40 *1016*	10 *254*	725 *329*
24 x 24 x 20 *600 x 600 x 500*	40 *1016*	10 *254*	785 *356*

See Fitting Size chart on page 61 for O.D.

FIG. 7066 – Tee Wye

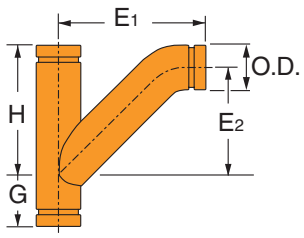

FIGURE 7066 TEE WYE

Nominal Size	G	H	E1	E2	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 x 2 x 2 *50 x 50 x 50*	2¾ *70*	7 *178*	9 *229*	4⅝ *117*	6.4 *2.9*
2½ x 2½ x 2½ *65 x 65 x 65*	3 *76*	7¾ *197*	10½ *267*	5¾ *146*	11.5 *5.2*
3 x 3 x 3 *80 x 80 x 80*	3¼ *83*	8½ *216*	11½ *292*	6½ *165*	16.5 *7.5*
3½ x 3½ x 3½ *90 x 90 x 90*	3½ *89*	10 *254*	13 *330*	7¾ *197*	22 *10.0*
4 x 4 x 3 *100 x 100 x 80*	3¾ *95*	10½ *267*	12⅞ *327*	7⅞ *200*	23 *10.4*
4 x 4 x 4 *100 x 100 x 100*	3¾ *95*	10½ *267*	13⅝ *346*	8⅛ *206*	26 *11.8*
5 x 5 x 3 *125 x 125 x 80*	4 *102*	12½ *318*	14¼ *362*	9¼ *235*	32 *14.5*
5 x 5 x 4 *125 x 125 x 100*	4 *102*	12½ *318*	15⅛ *384*	9⅝ *244*	35 *15.9*
5 x 5 x 5 *125 x 125 x 125*	4 *102*	12½ *318*	16⅛ *410*	10 *254*	40 *18.1*
6 x 6 x 3 *150 x 150 x 80*	4½ *114*	14 *356*	15 5/16 *389*	10 5/16 *262*	50 *22.7*
6 x 6 x 4 *150 x 150 x 100*	4½ *114*	14 *356*	16¼ *413*	10¾ *273*	55 *24.9*
6 x 6 x 5 *150 x 150 x 125*	4½ *114*	14 *356*	17¼ *438*	11⅛ *283*	58 *26.3*
6 x 6 x 6 *150 x 150 x 150*	4½ *114*	14 *356*	18¼ *464*	11½ *292*	60.5 *27.4*
8 x 8 x 3 *200 x 200 x 80*	6 *152*	18 *457*	18 3/16 *462*	13 3/16 *335*	100 *45.4*
8 x 8 x 4 *200 x 200 x 100*	6 *152*	18 *457*	19 *483*	13½ *343*	110 *49.9*
8 x 8 x 5 *200 x 200 x 125*	6 *152*	18 *457*	20 *508*	13⅞ *352*	111 *50.3*
8 x 8 x 6 *200 x 200 x 150*	6 *152*	18 *457*	21⅛ *537*	14⅜ *365*	112 *50.8*
8 x 8 x 8 *200 x 200 x 200*	6 *152*	18 *457*	23¼ *591*	15¼ *387*	120 *54.4*
10 x 10 x 3 *250 x 250 x 80*	6½ *165*	20½ *521*	19⅞ *505*	14⅞ *378*	130 *59.0*
10 x 10 x 4 *250 x 250 x 100*	6½ *165*	20½ *521*	20¾ *527*	15¼ *387*	135 *61.2*
10 x 10 x 5 *250 x 250 x 125*	6½ *165*	20½ *521*	21⅞ *556*	15¾ *400*	140 *63.5*
10 x 10 x 6 *250 x 250 x 150*	6½ *165*	20½ *521*	22⅞ *581*	16⅛ *410*	145 *65.8*
10 x 10 x 8 *250 x 250 x 200*	6½ *165*	20½ *521*	27¼ *692*	19¼ *489*	150 *68.0*
10 x 10 x 10 *250 x 250 x 250*	6½ *165*	20½ *521*	27¼ *692*	18 *457*	190 *86.2*
12 x 12 x 12 *300 x 300 x 300*	7 *178*	23 *584*	31 *787*	20½ *521*	240 *109*

FIG. 7067 – Reducing Tee Wye

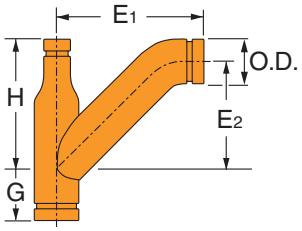

FIGURE 7067 REDUCING TEE WYE

Nominal Size	G	H	E1	E2	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
4 x 3 x 3 *100 x 80 x 80*	1⅝ *41*	7⅜ *187*	10¾ *273*	5⅝ *143*	16.0 *7.3*
4 x 3 x 4 *100 x 80 x 100*	3¾ *95*	10½ *267*	13⅝ *346*	8⅛ *206*	27.0 *12.2*
5 x 3 x 3 *125 x 80 x 80*	1¼ *32*	9¾ *248*	11½ *292*	6½ *165*	25.0 *11.3*
5 x 3 x 5 *125 x 80 x 125*	4 *102*	12½ *318*	16⅛ *410*	10 *254*	44.0 *20.0*
5 x 4 x 3 *125 x 100 x 80*	1⅞ *48*	9⅛ *232*	11⅞ *302*	6⅞ *175*	21.0 *9.5*
5 x 4 x 4 *125 x 100 x 100*	1⅞ *48*	9⅛ *232*	12¾ *324*	7¼ *184*	25.0 *11.3*
6 x 4 x 6 *150 x 100 x 150*	4½ *114*	14 *356*	18¼ *464*	11½ *292*	61.0 *27.7*
6 x 5 x 3 *150 x 125 x 80*	1¼ *32*	10¾ *273*	13 *330*	8 *203*	27.0 *12.2*
6 x 5 x 4 *150 x 125 x 100*	1¼ *32*	10¾ *273*	13⅞ *352*	8⅜ *213*	31.0 *14.1*
8 x 6 x 4 *200 x 150 x 100*	1 *25*	12 *305*	14¾ *375*	9¼ *235*	45.0 *20.4*
8 x 6 x 8 *200 x 150 x 200*	6 *152*	18 *457*	23¼ *591*	15¼ *387*	95.0 *43.1*

FIG. 7071 – True Wye

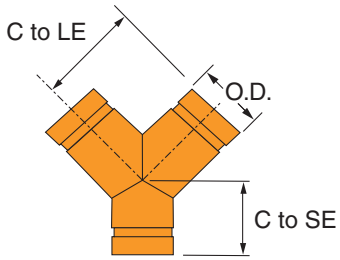

FIGURE 7071 TRUE WYE

Nominal Size	O.D.	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ *57*	2¼ *57*	1.1 *0.5*
1¼ *32*	1.660 *42.2*	2¾ *70*	2½ *64*	1.5 *0.7*
1½ *40*	1.900 *48.3*	2¾ *70*	2¾ *70*	1.8 *0.8*
2 *50*	2.375 *60.3*	3¼ *83*	2¾ *70*	2.3 *1.0*
2½ *65*	2.875 *73.0*	3¾ *95*	3 *76*	5.0 *2.3*
3 *80*	3.500 *88.9*	4¼ *108*	3¼ *83*	6.1 *2.8*
3½ *90*	4.000 *101.6*	4½ *114*	3½ *89*	8.3 *3.8*
4 *100*	4.500 *114.3*	5 *127*	3¾ *95*	10.5 *4.8*
5 *125*	5.563 *141.3*	5½ *140*	4 *102*	15 *6.8*
6 *150*	6.625 *168.3*	6½ *165*	4½ *114*	21.6 *9.8*
8 *200*	8.625 *219.1*	7¾ *197*	6 *152*	36.0 *16.3*
10 *250*	10.750 *273.1*	9 *229*	6½ *165*	51.0 *23.1*
12 *300*	12.750 *323.9*	10 *254*	7 *178*	160.0 *72.6*
14 *350*	14.000 *355.6*	11 *279*	7½ *191*	136.0 *61.7*
16 *400*	16.000 *406.4*	12 *305*	8 *203*	166.0 *75.3*
18 *450*	18.000 *457.2*	15½ *394*	8½ *216*	234 *106*
20 *500*	20.000 *508.0*	17¼ *438*	9 *229*	281 *128*
24 *600*	24.000 *609.6*	20 *508*	10 *254*	523 *237*

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See Fitting Size chart on page 61 for O.D.

FIG. 7087 GR X FPT

Female Thread Adapter

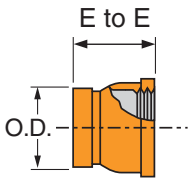

FIGURE 7087 FEMALE THREAD ADAPTER

Nominal Size	Grooved End O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2 1/16 *52*	0.7 *0.3*
1 1/4 *32*	1.660 *42.2*	2 5/16 *59*	1.4 *0.6*
1 1/2 *40*	1.900 *48.3*	2 5/16 *59*	1.5 *0.7*
2 *50*	2.375 *60.3*	2 1/2 *64*	1.6 *0.7*
2 1/2 *65*	2.875 *73.0*	2 3/4 *70*	1.6 *0.7*
3 *80*	3.500 *88.9*	2 3/4 *70*	2.5 *1.1*
4 *100*	4.500 *114.3*	3 1/4 *83*	4.5 *2.0*

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FIG. 7055 GR X MPT

90° Adapter Elbow

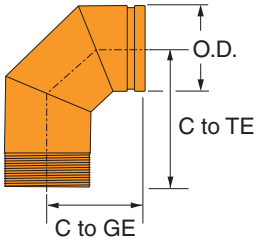

FIGURE 7055 90° ADAPTER ELBOW

Nominal Size	Fitting O.D.	Center to Grooved End	Center to Threaded End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2 1/4 *57*	2 1/4 *57*	0.6 *0.3*
1 1/4 *32*	1.660 *42.2*	2 3/4 *70*	2 3/4 *70*	1.0 *0.5*
1 1/2 *40*	1.900 *48.3*	2 3/4 *70*	2 3/4 *70*	1.2 *0.5*
2 *50*	2.375 *60.3*	3 1/4 *83*	4 1/4 *108*	2.3 *1.0*
2 1/2 *65*	2.875 *73.0*	3 3/4 *95*	3 3/4 *95*	3.7 *1.7*
3 *80*	3.500 *88.9*	4 1/4 *108*	6 *152*	6.5 *2.9*
3 1/2 *90*	4.000 *101.6*	4 1/2 *114*	6 1/4 *159*	8.2 *3.7*
4 *100*	4.500 *114.3*	5 *127*	7 1/4 *184*	11 *5.0*
6 *150*	6.625 *168.3*	6 1/2 *165*	6 1/2 *165*	19.8 *9.0*

FIG. 7056 GR X MPT

45° Adapter Elbow

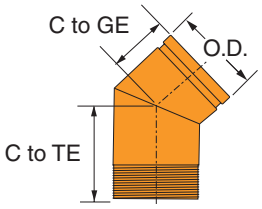

FIGURE 7056 45° ADAPTER ELBOW

Nominal Size	Fitting O.D.	Center to Grooved End	Center to Threaded End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	1 3/4 *44*	1 3/4 *44*	0.6 *0.3*
1 1/4 *32*	1.660 *42.2*	1 3/4 *44*	1 3/4 *44*	0.7 *0.3*
1 1/2 *40*	1.900 *48.3*	1 3/4 *44*	1 3/4 *44*	0.8 *0.4*
2 *50*	2.375 *60.3*	2 *51*	3 *76*	1.6 *0.7*
2 1/2 *65*	2.875 *73.0*	2 1/4 *57*	2 1/4 *57*	2.2 *1.0*
3 *80*	3.500 *88.9*	2 1/2 *64*	4 1/4 *108*	4.3 *2.0*
3 1/2 *90*	4.000 *101.6*	2 3/4 *70*	2 3/4 *70*	4.2 *1.9*
4 *100*	4.500 *114.3*	3 *76*	5 1/4 *133*	7.5 *3.4*
6 *150*	6.625 *168.3*	3 1/2 *89*	3 1/2 *89*	11.1 *5.0*

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REDUCING BASE SUPPORT ELBOW

FIG. 7050RF – Grooved x 150# Flanged (GxF)

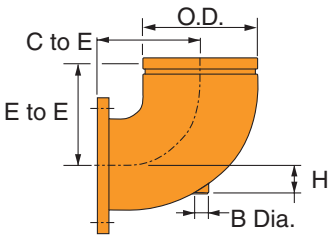

FIGURE 7050RF REDUCING BASE SUPPORT ELBOW

Nominal Size	Grooved End O.D.	Center to End	H	B Dia. Threaded	Approx. Wt. Ea. GxF
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*NPSC*	*Lbs./Kg*
5 x 4 *125 x 100*	5.563 *141.3*	12 *305*	2 1/2 *64*	1 1/2 *38*	36.5 *16.6*
6 x 4 *150 x 100*	6.625 *168.3*	12 *305*	2 1/2 *64*	1 1/2 *38*	38.5 *17.5*
6 x 5 *150 x 125*	6.625 *168.3*	12 1/2 *318*	2 1/2 *64*	1 1/2 *38*	45.4 *20.6*
8 x 5 *200 x 125*	8.625 *219.1*	16 *406*	3 *76*	1 1/2 *38*	65.5 *29.7*
8 x 6 *200 x 150*	8.625 *219.1*	16 *406*	3 *76*	1 1/2 *38*	73.0 *33.1*

Nominal Size	Grooved End O.D.	Center to End	H	B Dia. Threaded	Approx. Wt. Ea. GxF
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*NPSC*	*Lbs./Kg*
10 x 6 *250 x 150*	10.750 *273.1*	19 *483*	3 1/2 *89*	1 1/2 *38*	100.0 *45.4*
10 x 8 *250 x 200*	10.750 *273.1*	19 *483*	3 1/2 *89*	1 1/2 *38*	127.0 *57.6*
12 x 8 *300 x 200*	12.750 *323.9*	22 *559*	4 *102*	1 1/2 *38*	155.0 *70.3*
12 x 10 *300 x 250*	12.750 *323.9*	22 *559*	4 *102*	1 1/2 *38*	186.0 *84.4*

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FIG. 7072GF GR X FLANGE

Concentric Reducer

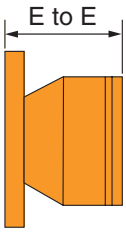

FIGURE 7072GF CONCENTRIC REDUCER		
Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs/Kg*
3 x 2 *80 x 65*	6½ *165*	1.8 *0.8*
4 x 2 *100 x 50*	5½ *140*	2.5 *1.1*
4 x 2½ *100 x 65*	5¾ *146*	2.6 *1.2*
4 x 3 *100 x 80*	5¾ *146*	2.6 *1.2*
5 x 3 *125 x 80*	5 *127*	4.5 *2.0*
5 x 4 *125 x 100*	5½ *140*	4.5 *2.0*
6 x 4 *150 x 100*	6 *152*	7.1 *3.2*
6 x 5 *150 x 125*	6½ *165*	7.4 *3.4*
8 x 6 *200 x 150*	7 *165*	12.6 *5.7*

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GROOVED FLANGE NIPPLES

FIG. 7084 – Groove x Class 150 Flange Nipple

FIG. 7085 – Groove x Class 300 Flange Nipple

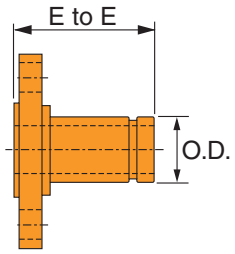

FIGURE 7084 GROOVE X CLASS 150 FLANGE NIPPLE			
Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3 *76*	2.5 *1.1*
1¼ *32*	1.660 *42.2*	4 *102*	3.8 *1.7*
1½ *40*	1.900 *48.3*	4 *102*	4.1 *1.9*
2 *50*	2.375 *60.3*	4 *102*	6.0 *2.7*
2½ *65*	2.875 *73.0*	4 *102*	9.2 *4.2*
3 *80*	3.500 *88.9*	4 *102*	10.4 *4.7*
3½ *90*	4.000 *101.6*	4 *102*	14.0 *6.4*
4 *100*	4.500 *114.3*	6 *152*	19.1 *8.7*
5 *125*	5.563 *141.3*	6 *152*	23.0 *10.4*
6 *150*	6.625 *168.3*	6 *152*	29.5 *13.4*
8 *200*	8.625 *219.1*	6 *152*	43.5 *19.7*
10 *250*	10.750 *273.1*	8 *203*	68.2 *30.9*
12 *300*	12.750 *323.9*	8 *203*	96.1 *43.6*
14 *350*	14.000 *355.6*	* *	* *
16 *400*	16.000 *406.4*	* *	* *
18 *450*	18.000 *457.2*	* *	* *
20 *500*	20.000 *508.0*	* *	* *
24 *600*	24.000 *609.6*	* *	* *

* Contact an Anvil Representative for dimensions & weights.

FIGURE 7085 GROOVE X CLASS 300 FLANGE NIPPLE	
End to End	Approx. Wt. Ea.
In./mm	*Lbs./Kg*
3 *76*	3.6 *1.6*
4 *102*	4.6 *2.1*
4 *102*	7.1 *3.2*
4 *102*	8.2 *3.7*
4 *102*	11.9 *5.4*
4 *102*	15.5 *7.0*
4 *102*	21.0 *9.5*
6 *152*	28.0 *12.7*
6 *152*	35.0 *15.9*
6 *152*	50.0 *22.7*
6 *152*	72.0 *32.7*
8 *203*	* *
8 *203*	* *
* *	* *
* *	* *
* *	* *
* *	* *
* *	* *

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FIG. 7074

Cap

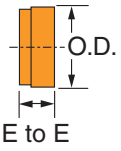

Fig. 7074T: 1/2", 3/4" and 1" tap options available.

FIGURE 7074 CAP			
Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1C *25*	1.315 *33.4*	1¼ *32*	0.3 *0.1*
1¼ C *32*	1.660 *42.2*	1¼ *32*	0.4 *0.2*
1½ C *40*	1.900 *48.3*	1¼ *32*	0.5 *0.2*
2 C *50*	2.375 *60.3*	1 *25*	0.5 *0.2*
2½ C *65*	2.875 *73.0*	1 *25*	0.7 *0.3*
3 O.D. C 76.1	*2.996* 76.1	*1* 25	*0.8* 0.4
3 C *80*	3.500 *88.9*	1 *25*	1.1 *0.5*
3½ C *90*	4.000 *101.6*	1 *25*	1.4 *0.6*
4¼ O.D. C 108.0	*4.250* 108.0	*1⅛* 29	*2.0* 0.9
4 C *100*	4.500 *114.3*	1⅛ *29*	2.8 *1.3*
5¼ O.D. C 133.0	*5.236* 133.0	*1⅛* 29	*3.2* 1.5
5½ O.D. C 139.7	*5.500* 139.7	*1⅛* 29	*4.0* 1.8
5 C *125*	5.563 *141.3*	1⅛ *29*	4.0 *1.8*
6¼ O.D. C 159.0	*6.259* 159.0	*1⅛* 29	*5.1* 2.3
6½ O.D. C 165.1	*6.500* 165.1	*1⅛* 29	*6.0* 2.7
6 C *150*	6.625 *168.3*	1 5/16 *33*	6.0 *2.7*
8 C *200*	8.625 *219.1*	1½ *38*	12.5 *5.7*
10 C *250*	10.750 *273.1*	1½ *38*	21.9 *9.9*
12 C *300*	12.750 *323.9*	1½ *38*	33.8 *15.3*
14* *350*	14.000 *355.6*	8½ *216*	40 *18.1*
16* *400*	16.000 *406.4*	9 *229*	45 *20.4*
18* *450*	18.000 *457.2*	10 *254*	58 *26.3*
20* *500*	20.000 *508.0*	11 *279*	79 *35.8*
24* *600*	24.000 *609.6*	12½ *318*	100 *45.4*

* Machined Dome Cap
C - Cast Ductile Iron

FIG. 7075

Bull Plug

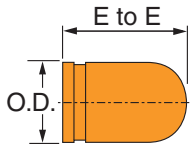

FIGURE 7075 BULL PLUG			
Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4 *102*	2.5 *1.1*
2½ *65*	2.875 *73.0*	5 *127*	3.1 *1.4*
3 *80*	3.500 *88.9*	6 *152*	4.4 *2.0*
4 *100*	4.500 *114.3*	7 *178*	7.4 *3.4*
5 *125*	5.563 *141.3*	9 *22*	13.0 *
6 *150*	6.625 *168.3*	10 *254*	18.5 *8.4*

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FIG. 7068

Cross

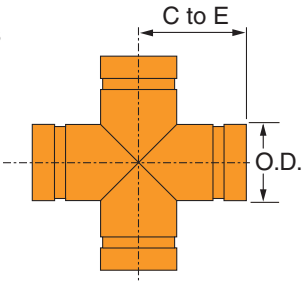

FIGURE 7068 CROSS			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ *57*	1.3 *0.6*
1¼ *32*	1.660 *42.2*	2¾ *70*	2.1 *1.0*
1½ *40*	1.900 *48.3*	2¾ *70*	2.5 *1.1*
2 *50*	2.375 *60.3*	3¼ *83*	2.9 *1.3*
2½ *65*	2.875 *73.0*	3¾ *95*	5.2 *2.4*
3 *80*	3.500 *88.9*	4¼ *108*	7.5 *3.4*
3½ *90*	4.000 *101.6*	4½ *114*	9.8 *4.4*
4 *100*	4.500 *114.3*	5 *127*	12.2 *5.5*
5 *125*	5.563 *141.3*	5½ *140*	17.6 *8.0*
6 *150*	6.625 *168.3*	6½ *165*	28.3 *12.8*
8 *200*	8.625 *219.1*	7¾ *197*	48.0 *21.8*
10 *250*	10.750 *273.1*	9 *229*	70.0 *31.8*
12 *300*	12.750 *323.9*	10 *254*	110 *49.9*
14 *350*	14.000 *355.6*	11 *279*	140 *63.5*
16 *400*	16.000 *406.4*	12 *305*	170 *77.1*
18 *450*	18.000 *457.2*	15½ *394*	260 *118*
20 *500*	20.000 *508.0*	17¼ *438*	320 *145*
24 *600*	24.000 *609.6*	20 *508*	585 *265*

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NIPPLES

FIG. 7086

GR x HOSE Nipple

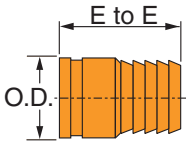

FIGURE 7086 HOSE NIPPLE			
Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3¼ *83*	0.4 *0.2*
1¼ *32*	1.660 *42.2*	3⅝ *92*	0.7 *0.3*
1½ *40*	1.900 *48.3*	4 *102*	0.8 *0.4*
2 *50*	2.375 *60.3*	4⅝ *117*	1.3 *0.6*
2½ *65*	2.875 *73.0*	5½ *140*	2.1 *1.0*
3 *80*	3.500 *88.9*	6 *152*	3.3 *1.5*
4 *100*	4.500 *114.3*	7¼ *184*	5.5 *2.5*
5 *125*	5.563 *141.3*	9¾ *248*	8.1 *3.7*
6 *150*	6.625 *168.3*	11 *279*	13.2 *6.0*
8 *200*	8.625 *219.1*	12½ *318*	24.0 *10.9*
10 *250*	10.750 *273.1*	14 *356*	29.0 *13.2*
12 *300*	12.750 *323.9*	16 *406*	46.0 *20.9*

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FIG. 7080

GR x GR

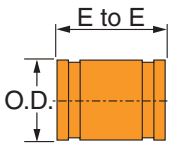


FIG. 7081

GR x MPT

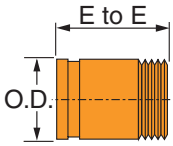
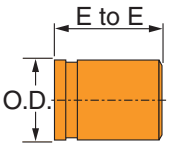


FIG. 7082

GR x BEV



FIGURES 7080, 7081 & 7082 ADAPTER NIPPLE		
Nominal Size	O.D.	Length
In./DN(mm)	*In./mm*	*In.*
¾ *20*	1.050 *26.7*	Multiple Lengths Available: 4", 6", 8", 10" and 12"
1 *25*	1.315 *33.4*	
1¼ *32*	1.660 *42.2*	
1½ *40*	1.900 *48.3*	
2 *50*	2.375 *60.3*	
2½ *65*	2.875 *73.0*	
3 *80*	3.500 *88.9*	
4 *100*	4.500 *114.3*	
5 *125*	5.563 *141.3*	
6 *150*	6.625 *168.3*	
8 *200*	8.625 *219.1*	
10 *250*	10.750 *273.1*	
12 *300*	12.750 *323.9*	

This product is not ULC Listed.

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FIG. 7062

Bullhead Tee (GR x GR x FPT)

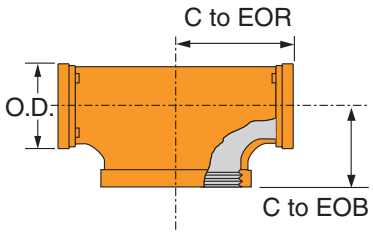

FIGURE 7062 BULLHEAD TEE (GR x GR x FPT)

Nominal Size	Center to End of Run	Center to End of Branch	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
5 x 5 x 8 *125 x 125 x 200*	7¾ *197*	5½ *140*	31.0 *14.1*
6 x 6 x 8 *150 x 150 x 200*	7¾ *197*	6½ *165*	37.6 *17.1*

See Fitting Size chart on page 61 for O.D.

These fittings are designed to provide minimal pressure drop and uniform strength. Pressure ratings of Gruvlok Fittings conforms to those of Fig. 7001 Gruvlok Standard Coupling.

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FIG. 7065

Standpipe Tee (GR x GR x FPT)

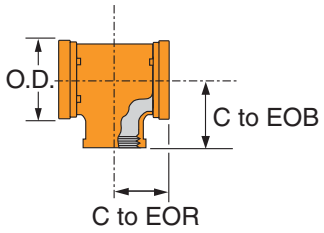


FIGURE 7065 STANDPIPE TEE (GR x GR x FPT)

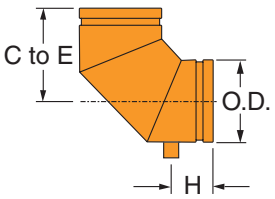
Nominal Size	O.D.	Center to End of Run	Center to End of Branch	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
4 x 4 x 2½ *100 x 100 x 65*	4.500 *114.3*	3¼ *83*	4 *102*	7.6 *3.4*
6 x 6 x 2½ *150 x 150 x 65*	6.625 *168.3*	3¼ *83*	5⅛ *130*	11.2 *5.1*

See Fitting Size chart on page 61 for O.D.

These fittings are designed to provide minimal pressure drop and uniform strength. Pressure ratings of Gruvlok Fittings conforms to those of Fig. 7001 Gruvlok Standard Coupling.

FIG. 7050DR

90° Drain elbow



Available fabricated Schedule 10/40.
Drain elbow has a standard 1" female NPT outlet.

FIGURE 7050DR 90° DRAIN ELBOW

Nominal Size	O.D.	Max Working Pressure	Dimensions		Approx. Wt. Ea.
			C to E	H	
In./DN(mm)	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*Lbs./Kg*
1¼ *32*	1.660 *42.2*	300 *20.7*	2¾ *69*	1¾ *44*	0.7 *0.3*
1½ *40*	1.900 *48.3*	300 *20.7*	2¾ *69*	1¾ *44*	1.7 *0.8*
2 *50*	2.375 *60.3*	300 *20.7*	3¼ *83*	1¾ *44*	2.0 *0.9*
2½ *65*	2.875 *73.0*	300 *20.7*	3¾ *95*	1⅞ *48*	2.5 *1.1*
3 *80*	3.500 *88.9*	300 *20.7*	4¼ *108*	2 *51*	3.2 *1.5*
4 *100*	4.500 *114.3*	300 *20.7*	5 *127*	2¼ *57*	4.6 *2.1*
5 *125*	5.583 *141.3*	300 *20.7*	5½ *140*	2⅜ *60*	11.5 *5.2*
6 *150*	6.625 *168.3*	300 *20.7*	6½ *165*	2⅜ *60*	9.6 *4.4*
8 *200*	8.625 *219.1*	300 *20.7*	7¾ *197*	2½ *64*	15.8 *7.2*
10 *250*	10.750 *273.1*	300 *20.7*	9 *229*	2¾ *69*	48.5 *22.0*
12 *300*	12.750 *323.9*	300 *20.7*	10 *254*	2¾ *69*	66.0 *29.0*

GRUVLOK® FIRE-RITE™ SHORT PATTERN FITTINGS

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FIG. 7450

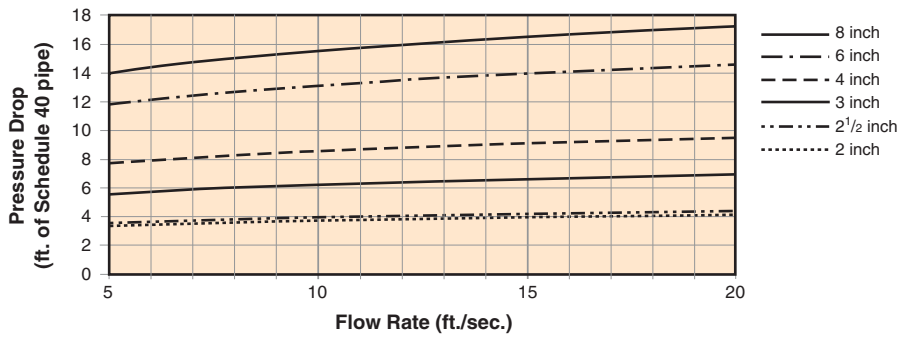
90° Short Pattern Elbow

The Gruvlok® Fire-Rite™ short pattern 90° elbows has a 2" to 8" size range and a 300 psi pressure rating.

Fire-Rite™ fittings are painted to industry specification and are available galvanized for more corrosive environments.

CAD design increases internal diameters and provides superior flow capability.

FIGURE 7450 90° ELBOW SHORT PATTERN FITTING – PRESSURE DROP



Gruvlok short pattern fittings exceed the headloss requirements of NFPA 13.

For Fig. 7450 90° grooved end elbows use the value shown.

Note: Above values are shown for Schedule 40 pipe to be consistent with industry practices.

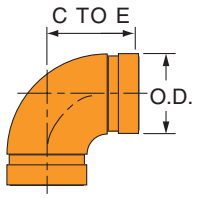


FIGURE 7450 90° ELBOW

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	2¾ *70*	1.7 *0.8*
2½ *65*	2.875 *73.0*	3 *76*	2.6 *1.2*
3 *80*	3.500 *88.9*	3⅜ *86*	3.5 *1.6*
4 *100*	4.500 *114.3*	4 *102*	6.5 *3.0*
6 *150*	6.625 *168.3*	5½ *140*	14.8 *6.7*
8 *200*	8.625 *219.1*	6⅞ *175*	25.6 *11.6*

All are Ductile Iron.

FIG. 7460

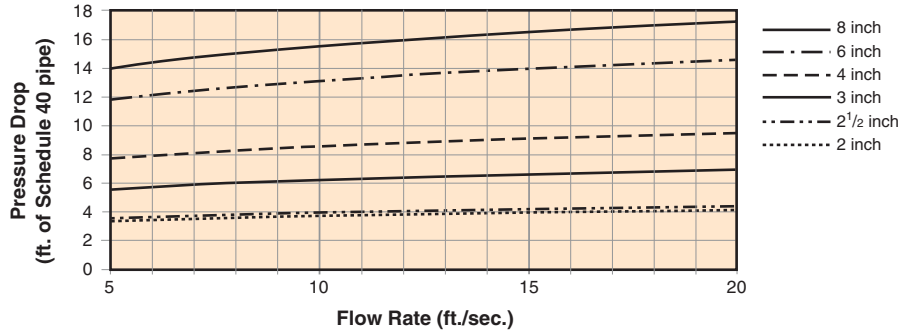
Short Pattern Tee

The Gruvlok® Fire-Rite™ short pattern tee has a 2" to 8" size range and a 300 psi pressure rating.

Fire-Rite™ fittings are painted to industry specification and are available galvanized for more corrosive environments.

CAD design increases internal diameters and provides superior flow capability.

FIGURE 7460 TEE SHORT PATTERN FITTING – PRESSURE DROP



Gruvlok short pattern fittings exceed the headloss requirements of NFPA 13.

For Fig. 7460 Tee branch use 2½ times the value shown.

For Fig. 7460 Tee run use the value shown.

Note: Above values are shown for Schedule 40 pipe to be consistent with industry practices.

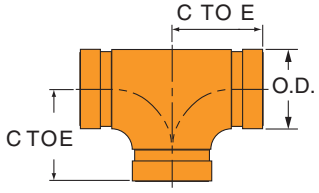


FIGURE 7460 TEE

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	2¾ *70*	2.5 *1.1*
2½ *65*	2.875 *73.0*	3 *76*	3.5 *1.6*
3 *80*	3.500 *88.9*	3⅜ *86*	4.8 *2.2*
4 *100*	4.500 *114.3*	4 *102*	8.1 *3.7*
6 *150*	6.625 *168.3*	5½ *140*	19.1 *8.7*
8 *200*	8.625 *219.1*	6⅞ *175*	35.2 *16.0*

All are Ductile Iron.

FIG. 7050 3D

Long Radius Elbows

1. 3D long radius elbows are available in sizes up to 24". Sizes 4" and below are provided with a 4" (101.6 mm) long integral tangent. Remaining sizes are provided with integral tangents with lengths equal to the nominal pipe size.
2. Grooved or plain-end available - specify choice on order.
3. Material: standard wall steel pipe to ASTM A 53, Grade B. (Other materials available on request).
4. Bends to conform to above radii.
5. C to E tolerances: 2" through 6" ± ⅛" (3.2 mm); 8" through 16" ± ¼" (6.4 mm); 18" through 24" + ⅜" (9.5 mm).
6. All weights are approximate, based on calculated weight of pipe.

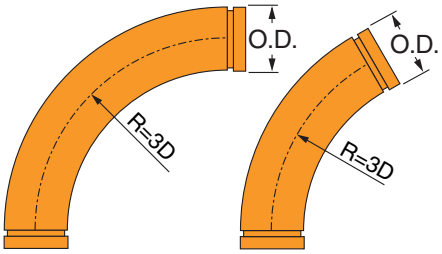


Fig. 7050-3D, 90° Elbow

Fig. 7057-3D, 60° Elbow

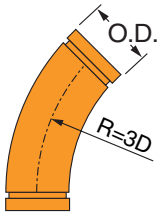


Fig. 7051-3D, 45° Elbow

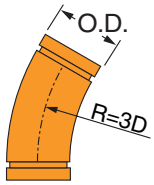


Fig. 7058-3D, 30° Elbow

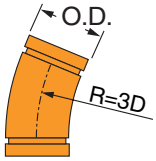


Fig. 7052-3D, 22½° Elbow

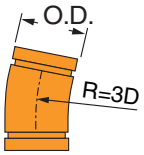


Fig. 7053-3D, 11¼° Elbow

FIGURE 7050-3D 90° ELBOW				FIG. 7057-3D 60° ELBOW		FIG. 7051-3D 45° ELBOW		FIG. 7058-3D 30° ELBOW		FIG. 7052-3D 22½° ELBOW		FIG. 7053-3D 11¼° ELBOW	
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	10 *254*	5.3 *2.4*	7½ *191*	4.3 *2.0*	6½ *165*	3.9 *1.8*	5¾ *146*	3.4 *1.5*	5¼ *133*	3.2 *1.5*	4½ *114*	2.8 *1.3*
2½ *65*	2.875 *73*	11½ *292*	9.5 *4.3*	8¼ *210*	7.7 *3.5*	7¼ *184*	6.7 *3.0*	6 *152*	5.8 *2.6*	5½ *140*	5.3 *2.4*	4¾ *121*	4.6 *2.1*
3 *80*	3.500 *88.9*	13 *330*	14.0 *6.4*	9¼ *235*	11.0 *5.0*	7¾ *197*	9.5 *4.3*	6½ *165*	8.0 *3.6*	5¾ *146*	7.3 *3.3*	5 *127*	6.2 *2.8*
3½ *90*	4.000 *101.6*	14½ *368*	18.6 *8.4*	10 *254*	14.4 *6.5*	8½ *216*	12.3 *5.6*	6¾ *171*	10.2 *4.6*	6 *152*	9.2 *4.2*	5 *127*	7.6 *3.4*
4 *100*	4.500 *114.3*	16 *406*	24.1 *10.9*	11 *279*	18.5 *8.4*	9 *229*	15.7 *7.1*	7¼ *184*	12.8 *5.8*	6½ *165*	11.4 *5.2*	5¼ *133*	9.3 *4.2*
5 *125*	5.563 *141.3*	20 *508*	40.9 *18.6*	13¾ *349*	31.3 *14.2*	11¼ *286*	26.5 *12.0*	9 *229*	21.8 *9.9*	8 *203*	19.4 *8.8*	6½ *165*	15.8 *7.2*
6 *150*	6.625 *168.3*	24 *610*	63.7 *28.9*	16½ *419*	48.8 *22.1*	13½ *343*	41.3 *18.7*	10¾ *273*	33.9 *15.4*	9½ *241*	30.1 *13.7*	7¾ *197*	24.6 *11.2*
8 *200*	8.625 *219.1*	32 *813*	127.8 *58.0*	22 *559*	97.9 *44.4*	18 *457*	82.9 *37.6*	14½ *368*	68.0 *30.8*	12¾ *324*	60.5 *27.4*	10½ *267*	49.3 *22.4*
10 *250*	10.750 *273.1*	40 *1016*	226.4 *102.7*	27¼ *692*	173.4 *78.7*	22½ *572*	146.9 *66.6*	18 *457*	120.5 *54.7*	16 *406*	107.2 *48.6*	13 *330*	87.3 *39.6*
12 *300*	12.750 *323.9*	48 *1219*	332.7 *150.9*	32¾ *832*	254.8 *115.6*	27 *686*	215.9 *97.9*	21¾ *552*	177.0 *80.3*	19¼ *489*	157.5 *71.4*	15½ *394*	128.3 *58.2*
14 *350*	14.000 *355.6*	56 *1422*	427.3 *193.8*	38¼ *972*	327.3 *148.5*	31½ *800*	227.3 *103.1*	25¼ *641*	227.3 *103.1*	22½ *572*	202.3 *91.8*	18¼ *464*	164.8 *74.8*
16 *400*	16.000 *406.4*	64 *1626*	560.1 *254.1*	43¾ *1111*	429.0 *194.6*	36 *914*	363.5 *164.9*	29 *737*	297.9 *135.1*	25½ *648*	265.2 *120.3*	20¾ *527*	216.0 *98.0*
18 *450*	18.000 *457.2*	72 *1829*	710.7 *322.4*	49¼ *1251*	544.4 *246.9*	40½ *1029*	461.3 *209.2*	32½ *826*	378.1 *171.5*	28¾ *730*	336.5 *152.6*	23.35 *593*	274.1 *124.3*
20 *500*	20.000 *508*	80 *2032*	879.3 *398.8*	54¾ *1391*	673.5 *305.5*	45 *1143*	540.7 *245.3*	36 *914*	467.8 *212.2*	32 *813*	416.3 *188.8*	26 *660*	339.2 *153.9*
24 *600*	24.000 *609.6*	96 *2438*	1270.3 *576.2*	65½ *1664*	973.0 *441.3*	53¾ *1365*	824.4 *373.9*	43¼ *1099*	675.7 *304.1*	38¼ *972*	601.4 *272.8*	31 *787*	490.0 *222.3*

FIG. 7050 5D

Long Radius Elbows

1. 5D long radius elbows are available in sizes up to 24". Sizes 4" and below are provided with a 4" (101.6 mm) long integral tangent. Remaining sizes are provided with integral tangents with lengths equal to the nominal pipe size.
2. Grooved or plain-end available.
3. Material: standard wall steel pipe to ASTM A 53, Grade B. (Other materials available on request).
4. Bends to conform to above radii.
5. C to E tolerances: 2" through 6" ± 1/8" (3.2 mm); 8" through 16" ± 1/4" (6.4 mm); 18" through 24" + 3/8" (9.5 mm).
6. All weights are approximate, based on calculated weight of pipe.

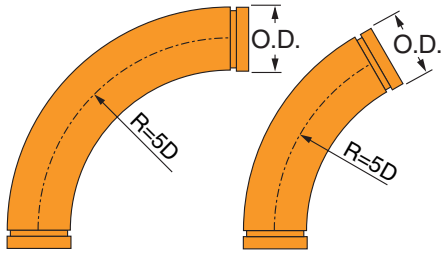


Fig. 7050-5D, 90° Elbow

Fig. 7057-5D, 60° Elbow

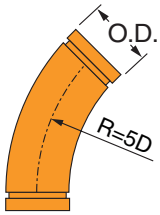


Fig. 7051-5D, 45° Elbow

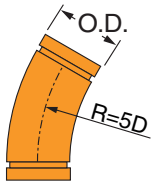


Fig. 7058-5D, 30° Elbow

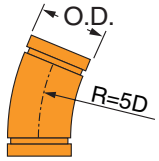


Fig. 7052-5D, 22½° Elbow

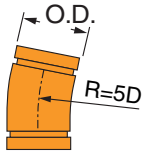


Fig. 7053-5D, 11¼° Elbow

FIGURE 7050-5D 90° ELBOW			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	14 356	7.2 3.3
2½ 65	2.875 73	16½ 419	13.3 6.0
3 80	3.500 88.9	19 483	19.9 9.0
3½ 90	4.000 101.6	21½ 546	26.9 12.2
4 100	4.500 114.3	24 610	35.4 16.1
5 125	5.563 141.3	30 762	60.0 27.2
6 150	6.625 168.3	36 914	93.5 42.4
8 200	8.625 219.1	48 1219	187.6 85.1
10 250	10.750 273.1	60 1524	332.4 150.8
12 300	12.750 323.9	72 1829	488.4 221.5
14 350	14.000 355.6	84 2134	627.4 284.6
16 400	16.000 406.4	96 2438	822.2 372.9
18 450	18.000 457.2	108 2743	1,043.4 473.3
20 500	20.000 508	120 3048	1,290.9 585.5
24 600	24.000 609.6	144 3658	1,864.8 845.9

FIG. 7057-5D 60° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
9¾ 248	5.6 2.5
11¼ 286	10.2 4.6
12¾ 324	15.0 6.8
12¼ 311	20.0 9.1
15½ 394	26.0 11.8
19½ 495	44.1 20.0
23¼ 591	68.6 31.1
31 787	137.7 62.5
39 991	244.1 110.7
46¾ 1187	358.6 162.7
54½ 1384	460.7 209.0
62¼ 1581	603.8 273.9
70 1778	766.2 347.5
77¾ 1975	947.9 430.0
93¼ 2369	1,369.3 621.1

FIG. 7051-5D 45° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
8¼ 210	4.8 2.2
9¼ 235	8.6 3.9
10¼ 260	12.5 5.7
11¼ 286	16.5 7.5
12½ 318	21.3 9.7
15½ 394	36.1 16.4
18½ 470	56.2 25.5
24½ 622	112.8 51.2
30¾ 781	199.9 90.7
37 940	293.7 133.2
43 1092	377.3 171.1
49¼ 1251	494.5 224.3
55¼ 1403	627.6 284.7
61½ 1562	776.4 352.2
73¾ 1873	1,121.6 508.7

FIG. 7058-5D 30° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
6¾ 171	4.0 1.8
7½ 191	7.0 3.2
8 203	10.0 4.5
8¾ 222	13.0 5.9
9½ 241	16.6 7.5
11¾ 298	28.1 12.7
14 356	43.8 19.9
18¾ 476	87.9 39.9
23½ 597	155.8 70.7
28 711	228.9 103.8
32¾ 832	294.0 133.4
37½ 953	385.3 174.8
42¼ 1073	489.0 221.8
46¾ 1187	605.0 274.4
56¼ 1429	873.9 396.4

FIG. 7052-5D 22½° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
6 152	3.6 1.6
6½ 165	6.2 2.8
7 178	8.8 4.0
7½ 191	11.3 5.1
8 203	14.3 6.5
10 254	24.1 10.9
12 305	37.6 17.1
16 406	75.4 34.2
20 508	133.7 60.6
24 610	196.4 89.1
28 711	252.3 114.4
32 813	330.7 150.0
36 914	419.7 190.4
40 1016	519.2 235.5
48 1219	750.1 340.2

FIG. 7053-5D 11¼° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
5 127	3.0 1.4
5¼ 133	5.0 2.3
5½ 140	6.9 3.1
5¾ 146	8.7 3.9
6 152	10.7 4.9
7½ 191	18.2 8.3
9 229	28.3 12.8
12 305	56.8 25.8
15 381	100.6 45.6
18 457	147.8 67.0
21 533	189.8 86.1
24 610	248.8 112.9
27 686	315.7 143.2
30 762	390.6 177.2
35¾ 908	564.3 256.0

FIG. 7050 6D

Long Radius Elbows

1. 6D long radius elbows are available in sizes up to 24". Sizes 4" and below are provided with a 4" (101.6 mm) long integral tangent. Remaining sizes are provided with integral tangents with lengths equal to the nominal pipe size.
2. Grooved or plain-end available.
3. Material: standard wall steel pipe to ASTM A 53, Grade B. (Other materials available on request).
4. Bends to conform to above radii.
5. C to E tolerances: 2" through 6" ± 1/8" (3.2 mm); 8" through 16" ± 1/4" (6.4 mm); 18" through 24" + 3/8" (9.5 mm).
6. All weights are approximate, based on calculated weight of pipe.

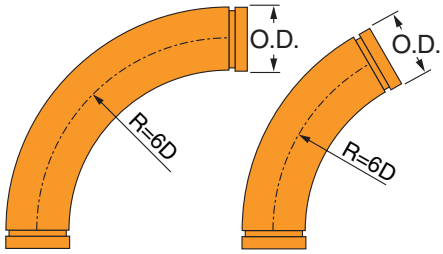


Fig. 7050-6D, 90° Elbow

Fig. 7057-6D, 60° Elbow

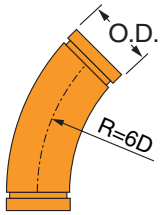


Fig. 7051-6D, 45° Elbow

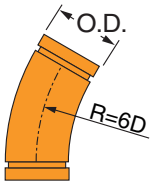


Fig. 7058-6D, 30° Elbow

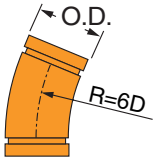


Fig. 7052-6D, 22½° Elbow

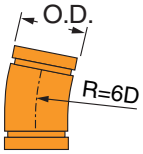


Fig. 7053-6D, 11¼° Elbow

FIGURE 7050-6D 90° ELBOW			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	16 406	8.2 3.7
2½ 65	2.875 73	19 483	15.2 6.9
3 80	3.500 88.9	22 559	22.9 10.4
3½ 90	4.000 101.6	25 635	31.1 14.1
4 100	4.500 114.3	28 711	41.1 18.6
5 125	5.563 141.3	35 889	69.6 31.6
6 150	6.625 168.3	42 1067	108.4 49.2
8 200	8.625 219.1	56 1422	217.5 98.7
10 250	10.750 273.1	70 1778	385.4 174.8
12 300	12.750 323.9	84 2134	566.2 256.8
14 350	14.000 355.6	98 2489	727.4 329.9
16 400	16.000 406.4	112 2845	953.3 432.4
18 450	18.000 457.2	126 3200	1,209.7 548.7
20 500	20 508	140 3556	1,496.6 678.8
24 600	24 609.6	168 4267	2,162.0 980.7

FIG. 7057-6D 60° ELBOW		
Center to End	Approx. Wt. Ea.	
In./mm	Lbs./Kg	
11 279	6.3 2.9	
12¾ 324	11.4 5.2	
14½ 368	17.0 7.7	
16¼ 413	22.8 10.3	
18 457	29.8 13.5	
22¼ 565	50.5 22.9	
26¾ 679	78.6 35.7	
35¾ 908	157.7 71.5	
44¾ 1137	279.4 126.7	
53½ 1359	410.5 186.2	
62½ 1588	527.3 239.2	
71½ 1816	691.1 313.5	
80½ 2045	877.1 397.8	
89¼ 2267	1,085.1 492.2	
107¼ 2724	1,567.5 711.0	

FIG. 7051-6D 45° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
9 229	5.3 2.4
10¼ 260	9.5 4.3
11½ 292	14.0 6.4
12¾ 324	18.6 8.4
14 356	24.1 10.9
17½ 445	40.9 18.6
21 533	63.7 28.9
28 711	127.8 58.0
35 889	226.4 102.7
41¾ 1060	332.7 150.9
48¾ 1238	427.3 193.8
55¾ 1416	560.1 254.1
62¾ 1594	710.7 322.4
69¾ 1772	879.3 398.8
83¾ 2127	1,270.3 576.2

FIG. 7058-6D 30° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
7¼ 184	4.3 2.0
8 203	7.7 3.5
8¾ 222	11.0 5.0
9¾ 248	14.4 6.5
10½ 267	18.5 8.4
13 330	31.3 14.2
15¾ 400	48.8 22.1
21 533	97.9 44.4
26 660	173.4 78.7
31¼ 794	254.8 115.6
36½ 927	327.3 148.5
41¾ 1060	429.0 194.6
47 1194	544.4 246.9
52¼ 1327	673.5 305.5
62½ 1588	973.0 441.3

FIG. 7052-6D 22½° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
6½ 165	3.9 1.8
7 178	6.7 3.0
7½ 191	9.5 4.3
8¼ 210	12.3 5.6
8¾ 222	15.7 7.1
11 279	26.5 12.0
13¼ 337	41.3 18.7
17½ 445	82.9 37.6
22 559	146.9 66.6
26¼ 667	215.9 97.9
30¾ 781	277.3 125.8
35¼ 895	363.5 164.9
39½ 1003	461.3 209.2
44 1118	570.7 258.9
52.34 1329	824.4 373.9

FIG. 7053-6D 11¼° ELBOW	
Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
5¼ 133	3.2 1.5
5½ 140	5.3 2.4
5¾ 146	7.3 3.3
6 152	9.2 4.2
6½ 165	11.4 5.2
8 203	19.4 8.8
9½ 241	30.1 13.7
12¾ 324	60.5 27.4
16 406	107.2 48.6
19 483	157.5 71.4
22¼ 565	202.3 91.8
25½ 648	265.2 120.3
28¾ 730	336.5 152.6
31¾ 806	416.3 188.8
38¼ 972	601.4 272.8

SERIES 7700

Butterfly Valve

AN-7721-3

Series 7700 butterfly valve
with 10 position lever lock

AN-7722-3

Series 7700 butterfly valve
with gear operator

Used in commercial grooved-end piping systems 2" through 12".

The uniqueness of the Series 7700 Gruvlok Butterfly Valve begins with the spherical bore of the disc seat area. This facilitates a constant DISC-TO-SEAT loading that maintains a leak tight stem seal regardless of disc position. The stem sealing force is constant through the full disc cycle and operating torques are kept low which increases valve life. The design provides a bubble tight seal from full vacuum to 300 psi when the valve is closed. The valve is rated for dead-end service to a full pressure rating of 300 psi. Silicone Free Series 7700 available upon special request.

NSF/ANSI 61

2" - 10" Series 7700
Certified to NSF/ANSI 61
(cold water) and Annex G
LEAD FREE

The stem-to-disc connection provides zero backlash. The high strength, corrosion resistant, stainless steel stems are blow-out proof. Each stem is fitted with a secondary seal that also provides a lifetime lubrication chamber.

The Series 7700 valve is designed with the contractor in mind. The valve body is a rugged one-piece casting with an integral mounting base for gear operator or handle actuation, while providing room for a minimum of 2" of pipe insulation. The valve is designed and manufactured to meet or exceed the requirements of MSS SP-67.

For data on fire protection listings/approvals, contact your Anvil representative.

SERIES 7700

Butterfly Valve

MATERIAL SPECIFICATIONS

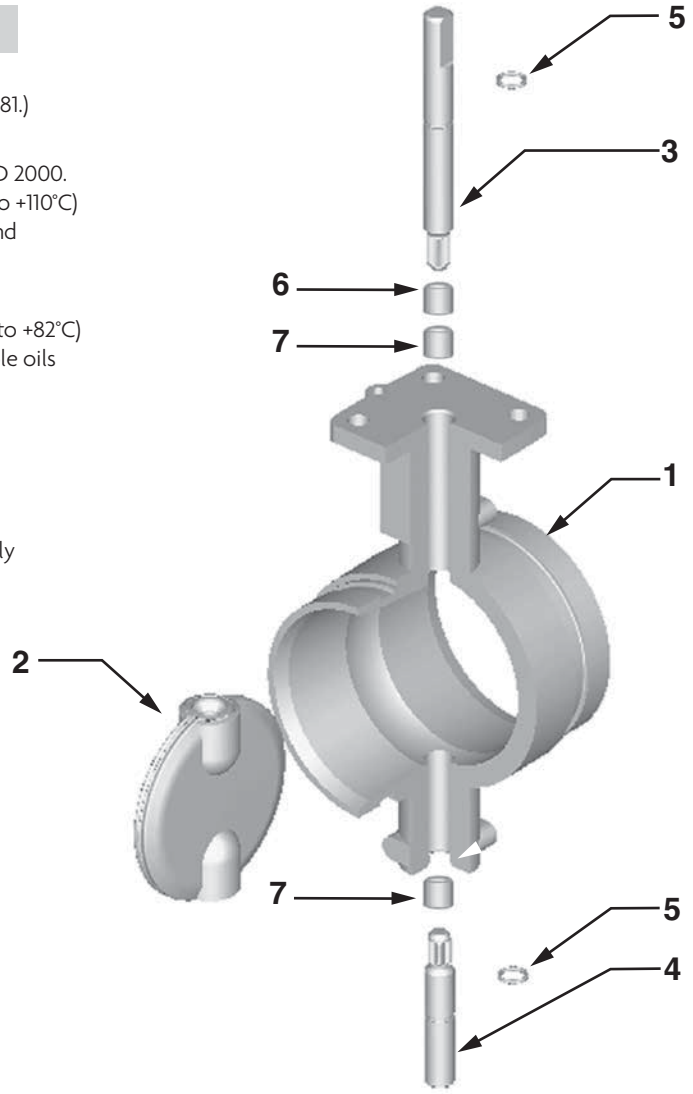
1. **BODY:** Ductile Iron conforming to ASTM A 536, Grade 65-45-12
   Body Coating: Nylon (For nylon coating resistance, see table on page 81.)
2. **DISC:** Ductile Iron conforming to ASTM A 536 Grades 65-45-12
   Disc Encapsulation: Properties as specified in accordance with ASTM D 2000.
   ❑ **Grade E** (EPDM): Service Temperature Range -40°F to +230°F (-40°C to +110°C)
   Recommended for water service, dilute acids, alkalies, oil-free air and many chemical services.
   NOT FOR USE IN PETROLEUM SERVICES.

   ❑ **Grade T** (Nitrile): Service Temperature Range -20°F to +180°F (-29°C to +82°C)
   Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
   NOT FOR USE IN HOT WATER SERVICES.

3, 4. **UPPER AND LOWER SHAFT:** Type 416 Stainless Steel

5. **O-RINGS:** Compatible with disc coating

6, 7. **TOP AND BOTTOM BRONZE SLEEVE BUSHINGS:** 8", 10", & 12" Valve only

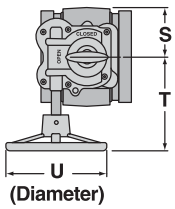


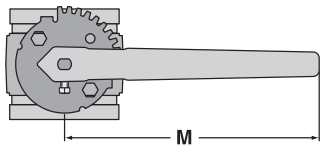
GRUVLOK BUTTERFLY VALVE SERIES 7700 (ORDERING INFORMATION)								
Sample Part Number 8" AN7721-3 —>	8"	A	N	77	2	1 -	3	Special
	Size	Body Style	Body Coating	Series	Disc Coating	Operator	Stem	
	2" - 12"	A	**N** - Nylon	77-77XX	**1** - Nitrile (Grade T) **2** - EPDM (Grade E)	**0** - None **1** - 10 Pos. L/Lock **2** - Gear Operator **D** - Infinite Pos. w/Memory Stop **4** - Short 10 Pos. L/lock Operator	**3** - 416 S.S.	**SF** - Manufactured without Silicone

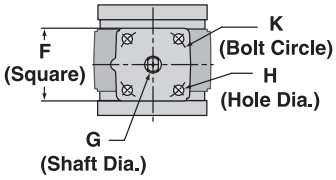
NOTE: For operator safety, hand levers on 8" valves are limited to applications with a 25 PSI (1.7 bar) maximum pressure.
For operator safety, hand levers on 10" and 12" valves are not available.

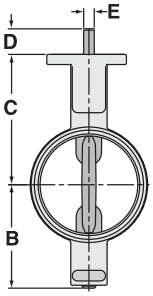
SERIES 7700

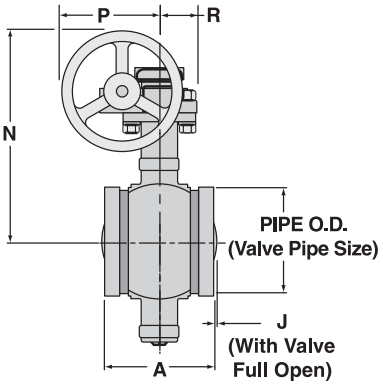
Butterfly Valve

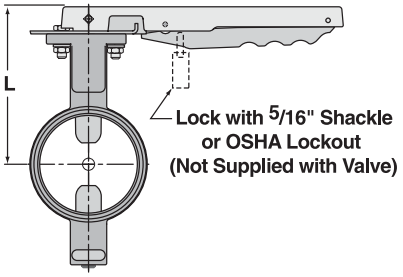












SERIES 7700 BUTTERFLY VALVE DIMENSIONS

Dimensions	Valve Size (ANSI/DN)								
	2	2½	3	4	5	6	8	10	12
In./mm	*50*	*65*	*80*	*100*	*125*	*150*	*200*	*250*	*300*
O.D. *In./mm*	2⅜ *60.3*	2⅞ *73.0*	3½ *88.9*	4½ *114.3*	5⁹⁄₁₆ *141.3*	6⅝ *168.3*	8⅝ *219.1*	10¾ *273.1*	12¾ *323.9*
A	3³⁄₁₆ *81.0*	3¹³⁄₁₆ *96.8*	3¹³⁄₁₆ *96.8*	4⅝ *117.3*	5¹³⁄₁₆ *147.6*	5¹³⁄₁₆ *147.6*	5¼ *133.4*	6¼ *158.8*	6½ *165.1*
B	3 *75.4*	3³⁄₁₆ *80.8*	3¹³⁄₁₆ *96.5*	4¼ *108.5*	5 *126.5*	5½ *138.9*	6¹⁵⁄₁₆ *175.8*	8 *202.9*	9 *229.4*
C	4³⁄₁₆ *105.9*	4⅜ *111.3*	5⅛ *129.0*	5⅜ *136.7*	5⅞ *149.4*	6⅜ *161.8*	7¾ *196.9*	9½ *240.3*	10½ *266.7*
D	1⅛ *26.9*	1⅛ *26.9*	1⅛ *26.9*	1⅛ *26.9*	1⅛ *26.9*	1⅛ *26.9*	1⅝ *41.1*	1⅝ *41.1*	1⅝ *41.1*
E	7⁄16 *11.1*	7⁄16 *11.1*	7⁄16 *11.1*	7⁄16 *11.1*	7⁄16 *11.1*	7⁄16 *11.1*	¾ *19.1*	¾ *19.1*	¾ *19.1*
F	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	5 *127.0*	5 *127.0*	5 *127.0*
G	9⁄16 *14.3*	9⁄16 *14.3*	9⁄16 *14.3*	9⁄16 *14.3*	⅞ *22.2*	⅞ *22.2*	1 *25.4*	1¼ *31.8*	1¼ *31.8*
H	7⁄16 *11.1*	7⁄16 *11.1*	7⁄16 *11.1*	7⁄16 *11.1*	7⁄16 *11.1*	7⁄16 *11.1*	½ *13.5*	½ *13.5*	½ *13.5*
J	- -	- -	- -	- -	- -	⅛ *3.3*	1⅜ *34.8*	1⅞ *47.0*	2¾ *70.1*
K	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	3 *76.2*	5 *127.0*	5 *127.0*	5 *127.0*
L	5⁵⁄₁₆ *135.1*	5½ *140.5*	6¼ *158.2*	6½ *165.9*	7 *178.6*	7½ *191.0*	9⁷⁄₁₆ *240.3*	- -	- -
M	10½ *266.7*	10½ *266.7*	10½ *266.7*	10½ *266.7*	10½ *266.7*	10½ *266.7*	15 *381.0*	- -	- -
N	7¹³⁄₁₆ *198.0*	8 *203.3*	8¹¹⁄₁₆ *221.1*	9 *228.7*	9½ *241.4*	10 *253.9*	14¹⁵⁄₁₆ *379.2*	16⅝ *422.7*	20¹¹⁄₁₆ *525.3*
P	4 *102.1*	4 *102.1*	4 *102.1*	4 *102.1*	4 *102.1*	4 *102.1*	8⅛ *204.5*	8⅛ *204.5*	11⅝ *295.4*
R	1½ *38.2*	1½ *38.2*	1½ *38.2*	1½ *38.2*	1½ *38.2*	1½ *38.2*	2⁵⁄₁₆ *58.5*	2⁵⁄₁₆ *58.5*	2⁹⁄₁₆ *65.5*
S	2 *51.0*	2 *51.0*	2 *51.0*	2 *51.0*	2 *51.0*	2 *51.0*	2⅝ *66.0*	2⅝ *66.0*	3¼ *83.0*
T	6⁵⁄₁₆ *160.3*	6⁵⁄₁₆ *160.3*	6⁵⁄₁₆ *160.3*	6⁵⁄₁₆ *160.3*	6⁵⁄₁₆ *160.3*	6⁵⁄₁₆ *160.3*	10¹³⁄₁₆ *275.3*	10¹³⁄₁₆ *275.3*	13¹³⁄₁₆ *350.3*
U	5 *127.0*	5 *127.0*	5 *127.0*	5 *127.0*	5 *127.0*	5 *127.0*	12 *304.8*	12 *304.8*	18 *457.2*

Note: 3" or 5" handwheels may be included on valves sizes 2" - 4". Contact your Anvil Rep. for additional information.

SERIES 7700

Butterfly Valve Performance Data

Maximum Working Pressure Rating: 300 PSI

(Commercial Applications - Sizes 2" thru 12")

CV VALUES

Valve Size	O.D.	Disc Position (degrees open)							
		25°	30°	40°	50°	60°	70°	80°	90°
In./mm	*In./mm*								
2 *50*	2.375 *60.3*	4 *0.3*	7 *0.5*	19 *1.3*	44 *3.0*	48 *3.3*	80 *5.5*	111 *7.7*	158 *10.9*
2½ *65*	2.875 *73.0*	9 *0.6*	14 *1.0*	34 *2.3*	78 *5.4*	84 *5.8*	142 *9.8*	196 *13.5*	280 *19.3*
3 *80*	3.500 *88.9*	14 *1.0*	20 *1.4*	50 *3.4*	112 *7.7*	128 *8.8*	215 *14.8*	285 *19.7*	400 *27.6*
4 *100*	4.500 *114.3*	29 *2.0*	41 *2.8*	100 *6.9*	239 *16.5*	250 *17.2*	420 *29.0*	582 *40.1*	826 *57.0*
5 *125*	5.563 *141.3*	62 *4.3*	76 *5.2*	182 *12.5*	415 *28.6*	445 *30.7*	780 *53.8*	1,100 *75.8*	1,480 *102.0*
6 *150*	6.625 *168.3*	96 *6.6*	141 *9.7*	325 *22.4*	755 *52.1*	809 *55.8*	1,370 *94.5*	1,920 *132.4*	2,678 *184.6*
8 *200*	8.625 *219.1*	172 *11.9*	252 *17.4*	592 *40.8*	1,365 *94.1*	1,460 *100.7*	2,430 *167.5*	3,410 *235.1*	4,819 *332.3*
10 *250*	10.750 *273.1*	230 *15.9*	328 *22.6*	792 *54.6*	1,825 *125.8*	1,962 *135.3*	3,260 *224.8*	4,590 *316.5*	6,431 *443.4*
12 *300*	12.750 *323.9*	418 *28.8*	604 *41.6*	1,440 *99.3*	3,350 *231.0*	3,590 *247.5*	5,980 *412.3*	8,750 *603.3*	11,947 *823.7*

HEADLOSS EQUIVALENT LENGTH OF PIPE

Valve Size	O.D.	Equivalent Feet of Pipe* C=120			Max. Insulating Thickness
		Sch. 10	Sch. 30	Sch. 40	
In./mm	*In./mm*	*Ft./m*			*In./mm*
2 *50*	2.375 *60.3*	5.8 *1.8*	- -	4.7 *1.4*	2 *50*
2½ *65*	2.875 *73.0*	5.1 *1.6*	- -	3.7 *1.1*	2½ *65*
3 *80*	3.500 *88.9*	9.6 *2.9*	- -	7.2 *2.2*	2 *50*
4 *100*	4.500 *114.3*	7.5 *2.3*	- -	5.7 *1.7*	2½ *65*
5 *125*	5.563 *141.3*	7.0 *2.1*	- -	5.6 *1.7*	2½ *65*
6 *150*	6.625 *168.3*	6.1 *1.9*	- -	4.8 *1.5*	2½ *65*
8 *200*	8.625 *219.1*	6.3 *1.9*	5.7 *1.7*	- -	2½ *65*
10 *250*	10.750 *273.1*	11.3 *3.4*	10.2 *3.1*	- -	3 *80*
12 *300*	12.750 *323.9*	8.4 *2.6*	7.4 *2.3*	- -	3½ *90*

* The equivalent feet of pipe is based on the Hazen and Williams formula and the flow rates typically used with each size valve.

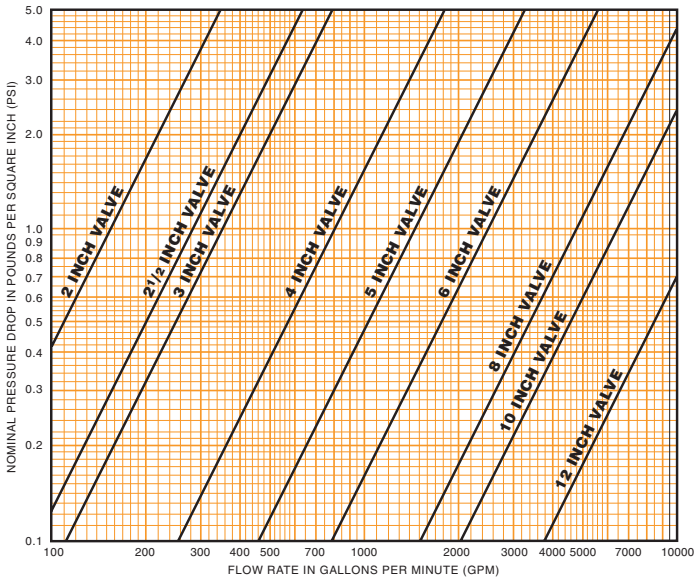
VALVE WEIGHT AND TORQUE VALUES

Valve Size	O.D.	* Approx. Wt. Ea.	Operating Pressure				
			50 PSIG	100 PSIG	150 PSIG	200 PSIG	300 PSIG
In./mm	*In./mm*	*Lbs./Kg*	*†Breakaway Torque (In. - Lbs) / N-m*				
2 *50*	2.375 *60.3*	5 *2.3*	72 *8.1*	90 *10.2*	100 *11.3*	120 *13.6*	200 *22.6*
2½ *65*	2.875 *73.0*	10 *4.5*	105 *11.9*	126 *14.2*	144 *16.3*	162 *18.3*	250 *28.2*
3 *80*	3.500 *88.9*	11 *5.0*	126 *14.2*	139 *15.7*	168 *19.0*	195 *22.0*	425 *48.0*
4 *100*	4.500 *114.3*	15 *6.8*	265 *29.9*	285 *32.2*	320 *36.2*	355 *40.1*	800 *90.4*
5 *125*	5.563 *141.3*	20 *9.0*	491 *55.5*	578 *65.3*	615 *69.5*	674 *76.2*	850 *96.0*
6 *150*	6.625 *168.3*	46 *20.9*	625 *70.6*	678 *76.6*	760 *85.9*	820 *92.7*	1,650 *186.4*
8 *200*	8.625 *219.1*	68 *30.8*	1,170 *132.2*	1,400 *158.2*	1,640 *185.3*	1,760 *198.9*	3,200 *361.6*
10 *250*	10.750 *273.1*	78 *35.4*	1,930 *218.1*	2,375 *268.4*	2,860 *323.2*	3,100 *350.3*	6,000 *678.0*
12 *300*	12.750 *323.9*	91 *41.3*	2,900 *327.7*	3,420 *386.4*	4,760 *537.9*	5,600 *632.8*	11,000 *1,242.9*

† These values are valid for water and lubricating fluid service only.
Contact Anvil for information on torques for dry and non-lubricating fluid service.

* Weights may vary based on valve options selected.

PRESSURE DROP (PSI) VS. (GPM)



SERIES 7700

Butterfly Valve

Resistance to various chemicals, as a function of temperature °F (Fahrenheit)

NYLON COATING

Coating Condition after 18 months immersion

RESISTANCE	68°F	104°F	140°F	176°F
Alcohols				
benzyl alcohol	L	P	P	P
butanol	G***	L	P	
ethanol (pure)	G***	G	L	
glycerine (pure)	G	G	L	P
glycol	G	G	G	P
methanol (pure)	G***	L	P	
Chlorinated solvents				
carbon tetrachloride	P			
methyl bromide	G	P		
methyl chloride	G	P		
perchloroethylene	G	G	L	
trichloroethane	L	P		
trichloroethylene	G	L		
Phenols				
	P	P	P	P
Various Organic Compounds				
anethole	G			
carbon disulphide	G***	L**	P	
diacetone alcohol	G	G***	L	P
dimethyl formamide	G	G	L	
ethylene chlorhydrin	P	P		
ethylene oxide	G	G	L	P
furfurol	G	G***	L	P
glucose	G	G	G	G
tetraethyl lead	G			
tetrahydrofurare	G	G	L	
Salts, esters, ethers				
amyl acetate	G	G	G	L
butyl acetate	G	G	G	L
diethyl ether		G		
dioctylphosphate	G	G	G	L
dioctylphthalate	G	G	G	L
ethyl acetate	G	G	G	
fatty acid esters	G	G	G	G
methyl acetate	G	G	G	
methyl sulfate	G	L		
tributylphosphaate	G	G	G	L
tricresylphosphate	GG	G	G	L
Various Products				
beer	G			
cider	G			
crude petroleum	G	G	G***	
diesel fuel	G	G	G***	
fruit juices	G	G		
fuel-oil	G	G	G	
greases	G	G	G	G
ground nut oil	G	G		
high octane gasoline	G	G	G***	
kerosene (paraffin)	G	G	G***	
linseed cake	G	G	G	G
milk	G	G	G	G
mustard	G			
normal gasoline	G	G	G***	
oils	G	G	G	G

RESISTANCE	68°F	104°F	140°F	176°F
Various Products (cont'd.)				
solutions or emulsions of D.D.T. or lindane hudroxy-quinoline (agricultural sprays)	G			
soap solution	G			
stearin	G	G	G	
solvent naptha	G	G	G***	
natural gas	G	G		
turpentine	G	G	G***	
vinegar	G			
wine	G			
Inorganic Acids				
chromic acid (10%)	P	P	P	P
hydrochlorhic acid (1%)	G	L	P	P
hydrochlorhic acid (10%)	G	L	P	P
nitric acid (all concentrations)	P	P	P	P
phosphoric acid (50%)	G	L	P	P
sulphuric acid (1%)	G	L	L	P
sulphuric acid (10%)	G	L	P	P
sulphur trioxide	L	P	P	P
Other Inorganic products				
agriculture sprays	G	G		
bleach solutions	L	P	P	P
bromine	P	P		
chlorine	P	P	P	P
fluorine	P	P	P	P
hydrogen	G	G	G	G
hydrogen peroxide (20 volumes)	G	L		
mercury	G	G	G	G
oxygen	G	G	L	P
ozone	L	P	P	P
potassium permanganate (5%)	P	P		
sea water	G	G	G	
soda water	G	G	G	G
sulphur	G	G		
water	G	G	G	L
Aldehydes & Ketones				
acetaldehyde	G	L	P	
acetone	G	G***	L	P
benzaldehyde	G	L	P	
cyclohexanone	G	L	P	
formaldehyde (technical grade)	G	L	P	
methylethylketone (MEK)	G	G	L	P
methylethylketone (MIBK)	G	G	L	P
Hydrocarbons				
acetylene	G	G	G	G
benzene	G	G***	L	
butane	G	G	G	
cyclohexane	G	G	G	L
decaline	G	G	G	L
HFA (Forane®)	G			
hexane	G	G	G	
methane	G	G	G	
naphthalene	G	G	G	L
propane	G	G	G	
styrene	G	G***		

RESISTANCE	68°F	104°F	140°F	176°F
Hydrocarbons (cont'd.)				
tulene	G	G***	L	L
xylene	G	G***	L	L
Inorganic Bases				
ammonium hydroxide (concentrated)	G	G	G	G
ammonia (liquid or gas)	G	G		
lime-wash	G	G	G	
potassium hydroxide (50%)	G	L	P	P
sodium hydroxide (5%)	G	G	L	
sodium hydroxide (10%)	G	L	L	
sodium hydroxide (50%)	G	L	P	P
Organic acids & anhydrides				
acetic acid	L	P	P	P
acetic anhydrie	L	P	P	P
citric acid	G	G	L	P
formic acid	P	P	P	P
lactic acid	G	G	G	L
oleic acid	G	G	G	L
oxalic acid	G	G	L	P
picric acid	L	P	P	P
tartaric acid (saturated solution)	G	G	G	L
uric acid	G	G	G	L
Inorganic Salts				
alum	G	G	G	
aluminium sulphate	G	G	G	G
ammonium nitrate	G	G	G	
barium chloride	G	G	G	G
calcium arsenate (concentrated solutions or slurries)	G	G	G	
calcium chloride	G	G	G	G
calcium sulphate	G	G	L	
copper sulphate	G	G	G	G
diammonium phosphate	G	G	L	
magnesium chloride (50%)	G	G	G	G
potassium ferrocyanide	G	G	G	
potassium nitrate	G*	L*	P	P
potassium sulphate	G	G	G	G
sodium carbonate	G	G	L	P
sodium chloride (saturated)	G	G	G	G
sodium silicate	G	G	G	
sodium sulphide	G	L	L	
trisodium phosphate	G	G	G	G
Organic bases				
aniline (pure)	L	P	P	P
diethanolamine (20%)	G	G***	G***	L
pyridine (pure)	L	P	P	P
urea	G	G	L	L

LEGEND		
*	=	Slight Yellowing
**	=	Yellowing
***	=	Swelling observed
G	=	Good
L	=	Limited
P	=	Poor

SERIES 7600

Butterfly Valve

The versatile Series 7600 Grooved-End Butterfly Valve has features that can satisfy a wide range of service requirements and allow it to be used with a diverse range of fluids. Its ductile iron body is epoxy coated to resist atmospheric attack, and the elastomer encapsulated disc can be ordered with EPDM or Nitrile materials. Rugged enough to take the punishment, yet the Series 7600 Valve is light in weight for easy handling and installation.

The Series 7600 Valve is rated 200 PSI (13.8 bar) to full vacuum, at temperatures from 0° to 150° F (-17.8° to 65.6° C). Every valve is seat tested to 110% of rated pressure. Not intended for use in potable water systems.

GENERAL SPECIFICATIONS

BODY: One-piece ductile iron, fully epoxy coated – light weight for easy handling.

DISC: Streamlined profile for maximum flow and minimal seat wear. The ductile iron disc is available with a choice of EPDM or Nitrile coverings.

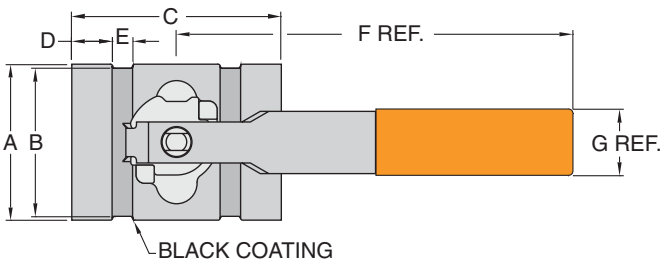
STEM/DISC ATTACHMENT: A splined interference fit creates a permanent rigid connection between the disc and stem, and eliminates the need for pins or bolts in the flow way.

STEM: Two-piece design for maximum flow. Top stem is Double D, giving positive indication of disc position at all times.

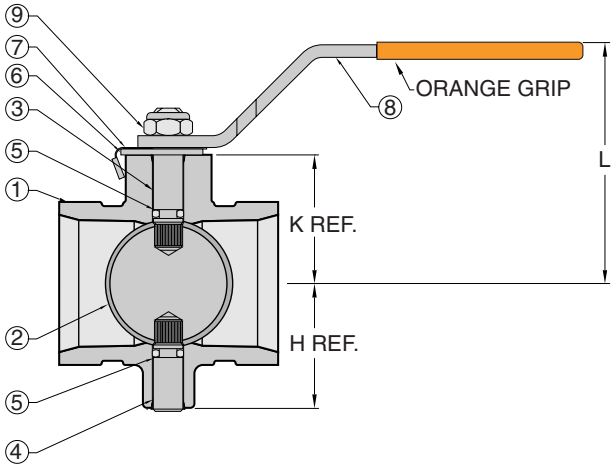
STEM SEAL: The interference between the rubber covered disc hub and the smooth, epoxy coated body provides the primary stem seal. O-rings on both upper and lower stems provide a secondary seal.

HANDLE: Two position on/off handle is standard.

TESTING AND CONFORMANCE: Testing to MSS SP-67. Grooved ends conform to the requirements of AWWA C606 for steel pipe.



MATERIAL SPECIFICATIONS



1. **BODY:** Epoxy Coated, ASTM A 536
2. **DISC:** EPDM or Nitrile, ASTM A 536
3. **LOWER STEM:** AISI 410
4. **UPPER STEM:** AISI 410
5. **STEM O-RING:** Nitrile
6. **LATCH PLATE:** Zinc Plated, ASTM A 228
7. **LATCH SPRING:** Electrolytic Coloring, ASTM A 228
8. **NUT, SELF LOCKING:** ASTM A 563
9. **HANDLE:** Zinc Plated, ASTM A 619

SERIES 7600 BUTTERFLY VALVE DIMENSIONS

Size	DIMENSIONS									
	A	B	C	D	E	F	G	H	K	L
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
2 *50*	2 3/8 *60.3*	2 1/4 *57.2*	3 7/16 *87.4*	5/8 *15.9*	5/16 *8.7*	6 *152.4*	1 *25.4*	1 13/16 *46.0*	2 *50.8*	3 3/16 *81.0*
2 1/2 *65*	2 15/16 *74.2*	2 3/4 *70.2*	3 13/16 *96.8*	5/8 *15.9*	3/8 *8.9*	6 *152.4*	1 *25.4*	2 1/16 *52.3*	2 7/16 *62.0*	3 5/8 *91.9*
3 *80*	3 9/16 *90.3*	3 3/8 *86.4*	3 13/16 *96.8*	5/8 *15.9*	3/8 *8.9*	8 7/16 *214.4*	1 *25.4*	2 5/8 *66.5*	2 11/16 *68.1*	4 1/4 *108.0*
4 *100*	4 9/16 *116.1*	4 3/8 *111.8*	4 5/8 *117.3*	5/8 *15.9*	3/8 *8.9*	8 7/16 *214.4*	1 *25.4*	3 5/16 *84.1*	3 5/16 *84.1*	4 15/16 *125.5*
6 *150*	6 3/4 *171.0*	6 9/16 *166.6*	5 1/4 *133.4*	5/8 *15.9*	3/8 *8.9*	12 1/4 *311.2*	1 1/4 *31.8*	4 3/8 *111.3*	4 3/8 *111.3*	7 *177.8*

SERIES 8000GR

Butterfly Valve

For use in Grooved-End Piping Systems 14" to 24"

FEATURES

- Up to 200 psig (13.8 bar) WOG (non-shock)
- Outstanding flow characteristics
- Low torque operation
- Superior flow control
- Streamline profile disc
- Suitable for HVAC applications
- Vacuum service to 29.5" (750 mm) Hg
- End-of-line service capabilities

BUTTERFLY VALVE PERFORMANCE DATA

PRESSURE RATINGS:
150 PSIG (10.3 bar) WOG (non-shock)
200 PSIG (13.8 bar) WOG (non-shock)
Special order - available upon request.
29.5" (750 mm) Hg Vacuum Service

TEMPERATURE RATINGS:

Grade E (EPDM):
-40°F to 230°F (-40°C to 110°C) (Service Temperature Range)
Recommended for water service, dilute acids, alkaline, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM SERVICES.

Grade T (Nitrile)
-20°F to 180°F (Service Temperature Range) (-29°C to 82°C)
Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
NOT FOR USE IN HOT WATER SERVICES.

FIGURE 8000GR - WEIGHT

Valve Size ANSI	O.D.	Weight	
		Valve Only	Valve with Gear Operator
In./DN(mm)	*In./mm*	*Lbs./Kg.*	*Lbs./Kg.*
14 *350*	14 *355.6*	354 *160.6*	378 *171.5*
16 *400*	16 *406.4*	428 *194.1*	452 *205.0*
18 *450*	18 *457.2*	524 *237.7*	548 *248.6*
20 *500*	20 *508.0*	704 *319.3*	728 *330.2*
24 *600*	24 *609.6*	1,027 *465.8*	1,097 *497.6*

SERIES 8000GR

Butterfly Valve

MATERIAL SPECIFICATIONS

BODY: Cast Iron - ASTM A 126 CL.B

EXTENSION BODY:
Pipe - ASTM A 53 Steel
Flange - ANSI B16.5 Forged Steel

LINER: Grade E (EPDM), GRADE T (Nitrile)

DISC:
Stainless Steel - ASTM A 351
Aluminum Bronze - ASTM B 148 C95400
Ductile Iron - ASTM A 536 Grade 65-45-12

DRIVE SHAFT:
Stainless Steel - ASTM A 582 Type 416
Stainless Steel - ASTM A 276 Type 316

BOTTOM SHAFT:
Stainless Steel - ASTM A 582 Type 416
Stainless Steel - ASTM A 276 Type 316

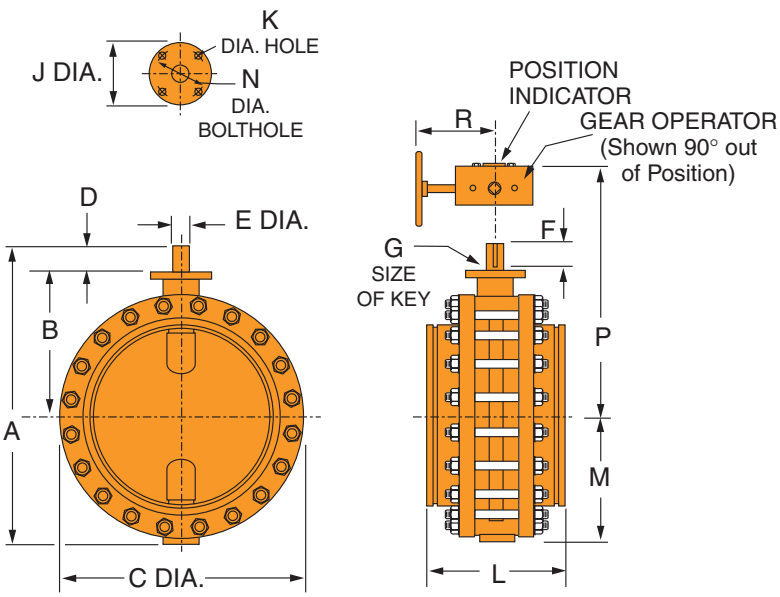
RETAINING SCREW: Steel

THRUST WASHER: Acetal

PLUG: Cast Iron - ASTM A 126 CL.B

UPPER BEARING: Teflon (Reinforced)

LOWER BEARING: Teflon (Reinforced)



SERIES 8000GR BUTTERFLY VALVES - DIMENSIONS

Valve Size ANSI	O.D.	A	B	C	D	E	F	G	J	K	L	M	N	P	R
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
14 *350*	14.000 *356*	26¼ *667*	13¼ *337*	21 *533*	2¼ *57*	1½ *38*	2 *51*	⅜ x ⅜ *87*	6 *152*	½ *13*	13¹⁄₁₆ *332*	10¾ *273*	5 *127*	17¹⁵⁄₁₆ *456*	10 *254*
16 *400*	16.000 *406*	29½ *749*	14¾ *375*	23½ *597*	2¼ *57*	1½ *38*	2 *51*	⅜ x ⅜ *87*	6 *152*	½ *13*	14⁵⁄₁₆ *364*	12½ *318*	5 *127*	19⁷⁄₁₆ *494*	10 *254*
18 *450*	18.000 *457*	32¾ *832*	15¾ *400*	25 *635*	3 *76*	1¾ *44*	2⅜ *60*	⅜ x ⅜ *87*	6¾ *171*	½ *13*	15⅜ *391*	14 *356*	5 *127*	20⁷⁄₁₆ *519*	10 *254*
20 *500*	20.000 *508*	34 *864*	16¼ *413*	27½ *699*	3 *76*	1¾ *44*	2⅝ *66*	⅜ x ⅜ *87*	6¾ *171*	½ *13*	16⅜ *416*	15 *381*	5 *127*	20¹⁵⁄₁₆ *532*	10 *254*
24 *600*	24.000 *610*	39⅜ *1,000*	19⅛ *486*	32 *813*	3 *76*	2¼ *57*	3¼ *83*	½ x ½ *116*	9½ *241*	¹³⁄₁₆ *21*	18¼ *464*	16¾ *425*	6½ *165*	24⅜ *619*	10¼ *260*

SERIES 8000GR BUTTERFLY VALVES (ORDERING INFORMATION)

Sample Part Number
18" GC-8282-6 —>

18"	G	C -	8	2	8	2	6
Valve Size	**Body Style**	**Body Material**	**Series**	**Seat Material**	**Disc Material**	**Operator**	**Stem**
14" - 24"	**G** - Grooved End	**C** - Cast Iron	8 - 8000	**1** - Nitrile **2** - EPDM	**0** - Nickel Plate Ductile Iron **7** - 316 S.S **8** - Bronze (Al-Brz.)	**0** - None **2** - Gear Operator **3** - Pneumatic **4** - Electric **5** - Spring Return Pneumatic **6** - Square Nut (with Gear Operator) **7** - Chain Wheel (with Gear)	**6** - 416 S.S. w/ RTFE Bearing **7** - 316 S.S. w/ RTFE Bearing

SERIES 8000GR

Butterfly Valve

Torque is the rotary effort required to operate a value. This turning force in a butterfly valve is determined by three factors; the friction of the disc and seat due to interference for sealing, bearing friction, and fluid dynamic torque.

Breakaway torque is the total of the torques resulting from bearing friction and disc/seat interference friction at a given pressure differential. This value is normally the highest required torque to operate a valve, and is used to size the actuator. Listed below are recommended sizing torques.

NOTE: These values are based on testing performed in the Gruvlok Research & Development Center. These values include a safety factor and are valid for water and lubricating fluids only at 70° F (21° C).

Since torques are greatly increased for dry and non-lubricating fluids and temperature variations, contact your Anvil Sales Office for accurate values in these applications.

ACTUATOR SIZING FOR GENERAL SERVICE APPLICATION
SERIES 8000GR BREAKAWAY TORQUE

Line Pressure	Valve Size (In.)				
	14	16	18	20	24
(PSI)/Bar	*Breakaway Torque (In. - Lbs.) / N-m*				
50 *3.4*	4,000 *452*	4,800 *542*	5,400 *610*	10,000 *1,130*	13,000 *1,469*
100 *6.9*	4,800 *542*	5,200 *588*	6,200 *701*	12,500 *1,412*	18,000 *2,034*
150 *10.3*	5,500 *621*	6,500 *734*	8,500 *960*	13,500 *1,525*	21,500 *2,429*

NOTE: For Teflon seated valves, contact your Anvil Sales Office.
These values are valid for water and lubricating fluid service only.
Contact factory for information on torques for dry and non-lubricating fluid service.

CV VALUES (WATER @ 70°F SP. GR. = 1.00)

Valve Size	Disc Position (Degrees Open)							
	25°	***30°***	***40°***	***50°***	***60°***	***70°***	***80°***	***90°***
In./mm								
14 *350*	650 *44.8*	825 *56.9*	1,500 *103.4*	2,300 *158.6*	3,500 *241.3*	6,200 *427.5*	9,700 *668.8*	10,500 *723.9*
16 *400*	850 *58.6*	1,000 *68.9*	1,850 *127.6*	2,900 *199.9*	4,600 *317.2*	7,500 *517.1*	10,600 *730.8*	13,500 *930.8*
18 *450*	1,100 *75.8*	1,400 *96.5*	2,450 *168.9*	3,800 *262.0*	5,000 *344.7*	9,700 *668.8*	13,850 *954.9*	18,000 *1,241.1*
20 *500*	1,400 *96.5*	1,650 *113.8*	3,050 *210.3*	4,800 *330.9*	7,400 *510.2*	12,500 *861.8*	17,750 *1,223.8*	23,000 *1,585.8*
24 *600*	2,000 *137.9*	2,400 *165.5*	4,200 *289.6*	6,600 *455.1*	10,500 *723.9*	17,000 *1,172.1*	23,000 *1,585.8*	31,000 *2,137.4*

Fluid Dynamic Torque is the force exerted when a fluid passes over the surface of the butterfly valve disc. The magnitude of this force is dependent on valve size, disc opening and flow through the valve. Typically, fluid dynamic torque is a maximum at an approximate 75° disc opening. Generally, the effects of dynamic torque can be ignored when the velocity is less than 15 feet/second for liquids and 15,000 feet/minute for gases to minimize the effects of turbulence on the valve. For applications above these limits, consult engineering.

The formula for determining the velocity for liquids is:

$$V = 0.0022 \frac{Q}{A}$$

V = Velocity of liquid (feet/second)
Q = Flow (gallons/minute)
A = Area of upstream pipe (sq. ft.)
See "Area of Pipe" chart

The formula for determining the velocity of gases:

$$Vg = \frac{Qf}{A}$$

Vg = Velocity of gas (feet/minute)
Qf = Flow of gas @ flowing condition*
(cubic feet/minute)
A = Area of upstream pipe (sq. ft.)
See "Area of Pipe" Chart

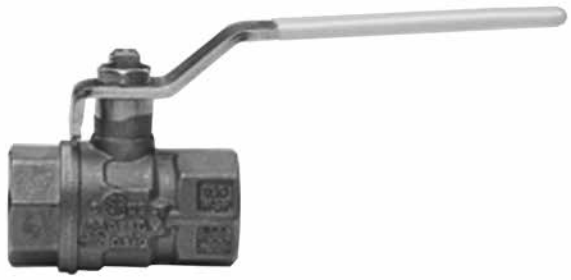
* Flowing condition means at temperature and pressure of gas stream in the valve

AREA OF PIPE

Pipe Size (Sch 40)	Area
In./mm	*Sq. ft/Sq. cm*
14 *350*	0.940 *873.29*
16 *400*	1.227 *1,140*
18 *450*	1.553 *1,443*
20 *500*	1.931 *1,794*
24 *600*	2.792 *2,594*

FIG. 161N LF & FIG. 1615 LF

Lead Free* Brass Ball Valves



Lead Free* Brass Ball Valve – NPT
161N LF ¼" - 4" Full Port
Connection: ANSI B 1.20.1 - Female/Female

Lead Free* Brass Ball Valve – Solder
1615 LF ½" - 3" Full Port
Connection: ANSI B 16.18 - Solder Ends

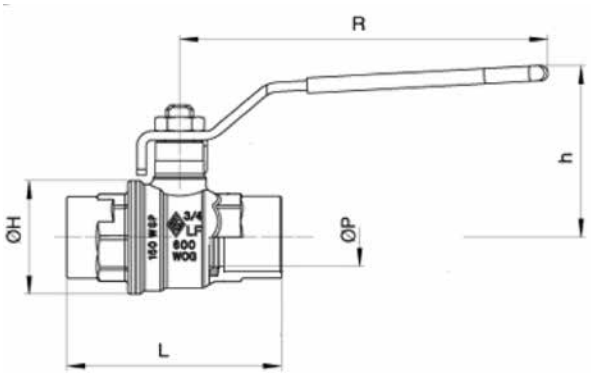
FEATURES

- Low Cost, Lead Free*, Ball Valve Solution
- Pressure Rating: 600psi WOG - 150psi WSP
- Temperature Rating: 366° F
- Blow Out Proof Stem
- Chrome Plated Brass Ball
- P.T.F.E. Seats & Double O-Ring Stem Packing

MATERIAL SPECIFICATIONS

BODY: Brass CW 510L
END CONNECTION: Brass CW 510L
BALL: (¼" - 2") Brass CW 510L – Chrome Plated; (2½" - 4") Steel - Chrome Plated
STEM: Brass CW 510L
HANDLE: Steel
BALL SEAT: P.T.F.E.
THRUST WASHER: P.T.F.E.
O-RING: NBR & FKM
NUT: Steel

AVAILABLE OPTIONS
Lever Handle, Lock Device, Memory Stop, Stem Extension, and "T" Handle



DIMENSIONS

Valve Code	Size	ØP	ØH	L	h	R	Cv	WOG	WSP	Approx. Wt. Ea.
	In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*				*Lbs./Kg*
161N LF FULL PORT THREADED END	¼	0.39	0.90	2.02	1.65	3.86	6.29	600	150	0.33
	8	*9.9*	*22.9*	*51.3*	*41.9*	*98.0*				*0.15*
	⅜	0.39	0.90	2.02	1.65	3.86	6.99	600	150	0.30
	10	*9.9*	*22.9*	*51.3*	*41.9*	*98.0*				*0.14*
	½	0.55	1.18	2.22	1.69	3.78	19.00	600	150	0.42
	15	*14.0*	*30.0*	*56.4*	*42.9*	*96.0*				*0.19*
	¾	0.75	1.42	2.46	2.22	4.76	34.50	600	150	0.71
	20	*19.1*	*36.1*	*62.5*	*56.4*	*120.9*				*0.32*
	1	0.94	1.71	3.01	2.32	4.76	50.18	600	150	0.99
	25	*24.0*	*43.4*	*76.5*	*58.9*	*120.9*				*0.45*
	1¼	1.19	2.09	3.37	2.85	5.94	103.70	600	150	1.74
	32	*30.2*	*53.1*	*85.6*	*74.4*	*150.9*				*0.79*
	1½	1.50	2.56	3.70	3.09	5.94	268.40	600	150	2.45
	40	*38.1*	*65.0*	*94.0*	*78.5*	*150.9*				*1.11*
	2	1.95	3.39	4.33	3.70	6.30	309.20	600	150	4.85
	50	*49.5*	*86.1*	*110.0*	*94.0*	*160.0*				*2.20*
	2½	2.44	4.09	5.16	4.59	8.07	624.00	600	150	8.22
	65	*62.0*	*103.9*	*131.1*	*116.6*	*205.0*				*3.73*
	3	2.99	4.96	5.94	4.98	8.07	1,009.00	600	150	13.07
	80	*75.9*	*126.0*	*150.9*	*126.5*	*205.0*				*5.93*
	4	3.94	6.54	7.60	6.54	10.31	1,622.00	600	150	27.34
	100	*100.1*	*166.1*	*193.0*	*166.1*	*261.9*				*12.40*
1615 LF FULL PORT SOLDERED END	½	0.55	1.22	2.19	1.77	3.78	18.90	600	150	0.39
	15	*14.0*	*31.0*	*55.6*	*45.0*	*96.0*				*0.18*
	¾	0.75	1.46	2.78	2.22	4.76	34.22	600	150	0.63
	20	*19.1*	*37.1*	*70.6*	*56.4*	*120.9*				*0.29*
	1	0.94	1.76	3.37	2.32	4.76	49.88	600	150	0.95
	25	*24.0*	*44.7*	*85.6*	*58.9*	*120.9*				*0.43*
	1¼	1.19	2.11	3.86	2.85	5.94	103.00	600	150	1.79
	32	*30.2*	*53.6*	*98.0*	*72.4*	*150.9*				*0.81*
	1½	1.50	2.64	4.48	3.09	5.94	307.00	600	150	2.58
	40	*38.1*	*67.1*	*113.8*	*78.5*	*150.9*				*1.17*
	2	1.95	3.39	5.33	3.70	6.30	307.00	600	150	5.03
	50	*49.5*	*86.1*	*135.4*	*94.0*	*160.0*				*2.28*
	2½	2.44	4.09	6.14	4.59	8.07	622.00	600	150	8.80
	65	*62.0*	*103.9*	*156.0*	*116.6*	*205.0*				*3.99*
	3	2.99	4.96	7.17	4.98	8.07	1,005.00	600	150	12.87
	80	*75.9*	*126.0*	*182.1*	*126.5*	*205.0*				*5.84*

* Lead free refers to the wetted suface of pipe, fitings and fixtures in potable water systems that have a weighted average lead content = 0.25%. Source: California Health & Safety Code (116875). Vermont Act 193.

SERIES 7500

Ball-valves

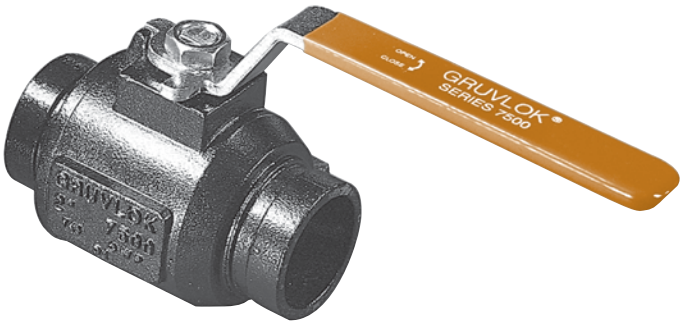
The Series 7500 grooved-end ball valve line consists of a 2" to 6", two piece design, and is available in configurations to address a broad spectrum of application requirements.

The Series 7500 has generous factors of safety for pressure retention and stem torsional strength. In addition, it has a blow-out proof stem design, low operating torque, and high Cv.

The Series 7500 is compliant with NACE MR01-75 when stainless steel trim is specified.

Grooved ends conform to the requirements of AWWA C606 for steel pipe.

For special configurations, contact your Anvil representative.



For stainless steel, see the stainless steel section.

PRESSURE-RATING:
800 psig CWP (55 bar) in ASTM A 395 Ductile Iron

MATERIAL SPECIFICATIONS

DUCTILE IRON/STAINLESS STEEL

BODY: Ductile Iron ASTM A 395

ENDPLATE: Ductile Iron ASTM A 395

BALL: Stainless Steel 316 or 304

STEM: 316 Stainless Steel

THRUST WASHER: RTFE

STEM SEAL: Flouroelastomer

RETAINING RING: Carbon Steel

HANDLE: Carbon Steel Zinc Plated

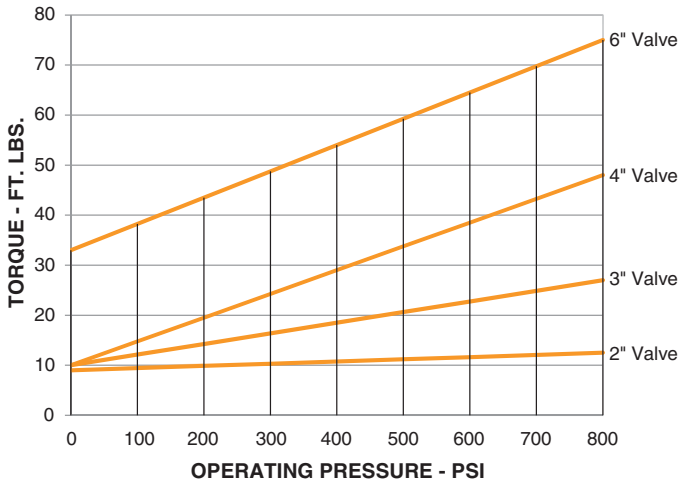
HANDLE NUT: 300 Series Stainless Steel

SEAT: RTFE

BODY SEAL: Viton

LOCK PLATE: 300 Series Stainless Steel

NOMINAL OPERATING TORQUE



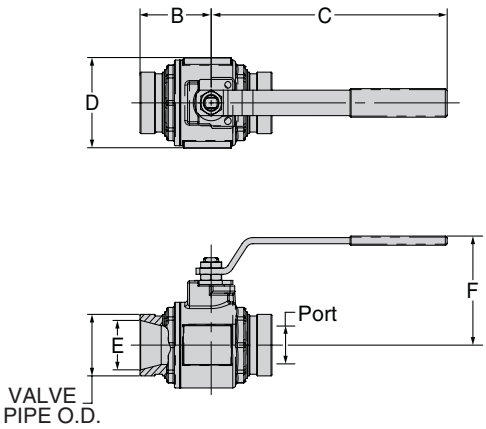
The nominal torque values are for water and lubricating service only.
For dry gasses an additional multiplier of 2 should be applied to the nominal values.
Additional torque of up to 3 times the nominal value may be required to break the ball loose if the valve is not frequently operated.

SERIES 7500 BALL VALVES (ORDERING INFORMATION)

Sample Part Number 4" GI-7512-2 —>	4"	G	I -	75	4	2 -	2
	Size	Configuration	Body/End Material	Series	Ball and Stem Material	Seat Material	Operator
	2" - 6"	**G** - 2 Way Grooved End	**I** - Ductile Iron ASTM A395	75 - 7500	**4** - 304 Stainless Steel (2" - 4") **6** - 316 Stainless Steel	**2** - RTFE / Flouroelastomer	**2** - 2 Position Locking Handle **3** - Bare Stem (6" only) **M** - Mining Handle (4" & 6" only)

SERIES 7500

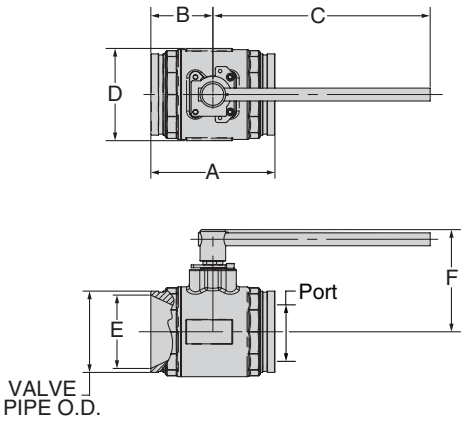
Ball-valves



7500 BALL VALVE

Size ANSI	O.D.	Dimensions							Cv	Approx. Wt. Ea.
		A	B	C	D	E	F	Port		
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*Lbs./Kg*
2 *50*	2.375 *60.3*	5 1/2 *140*	2 31/32 *75*	9 55/64 *250*	3 1/2 *89*	1 59/64 *49*	4 15/64 *107*	1 1/2 *38*	170	7.5 *3.4*
3 *80*	3.500 *88.9*	6 9/16 *167*	3 37/64 *91*	12 5/8 *321*	5 5/64 *129*	2 57/64 *74*	5 31/64 *139*	2 1/2 *64*	425	18.0 *8.2*
4 *100*	4.500 *114.3*	8 1/4 *210*	4 11/64 *106*	15 1/64 *382*	5 29/32 *150*	3 3/4 *95*	5 15/16 *151*	3 *76*	600	34.0 *15.5*
6* *150*	6.625 *168.3*	10 7/64 *257*	5 1/16 *129*	15 1/64 *382*	7 33/64 *191*	5 63/64 *152*	7 13/32 *188*	4 *102*	850	67.0 *30.5*

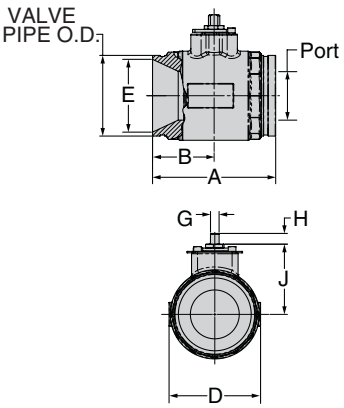
* 6" sizes come bare stem only. 2 position locking handle sold seperately.



7500 BALL VALVE WITH MINING HANDLE

Size ANSI	O.D.	Dimensions							Cv	Approx. Wt. Ea.
		A	B	C	D	E	F	Port		
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*Lbs./Kg*
4* *100*	4.500 *114.3*	8 1/4 *210*	4 11/64 *106*	17 23/32 *450*	5 29/32 *150*	3 3/4 *95*	6 55/64 *174*	3 *76*	600	35.0 *15.9*
6* *150*	6.625 *168.3*	10 7/64 *257*	5 1/16 *129*	17 23/32 *450*	7 33/64 *191*	5 63/64 *152*	8 21/64 *212*	4 *102*	850	68.0 *30.9*

* Mining handle sold separately.



7500 BALL VALVE WITH BARE STEM

Size ANSI	O.D.	Dimensions								Cv	Approx. Wt. Ea.
		A	B	D	E	G	H	I	Port		
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*Lbs./Kg*
6 *150*	6.625 *168.3*	10 7/64 *257*	5 1/16 *129*	7 33/64 *191*	5 63/64 *152*	45/64 *18*	7/8 *23*	5 49/64 *147*	4 *102*	850	66.0 *30.0*

Standard option, handle sold separately.

FIG. 90G
Check Valves

The Fig 90G Check Valve is designed for use with Anvil Gruvlok couplings for fast and easy installation on grooved pipe.

Grooved ends conform to the requirements of AWWA C606.

The valve is fitted with a large bonnet closure for ease of field servicing.

All Fig 90G Check Valves are supplied with a ½" NPT pipe plug installed in the bonnet cap.

The valve is available with Bonnet Gaskets and Clapper Seals made from EPDM or Nitrile.

PERFORMANCE:
Pressure Rating: 300 psi (20.7 bar) maximum working pressure.

The Fig 90G must be installed with the arrow on the valve body point in the direction of flow through the pipeline. This valve must be installed on horizontal pipelines only.

MATERIAL SPECIFICATIONS

BODY: Ductile iron conforming to ASTM A 536, Grade 65-45-12, painted.

BONNET CAP: Ductile iron conforming to ASTM A 536, Grade 65-45-12, painted.

BONNET COUPLING HOUSING: Ductile iron conforming to ASTM A 536, Grade 65-45-12, painted.

CLAPPER: Type 316 Stainless Steel

CLAPPER PIN: Type 316 Stainless Steel

BUSHING: PTFE

CLAPPER SEAT/BUMPER/BONNET GASKET:
Grade E EPDM: -40° to 230°F (-40° to 110°C) Service Temperature Range
Recommended for water service, dilute acids, alkaline, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM SERVICES.

Grade T Nitrile: -20° to 180°F (-29° to 80°C) Service Temperature Range
Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
NOT FOR USE IN HOT WATER SERVICES.

PLUGS: Malleable iron conforming to ASTM A 47, galvanized.

CLOSURE BOLTS & NUTS: Heat treated, oval-neck track head bolts conforming to ASTM A-183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A-563 Grade A or Grade B, or SAE J995 Grade 2. Bolts and nuts are provided zinc electroplated.

FIGURE 90G CHECK VALVE

Nominal Size	O.D.	Nominal Dimensions			Approx. Wt. Ea.
		A	B	C	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg.*
2 *50*	2.375 *60.3*	9.02 *229*	5.12 *30*	1.85 *47*	11.4 *5.2*
2½ *65*	2.875 *73.0*	9.25 *235*	5.34 *136*	2.24 *57*	21.3 *9.7*
3 *80*	3.500 *88.9*	10.75 *273*	5.71 *145*	2.76 *70*	16.0 *7.3*
4 *100*	4.500 *114.3*	12.01 *305*	6.42 *163*	3.31 *84*	33.3 *15.1*

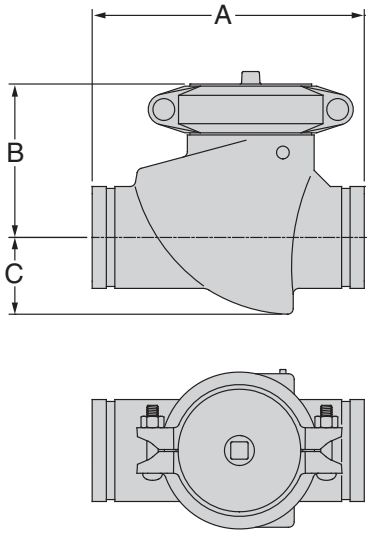
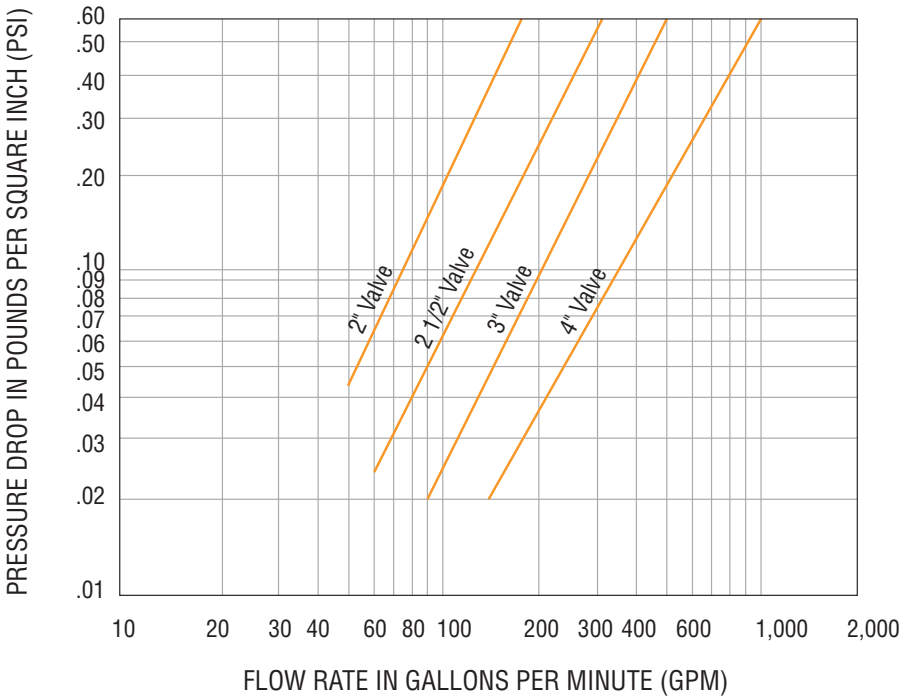


FIG. 90G

Check Valves

FLOW CHARACTERISTICS

The chart below expresses the flow of water through a full open valve.



CV VALUES		
Size		Flow Coefficients – CV
Nominal Diameter	Actual Outside Diameter	Full Open Valve
In./mm	*In./mm*	
2 *50*	2.375 *60.3*	80 –
2½ *65*	2.875 *73.0*	134 –
3 *80*	3.500 *88.9*	210 –
4 *100*	4.500 *114.3*	430 –

CV values for flow of water are with a full open valve.

IMPORTANT NOTE:

The Fig 90G check valve life may be shortened and system damage may occur if check valves are installed too close to a source of unstable flow. Check valves must be installed at a reasonable distance away from pumps, elbows, expanders, reducers or other similar devices. Sound piping practices dictate a minimum of five (5) times the pipe diameter for general use. Distances between three (3) and five (5) diameters are allowable provided the flow velocity is less than 8 feet per second. Distances less than 3 diameters are not recommended.

FIG. 400G

Grooved-End Silent Check Valve

Available in Sizes 2" thru 10"

The 400G is a center guided, spring loaded, silent check valve. Designed and engineered for silent operation with low head loss, the valve disc will close prior to the reversal of flow, thereby preventing or minimizing water hammer and damaging shock.

- The 400G can be used in any HVAC, industrial or commercial grooved piping systems.
- The valve is designed for liquid service with any pipe orientation, flow up or down.
- Bronze metal seats are standard, with Stainless Steel or resilient seats available as an option.
- Flow coefficients for this valve are some of the lowest in the industry and are listed for each size on the drawing.

NOTE: Valve is designed for liquid service only. Install 3 to 4 pipe diameters downstream from pump discharge or elbows to avoid flow turbulence.

MAX. NON-SHOCK WORKING PSI
125# ANSI B16.1 FLANGE RATING

Size	Temperature	
2" - 10"	150˚F *65˚C*	200˚F *90˚C*
	200 PSI *13.8 bar*	190 PSI *13.1 bar*

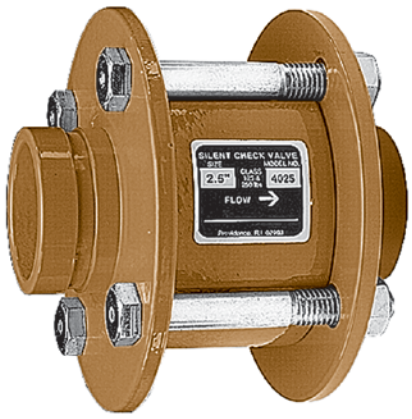


FIGURE 400G GROOVED-END SILENT CHECK VALVE

Valve Size	O.D.	Model	A	B	Cv Flow *	Approx. Wt. Each
In./mm	*In./mm*	*Number*	*In./mm*	*In./mm*		*Lbs./Kg*
2 *50*	2.375 *60.3*	402G	6 *152*	6 *152*	66 *1,676*	12 *5.4*
2½ *65*	2.875 *73.0*	4025G	6¼ *159*	7 *178*	88 *2,235*	15 *6.8*
3 *80*	3.500 *88.9*	403G	6 7/16 *164*	7½ *191*	130 *3,302*	20 *9.1*
4 *100*	4.500 *114.3*	404G	8⅛ *206*	9 *229*	228 *5,791*	36 *16.3*
5 *125*	5.563 *141.3*	405G	11¼ *286*	10 *254*	350 *8,890*	50 *22.7*
6 *150*	6.625 *168.3*	406G	12¼ *311*	11 *279*	520 *13,208*	68 *30.8*
8 *200*	8.625 *219.1*	408G	13¾ *349*	13½ *343*	900 *22,860*	140 *63.5*
10 *250*	10.750 *273.1*	410G	16 *406*	16 *406*	1,450 *36,830*	198 *89.8*

* Flow coefficient is the number of U.S. gallons/minute of 60˚ F (16˚ C) water that will flow through a valve with 1 psi (0.069 bar) of pressure drop across the valve.

MATERIAL SPECIFICATIONS

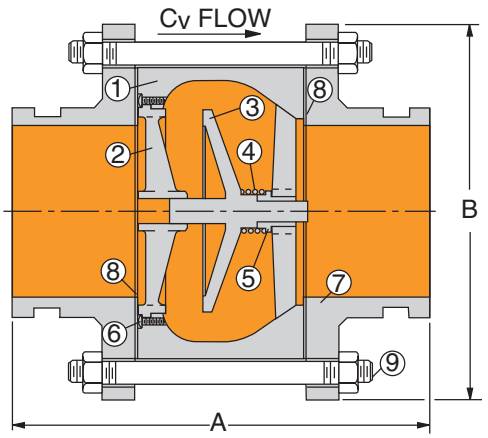
STANDARD MATERIALS:
Cast Iron body ASTM A 48, Class 35
Bronze Disc and Seat ASTM B 584 Alloy 838
Ductile Iron Grooved-Ends ASTM A 395

OPTIONAL TRIM MATERIALS:
Bronze with Nitrile seats
Stainless Steel seats
Stainless with Nitrile seats

1. **BODY:** Cast Iron ASTM A 48, Class 35
2. **SEAT:** Bronze ASTM B 584, Copper Alloy 838
3. **PLUG:** Bronze ASTM B 584, Copper Alloy 838
4. **SPRING:** Stainless Steel T304, ASTM A 313
5. **BUSHING:** Bronze ASTM B 584, Copper Alloy 836
6. **SCREWS:** Stainless Steel T304, ASTM A 276
7. **GROOVED-END:** Ductile Iron ASTM A 395
8. **GASKET:** Non Asbestos

   For gasket grade recommendations see the Technical Data section
9. **BOLTS:** Carbon Steel

Other materials and resilient seats are available... contact your Anvil representative.



SERIES 7800

Check Valves

For use in Grooved-End Piping Systems

The Gruvlok Series 7800 Check Valve is a compact, cost effective valve offering low pressure-drop, non-slam performance. The Series 7800 Check Valve assembly is lighter and faster to install, and costs less than flanged and wafer valve assemblies.

In the fully open position the Series 7800 swing clapper is held tightly against the valve body, out of the flow stream, to provide maximum flow area and prevention of clapper flutter. The clapper design produces quick, non-slam closure before flow reversal can occur, while meeting FM requirements for an anti-water hammer valve rating.

Each valve is hydrostatically tested for leak tightness to 500 PSI. The clapper-seat design permits leak free sealing of back pressures in service conditions ranging from 300 PSI (20.7 bar) to as low as 1 PSI (0.07 bar) (head pressure: 28").

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

PERFORMANCE:

Pressure Rating:
Commercial Applications - Sizes 2" thru 12" inclusive, 300 psi (20.7 bar) maximum working pressure.

MATERIAL SPECIFICATIONS

BODY: Ductile iron conforming to ASTM A 536, Grade 65-45-12

COATING: Rust inhibiting paint on exterior and interior – color: orange enamel

CLAPPER: 2"- 5" Type 304 or 302 stainless steel to ASTM A 167
6"-12" Ductile iron conforming to ASTM A 536, Grade 65-45-12

CLAPPER FACING:
Grade E EPDM: -40° to 230°F (-40° to 110°C) Service Temperature Range
Recommended for water service, dilute acids, alkaline, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM SERVICES.

Grade T Nitrile: -20° to 180°F (-29° to 80°C) Service Temperature Range
Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
NOT FOR USE IN HOT WATER SERVICES.

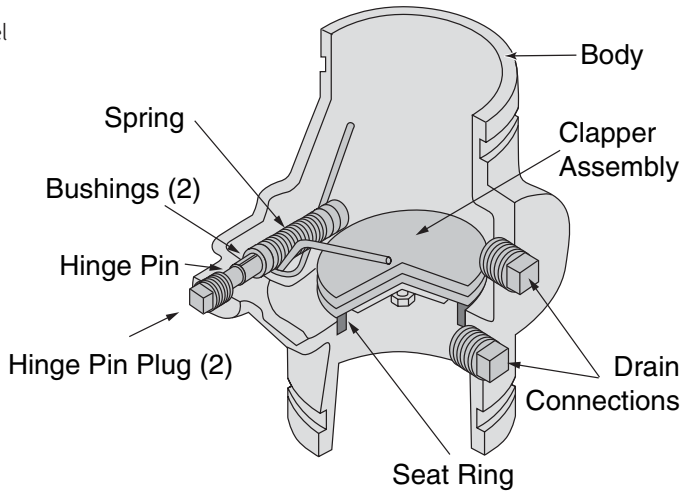
SEAT RING: Type 304 stainless steel to ASTM A 123, ASTM A 213, ASTM A 312 or ASTM A 269

SPRING: Type 302 stainless steel to ASTM A 313

HINGE PIN: Type 304 or 302 stainless steel to ASTM A 580

HINGE PIN BUSHINGS: Sintered bronze to ASTM B 438

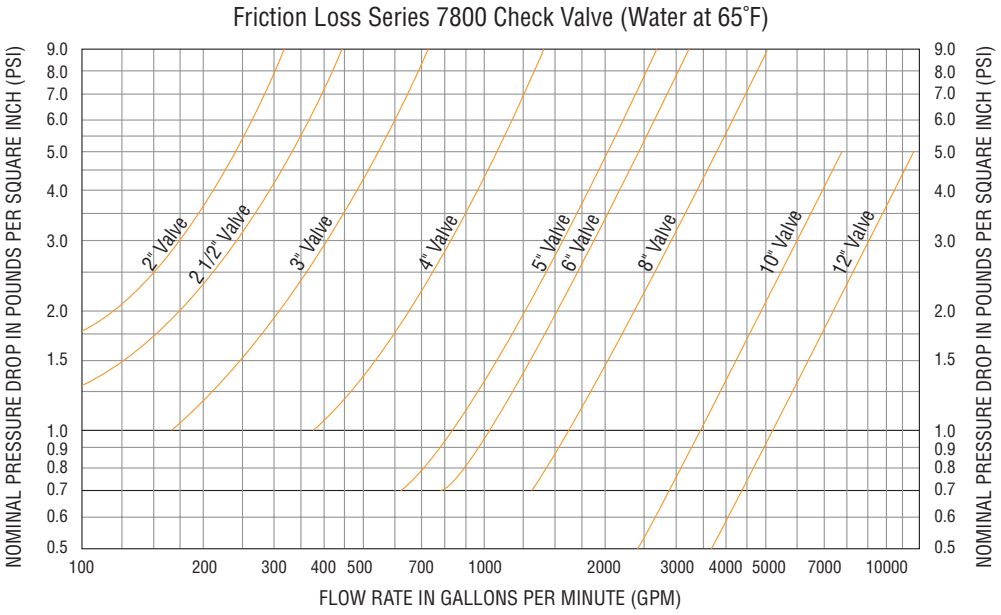
HINGE PIN PLUGS & DRAIN PLUGS: Cast iron to ASTM A 126 Class A



SERIES 7800

Check Valves

For use in Grooved-End Piping Systems



FLOW DATA:

The approximate friction losses, based on the Hazen and Williams formula, expressed in equivalent length of pipe is given below. The friction losses have been calculated on the basis of flow rates typically used with each size valve.

FLOW DATA - FRICTION LOSS (FT. OF PIPE)

Valve Size	O.D.	C=100			C=120		
		Sch. 10	Sch. 30	Sch. 40	Sch. 10	Sch. 30	Sch. 40
In./mm	*In./mm*	*Ft./m*	*Ft./m*	*Ft./m*	*Ft./m*	*Ft./m*	*Ft./m*
2 *50*	2.375 *60.3*	10 *3.0*	— —	8 *2.4*	14 *4.3*	— —	11 *3.4*
2½ *65*	2.875 *73.0*	14 *4.3*	— —	10 *3.0*	20 *6.1*	— —	15 *4.6*
3 *80*	3.500 *88.9*	17 *5.2*	— —	12 *3.7*	23 *7.0*	— —	17 *5.2*
4 *100*	4.500 *114.3*	17 *5.2*	— —	13 *4.0*	23 *7.0*	— —	18 *5.5*
5 *125*	5.563 *141.3*	14 *4.3*	— —	11 *3.4*	20 *6.1*	— —	15 *4.6*
6 *150*	6.625 *168.3*	23 *7.0*	— —	19 *5.8*	33 *10.1*	— —	26 *7.9*
8 *200*	8.625 *219.1*	35 *10.7*	32 *9.8*	30 *9.1*	50 *15.2*	45 *13.7*	43 *13.1*
10 *250*	10.750 *273.1*	28 *8.5*	25 *7.6*	24 *7.3*	40 *12.2*	36 *11.0*	34 *10.4*
12 *300*	12.750 *323.9*	31 *9.4*	28 *8.5*	26 *7.9*	44 *13.4*	39 *11.9*	37 *11.3*

IMPORTANT NOTE:

Check valve life may be shortened and system damage may occur if check valves are installed too close to a source of unstable flow. Check valves must be installed at a reasonable distance away from pumps, elbows, expanders, reducers or other similar devices. Sound piping practices dictate a minimum of five (5) times the pipe diameter for general use. Distances between three (3) and five (5) diameters are allowable provided the flow velocity is less than 8 feet per second. Distances less than 3 diameters are not recommended.

This valve may be installed vertically or horizontally. In a horizontal installation, the hinge pin is to be located on top.

Not for use in copper systems.

SERIES 7800

Check Valves

For use in Grooved-End Piping Systems

SERIES 7800 CHECK VALVES (ORDERING INFORMATION)					
Sample Part Number 4" 7811—>	4"	78	1	1	X
	Size	Series	Clapper Facing Material	Body Finish	Special Configuration
	2" - 12"	78 - 7800	**1** - EPDM (Std) **2** - Nitrile (Std)	**1** - Painted (Std)	**2** - Other*

* Contact an Anvil representative for more information.

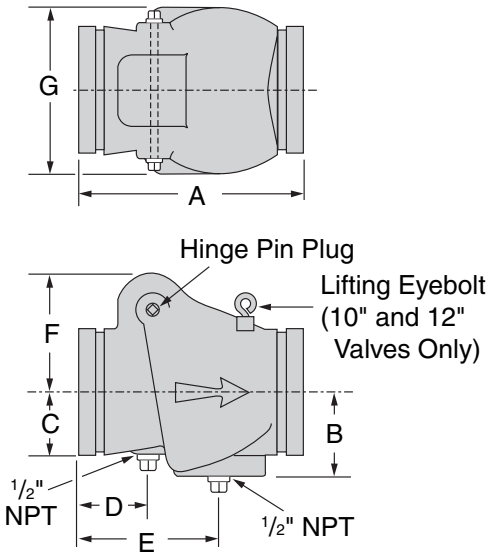


FIGURE 7800 CHECK VALVE									
Nominal Size	O.D.	Nominal Dimensions							Approx. Wt. Ea.
		A	B	C	D	E	F	G	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg.*
2 *50*	2.375 *60.3*	6¾ *171*	2⅜ *60*	1 7/16 *36*	1¾ *44*	4½ *114*	3 3/16 *81*	4⅜ *111*	7.5 *3.4*
2½ *65*	2.875 *73.0*	7¼ *184*	2 7/16 *61*	1 9/16 *39*	1¾ *44*	3 13/16 *96*	3⅝ *92*	4½ *114*	10.5 *4.8*
3 *80*	3.500 *88.9*	7¾ *197*	2⅝ *67*	2 *51*	1 3/16 *46*	4 1/16 *103*	3 11/16 *93*	4 15/16 *125*	11.5 *5.2*
4 *100*	4.500 *114.3*	8⅛ *206*	3⅛ *79*	2¼ *57*	2½ *64*	5 1/16 *128*	4¼ *108*	6 *152*	13.5 *6.1*
5 *125*	5.563 *141.3*	9¾ *248*	3½ *89*	2¾ *70*	2 7/16 *61*	5 13/16 *147*	4⅝ *117*	6¾ *171*	19.0 *8.6*
6 *150*	6.625 *168.3*	12¾ *324*	4¼ *108*	3 5/16 *84*	3⅛ *79*	6¼ *159*	6¾ *171*	8½ *216*	33.5 *15.2*
8 *200*	8.625 *219.1*	14¾ *365*	5 1/16 *128*	3 15/16 *100*	4 *102*	5 15/16 *150*	8 *203*	10¼ *260*	59.0 *26.8*
10 *250*	10.750 *273.1*	18 *457*	6 5/16 *160*	4 15/16 *125*	4 9/16 *115*	6⅞ *175*	9 3/16 *233*	12 11/16 *322*	130.0 *59.0*
12 *300*	12.750 *323.9*	21 *533*	7 5/16 *185*	6 *152*	5 1/16 *128*	7¼ *184*	10⅜ *264*	14¾ *375*	183.0 *83.0*

FIG. ANVIL ABV-9900V SERIES

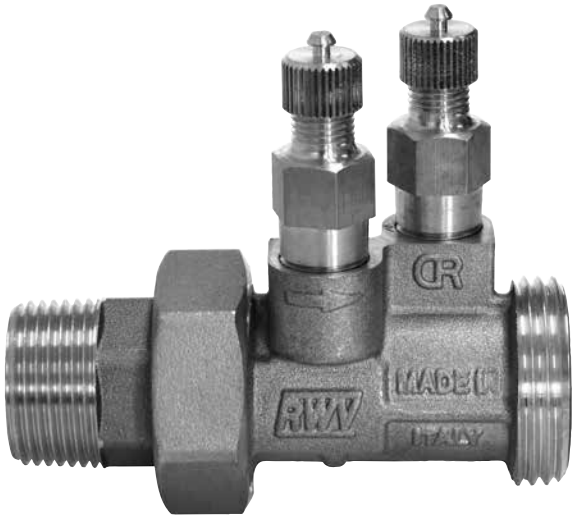
Straight DZR Brass Automatic Balancing Valve

FEATURES

Threaded F/F (ASME B1.20.1 - NPT) or solder joint (ASME B16.22) union ends. Wide range of flows available (see cartridge section). 300 WOG (Maximum 300psi up to 160°F. Maximum 150psi at 260°F.)

Available on following versions:

- ABV-T-9907 (NPT Union F/F Ends) with mounted test points
- ABV-S-9909 (CxC Union Ends) with mounted test points



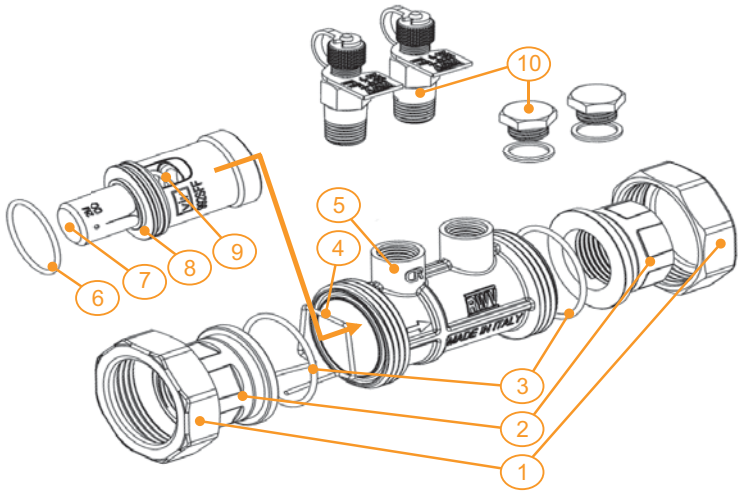
Working Conditions:

- Water (15°F to 260°F)
  (Glycolic-Ethylene and glycolic-propylene mixtures up to 50% may be used.)
  below 32°F only for water with added anti-freezing fluids
  over 212°F only for water with added anti-boiling fluids
- Flow Range
  Valves up to 3/4"L: 0.32GPM - 3.17GPM
  3/4" and 1" valves: 2.06GPM - 15.1 GPM
  1 1/4", 1 1/2", and 2" valves: 4.91GPM - 41.2GPM
  2"H and 2 1/2" valves: 25.4GPM - 105GPM
- Working ΔP depending on selected cartridge

MATERIAL SPECIFICATIONS

1. **UNION NUT:** Brass ASTM B283 C37700
2. **UNION**[1]: DZR Brass UNS C35330
3. **UNION O-RING:** EPDM Perox
4. **SPRING:** Stainless Steel AISI 302
5. **BODY:** DZR Brass UNS C35330
6. **CARTRIDGE O-RING:** EPDM Perox
7. **SHAPED OPENING:** Stainless Steel
8. **CARTRIDGE BODY:** DZR Brass UNS C35330
9. **CARTRIDGE SPRING:** Stainless Steel AISI 302
10. **TEST POINT/PLUG:** DZR Brass[2] UNS C35330

[1] In two pieces for 3/4"-L and 2"F threaded version
[2] Plug with copper gaskets. Test points with EPDM Perox gaskets and polypropylene ties.



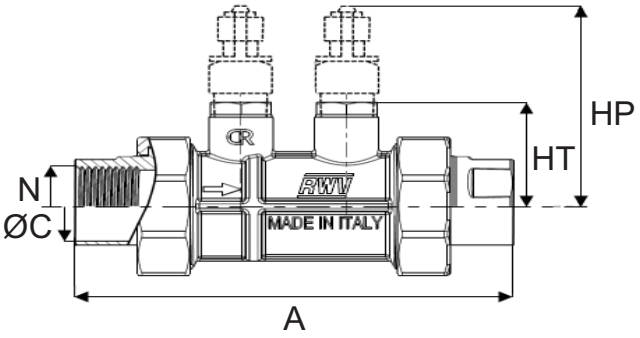
For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL ABV-9900V SERIES

Straight DZR Brass Automatic Balancing Valve

FIGURE ANVIL ABV-9900V SERIES STRAIGHT DZR BRASS AUTOMATIC BALANCING VALVE							
Valve Size	N	øC[1]	A[2]	HT/HP	Cv[3]	Approx. Wt. Each	
						Valve	Cartridge
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*GPM*	*Lbs./Kg*	*Lbs./Kg*
½ *15*	½ *15*	0.627-0.631 *15.93-16.03*	3.78/3.41 *96.0/86.6*	1.08/2.34 *27.4/59.4*	14 –	0.83/0.73 *0.38/0.33*	0.10 *0.05*
¾L *20*	¾ *20*	0.877-0.881 *22.28-22.38*	4.65/3.96 *118.1/100.6*	1.08/2.34 *27.4/59.4*	14 –	0.99/0.76 *0.45/0.34*	0.10 *0.05*
¾ *20*	¾ *20*	0.877-0.881 *22.28-22.38*	4.47/4.51 *113.5/114.6*	1.34/2.60 *34.0/66.0*	21 –	1.16/1.03 *0.53/0.47*	0.21 *0.10*
1 *25*	1 *25*	1.128-1.131 *28.65-28.73*	4.72/4.74 *119.9/120.0*	1.34/2.60 *34.0/66.0*	27 –	1.45/1.21 *0.66/0.55*	0.21 *0.10*
1¼ *32*	1¼ *32*	1.378-1.381 *35.00-35.08*	6.27/6.82 *159.3/173.2*	1.61/2.87 *40.9/72.9*	97 –	2.78/3.17 *1.26/1.44*	0.56 *0.25*
1½ *40*	1½ *40*	1.628-1.632 *41.35-41.45*	6.27/7.06 *159.3/179.3*	1.61/2.87 *40.9/72.9*	97 –	3.34/3.18 *1.52/1.44*	0.56 *0.25*
2 *50*	2 *50*	2.128-2.132 *54.05-54.15*	8.20/7.56 *208.3/192.0*	1.61/2.87 *40.9/72.9*	94 –	4.55/3.28 *2.06/1.49*	0.56 *0.25*
2H *50*	2 *50*	2.128-2.132 *54.05-54.15*	9.16/9.82 *232.7/249.4*	2.36/3.62 *59.9/91.9*	189 –	7.83/7.45 *3.55/3.38*	3.01 *1.37*
2½ *65*	2½ *65*	2.628-2.632 *66.75-66.88*	9.50/10.01 *241.3/254.3*	2.36/3.62 *59.9/91.9*	228 –	8.31/7.47 *3.77/3.39*	3.01 *1.37*

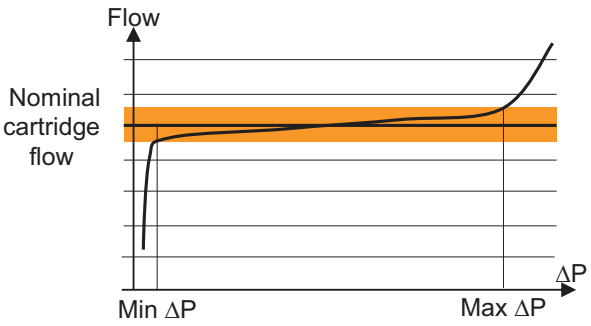
[1] Tolerance field
[2] Threaded ends / soldering ends
[3] For valve body without cartridge
[4] Threaded ends / soldering ends, ver. with test points +0.10lb



CARTRIDGES

Cartridges are available in different ranges of working differential pressure. The minimum and maximum working ΔP therefore depends on the specific cartridge model.
A numeric code is marked on the cartridge body univocally indentifying it (example for KRR992215.1880).

If installed, the test points allow to verify if the valve is actually working within the range suitable for the selected cartridge.



Flow regulation accuracy +/-5% of nominal flow

For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL ABV-9900V SERIES

Straight DZR Brass Automatic Balancing Valve

CARTRIDGES

MINI: for 1/2" and 3/4"L Valves

RWV Code	Flow	Range ΔP
–	GPM	psi
KRR991202.1880	0.32	2.2-25
KRR991203.1880	0.48	2.3-32
KRR991204.1880	0.63	2.3-32
KRR991205.1880	0.79	2.3-32
KRR991206.1880	0.95	2.3-32
KRR991207.1880	1.11	2.3-32
KRR991208.1880	1.27	2.3-32
KRR991209.1880	1.43	2.3-32
KRR991210.1880	1.59	2.3-32
KRR991211.1880	1.74	2.5-32
KRR991212.1880	1.90	2.5-32
KRR991213.1880	2.06	2.5-32
KRR991214.1880	2.22	2.5-32
KRR991215.1880	2.38	2.5-32
KRR991216.1880	2.54	2.5-32
KRR991218.1880	2.85	2.6-32
KRR991220.1880	3.17	2.8-32

SMALL : for 3/4" and 1" Valves Standard Range

RWV Code	Flow	Range ΔP
–	GPM	psi
KRR992213.1880	2.06	2.5-35
KRR992215.1880	2.38	2.5-35
KRR992217.1880	2.69	2.5-35
KRR992219.1880	3.01	2.5-35
KRR992221.1880	3.33	2.6-35
KRR992224.1880	3.80	2.6-35
KRR992227.1880	4.28	2.6-35
KRR992230.1880	4.76	2.6-35
KRR992233.1880	5.23	2.6-35
KRR992236.1880	5.71	2.6-35
KRR992240.1880	6.34	2.6-35
KRR992245.1880	7.13	2.8-35
KRR992250.1880	7.93	2.8-35
KRR992255.1880	8.72	3.0-35
KRR9922601880	9.51	3.2-35
KRR992266.1880	10.5	3.5-35
KRR992272.1880	11.4	3.5-35

SMALL : for 3/4" and 1" Valves HP Range

RWV Code	Flow	Range ΔP
–	GPM	psi
KRR992318.1880	2.85	4.2-64
KRR992320.1880	3.17	4.6-64
KRR992323.1880	3.65	4.8-64
KRR992327.1880	3.96	4.8-64
KRR992329.1880	4.60	4.8-64
KRR992332.1880	5.07	4.8-64
KRR992336.1880	5.71	4.8-64
KRR992340.1880	6.34	4.8-64
KRR992345.1880	7.13	4.8-64
KRR992350.1880	7.93	4.8-64
KRR992355.1880	8.72	4.9-64
KRR992361.1880	9.67	5.2-64
KRR992368.1880	10.80	5.2-64
KRR992375.1880	11.90	5.2-64
KRR992380.1880	12.70	5.2-64
KRR992386.1880	13.60	5.8-64
KRR992395.1880	15.10	5.8-64

MEDIUM : for 1 1/4", 1 1/2" and 2" Valves Standard Range

RWV Code	Flow	Range ΔP
–	GPM	psi
KRR994231.1880	4.91	1.9-33
KRR994234.1880	5.39	1.9-33
KRR994237.1880	5.86	1.9-33
KRR994240.1880	6.34	2.0-33
KRR994246.1880	7.29	2.0-33
KRR994250.1880	7.93	2.0-33
KRR994255.1880	8.72	2.0-33
KRR994258.1880	9.19	2.0-33
KRR994262.1880	9.83	2.0-33
KRR994267.1880	10.60	2.2-33
KRR994274.1880	11.70	2.2-33
KRR994283.1880	13.20	2.2-33
KRR994290.1880	14.30	2.2-33
KRR994297.1880	15.40	2.2-33
KRR994210.1880	16.60	2.2-33
KRR994212.1880	19.00	2.2-33
KRR994213.1880	20.60	2.3-33
KRR994214.1880	22.80	2.5-33
KRR994216.1880	24.70	2.5-33
KRR994217.1880	26.60	2.6-33
KRR994218.1880	28.50	2.8-33
KRR994220.1880	31.10	2.8-33

MEDIUM : for 1 1/4", 1 1/2" and 2" Valves HP Range

RWV Code	Flow	Range ΔP
–	GPM	psi
KRR994341.1880	6.50	3.8-61
KRR994346.1880	7.29	3.8-61
KRR994351.1880	8.08	3.8-61
KRR994355.1880	8.72	3.9-61
KRR994362.1880	9.83	3.9-61
KRR994368.1880	10.80	3.9-61
KRR994374.1880	11.70	3.9-61
KRR994379.1880	12.50	3.9-61
KRR994383.1880	13.20	3.9-61
KRR994391.1880	14.40	4.1-61
KRR994310.1880	15.90	4.1-61
KRR994311.1880	17.60	4.1-61
KRR994312.1880	19.00	4.2-61
KRR994313.1880	20.60	4.2-61
KRR994314.1880	22.00	4.2-61
KRR994316.1880	26.00	4.4-61
KRR994318.1880	27.70	4.5-61
KRR994319.1880	30.10	4.5-61
KRR994321.1880	32.70	4.6-61
KRR994322.1880	35.40	4.9-61
KRR994324.1880	38.00	5.1-61
KRR994326.1880	41.20	5.5-61

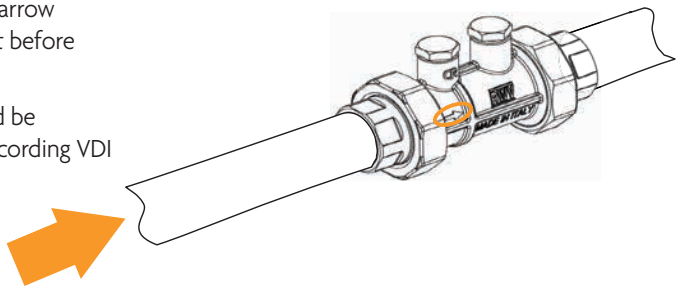
LARGE: for 2"H and 2 1/2"L Valves

RWV Code	Flow	Range ΔP
–	GPM	psi
KRR996216.1880	25.4	2.0-33
KRR996218.1880	28.5	2.0-33
KRR996220.1880	31.7	2.0-33
KRR996222.1880	34.9	2.2-33
KRR996224.1880	38.0	2.2-33
KRR996227.1880	42.8	2.2-33
KRR996230.1880	47.6	2.3-33
KRR996233.1880	52.3	2.3-33
KRR996236.1880	57.1	2.3-33
KRR996240.1880	63.4	2.5-33
KRR996245.1880	71.3	2.5-33
KRR996250.1880	79.3	2.8-33
KRR996255.1880	87.2	2.8-33
KRR996260.1880	95.1	3.0-33
KRR996266.1880	105.0	3.0-33

INSTALLATION

Install the valve so that the flow direction matches the direction of the arrow indicated on the body of the valve. Perform correct flushing of the plant before installing the cartridge.

In order to obtain the best correct flowrate regulation, the valves should be installed using pipes of its same normal size. Water quality should be according VDI 2035. Use at least one strainer for each installation.



For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL MBV-9510 SERIES

Fixed Orifice Double Regulating Valve

FEATURES

Fixed orifice DZR brass double regulating valve. Intended for HVAC use. Threaded F/F (ASME B1.20.1 - NPT) or solder joint ends (ASME B16.22). Design according to BS7350. Tolerance on nominal C_{vs} +3% (test according to BS7350). 300 WOG (Maximum 300psi up to 160˚F. Maximum 150psi at 260˚F.)

Available on following versions:

- MBV-T-9517, threaded ends, with test points
- MBV-S-9519, solder joint ends, with test points

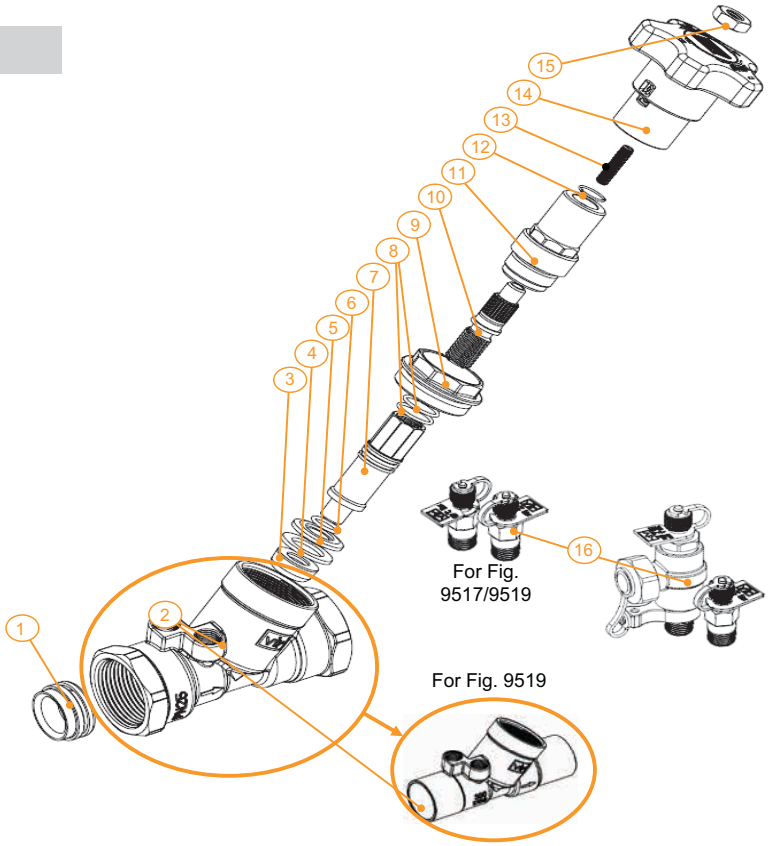
Working Conditions:

- Water (15˚F to 260˚F)
  below 32˚F only for water with added anti-freezing fluids
  over 212˚F only for water with added anti-boiling fluids

MATERIAL SPECIFICATIONS

1. **VENTURI INSERT:** DZR Brass
2. **BODY:** DZR Brass
3. **BALANCING CONE:** DZR Brass
4. **GASKET DISC:** PTFE
5. **DISC**[1]: DZR Brass
6. **DISC O-RING**[1]: EPDM Perox
7. **DISC STEM:** DZR Brass
8. **STEM O-RING:** EPDM Perox
9. **UNION**[1]: DZR Brass
10. **STEM:** Brass ASTM B124 C37700
11. **BONNET:** DZR Brass
12. **STOP SPRING RING:** Spring Steel
13. **SCREW:** Steel
14. **HANDWHEEL:** ABS (Blue)
15. **NUT:** Zinc Plated Steel
16. **TEST POINT:** DZR Brass[2] ASTM C35330

[1] Only on 1 ¼", 1½" and 2"
[2] Test points with EPDM gaskets and polypropylene ties

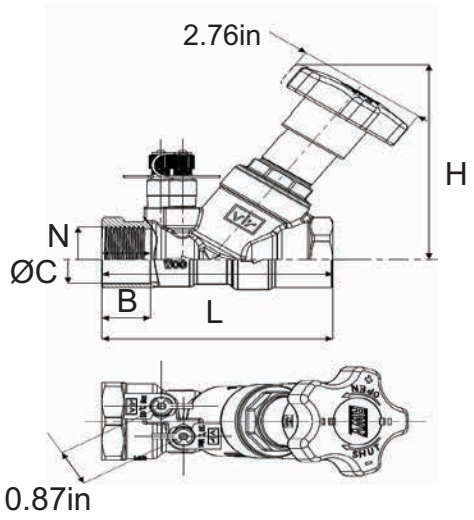


For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL MBV-9510 SERIES

Fixed Orifice Double Regulating Valve

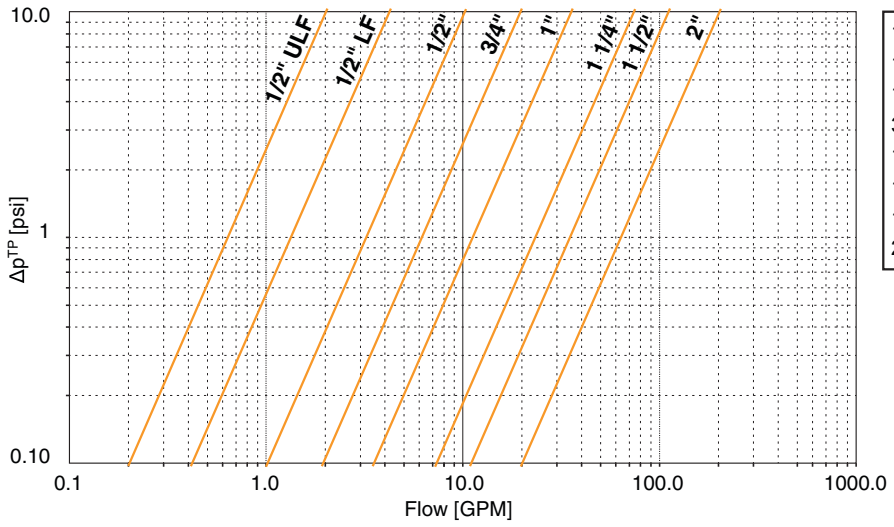
FIGURE ANVIL MBV-9510 SERIES FIXED ORIFICE DOUBLE REGULATING VALVE							
Valve Size	N	øC[1]	H	L[2]	B[2]	Approx. Wt.[2] Each	Flow Range
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*	*GPM*
U-½ 15	½ - 14 –	0.627-0.631 15.93-16.03	4.06 103.1	3.46/3.74 87.9/95.0	0.71/0.55 18.0/14..0	1.23/1.16 0.56/0.53	0.27-0.71 –
L-½ 15	½ - 14 –	0.627-0.631 15.93-16.03	4.06 103.1	3.46/3.74 87.9/95.0	0.71/0.55 18.0/14..0	1.23/1.16 0.56/0.53	0.49-1.17 –
½ 15	½ - 14 –	0.627-0.631 15.93-16.03	4.06 103.1	3.46/3.74 87.9/95.0	0.71/0.55 18.0/14..0	1.23/1.16 0.56/0.53	0.98-2.35[3] –
¾ 20	¾ - 14 –	0.877-0.881 22.28-22.38	4.06 103.1	3.78/4.18 96.0/106.2	0.75/0.76 19.1/19.3	1.43/1.34 0.65/0.61	2.19-5.15[3] –
1 25	1 - 11.5 –	1.128-1.131 28.65-28.73	4.06 103.1	3.94/4.57 100.1/116.1	0.89/0.92 22.6/23.4	1.73/1.55 0.78/0.70	4.09-9.56[3] –
1¼ 32	1¼ - 11.5 –	1.378-1.381 35.00-35.08	4.06 103.1	4.63/5.28 117.6/134.1	0.98/0.98 24.9/27.9	2.78/2.53 1.26/1.15	8.56-19.81[3] –
1½ 40	1½ - 11.5 –	1.628-1.632 41.35-41.45	4.06 103.1	5.00/5.90 127.0/149.9	0.98/1.10 24.9/27.9	3.50/3.16 1.59/1.43	12.84-29.80[3] –
2 50	2 - 11.5 –	2.128-2.132 54.05-54.15	4.06 103.1	5.72/6.73 145.3/170.9	1.15/1.35 29.2/34.3	4.80/4.46 2.18/2.02	24.09-55.63[3] –



[1] Tolerance field
[2] Threaded ends/soldering ends
[3] Dimension with VIR actuators, for more details please consult specific technical sheet
[4] Suggested flow range applicability (BS7350)

If used with measuring manometers different from those proposed by Anvil-RWV, please verify that sensibility of the measuring device is compatible with indicated minimum.

FLOW DIAGRAM



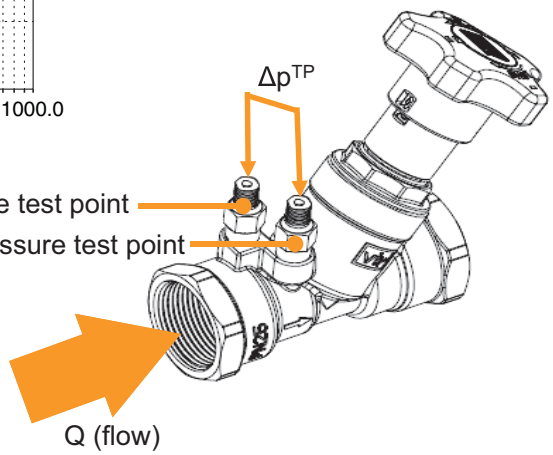
1/2" ULF.....C_{vs} venturi 0.64
1/2" LF.....C_{vs} venturi 1.33
1/2".....C_{vs} venturi 3.24
3/4".....C_{vs} venturi 6.16
1".....C_{vs} venturi 11.24
1 1/4".....C_{vs} venturi 23.41
1 1/2".....C_{vs} venturi 34.95
2".....C_{vs} venturi 63.67

$$Q = C_{vs}^{venturi} \cdot \sqrt{\Delta p^{TP}}$$

Q = flow rate in GPM

Δp = differential pressure signal in psi generated through the pressure test points

C_{vs} = flow coefficient



For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL MBV-9510 SERIES

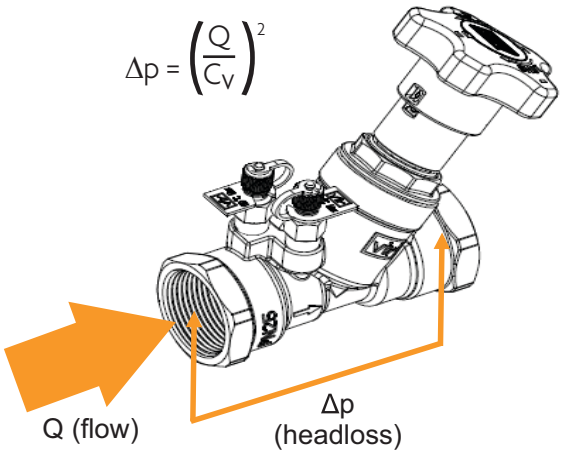
Fixed Orifice Double Regulating Valve

HEADLOSS

HEADLOSS CALCULATION								
Handwheel Position	C_V (GPM/psi$^{0.5}$)							
	U-½"	L-½"	½"	¾"	1"	1¼"	1½"	2"
–	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*
0.5	0.177	0.160	0.474	0.474	1.70	2.96	3.14	6.20
0.7	0.206	0.186	0.474	0.543	2.00	3.38	3.61	7.56
1.0	0.283	0.287	0.613	0.671	2.42	3.95	4.27	9.65
1.3	0.331	0.394	0.717	0.809	2.82	4.49	4.96	12.19
1.5	0.355	0.440	0.809	0.902	3.12	4.83	5.57	14.30
1.7	0.387	0.501	0.902	0.994	3.48	5.25	6.60	16.64
2.0	0.445	0.586	0.994	1.12	4.13	6.27	8.99	20.17
2.3	0.511	0.669	1.10	1.25	4.83	7.82	12.08	23.35
2.5	0.517	0.696	1.18	1.39	5.28	9.16	14.21	25.12
2.7	0.527	0.743	1.32	1.62	5.63	10.46	16.34	26.66
3.0	0.563	0.828	1.60	2.24	6.09	12.21	18.89	28.72
3.3	0.578	0.864	1.88	2.94	6.49	13.39	20.67	30.57
3.5	0.594	0.891	2.03	3.39	6.64	13.94	21.54	31.72
3.7	0.595	0.925	2.12	3.75	6.80	14.34	22.16	32.86
4.0	0.603	0.953	2.19	4.06	7.10	14.50	22.65	34.36
4.4	0.605	0.985	2.22	4.24	7.21	–	–	–

Formula linking flow Q (in GPM) and theoretical valve headloss (pressure drop) Δp (in psi). C_V depends on handwheel position as indicated in table.

$$\Delta p = \left(\frac{Q}{C_V}\right)^2$$



INSTALLATION

To obtain the best performances valve must be installed on a pipe with its same nominal size preceded and followed by straight pipe lengths as per figure indications.

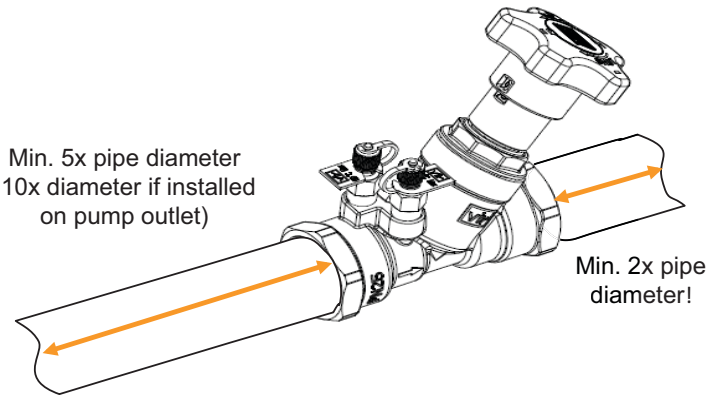


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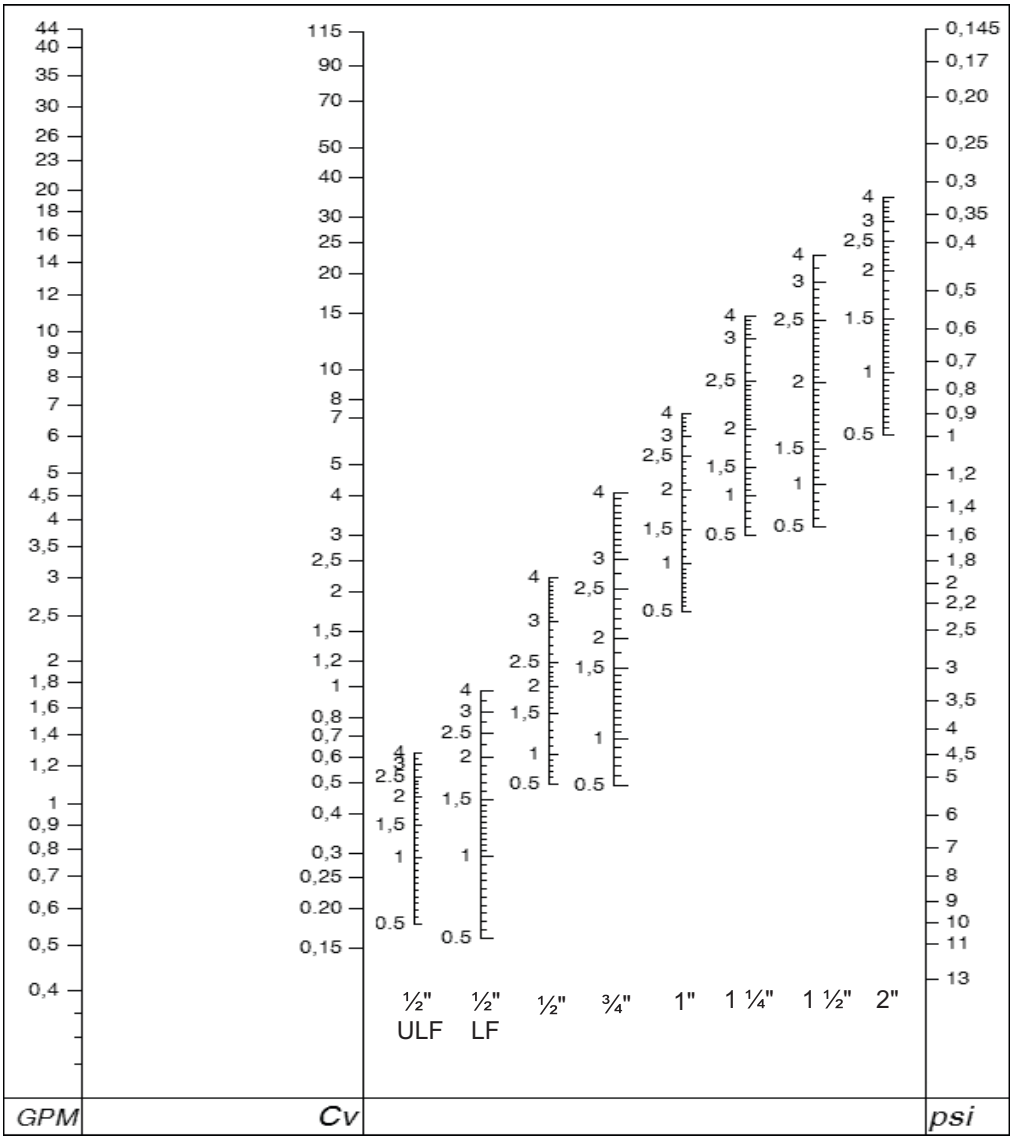
FIG. ANVIL MBV-9510 SERIES

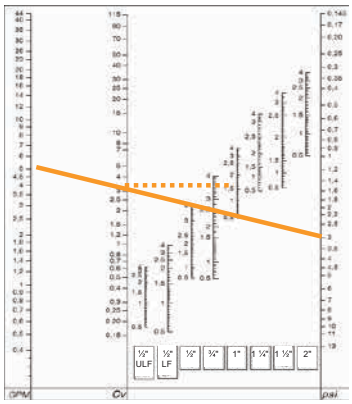
Fixed Orifice Double Regulating Valve

PRESETTING



Using diagram above, determine the presetting position of the valve with the given design flowrate and headloss:

1) Draw a straight line joining design flowrate and design headloss;
2) Determine design Cv value as intersection of drawn line and Cv axis;
3) Draw a straight horizontal line from intersection previously identified and the specific valve size axis;
4) Intersection determines handwheel position to use for presetting.



In the example for a design flowrate of 5GPM and design Δp 3psi handwheel position of 1.35 is determined for a 1" valve

For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL MBV-9510AB SERIES

Fixed Orifice Double Regulating Low Lead Valves

FEATURES

Fixed orifice low lead DZR brass double regulating valve. Intended for HVAC and domestic water use. Threaded F/F (ASME B1.20.1 - NPT) or solder joint ends (ASME B16.22). Design according to BS7350. Tolerance on nominal C_{vs} ±3% (test according to BS7350). 300 WOG (Maximum 300psi up to 160˚F. Maximum 150psi at 260˚F.)

Available on following versions:

- MBV-T-9517AB, threaded ends, with test points
- MBV-S-9519AB, solder joint ends, with test points

Working Conditions:

- Water (15˚F to 260˚F)
  below 32˚F only for water with added anti-freezing fluids
  over 212˚F only for water with added anti-boiling fluids

MATERIAL SPECIFICATIONS

1. **VENTURI INSERT:** Low Lead DZR Brass ASTM C27453
2. **BODY:** Low Lead DZR Brass ASTM C27453
3. **BALANCING CONE:** Low Lead DZR Brass ASTM C27453
4. **GASKET DISC:** PTFE
5. **DISC**[1]: Low Lead DZR Brass ASTM C27453
6. **DISC O-RING**[1]: EPDM Perox
7. **DISC STEM:** Low Lead DZR Brass ASTM C27453
8. **STEM O-RING:** EPDM Perox
9. **UNION**[1]: Low Lead DZR Brass ASTM C27453
10. **STEM:** Brass ASTM B124 C37700
11. **BONNET:** Low Lead DZR Brass ASTM C27453
12. **STOP SPRING RING:** Spring Steel
13. **SCREW:** Steel
14. **HANDWHEEL:** ABS (Blue)
15. **NUT:** Zinc Plated Steel
16. **TEST POINT:** DZR Brass[2] ASTM C35330

[1] Only on 1 ¼", 1½" and 2"
[2] Test points with EPDM gaskets and polypropylene ties

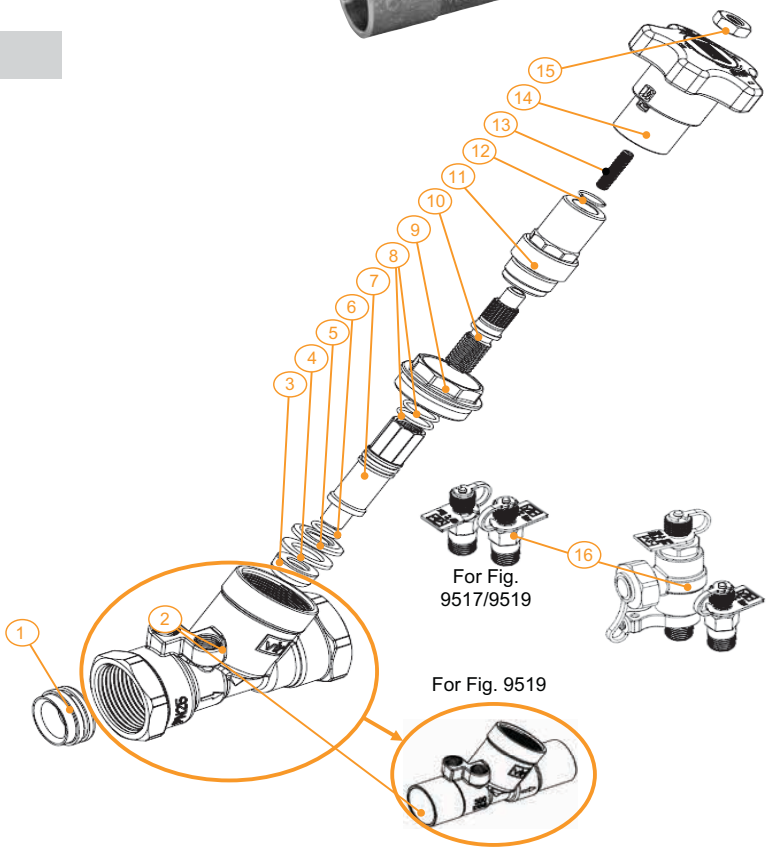


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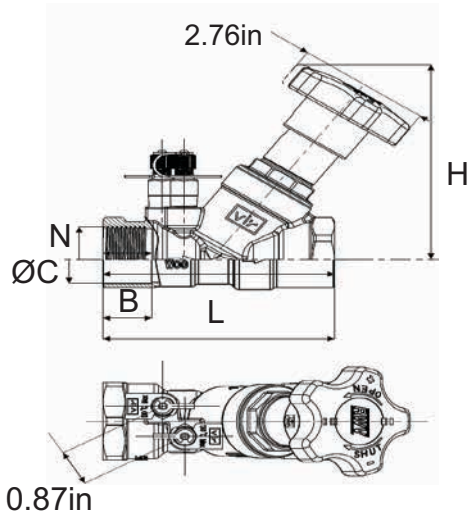
FIG. ANVIL MBV-9510AB SERIES

Fixed Orifice Double Regulating Low Lead Valves

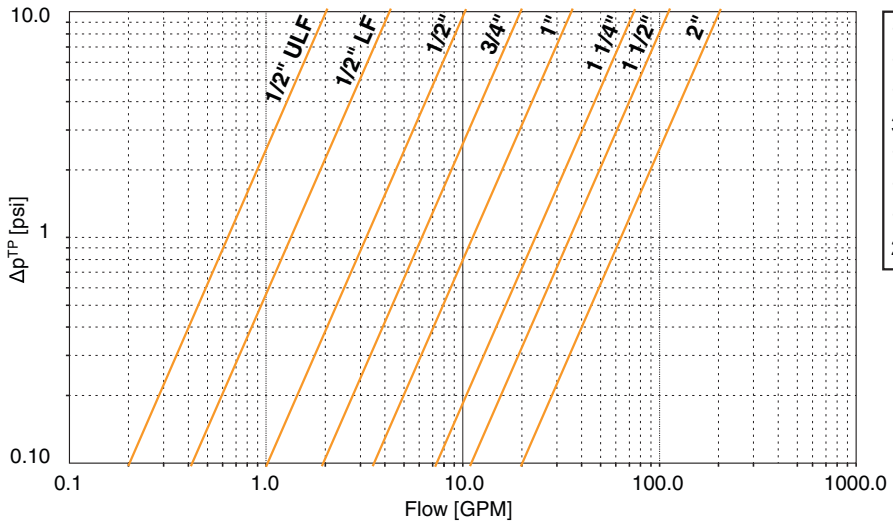
FIGURE ANVIL MBV-9510AB SERIES FIXED ORIFICE DOUBLE REGULATING LOW LEAD VALVES							
Valve Size	N	øC[1]	H	L[2]	B[2]	Approx. Wt.[2] Each	Flow Range
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*	*GPM*
U-½ *15*	½ - 14 –	0.627-0.631 *15.93-16.03*	4.06 *103.1*	3.46/3.74 *87.9/95.0*	0.71/0.55 *18.0/14..0*	1.23/1.16 *0.56/0.53*	0.27-0.71 –
L-½ *15*	½ - 14 –	0.627-0.631 *15.93-16.03*	4.06 *103.1*	3.46/3.74 *87.9/95.0*	0.71/0.55 *18.0/14..0*	1.23/1.16 *0.56/0.53*	0.49-1.17 –
½ *15*	½ - 14 –	0.627-0.631 *15.93-16.03*	4.06 *103.1*	3.46/3.74 *87.9/95.0*	0.71/0.55 *18.0/14..0*	1.23/1.16 *0.56/0.53*	0.98-2.35[3] –
¾ *20*	¾ - 14 –	0.877-0.881 *22.28-22.38*	4.06 *103.1*	3.78/4.18 *96.0/106.2*	0.75/0.76 *19.1/19.3*	1.43/1.34 *0.65/0.61*	2.19-5.15[3] –
1 *25*	1 - 11.5 –	1.128-1.131 *28.65-28.73*	4.06 *103.1*	3.94/4.57 *100.1/116.1*	0.89/0.92 *22.6/23.4*	1.73/1.55 *0.78/0.70*	4.09-9.56[3] –
1¼ *32*	1¼ - 11.5 –	1.378-1.381 *35.00-35.08*	4.06 *103.1*	4.63/5.28 *117.6/134.1*	0.98/0.98 *24.9/27.9*	2.78/2.53 *1.26/1.15*	8.56-19.81[3] –
1½ *40*	1½ - 11.5 –	1.628-1.632 *41.35-41.45*	4.06 *103.1*	5.00/5.90 *127.0/149.9*	0.98/1.10 *24.9/27.9*	3.50/3.16 *1.59/1.43*	12.84-29.80[3] –
2 *50*	2 - 11.5 –	2.128-2.132 *54.05-54.15*	4.06 *103.1*	5.72/6.73 *145.3/170.9*	1.15/1.35 *29.2/34.3*	4.80/4.46 *2.18/2.02*	24.09-55.63[3] –



[1] Tolerance field
[2] Threaded ends/soldering ends
[3] Dimension with VIR actuators, for more details please consult specific technical sheet
[4] Suggested flow range applicability (BS7350)

If used with measuring manometers different from those proposed by Anvil-RWV, please verify that sensibility of the measuring device is compatible with indicated minimum.

FLOW DIAGRAM



1/2" ULF.....C_{vs} venturi 0.64
1/2" LF.....C_{vs} venturi 1.33
1/2".....C_{vs} venturi 3.24
3/4".....C_{vs} venturi 6.16
1".....C_{vs} venturi 11.24
1 1/4".....C_{vs} venturi 23.41
1 1/2".....C_{vs} venturi 34.95
2".....C_{vs} venturi 63.67

$$Q = C_{Vs}^{venturi} \bullet \sqrt{\Delta p^{TP}}$$

Q = flow rate in GPM

Δp = differential pressure signal in psi generated through the pressure test points

C_{Vs} = flow coefficient

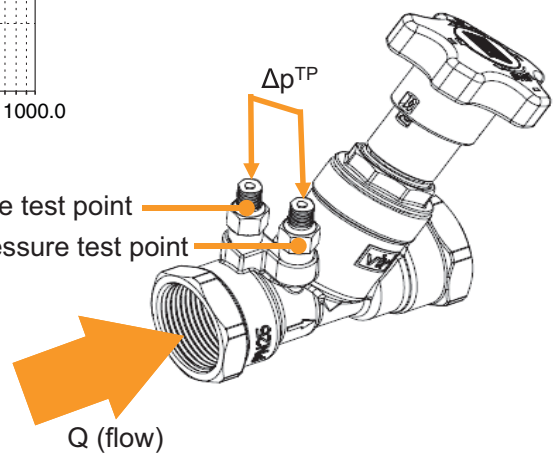


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FIG. ANVIL MBV-9510AB SERIES

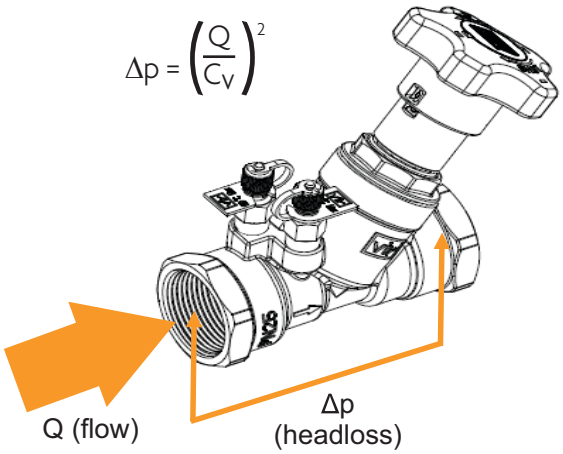
Fixed Orifice Double Regulating Low Lead Valves

HEADLOSS

HEADLOSS CALCULATION								
Handwheel Position	C_V (GPM/psi$^{0.5}$)							
	U-½"	L-½"	½"	¾"	1"	1¼"	1½"	2"
–	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*
0.5	0.177	0.160	0.474	0.474	1.70	2.96	3.14	6.20
0.7	0.206	0.186	0.474	0.543	2.00	3.38	3.61	7.56
1.0	0.283	0.287	0.613	0.671	2.42	3.95	4.27	9.65
1.3	0.331	0.394	0.717	0.809	2.82	4.49	4.96	12.19
1.5	0.355	0.440	0.809	0.902	3.12	4.83	5.57	14.30
1.7	0.387	0.501	0.902	0.994	3.48	5.25	6.60	16.64
2.0	0.445	0.586	0.994	1.12	4.13	6.27	8.99	20.17
2.3	0.511	0.669	1.10	1.25	4.83	7.82	12.08	23.35
2.5	0.517	0.696	1.18	1.39	5.28	9.16	14.21	25.12
2.7	0.527	0.743	1.32	1.62	5.63	10.46	16.34	26.66
3.0	0.563	0.828	1.60	2.24	6.09	12.21	18.89	28.72
3.3	0.578	0.864	1.88	2.94	6.49	13.39	20.67	30.57
3.5	0.594	0.891	2.03	3.39	6.64	13.94	21.54	31.72
3.7	0.595	0.925	2.12	3.75	6.80	14.34	22.16	32.86
4.0	0.603	0.953	2.19	4.06	7.10	14.50	22.65	34.36
4.4	0.605	0.985	2.22	4.24	7.21	–	–	–

Formula linking flow Q (in GPM) and theoretical valve headloss (pressure drop) Δp (in psi). C_V depends on handwheel position as indicated in table.

$$\Delta p = \left(\frac{Q}{C_V}\right)^2$$



INSTALLATION

To obtain the best performances valve must be installed on a pipe with its same nominal size preceded and followed by straight pipe lengths as per figure indications.

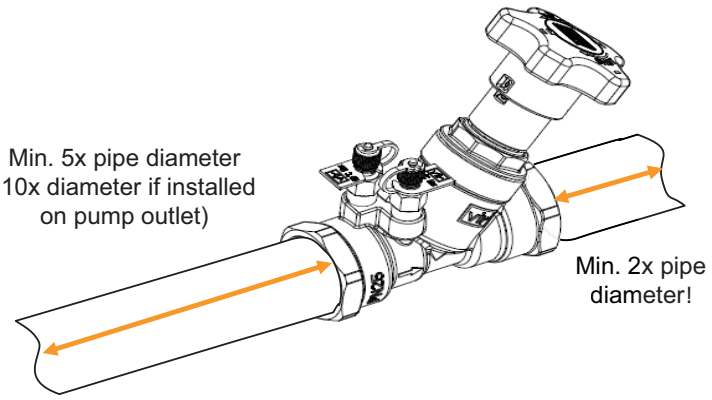


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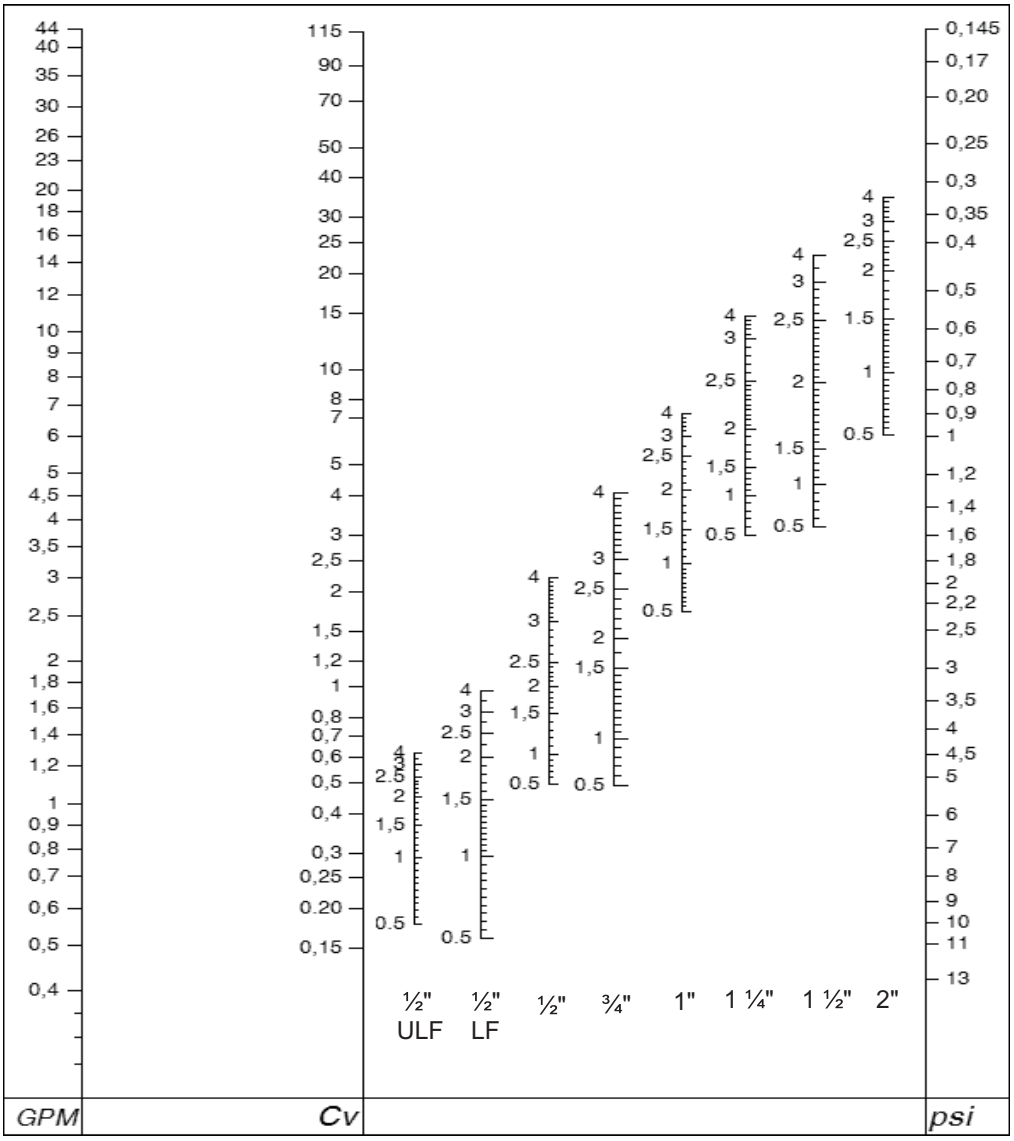
FIG. ANVIL MBV-9510AB SERIES

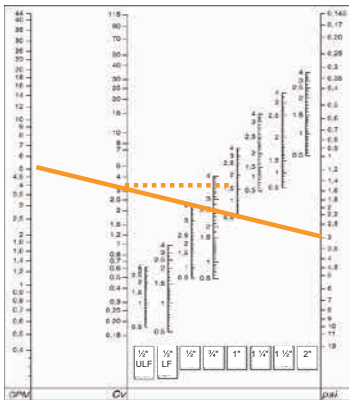
Fixed Orifice Double Regulating Low Lead Valves

PRESETTING



Using diagram above, determine the presetting position of the valve with the given design flowrate and headloss:

1) Draw a straight line joining design flowrate and design headloss;
2) Determine design Cv value as intersection of drawn line and Cv axis;
3) Draw a straight horizontal line from intersection previously identified and the specific valve size axis;
4) Intersection determines handwheel position to use for presetting.



In the example for a design flowrate of 5GPM and design Δp 3psi handwheel position of 1.35 is determined for a 1" valve

For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL CSV-9520AB SERIES

DZR Brass On/Off Terminal Low Lead Balancing Valves

FEATURES

Low lead brass ON/OFF terminal balancing valve for HVAC and domestic water use. Threaded F/F (ASME B1.20.1 - NPI) or solder joint ends (ASME B16.22). Tolerance on nominal C_v for fully open valve + 10% (test according to BS7350). 300 WOG (Maximum 300psi up to 160˚F. Maximum 150psi at 260˚F.)

Available in following versions:

- CSV-T-9527AB threaded ends
- CSV-S-9529AB solder joint ends

Provided with mounted test points. With threaded M30x1.5 connection for linear actuator (Vaurien)

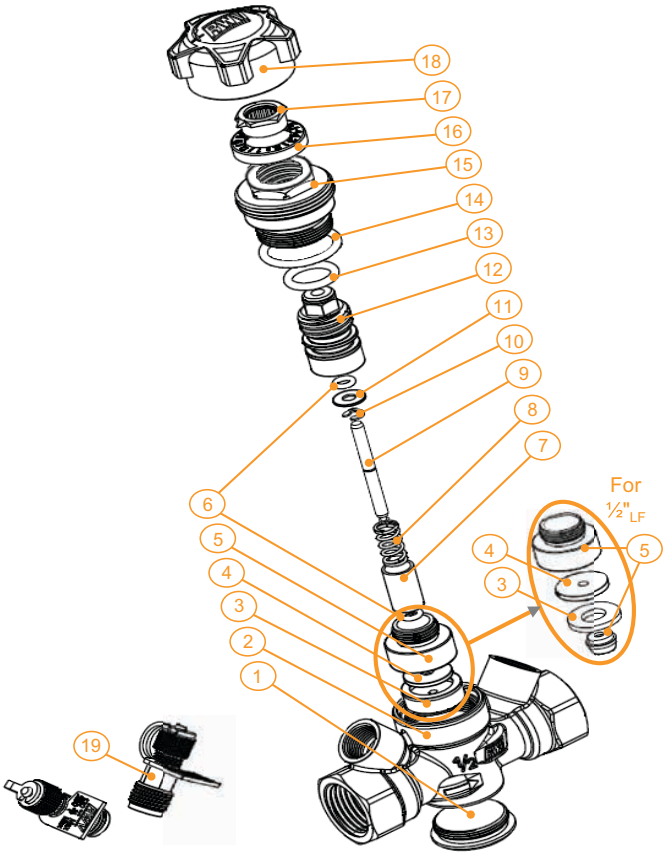
Working Conditions:

- Water (15˚F to 260˚F)
  below 32˚F only for water with added anti-freezing fluids
  over 212˚F only for water with added anti-boiling fluids

MATERIAL SPECIFICATIONS

1. **PLUG:** CW510L
2. **BODY:** CW510L
3. **DISC GASKET:** EPDM Perox
4. **GASKET WASHER**[1]**:** CW510L
5. **BALANCE DISC**[2]**:** CW510L
6. **STEM O-RING:** EPDM Perox
7. **SPRING CARTRIDGE:** Brass
8. **SPRING:** Stainless Steel
9. **DISC STEM:** Stainless Steel
10. **STOP RING:** Stainless Steel
11. **WASHER:** Brass
12. **BALANCING STEM:** CW510L
13. **BALANCING STEM O-RING:** EPDM Perox
14. **BONNET O-RING:** EPDM Perox
15. **BONNET:** CW510L
16. **GRADUATED SCALE:** Blue Polypropylene
17. **REG. INDICATOR:** Orange Polyamide
18. **ON/OFF CAP:** Blue Polyamide
19. **TEST POINT/PLUG:** DZR Brass[3]

[1] Clamped to stem for ½"/¾", with brass threaded washer for 1".
[2] In two parts (disc + cone) for ½"LF
[3] Plug with copper gaskets. Test points with EPDM Perox gaskets and polypropylene ties.



For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL CSV-9520AB SERIES

DZR Brass On/Off Terminal Low Lead Balancing Valves

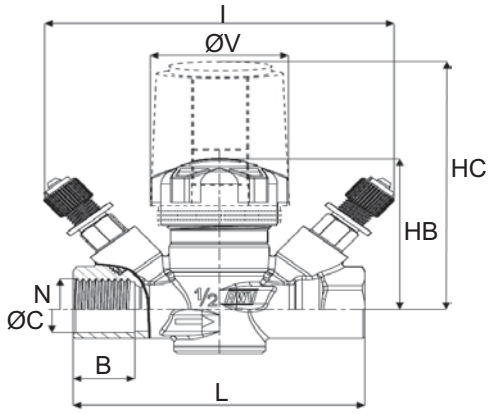
FIGURE ANVIL CSV-9520AB SERIES DZR BRASS ON/OFF TERMINAL BALANCING VALVE										
Valve Size	N	øC[1]	L[2]	B[2]	HB	HC[3]	øV	I	Approx. Wt. Each	Flow Range
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*	*GPM*
½LF	½ - 14	0.627-0.631	3.3/3.9	0.65/0.51	2.0	3.3	1.6	3.9	0.77/0.74	0.49/1.17
15	–	*15.93-16.03*	*83.8/99.1*	*16.5/13.0*	*50.8*	*83.8*	*40.6*	*99.1*	*0.35/0.34*	–
½	½ - 14	0.627-0.631	3.3/3.9	0.65/0.51	2.0	3.3	1.6	3.9	0.77/0.74	0.98/2.35[4]
15	–	*15.93-16.03*	*83.8/99.1*	*16.5/13.0*	*50.8*	*83.8*	*40.6*	*99.1*	*0.35/0.34*	–
¾	¾ - 14	0.877-0.881	3.5/4.6	0.76/0.78	2.0	3.3	1.6	4.1	0.99/0.99	2.19/5.15[4]
20	–	*22.28-22.38*	*88.9/116.8*	*19.3/19.8*	*50.8*	*83.8*	*40.6*	*104.1*	*0.45/0.45*	–
1	1 - 11.5	1.128-1.131	3.9/5.0	0.90/0.92	2.8	4.3	1.6	4.3	1.37/1.27	4.09/9.56[4]
25	–	*28.65-28.73*	*99.1/127.0*	*22.9/23.4*	*71.1*	*109.2*	*40.6*	*109.2*	*0.62/0.58*	–

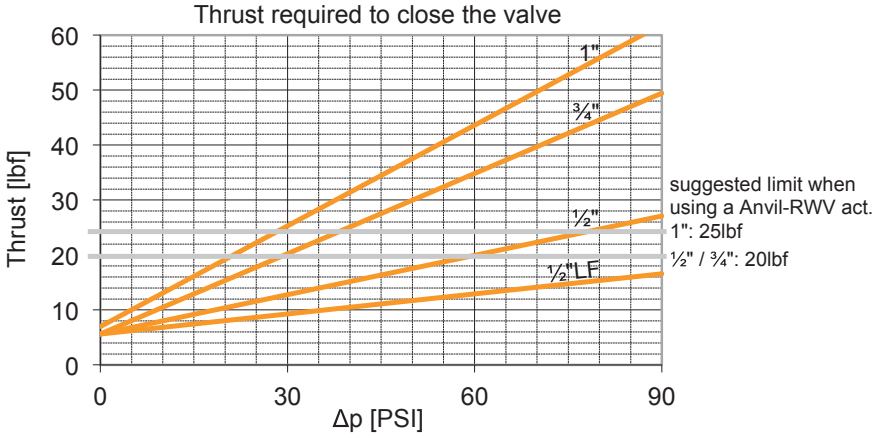
[1] Tolerance field

[2] Threaded ends/soldering ends

[3] Dimension with VIR actuators, for more details please consult specific technical sheet

If using a measuring manometer different from those proposed by Anvil-RWV, please verify that sensibility of the measuring device is compatible with indicated minimum flow (see flow measurement paragraph).





FLOW MEASUREMENT

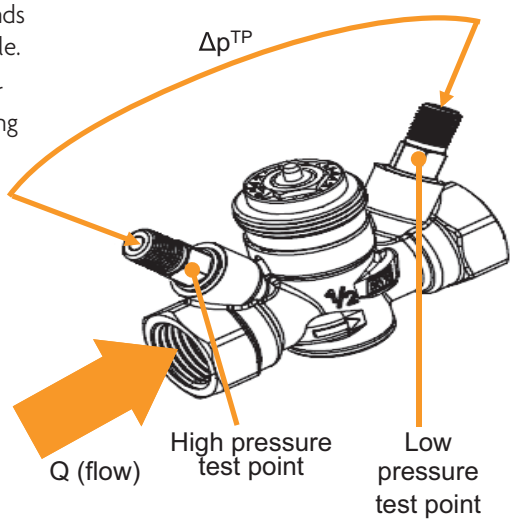
FLOW MEASUREMENT				
Regulating Position	C_V			
	½"LF	½"	¾"	1"
–	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*
0.5	0.127	0.578	0.798	1.538
1.0	0.173	0.879	1.237	2.405
1.5	0.220	1.098	1.584	3.121
2.0	0.254	1.260	1.896	3.665
2.5	0.289	1.399	2.197	4.162
3.0	0.335	1.514	2.451	4.509
3.5	0.382	1.607	2.671	4.844
4.0	0.428	1.699	2.856	5.226
4.5	0.486	1.769	3.017	5.491
5.0	0.543	1.838	3.179	5.723
5.5	0.601	1.884	3.306	5.942
6.0	0.659	1.931	3.422	6.127
6.5	0.717	1.965	3.526	6.312
7.0	0.775	2.000	3.619	6.555
7.5	0.832	2.035	3.700	6.740
8.0	0.879	2.058	3.792	6.937
8.5	0.925	2.081	3.873	7.087
9.0	0.960	2.104	3.942	7.145
9.5	0.994	2.116	4.012	7.283

$$Q = C_V \bullet \sqrt{\Delta p^{TP}}$$

Formula linking flow Q (in GPM) and Δp measured at test points (in psi). C_V depends on regulating position as indicated in table.

Minimum flow that can be measured for each diameter may be calculated by using in the formula minimum Δp that can be measureed by used manometer.

Valves are anyway designed for best performances when used on range previously suggested.



For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL CSV-9520AB SERIES

DZR Brass On/Off Terminal Low Lead Balancing Valves

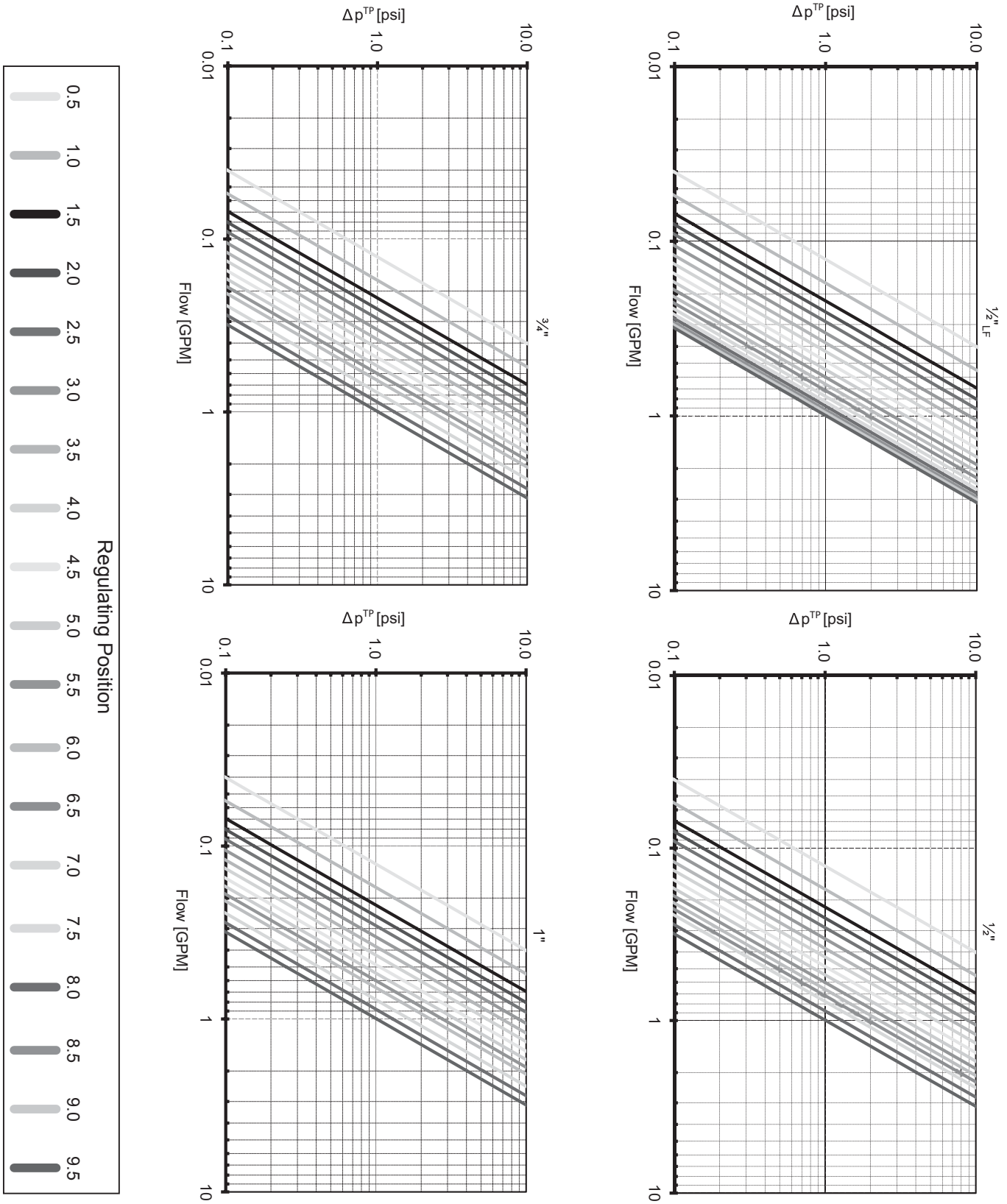


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FIG. ANVIL CSV-9520AB SERIES

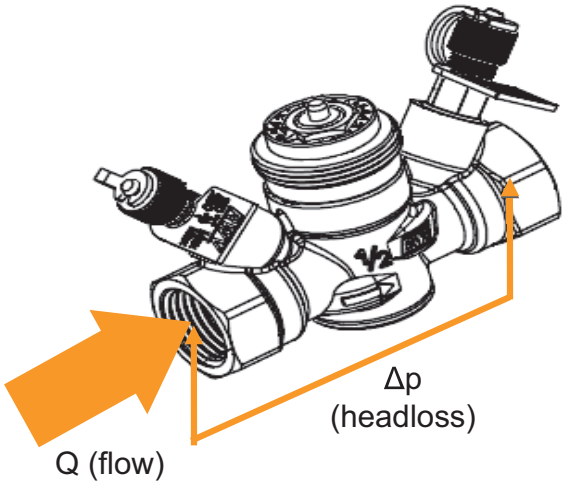
DZR Brass On/Off Terminal Low Lead Balancing Valves

HEADLOSS CALCULATION

HEADLOSS CALCULATION				
Regulating Position	C_V (GPM/psi$^{0.5}$)			
	½"LF	½"	¾"	1"
–	*GPM/psi*	*GPM/psi*	*GPM/psi*	*GPM/psi*
0.5	0.127	0.578	0.798	1.538
1.0	0.173	0.879	1.237	2.405
1.5	0.220	1.098	1.584	3.121
2.0	0.254	1.260	1.896	3.665
2.5	0.289	1.399	2.197	4.162
3.0	0.335	1.514	2.451	4.509
3.5	0.382	1.607	2.671	4.844
4.0	0.428	1.699	2.856	5.226
4.5	0.486	1.769	3.017	5.491
5.0	0.543	1.838	3.179	5.723
5.5	0.601	1.884	3.306	5.942
6.0	0.659	1.931	3.422	6.127
6.5	0.717	1.965	3.526	6.312
7.0	0.775	2.000	3.619	6.555
7.5	0.832	2.035	3.700	6.740
8.0	0.879	2.058	3.792	6.937
8.5	0.925	2.081	3.873	7.087
9.0	0.960	2.104	3.942	7.145
9.5	0.994	2.116	4.012	7.283

Formula linking flow Q (in GPM) and theoretical valve headloss (pressure drop) Δp (in psi). C_V depends on regulating position as indicated in table.

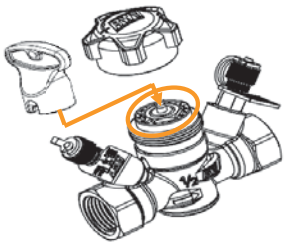
$$\Delta p = \left(\frac{Q}{C_V}\right)^2$$



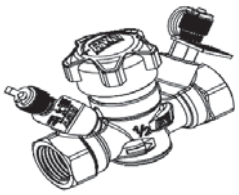
INSTALLATION

Regulation is done by removing the ON/OFF cap and acting on regulation indicator with the provided key. Once desired regulation is obtained, screw on the cap (gently with the only aim to fix it to the valve, do not apply force!)

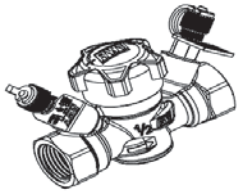
It's possible at any time to act on the ON/OFF cap to completely close the valve, independently from regulation. To do so, act on the cap screwing it on at full stroke.



Regulation



ON/OFF Cap Fixing



Valve Shut-Off

To obtain the best performances valve must be installed on a pipe with its same nominal size preceded and followed by straight pipe lengths as per figure indications.

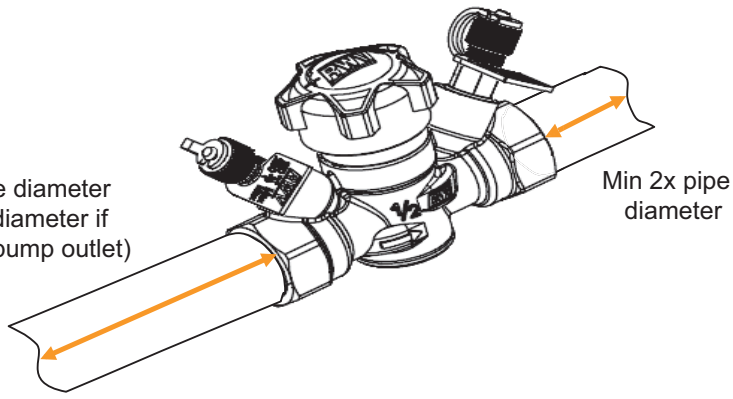


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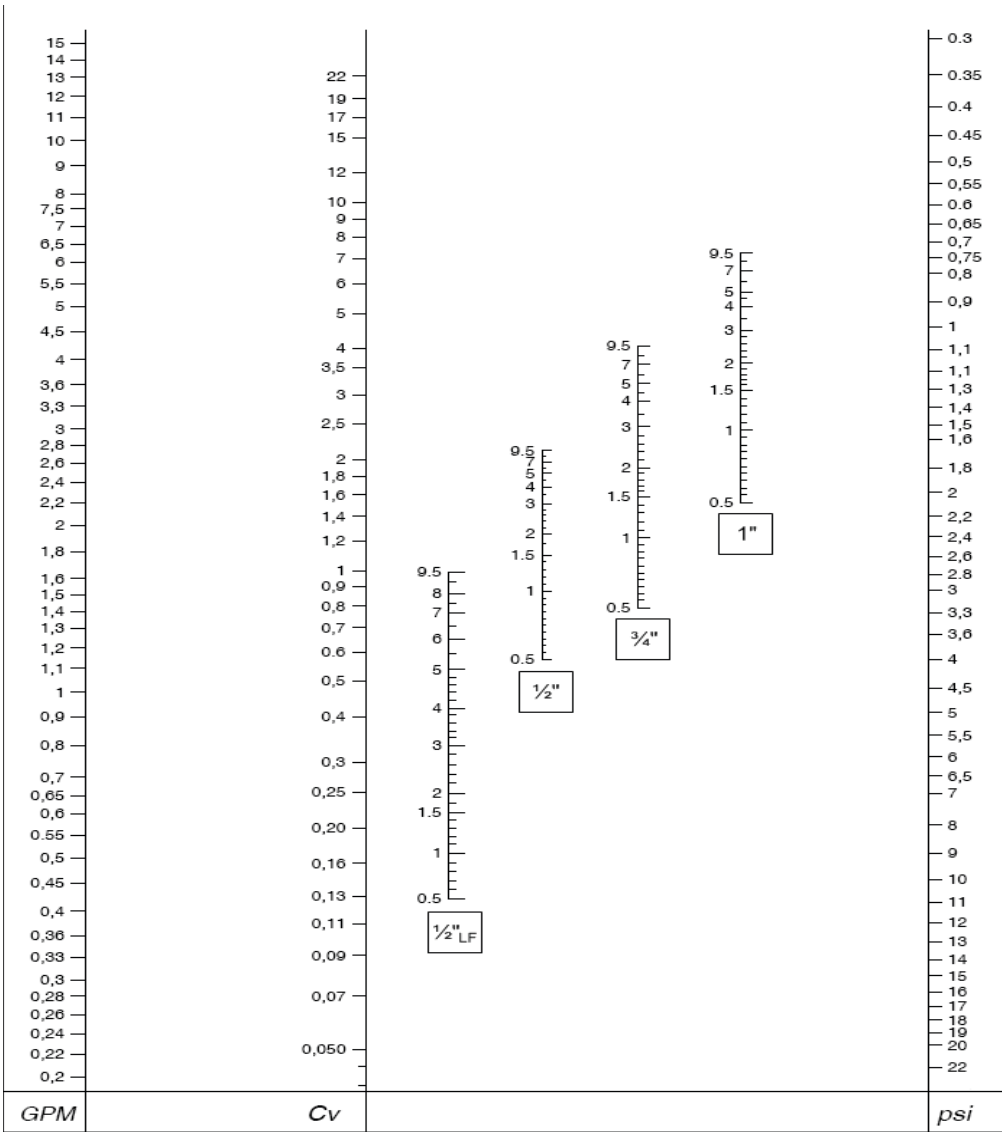
FIG. ANVIL CSV-9520AB SERIES

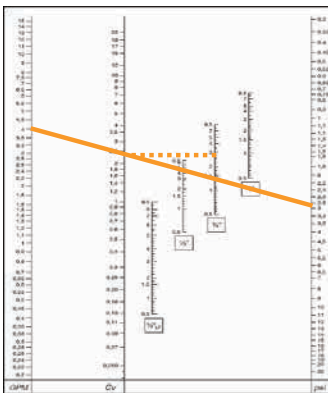
DZR Brass On/Off Terminal Low Lead Balancing Valves

PRESETTING



By using diagram above is possible to evaluate the presetting position of the valve with given design flowrate and headloss:

1) Draw a straight line joining design flowrate and design headloss;
2) Determine design C_V value as intersection of drawn line and Cv axis;
3) Draw a straight horizontal line from intersection previously identified and the specific valve size axis;
4) Intersection determines handwheel position to use for presetting.



In the example for a design flowrate of 4GPM and desi
Δp 3psi handwheel position of 2.7 is determined for a ³
valve

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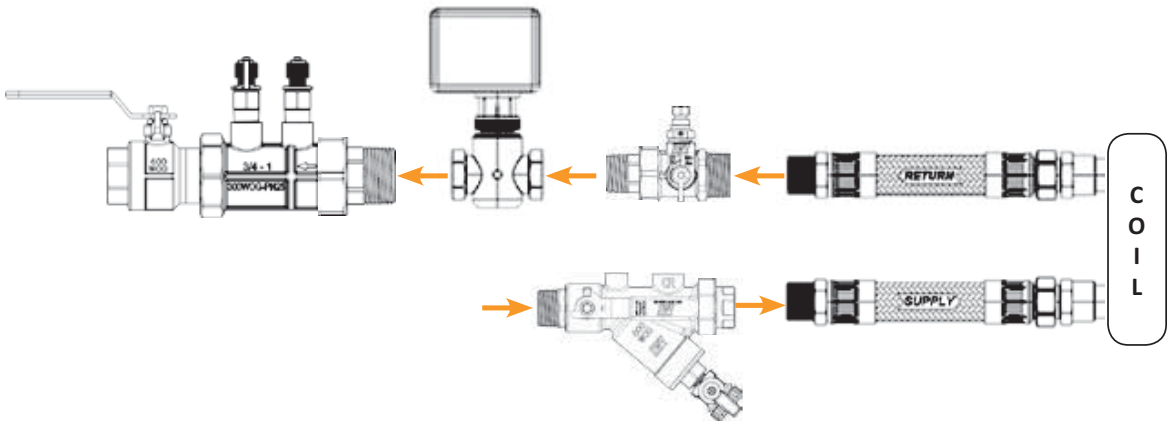
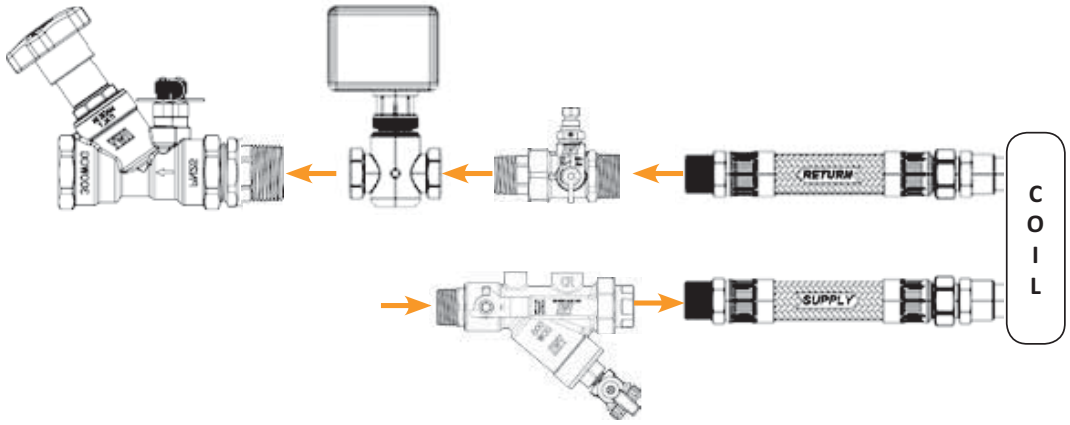
STANDARD COIL HOOK UP KIT CONFIGURATION

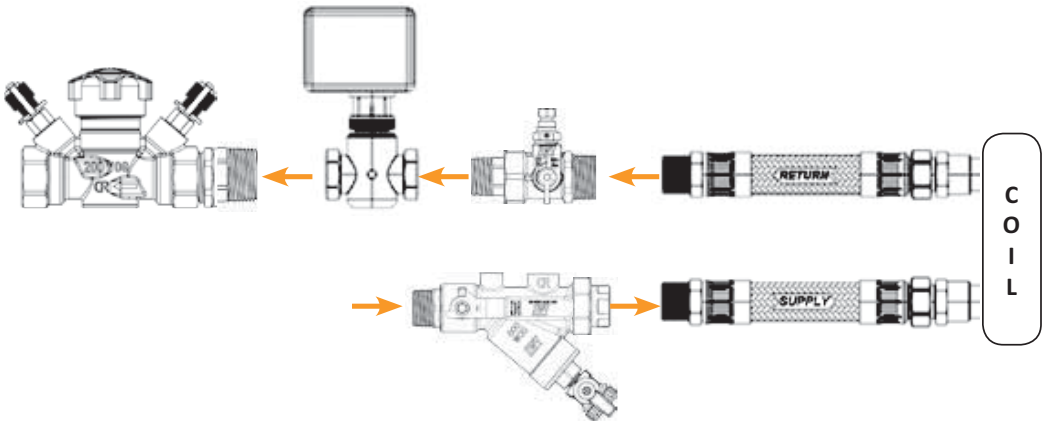
AUTOMATIC 2-WAY



MANUAL 2-WAY



CIRCUIT SETTER 2-WAY



Multiple configurations available.
Product will be seal packed and labeled per the mechanical schedule provided.

For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL 92ST

DZR Brass Ball Valve with Strainer

FEATURES

- DZR brass ball valve with strainer
- Threaded F/F with union end (ASME B1.20.1 - NPT) (F/M with union end for 3/4", 1" and 2")
- Air testing according EN12266-1
- Blow-out proof stem
- Stainless steel strainer (20 mesh)
- Available with optional test point and/or drain
- 600 WOG (400 WOG for 1 1/2" and 2")

Working Conditions:
Water (15°F to 260°F)
below 32°F only for water with added anti-freezing fluids
over 212°F only for water with added anti-boiling fluids

MATERIAL SPECIFICATIONS

1. **FIXED END:** DZR Brass ASTM C35330
2. **BALL:** Chrome Plated DZR Brass ASTM C35330
3. **SEAT:** PTFE
4. **BODY:** DZR Brass ASTM C35330
5. **SCREW:** Geomet Steel
6. **HANDLE:** Geomet Steel[1]
7. **O-RING:** EPDM Perox
8. **STEM:** DZR Brass ASTM C35330
9. **STRAINER:** Stainless Steel A304
10. **PLUG GASKET:** EPDM Perox
11. **PLUG:** DZR Brass ASTM C35330
12. **PLUG GASKET:** EPDM Perox
13. **TEST POINT/PLUG[2]:** DZR Brass ASTM C35330
14. **UNION END:** DZR Brass ASTM C35330
15. **UNION NUT:** Brass ASTM B283 C37700
16. **FITTING[3]:** DZR Brass

[1] With blue PVC cover
[2] Test point with EPDM Perox gaskets and polypropylene tie
[3] Excluded 1/2" and 3/4"

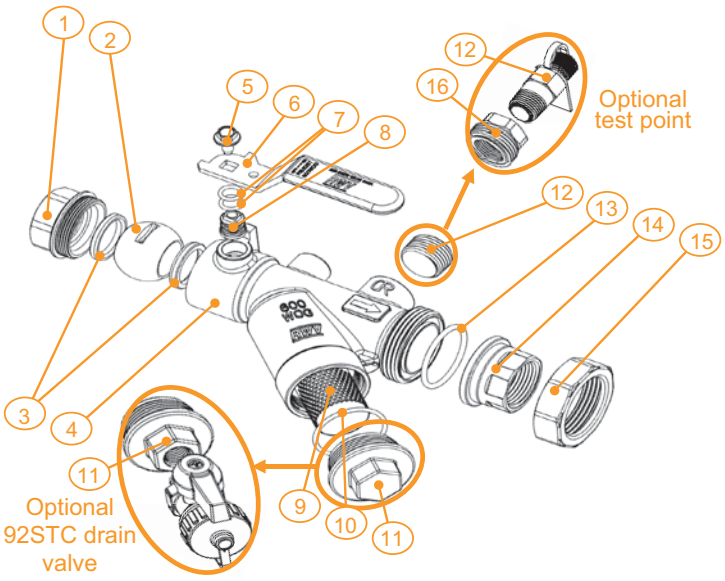


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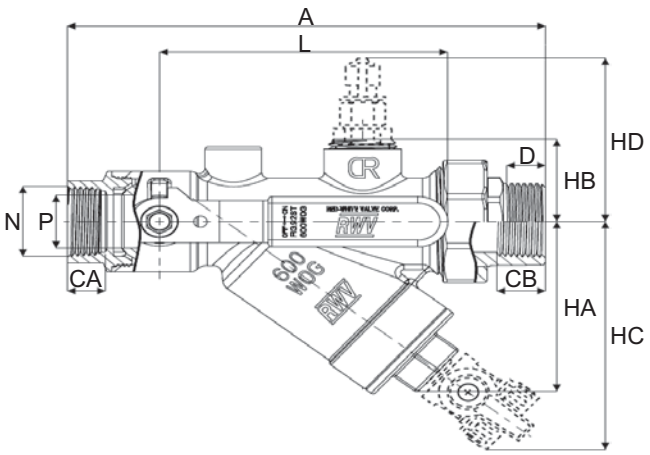
FIG. ANVIL 92ST

DZR Brass Ball Valve with Strainer



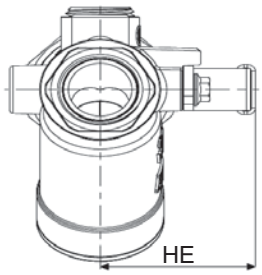


FIGURE ANVIL 92ST DZR BRASS BALL VALVE WITH STRAINER

Valve Size	N	A	CA/CB	D	P	HE	L	HA/HC	HB/HD	Approx. Wt. Each[1]
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
½ *15*	½ *15*	4.4 *111.8*	0.45/0.55 *11.4/14.0*	– –	0.59 *15.0*	1.8 *45.7*	3.6 *91.4*	1.5/3.1 *38.1/78.7*	0.8/2.2 *20.3/55.9*	1.09/1.43 *0.49/0.65*
¾ *20*	¾ *20*	5.0 *127.0*	0.62/ - *15.7/ -*	0.55 *14.0*	0.59 *15.0*	1.8 *45.7*	3.6 *91.4*	1.5/3.1 *38.1/78.7*	0.8/2.2 *20.3/55.9*	1.15/1.49 *0.52/0.68*
¾F *20*	¾ *20*	5.9 *149.9*	0.47/0.55 *11.9/14.0*	– –	0.78 *19.8*	1.9 *48.3*	3.6 *91.4*	2.6/3.5 *66.0/88.9*	1.3/2.6 *33.0/66.0*	2.45/2.72 *1.11/1.23*
1 *25*	1 *25*	6.7 *170.2*	0.70/ - *17.8/ -*	0.70 *17.8*	0.78 *19.8*	1.9 *48.3*	3.6 *91.4*	2.6/3.5 *66.0/88.9*	1.3/2.6 *33.0/66.0*	2.55/2.88 *1.16/1.31*
1¼ *32*	1¼ *32*	8.5 *215.9*	0.85/0.71 *21.6/18.0*	– –	1.26 *32.0*	2.3 *58.4*	5.0 *127.0*	3.7/4.4 *94.0/111.8*	1.4/2.9 *35.6/73.7*	5.80/6.16 *2.63/2.79*
1½ *40*	1½ *40*	10.8 *274.3*	0.85/0.84 *21.6/21.3*	– –	1.57 *39.9*	2.9 *73.7*	5.6 *142.2*	4.2/4.6 *106.7/116.8*	1.7/3.2 *43.2/81.3*	7.59/7.92 *3.44/3.59*
2 *50*	2 *50*	11.2 *284.5*	0.81/ - *20.6/ -*	1.22 *31.0*	1.57 *39.9*	2.9 *73.7*	5.6 *142.2*	4.2/4.6 *106.7/116.8*	1.7/3.2 *43.2/81.3*	8.09/8.42 *3.67/3.82*

[1] Weight for standard version/Weight for version with drain ball valve and test points

For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL 92BPC

DZR Brass Ball Valve with Bypass

FEATURES

- DZR Brass Ball Valve with Bypass
- Threaded F/F with Union End (ASME B1.20.1 - NPT)
- Blow-out Proof Stem
- Adjustable Packing Nut
- Provided with 1 Test Point and Drain Valve

Working Conditions:
600WOG @ 160˚F
Max. Temperature 260˚F @ 150psi

MATERIAL SPECIFICATIONS

1. **BODY:** DZR Brass ASTM C35330
2. **RETAINER:** Brass ASTM C37700
3. **BALL:** Chrome Plated Brass ASTM C37700
4. **SEAT RING:** PTFE
5. **STEM:** Brass ASTM C37700
6. **STEM SEAL:** PTFE
7. **HANDLE COVER:** PVC
8. **SCREW:** Zinc Plated Steel A304
9. **HANDLE:** Zinc Plated Steel A304
10. **PACKING NUT:** Brass ASTM C37700
11. **O-RING:** EPDM
12. **UNION NUT:** DZR Brass ASTM C35330
13. **SEAT RING:** PTFE
14. **TAIL PIECE:** DZR Brass ASTM C35330
15. **PLUG:** Brass ASTM C37700
16. **STEM O-RING:** EPDM
17. **DRAIN VALVE:** Brass ASTM C37700

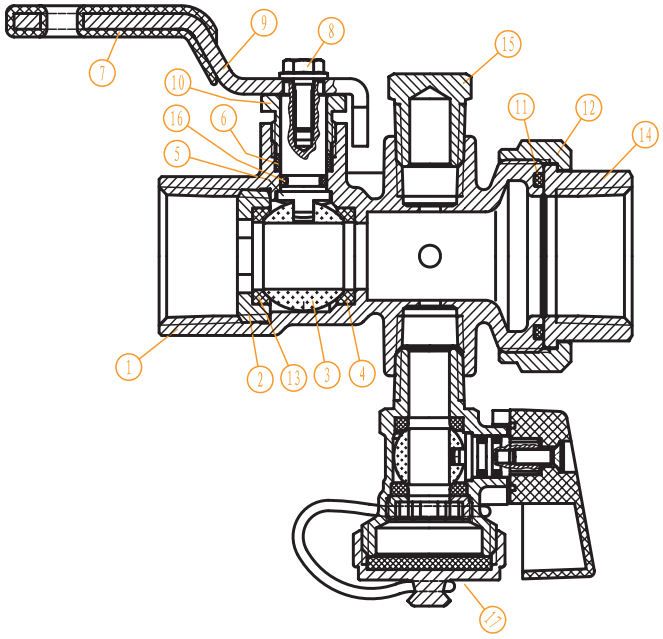


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FIG. ANVIL 92BPC

DZR Brass Ball Valve with Bypass

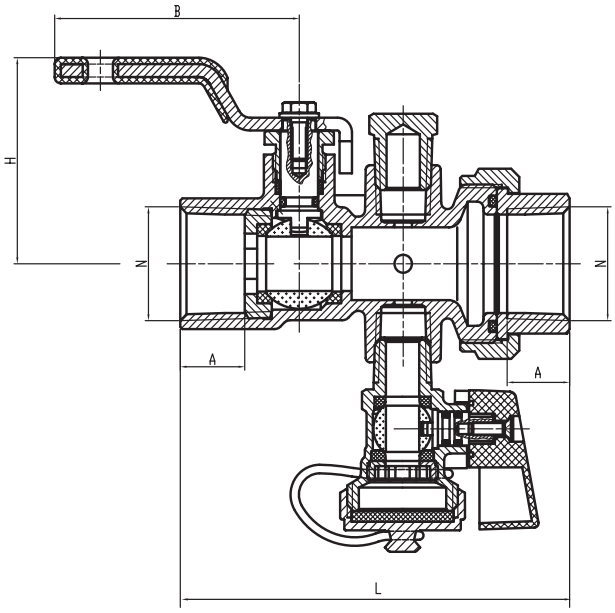


FIGURE ANVIL 92BPC DZR BRASS VALVE WITH BYPASS						
Valve Size	N	A	B	H	L	Approx. Wt. Each
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
½ *15*	½ *15*	0.6 *15.2*	2.32 *58.9*	1.76 *44.7*	3.73 *94.7*	0.97 *0.44*
¾ *20*	¾ *20*	0.6 *15.2*	2.32 *58.9*	1.90 *48.3*	3.69 *93.7*	1.13 *0.51*
1 *25*	1 *25*	0.7 *17.8*	4.05 *102.9*	2.01 *51.1*	3.95 *100.3*	1.48 *0.67*
1¼ *32*	1¼ *32*	0.7 *17.8*	4.74 *120.4*	2.52 *64.0*	4.39 *111.5*	2.21 *1.00*
1½ *40*	1½ *40*	0.7 *17.8*	4.74 *120.4*	2.61 *66.3*	4.81 *122.2*	2.80 *1.27*
2 *50*	2 *50*	0.7 *17.8*	5.58 *141.7*	3.46 *87.9*	5.24 *133.1*	4.33 *1.96*

For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL 99IBV

Ball Valve with Nut for 9900V Series Valves

FEATURES

Available on following versions:

- Threaded F inlet (ASME B1.20.1 - NPT)
- Solder joint inlet (ASME B16.22)

Can be combined with threaded F or solder joint 9900 series valve.
Air testing according to EN12266-1.
Blow-out proof stem, adjustable packing

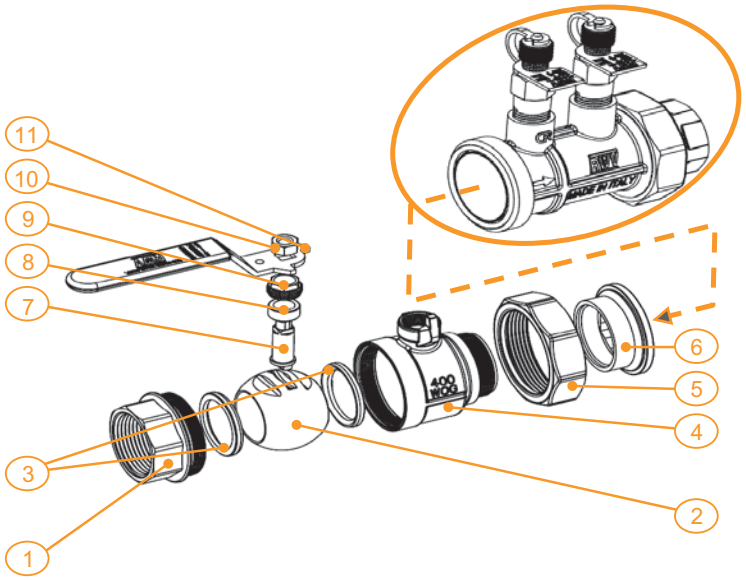
- 400 WOG

Working Conditions:
Water (15°F to 260°F)
below 32°F only for water with added anti-freezing fluids
over 212°F only for water with added anti-boiling fluids

MATERIAL SPECIFICATIONS

1. **FIXED END: DZR** Brass
2. **BALL:** Chrome Plated DZR Brass
3. **SEAT:** PTFE
4. **BODY:** DZR Brass
5. **TAIL PIECE NUT:** Brass
6. **TAIL PIECE:** DZR Brass
7. **STEM:** DZR Brass
8. **PACKING RING:** PTFE
9. **PACKING NUT:** Brass
10. **NUT:** Dacromet Steel
11. **HANDLE:** Dacromet Steel[1]

[1] With blue PVC COVER



For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL 99IBV

Ball Valve with Nut for 9900V Series Valves

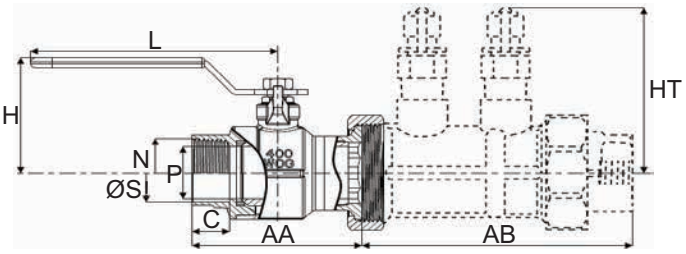


FIGURE ANVIL 99IBV BALL VALVE WITH NUT FOR 9900V SERIES VALVES

Ball Valve Size[1]	N	øS[2]	B[3]	P	AA[3]	AB[4]	HV	HT	L	Approx. Wt. Each[3]	
										99IBV	9900V
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*	*Lbs./Kg*
½ *15*	½ *15*	0.627-0.631 *15.93-16.03*	0.60/0.51 *15.2/13.0*	0.50 *12.7*	2.0/2.0 *50.8/50.8*	3.0/3.3/2.8 *76.2/83.8/71.1*	1.6 *40.6*	2.3 *58.4*	3.2 *81.3*	0.50/0.50 *0.23/0.23*	0.73/0.68 *0.33/0.31*
¾LF *20*	¾ *20*	0.877-0.881 *22.28-22.38*	0.60/0.75 *15.2/19.1*	0.50 *12.7*	2.1/2.3 *53.3/58.4*	3.4/3.3/3.1 *86.4/83.8/78.7*	1.6 *40.6*	2.3 *58.4*	3.2 *81.3*	0.53/0.53 *0.24/0.24*	0.81/0.70 *0.37/0.32*
¾ *20*	¾ *20*	0.877-0.881 *22.28-22.38*	0.60/0.75 *15.2/19.1*	0.79 *20.1*	2.4/2.8 *61.0/71.1*	3.6/3.9/3.6 *91.4/99.1/91.4*	2.3 *58.4*	2.6 *66.0*	3.6 *91.4*	0.95/0.97 *0.43/0.44*	1.08/1.00 *0.49/0.45*
1 *25*	1 *25*	1.128-1.131 *28.65-28.73*	0.71/0.91 *18.0/23.1*	0.79 *20.1*	2.6/2.9 *66.0/73.7*	3.7/4.2/3.8 *94.0/106.7/96.5*	2.3 *58.4*	2.6 *66.0*	3.6 *91.4*	1.04/1.00 *0.47/0.45*	1.26/1.09 *0.57/0.49*
1¼ *32*	1¼ *32*	1.378-1.381 *35.00-35.08*	0.73/0.97 *18.5/24.6*	1.26 *32.0*	3.3/3.7 *83.8/94.0*	5.2/5.5/5.5 *132.1/139.7/139.7*	2.8 *71.1*	2.9 *73.7*	5.0 *127.0*	2.41/2.20 *1.09/1.00*	2.58/2.57 *1.17/1.17*
1½ *40*	1½ *40*	1.628-1.632 *41.35-41.45*	0.77/1.09 *19.6/27.7*	1.26 *32.0*	3.4/3.9 *86.4/99.1*	5.2/5.9/5.6 *132.1/149.9/142.2*	2.8 *71.1*	2.9 *73.7*	5.0 *127.0*	2.64/2.47 *1.20/1.12*	2.78/2.57 *1.26/1.17*
2 *50*	2 *50*	2.128-2.132 *54.05-54.15*	0.81/1.34 *20.6/34.0*	1.26 *32.0*	3.5/4.4 *88.9/111.8*	6.2/6.1/5.9 *157.5/154.9/149.9*	2.8 *71.1*	2.9 *73.7*	5.0 *127.0*	2.78/2.78 *1.26/1.26*	3.36/2.77 *1.52/1.17*
2HF *50*	2 *50*	2.128-2.132 *54.05-54.15*	0.81/1.34 *20.6/34.0*	1.97 *50.0*	4.3/5.0 *109.2/127.0*	7.8/-/8.2 *198.1/-/208.3*	3.6 *91.4*	3.6 *91.4*	5.6 *142.4*	6.39/6.46 *2.90/2.93*	9.06/8.85 *4.11/4.01*
2½ *65*	2½ *65*	2.628-2.633 *66.75-68.88*	1.18/1.49 *30.0/37.8*	1.97 *50.0*	4.7/5.2 *119.4/132.1*	8.0/-/8.3 *203.2/-/210.8*	3.6 *91.4*	3.6 *91.4*	5.6 *142.4*	7.01/6.68 *3.18/3.03*	9.34/8.86 *4.24/4.02*

[1] Also available following 99IBV/9905V combinations: ¾LF"/½", 1"/¾", 1½"/1¼", 2"/1½", 2"/2½"
[2] Tolerance field
[3] Threaded ends/soldering ends
[4] Threaded F ends/threaded M ends/soldering ends
[5] Threaded ends/soldering ends; weight includes cartridge

For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL 92UN

DZR Brass Union Body with Air Vent and Test Point

FEATURES

- DZR Brass Union Body with Air Vent and Test Point
- Threaded F or M (ASME B1.20.1 - NPT)
- Solder joint ends (ASME B16.22)
- 400 WOG

Union ends available on following versions:

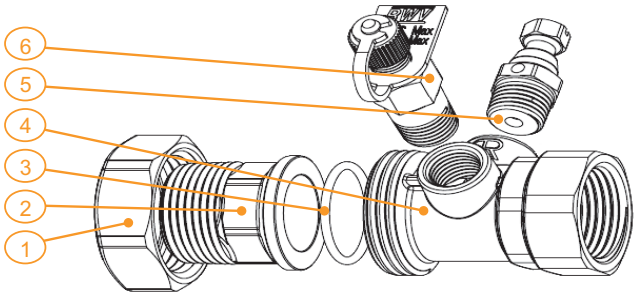
- Threaded M (ASME B1.20.1 - NPT)
- Solder joint ends (ASME B16.22)

Working Conditions:
Water (15˚F to 260˚F)
below 32˚F only for water with added anti-freezing fluids
over 212˚F only for water with added anti-boiling fluids

MATERIAL SPECIFICATIONS

1. **UNION NUT:** Brass
2. **UNION:** DZR Brass
3. **UNION O-RING:** EPDM Perox
4. **BODY:** DZR Brass
5. **VENT:** DZR Brass
6. **TEST POINT:** DZR Brass[1]

[1] With EPDM Perox gaskets and polypropylene tie



For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL 92UN

DZR Brass Union Body with Air Vent and Test Point

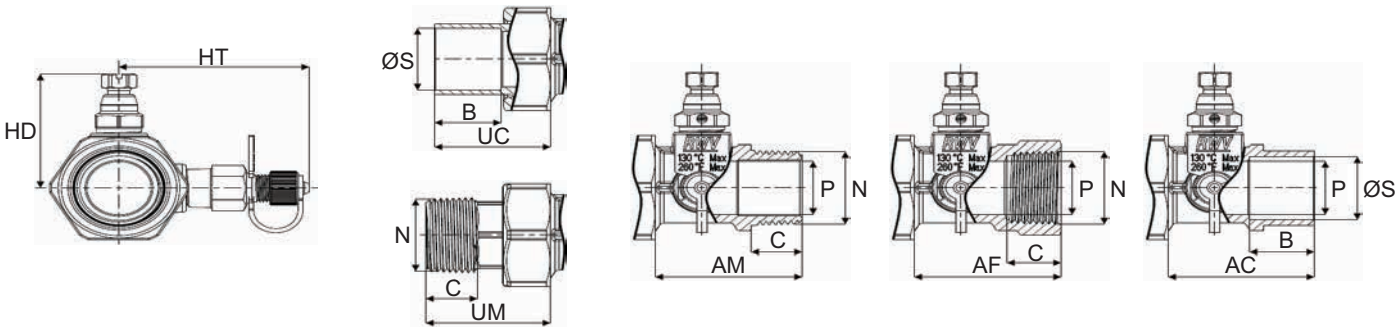


FIGURE ANVIL 92UN DZR BRASS UNION BODY WITH AIR VENT AND TEST POINT													
Union Size	N	øS	C	B	P	AM	AF	AC	UM	UC	HD	HT	Approx. Wt. Each[1]
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
½ *15*	½ *15*	0.627-0.631 *15.93-16.03*	0.55 *14.0*	0.51 *13.0*	0.59 *15.0*	1.7 *43.2*	1.6 *40.6*	1.5 *38.1*	1.4 *35.6*	0.9 *22.3*	1.6 *40.6*	2.2 *55.9*	0.50/0.58 *0.23/0.26*
¾ *20*	¾ *20*	0.877-0.881 *22.28-22.38*	0.63 *16.0*	0.78 *19.8*	0.74 *18.8*	1.7 *43.2*	1.7 *43.2*	1.7 *43.2*	1.5 *38.1*	1.4 *35.6*	1.6 *40.6*	2.2 *55.9*	0.57/0.64 *0.26/0.29*
1 *25*	1 *25*	1.128-1.131 *28.65-28.73*	0.70 *17.8*	0.91 *23.1*	1.00 *25.4*	1.9 *48.3*	1.7 *43.2*	1.9 *48.3*	1.8 *45.7*	1.6 *40.6*	1.9 *48.3*	2.3 *58.4*	0.64/0.84 *0.29/0.38*
1¼ *32*	1¼ *32*	1.378-1.381 *35.00-35.08*	0.73 *18.5*	0.98 *24.9*	1.25 *31.8*	2.0 *50.8*	1.8 *45.7*	2.0 *50.8*	1.9 *48.3*	1.7 *43.2*	2.0 *50.8*	2.5 *63.5*	1.01/1.15 *0.46/0.53*
1½ *40*	1½ *40*	1.628-1.632 *41.35-41.45*	0.77 *19.6*	1.10 *27.9*	1.50 *38.1*	2.1 *53.3*	1.8 *45.7*	2.1 *53.3*	2.2 *55.9*	1.9 *48.3*	2.1 *53.3*	2.5 *63.5*	1.59/1.90 *0.72/0.86*
2 *50*	2 *50*	2.128-2.132 *54.05-54.15*	0.80 *20.3*	1.35 *34.3*	1.97 *50.0*	2.1 *53.3*	1.8 *45.7*	2.2 *55.9*	2.3 *58.4*	2.1 *53.3*	2.4 *61.0*	2.8 *71.1*	1.90/2.26 *0.86/1.03*

[1] Weight varying in the indicated range depending on the body/union end combination

For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

FIG. ANVIL 92HS

Stainless Steel Braided Hose – 12", 24" and 36" lengths available

FEATURES

- Lower risk of leakage
- Fewer field installation joints
- Less installation time and cost
- Fire retardant stainless steel

MATERIAL SPECIFICATIONS

1. **NUT:** Brass C36000
2. **GASKET:** Paper
3. **CONNECTOR:** Stainless Steel AISI304
4. **FLEXIBLE HOSE/INNER PIPE:** Stainless Steel/EPDM, AISI304/EPDM
5. **SCREW:** Brass C36000

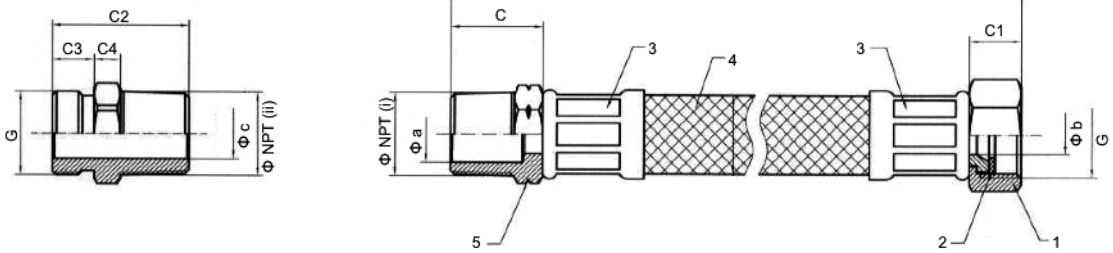


FIGURE ANVIL 92HS HOSE

Hose Size	øNPT(i)	øNPT(ii)	øa	øb	øc	C	C1	C2	C3	C4	G	L	Approx. Wt. Each
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
½ *15*	½ *15*	½ *15*	0.55 *14.0*	0.37 *9.4*	0.49 *12.4*	0.91 *23.1*	0.51 *13.0*	1.34 *34.0*	0.41 *10.4*	0.26 *6.6*	½ *15*	24/36 *610/914*	0.8/1.1 *0.36/0.50*
¾ *20*	¾ *20*	¾ *20*	0.79 *20.1*	0.59 *15.0*	0.69 *17.5*	0.93 *14.0*	0.55 *14.0*	0.46 *11.7*	0.47 *11.9*	0.28 *7.1*	¾ *20*	24/36 *610/914*	1.2/2.0 *0.54/0.91*
1 *25*	1 *25*	1 *25*	0.94 *23.9*	0.75 *19.1*	0.81 *20.6*	1.10 *15.5*	0.61 *15.5*	0.75 *19.1*	0.57 *14.5*	0.31 *7.9*	1 *25*	24/36 *610/914*	1.7/2.8 *0.77/1.27*
1¼ *32*	1¼ *32*	1¼ *32*	1.17 *29.8*	0.94 *23.8*	1.00 *25.4*	1.12 *28.4*	0.71 *18.5*	1.85 *47.2*	0.58 *14.8*	0.35 *9.0*	1¼ *32*	24/36 *610/914*	3.4/3.7 *1.52/1.66*
1½ *40*	1½ *40*	1½ *40*	1.41 *36.0*	1.25 *31.8*	– –	1.18 *30.0*	0.75 *19.0*	– –	– –	– –	1½ *40*	12 *305*	2.0 *0.89*
2 *50*	2 *50*	2 *50*	2.09 *53.1*	2.09 *53.1*	– –	2.08 *52.8*	2.08 *52.8*	– –	– –	– –	2 *50*	12 *305*	2.3 *1.02*

NOTE: 1½" and 2" sizes are not available with swivel connection.

For additional information on Gruvlok bag and tag coil kit service, contact an Anvil Representative.

GBV-G, GBV-A & GBV-F

Balancing Valves

Ductile Iron ASTM A536, Grade 65-45-12

The Series GBV is a multi-turn, Y-style globe valve designed for accurate determination and control of fluid flow to circuits requiring precise balancing.

Max. Working Pressure
300 PSI / 20.7 bar (PN20)

Max. Working Temperature
230°F (110°C)

Straight Shown

FEATURES & BENEFITS

- Pressure differential ports on both sides of the valve
- Convertible design, straight to 90° angle by removing and replacing four set screws
- Positive shutoff for equipment servicing
- Multi-turn adjustment
- Ergodynamically designed handwheel
- Micrometer type adjustment scale
- Tamper-proof hidden memory stop

MATERIAL SPECIFICATIONS

BODY, BONNET: Ductile Iron ASTM A536, Grade 65-45-12

STEM & DISC: Brass Alloy B16

ELASTOMERS: EPDM

HANDWHEEL: Reinforced Nylon; ABS

GBV-G – Balancing Valve
2 1/2" to 12" Ductile Iron, Grooved-End or Flanged-End Straight

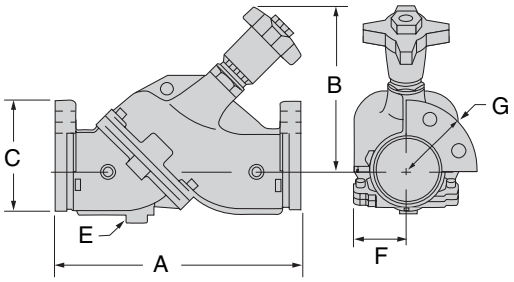


FIGURE GBV-G GROOVED-END STRAIGHT BALANCING VALVES
DUCTILE IRON, GROOVED-END OR FLANGED-END STRAIGHT

Nominal Size	O.D.	A	B Open	C	E	F	Flange Diameter		Approx. Wt. Each
							G Flange 125#	G Flange 250#	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2½	2.875	12	9⅝	2¾	1	2⁹⁄₁₆	7	7½	25
65	*73.0*	*305*	*244*	*70*	*25*	*65*	*178*	*191*	*11.3*
3	3.500	12	10½	2⁷⁄₁₆	1	3	7½	8¼	28
80	*88.9*	*305*	*267*	*61*	*25*	*76*	*191*	*210*	*12.7*
4	4.500	14	10⁹⁄₁₆	3	1¼	3⁷⁄₁₆	9¼	10	41
100	*114.3*	*356*	*268*	*76*	*32*	*87*	*235*	*254*	*18.6*
5	5.563	17½	13¹⁄₁₆	3⅝	1¼	4¹⁵⁄₁₆	10	11	90
125	*141.3*	*445*	*331*	*92*	*32*	*125*	*254*	*279*	*40.8*
6	6.625	20¹¹⁄₁₆	13¾	4⁷⁄₁₆	2	5⅞	11	12½	130
150	*168.3*	*525*	*349*	*112*	*51*	*149*	*279*	*318*	*59.0*
8	8.625	28³⁄₁₆	24⅝	5¹¹⁄₁₆	2¼	7⅞	13½	15	310
200	*219.1*	*716*	*625*	*144*	*57*	*200*	*343*	*381*	*140.6*
10	10.750	30	26½	6⁹⁄₁₆	2¼	9¹⁵⁄₃₂	16	17½	460
250	*273.1*	*762*	*673*	*166*	*57*	*240*	*406*	*445*	*208.7*
12	12.750	38¹⁄₁₆	28⁷⁄₁₆	7⅝	2¼	12⅝	19	20½	870
300	*323.9*	*966*	*722*	*194*	*57*	*321*	*483*	*521*	*394.6*

NOTE: Grooved-Ends are for connection of components with dimensions conforming to Gruvlok® standard grooved specifications for IPS pipe.

GBV-G, GBV-A & GBV-F

Balancing Valves

Ductile Iron, Grooved-End and Cast Bronze, Solder & Threaded GBV

GBV-A – Balancing Valve

2½" to 12" Ductile Iron, Grooved-End or Flanged-End Angle

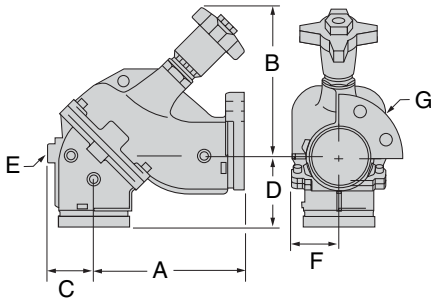


FIGURE GBV-A GROOVED-END ANGLE BALANCING VALVES
DUCTILE IRON, GROOVED-END OR FLANGED-END ANGLE

Nominal Size	O.D.	A	B Open	C	D	E	F	Flange Diameter		Approx. Wt. Each
								G Flange 125#	G Flange 250#	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2½	2.875	7⅜	9⅝	2¾	4⅝	1	2⁹⁄₁₆	7	7½	25
65	*73.0*	*187*	*244*	*70*	*117*	*25*	*65*	*178*	*191*	*11.3*
3	3.500	8³⁄₁₆	10½	2⁷⁄₁₆	3⅞	1	3	7½	8¼	28
80	*88.9*	*213*	*267*	*61*	*98*	*25*	*76*	*191*	*210*	*12.7*
4	4.500	9⅝	10⁹⁄₁₆	3	4⅜	1¼	3⁷⁄₁₆	9¼	10	41
100	*114.3*	*244*	*268*	*76*	*111*	*32*	*87*	*235*	*254*	*18.6*
5	5.563	12	13¹⁄₁₆	3⅝	5½	1¼	4¹⁵⁄₁₆	10	11	90
125	*141.3*	*305*	*331*	*92*	*140*	*32*	*125*	*254*	*279*	*40.8*
6	6.625	14⅛	13¾	4⁷⁄₁₆	6⅝	2	5⅞	11	12½	130
150	*168.3*	*359*	*349*	*112*	*168*	*51*	*149*	*279*	*318*	*59.0*
8	8.625	18¹⁵⁄₁₆	24⅝	5¹¹⁄₁₆	9³⁄₁₆	2¼	7⅞	13½	15	310
200	*219.1*	*481*	*625*	*144*	*233*	*57*	*200*	*343*	*381*	*140.6*
10	10.750	20⁵⁄₁₆	26½	6⁹⁄₁₆	9¾	2¼	9¹⁵⁄₃₂	16	17½	460
250	*273.1*	*515*	*673*	*166*	*248*	*57*	*240*	*406*	*445*	*208.7*
12	12.750	24¹⁄₁₆	28⁷⁄₁₆	7⅝	14	2¼	12⅝	19	20½	870
300	*323.9*	*611*	*722*	*194*	*356*	*57*	*321*	*483*	*521*	*394.6*

NOTE: Grooved-Ends are for connection of components with dimensions conforming to Gruvlok® standard grooved specifications for IPS pipe. See www.anvilintl.com for installation instructions and flow data.

FTV-S (Straight) & FTV-A (Angle Body)

Tri-Service Valve

SERVICE RECOMMENDATIONS:

The Model FTV-S & FTV-A Tri-Service Valve is primarily designed for installation in pump discharge piping where it functions as a spring loaded silent check valve, flow control valve and shut off valve.

OPERATION:

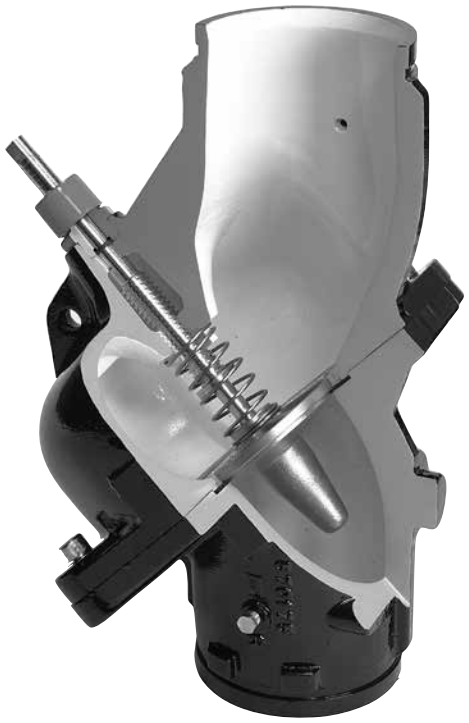
The Model FTV Tri-Service Valve operates automatically and silently. Line pressure of approximately 1/4 PSI will open the disc. The spring closes the disc as the line flow approaches zero in order to prevent flow reversal & water hammer. The flow through the valve can be adjusted from bubble tight shut off to full flow by the threaded rising stem.

FEATURES:

The unique convertible body design permits the valve to be changed on site from the straight to the angle configuration.

Flow measurement (where an approximate indication is acceptable) is obtained by flow measuring ports on each side of the valve seat. Pressure differential is easily recorded using differential pressure measurement devices. If precision accuracy is required, we recommend that a Gruvlok® Circuit Balancing Valve be installed downstream from the FTV valve.

See pages 212-214 for installation instructions and flow data.

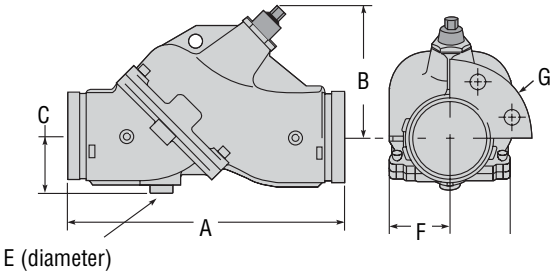


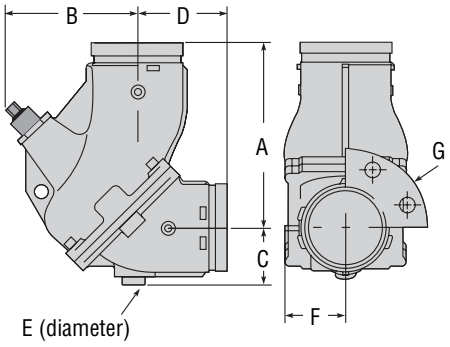
FEATURES & BENEFITS

- Three functions, one valve —
  1. Spring-closure design,
  2. Non-slam check valve,
  3. Flow throttling valve
- Reduced field installation and material cost
- Stainless steel spring
- High-strength resin seat EPDM for 8" and larger
- Anti-rotation lugs on the inlet and outlet. These lugs, combined with the Gruvlok 7401 Rigidlok Coupling or the Gruvlok flange adapter provides for a ridged rotation free installation
- Flow measurement and pump throttling capabilities
- Temperature measurement capability
- Spring-closure design check valve prevents gravity or reverse circulation when pump is not operating
- Bonnet "O" Ring can be replaced under full system pressure by back seating of valve stem
- Suitable for maximum working pressure to 375 psi (26 bar) and temperatures to 230°F. (110°C).
- Valve seat can be changed in the field without use of special tools
- Low pressure drop due to "Y" pattern valve design
- Valve Cv designed to ASHRAE flow recommendations for quiet system operation
- Drip-tight shut off valve smoke development rating of 50 or less

FTV-S (Straight) & FTV-A (Angle Body)

Tri-Service Valve





MODEL FTV-S (STRAIGHT)

Connection Size	A	B (fully open)	C	E	F	Flange 125/150 PSI G	Flange 250/300 PSI G	Approx. Wt. Each
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 1/2 65	12 305	7 178	2 3/4 70	1 25	2 9/16 65	7 178	7 1/2 191	19 9
3 80	12 305	7 13/16 198	2 7/16 62	1 25	3 80	7 1/2 191	8 1/4 210	24 11
4 100	14 356	8 203	3 80	1 1/4 32	3 7/16 87	9 1/4 235	10 254	42 19
5 125	17 1/2 445	10 1/8 257	3 5/8 92	1 1/4 32	4 15/16 125	10 254	11 279	81 37
6 150	20 11/16 525	10 3/8 264	4 7/16 113	2 51	5 7/8 149	11 279	12 1/2 318	120 54
8 200	28 3/16 716	22 13/16 579	5 11/16 144	2 1/4 57	7 7/8 200	13 1/2 343	15 381	300 136
10 250	30 762	28 5/8 727	6 9/16 167	2 1/4 57	9 15/32 241	16 409	17 1/2 445	450 204
12 300	38 1/16 967	32 5/8 829	7 5/8 194	2 1/4 57	12 5/8 321	19 483	20 1/2 521	850 390

See Page 61 for O.D. Size

MODEL FTV-A (ANGLE)

Connection Size	A	B (fully open)	C	D	E	F	Flange 125/150 PSI G	Flange 250/300 PSI G	Approx. Wt. Each
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 1/2 65	7 3/8 187	7 178	2 3/4 70	4 5/8 117	1 25	2 9/16 65	7 178	7 1/2 191	19 9
3 80	8 3/16 208	7 13/16 198	2 7/16 62	3 7/8 98	1 25	3 80	7 1/2 191	8 1/4 210	24 11
4 100	9 5/8 244	8 203	3 80	4 3/8 111	1 1/4 32	3 7/16 87	9 1/4 235	10 254	42 19
5 125	12 305	10 1/8 257	3 5/8 92	5 1/2 140	1 1/4 32	4 15/16 125	10 254	11 279	81 37
6 150	14 1/8 359	10 3/8 264	4 7/16 113	6 5/8 168	2 51	5 7/8 149	11 279	12 1/2 318	120 54
8 200	18 15/16 481	18 3/4 476	5 11/16 144	9 3/16 233	2 1/4 57	7 7/8 200	13 1/2 343	15 381	300 136
10 250	20 5/16 516	24 610	6 9/16 167	9 3/4 248	2 1/4 57	9 15/32 241	16 409	17 1/2 445	450 204
12 300	24 1/16 611	26 1/4 667	7 5/8 194	14 356	2 1/4 57	12 5/8 321	19 483	20 1/2 521	860 390

See Page 61 for O.D. Size

MATERIAL SPECIFICATIONS

BODY: Ductile Iron ASTM A 536 Grade 65-45-12

DISC: Bronze ASTM B 584 C-84400

STEM: Stainless Steel ASTM A 582 Type 416

SEAT: High Strength Engineered Resin

SPRING: Stainless Steel ASTM A 302

"O" RINGS: BUNA

COUPLINGS/FLANGES: Ductile Iron ASTM A 536 Grade 65-45-12 with EPDM[2] Gaskets (Optional)

INSULATION: Optional[1]

NOTE 1: Optional pre-formed insulation is available to meet ASTM D 1784 Class 14253-C, MEA #7-87, ASTM E 136 with a flame spread rating of 25 or less and a smoke development rating of 50 or less.

NOTE 2: EPDM is not suitable for oil service.

NOTE: For temperatures between 230°F and 300°F (110°C and 149°C) specify Viton Elastomers

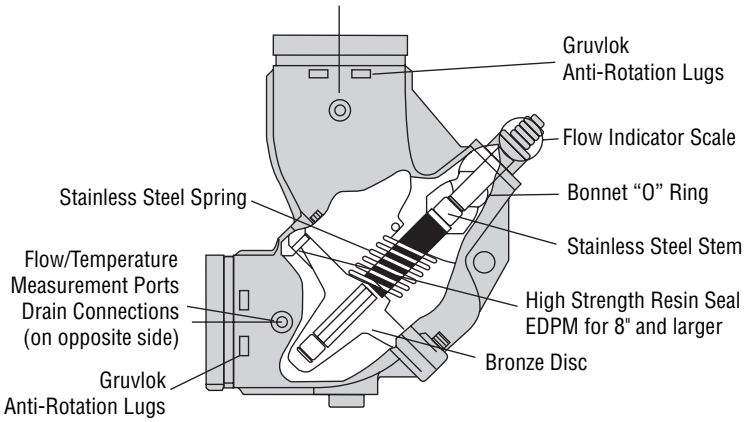
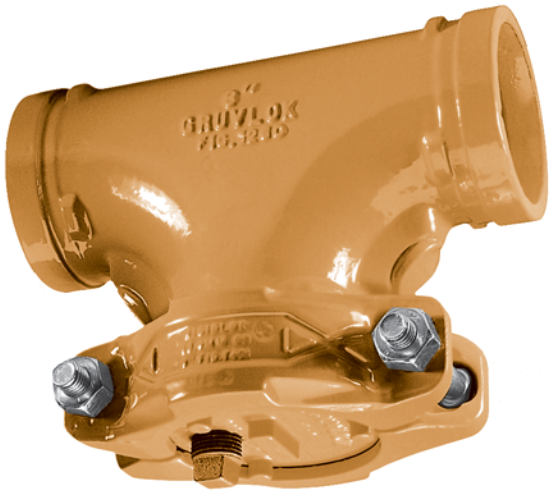


FIG. 7260

Tee Strainer



The Fig. 7260 Tee Strainer provides an economical, compact and hydraulically efficient means of protecting valuable piping system components. The in-line, twin-fold strainer basket provides more than 100% of the projected pipe area for open flow through the strainer screen, which results in excellent flow performance across the strainer.

Gruvlok Strainers are designed and tested to ensure long term, reliable service in working pressures up to 750 psi (51.7 bar), depending on size and the pressure rating of the connecting coupling.

MATERIAL SPECIFICATIONS

BODY:
2" - 12" Ductile iron conforming to ASTM A 536, Grade 65-45-12

14" - 18" Carbon steel pipe conforming to ASTM A 53

STRAINER BASKET:
Stainless steel type 304 bar and woven wire screen. 12 mesh in sizes 2" - 3" and 6 mesh in sizes 4" - 18".

ACCESS COUPLING & END CAP:

2" - 12" Ductile iron conforming to ASTM A 536, Grade 65-45-12

14" - 18" Low carbon steel conforming to ASTM A 53

BOLTS:
SAE J429, Grade 5, Zinc Electroplated

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated

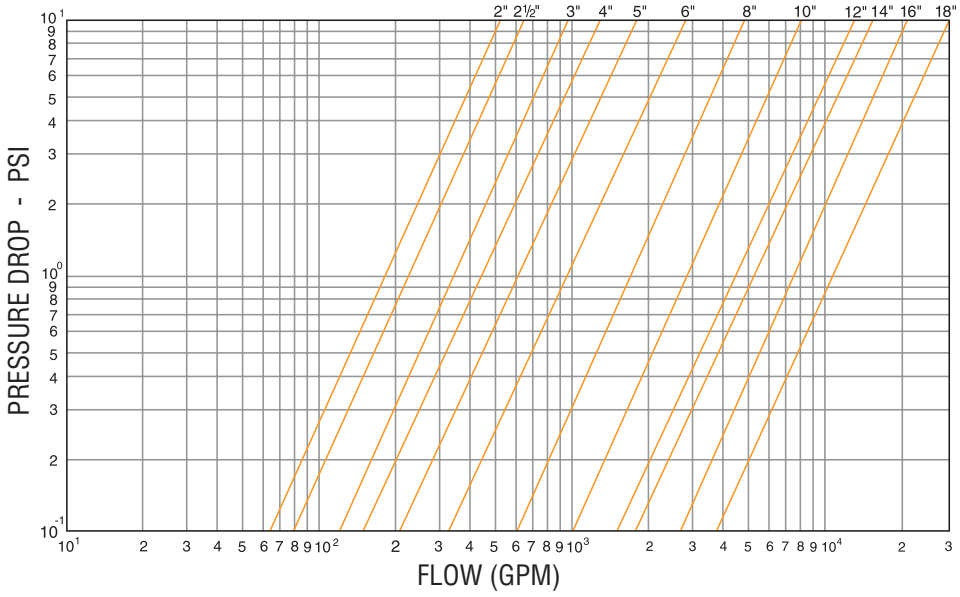
COUPLING GASKETS:
Elastomer properties as designated by ASTM D 2000
Grade "E" EPDM -40°F to +230°F (service temp. range)
Grade "EP" EPDM -40°F to +250°F (service temp. range)
Other options available upon request.

DRAIN PLUG: Carbon steel square head plug conforming to ASME B16.11

TAP SIZES: 2"-4" – ½ NPT, 5"-8" – ¾ NPT, 10"-18" – 1 NPT,

COATING:
2" - 12" - Rust-inhibiting paint — color: orange (standard)
Hot Dip Galvanized conforming to ASTM A 153 (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

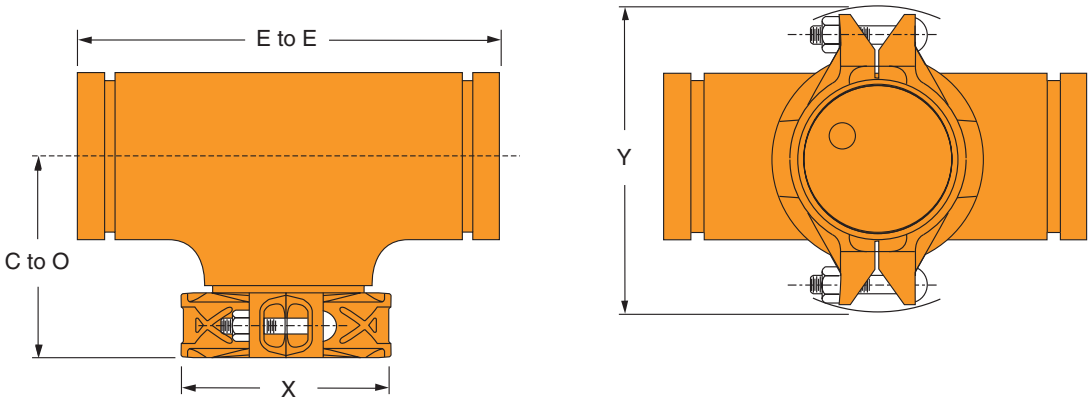
FLOW CHARACTERISTICS



NOTE: Most U.S. piping engineers specify system startup instructions for new systems which include removing and cleaning the strainer screen after system flushing of main piping before the system is put into normal operation. After flushing, replace the strainer screen. Flow data values are based on flow of clean water at ambient temperatures. The pressure drop across a strainer, 50% clogged, is approximately twice as great as that of a clean strainer. Strainer baskets need a routine maintenance program to maintain efficiency and to prevent excess pressure drop caused by a clogged screen.

FIG. 7260

Tee Strainer



NOTE: The above illustration shows the required orientation of the Rigidlok access coupling for assembly with a grooved-end flange.

FIGURE 7260 TEE STRAINER

Nominal Size	O.D.	Maximum* Working Pressure	E to E	C to O	X	Y	Basket Removal	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Clearance*	*Lbs./Kg*
2 *50*	2.375 *60.3*	750 *51.7*	6½ *165*	4¼ *108*	3½ *89*	5⅞ *149*	4⅜ *111*	6.0 *2.7*
2½ *65*	2.875 *73.0*	750 *51.7*	7½ *191*	4¾ *121*	4 *102*	6½ *165*	5⅛ *130*	8.0 *3.6*
3 *80*	3.500 *88.9*	750 *51.7*	8½ *216*	5¼ *133*	4¾ *121*	7 *178*	6 *152*	13.0 *5.9*
4 *100*	4.500 *114.3*	750 *51.7*	10 *254*	6⅛ *156*	5⅞ *149*	8⅜ *213*	7¼ *184*	19.0 *8.6*
5 *125*	5.563 *141.3*	750 *51.7*	11 *279*	6⅝ *168*	7 *178*	10⅛ *257*	8¼ *210*	30.0 *13.6*
6 *150*	6.625 *168.3*	750 *51.7*	13 *330*	7⅝ *194*	8⅛ *206*	11⅛ *283*	9¾ *248*	45.0 *20.4*
8 *200*	8.625 *219.1*	600 *41.4*	15½ *394*	9⅛ *232*	10½ *267*	14⅛ *359*	12 *305*	79.0 *35.8*
10 *250*	10.750 *273.1*	500 *34.5*	18 *457*	10⅜ *264*	12⅞ *327*	17⅛ *435*	14¼ *362*	133 *60.3*
12 *300*	12.750 *323.9*	400 *27.6*	20 *508*	11⅜ *289*	15 *381*	19⅛ *486*	16¼ *413*	187 *84.8*
14 *350*	14.000 *355.6*	300 *20.7*	22 *559*	12¾ *324*	16⅛ *410*	20½ *521*	17¼ *438*	272 *123.4*
16 *400*	16.000 *406.4*	300 *20.7*	24 *610*	12 *305*	18⅛ *460*	22¼ *565*	20 *508*	350 *158.8*
18 *450*	18.000 *457.2*	300 *20.7*	31 *787*	15½ *394*	20½ *521*	24⅜ *619*	24½ *622*	400 *181.4*

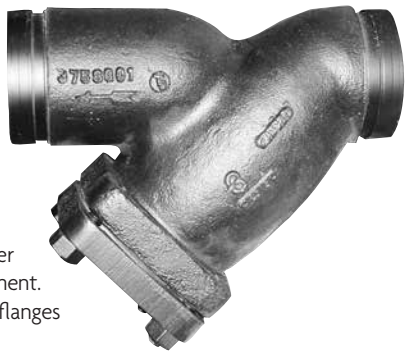
* Maximum working pressure is based upon the performance capability of the Gruvlok Strainer. Maximum system working pressure is dependent upon the couplings used for installation and the pressure capability of other system components.

14" - 18" Fabricated

Not for use with copper systems.

MODEL 758G

Grooved-End "Wye" Strainer



SERVICE RECOMMENDATIONS

For use in water, oil and gas piping to provide economical protection for pumps, meters, valves, compressors, traps and similar equipment.

SCREENS

Standard screens for Y-Strainer are perforated 304 Stainless Steel with spot welded seam. Mesh lining is available in all alloys for extra fine straining. Recommended standard perforations are listed below in the material specifications.

GRUVLOK STRAINER BASKET

Furnished as standard in sizes 8" (43 mm) and larger.
A one-quarter turn securely locks the screen in its seat and frees the serviceman for securing the cover flange to the body of the strainer.
Contact an Anvil Representative for other applications.

CONSTRUCTION

All covers have an NPT blowoff outlet at location "C". A recessed seat in the cover ensures accurate screen alignment. Bosses at the inlet and outlet flanges are provided for gauge taps.

Self-cleaning is done by opening the valve or plug connected to the blowoff outlet. (When ordering, advise when strainers are to be mounted in vertical piping, the cover can be rotated to position the blowoff at the lowest point.)

BLOWOFF OUTLETS

Tapped NPT size specified in the dimension table. Blowoff outlets are not normally furnished with plugs.

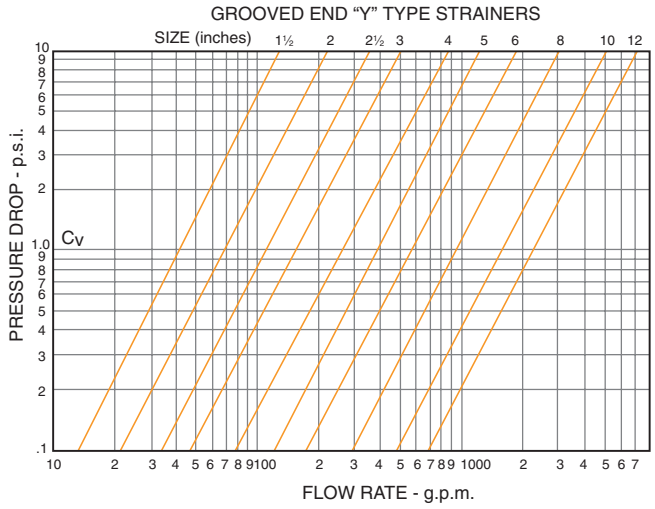
INDIVIDUALLY HYDROSTATICALLY TESTED

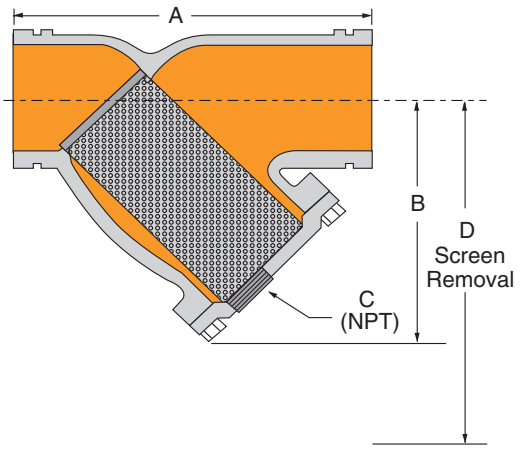
Working Pressures Non-Shock
640 PSI @ 150°F (45 Bar @ 65°C)

FLOW DATA:

NOTE 1. Most U.S. piping engineers specify system startup instructions for new systems which include removing the pre-filter screen after system flushing of the main piping before the system is put into normal operation. Flow data values are based on flow of clean water at ambient temperatures. The pressure drop across the diffuser basket strainer, 50% clogged, is approximately twice as great as that of a clean strainer.

NOTE 2. Suction Diffuser baskets need a routine maintanence program to maintain system efficiency.





MATERIAL SPECIFICATIONS

BODY & COVER: Ductile Iron ASTM A 395 Grade 60-40-18

FLAT GASKETS: Non-asbestos

SCREEN:
2" - 4" Type 304 Stainless Steel 1/16" (1.6mm) dia. holes (12 mesh)
5" - 12" Type 304 Stainless Steel 1/8" (3.2mm) dia. holes (6 mesh)
Special order screen option: 2" - 8" – 16 mesh / 10" - 12" – 12 mesh

COUPLING: Ductile iron ASTM A 536 Grade 65-45-12

FIGURE 758 G GROOVED-END "WYE" STRAINER

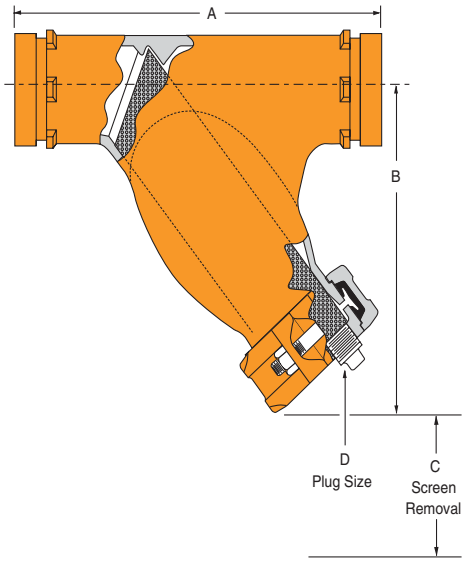
Nominal Size	O.D.	Dimensions				Approx. Wt. Each
		A	B	C Plug Size	D	
In./DN(mm)	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	7⅞ 200	5¼ 133	½ 25	7 178	12.0 5.4
2½ 65	2.875 73.0	10 254	6½ 165	1 25	9¾ 248	18.0 8.2
3 80	3.500 88.9	10⅛ 257	7 178	1 25	10 254	23.0 10.4
4 100	4.500 114.3	12⅛ 308	8¼ 210	1½ 38	12 305	42.0 19.1
5 125	5.563 141.3	15⅝ 396	11¼ 286	2 51	17 432	80.0 36.3
6 150	6.625 168.3	18½ 470	13½ 343	2 51	20 508	112.0 50.8
8 200	8.625 219.1	21⅝ 549	15½ 394	2 51	22¾ 577	205.0 93.0
10 250	10.750 273.1	25¾ 654	18½ 470	2 51	28 711	277.0 125.6
12 300	12.750 323.9	30 762	21¾ 552	2 51	30 762	470.0 213.2

* Maximum working pressure is based upon the performance capability of the Gruvlok® Strainer. Maximum system working pressure is dependant upon the couplings used for installation and the pressure capacity of other system components.
Not for use with copper systems.

MODEL 768G

Grooved-end "Wye" Strainer

Grooved-end Wye-Strainers are designed to strain debris and foreign matter from piping systems and thus provide inexpensive protection for costly pumps, meters and other components. The Strainer can be installed quickly and easily with two mechanical couplings and the straight flow through design provides for lower pressure drop. This strainer features a stainless steel screen that is secured with an end cap and mechanical coupling. Cleaning and maintenance of the screen can be accomplished easily by removing the coupling. The Strainer is suitable for vertical and horizontal installations.



Values for flow of water at +60°F (+16°C)

$$C_V = \frac{Q}{\sqrt{\Delta P}}$$

Where:
Q = Flow (GPM)
C_V = flow coefficient
ΔP = Pressure drop (PSI)

MATERIAL SPECIFICATIONS

BODY: Ductile iron ASTM A 536 Grade 65-45-12

END CAP: Ductile iron ASTM A 536 Grade 65-45-12

SCREEN:

2" - 3" Type 304 Stainless Steel to ASTM A 240 1/16" (1.6 mm) perforations (12 mesh)

4" - 12" Type 304 Stainless Steel to ASTM A 240 1/8" (3.2 mm) perforations (6 mesh)

COUPLING: Ductile iron ASTM A 536 Grade 65-45-12

GASKET:

EPDM Temperature range -40°F - +230°F (-40° to 110°C) - Standard
Nitrile Temperature range -20°F to 180°F (-29° to 82°C) - Special Request

BLOW DOWN PORT:

2"- 5": 1" tapped with plug,
6" - 12": 1½" tapped with plug

Strainer baskets need a routine maintenance program to maintain efficiency and to prevent excess pressure drop caused by a clogged screen.

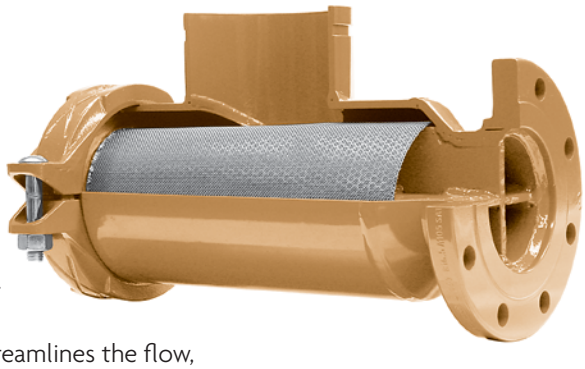
FIGURE 768G GROOVED-END "WYE" STRAINER

Nominal Size	O.D.	Working Pressure	Dimensions				Cv Values	Approx. Wt. Each
			A	B	C	D Plug Size		
In./DN(mm)	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*Lbs./Kg*
2 *50*	2.375 *60.3*	300 *20.7*	9¾ *248*	6¾ *171*	4⅞ *124*	1 *25*	59	11 *5.0*
2½ *65*	2.875 *73.0*	300 *20.7*	10¾ *273*	7⅜ *187*	5¼ *133*	1 *25*	92	14 *6.4*
3 *80*	3.500 *88.9*	300 *20.7*	11¾ *298*	8 3/16 *208*	5⅞ *149*	1 *25*	162	20 *9.1*
4 *100*	4.500 *114.3*	300 *20.7*	14¼ *362*	10 *254*	7½ *191*	1 *25*	284	32 *14.5*
5 *125*	5.563 *141.3*	300 *20.7*	16½ *419*	11¼ *286*	8¼ *210*	1 *25*	410	46 *20.9*
6 *150*	6.625 *168.3*	300 *20.7*	18½ *470*	13⅜ *340*	9⅞ *251*	1½ *38*	770	70 *31.8*
8 *200*	8.625 *219.1*	300 *20.7*	24 *610*	16¾ *425*	12 5/16 *313*	1½ *38*	1010	155 *70.3*
10 *250*	10.750 *273.1*	300 *20.7*	27 *686*	19 *483*	13 11/16 *348*	1½ *38*	1800	230 *104.3*
12 *300*	12.750 *323.9*	300 *20.7*	30 *762*	22 15/16 *583*	16 11/16 *424*	1½ *38*	2800	335 *152.0*

Not for use in copper systems.

- Pressure ratings listed are CWP (cold water pressure) or maximum working pressure within the service temperature range of the gasket used in the coupling. This rating may occasionally differ from maximum working pressures listed and/or approved by UL, ULC, and/or FM as testing conditions and test pipes differ.
- Maximum working pressure and end loads listed are total of internal and external pressures and loads based on Sch. 40 steel pipe with roll grooves to ANSI C606-97 specifications.
- For one time field test only the maximum joint working pressure may be increased 1½ times the figures shown.
- Warning: Piping systems must always be depressurized and drained before attempting disassembly and or removal of any components.

FIG. 7250
Suction Diffuser



The Fig. 7250 Gruvlok Suction Diffuser protects your pump and saves you money on your overall installed cost while offering you these advantages:

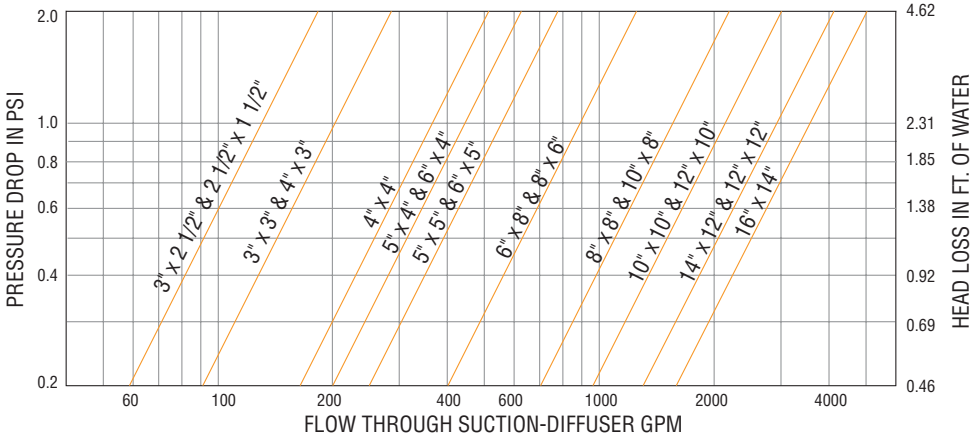
SAVES SPACE:
Mounts directly to the pump. Length is ideal for header spacing, reducing the need for additional fittings.

SAVES LABOR AND MATERIAL:
The lightweight compact design is easily installed with no need for welding.

IMPROVES PUMP PERFORMANCE:
The one-piece diffuser vane and strainer design reduces flow turbulence, streamlines the flow, and traps any hazardous foreign material to better protect your pump.

PIPE SUPPORT LUG STANDARD

FLOW CHARACTERISTICS



FLOW DATA:

NOTE 1. Most U.S. piping engineers specify system startup instructions for new systems which include removing the pre-filter screen after system flushing of the main piping before the system is put into normal operation. Flow data values are based on flow of clean water at ambient temperatures. The pressure drop across the diffuser basket strainer, 50% clogged, is approximately twice as great as that of a clean strainer.

NOTE 2. Suction Diffuser baskets need a routine maintanence program to maintain system efficiency.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact an Anvil Representative for more information

HOUSING:
Sizes 2½" x 2 ½" through 10" x 8":
Carbon steel Schedule 40 conforming to ASTM A 53, Grade B.
Sizes 10" x 10" through 16" x 14":
Carbon steel .375" standard weight wall conforming to ASTM A 53, Grade B.

DIFFUSER BASKET:
Stainless steel type 304, #16 perforated plate with 3/16" diameter holes. (51% open area). Pre-Filter: Stainless steel type 304 screen - 16 mesh. (removable).

COUPLINGS:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

FLANGES:
Carbon steel class 150# conforming to ASME B 16.5.

DRAIN & GAGE PLUGS:
Carbon steel square head plugs conforming to ASME B16.11.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

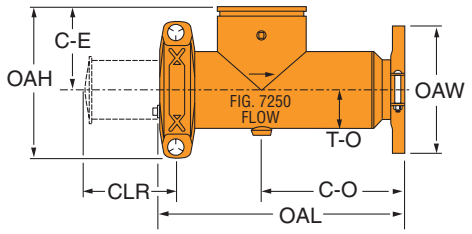
Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended. NSF-61 Certified for cold and hot water applications up through 12".

Grade "T" Nitrile (Orange color code) -20°F to 180°F
(Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

FIG. 7250
Suction Diffuser



SIZES 2½" X 2½" thru 16" x 14"

FIGURE 7250 SUCTION DIFFUSER

Nominal Size	O.D.	System Side (Grooved)	Pump Side (Flanged)	C-E	C-O	OAL	OAH	OAW Flange O.D.	CLR	T-O	Orifice Cylinder Open Area	Max. Working Pressure	Approx. Wt. Each
In./DN(mm)	*In./mm*	*In./DN(mm)*	*In./DN(mm)*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In. Sq./cm. Sq.*	*PSI/bar*	*Lbs./Kg*
2½ x 2½ *65 x 65*	2.875 x 2.875 *73.0 x 73.0*	2½ *65*	2½ *65*	5 *127*	8 *203*	13½ *343*	9 *229*	7 *178*	13½ *343*	2¼ *57*	48 *310*	300 *20.7*	32 *14.5*
3 x 2 *80 x 50*	3.500 x 2.375 *88.9 x 60.3*	3 *80*	2 *50*	5 *127*	8 *203*	13½ *343*	9 *229*	6 *152*	13½ *343*	2¼ *57*	42 *271*	300 *20.7*	34 *15.4*
3 x 2½ *80 x 65*	3.500 x 2.875 *88.9 x 73.0*	3 *80*	2½ *65*	5 *127*	8 *203*	13½ *343*	9 *229*	7 *178*	13½ *343*	2¼ *57*	48 *310*	300 *20.7*	34 *15.4*
3 x 3 *80 x 80*	3.500 x 3.500 *88.9 x 88.9*	3 *80*	3 *80*	5 *127*	8 *203*	13½ *343*	9 *229*	7½ *191*	10¼ *260*	2 13/16 *71*	58 *374*	300 *20.7*	35 *15.9*
4 x 2 *100 x 50*	4.500 x 2.375 *114.3 x 60.3*	4 *100*	2 *50*	5 *127*	8 *203*	13½ *343*	9 *229*	6 *152*	13½ *343*	2¼ *57*	48 *310*	300 *20.7*	35 *15.9*
4 x 2½ *100 x 65*	4.500 x 2.875 *114.3 x 73.0*	4 *100*	2½ *65*	5 *127*	8 *203*	13½ *343*	9 *229*	7 *178*	13½ *343*	2¼ *57*	48 *310*	300 *20.7*	36 *16.3*
4 x 3 *100 x 80*	4.500 x 3.500 *114.3 x 88.9*	4 *100*	3 *80*	5 *127*	8 *203*	13½ *343*	9 *229*	7½ *191*	10¼ *260*	2 13/16 *71*	58 *374*	300 *20.7*	37 *16.8*
4 x 4 *100 x 100*	4.500 x 4.500 *114.3 x 114.3*	4 *100*	4 *100*	6½ *165*	10½ *267*	17½ *445*	11¾ *298*	9 *229*	13½ *343*	3 5/16 *84*	94 *607*	300 *20.7*	70 *31.8*
5 x 4 *125 x 100*	5.563 x 4.500 *141.3 x 114.3*	5 *125*	4 *100*	6½ *165*	10½ *267*	17½ *445*	11¾ *298*	9 *229*	13½ *343*	3 5/16 *84*	94 *607*	300 *20.7*	72 *32.7*
5 x 5 *125 x 125*	5.563 x 5.563 *141.3 x 141.3*	5 *125*	5 *125*	6½ *165*	10½ *267*	17½ *445*	13¾ *349*	10 *254*	13½ *343*	4 5/16 *110*	117 *755*	300 *20.7*	75 *34.0*
6 x 3 *150 x 80*	6.625 x 3.500 *168.3 x 88.9*	6 *150*	3 *80*	6½ *165*	10½ *267*	17½ *445*	11¾ *298*	7½ *191*	13½ *343*	3 5/16 *84*	94 *607*	300 *20.7*	72 *34.0*
6 x 4 *150 x 100*	6.625 x 4.500 *168.3 x 114.3*	6 *150*	4 *100*	6½ *165*	10½ *267*	17½ *445*	11¾ *298*	9 *229*	13½ *343*	3 5/16 *84*	94 *607*	300 *20.7*	73 *33.1*
6 x 5 *150 x 125*	6.625 x 5.563 *168.3 x 141.3*	6 *150*	5 *125*	6½ *165*	10½ *267*	17½ *445*	13¾ *349*	10 *254*	13½ *343*	4 5/16 *110*	117 *755*	300 *20.7*	75 *34.0*
6 x 6 *150 x 150*	6.625 x 6.625 *168.3 x 168.3*	6 *150*	6 *150*	7¾ *197*	13¼ *337*	21½ *546*	14¾ *375*	11 *279*	16¼ *413*	4 5/16 *110*	167 *1,077*	300 *20.7*	120 *54.4*
8 x 5 *200 x 125*	8.625 x 5.563 *219.1 x 141.3*	8 *200*	5 *125*	7¾ *197*	13¼ *337*	21½ *546*	14¾ *375*	10 *254*	16¼ *413*	4 5/16 *110*	167 *1,077*	300 *20.7*	128 *58.1*
8 x 6 *200 x 150*	8.625 x 6.625 *219.1 x 168.3*	8 *200*	6 *150*	7¾ *197*	13¼ *337*	21½ *546*	14¾ *375*	11 *279*	16¼ *413*	4 5/16 *110*	167 *1,077*	300 *20.7*	130 *59.0*
8 x 8 *200 x 200*	8.625 x 8.625 *219.1 x 219.1*	8 *200*	8 *200*	9 *229*	15¼ *387*	24½ *622*	17¾ *451*	13½ *343*	19¾ *502*	5⅜ *137*	266 *1,716*	300 *20.7*	190 *86.2*
10 x 6 *250 x 150*	10.750 x 6.625 *273.1 x 168.3*	10 *250*	6 *150*	9 *229*	15¼ *387*	24½ *622*	17½ *445*	11 *279*	19¾ *502*	5⅜ *137*	266 *1,716*	300 *20.7*	195 *88.5*
10 x 8 *250 x 200*	10.750 x 8.625 *273.1 x 219.1*	10 *250*	8 *200*	9 *229*	15¼ *387*	24½ *622*	17½ *445*	13½ *343*	19¾ *502*	5⅜ *137*	266 *1,716*	300 *20.7*	200 *90.7*
10 x 10 *250 x 250*	10.750 x 10.750 *273.1 x 273.1*	10 *250*	10 *250*	10 *254*	17¼ *438*	28 *711*	19⅝ *498*	16 *406*	23¾ *603*	6⅜ *162*	384 *2,477*	300 *20.7*	225 *102.1*
12 x 8 *300 x 200*	12.750 x 8.625 *323.9 x 219.1*	12 *300*	8 *200*	10 *254*	17¼ *438*	28 *711*	19⅝ *498*	13½ *343*	23¾ *603*	6⅜ *162*	384 *2,477*	300 *20.7*	225 *102.1*
12 x 10 *300 x 250*	12.750 x 10.750 *323.9 x 273.1*	12 *300*	10 *250*	10 *254*	17¼ *438*	28 *711*	19⅝ *498*	16 *406*	23¾ *603*	6⅜ *162*	384 *2,477*	300 *20.7*	230 *104.3*
12 x 12 *300 x 300*	12.750 x 12.750 *323.9 x 323.9*	12 *300*	12 *300*	11 *279*	24¼ *616*	36 *914*	20½ *521*	19 *483*	34¼ *870*	8 *203*	695 *4,484*	300 *20.7*	382 *173.3*
14 x 10 *350 x 250*	14.000 x 10.750 *355.6 x 273.1*	14 *350*	10 *250*	11 *279*	24¼ *616*	36 *914*	20½ *521*	16 *406*	34¼ *870*	8 *203*	695 *4,484*	300 *20.7*	382 *173.3*
14 x 12 *350 x 300*	14.000 x 12.750 *355.6 x 323.9*	14 *350*	12 *300*	11 *279*	24¼ *616*	36 *914*	20½ *521*	19 *483*	34¼ *870*	8 *203*	695 *4,484*	300 *20.7*	382 *173.3*
14 x 14 *350 x 350*	14.000 x 14.000 *355.6 x 355.6*	14 *350*	14 *350*	12 *305*	26¼ *667*	39 *991*	23 *584*	21 *533*	36 *914*	9 *229*	817 *5,271*	300 *20.7*	467 *211.8*
16 x 14 *400 x 350*	16.000 x 14.000 *406.4 x 355.6*	16 *400*	14 *350*	12 *305*	26¼ *667*	39 *991*	23 *584*	21 *533*	36 *914*	9 *229*	817 *5,271*	300 *20.7*	467 *211.8*

Other sizes available on special request. Contact an Anvil Rep. for ordering information.
Dimensions may vary Contact an Anvil Rep. for certified values.
Not for use in copper systems.
Product must be supported by pipe supports (supports not included).

1. "CLR" Dimension indicates clearance needed for diffuser basket removal.
2. Drain Holes: (End Cap)
   -¾" NPT for sizes 2½ x 2½ thru 6 x 5, -1" NPT for sizes 6 x 6 thru 16 x 14.
3. Pipe Support - Use 1¼" SCH. 40 Pipe for 2½" thru 10" pipe and 2" SCH. 40 Pipe for 12" and larger diffusers.
4. "Orifice Cylinder Open Area" is the total area of the opening in the diffuser basket after the pre-filter screen has been removed.

MODEL GAV-15

Automatic Air Vents For Ultimate Performance

- Two Sizes Equip All Riser Systems
- Spherical Float for Strength
- Stainless Steel Float and Trim
- Special Design Eliminates Blow-by

The Air Vent (GAV) features a Stainless Steel spherical float design. Air in the piping system is vented through the discharge valve that is normally open. Rising water activates the float to close the valve. The valve outlet is tapped to take a safety drain line.

Simplicity of design in the GAV ensures long-lasting efficiency. The Stainless Steel float and valve mechanism involve no wearing parts, and no intricate function. The precision formed cast iron body custom fits the float and valve, and protectively houses their operation under the most demanding conditions.

Max. Working Pressure
175 PSI (12 bar) @ 150° F (66° C)
150 PSI (10 bar) @ 250° F (121° C)

Test Pressure
300 PSI (21 bar) @ 70° F (21° C)

MODEL GAV-15 AUTOMATIC AIR VENT

Valve Size	Maximum Temp.	Inlet Size NPT	Outlet Size NPT	Orifice Size	Approx. Wt. Ea
In./mm	*°F/°C*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
½ *15*	250 *120*	½ *15*	½ *15*	1/16 *2*	5½ *3*
¾ *20*	250 *120*	¾ *20*	½ *15*	1/16 *2*	5½ *3*
1 *25*	250 *120*	1 *25*	½ *15*	1/16 *2*	5½ *3*

MODEL GAV-15 AUTOMATIC AIR VENT

Type	Max. Water Pressure	Max. Temp.	Inlet Size	Outlet Size NPT	Valve Orifice	Overall			Approx. Wt. Ea
						Height	Width	Length	
	PSI/bar	*°F/°C*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
GAV-15	150 *10*	250 *120*	½, ¾ & 1 *15, 20 & 25*	⅜ *10*	1/16 *2*	5¼ *130*	4¾ *100*	4¾ *100*	5½ *2.5*

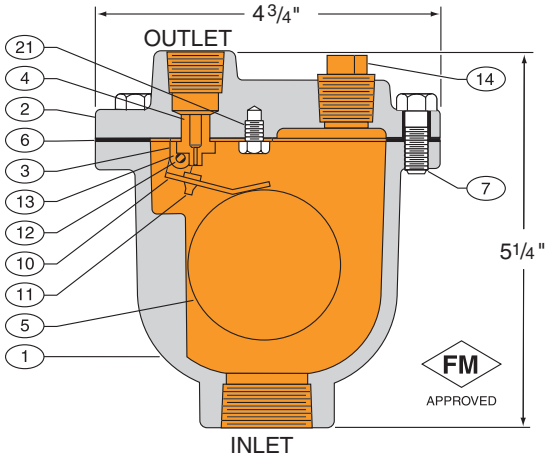
MATERIAL SPECIFICATIONS

1. **BODY:** Cast Iron ASTM A 126, Class B
2. **COVER:** Cast Iron ASTM A 126, Class B
3. **LEVER FRAME:** Stainless Steel-T304, ASTM A 240
4. **SEAT:** Stainless Steel-T303, 582
5. **FLOAT:** Stainless Steel-T304, ASTM A 240
6. **GASKET:** Non Asbestos
7. **COVER BOLT:** Carbon Steel-Sae Grade 5

10 **FLOAT ARM:** Stainless Steel-T304, ASTM A 240

11. **ORIFICE BUTTON:** Viton
12. **PIVOT PIN:** Stainless Steel-T303, 582
13. **PIN RETAINER:** Stainless Steel-Ph 15-7 MO
14. **PIPE PLUG ½":** Steel

21. **LOCATOR:** Stainless Steel-T304, ASTM F 593



MODEL GAV-30

Automatic Air Vents for Ultimate Performance

- Two Sizes Equip All Riser Systems
- Spherical Float for Strength
- Stainless Steel Float and Trim
- Special Design Eliminates Blow-by

The Air Vent (GAV) features a Stainless Steel spherical float design. Air in the piping system is vented through the discharge valve that is normally open. Rising water activates the float to close the valve. The valve outlet is tapped to take a safety drain line.

Simplicity of design in the GAV ensures long-lasting efficiency. The Stainless Steel float and valve mechanism involve no wearing parts, and no intricate function. The precision formed cast iron body custom fits the float and valve, and protectively houses their operation under the most demanding conditions.

Max. Working Pressure
300 PSI

Test Pressure
450 PSI

MODEL GAV-30 AUTOMATIC AIR VENT

Valve Size	Maximum Temp.	Inlet Size NPT	Outlet Size NPT	Orifice Size	Approx. Wt. Each.
In./mm	*°F/°C*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
½ *15*	250 *120*	½ *15*	½ *15*	1/16 *2*	8 *3*
¾ *20*	250 *120*	¾ *20*	½ *15*	1/16 *2*	8 *3*

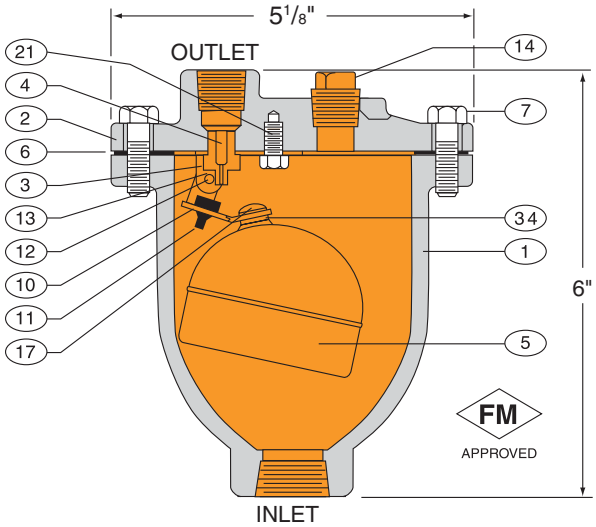
MODEL GAV-30 AUTOMATIC AIR VENT

Type	Max. Water Pressure	Max. Temp.	Inlet Size	Outlet Size NPT	Valve Orifice	Overall			Approx. Wt. Each.
						Height	Width	Length	
	PSI/bar	*°F/°C*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
GAV-30	300 *20.7*	250 *120*	½, ¾ & 1 *15, 20 & 25*	½ *15*	1/16 *2*	6 *150*	5⅛ *125*	5⅛ *125*	7½ *3.4*

MATERIAL SPECIFICATIONS

1. **BODY:** Cast Iron ASTM A 126, Class B
2. **COVER:** Cast Iron ASTM A 126, Class B
3. **LEVER FRAME:** Stainless Steel ASTM A 240
4. **SEAT:** Stainless Steel-T303, 582
5. **FLOAT:** Stainless Steel-T304, ASTM A 240
6. **GASKET:** Non Asbestos
7. **COVER BOLT:** Alloy Steel ASTM A 449 Grade 5
10. **FLOAT ARM:** Stainless Steel-T304, ASTM A 240
11. **ORIFICE BUTTON:** Viton
12. **PIVOT PIN:** Stainless Steel-T303, 582
13. **PIN RETAINER:** Stainless Steel-Ph 15-7 MO
14. **PIPE PLUG:** Steel
17. **FLOAT RETAINER:** Stainless Steel T304, ASTM F 879
21. **LOCATOR:** Stainless Steel-T304, ASTM F 593
34. **LOCK WASHER:** Stainless Steel T304, ASTM A 240

NOTE: All specification as last revised



ANVILFLEX® FLEX CONNECTORS

AnvilFlex Flexible connectors are used to prevent damage to pumps caused by piping stress. AnvilFlex connectors also absorb vibration and noise found in pump installations. AnvilFlex connectors are easily installed and reduce the possibility of pump failure.

They are designed to be pressure tested 1.5 times their maximum rated working pressure and manufactured with a 4:1 safety factor. Their compact design saves valuable space.

See page 215 for installation instructions.

Working pressure of standard hose and braid up to 1,325 psi (91 bar) or full vacuum and operating temperatures of -400°F (-240° C) to +1,500°F (816° C).

AnvilFlex connectors are manufactured with 321 stainless steel annular corrugated close pitch metal flexible hose. Other stainless steel and corrosion resistant alloys are available. Contact your Anvil representative for additional information.

MATERIAL SPECIFICATIONS

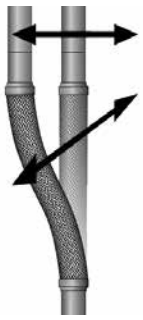
HOSE: 300 Series Stainless Steel

BRAID: Stainless Steel Type 304

ENDS: Schedule 40 Carbon Steel Grooved-Ends

MOTION CLASSIFICATIONS

AnvilFlex flex connectors are braided pump connectors capable of handling the following movements:



PARALLEL

VIBRATION

PARALLEL OFFSET MOTION:

Motion that occurs when one end of the hose assembly is deflected in a plane perpendicular to the longitudinal axis with the ends remaining parallel. Offset is measured as displacement of the free end centerline from the fixed end centerline.

MOTION FREQUENCY:

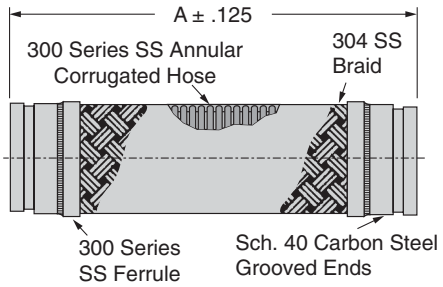
Permanent Offset - The maximum fixed parallel offset to which the corrugated metal hose assembly may be bent without damage. No further motion is to be imposed other than normal vibration.

Intermittent Offset is motion that occurs on a regular or irregular cyclic basis. It is normally the result of thermal expansion and contraction or other non-continuous actions.

NOTE: AnvilFlex flex connectors are manufactured with a 4:1 safety factor.

FIG. AF-21-GG

Grooved Ends
Flex Connector

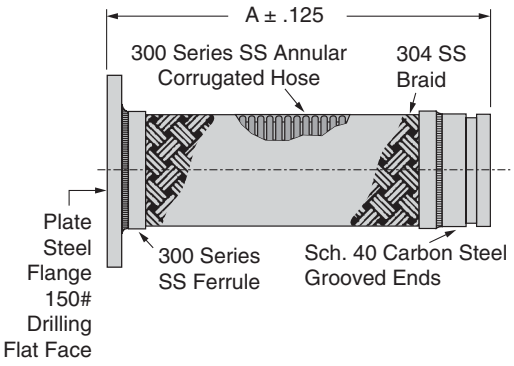


AF-21-GG GRXGR FLEX CONNECTORS

Nominal Size	O.D.	Model or 10 dig. #	A	Pressure 70°F	Parallel Offset *		Approx. Wt. Ea.
					Permanent	Intermittent	
In./DN(mm)	*In./mm*		*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*Lbs./kN*
2 *50*	2.375 *60.3*	AF0390232007	12 *304.8*	450 *31.0*	1¼ *31.8*	⅜ *9.5*	2.5 *1.1*
2½ *65*	2.875 *73.0*	AF0390232106	12 *304.8*	300 *20.7*	1¼ *31.8*	⅜ *9.5*	3.5 *1.6*
3 *80*	3.500 *88.9*	AF0390232031	12 *304.8*	275 *19.0*	¾ *19.1*	¼ *6.4*	4.5 *2.0*
4 *100*	4.500 *114.3*	AF0390232114	14 *355.6*	270 *18.6*	½ *12.7*	¼ *6.4*	8.0 *3.6*
5 *125*	5.563 *141.3*	AF0390232122	16 *406.4*	225 *15.5*	⅞ *22.2*	⅜ *9.5*	12.0 *5.4*
6 *150*	6.625 *168.3*	AF0390232130	16 *406.4*	165 *11.4*	⅝ *15.9*	¼ *6.4*	14.0 *6.4*
8 *200*	8.625 *219.1*	AF0390232148	16 *406.4*	155 *10.7*	½ *12.7*	¼ *6.4*	20.0 *9.1*
10 *250*	10.750 *273.1*	AF0390232155	20 *508.0*	150 *10.3*	⅝ *15.9*	¼ *6.4*	38.0 *17.2*
12 *300*	12.750 *323.9*	AF0390232163	20 *508.0*	145 *10.0*	½ *12.7*	¼ *6.4*	46.0 *20.9*

FIG. AF-21-GF

Grooved x Class 150 Flanged Flex Connectors



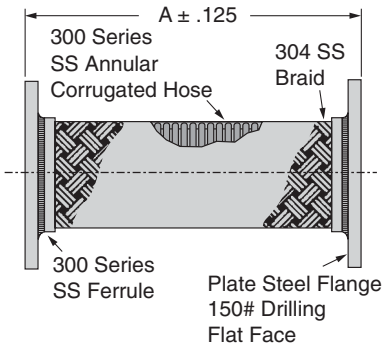
AF-21-GF GRXFL FLEX CONNECTORS

Nominal Size	O.D.	Model or 10 dig. #	A	Pressure 70°F	Parallel Offset		Approx. Wt. Ea.
					Permanent	Intermittent	
In./DN(mm)	*In./mm*		*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*Lbs./kN*
2 *50*	2.375 *60.3*	AF0390232197	12 *304.8*	450 *31.0*	1⅞ *47.6*	⅝ *15.9*	7.2 *3.3*
2½ *65*	2.875 *73.0*	AF0390232213	12 *304.8*	300 *20.7*	1⅝ *41.3*	⅝ *15.9*	8.5 *3.9*
3 *80*	3.500 *88.9*	AF0390232171	12 *304.8*	275 *19.0*	1⅛ *28.6*	½ *12.7*	10.4 *4.7*
4 *100*	4.500 *114.3*	AF0390232189	12 *304.8*	270 *18.6*	⅝ *15.9*	¼ *6.4*	14.0 *6.4*
5 *125*	5.563 *141.3*	AF0390232247	14 *355.6*	225 *15.5*	⅞ *22.2*	⅜ *9.5*	18.4 *8.3*
6 *150*	6.625 *168.3*	AF0390232254	14 *355.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	23.7 *10.8*
8 *200*	8.625 *219.1*	AF0390232262	15 *381.0*	155 *10.7*	⅝ *15.9*	¼ *6.4*	39.6 *18.0*
10 *250*	10.750 *273.1*	AF0390232270	16 *406.4*	150 *10.3*	⅝ *15.9*	¼ *6.4*	40 *18.1*
12 *300*	12.750 *323.9*	AF0390232288	17 *431.8*	145 *10.0*	½ *12.7*	¼ *6.4*	50 *22.7*

* See Motion Classification on previous page for additional information.

FIG. AF-21-FF

Class 150 Flanged x Class 150 Flanged Flex Connectors



AF-21-FF FLXFL FLEX CONNECTORS

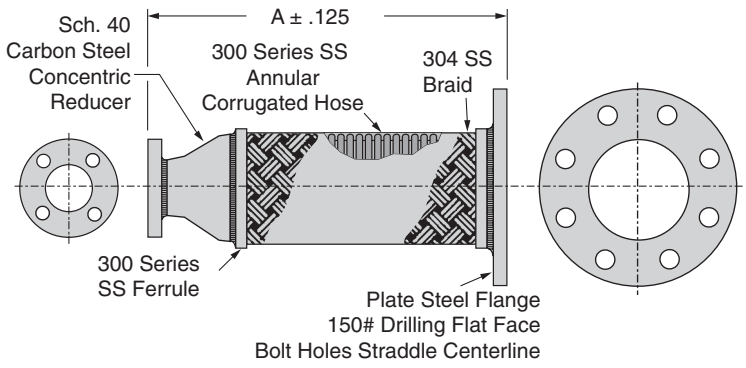
Nominal Size	O.D.	Model or 10 dig. #	A	Pressure 70°F	Parallel Offset		Approx. Wt. Ea.
					Permanent	Intermittent	
In./DN(mm)	*In./mm*		*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*Lbs./kN*
2 *50*	2.375 *60.3*	AF0390232387	9 *228.6*	450 *31.0*	1⅛ *28.6*	⅜ *9.5*	10.0 *4.5*
2½ *65*	2.875 *73.0*	AF0390232395	9 *228.6*	300 *20.7*	1 *25.4*	⅜ *9.5*	12.0 *5.4*
3 *80*	3.500 *88.9*	AF0390232403	9 *228.6*	275 *19.0*	⅝ *15.9*	¼ *6.4*	14.0 *6.4*
4 *100*	4.500 *114.3*	AF0390232429	9 *228.6*	270 *18.6*	½ *12.7*	¼ *6.4*	19.0 *8.6*
5 *125*	5.563 *141.3*	AF0390232437	11 *279.4*	225 *15.5*	¾ *19.1*	⅜ *9.5*	25.0 *11.3*
6 *150*	6.625 *168.3*	AF0390232445	11 *279.4*	165 *11.4*	⅝ *15.9*	¼ *6.4*	30.0 *13.6*
8 *200*	8.625 *219.1*	AF0390232452	12 *304.8*	155 *10.7*	½ *12.7*	¼ *6.4*	54.0 *24.5*
10 *250*	10.750 *273.1*	AF0390232460	13 *330.2*	150 *10.3*	½ *12.7*	¼ *6.4*	75.0 *34.0*
12 *300*	12.750 *323.9*	AF0390232478	14 *355.6*	145 *10.0*	½ *12.7*	¼ *6.4*	105.0 *47.6*

* See Motion Classification on previous page for additional information.

FIG. AF-21-RFF

Class 150 Flanged x Class 150

Flanged Reducing Flex Connectors



AF-21-RFF FLXFL REDUCING FLEX CONNECTORS

Nominal Size		Small O.D.	Large O.D.	Length	Pressure 70°F	Parallel Offset		Approx. Wt. Ea.
Small Flange	Large Flange					Permanent	Intermittent	
In./DN(mm)	*In./DN(mm)*	*In./mm*	*In./mm*	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*Lbs./kN*
1½ *40*	2 *50*	1.660 *42.2*	2.375 *60.3*	14 *355.6*	450 *31.0*	1½ *38.1*	⅝ *15.9*	6.7 *3.0*
	2½ *65*	1.660 *42.2*	2.875 *73.0*	14 *355.6*	300 *20.7*	1¼ *31.8*	⅜ *9.5*	6.9 *3.1*
2 *50*	2½ *65*	2.375 *60.3*	2.875 *73.0*	14 *355.6*	300 *20.7*	1¼ *31.8*	⅜ *9.5*	8.1 *3.7*
	3 *80*	2.375 *60.3*	3.500 *88.9*	14 *355.6*	275 *19.0*	¾ *19.1*	⅜ *9.5*	10.1 *4.6*
	4 *100*	2.375 *60.3*	4.500 *114.3*	15 *381.0*	270 *18.6*	½ *12.7*	¼ *6.4*	12.0 *5.4*
2½ *65*	3 *80*	2.875 *73.0*	3.500 *88.9*	14 *355.6*	275 *19.0*	¾ *19.1*	⅜ *9.5*	11.2 *5.1*
	4 *100*	2.875 *73.0*	4.500 *114.3*	15 *381.0*	270 *18.6*	½ *12.7*	¼ *6.4*	14.7 *6.7*
	5 *125*	2.875 *73.0*	5.563 *141.3*	18 *457.2*	225 *15.5*	¾ *19.1*	⅜ *9.5*	18.9 *8.6*
	6 *150*	2.875 *73.0*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	25.3 *11.5*
3 *80*	4 *100*	3.500 *88.9*	4.500 *114.3*	15 *381.0*	270 *18.6*	½ *12.7*	¼ *6.4*	15.5 *7.0*
	5 *125*	3.500 *88.9*	5.563 *141.3*	18 *457.2*	225 *15.5*	¾ *19.1*	⅜ *9.5*	19.7 *8.9*
	6 *150*	3.500 *88.9*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	26.1 *11.8*
4 *100*	5 *125*	4.500 *114.3*	5.563 *141.3*	18 *457.2*	225 *15.5*	¾ *19.1*	⅜ *9.5*	21.6 *9.8*
	6 *150*	4.500 *114.3*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	28.0 *12.7*
	8 *200*	4.500 *114.3*	8.625 *219.1*	20 *508.0*	155 *10.7*	⅝ *15.9*	¼ *6.4*	38.4 *17.4*
5 *125*	6 *150*	5.563 *141.3*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	31.0 *14.1*
	8 *200*	5.563 *141.3*	8.625 *219.1*	20 *508.0*	155 *10.7*	⅝ *15.9*	¼ *6.4*	40.7 *18.5*
6 *150*	8 *200*	6.625 *168.3*	8.625 *219.1*	20 *508.0*	155 *10.7*	½ *12.7*	¼ *6.4*	41.7 *18.9*
	10 *250*	6.625 *168.3*	10.750 *273.1*	20 *508.0*	150 *10.3*	½ *12.7*	¼ *6.4*	83.1 *37.7*
8 *200*	10 *250*	8.625 *219.1*	10.750 *273.1*	20 *508.0*	150 *10.3*	½ *12.7*	¼ *6.4*	95.0 *43.1*
10 *250*	12 *300*	10.750 *273.1*	12.750 *323.9*	22 *558.8*	145 *10.0*	½ *12.7*	¼ *6.4*	125.9 *571*

FOR TEMP ABOVE 70°F (21.6° C)	
Temperature	Factor S.S.
°F / °C	
70 *21.1*	1.00
200 *93.3*	0.94
300 *148.8*	0.88
400 *204.4*	0.83
500 *260.0*	0.78
600 *315.6*	0.74

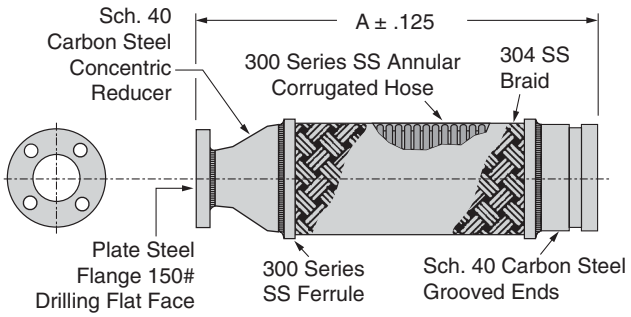
For safe working pressure above 70°F (21.1° C), Multiply pressure shown at 70°F. times correction factor of require temperature.

* See Motion Classification on page 135 for additional information.

Working pressures shown for the hose and braid are based on an operating temperature of 70° F (21° C) with a 4:1 safety factor.

FIG. AF-21-RGF

Grooved x Class 150 Flanged Reducing Flex Connectors



AF-21-RGF GRXFL REDUCING FLEX CONNECTORS

Nominal Size		Small O.D.	Large O.D.	Length	Pressure 70°F	Parallel Offset		Approx. Wt. Ea.
Small Flange	Large Groove & Hose					Permanent	Intermittent	
In./DN(mm)	*In./DN(mm)*	*In./mm*	*In./mm*	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*Lbs./kN*
1½ *40*	2 *50*	1.660 *42.2*	2.375 *60.3*	14 *355.6*	450 *31.0*	1½ *38.1*	⅝ *15.9*	6.7 *3.0*
	2½ *65*	1.660 *42.2*	2.875 *73.0*	14 *355.6*	300 *20.7*	1¼ *31.8*	⅜ *9.5*	6.9 *3.1*
2 *50*	2½ *65*	2.375 *60.3*	2.875 *73.0*	14 *355.6*	300 *20.7*	1¼ *31.8*	⅜ *9.5*	8.1 *3.7*
	3 *80*	2.375 *60.3*	3.500 *88.9*	14 *355.6*	275 *19.0*	¾ *19.1*	⅜ *9.5*	10.1 *4.6*
	4 *100*	2.375 *60.3*	4.500 *114.3*	14 *355.6*	270 *18.6*	½ *12.7*	¼ *6.4*	12.0 *5.4*
2½ *65*	3 *80*	2.875 *73.0*	3.500 *88.9*	14 *355.6*	275 *19.0*	¾ *19.1*	⅜ *9.5*	11.2 *5.1*
	4 *100*	2.875 *73.0*	4.500 *114.3*	14 *355.6*	270 *18.6*	½ *12.7*	¼ *6.4*	14.7 *6.7*
	5 *125*	2.875 *73.0*	5.563 *141.3*	18 *457.2*	225 *15.5*	¾ *19.1*	⅜ *9.5*	18.9 *8.6*
	6 *150*	2.875 *73.0*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	25.3 *11.5*
3 *80*	4 *100*	3.500 *88.9*	4.500 *114.3*	15 *381.0*	270 *18.6*	½ *12.7*	¼ *6.4*	15.5 *7.0*
	5 *125*	3.500 *88.9*	5.563 *141.3*	18 *457.2*	225 *15.5*	¾ *19.1*	⅜ *9.5*	19.7 *8.9*
	6 *150*	3.500 *88.9*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	26.1 *11.8*
4 *100*	5 *125*	4.500 *114.3*	5.563 *141.3*	18 *457.2*	225 *15.5*	¾ *19.1*	⅜ *9.5*	21.6 *9.8*
	6 *150*	4.500 *114.3*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	28.0 *12.7*
	8 *200*	4.500 *114.3*	8.625 *219.1*	20 *508.0*	155 *10.7*	⅝ *15.9*	¼ *6.4*	38.4 *17.4*
5 *125*	6 *150*	5.563 *141.3*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	31.0 *14.1*
	8 *200*	5.563 *141.3*	8.625 *219.1*	20 *508.0*	155 *10.7*	⅝ *15.9*	¼ *6.4*	40.7 *18.5*
6 *150*	8 *200*	6.625 *168.3*	8.625 *219.1*	20 *508.0*	155 *10.7*	½ *12.7*	¼ *6.4*	41.7 *18.9*
8 *200*	10 *250*	8.625 *219.1*	10.750 *273.1*	23 *584.2*	150 *10.3*	½ *12.7*	¼ *6.4*	84.0 *38.1*
10 *250*	12 *300*	10.750 *273.1*	12.750 *323.9*	25 *635.0*	145 *10.0*	½ *12.7*	¼ *6.4*	102.0 *46.3*

* See Motion Classification on page 135 for additional information.
Working pressures shown for the hose and braid are based on an operating temperature of 70° F (21° C) with a 4:1 safety factor.

FOR TEMP ABOVE 70°F (21.6° C)

Temperature	Factor S.S.
°F / °C	
70 *21.1*	1.00
200 *93.3*	0.94
300 *148.8*	0.88
400 *204.4*	0.83
500 *260.0*	0.78
600 *315.6*	0.74

For safe working pressure above 70°F (21.1° C), Multiply pressure shown at 70°F. times correction factor of required temperature.

FIG. 7004
Coupling

The Gruvlok Fig. 7004 is designed to provide the versatility of a grooved joint while providing a rigid pipe joint.

The Fig. 7004 coupling permits working pressure ratings up to 1200 psi (82.7 bar).

This coupling is also suited for lower pressure systems which experience pressure pulses. Systems used for high pressure, including auto and truck washes, will benefit from the increased pressure capability.

Working Pressure & End Load values are based on grooved standard wall pipe.

Fig. 7004 provides a rigid joint and does not allow for expansion or contraction. The Fig. 7004 coupling is an ideal choice for higher pressure applications such as elevator services.

NOTE: Fig. 7004 can be used with EG fittings as a commercial joint only.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

STAINLESS STEEL BOLTS & NUTS:
304SS bolts and nuts are available as a standard option.
(316SS are available for special order)

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE:
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint – Color: Orange (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code) Standard
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

For hot water applications the use of Gruvlok Extreme Temperature lubricant is recommended.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

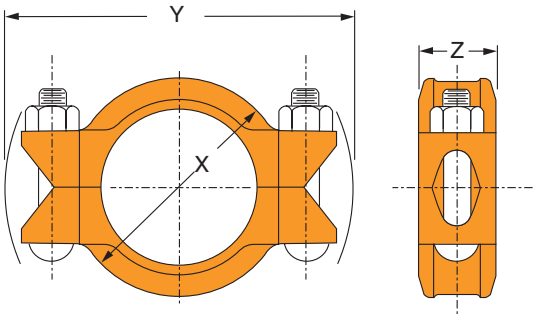
Grade "O" Fluoro-Elastomer (Blue color code)
Size Range: 2" - 12" (C style only)
20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

Grade "L" Silicone (Red color code)
Size Range: 2" - 12" (C style only)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services.

GASKET TYPE:
Standard C Style (2" - 12")
Flush Gap (2" - 12")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™(Do Not use with Grade "L")

FIG. 7004
Coupling



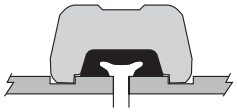


Fig. 7004 with standard gasket

FIGURE 7004 COUPLING

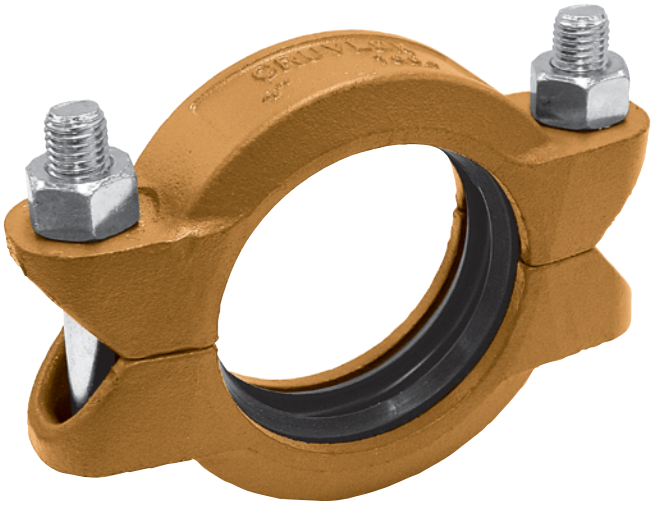
Nominal Size	O.D.	Max. Wk. Pressure†	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	1200 *82.7*	5,316 *23.6*	0 -1/32 *0 - 0.79*	3 5/8 *92*	6 1/4 *159*	1 7/8 *48*	2	5/8 x 2 3/4 –	3.9 *1.8*
2 1/2 *65*	2.875 *73.0*	1200 *82.7*	7,790 *34.7*	0 -1/32 *0 - 0.79*	4 1/4 *108*	6 7/8 *175*	1 7/8 *48*	2	5/8 x 3 1/2 *M16 x 85*	4.6 *2.1*
3 *80*	3.500 *88.9*	1200 *82.7*	11,545 *51.4*	0 -1/32 *0 - 0.79*	4 7/8 *124*	7 1/2 *191*	1 7/8 *48*	2	5/8 x 3 1/2 *M16 x 85*	5.2 *2.4*
4 *100*	4.500 *114.3*	1200 *82.7*	19,085 *84.9*	0 -3/32 *0 - 2.38*	6 1/4 *159*	9 1/2 *241*	2 1/4 *57*	2	3/4 x 4 1/2 *M20 x 110*	8.6 *3.9*
5 *125*	5.563 *141.3*	1000 *68.9*	24,306 *108.1*	0 -3/32 *0 - 2.38*	7 1/2 *191*	11 *279*	2 1/4 *57*	2	7/8 x 5 1/2 *M22 x 150*	14.0 *6.4*
6 *150*	6.625 *168.3*	1000 *68.9*	34,472 *153.3*	0 -3/32 *0 - 2.38*	8 3/4 *222*	12 1/8 *308*	2 1/4 *57*	2	7/8 x 5 1/2 *M22 x 150*	15.5 *7.0*
8 *200*	8.625 *219.1*	800 *55.2*	46,741 *207.9*	0 -3/32 *0 - 2.38*	11 1/8 *283*	14 7/8 *378*	2 5/8 *67*	2	1 x 5 1/2 –	25.6 *11.6*
10 *250*	10.750 *273.1*	800 *55.2*	72,610 *323.0*	0 -3/32 *0 - 2.38*	13 1/2 *343*	17 *432*	2 5/8 *67*	2	1 x 6 1/2 –	32.3 *14.7*
12 *300*	12.750 *323.9*	800 *55.2*	102,141 *454.4*	0 -3/32 *0 - 2.38*	15 7/8 *403*	19 1/4 *489*	2 5/8 *67*	2	1 x 6 1/2 –	43.9 *19.9*

†Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

For additional details see "Coupling Data Chart Notes" on page 17.
See Installation & Assembly directions on page 205.
Not for use in copper systems.

FIG. 7004 with EG® Gasket

Coupling



The Gruvlok Fig. 7004 Coupling with EG® Gasket uses the specially designed "End Guard" gasket for use with "EG" grooved pipe. The "EG" gasket has a center rib which extends between the pipes in order to provide pipe end protection, which makes it ideally suited for internally lined or coated pipe applications.

The Fig. 7004 Coupling with EG® Gasket permits working pressure ratings up to 2500 psi (172.4 bar).

Working Pressure and End Load values are based on "EG" cut grooved extra heavy steel pipe. Fig. 7004 provides a rigid joint and does not allow for expansion or contraction. Beveled end pipe should not be used with "EG" gaskets.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated
ISO 898-1, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated
ISO 898-2, Class 8.8, Zinc Electroplated followed by a Yellow Chromate Dip

STAINLESS STEEL BOLTS & NUTS:
304SS bolts and nuts are available as a standard option.
(316SS are available for special order).

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint – Color: Orange (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

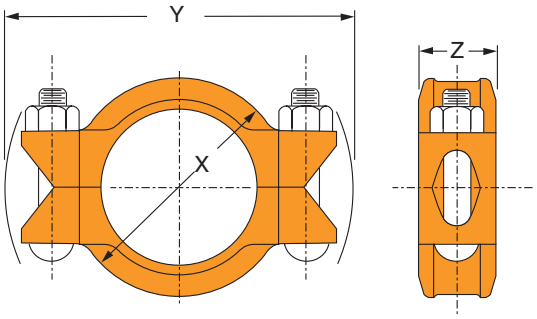
Grade "T" Nitrile (Orange color code) EG Gasket
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

GASKET TYPE:
"EG" Style

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™(Do Not use with Grade "L")

FIG. 7004 with EG® Gasket

Coupling



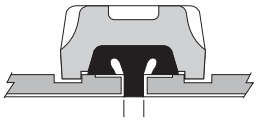


Fig. 7004 with "EG" gasket

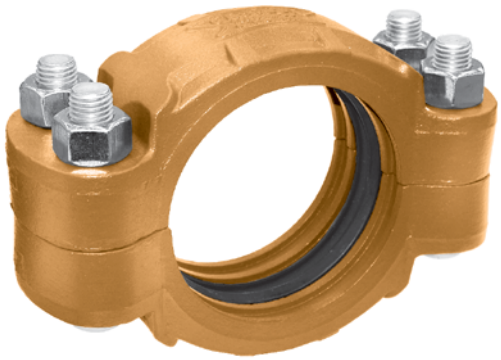
FIGURE 7004 COUPLING WITH EG GASKET

Nominal Size	O.D.	Max. Wk. Pressure	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	2500 *172.4*	11,075 *49.27*	0 -1/32 *0 - 0.79*	3 5/8 *92*	6 1/4 *159*	1 7/8 *48*	2	5/8 x 2 3/4 –	4.1 *1.9*
2 1/2 *65*	2.875 *73.0*	2500 *172.4*	16,230 *72.19*	0 -1/32 *0 - 0.79*	4 1/4 *108*	6 7/8 *175*	1 7/8 *48*	2	5/8 x 3 1/2 *M16 x 85*	5.1 *2.3*
3 *80*	3.500 *88.9*	2500 *172.4*	24,053 *106.99*	0 -1/32 *0 - 0.79*	4 7/8 *124*	7 1/2 *191*	1 7/8 *48*	2	5/8 x 3 1/2 *M16 x 85*	5.5 *2.5*
4 *100*	4.500 *114.3*	2500 *172.4*	39,761 *176.86*	0 -3/32 *0 - 2.38*	6 1/4 *159*	9 1/2 *241*	2 1/4 *57*	2	3/4 x 4 1/2 *M20 x 110*	9.0 *4.1*
6 *150*	6.625 *168.3*	2000 *137.9*	68,943 *306.67*	0 -3/32 *0 - 2.38*	8 3/4 *222*	12 1/8 *308*	2 1/4 *57*	2	7/8 x 5 1/2 *M22 x 150*	15.5 *7.0*
8 *200*	8.625 *219.1*	1500 *103.4*	87,639 *389.84*	0 -3/32 *0 - 2.38*	11 1/8 *283*	14 7/8 *378*	2 5/8 *67*	2	1 x 5 1/2 –	25.6 *11.6*
10 *250*	10.750 *273.1*	1250 *86.2*	113,453 *504.66*	0 -3/32 *0 - 2.38*	13 1/2 *343*	17 *432*	2 5/8 *67*	2	1 x 6 1/2 –	32.3 *14.7*
12 *300*	12.750 *323.9*	1250 *86.2*	159,595 *709.92*	0 -3/32 *0 - 2.38*	15 7/8 *403*	19 1/4 *489*	2 5/8 *67*	2	1 x 6 1/2 –	43.9 *19.9*

For additional details see "Coupling Data Chart Notes" on page 17.
See Installation & Assembly directions on page 206.
Not for use in copper systems.

FIG. 7377

Double Groove Coupling



Gruvlok Fig. 7377 is a flexible coupling utilizing double groove technology designed for high pressure piping applications. Fig. 7377 is specifically designed for use in mining, oil, gas, slurry, sludge, and hydraulic systems. The maximum working pressure for each pipe schedule and size are listed in the table below. Fig. 7377 is an ideal solution for high pressure applications, exceeding Anvil's Fig. 7004 capabilities. See page 245 for double groove piping dimensions.

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint – Color: Orange (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

Additional gaskets available, please contact an Anvil Representative.

GASKET TYPE:
Standard C Style ("EP" and "T")
End Guard ("T")
Flush Gap ("EP")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™

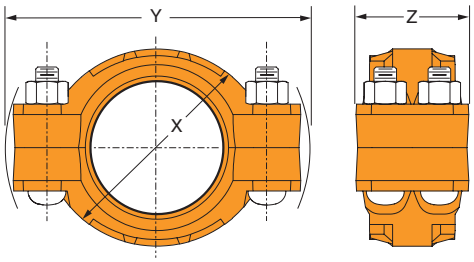


FIGURE 7377 DOUBLE GROOVE COUPLING

Nominal Size	O.D.	Schedule 160		Schedule 80		Range of Pipe End Separation		Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
		Max. Working Pressure	Max. End Load	Max. Working Pressure*	Max. End Load	Standard	End Guard	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-m*		*Lbs./Kg*
6 150	6.625 168.3	4,000 275.8	137,886 613.3	3,000 206.8	103,415 460.0	0.070 - 0.250 1.78 - 6.35	0.110 - 0.290 2.79 - 7.37	8⅘ 225	12¾ 324	5 127	4	1 x 5½ –	450 –	525 –	42.6 19.3
8 200	8.625 219.1	3,500 241.3	204,492 909.6	2,500 172.4	146,060 649.6	0.060 - 0.250 1.52 - 6.35	0.132 - 0.322 3.35 - 8.18	11⅓ 287	15⅘ 396	6 152	4	1⅛ x 6½ –	500 –	600 –	72.0 32.7
10 250	10.750 273.1	3,000 206.8	272,288 1,211.1	2,500 172.4	226,906 1,009.3	0.080 - 0.250 2.03 - 6.35	0.152 - 0.322 3.86 - 8.18	13½ 343	18¾ 476	6⅛ 156	4	1⅛ x 6½ –	500 –	600 –	98.3 44.6

* Maximum line pressure, including surge, to which a joint can be subjected. Working pressures are based on pipe in accordance with Gruvlok double cut groove specifications. Maximum allowable working pressure may be limited by code requirements, system components, and system design. Note: For a one time field test only, the maximum working pressure may be increased by 1.25 times the figure shown.

For additional details see "Coupling Data Chart Notes" on page 17.
§ – Lubricate bolts with Gruvlok Xtreme Lubricant.
See Installation & Assembly directions on page 207.

HIGH PRESSURE FITTINGS

Gruvlok End Guard fittings are fabricated from extra heavy (XS) materials. The groove conforms to Gruvlok End Guard cut grooving specification. These fittings may be used for high pressure systems and where lined or coated fittings are required. Gruvlok EG fittings conform to NACE STD-RP-04-72 (Contact an Anvil Representative with specific service details). End Guard fittings should only be used with Series 7004 Couplings and EG Gasket.

Double groove fittings available, please contact an Anvil Sales Representative.

FITTING SIZE			
Nominal Size	O.D.	Nominal Size	O.D.
In./DN(mm)	*In./mm*	*In./DN(mm)*	*In./mm*
1 *25*	1.315 *33.7*	3 *80*	3.500 *88.9*
1¼ *32*	1.660 *42.4*	4 *100*	4.500 *114.3*
1½ *40*	1.900 *48.3*	5 *140*	5.563 *141.3*
2 *50*	2.375 *60.3*	6 *150*	6.625 *168.3*
2½ *65*	2.875 *73.0*	8 *200*	8.625 *219.1*

MATERIAL SPECIFICATIONS

ELBOWS: Extra strong forged steel fittings conforming to ASTM A 234 with welded tangents of schedule 80 steel pipe conforming to ASTM A 106.

TEES & CROSSES: Segment welded schedule 80 steel pipe conforming to ASTM A 106.

COATINGS:
Rust inhibiting paint – Color: Orange (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

FIG. 7050 EG - High Pressure 90° LR Elbow

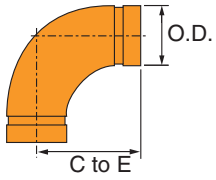


FIGURE 7050 EG, HIGH PRESSURE 90° LR ELBOW			
Nominal Size	O.D.	Center To-End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3¼ *83*	2.5 *1.1*
2½ *65*	2.875 *73.0*	3¾ *95*	4.2 *1.9*
3 *80*	3.500 *88.9*	4¼ *108*	6.0 *2.7*
4 *100*	4.500 *114.3*	5 *127*	11.0 *5.0*
6 *150*	6.625 *168.3*	6½ *165*	27.2 *12.4*
8 *200*	8.625 *219.1*	* *	* *
10 *250*	10.750 *273.0*	* *	* *
12 *300*	12.750 *323.9*	* *	* *

* Contact an Anvil Representative for more information.

FIG. 7051 EG - High Pressure 45° LR Elbow

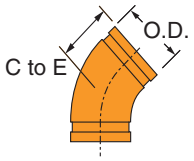


FIGURE 7051 EG, HIGH PRESSURE 45° LR ELBOW			
Nominal Size	O.D.	Center To-End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	2 *51*	1.8 *0.8*
2½ *65*	2.875 *73.0*	2¼ *57*	2.9 *1.3*
3 *80*	3.500 *88.9*	2½ *64*	4.3 *2.0*
4 *100*	4.500 *114.3*	3 *76*	7.5 *3.4*
6 *150*	6.625 *168.3*	3½ *89*	16.5 *7.5*
8 *200*	8.625 *219.1*	* *	* *
10 *250*	10.750 *273.0*	* *	* *
12 *300*	12.750 *323.9*	* *	* *

* Contact an Anvil Representative for more information.

HIGH PRESSURE FITTINGS

FIG. 7060 EG - High Pressure Tee

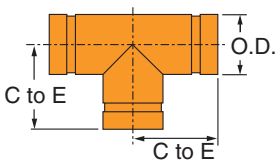


FIGURE 7060 EG - HIGH PRESSURE TEE			
Nominal Size	O.D.	Center To-End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3¼ *83*	3.3 *1.5*
2½ *65*	2.875 *73.0*	3¾ *95*	5.1 *2.3*
3 *80*	3.500 *88.9*	4¼ *108*	9.3 *4.2*
4 *100*	4.500 *114.3*	5 *127*	15.9 *7.2*
6 *150*	6.625 *168.3*	6½ *165*	38.5 *17.5*
8 *200*	8.625 *219.1*	* *	* *
10 *250*	10.750 *273.0*	* *	* *
12 *300*	12.750 *323.9*	* *	* *

* Contact an Anvil Representative for more information.

FIG. 7662 EG - High Pressure Header Tee

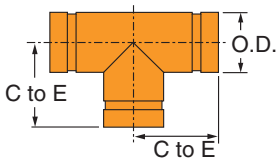


FIG. 7662 EG - HIGH PRESSURE HEADER TEE			
Nominal Size	O.D.	Center To-End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	6½ *165*	4.9 *2.2*
2 *50*	2.375 *60.3*	5 *127*	3.6 *1.6*

FIG. 7068 EG - High Pressure Cross

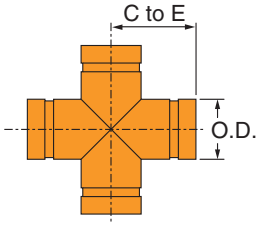


FIG. 7068 EG - HIGH PRESSURE CROSS			
Nominal Size	O.D.	Center To-End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3¼ *83*	3.9 *1.8*
2½ *65*	2.875 *73.0*	3¾ *95*	6.8 *3.1*
3 *80*	3.500 *88.9*	4¼ *108*	11.5 *5.2*
4 *100*	4.500 *114.3*	5 *127*	19.3 *8.8*
6 *150*	6.625 *168.3*	6½ *165*	46.0 *20.9*
8 *200*	8.625 *219.1*	* *	* *
10 *250*	10.750 *273.0*	* *	* *
12 *300*	12.750 *323.9*	* *	* *

* Contact an Anvil Representative for more information.

GRUVLOK® CTS COPPER SYSTEM

The Gruvlok® CTS Copper System offers an installer of large diameter copper tubing an alternative to the conventional soldering and brazing.

This new grooved copper system is faster and easier to install. Temperature and weather conditions are no longer a factor when planning installations. There is no sweating or brazing as this system requires only a wrench for assembly on grooved end pipe.

The copper system is "flame-free". Essentially you save time and enjoy a very reliable system that is both versatile and economical. Safety is a factor as there is no fire hazard, especially in a retrofit installation. The ease of assembly is a great benefit in new construction and ease of disassembly is ideal for renovation, retrofit or expansion.

BENEFITS

- Fast and easy to assemble.
- No flame, no sweat
- Each joint has a union.
- Provides rigidity
- Easily roll grooved
- Proven joint reliability
- Accepted and approved.
- Economical and reliable

FIG. 6402

CTS SlideLOK® Ready for Installation Coupling

NSF/ANSI 61

Patent D680629, D680630, D696751

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative

The CTS SlideLOK coupling is a ready for installation coupling designed to reduce installation time. The slide action allows for greater flexibility during installation. The patented gasket provides four separate sealing surfaces for added protection. The engineered metal-to-metal installation requirement is a quick and easy indication of proper assembly.

The CTS SlideLOK is designed to be used with copper tube sizes 2" - 8" and produces a secure, rigid joint connection.

The CTS SlideLOK coupling allows for a maximum working pressure of 300 psi for type K or L. Contact an Anvil representative for other copper tube pressure ratings.

SlideLOK Pressure Responsive Gasket

MATERIAL SPECIFICATIONS

BOLTS:
SAE J429, Grade 5, Zinc Electroplated

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATINGS:
Rust inhibiting paint Color: COPPER (standard)
Hot Dipped Zinc Galvanized (optional)

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Copper color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

GASKET TYPE:
SlideLOK (2" - 8")

LUBRICATION:
Standard
Gruvlok Xtreme™

FIG. 6402

CTS SlideLOK® Ready for Installation Coupling

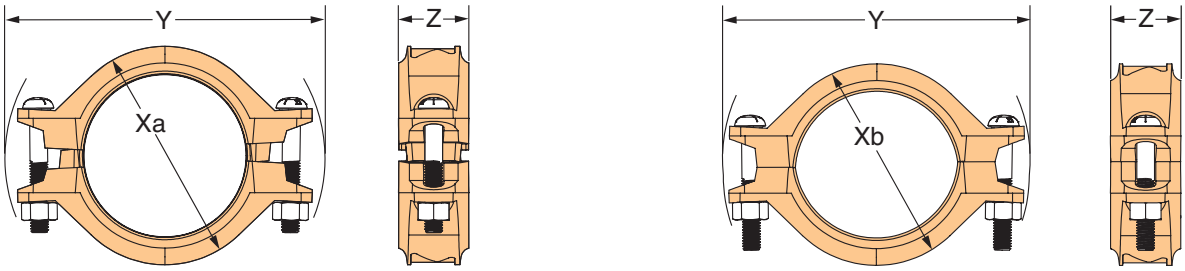


FIGURE 6402 CTS SLIDELOK COUPLING

Nominal Size	O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Coupling Dimensions				Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
					Xa	Xb	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-M*		*Lbs./kg*
2 *50*	2.125 *54.0*	300 *20.7*	1,064 *4.73*	0-0.08 *0-2.0*	3½ *89*	3¼ *83*	5½ *140*	1 15/16 *49*	2	½ x 3½ *M12 X 89*	80 *110*	100 *150*	2.4 *1.1*
2½ *65*	2.625 *66.7*	300 *20.7*	1,624 *7.22*	0-0.08 *0-2.0*	4 *102*	3¾ *95*	6 *152*	1 15/16 *49*	2	½ x 3½ *M12 X 89*	80 *110*	100 *150*	2.6 *1.2*
3 *80*	3.125 *79.4*	300 *20.7*	2,301 *10.24*	0-0.08 *0-2.0*	4⅝ *117*	4¼ *108*	6¾ *171*	1 15/16 *49*	2	½ x 3½ *M12 X 89*	80 *110*	100 *150*	3.5 *1.6*
4 *100*	4.125 *104.8*	300 *20.7*	4,009 *17.83*	0-0.13 *0-3.3*	5½ *140*	5⅛ *130*	8 *203*	2 *51*	2	½ x 3½ *M12 X 89*	80 *110*	100 *150*	4.0 *1.8*
5 *125*	5.125 *130.2*	300 *20.7*	6,189 *27.53*	0-0.13 *0-3.3*	6⅝ *168*	6¼ *159*	9¼ *235*	2 *51*	2	⅝ x 3½ *M16 X 89*	100 *135*	130 *175*	5.0 *2.3*
6 *150*	6.125 *155.6*	300 *20.7*	8,839 *39.32*	0-0.13 *0-3.3*	7¾ *197*	7¼ *184*	10¼ *260*	2 *51*	2	⅝ x 3½ *M16 X 89*	100 *135*	130 *175*	5.8 *2.6*
8 *200*	8.125 *206.4*	300 *20.7*	15,555 *69.19*	0.07-0.13 *0-3.3*	9¾ *248*	9¼ *235*	12¼ *311*	2 *51*	2	⅝ x 4¼ *M16 X 110*	100 *135*	130 *175*	8.0 *3.6*

For additional details see "Coupling Data Chart Notes" on page 17.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on pages 193-194.

FIG. 6400
Rigid Coupling

The Figure 6400 Rigid Coupling is specially designed to provide a rigid pipe connection to meet the specific demands of copper tubing installation size 2"-8". Fast and easy swing-over installation of the rugged lightweight housing produces a secure rigid pipe joint. Available with Grade "EP" Copper EPDM flush gap style gasket. Gasket has service temperature range of -40°F to +250°F. NSF 61 Certified for cold +86°F (+30°C) and hot +180°F (+82°C) potable water service.

MATERIAL SPECIFICATIONS

HOUSING:
Ductile iron conforming to ASTM A-536, Grade 65-45-12

COATINGS:
Rust inhibiting enamel paint — Color: Copper
For other coating requirements contact your Anvil Representative.

BOLTS:
SAE J429, Grade 5, Zinc Electroplated

HEAVY HEX NUTS:
ASTM A563, Grade A, Zinc Electroplated

GASKETS:
Grade "EP" EPDM Flush Gap Gasket (Copper Color Code)
Service Temperature Range: -40°F to +250°F(-40°C to +121°C)
Recommended for water service, diluted acids, alkaline solutions, oil-free air and many chemical services. NOT FOR USE IN PETROLEUM APPLICATIONS.

NSF 61 Certified for cold +86°F (+30°C) and hot +180°F (+82°C) potable water service.

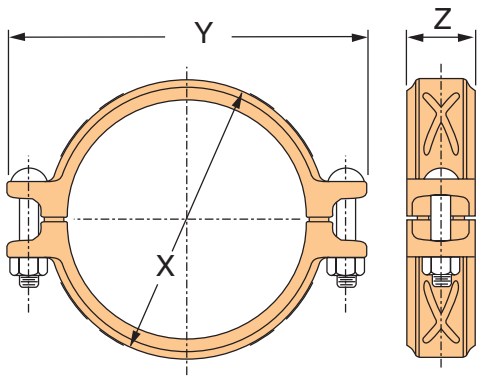


FIGURE 6400 RIGID COUPLING

Nominal Size	Copper Tube Diameter	Max Wk. Pressure	Max End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	
In.	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*				*In./mm*	*Lbs./Kg*
2	2.125 *54.0*	300 *20.7*	1063 *4.73*	0 - 0.08 *0 - 2.0*	3.00 *76*	5.00 *127*	1.68 *43*	2	⅜ x 2¼	1.53 *0.69*
2½	2.625 *66.7*	300 *20.7*	1623 *7.22*	0 - 0.08 *0 - 2.0*	3.50 *89*	5.50 *140*	1.68 *43*	2	⅜ x 2¼	1.78 *0.81*
3	3.125 *79.4*	300 *20.7*	2300 *10.23*	0 - 0.08 *0 - 2.0*	4.18 *106*	6.28 *159*	1.68 *43*	2	½ x 3	2.76 *1.25*
4	4.125 *104.8*	300 *20.7*	4007 *17.82*	0 - 0.13 *0 - 2.4*	5.20 *132*	7.50 *191*	1.70 *43*	2	½ x 3	3.27 *1.48*
5	5.125 *130.2*	300 *20.7*	6186 *27.51*	0 - 0.13 *0 - 2.4*	6.20 *157*	9.10 *231*	1.80 *46*	2	⅝ x 3¼	4.71 *2.14*
6	6.125 *155.6*	300 *20.7*	8835 *39.30*	0 - 0.13 *0 - 2.4*	7.20 *183*	10.20 *259*	1.80 *46*	2	⅝ x 3¼	5.24 *2.38*
8	8.125 *206.4*	300 *20.7*	15547 *69.15*	0 - 0.13 *0 - 2.4*	9.32 *237*	12.40 *315*	2.00 *51*	2	⅝ x 3¼	7.67 *3.48*

Pressure ratings and end loads are based on use with ASTM B88 Type K or L tubing. For pressure ratings on Type M and DWV, contact your Anvil Representative.
See Installation & Assembly directions on page 195.

CTS COPPER FITTINGS

CTS Copper Fittings are produced with groove and cup ends in a variety of fitting configurations. The fittings are constructed to ASTM B75 UNS C12200 with a minimum copper content of 99.9%. Fitting pressure ratings match the ratings of the Figure 6400 Coupling.

NSF Certified to ANSI/NSF 61

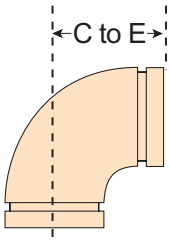


FIG. 6050

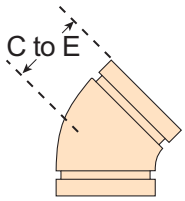


FIG. 6051

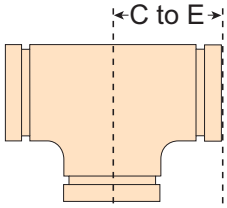


FIG. 6060

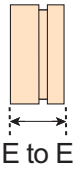


FIG. 6074

DIMENSIONS/WEIGHTS — ELBOWS, TEES & CAPS

Nominal Size	Copper Tube Diameter	Fig. 6050 90° Elbow		Fig. 6051 45° Elbow		Fig. 6060 Tee		Fig. 6074 Cap	
		C to E	Wt. Ea.	C to E	Wt. Ea.	C to E	Wt. Ea.	E to E	Wt. Ea.
In.	*In./mm*	*In./mm*	*Lbs./kg*	*In./mm*	*Lbs./kg*	*In./mm*	*Lbs./kg*	*In./mm*	*Lbs./kg*
2	2.125 *54.0*	2.91 *74*	0.75 *0.34*	2.19 *56*	0.61 *0.28*	2.69 *68*	1.45 *0.66*	2.00 *51*	0.36 *0.16*
2½	2.625 *66.7*	3.31 *84*	1.15 *0.52*	2.31 *59*	0.89 *0.40*	3.20 *81*	2.37 *1.07*	2.00 *51*	0.50 *0.23*
3	3.125 *79.4*	3.81 *97*	1.88 *0.85*	2.59 *66*	1.38 *0.63*	3.52 *89*	3.38 *1.53*	2.00 *51*	0.69 *0.31*
4	4.125 *104.8*	4.75 *121*	4.07 *1.85*	3.19 *81*	2.99 *1.36*	4.25 *108*	5.77 *2.62*	2.00 *51*	1.15 *0.52*
5	5.125 *130.2*	5.94 *151*	6.94 *3.15*	3.25 *83*	4.00 *1.81*	5.94 *151*	12.84 *5.82*	2.75 *70*	1.81 *0.82*
6	6.125 *155.6*	6.94 *176*	11.12 *5.04*	3.63 *92*	6.16 *2.79*	6.94 *176*	21.00 *9.52*	3.13 *80*	2.68 *1.22*
8	8.125 *206.4*	7.75 *197*	21.81 *9.89*	4.25 *108*	13.66 *6.20*	7.75 *197*	21.81 *9.89*	– –	– –

REDUCING TEES

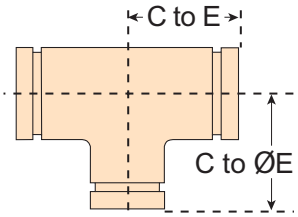


FIG. 6061

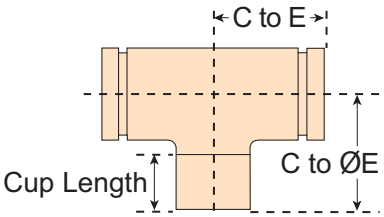


FIG. 6064

DIMENSIONS/WEIGHTS – REDUCING TEES

Nominal Size	Fig. 6061 Groove x Groove x Groove			Fig. 6064 Groove x Groove x Cup			
	C to E	C to ØE	Wt. Ea	C to E	C to ØE	Cup Length	Wt Ea.
In.	*In./mm*	*In./mm*	*Lbs./kg*	*In./mm*	*In./mm*	*In./mm*	*Lbs./kg*
2 x 2 x ¾	– –	– –	– –	2.20 *56*	1.98 *50*	0.75 *19*	0.88 *0.40*
2 x 2 x 1	– –	– –	– –	2.33 *59*	2.20 *56*	0.91 *23*	1.03 *0.47*
2 x 2 x 1¼	– –	– –	– –	2.48 *63*	2.35 *60*	0.97 *25*	1.12 *0.51*
2 x 2 x 1½	– –	– –	– –	2.55 *65*	2.28 *58*	1.09 *28*	1.25 *0.57*
2½ x 2½ x ¾	– –	– –	– –	2.27 *58*	2.18 *55*	0.75 *19*	1.25 *0.57*
2½ x 2½ x 1	– –	– –	– –	2.40 *61*	2.40 *61*	0.91 *23*	1.38 *0.63*
2½ x 2½ x 1¼	– –	– –	– –	2.52 *64*	2.57 *65*	0.97 *25*	1.56 *0.71*
2½ x 2½ x 1½	– –	– –	– –	2.70 *69*	2.68 *68*	1.09 *28*	1.88 *0.85*
2½ x 2½ x 2	3.28 *83*	3.38 *86*	2.54 *1.15*	– –	– –	– –	– –
3 x 3 x ¾	– –	– –	– –	2.45 *62*	2.60 *66*	0.75 *19*	1.88 *0.85*
3 x 3 x 1	– –	– –	– –	2.54 *65*	2.79 *71*	0.91 *23*	2.04 *0.93*
3 x 3 x 1¼	– –	– –	– –	2.63 *67*	2.89 *73*	0.97 *25*	2.13 *0.97*
3 x 3 x 1½	– –	– –	– –	2.85 *72*	3.00 *76*	1.09 *28*	2.25 *1.02*
3 x 3 x 2	3.00 *76*	3.38 *86*	2.90 *1.32*	– –	– –	– –	– –
3 x 3 x 2½	3.25 *83*	3.50 *89*	3.16 *1.43*	– –	– –	– –	– –
4 x 4 x ¾	– –	– –	– –	2.95 *75*	3.00 *76*	0.75 *19*	3.63 *1.65*
4 x 4 x 1	– –	– –	– –	3.10 *79*	3.22 *82*	0.91 *23*	3.94 *1.79*
4 x 4 x 1¼	– –	– –	– –	3.25 *83*	3.47 *88*	0.97 *25*	4.24 *1.92*
4 x 4 x 1½	– –	– –	– –	3.35 *85*	3.65 *93*	1.09 *28*	4.47 *2.03*
4 x 4 x 2	3.66 *93*	4.13 *105*	5.14 *2.33*	– –	– –	– –	– –
4 x 4 x 2½	3.94 *100*	4.06 *103*	5.36 *2.43*	– –	– –	– –	– –
4 x 4 x 3	4.19 *106*	4.16 *106*	5.88 *2.67*	– –	– –	– –	– –
5 x 5 x 3	3.75 *95*	4.63 *118*	7.45 *3.38*	– –	– –	– –	– –
5 x 5 x 4	4.25 *108*	4.56 *116*	8.13 *3.69*	– –	– –	– –	– –
6 x 6 x 2½	3.63 *92*	5.13 *130*	9.42 *4.27*	– –	– –	– –	– –
6 x 6 x 3	3.69 *94*	5.19 *132*	10.06 *4.56*	– –	– –	– –	– –
6 x 6 x 4	4.19 *106*	5.13 *130*	10.86 *4.93*	– –	– –	– –	– –
6 x 6 x 5	4.69 *119*	5.19 *132*	12.73 *5.77*	– –	– –	– –	– –

CONCENTRIC REDUCERS

NSF Certified to ANSI/NSF 61

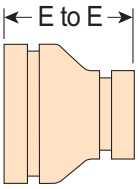


FIG. 6072

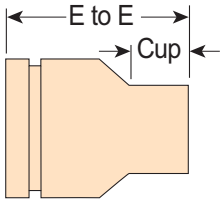


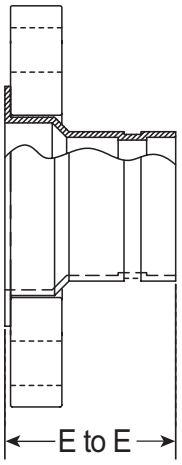
FIG. 6075

DIMENSIONS/WEIGHTS – REDUCERS

Nominal Size	Fig. 6072 Groove x Groove		Fig. 6075 Groove x Cup		
	E to E	Wt. Ea	E to E	Cup Length	Wt Ea.
In.	*In./mm*	*Lbs./kg*	*In./mm*	*In./mm*	*Lbs./kg*
2 x 1	– –	– –	2.70 *68.6*	0.91 *23.1*	0.32 *0.15*
2 x 1¼	– –	– –	3.00 *76.2*	0.97 *24.6*	0.36 *0.16*
2 x 1½	– –	– –	2.94 *74.7*	1.09 *27.7*	0.38 *0.17*
2½ x 1	– –	– –	3.25 *82.6*	0.91 *23.1*	0.53 *0.24*
2½ x 1¼	– –	– –	3.52 *89.4*	0.97 *24.6*	0.59 *0.27*
2½ x 1½	– –	– –	3.45 *87.6*	1.09 *27.7*	0.59 *0.27*
2½ x 2	3.29 *83.6*	0.58 *0.26*	3.30 *83.8*	1.34 *34.0*	0.58 *0.26*
3 x 1½	– –	– –	3.68 *93.5*	1.09 *27.7*	0.84 *0.38*
3 x 2	2.50 *63.5*	0.58 *0.26*	4.10 *104.1*	1.34 *34.0*	0.97 *0.44*
3 x 2½	2.50 *63.5*	0.62 *0.28*	– –	– –	– –
4 x 2	4.75 *120.7*	1.71 *0.78*	4.75 *120.7*	1.34 *34.0*	1.76 *0.80*
4 x 2½	3.00 *76.2*	1.12 *0.51*	– –	– –	– –
4 x 3	3.00 *76.2*	1.22 *0.55*	– –	– –	– –
5 x 3	3.88 *98.6*	2.11 *0.96*	– –	– –	– –
5 x 4	3.38 *85.9*	1.97 *0.89*	– –	– –	– –
6 x 3	4.38 *111.3*	2.96 *1.34*	– –	– –	– –
6 x 4	3.88 *98.6*	2.87 *1.30*	– –	– –	– –
6 x 5	3.38 *85.9*	2.78 *1.26*	– –	– –	– –
8 x 6	5.00 *127.0*	6.60 *2.99*	– –	– –	– –

FIG. 6084

Flange Adapter



NSF Certified to ANSI/NSF 61

The Gruvlok® Fig. 6084 Flange Adapter allows for direct connection of Class 125 or Class 150 flanged components to the CTS Copper System. The CTS Copper Flange Adapter (Sizes 2" thru 6") conforms to ANSI class 125/150 bolt patterns and is rated at 300 PSIG (20.7 bar). The flange adaptor is a dielectric union, utilizing the epoxy coating as a suitable replacement for flange dialectic insulation kits.

FIGURE 6084 FLANGE ADAPTER

Nominal Size	Copper Tube Diameter	E to E	Approx. Wt. Ea.
In.	*In./mm*	*In./mm*	*Lbs./kg*
2	2.125 *54.0*	3.0 *76.2*	0.85 *0.39*
2½	2.625 *66.7*	3.5 *88.9*	1.34 *0.61*
3	3.125 *79.4*	3.5 *88.9*	1.73 *0.78*
4	4.125 *104.8*	3.5 *88.9*	2.43 *1.10*
5	5.125 *130.2*	3.5 *88.9*	3.27 *1.48*
6	6.125 *155.6*	4.0 *101.6*	4.78 *2.17*

SERIES 6700

CTS Copper Butterfly Valve

The lever handle bronze body butterfly valve is designed for use with grooved copper tubing (CTS), fittings and couplings. This valve features a 10 position lever handle, bronze body and EPDM rubber encapsulated disc. Both bronze valve body and the EPDM rubber disc obtained certification to ANSI/NSF 61 for use in potable water systems and is rated to 300 PSI.

NSF/ANSI 61
Hot Water / Annex G
LEAD FREE

MATERIAL SPECIFICATIONS

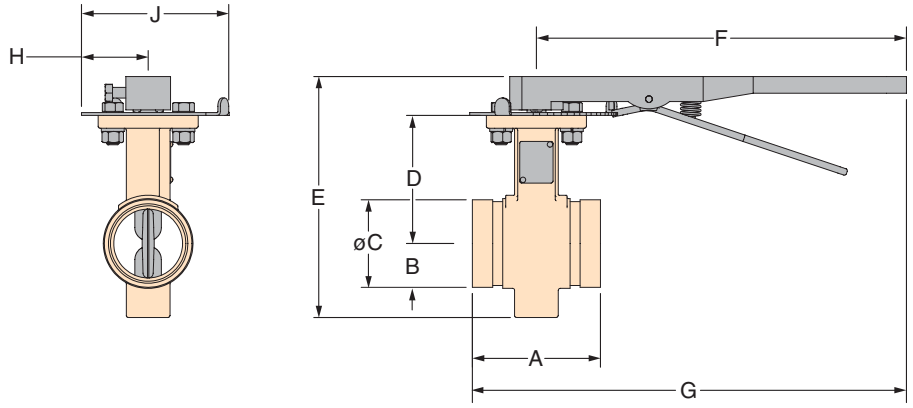
VALVE BODY:
ASTM B584 C89836; Bronze, Low Lead

DISC:
ASTM A536 Gr. 65-45-12; Ductile Iron

DISC ENCAPSUALTION:
Grade "EP" EPDM Rubber: Service temperature range: -40°F to +250°F (-40°C to +121°C). Recommended for water service, diluted acids, alkaline solutions, and oil-free air.
NOT RECOMMENDED FOR USE IN PETROLEUM APPLICATIONS.

UPPER & LOWER SHAFTS:
Stainless Steel Type 17-4PH; ASTM A564

CERTIFICATIONS:
ANSI/NSF61 for use in Cold +86F(+30C) and Hot +180F(+82C) potable water systems. Annex G. UPC.

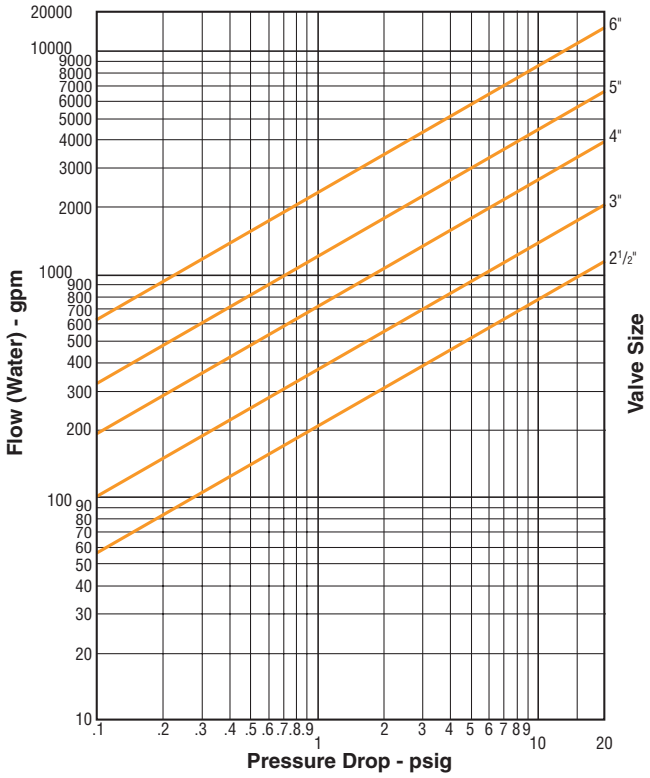


SERIES 6700 CTS COPPER BUTTERFLY VALVE DIMENSIONS

Nominal Size	Copper Tube Diameter	Dimensions									Weight
		A	B	C	D	E	F	G	H	J	
In.	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./kg*
2½	2.625 *66.7*	3.77 *95.8*	2.22 *56.4*	2.63 *66.7*	3.83 *97.3*	7.20 *182.5*	10.50 *266.7*	12.39 *314.6*	2.00 *50.8*	4.43 *112.5*	4 *1.8*
3	3.125 *79.4*	3.77 *95.8*	2.60 *65.9*	3.13 *79.4*	4.08 *130.5*	7.84 *198.2*	10.50 *266.7*	12.39 *314.6*	2.00 *50.8*	4.43 *112.5*	5 *2.3*
4	4.125 *104.8*	4.63 *117.6*	3.10 *78.7*	4.13 *104.9*	4.72 *119.9*	8.97 *227.8*	10.50 *266.7*	12.81 *325.5*	2.00 *50.8*	4.43 *112.5*	8 *3.8*
5	5.125 *130.2*	5.88 *149.4*	3.85 *97.8*	5.13 *130.2*	5.22 *132.6*	10.27 *260.9*	10.50 *266.7*	13.44 *341.4*	2.00 *50.8*	4.43 *112.5*	14 *6.4*
6	6.125 *155.6*	5.88 *149.4*	4.36 *110.8*	6.13 *155.6*	5.75 *146.2*	11.31 *287.3*	10.50 *266.7*	13.44 *341.4*	2.00 *50.8*	4.43 *112.5*	18 *8.1*

SERIES 6700

CTS Copper Butterfly Valve



Values for flow of water at +60˚F (+16˚C)

$$C_v = \frac{Q}{\sqrt{\Delta P}}$$

Where: C_v = Flow coefficient
Q = Flow (GPM)
ΔP = Pressure drop (psi)

GRUVLOK CTS COPPER BUTTERFLY VALVE SERIES 6700 (ORDERING INFORMATION)

Sample Part Number 4" 6711-1 —>	4"	67	1	1 -	1
	Size	Series	Disc Coating	Operator	Shaft
	2½" - 6"	6700	**1** - EPDM (Grade EP)	**0** - None **1** - 10 Pos. Handlever	**1** - 17-4 PH S/S

FIG. 7088, 7089 & 7090

Di-Electric Pipe Connection

The Fig 7088, 7089, & 7090 di-electric nipple inhibits the formation of galvanic corrosion between dissimilar piping metals. The di-electric nipples offer a variety of connections from thread to thread, thread to groove, or groove to groove all for IPS pipe sizes.

The di-electric fittings are designed to meet ASTM F 492 for continuous use at temperatures from -40˚F to 230˚F (-40˚C to 110˚C) and pressures up to 300 psi (20.7 bar). The di-electric pipe connections will achieve a dielectric waterway in potable water and appropriate HVAC applications.

MATERIAL SPECIFICATIONS

HOUSING: Steel Tube to ASTM A 513, Zinc Plated

LINER: Polypropylene

THREADS: ASME B1.20.1

GROOVES: Gruvlok Cut Groove Dimensions (Refer to page 237 for detailed information.)

INSTALLATION & ASSEMBLY: For installation and assembly of grooved-end connections, see "Fig. 7400 Gruvlok Rigidlite Coupling" and "Fig. 7012 Gruvlok Flange".

FIGURE 7088, 7089 & 7090 DI-ELECTRIC NIPPLES

Nom. IPS Pipe Size	O.D.	Max Working Pressure	Fig. 7088 Thread x Groove		Fig. 7089 Groove x Groove		Fig. 7090 Thread x Thread	
			E to E	Approx. Wt. Ea.	E to E	Approx. Wt. Ea.	E to E	Approx. Wt. Ea.
NIPS/DN	*In./mm*	*PSI/bar*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*
½ *15*	0.840 *21.3*	300 *20.7*	– –	– –	– –	– –	3 *76.2*	0.20 *0.1*
¾ *20*	1.050 *26.7*	300 *20.7*	– –	– –	– –	– –	3 *76.2*	0.20 *0.1*
1 *25*	1.315 *33.7*	300 *20.7*	4 *101.6*	0.30 *0.1*	– –	– –	4 *101.6*	0.30 *0.1*
1¼ *32*	1.660 *42.4*	300 *20.7*	4 *101.6*	0.60 *0.3*	– –	– –	4 *101.6*	0.60 *0.3*
1½ *40*	1.900 *48.3*	300 *20.7*	4 *101.6*	0.80 *0.4*	– –	– –	4 *101.6*	0.80 *0.4*
2 *50*	2.375 *60.3*	300 *20.7*	4 *101.6*	1.00 *0.5*	4 *101.6*	1.00 *0.5*	4 *101.6*	1.00 *0.5*
2½ *65*	2.875 *73.0*	300 *20.7*	6 *152.4*	1.60 *0.7*	6 *152.4*	1.60 *0.7*	6 *152.4*	1.60 *0.7*
3 *80*	3.500 *88.9*	300 *20.7*	6 *152.4*	2.00 *0.9*	6 *152.4*	2.00 *0.9*	6 *152.4*	2.00 *0.9*
4 *100*	4.500 *114.3*	300 *20.7*	6 *152.4*	4.50 *2.0*	6 *152.4*	4.50 *2.0*	– –	– –

Figure 7088 available in Nominal Pipe Sizes 1" through 4" only.
Figure 7089 available in Nominal Pipe Sizes 2" through 4" only.
Figure 7090 available in Nominal Pipe Sizes ½" through 3" only.

FIG. 7088 - Groove by Thread

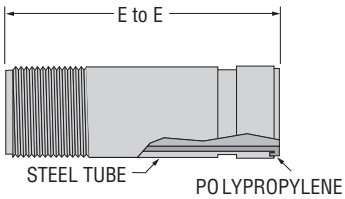


FIG. 7089 - Groove by Groove

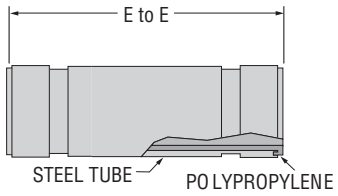


FIG. 7090 - Thread by Thread

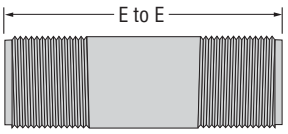


FIG. 7091

Gruvlok® DI-LOK® CTS Groove x IPS Groove Dielectric Fitting

The Gruvlok Fig. 7091 DI-LOK Fitting prevents the formation of a galvanic cell between grooved end steel pipe and copper tube. The separation of copper from steel by the fitting virtually eliminates the galvanic cell created by the dissimilar metals.

The DI-LOK Fitting is designed for use at temperatures from -40˚F to 230˚F (-40˚C to 110˚C) and pressures to 300 psig (20.7 bar) in a wide range of applications.

NSF/ANSI 61

UPC

C ®

Hot Water / Annex G

LEAD FREE

MATERIAL SPECIFICATIONS

HOUSING: Seamless Carbon Steel to ASTM A106

COATING: Nylon conforming to ANSI/NSF-61

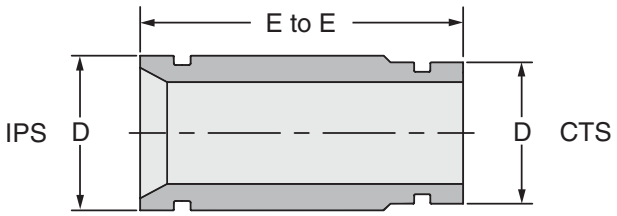


FIGURE 7091 DI-LOK NIPPLE

Nominal Size	Copper (CTS) D Actual	Steel (IPS) D Actual	End to End	Approx. Wt. Ea.
IPS	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.125 *53.98*	2.375 *60.33*	4.0 *101.60*	1.76 *0.80*
2½ *65*	2.625 *66.68*	2.875 *73.03*	6.0 *152.40*	3.66 *1.66*
3 *80*	3.125 *79.38*	3.500 *88.90*	6.0 *152.40*	5.23 *2.37*
4 *100*	4.125 *104.78*	4.500 *114.30*	6.0 *152.40*	6.88 *3.12*
6 *150*	6.125 *155.58*	6.625 *168.28*	6.0 *152.40*	13.80 *6.26*
8 *200*	8.125 *206.38*	8.625 *219.07*	6.0 *152.40*	18.91 *8.58*

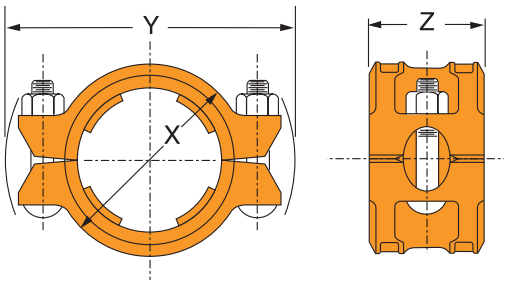
For installation and assembly of grooved-end connections, see "Fig. 6400 Gruvlok Rigid Coupling", "Fig. 7400 Gruvlok Rigidlite Coupling" and "Fig. 7012 Gruvlok Flange".

FIG. 7005

Roughneck® Coupling

c UL us LISTED

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.



The Fig. 7005 Roughneck Coupling is an effective and reliable way of joining plain-end or beveled end pipe. The Roughneck Coupling is ideal for use in a variety of applications including mining, process piping, manifold piping and oilfield services. The unique gripper action provides a positive pipe joint and allows for working pressure ratings up to 750 PSI (52 bar) for schedule 40 pipe. Contact an Anvil Representative for schedule 10 pressure ratings.

MATERIAL SPECIFICATIONS

HOUSING: Ductile Iron conforming to ASTM A 536, Grade 65-45-12 or Malleable Iron conforming to ASTM A 47, Grade 32510.

BOLTS: SAE J429, Grade 5, Zinc Electroplated

HEAVY HEX NUTS: ASTM A563, Grade A, Zinc Electroplated

GRIPPERS: 2"-8" heat treated, electroplated carbon steel. 10"-16" heat treated stainless steel.

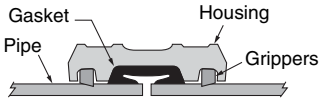
COATINGS: Rust inhibiting paint - Color: Orange Standard, (2" - 12") Hot Dipped Zinc Galvanized Optional, Other Colors Available (IE: RAL3000 and RAL9000). For other Coating requirements contact an Anvil Representative.

GASKET: Grade E (EPDM) or Grade T (Nitrile) Elastomers with properties as designed by ASTM D 2000 for each gasket grade.

FIGURE 7005 ROUGHNECK® COUPLING

Nominal Size	O.D.	Max. Wk. Pressure	Max. End Load	No. of Grippers	Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	Min.	Max	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*		*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-m*	*Ft.-Lbs./N-m*	*Lbs./Kg*
2 *50*	2.375 *60.3*	750 *51.7*	3,323 *14.78*	8	3¾ *95*	6⅜ *162*	3½ *89*	2	⅝ x 3¼ -	150 *203*	190 *257*	6.6 *3.0*
2½ *65*	2.875 *73.0*	600 *41.4*	3,895 *17.33*	8	4¼ *108*	7⅛ *181*	3½ *89*	2	⅝ x 3¼ -	150 *203*	190 *257*	7.4 *3.4*
3 *80*	3.500 *88.9*	600 *41.4*	5,773 *25.68*	8	4⅞ *124*	8⅛ *206*	3½ *89*	2	¾ x 4½ -	200 *271*	250 *339*	10.5 *4.8*
4 *100*	4.500 *114.3*	450 *31.0*	7,157 *31.84*	8	6⅜ *162*	9⅜ *238*	4⅛ *105*	2	¾ x 4½ -	200 *271*	250 *339*	16.4 *7.4*
5 *125*	5.563 *141.3*	350 *24.1*	8,507 *37.84*	8	7½ *191*	11⅛ *283*	4⅜ *111*	2	⅞ x 5 -	250 *339*	300 *406*	23.8 *10.8*
6 *150*	6.625 *168.3*	300 *20.7*	10,341 *46.00*	12	8¾ *222*	12⅞ *327*	4⅜ *111*	2	1 x 6 -	250 *339*	300 *406*	31.7 *14.4*
8 *200*	8.625 *219.1*	300 *20.7*	17,528 *77.97*	12	10⅞ *276*	14½ *368*	4½ *114*	4	⅞ x 5 -	250 *339*	300 *406*	38.6 *17.5*
10 *250*	10.750 *273.1*	300 *20.7*	27,229 *121.12*	8	12⅝ *321*	18 *457*	5⅜ *137*	4	1 x 6½ -	500 *678*	600 *814*	40 *18.1*
12 *300*	12.750 *323.9*	250 *17.2*	31,919 *141.98*	12	14⅞ *378*	20¼ *514*	5⅜ *137*	4	1 x 6½ -	550 *746*	700 *949*	56 *25.4*
14 *350*	14.000 *355.6*	200 *13.8*	30,788 *136.95*	12	16¾ *425*	22⅛ *562*	6¼ *159*	4	1 x 6½ -	550 *746*	700 *949*	88 *39.9*
16 *400*	16.000 *406.4*	150 *10.3*	30,159 *134.15*	12	18¾ *476*	24 *610*	6¼ *159*	4	1 x 6½ -	550 *746*	700 *949*	95 *43.1*

For additional details see "Coupling Data Chart Notes" on page 17.
§ – For additional Bolt Torque information, see page 222.
See Installation & Assembly directions on page 204.
Not for use in copper or PVC systems.



Working pressure and end load are based on a properly assembled Roughneck coupling with bolts fully torqued to the above specifications, on plain-end or beveled standard wall steel pipe and Gruvlok Plain- End Fittings.

Roughneck Couplings are designed to be used on plain-end pipe and Gruvlok Plain-End Fittings only. For externally coated pipe applications, contact an Anvil Representative.

Not recommended for use on steel pipe with a hardness greater than 150 Brinell, Stainless Steel, plastic, HDPE, cast iron or other brittle pipe.

Not recommended for pipe schedule transitioning

Suitable for schedule 10 steel pipe, for pressure ratings contact an Anvil Representative.

*Bolt torque ratings shown must be applied at installation.

GRUVLOK PLAIN-END FITTINGS

Gruvlok plain-end fittings are manufactured to provide minimum pressure drop and uniform flow. Fittings are designed for use with the Fig. 7005 Roughneck Couplings only.

Gruvlok plain-end fittings are available in sizes through 8" nominal pipe size in a variety of styles. Depending on size and configuration, fittings are either segment-welded steel or forged steel.

Fittings are normally coated with a rust inhibiting paint.
Other coatings including Hot Dipped Zinc Galvanizing, are available.

MATERIAL SPECIFICATIONS

SEGMENT WELDED STEEL FITTINGS:
Sizes 2" - 4" Carbon Steel pipe conforming to ASTM A 53, Type "F";
Sizes 5" - 8"; Carbon Steel pipe conforming to ASTM A 53, Type "E" or "S", Grade "B".

STEEL FITTINGS: Forged Steel conforming to ASTM A 106.

ADAPTER FLANGES:
Class 150 - Carbon Steel conforming to ANSI B16.5
Class 300 - Carbon Steel conforming to ANSI B16.5

FITTING SIZE

Nominal Size	O.D.	Nominal Size	O.D.
In./DN(mm)	*In./mm*	*In./DN(mm)*	*In./mm*
2 *50*	2.375 *60.3*	4 *100*	4.500 *114.3*
2½ *65*	2.875 *73.0*	5 *140*	5.563 *141.3*
3 *80*	3.500 *88.9*	6 *150*	6.625 *168.3*
3½ *90*	4.000 *101.6*	8 *200*	8.625 *219.1*

The Fitting Size Chart is used to determine the O.D. of the pipe that the fittings is to be used with. Gruvlok® Fittings are identified by either the Nominal size in inches or the Pipe O.D. In./mm.

FIG. 7050P - 90° Elbow

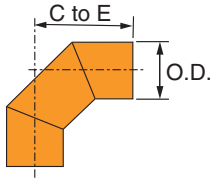


FIGURE 7050P
90° ELBOW

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4¾ *121*	2.7 *1.2*
2½ *65*	2.875 *73.0*	5½ *140*	4.8 *2.2*
3 *80*	3.500 *88.9*	6¼ *159*	7.2 *3.3*
4 *100*	4.500 *114.3*	7¾ *197*	12.3 *5.6*
5 *125*	5.563 *141.3*	9½ *241*	13.4 *6.1*
6 *150*	6.625 *168.3*	11 *279*	31 *14.1*
8 *200*	8.625 *219.1*	11 *279*	38.7 *17.6*

FIG. 7051P - 45° Elbow

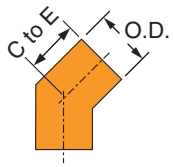


FIGURE 7051P
45° ELBOW

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3⅛ *79*	2.0 *0.9*
2½ *65*	2.875 *73.0*	3½ *89*	3.5 *1.6*
3 *80*	3.500 *88.9*	3¾ *95*	4.8 *2.2*
4 *100*	4.500 *114.3*	4¼ *108*	8.0 *3.6*
5 *125*	5.563 *141.3*	5⅛ *130*	9.2 *4.2*
6 *150*	6.625 *168.3*	5¾ *146*	18.5 *8.4*
8 *200*	8.625 *219.1*	6 *152*	24.9 *11.3*

FIG. 7060P - Tee

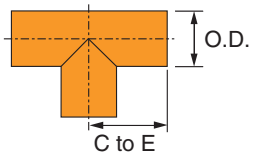


FIGURE 7060P
TEE

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4¼ *108*	3.5 *1.6*
2½ *65*	2.875 *73.0*	4¾ *121*	6.2 *2.8*
3 *80*	3.500 *88.9*	5⅛ *130*	8.6 *3.9*
4 *100*	4.500 *114.3*	5⅞ *149*	13.8 *6.3*
5 *125*	5.563 *141.3*	6⅞ *175*	21.7 *9.8*
6 *150*	6.625 *168.3*	7⅝ *194*	30.9 *14.0*
8 *200*	8.625 *219.1*	10 *254*	61.1 *27.7*

GRUVLOK PLAIN-END FITTINGS

FIG. 7068P - Cross

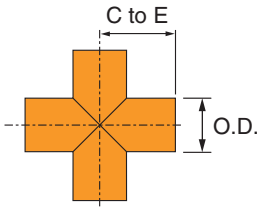


FIGURE 7068P - CROSS

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	4¼ 108	4.4 2.0
2½ 65	2.875 73.0	4¾ 121	7.8 3.5
3 80	3.500 88.9	5⅛ 130	10.7 4.9
4 100	4.500 114.3	5⅞ 149	17 7.7
5 125	5.563 141.3	6⅞ 175	26.7 12.1
6 150	6.625 168.3	7⅝ 194	37.7 17.1
8 200	8.625 219.1	10 254	74.6 33.8

FIG. 7069P - 45° Lateral

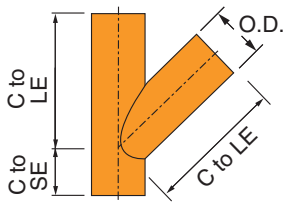


FIGURE 7069P - 45° LATERAL

Nominal Size	O.D.	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	7¼ 184	2¾ 70	5.1 2.3
2½ 65	2.875 73.0	7¾ 197	3 76	9.5 4.3
3 80	3.500 88.9	8¾ 222	3¼ 83	12.8 5.8
4 100	4.500 114.3	10¾ 273	3¾ 95	22.2 10.1
5 125	5.563 141.3	12¾ 324	4 102	38.0 17.2
6 150	6.625 168.3	14 356	4½ 114	54.0 24.5
8 200	8.625 219.1	18 457	6 152	92.0 41.7

FIG. 7071P - 90° True Wye

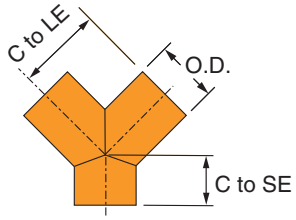


FIGURE 7071P - 90° TRUE WYE

Nominal Size	O.D.	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	4¼ 108	2¾ 70	3.5 1.6
2½ 65	2.875 73.0	4¾ 121	3 76	6.2 2.8
3 80	3.500 88.9	5⅛ 130	3¼ 83	8.5 3.9
4 100	4.500 114.3	5⅞ 149	3¾ 95	14.0 6.4
5 125	5.563 141.3	6⅞ 175	4 102	21.6 9.8
6 150	6.625 168.3	7⅝ 194	4½ 114	31.2 14.2
8 200	8.625 219.1	10 254	6 152	53.6 24.3

FIG. 7061P - Reducing Tee

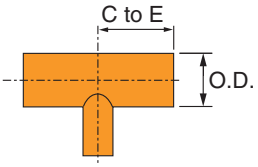


FIGURE 7061P REDUCING TEE

Nominal Size	Center To End	Approx. Wt. Ea.	Nominal Size	Center To End	Approx. Wt. Ea.
In./DN(mm)	In./mm	Lbs./Kg	In./DN(mm)	In./mm	Lbs./Kg
3 x 3 x 2 80 x 80 x 50	5½ 140	7.1 3.2	8 x 8 x 4 200 x 200 x 100	10 254	46.0 20.9
4 x 4 x 2 100 x 100 x 50	5⅞ 149	11.3 5.1	8 x 8 x 5 200 x 200 x 125	10 254	48.0 21.8
4 x 4 x 2½ 100 x 100 x 65	5⅞ 149	11.6 5.3	8 x 8 x 6 200 x 200 x 150	10 254	50.0 22.7
4 x 4 x 3 100 x 100 x 80	5⅞ 149	11.9 5.4	10 x 10 x 4 250 x 250 x 100	11½ 292	74.0 33.6
6 x 6 x 2 150 x 150 x 50	7⅝ 194	24.6 11.2	10 x 10 x 6 250 x 250 x 150	11½ 292	78.0 35.4
6 x 6 x 3 150 x 150 x 80	7⅝ 194	25.4 11.5	10 x 10 x 8 250 x 250 x 200	11½ 292	86.0 39.0
6 x 6 x 4 150 x 150 x 100	7⅝ 194	26.2 11.9	12 x 12 x 6 300 x 300 x 150	13½ 343	112.0 50.8
8 x 8 x 2 200 x 200 x 50	10 254	42.0 19.1	12 x 12 x 8 300 x 300 x 200	13½ 343	118.0 53.5
8 x 8 x 3 200 x 200 x 80	10 254	44.0 20.0	12 x 12 x 10 300 x 300 x 250	13½ 343	130.0 59.0

FIG. 7050LRP - 90° LR Elbow

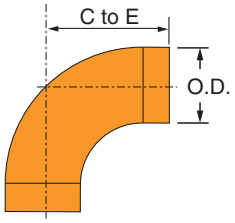


FIGURE 7050 LRP - 90° LR ELBOW

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	5 127	2.5 1.1
2½ 65	2.875 73.0	5¾ 146	4.9 2.2
3 80	3.500 88.9	6½ 165	6.5 2.9
4 100	4.500 114.3	8 203	11.5 5.2
5 125	5.563 141.3	9¾ 248	21.5 9.8
6 150	6.625 168.3	11¼ 286	28.5 12.9
8 200	8.625 219.1	15 381	56.7 25.7

GRUVLOK PLAIN-END FITTINGS

FIG. 7051LRP - 45° LR Elbow

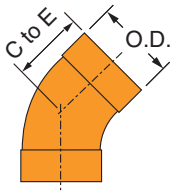


FIGURE 7051 LRP - 45° LR ELBOW

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3⅜ *86*	1.8 *0.8*
2½ *65*	2.875 *73.0*	3¾ *95*	3.6 *1.6*
3 *80*	3.500 *88.9*	4 *102*	4.5 *2.0*
4 *100*	4.500 *114.3*	4½ *114*	7.5 *3.4*
5 *125*	5.563 *141.3*	5⅜ *137*	13.8 *6.3*
6 *150*	6.625 *168.3*	6 *152*	17.3 *7.8*
8 *200*	8.625 *219.1*	8 *203*	34.0 *15.4*

FIG. 7075P - Bull Plug

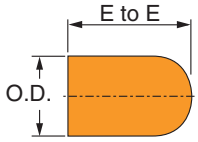


FIGURE 7075P - BULL PLUG

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4 *102*	2.3 *1.0*
2½ *65*	2.875 *73.0*	5 *127*	3.0 *1.4*
3 *80*	3.500 *88.9*	6 *152*	4.5 *2.0*
4 *100*	4.500 *114.3*	7 *178*	7.5 *3.4*
5 *125*	5.563 *141.3*	8½ *216*	12.5 *5.7*
6 *150*	6.625 *168.3*	10 *254*	17.0 *7.7*
8 *200*	8.625 *219.1*	11 *279*	29.0 *13.2*

FIG. 7084P & FIG. 7085P

(Plain-End x Class 150 or 300) Flange Nipples

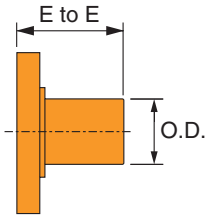


FIGURE 7084P
PLAIN-END X CLASS 150 FLANGE NIPPLES

Nominal Size	O.D.	End To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4 *102*	6.0 *2.7*
2½ *65*	2.875 *73.0*	4 *102*	9.2 *4.2*
3 *80*	3.500 *88.9*	4 *102*	10.4 *4.7*
4 *100*	4.500 *114.3*	6 *152*	19.1 *8.7*
5 *125*	5.563 *141.3*	6 *152*	23.0 *10.4*
6 *150*	6.625 *168.3*	6 *152*	29.5 *13.4*
8 *200*	8.625 *219.1*	6 *152*	43.5 *19.7*

FIGURE 7085P
PLAIN-END X CLASS 300 FLANGE NIPPLES

End To End	Approx. Wt. Ea.
In./mm	*Lbs./Kg*
4 *102*	8.2 *3.7*
4 *102*	11.9 *5.4*
4 *102*	15.5 *7.0*
6 *152*	28.0 *12.7*
6 *152*	35.0 *15.9*
6 *152*	50.0 *22.7*
6 *152*	72.0 *32.7*

GRUVLOK PLAIN-END FITTINGS

ADAPTER NIPPLES

FIG. 7080P
Plain x Grooved

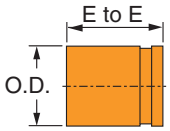


FIG. 7081P
Plain x Thread

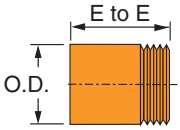


FIG. 7082P
Plain x Bevel

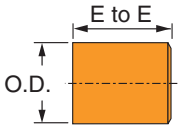


FIGURE 7080P, 7081P, 7082P ADAPTER NIPPLES

Nominal Size	O.D.	End To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4 & 6 *102 & 152*	1.2 *0.5*
2½ *65*	2.875 *73.0*	4 & 6 *102 & 152*	1.9 *0.9*
3 *80*	3.500 *88.9*	4 & 6 *102 & 152*	2.5 *1.1*
4 *100*	4.500 *114.3*	4 & 6 *102 & 152*	5.5 *2.5*
6 *150*	6.625 *168.3*	4 & 6 *102 & 152*	9.5 *4.3*
8 *200*	8.625 *219.1*	4 & 6 *102 & 152*	14.2 *6.4*

FIG. 7077P
Swaged Nipples

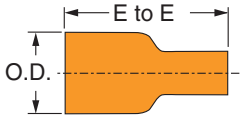
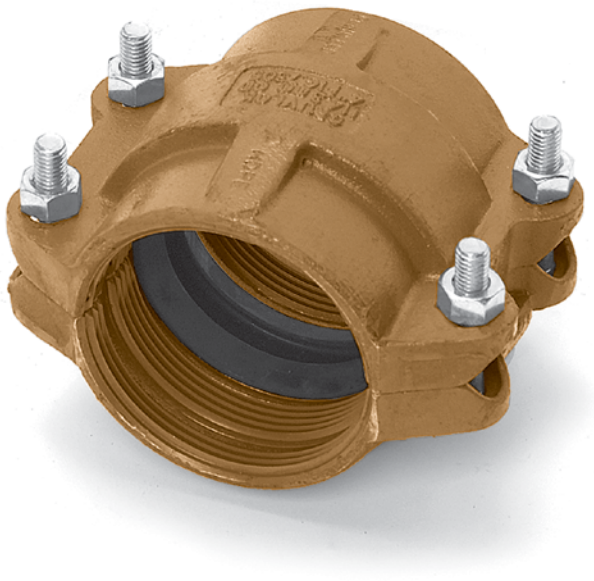


FIGURE 7077P SWAGED NIPPLES

Nominal Size	End Center To End	Approx. Wt. Ea.	Nominal Size	End Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*	*In./DN(mm)*	*In./mm*	*Lbs./Kg*
2½ x 2 *65 x 50*	7 *178*	3.0 *1.4*	6 x 2 *150 x 50*	12 *305*	17.0 *7.7*
3 x 2 *80 x 50*	8 *203*	4.5 *2.0*	6 x 2½ *150 x 65*	12 *305*	17.0 *7.7*
3 x 2½ *80 x 65*	8 *203*	4.5 *2.0*	6 x 3 *150 x 80*	12 *305*	17.0 *7.7*
4 x 2 *100 x 50*	9 *229*	7.5 *3.4*	6 x 4 *150 x 100*	12 *305*	17.0 *7.7*
4 x 2½ *100 x 65*	9 *229*	7.5 *3.4*	6 x 5 *150 x 125*	12 *305*	17.0 *7.7*
4 x 3 *100 x 80*	9 *229*	7.5 *3.4*	8 x 3 *200 x 80*	13 *330*	29.0 *13.2*
5 x 2 *125 x 50*	11 *279*	11.5 *5.2*	8 x 4 *200 x 100*	13 *330*	29.0 *13.2*
5 x 3 *125 x 80*	11 *279*	11.5 *5.2*	8 x 5 *200 x 125*	13 *330*	29.0 *13.2*
5 x 4 *125 x 100*	11 *279*	11.5 *5.2*	8 x 6 *200 x 150*	13 *330*	29.0 *13.2*

See chart on page 159 for O.D.

FIG. 7305
HDPE Coupling



The Gruvlok Figure 7305 HDPE Coupling is a cost effective, easy to assemble, mechanical joint for HDPE pipe conforming to ASTM F714, D2447, D3000, or D3035 with wall thicknesses ranging from SDR 32.5 to SDR 7.3. The Gruvlok coupling method also eliminates the need for costly fusion equipment.

Each coupling uses four bolts to drive sharply machined teeth into the outside of the HDPE pipe. When the teeth effectively grip into the pipe, it provides a secure and rigid mechanical connection with pressure capabilities exceeding that of the HDPE pipe itself. The banks of teeth are positioned away from the gasket to enhance the gasket's sealing ability throughout the operating temperature range.

The Figure 7305 HDPE coupling also provides a low profile contoured housing with ramps along the outside diameter. This allows the coupling to slide over most obstacles when long lengths of the pipeline are relocated.

MATERIAL SPECIFICATIONS

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATING:
Rust inhibiting paint – Color: Orange
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

HARDWARE:
Bolts: SAE J429, Grade 5, Zinc Electroplated

Heavy Hex Nuts: ASTM A563, Grade A, Zinc Electroplated

Washers: Zinc Coated, Hardened Steel Washers per ASTM F436

GASKETS: Properties in accordance with ASTM D 2000

Grade E EPDM (Green color code)
Service Temperature Range: -30°F to 230°F (-34°C to 110°C).
Recommended for water service, dilute acids, alkaline solutions, oil free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade T Nitrile (Orange color code)
Service Temperature Range: -20°F to 180°F (-29°C to 82°C).
Recommended for petroleum applications, air with oil vapor, vegetable and mineral oils.
NOT FOR USE WITH HOT WATER OR HOT AIR.

For specific chemical applications, reference the Gruvlok Gasket Recommendations section of the Gruvlok catalog.

⚠ WARNING

1. Gruvlok products for HDPE pipe must be installed using Gruvlok Xtreme™ Temperature Lubricant.
2. The listed gasket temperature rating may exceed the manufacturer's temperature rating for HDPE pipe. Consult with the HDPE pipe manufacturer for appropriate service temperatures before use.
3. The Figure 7305 HDPE Coupling is intended for use on HDPE Pipe only. Use of other plastic pipe materials is prohibited.

FIG. 7305

HDPE Coupling

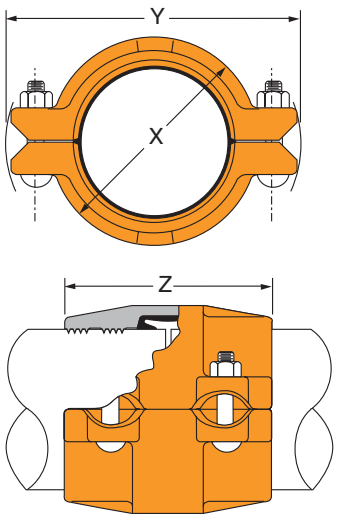


FIGURE 7305 HDPE COUPLING							
Nominal Size	Pipe O.D.	Coupling Dimensions			Coupling Bolts		Approx. Wt. Ea.
		X	Y	Z	Qty.	Size	
In./DN(mm)	*In./DN(mm)*	*In./DN(mm)*	*In./DN(mm)*	*In./DN(mm)*		*In.*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3⅜ *86*	5½ *140*	4⅝ *117*	4	½ x 2⅜	4.5 *2.0*
3 *80*	3.500 *88.9*	4⅝ *117*	6¾ *171*	4⅝ *117*	4	½ x 3	8.5 *3.9*
4 *100*	4.500 *114.3*	5¾ *146*	8 *203*	5¾ *146*	4	½ x 3	12.0 *5.4*
6 *150*	6.625 *168.3*	7⅞ *200*	11 *279*	5⅞ *149*	4	⅝ x 3½	18.0 *8.2*
8 *200*	8.625 *219.1*	10⅜ *262*	13¼ *337*	6⅛ *156*	4	⅝ x 3¾	30.0 *13.6*
10 *250*	10.750 *273.1*	12⅝ *319*	15¾ *400*	6½ *165*	4	¾ x 4¾	43.0 *19.5*
12 *300*	12.750 *323.9*	14½ *368*	17⅞ *454*	7⅛ *181*	4	¾ x 4¾	58.0 *26.3*
14 *350*	14.000 *355.6*	16⅝ *416*	20⅜ *518*	10⅛ *256*	4	1 x 5½	108.0 *49.1*
16 *400*	16.000 *406.4*	18½ *467*	21⅜ *541*	10⅛ *256*	4	1 x 4½	97.2 *44.2*
18 *450*	18.000 *457.2*	20⅜ *515*	23½ *595*	10⅛ *256*	4	1 x 4½	111.1 *50.5*

The pressure rating of the Figure 7305 HDPE Coupling is determined by the working pressure of the HDPE pipe installed. Consult with the HDPE pipe manufacturer for the appropriate working pressure before use. HDPE working pressures are determined by wall thickness, pipe composition, and applicable service temperature.

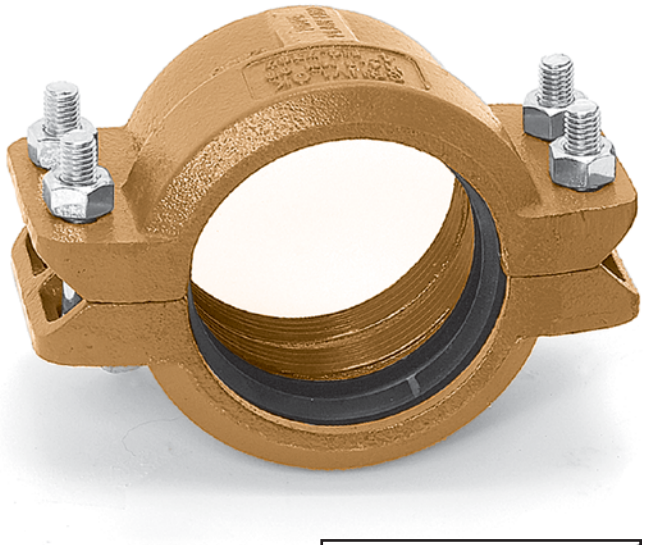
HDPE PIPE DIMENSIONAL SPECIFICATIONS										
Nominal Size	O.D. Actual	O.D. Tolerance +/-	Out of Roundness Tolerance +/-	Pipe Wall Thickness						
				SDR 7.3	SDR 9	SDR 11	SDR 15.5	SDR 17	SDR 21	SDR 32.5
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
2 *50*	2.375 *60.3*	0.006 *0.15*	0.035 *0.89*	0.325 *8.3*	0.264 *6.7*	0.216 *5.5*	0.153 *3.9*	0.140 *3.6*	0.113 *2.9*	- -
3 *80*	3.500 *88.9*	0.016 *0.41*	0.040 *1.02*	0.479 *12.2*	0.389 *9.9*	0.318 *8.1*	0.226 *5.7*	0.206 *5.2*	0.167 *4.2*	0.108 *2.7*
4 *100*	4.500 *114.3*	0.020 *0.51*	0.040 *1.02*	0.616 *15.6*	0.500 *12.7*	0.409 *10.4*	0.290 *7.4*	0.265 *6.7*	0.214 *5.4*	0.138 *3.5*
6 *150*	6.625 *168.3*	0.030 *0.76*	0.050 *1.27*	0.908 *23.1*	0.736 *18.7*	0.602 *15.3*	0.427 *10.8*	0.327 *8.3*	0.265 *6.7*	0.204 *5.2*
8 *200*	8.625 *219.1*	0.039 *0.99*	0.075 *1.91*	1.182 *30.0*	0.958 *24.3*	0.784 *19.9*	0.556 *14.1*	0.507 *12.9*	0.340 *8.6*	0.265 *6.7*
10 *250*	10.750 *273.1*	0.048 *1.22*	0.075 *1.91*	1.473 *37.4*	1.194 *30.3*	0.977 *24.8*	0.694 *17.6*	0.632 *16.1*	0.512 *13.0*	0.331 *8.4*
12 *300*	12.750 *323.9*	0.057 *1.45*	0.075 *1.91*	1.747 *44.4*	1.417 *36.0*	1.159 *29.4*	0.823 *20.9*	0.750 *19.1*	0.607 *15.4*	0.392 *10.0*
14 *350*	14.000 *355.6*	0.063 *1.60*	0.075 *1.91*	1.918 *48.7*	1.556 *39.5*	1.273 *32.3*	0.903 *22.9*	0.824 *20.9*	0.667 *16.9*	0.431 *10.9*
16 *400*	16.000 *406.4*	0.072 *1.83*	0.075 *1.91*	2.192 *55.7*	1.778 *45.2*	1.455 *37.0*	1.032 *26.2*	0.941 *23.9*	0.762 *19.4*	0.492 *12.5*
18 *450*	18.000 *457.2*	0.081 *2.06*	0.075 *1.91*	2.466 *62.6*	2.000 *50.8*	1.636 *41.6*	1.161 *29.5*	1.059 *26.9*	0.857 *21.8*	0.554 *14.1*

HDPE Pipe Dimensions per ASTM F714, ASTM D2447, and ASTM D3035

See Installation & Assembly directions on page 208.

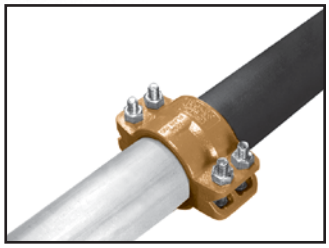
FIG. 7307

HDPE Transition Coupling



The Gruvlok Figure 7307 HDPE Transition Coupling is a cost effective, easy to assemble, mechanical joint intended to connect HDPE pipe to Gruvlok standard weight roll or cut grooved steel pipe, lightweight roll grooved pipe, or Gruvlok grooved-end fittings and valves. The Figure 7307 is compatible with HDPE pipe conforming to ASTM F714, D2447, D3000, or D3035 having wall thicknesses ranging from SDR 32.5 to SDR 7.3 and any schedule steel pipe conforming to Gruvlok's standard pipe specifications.

Each coupling uses four bolts to drive sharply machined teeth into the outside of the HDPE pipe and engages a keyed section into the grooved steel pipe or fitting. When the teeth effectively grip into the pipe, it provides a secure and rigid mechanical connection with pressure capabilities exceeding that of the HDPE pipe itself without the need for costly fusion equipment.



The banks of teeth are positioned away from the gasket to enhance the coupling's sealing ability throughout the operating temperature range. As a result, the temperature and pressure capabilities of the Figure 7307 Transition Coupling exceed the highest temperature and pressure ratings of the HDPE pipe.

The Figure 7307 HDPE Transition Coupling also features a low-profile contoured housing with ramps along the outside diameter. This allows the coupling to slide over most obstacles when long lengths of the pipeline are relocated.

MATERIAL SPECIFICATIONS

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATING:
Rust inhibiting paint – Color: Orange
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

HARDWARE:
Bolts: SAE J429, Grade 5, Zinc Electroplated

Heavy Hex Nuts: ASTM A563, Grade A, Zinc Electroplated

Washers: Zinc Coated, Hardened Steel Washers per ASTM F436

GASKETS: Properties in accordance with ASTM D 2000

Grade E EPDM (Green color code)
Service Temperature Range: -30°F to 230°F (-34°C to 110°C).
Recommended for water service, dilute acids, alkaline solutions, oil free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade T Nitrile (Orange color code)
Service Temperature Range: -20°F to 180°F (-29°C to 82°C).
Recommended for petroleum applications, air with oil vapor, vegetable and mineral oils.
NOT FOR USE WITH HOT WATER OR HOT AIR.

For specific chemical applications, reference the Gruvlok Gasket Recommendations section of the Gruvlok catalog.

⚠ WARNING

1. Gruvlok products for HDPE pipe must be installed using Gruvlok Xtreme™ Temperature Lubricant.
2. The listed gasket temperature rating may exceed the manufacturer's temperature rating for HDPE pipe. Consult with the HDPE pipe manufacturer for appropriate service temperatures before use.
3. The Figure 7307 HDPE Transition Coupling is intended for use on HDPE Pipe only. Use of other plastic pipe materials is prohibited.

FIG. 7307

HDPE Transition Coupling

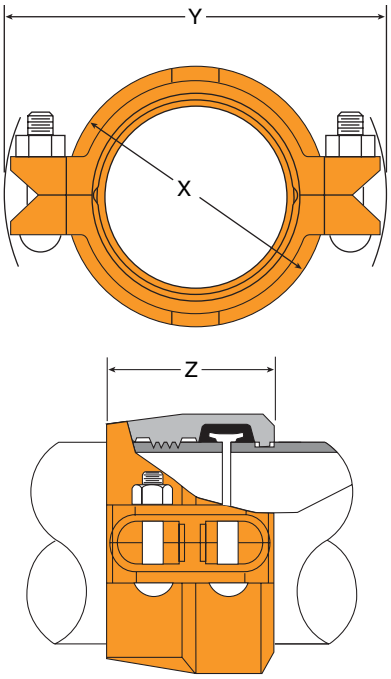


FIGURE 7307 HDPE TRANSITION COUPLING							
Nominal Size	Pipe O.D.	Coupling Dimensions			Coupling Bolts		Approx. Wt. Ea.
		X	Y	Z	Qty.	Size	
In./DN(mm)	*In./DN(mm)*	*In./DN(mm)*	*In./DN(mm)*	*In./DN(mm)*		*In.*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3½ *89*	5⅞ *149*	3⅛ *79*	4	½ x 2⅜	4.5 *2.0*
3 *80*	3.500 *88.9*	4⅝ *117*	7 *178*	3⅛ *79*	4	½ x 3	8.5 *3.9*
4 *100*	4.500 *114.3*	5⅞ *149*	8¼ *210*	3¾ *95*	4	½ x 3	12.0 *5.4*
6 *150*	6.625 *168.3*	8 *203*	11⅛ *283*	3¾ *95*	4	⅝ x 3½	18.0 *8.2*
8 *200*	8.625 *219.1*	10⅜ *262*	13½ *343*	4¼ *108*	4	⅝ x 3¾	30.0 *13.6*
10 *250*	10.750 *273.1*	12¾ *324*	16¾ *425*	5 *127*	4	¾ x 4¾	43.0 *19.5*
12 *300*	12.750 *323.9*	14¾ *375*	19 *483*	5 *127*	4	⅞ x 5	58.0 *26.3*

The pressure rating of the Figure 7307 HDPE Transition Coupling is determined by the working pressure of the HDPE pipe installed. Consult with the HDPE pipe manufacturer for the appropriate working pressure before use. HDPE working pressures are determined by wall thickness, pipe composition, and applicable service temperature.

HDPE PIPE DIMENSIONAL SPECIFICATIONS										
Nominal Size	Pipe O.D.	O.D. Tolerance +/-	Out of Roundness Tolerance +/-	Pipe Wall Thickness						
				SDR 7.3	SDR 9	SDR 11	SDR 15.5	SDR 17	SDR 21	SDR 32.5
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
2 *50*	2.375 *60.3*	0.006 *0.15*	0.035 *0.89*	0.325 *8.3*	0.264 *6.7*	0.216 *5.5*	0.153 *3.9*	0.140 *3.6*	0.113 *2.9*	- -
3 *80*	3.500 *88.9*	0.016 *0.41*	0.040 *1.02*	0.479 *12.2*	0.389 *9.9*	0.318 *8.1*	0.226 *5.7*	0.206 *5.2*	0.167 *4.2*	0.108 *2.7*
4 *100*	4.500 *114.3*	0.020 *0.51*	0.040 *1.02*	0.616 *15.6*	0.500 *12.7*	0.409 *10.4*	0.290 *7.4*	0.265 *6.7*	0.214 *5.4*	0.138 *3.5*
6 *150*	6.625 *168.3*	0.030 *0.76*	0.050 *1.27*	0.908 *23.1*	0.736 *18.7*	0.602 *15.3*	0.427 *10.8*	0.327 *8.3*	0.265 *6.7*	0.204 *5.2*
8 *200*	8.625 *219.1*	0.039 *0.99*	0.075 *1.91*	1.182 *30.0*	0.958 *24.3*	0.784 *19.9*	0.556 *14.1*	0.507 *12.9*	0.340 *8.6*	0.265 *6.7*
10 *250*	10.750 *273.1*	0.048 *1.22*	0.075 *1.91*	1.473 *37.4*	1.194 *30.3*	0.977 *24.8*	0.694 *17.6*	0.632 *16.1*	0.512 *13.0*	0.331 *8.4*
12 *300*	12.750 *323.9*	0.057 *1.45*	0.075 *1.91*	1.747 *44.4*	1.417 *36.0*	1.159 *29.4*	0.823 *20.9*	0.750 *19.1*	0.607 *15.4*	0.392 *10.0*

HDPE Pipe Dimensions per ASTM F714, ASTM D2447, and ASTM D3035

For steel pipe requirements, refer to Gruvlok Groove Specifications for steel pipe in the Technical Data Section.

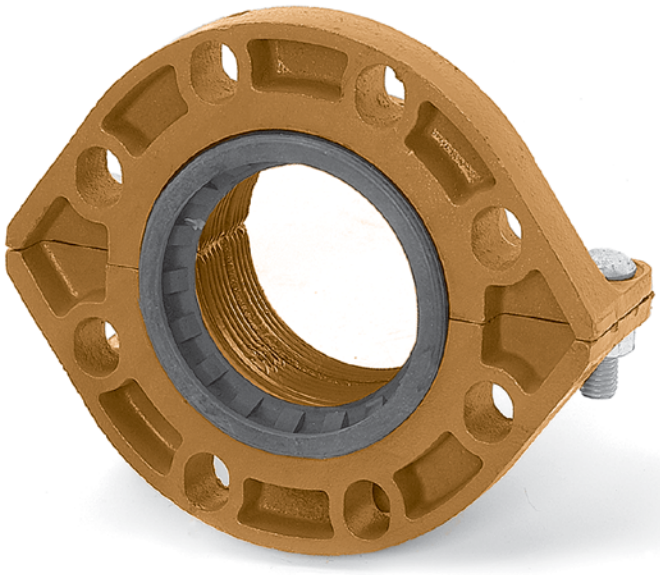
See Installation & Assembly directions on page 209.

FIG. 7312

HDPE Flange Adapter

The Gruvlok Figure 7312 HDPE Flange Adapter is a cost effective, easy to assemble, mechanical joint intended to connect HDPE pipe to any ASME/ANSI Class 125 or Class 150 flanged piping components without the need for costly fusion equipment. The Figure 7312 is compatible with HDPE pipe conforming to ASTM F714, D2447, D3000, or D3035 having wall thicknesses ranging from SDR 32.5 to SDR 7.3.

Each coupling uses two bolts to drive sharply machined teeth into the outside of the HDPE pipe. When the teeth effectively grip into the pipe, it provides a secure and rigid mechanical connection with pressure capabilities exceeding that of the HDPE pipe itself. The banks of teeth are positioned away from the gasket to enhance the coupling's sealing ability throughout the operating temperature range. As a result, the temperature and pressure capabilities of the Figure 7307 Transition Coupling exceed the highest temperature and pressure ratings of the HDPE pipe.



MATERIAL SPECIFICATIONS

HOUSING:
Ductile Iron conforming to ASTM A 536, Grade 65-45-12

COATING:
Rust inhibiting paint – Color: Orange
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact an Anvil Representative.

HARDWARE:
Bolts: SAE J429, Grade 5, Zinc Electroplated

Heavy Hex Nuts: ASTM A563, Grade A, Zinc Electroplated

Washers: Zinc Coated, Hardened Steel Washers per ASTM F436

GASKETS: Properties in accordance with ASTM D 2000

Grade E EPDM (Green color code)
Service Temperature Range: -30°F to 230°F (-34°C to 110°C).
Recommended for water service, dilute acids, alkaline solutions, oil free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade T Nitrile (Orange color code)
Service Temperature Range: -20°F to 180°F (-29°C to 82°C).
Recommended for petroleum applications, air with oil vapor, vegetable and mineral oils.
NOT FOR USE WITH HOT WATER OR HOT AIR.

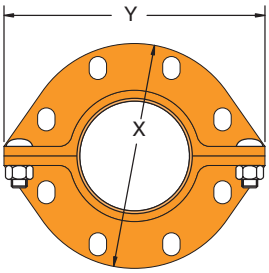
For specific chemical applications, reference the Gruvlok Gasket Recommendations section of the Gruvlok catalog.

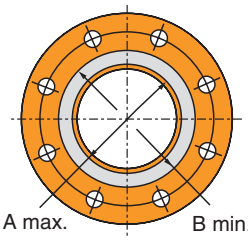
⚠ WARNING

1. Gruvlok products for HDPE pipe must be installed using Gruvlok Xtreme™ Temperature Lubricant.
2. The listed gasket temperature rating may exceed the manufacturer's temperature rating for HDPE pipe. Consult with the HDPE pipe manufacturer for appropriate service temperatures before use.
3. The Figure 7312 HDPE Flange Adapter is intended for use on HDPE Pipe only. Use of other plastic pipe materials is prohibited.

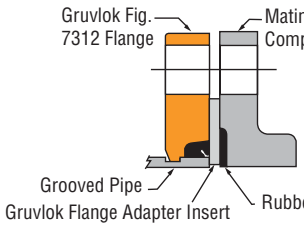
FIG. 7312

HDPE Flange Adapter

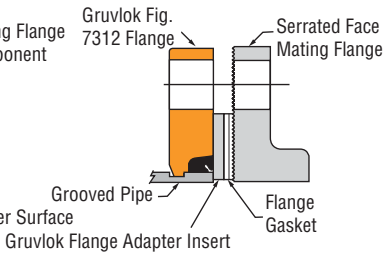




NOTE A



NOTES 1 and 2



NOTES 3 and 4

FIGURE 7312 HDPE FLANGE ADAPTER

Nominal Size	Pipe O.D.	Flange Dimensions			Sealing Surface		Latch Bolt		Mating Flange Bolts		Approx. Wt. Ea.
		X	Y	Z	A Max.	B Min.	Qty.	Size	Qty.	Size	
In./DN(mm)	*In./DN(mm)*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In.*		*In./mm*	*Lbs./Kg*
4 *100*	4.500 *114.3*	8⅞ *225*	10¼ *260*	3 *76*	4⅝ *117*	5⅜ *137*	2	⅝ x 2	8	⅝ x 3	12 *5.4*
6 *150*	6.625 *168.3*	11⅛ *283*	12¼ *311*	3½ *89*	6¾ *171*	7⅝ *194*	2	¾ x 3½	8	¾ x 3½	18 *8.2*
8 *200*	8.625 *219.1*	13½ *343*	14¾ *375*	3½ *89*	8¾ *222*	9⅞ *251*	2	¾ x 3½	8	¾ x 3½	30 *13.6*

A. The sealing surfaces A Max. to B Min. of the mating flange must be free from gouges, undulations and deformities of any type to ensure proper sealing of gasket.

B. Gruvlok Flanges are to be assembled on butterfly valves so as not to interfere with actuator or handle operation.

C. Do not use Gruvlok Flanges within 90 degrees of one another on standard fittings because the outside dimensions may cause interference.

D. Gruvlok Flanges should not be used as anchor points for tierods across non-restrained joints.

E. Fig. 7312 Gruvlok Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a Gruvlok Flange Adapter Insert is required for applications against rubber faced valves or other equipment. The Gruvlok Flange Adapter Insert is installed between the Gruvlok Flange sealing gasket and the mating flange or surface to provide a good sealing surface area.

F. Gruvlok Flanges are not recommended for use against formed rubber flanges.

G. The pressure rating of the Figure 7307 HDPE Transition Coupling is determined by the working pressure of the HDPE pipe installed. Consult with the HDPE pipe manufacturer for the appropriate working pressure before use. HDPE working pressures are determined by wall thickness, pipe composition, and applicable service temperature.

HDPE PIPE DIMENSIONAL SPECIFICATIONS

Nominal Size	Pipe O.D.	O.D. Tolerance +/-	Out of Roundness Tolerance +/-	Pipe Wall Thickness						
				SDR 7.3	SDR 9	SDR 11	SDR 15.5	SDR 17	SDR 21	SDR 32.5
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
4 *100*	4.500 *114.3*	0.020 *0.51*	0.040 *1.02*	0.616 *15.6*	0.500 *12.7*	0.409 *10.4*	0.290 *7.4*	0.265 *6.7*	0.214 *5.4*	0.138 *3.5*
6 *150*	6.625 *168.3*	0.030 *0.76*	0.050 *1.27*	0.908 *23.1*	0.736 *18.7*	0.602 *15.3*	0.427 *10.8*	0.327 *8.3*	0.265 *6.7*	0.204 *5.2*
8 *200*	8.625 *219.1*	0.039 *0.99*	0.075 *1.91*	1.182 *30.0*	0.958 *24.3*	0.784 *19.9*	0.556 *14.1*	0.507 *12.9*	0.340 *8.6*	0.265 *6.7*

HDPE Pipe Dimensions per ASTM F714, ASTM D2447, and ASTM D3035

See Installation & Assembly directions on page 210.

APPLICATIONS WHICH REQUIRE A GRUVLOK® FLANGE ADAPTER INSERT:

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruvlok Flange Adapter Insert between the valve and the Gruvlok Flange.

2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the rubber-faced flange.

3. When mating to a serrated flange surface, a standard fullfaced flange gasket is installed against the serrated flange face, and the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the standard flange gasket.

4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.

SOCK-IT® PIPING METHOD FITTINGS

The Gruvlok® Sock-It® Piping Method provides a quick, secure and reliable method of joining plain-end steel pipe. Several Sock-It configurations are available: tees with NPT outlets, reducing run tees with NPT outlets, straight couplings, 90 elbows, straight tees and reducing elbows. Pressure energized elastomeric gaskets provide the Sock-It with a leak tight seal. Specially designed lock bolts secure the pipe in the Sock-It Fitting, providing a fast, dependable way of joining small diameter plain-end pipe.

Working pressure ratings shown are for reference only and are based on schedule 40 pipe. For the latest UL/ULC Listed and FM approved pressure ratings versus pipe schedule see www.anvilintl.com or contact your local Anvil Sales Representative.

See Installation & Assembly directions on page 211.

FITTING SIZE			
Nominal Size	O.D.	Nominal Size	O.D.
In./DN(mm)	*In./mm*	*In./DN(mm)*	*In./mm*
½ *15*	0.840 *21.3*	1½ *40*	1.900 *48.3*
¾ *20*	1.050 *26.7*	2 *50*	2.375 *60.3*
1 *25*	1.315 *33.7*	2½ *65*	2.875 *73.0*
1¼ *32*	1.660 *42.4*		

The Fitting Size Chart is used to determine the O.D. of the pipe that the fittings is to be used with. Gruvlok Fittings are identified by either the Nominal size in inches or the Pipe O.D. in mm.

c UL us LISTED FM APPROVED

For Listings/Approval Details and Limitations, visit our website at www.anvilintl.com or contact an Anvil® Sales Representative.

NOTE: All Sock-It® fittings are UL/ULC Listed and FM Approved for 175 psi working pressure when used to join XL Pipe and Dyna-Flow Pipe.

MATERIAL SPECIFICATIONS

HOUSING: Cast iron ASTM A 126 CLASS A

BOLTS: Case hardened carbon steel, dichromate finish.

GASKETS: EPDM, as specified in accordance with ASTM D 2000

FIG. 7100 - 90° Elbow (Sock-It® x Sock-It®)

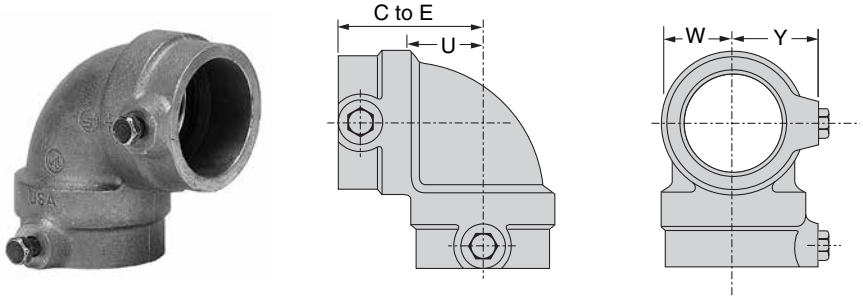
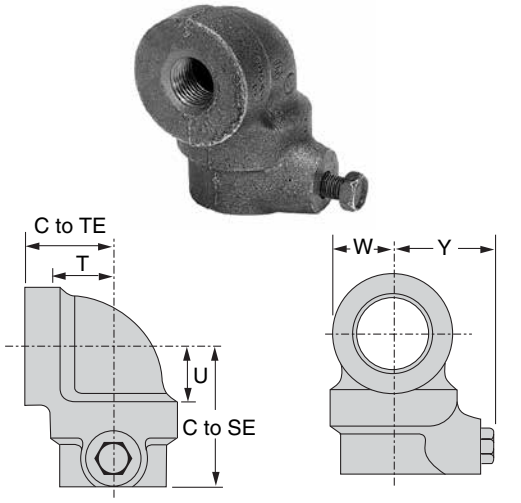


FIGURE 7100 SOCK-IT® ELBOW (S X S)								
Nominal Size	O.D.	Max. Working Pressure		Dimensions				Approx. Wt. Ea.
		UL/ULC Listed	FM Approved	Center To End	U*	W	Y	
In./DN(mm)	*In./mm*	*PSI/bar*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.7*	300 *20.7*	300 *20.7*	2 5/16 *59*	7/8 *22*	1 1/16 *27*	1 3/4 *44*	1.9 *0.9*
1¼ *32*	1.660 *42.4*	300 *20.7*	300 *20.7*	2 7/16 *62*	1 *25*	1¼ *32*	1 13/16 *46*	2.3 *1.0*
1½ *40*	1.900 *48.3*	300 *20.7*	300 *20.7*	2 5/8 *67*	1 1/8 *29*	1 3/8 *35*	1 15/16 *49*	2.7 *1.2*
2 *50*	2.375 *60.3*	175 *12.1*	250 *17.2*	3¼ *83*	1 9/16 *40*	1 5/8 *41*	2 3/16 *56*	4.0 *1.8*

* "U" - Run take-out dimension.

SOCK-IT® PIPING METHOD FITTINGS

FIG. 7101 - 90° Reducing Elbow (Sock-It® x NPT)



C to SE - Center to Sock-It® End
C to TE - Center to Thread End

* "U" - Take-out dimension, Sock-It® End.
** "T" - Take-out dimension, Thread End.

FIGURE 7101 SOCK-IT® REDUCING ELBOW (S X NPT)

Nominal Size	Max. Working Pressure		Dimensions						Approx. Wt. Ea.
	UL/ULC Listed	FM Approved	Center to TE	Center To SE	U*	T**	W	Y	
In./DN(mm)	*PSI/bar*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 x ½ *25 x 15*	300 *20.7*	300 *20.7*	1 7/16 *37*	2 5/16 *59*	7/8 *22*	1 *25*	1 1/16 *27*	1 11/16 *43*	1.7 *0.8*
1 x ¾ *25 x 20*	300 *20.7*	300 *20.7*	1 7/16 *37*	2 5/16 *59*	7/8 *22*	7/8 *22*	1 1/16 *27*	1 11/16 *43*	1.6 *0.7*
1 x 1 *25 x 25*	300 *20.7*	300 *20.7*	1 7/16 *37*	2 5/16 *59*	7/8 *22*	7/8 *22*	1 1/16 *27*	1 11/16 *43*	1.5 *0.7*
1¼ x ½ *32 x 15*	300 *20.7*	300 *20.7*	1 9/16 *40*	2½ *64*	1 1/16 *17*	1⅛ *29*	1¼ *32*	1 13/16 *46*	2.2 *1.0*
1¼ x ¾ *32 x 20*	300 *20.7*	300 *20.7*	1 9/16 *40*	2½ *64*	1 1/16 *17*	1 *25*	1¼ *32*	1 13/16 *46*	2.1 *1.0*
1¼ x 1 *32 x 25*	300 *20.7*	300 *20.7*	1 9/16 *40*	2½ *64*	1 1/16 *17*	1 *25*	1¼ *32*	1 13/16 *46*	2 *0.9*
1½ x ½ *40 x 15*	300 *20.7*	300 *20.7*	1 11/16 *43*	2½ *64*	1 *25*	1¼ *32*	1⅜ *35*	1 15/16 *49*	2.5 *1.1*
1½ x ¾ *40 x 20*	300 *20.7*	300 *20.7*	1 11/16 *43*	2½ *64*	1 *25*	1⅛ *29*	1⅜ *35*	1 15/16 *49*	2.4 *1.1*
1½ x 1 *40 x 25*	300 *20.7*	300 *20.7*	1 11/16 *43*	2½ *64*	1 *25*	1⅛ *29*	1⅜ *35*	1 15/16 *49*	2.3 *1.0*

FIG. 7103 - Straight Tee (Sock-It® x Sock-It® x Sock-It®)

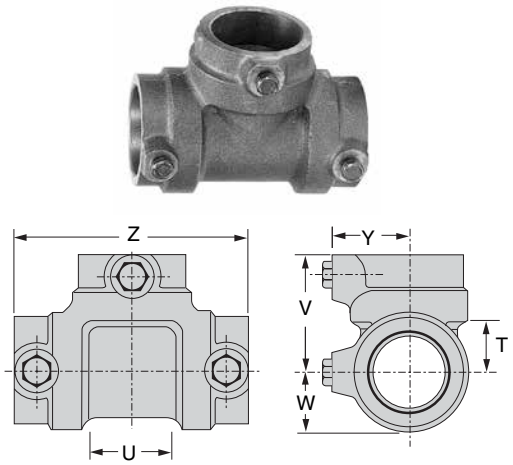


FIGURE 7103 SOCK-IT® STRAIGHT TEE (S x S x S)

Nominal Size	O.D.	Max. Working Pressure		Dimensions						Approx. Wt. Ea.
		UL/ULC Listed	FM Approved	**T	U*	V	W	Y	Z	
In./DN(mm)	*In./mm*	*PSI/bar*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.7*	300 *20.7*	300 *20.7*	1 3/16 *21*	1⅝ *41*	2¼ *57*	1 1/16 *27*	1 11/16 *43*	4½ *114*	2.3 *1.0*
1¼ *32*	1.660 *42.4*	175 *12.1*	300 *20.7*	1 *25*	2 *51*	2 7/16 *62*	1¼ *32*	1 13/16 *46*	4⅞ *124*	2.9 *1.3*
1½ *40*	1.900 *48.3*	175 *12.1*	300 *20.7*	1 1/16 *17*	2⅛ *54*	2 9/16 *65*	1⅜ *35*	1 15/16 *49*	5⅛ *130*	3.4 *1.5*
2 *50*	2.375 *60.3*	175 *12.1*	250 *17.2*	1 5/16 *23*	2⅝ *67*	3 *76*	1 11/16 *43*	2 3/16 *56*	6 *152*	5.6 *2.5*

* "U" - Run take-out dimension.
***"T" - Outlet take-out dimension.

FIG. 7107 - Coupling (Sock-It® x Sock-It®)

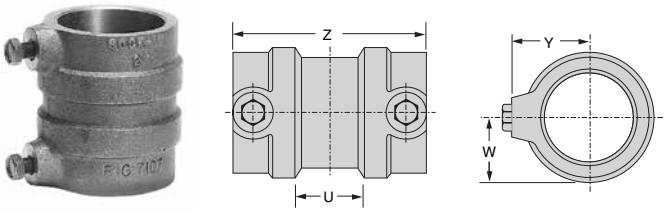


FIGURE 7107 SOCK-IT® COUPLING (S x S)

Nominal Size	O.D.	Max. Working Pressure		Dimensions				Approx. Wt. Ea.
		UL/ULC Listed	FM Approved	U*	W	Y	Z	
In./DN(mm)	*In./mm*	*PSI/bar*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.7*	300 *20.7*	300 *20.7*	¼ *6*	1 1/16 *27*	1 11/16 *43*	3⅛ *79*	1.7 *0.8*
1¼ *32*	1.660 *42.4*	300 *20.7*	300 *20.7*	¼ *6*	1¼ *32*	1 13/16 *46*	3⅛ *79*	1.9 *0.9*
1½ *40*	1.900 *48.3*	300 *20.7*	300 *20.7*	¼ *6*	1⅜ *35*	1 15/16 *49*	3¼ *83*	2.1 *1.0*
2 *50*	2.375 *60.3*	175 *12.1*	250 *17.2*	¼ *6*	1⅝ *41*	2 3/16 *56*	3⅝ *92*	2.9 *1.3*

* "U" - Run take-out dimension.

SOCK-IT® PIPING METHOD FITTINGS

FIG. 7105 - Reducing Outlet Tee (Sock-It® x Sock-It® x NPT)

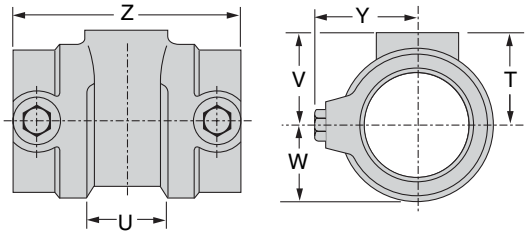


FIGURE 7105 SOCK-IT® REDUCING OUTLET TEE (S X S X NPT)

Nominal Size	Max. Working Pressure		Dimensions						Approx. Wt. Ea.
	UL/ULC Listed	FM Approved	**T	U*	V	W	Y	Z	
In./DN(mm)	*PSI/bar*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 x 1 x ½ *25 x 25 x 15*	300 *20.7*	300 *20.7*	1 *25*	1⅜ *35*	1 7⁄16 *37*	1 1⁄16 *27*	1 11⁄16 *43*	4¼ *108*	2.0 *0.9*
1 x 1 x ¾ *25 x 25 x 20*	300 *20.7*	300 *20.7*	⅞ *22*	1⅜ *35*	1 7⁄16 *37*	1 1⁄16 *27*	1 11⁄16 *43*	4¼ *108*	1.9 *0.9*
1 x 1 x 1 *25 x 25 x 25*	300 *20.7*	300 *20.7*	⅞ *22*	1⅜ *35*	1 7⁄16 *37*	1 1⁄16 *27*	1 11⁄16 *43*	4¼ *108*	1.9 *0.9*
1¼ x 1¼ x ½ *32 x 32 x 15*	300 *20.7*	300 *20.7*	1⅛ *29*	1⅜ *35*	1⅝ *41*	1¼ *32*	1 13⁄16 *46*	4¼ *108*	2.2 *1.0*
1¼ x 1¼ x ¾ *32 x 32 x 20*	300 *20.7*	300 *20.7*	1 *25*	1⅜ *35*	1⅝ *41*	1¼ *32*	1 13⁄16 *46*	4¼ *108*	2.2 *1.0*
1¼ x 1¼ x 1 *32 x 32 x 25*	300 *20.7*	300 *20.7*	1 *25*	1⅜ *35*	1⅝ *41*	1¼ *32*	1 13⁄16 *46*	4¼ *108*	2.0 *0.9*
1½ x 1½ x ½ *40 x 40 x 15*	300 *20.7*	300 *20.7*	1¼ *32*	1⅜ *35*	1¾ *44*	1⅜ *35*	1 15⁄16 *49*	4⅜ *111*	2.7 *1.2*
1½ x 1½ x ¾ *40 x 40 x 20*	300 *20.7*	300 *20.7*	1⅛ *29*	1⅜ *35*	1¾ *44*	1⅜ *35*	1 15⁄16 *49*	4⅜ *111*	2.6 *1.2*
1½ x 1½ x 1 *40 x 40 x 25*	300 *20.7*	300 *20.7*	1⅛ *29*	1⅜ *35*	1¾ *44*	1⅜ *35*	1 15⁄16 *49*	4⅜ *111*	2.5 *1.1*
2 x 2 x ½ *50 x 50 x 15*	175 *12.1*	250 *17.2*	1½ *38*	1⅜ *35*	1 15⁄16 *49*	1⅝ *41*	2 3⁄16 *56*	4¾ *121*	3.5 *1.6*
2 x 2 x ¾ *50 x 50 x 20*	175 *12.1*	250 *17.2*	1⅜ *35*	1⅜ *35*	1 15⁄16 *49*	1⅝ *41*	2 3⁄16 *56*	4¾ *121*	3.4 *1.5*
2 x 2 x 1 *50 x 50 x 25*	175 *12.1*	250 *17.2*	1⅜ *35*	1⅜ *35*	1 15⁄16 *49*	1⅝ *41*	2 3⁄16 *56*	4¾ *121*	3.3 *1.5*
2½ x 2½ x ¾ *65 x 65 x 20*	175 *12.1*	175 *12.1*	1½ *38*	1⅜ *35*	2⅛ *54*	1 15⁄16 *49*	2 7⁄16 *62*	4¾ *121*	5.2 *2.4*
2½ x 2½ x 1 *65 x 65 x 25*	175 *12.1*	175 *12.1*	1½ *38*	1⅜ *35*	2⅛ *54*	1 15⁄16 *49*	2 7⁄16 *62*	4¾ *121*	5.2 *2.4*

* "U" - Run take-out dimension. ** "T" - Outlet take-out dimension.

FIG. 7106 - Reducing Tee (Sock-It® x Sock-It® x NPT)

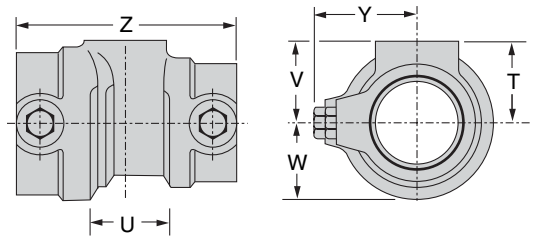


FIGURE 7106 SOCK-IT® REDUCING TEE (S x S x NPT)

Nominal Size	Max. Working Pressure		Dimensions						Approx. Wt. Ea.
	UL/ULC Listed	FM Approved	**T	U*	V	W	Y	Z	
In./DN(mm)	*PSI/bar*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1¼ x 1 x ½ *32 x 25 x 15*	300 *2.1*	300 *2.1*	1 *25*	1⅜ *35*	1 7⁄16 *37*	1¼ *32*	1 13⁄16 *46*	4¼ *108*	2.1 *1.0*
1¼ x 1 x ¾ *32 x 25 x 20*	300 *20.7*	300 *20.7*	⅞ *22*	1⅜ *35*	1 7⁄16 *37*	1¼ *32*	1 13⁄16 *46*	4¼ *108*	2.1 *1.0*
1¼ x 1 x 1 *32 x 25 x 25*	300 *20.7*	300 *20.7*	⅞ *22*	1⅜ *35*	1 7⁄16 *37*	1¼ *32*	1 13⁄16 *46*	4¼ *108*	2.0 *0.9*
1½ x 1¼ x ½ *40 x 32 x 15*	300 *20.7*	300 *20.7*	1⅛ *29*	1⅜ *35*	1 9⁄16 *40*	1⅜ *35*	1 15⁄16 *49*	4⅜ *111*	2.5 *1.1*
1½ x 1¼ x ¾ *40 x 32 x 20*	300 *20.7*	300 *20.7*	1 *25*	1⅜ *35*	1 9⁄16 *40*	1⅜ *35*	1 15⁄16 *49*	4⅜ *111*	2.4 *1.1*
1½ x 1¼ x 1 *40 x 32 x 25*	300 *20.7*	300 *20.7*	1 *25*	1⅜ *35*	1 9⁄16 *40*	1⅜ *35*	1 15⁄16 *49*	4⅜ *111*	2.2 *1.0*
2 x 1½ x ½ *50 x 40 x 15*	175 *12.1*	250 *17.2*	1¼ *32*	1⅜ *35*	1¾ *44*	1⅝ *41*	2 3⁄16 *56*	4 9⁄16 *116*	3.2 *1.5*
2 x 1½ x ¾ *50 x 40 x 20*	175 *12.1*	250 *17.2*	1⅛ *29*	1⅜ *35*	1¾ *44*	1⅝ *41*	2 3⁄16 *56*	4 9⁄16 *116*	3.1 *1.4*
2 x 1½ x 1 *50 x 40 x 25*	175 *12.1*	250 *17.2*	1⅛ *29*	1⅜ *35*	1¾ *44*	1⅝ *41*	2 3⁄16 *56*	4 9⁄16 *116*	3.0 *1.4*

* "U" - Run take-out dimension. ** "T" - Outlet take-out dimension.

FIG. 7400SS

Rigidlite® Coupling

The Gruvlok Figure 7400SS coupling is available in 1 1/4" – 8" sizes. The standard material is ASTM A 743 CF8M (Type 316) cast stainless steel which is ideal for corrosive environments.

Any Gruvlok gasket material may be utilized in the 7400SS coupling for a broad array of applications. Gasket properties are as designated in accordance with ASTM D 2000. The 7400SS is provided with ASTM A 193 B8M bolts and ASTM A 194 Grade 8M nuts.

NSF Certified to ANSI/NSF 61

MATERIAL SPECIFICATIONS

STAINLESS STEEL BOLTS & NUTS:
Hex head stainless steel bolts, Type 316 per ASTM A 193 Grade B8M class 1 and heavy hex stainless steel nuts, Type 316 per ASTM A 194 Grade 8M class 1. Nuts and bolts are zinc plated to prevent common thread galling. Contact an Anvil Representative for more information.

HOUSING:
Cast Stainless Steel (Type 316) - ASTM A 743 CF8M

GASKETS: Materials
Properties as designated in accordance with ASTM D 2000

Grade "EP" EPDM (Green and Red color code)
-40°F to 250°F (Service Temperature Range)(-40°C to 121°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many other chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

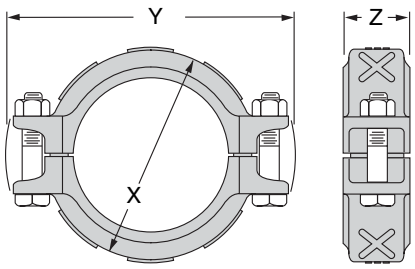
Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR.

Grade "O" Fluoro-Elastomer (Blue color code)
20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.

Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services.

GASKET TYPE:
Standard C Style
Flush Gap (1 1/4" – 8")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")



CAUTION: Contact your local Anvil representative for corrosive application environments.

No coatings or zinc options.

* All bolts are hex head design Type 316 Grade B8M Class 1 stainless steel to ASTM A 193, with Type 316 Grade 8M stainless steel heavy hex nuts conforming to ASTM A 194. Use of suitable anti-galling thread compound is recommended.

† Ratings apply when used with Schedule 40 ASTM A 312 Type 304 stainless steel pipe for all sizes. Refer to ratings chart for additional data.

FIGURE 7400SS - RIGIDLITE STAINLESS STEEL COUPLING

Nominal Size	O.D.	Max. Wk. Pressure†	Max. End Load†	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts*		Specified Torque		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	Min.	Max.	
In./mm	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-m*		*Lbs./Kg*
1 1/4	1.660	300	649	0-1/32	2 7/8	4 1/8	1 3/4	2	3/8 x 2 1/4	15	20	1.6
32	*42.4*	*20.7*	*2.89*	*0-0.79*	*73*	*105*	*44*		*M10 x 57*	*21*	*27*	*0.7*
1 1/2	1.900	300	851	0-1/32	3 1/8	4 5/8	1 3/4	2	3/8 x 2 1/4	15	20	1.7
40	*48.3*	*20.7*	*3.78*	*0-0.79*	*79*	*117*	*44*		*M10 x 57*	*21*	*27*	*0.8*
2	2.375	300	1,329	0-1/32	3 5/8	5 3/8	1 3/4	2	3/8 x 2 1/4	15	20	2.1
50	*60.3*	*20.7*	*5.91*	*0-0.79*	*92*	*137*	*45*		*M10 x 57*	*21*	*27*	*1.0*
2 1/2	2.875	300	1,948	0-1/32	4 1/8	5 7/8	1 3/4	2	3/8 x 2 1/4	15	20	2.3
65	*73.0*	*20.7*	*8.66*	*0-0.79*	*105*	*149*	*44*		*M10 x 57*	*21*	*27*	*1.0*
3	3.500	300	2,886	0-1/32	4 5/8	6 5/8	1 3/4	2	1/2 x 2 3/4	50	60	3.1
80	*88.9*	*20.7*	*12.84*	*0-0.79*	*117*	*168*	*44*		*M12 x 70*	*68*	*80*	*1.4*
4	4.500	300	4,771	0-3/32	6	7 3/4	1 7/8	2	1/2 x 2 3/4	50	60	4.4
100	*114.3*	*20.7*	*21.22*	*0-2.38*	*152*	*197*	*48*		*M12 x 70*	*68*	*80*	*2.0*
6	6.625	275	9,480	0-3/32	8 1/8	11 1/8	2	2	3/4 x 3	80	100	7.8
150	*168.3*	*19.0*	*42.17*	*0-2.38*	*206*	*283*	*51*		*M20 x 76*	*110*	*150*	*3.5*
8	8.625	275	16,067	0-3/32	10 3/8	13 5/8	2 3/8	2	3/4 x 3	80	100	13.2
200	*219.1*	*19.0*	*71.47*	*0-2.38*	*264*	*346*	*60*		*M20 x 76*	*110*	*150*	*6.0*

Range of Pipe End Separation values are for roll grooved pipe and may be doubled for cut groove pipe.

GRUVLOK STAINLESS STEEL FITTINGS

Anvil offers two different sets of stainless steel fittings. The Gruvlok Series Fittings have full flow designs formed from type 304SS pipe. The Schedule 10 fittings are fabricated from segmentally welded 316SS unless otherwise noted and are also available as Schedule 40 and/or Type 304SS.

GRUVLOK COUPLING & FLANGE WORKING PRESSURE RATINGS (PSI)

The following are pressure ratings for Gruvlok Stainless Steel Piping Systems. The ratings for Schedule 10S pipe are based upon the use of roll-groover roll sets that have been specifically designed for use on Schedule 10 Stainless Steel pipe. Using roll sets that were designed for roll grooving standard wall pipe may significantly reduce the pressure ratings that can be obtained. The Model 1007/3007 roll groovers require the use of the optional Schedule 10 roll set to groove Schedule 5S and 10S. For grooving Schedule 40S on the Model 1007/3007 roll groovers, the standard steel roll grooving set should be used.

**GRUVLOK COUPLING & FLANGE WORKING PRESSURE RATINGS (PSI)
ON 304 AND 316 STAINLESS STEEL ROLL GROOVED PIPE**

Nominal Pipe Size	Pipe O.D.	Nominal Wall Thickness	Pipe Schedule Number	Coupling and Flanges										
				Fig. 7000 Lightweight	Fig. 7001 Standard	Fig. 7003 Hingelok	Fig. 7004 High Pressure	Fig. 7010* Reducing	Fig. 7012 Flange	Fig. 7013 Flange	Fig. 7400 Rigidlite	Fig. 7401 Rigidlok	Fig. 7400SS Coupling	Fig. 7402 SlideLOK®
In./DN(mm)	*In./mm*	*Inches*	–	*PSI*										
1 *25*	1.315 *33.4*	0.065	5S	400	400	–	–	–	–	–	300	–	–	–
		0.109	10S	400	500	–	–	–	–	–	300	–	–	–
		0.133	40	500	750	–	–	–	–	–	300	–	–	–
1¼ *32*	1.660 *42.4*	0.065	5S	400	400	–	–	–	–	–	300	–	275	–
		0.109	10S	500	500	–	–	–	–	–	300	–	300	–
		0.140	40	500	750	–	–	–	–	–	300	–	300	–
1½ *40*	1.900 *48.3*	0.065	5S	400	400	275	–	–	–	–	300	400	275	–
		0.109	10S	500	500	300	–	–	–	–	300	500	300	–
		0.145	40	500	750	300	–	–	–	–	300	750	300	–
2 *50*	2.375 *60.3*	0.065	5S	250	325	250	325	250	250	275	250	325	275	–
		0.109	10S	500	500	300	500	500	300	300	300	500	300	500
		0.154	40	500	750	300	750	500	300	300	300	750	300	750
2½ *65*	2.875 *73.0*	0.083	5S	250	325	250	325	250	250	275	250	325	200	–
		0.120	10S	500	500	300	500	500	300	300	300	500	300	325
		0.203	40	500	750	300	750	500	300	300	300	750	300	400
3 *80*	3.500 *88.9*	0.083	5S	250	325	250	325	250	250	275	250	325	200	–
		0.120	10S	500	500	300	500	500	300	300	300	500	300	300
		0.216	40	500	750	300	750	500	300	300	300	750	300	400
4 *100*	4.500 *114.3*	0.083	5S	200	250	200	250	200	200	250	200	250	200	–
		0.120	10S	300	400	300	400	300	300	300	300	400	300	200
		0.237	40	500	750	300	750	500	300	300	300	750	300	400
5 *125*	5.563 *141.3*	0.109	5S	125	200	125	200	125	125	200	125	200	–	–
		0.134	10S	200	300	200	300	200	200	300	200	300	–	200
		0.258	40	300	500	300	500	300	300	300	300	500	–	300
6 *150*	6.625 *168.3*	0.109	5S	75	125	75	125	75	75	125	75	125	125	–
		0.134	10S	200	200	200	200	200	200	200	200	200	250	175
		0.280	40	300	500	300	500	300	300	300	300	500	275	250
8 *200*	8.625 *219.1*	0.109	5S	50	75	50	75	50	50	75	50	75	75	–
		0.148	10S	150	200	150	200	150	150	200	150	200	150	Application
		0.322	40	300	400	300	400	300	300	300	300	400	275	Application
10 *250*	10.750 *273.0*	0.134	5S	–	50	–	50	–	50	50	–	50	–	–
		0.165	10S	–	100	–	100	–	100	100	–	100	–	–
		0.365	40	–	400	–	400	–	300	300	–	400	–	–
12 *300*	12.750 *323.9*	0.156	5S	–	75	–	75	–	50	75	–	75	–	–
		0.180	10S	–	125	–	125	–	100	125	–	125	–	–
		0.375	40	–	400	–	400	–	300	300	–	400	–	–

Notes:

1) Pressure ratings based on ASTM A312 Type 304 stainless steel pipe or equivalent.
2) Failure to use Rollers specifically designed for Stainless Steel Pipe may significantly reduce pressure retention capabilities.
3) Pressure ratings on cut grooved pipe meet or exceed the schedule 40 pressure ratings listed above. For information regarding higher ratings contact Anvil.
4) * For pressure ratings on Figure 7010 Reducing Couplings use larger pipe size.
5) For pressure ratings for the reducing tees, concentric reducers and eccentric reducers, use the rating of the weakest end.
6) Pressure ratings on schedule 10 stainless steel pipe may be increased by using Anvil's 1007/3007 roll groovers with the schedule 10 roller set. Contact Anvil for details.

GRUVLOK STAINLESS STEEL FITTINGS - TYPE 304

Gruvlok A Series Stainless Steel Fittings are full flow design with ends grooved to Gruvlok specifications. The A Series standard material is formed from Type 304 Stainless Steel. The A Series Fittings are annealed after forming and grooving to provide increased corrosion resistance. Gruvlok A Series Stainless Steel 45° and 90° elbows and tees have compact center-to-end dimensions which make installation quick and easy with the Gruvlok Figure 7400SS Coupling, or other Gruvlok products.

PRESSURE RATINGS FOR STAINLESS STEEL PIPE & FITTINGS

Schedule 10S pipe are based upon the use of roll-groover roll sets that have been specifically designed for use on Schedule 10S stainless steel pipe. Using roll sets that were designed for roll grooving carbon steel pipe may significantly reduce the pressure ratings that can be obtained. Consult Gruvlok for applications that involve roll grooving 10" or larger stainless steel pipe or that involves Schedule 5S stainless steel pipe.

A SERIES SS FITTING PRESSURE RATINGS

Sizes	1¼"	1½"	2"	2½"	3"	4"	6"	8"	10"	12"
Pressure (psi)	500	500	500	500	500	500	400	250	100	200

FIG. A7050-SS04

90° Stainless Steel Elbow
Type 304

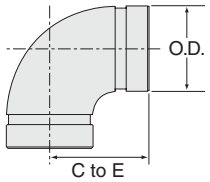


FIGURE A7050SS
90° STAINLESS STEEL ELBOW

Nominal Size	Center to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	2 13/16 *71.44*	0.8 *0.4*
1½ *40*	3 *76.20*	1.0 *0.5*
2 *50*	3 11/16 *93.66*	1.3 *0.6*
2½ *65*	4 5/16 *109.54*	1.8 *0.8*
3 *80*	5 1/16 *128.59*	2.9 *1.3*
4 *100*	6 5/16 *160.34*	4.6 *2.1*
6 *150*	9 *228.60*	11.2 *5.1*
8 *200*	12 *304.80*	22.7 *10.3*
10 *250*	15 *381.00*	35.3 *16.0*
12 *300*	18 *457.20*	56.9 *25.8*

FIG. A7051-SS04

45° Stainless Steel Elbow
Type 304

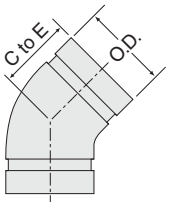


FIGURE A7051SS
45° STAINLESS STEEL ELBOW

Nominal Size	Center to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	1¾ *44.45*	0.4 *0.2*
1½ *40*	1 7/8 *47.63*	0.5 *0.2*
2 *50*	2 1/8 *53.98*	0.7 *0.3*
2½ *65*	2⅜ *60.33*	0.9 *0.4*
3 *80*	2 13/16 *71.44*	1.5 *0.7*
4 *100*	3 5/16 *84.14*	2.4 *1.1*
6 *150*	4 1/2 *114.30*	6.0 *2.7*
8 *200*	5 7/8 *149.23*	11.7 *5.3*
10 *250*	7 1/8 *180.98*	17.6 *8.0*
12 *300*	8 5/8 *219.08*	27.6 *12.5*

FIG. A7060-SS04

Stainless Steel Tees
Type 304

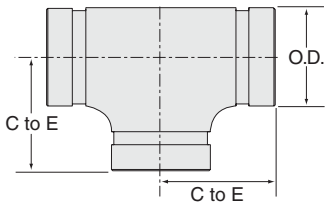


FIGURE A7060SS
STAINLESS STEEL TEE

Nominal Size	Center to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	2¾ *69.85*	1.1 *0.5*
1½ *40*	2 15/16 *74.61*	1.3 *0.6*
2 *50*	3⅜ *80.96*	3.2 *1.5*
2½ *65*	3 11/16 *93.66*	4.4 *2.0*
3 *80*	4 *101.60*	5.8 *2.6*
4 *100*	4 15/16 *125.41*	8.6 *3.9*
6 *150*	6½ *165.10*	18.5 *8.4*
8 *200*	8 1/16 *204.79*	33.4 *15.1*
10 *250*	9 1/2 *241.30*	35.3 *16.0*
12 *300*	11 *279.40*	52.7 *23.9*

FIG. A7074-SS04

Stainless Steel Caps
Type 304

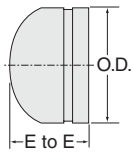


FIGURE A7074SS
STAINLESS STEEL CAP

Nominal Size	Center to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	1¾ *44.45*	0.4 *0.2*
1½ *40*	1¾ *44.45*	0.4 *0.2*
2 *50*	2 *50.80*	0.4 *0.2*
2½ *65*	2⅜ *55.56*	0.9 *0.4*
3 *80*	2 9/16 *65.09*	1.1 *0.5*
4 *100*	2 15/16 *74.61*	1.5 *0.7*
6 *150*	3 9/16 *90.49*	3.1 *1.4*
8 *200*	4 *101.60*	6.6 *3.0*
10 *250*	5 *127.00*	9.9 *4.5*
12 *300*	6 *152.40*	15.2 *6.9*

Notes:
1) *Dimensions may differ from those shown above. Contact an Anvil Representative for more information.
2) For A Series 304 SS refer to the pressure ratings chart above.

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CLASSIFIED UL WATER QUALITY
Drinking Water System Component
ANSI/NSF 61
MH21189

GRUVLOK STAINLESS STEEL FITTINGS - TYPE 304

FIG. A7061-SS04

Stainless Steel Reducing Tees
Type 304

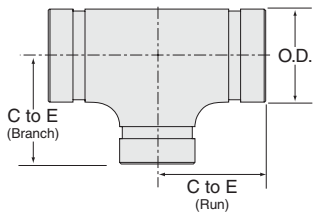

FIGURE A7061SS
STAINLESS STEEL REDUCING TEE

Nominal Size	Center to End (Run)	Center to End (Branch)	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1½ x 1¼ *40 x 32*	2 15/16 *74.61*	2¾ *69.85*	1.3 *0.6*
2 x 1¼ *50 x 32*	3 3/16 *80.96*	2 15/16 *74.61*	1.8 *0.8*
2 x 1½ *50 x 40*	3 3/16 *80.96*	3 1/16 *77.79*	1.8 *0.8*
2½ x 1½ *65 x 40*	3 11/16 *93.66*	3 5/16 *84.14*	2.7 *1.2*
2½ x 2 *65 x 50*	3 11/16 *93.66*	3 9/16 *90.49*	2.7 *1.2*
3 x 1½ *80 x 40*	4 *101.60*	3 9/16 *90.49*	3.1 *1.4*
3 x 2 *80 x 50*	4 *101.60*	3 11/16 *93.66*	5.1 *2.3*
3 x 2½ *80 x 65*	4 *101.60*	3⅞ *98.43*	5.4 *2.4*
4 x 2 *100 x 50*	4 15/16 *125.41*	4 5/16 *109.54*	8.0 *3.6*
4 x 2½ *100 x 65*	4 15/16 *125.41*	4⅝ *117.48*	5.3 *2.4*
4 x 3 *100 x 80*	4 15/16 *125.41*	4¾ *120.65*	8.6 *3.9*
6 x 3 *150 x 80*	6½ *165.10*	5 13/16 *147.64*	16.8 *7.6*
6 x 4 *150 x 100*	6⅛ *155.58*	6 *152.40*	16.8 *7.6*
8 x 4 *200 x 100*	8 1/16 *204.79*	7 3/16 *182.56*	29.7 *13.4*
8 x 6 *200 x 150*	8 1/16 *204.79*	7 11/16 *195.26*	33.4 *15.1*
10 x 6 *250 x 150*	9½ *241.30*	8⅞ *255.43*	21.6 *9.8*
10 x 8 *250 x 200*	9½ *241.30*	9 1/16 *230.19*	32.2 *14.6*
12 x 8 *300 x 200*	11 *279.40*	10 1/16 *255.59*	47.2 *21.4*
12 x 10 *300 x 250*	11 *279.40*	10 9/16 *268.29*	49.2 *22.3*

FIG. A7072-SS04

Stainless Steel Concentric Reducers
Type 304

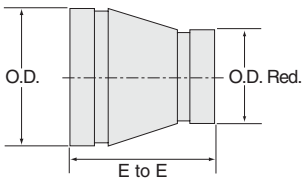

FIGURE A7072SS
STAINLESS STEEL CONCENTRIC REDUCER

Nominal Size	End to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1½ x 1¼ *40 x 32*	3¾ *95.25*	0.4 *0.2*
2 x 1¼ *50 x 32*	4⅛ *104.78*	0.7 *0.3*
2 x 1½ *50 x 40*	4⅛ *104.78*	0.7 *0.3*
2½ x 1½ *65 x 40*	4 7/16 *112.71*	1.1 *0.5*
2½ x 2 *65 x 50*	4 7/16 *112.71*	1.1 *0.5*
3 x 1½ *80 x 40*	4¾ *120.65*	1.3 *0.6*
3 x 2 *80 x 50*	4¾ *120.65*	1.3 *0.6*
3 x 2½ *80 x 65*	4¾ *120.65*	1.3 *0.6*
4 x 2 *100 x 50*	5 5/16 *134.94*	1.8 *0.8*
4 x 2½ *100 x 65*	5 5/16 *134.94*	1.8 *0.8*
4 x 3 *100 x 80*	5 5/16 *134.94*	2.0 *0.9*
6 x 3 *150 x 80*	6¾ *171.45*	3.8 *1.7*
6 x 4 *150 x 100*	6¾ *171.45*	4.0 *1.8*
8 x 4 *200 x 100*	7 9/16 *192.09*	6.6 *3.0*
8 x 6 *200 x 150*	7 9/16 *192.09*	7.3 *3.3*
10 x 6 *250 x 150*	8 11/16 *220.66*	9.7 *4.4*
10 x 8 *250 x 200*	8 11/16 *220.66*	10.6 *4.8*
12 x 8 *300 x 200*	9 7/16 *239.71*	15.0 *6.8*
12 x 10 *300 x 250*	9 7/16 *239.71*	15.9 *7.2*

FIG. 7084SS

Groove x Class 150
Stainless Steel Flange Adapter
Type 304

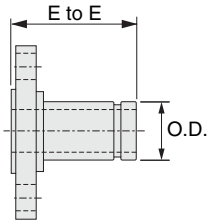

FIGURE 7084SS
STAINLESS STEEL FLANGE ADAPTER

Nominal Size	End to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
2 *50*	3 1/8 *79.38*	5.7 *2.6*
2½ *65*	3⅜ *85.73*	8.6 *3.9*
3 *80*	3⅜ *85.73*	9.7 *4.4*
4 *100*	3 9/16 *90.49*	14.6 *6.6*
5 *125*	3¾ *95.25*	17.5 *7.9*
6 *150*	3 15/16 *100.01*	19.4 *8.8*
8 *200*	4 1/2 *114.30*	32.9 *14.9*
10 *250*	4¾ *120.65*	45.0 *20.4*
12 *300*	4¾ *120.65*	70.8 *32.1*

Notes:
1) *Dimensions may differ from those shown above. Contact an Anvil Representative for more information.
2) For A Series 304 SS pressure ratings refer to the chart on page 174.
3) The pressure rating for the reducing tees and concentric reducers is based upon the rating of the weakest end.

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CLASSIFIED UL WATER QUALITY
Drinking Water System Component
ANSI/NSF 61
MH21189

GRUVLOK STAINLESS STEEL FITTINGS - TYPE 316

Gruvlok Schedule 10 Stainless Steel Fittings are segmentally welded with ends grooved to Gruvlok specifications. The standard material is 316 Stainless Steel unless otherwise noted with 304SS and/or Schedule 40 optional. Installation is quick and easy with the Gruvlok Figure 7400SS Coupling, or other Gruvlok product.

FIG. 7050SS

90° Stainless Steel Elbow
Type 316

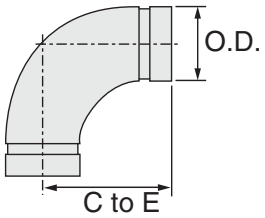

FIGURE 7050SS
90° STAINLESS STEEL ELBOW

Nominal Size	Center to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	3⅝ *98*	1.2 *0.5*
1½ *40*	4¼ *108*	1.4 *0.6*
2 *50*	4⅜ *111*	2.3 *1.0*
2½ *65*	5¾ *146*	3.3 *1.5*
3 *80*	5⅞ *149*	4.6 *2.1*
4 *100*	7½ *191*	7.9 *3.6*
6 *150*	10¾ *273*	17.0 *7.7*
8 *200*	15 *381*	29.4 *13.4*
10 *250*	18 *457*	41.8 *18.9*
12 *300*	21 *533*	46.5 *21.1*

FIG. 7051SS

45° Stainless Steel Elbow
Type 316

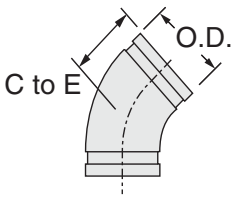

FIGURE 7051SS
45° STAINLESS STEEL ELBOW

Nominal Size	Center to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	2½ *64*	0.7 *0.3*
1½ *40*	2½ *64*	0.9 *0.4*
2 *50*	2½ *64*	1.5 *0.7*
2½ *65*	3 *76*	1.9 *0.9*
3 *80*	3⅜ *86*	3.3 *1.5*
4 *100*	4 *102*	5.4 *2.4*
6 *150*	5½ *140*	11.2 *5.1*
8 *200*	7¼ *184*	19.8 *9.0*
10 *250*	8½ *216*	21.0 *9.5*
12 *300*	10 *254*	23.0 *10.4*

FIG. 7060SS

Stainless Steel Tees
Type 316

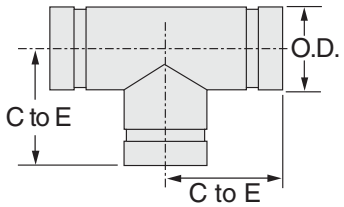

FIGURE 7060SS
STAINLESS STEEL TEE

Nominal Size	Center to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	2¾ *70*	1.5 *0.7*
1½ *40*	2¾ *70*	1.8 *0.8*
2 *50*	3¼ *83*	2.4 *1.1*
2½ *65*	3¾ *95*	4.0 *1.8*
3 *80*	4¼ *108*	5.8 *2.6*
4 *100*	5 *127*	10.3 *4.7*
6 *150*	6½ *165*	25.7 *11.7*
8 *200*	7¾ *197*	41.1 *18.6*
10 *250*	9 *229*	36.0 *16.3*
12 *300*	10 *254*	48.4 *22.0*

FIG. 7074SS

Stainless Steel Caps
Type 316

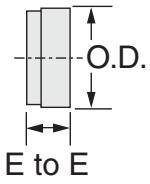

FIGURE 7074SS
STAINLESS STEEL CAP

Nominal Size	Center to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	1⅝ *41*	0.4 *0.2*
1½ *40*	1⅝ *41*	0.5 *0.2*
2 *50*	1⅝ *41*	0.8 *0.4*
2½ *65*	1¾ *45*	1.1 *0.5*
3 *80*	1¾ *45*	1.6 *0.7*
4 *100*	1¾ *45*	2.8 *1.3*
6 *150*	1⅞ *48*	3.7 *1.7*
8 *200*	2¼ *57*	8.8 *4.0*
10 *250*	2¼ *57*	12.1 *5.5*
12 *300*	2¼ *57*	17.3 *7.8*

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Notes:

1) *Dimensions may differ from those shown above. Contact an Anvil Representative for more information.
2) Fabricated fittings weights are based on Schedule 10 pipe.
3) Fabricated Schedule 10, 316SS and Schedule 40 Center to End dimensions are the same.
4) The pressure rating for the Gruvlok Schedule 10 Stainless Steel Fittings are equal to the pressure rating of the coupling used on Schedule 10 pipe as shown in the Working Pressure Ratings Chart for Stainless Steel Roll Grooved Pipe on page 173.

Center to End dimensions differ from the 304 A Series, when ordering verify if 304 dimensions are required.

GRUVLOK STAINLESS STEEL FITTINGS - TYPE 316

FIG. 7061SS

Stainless Steel Reducing Tees
Type 316

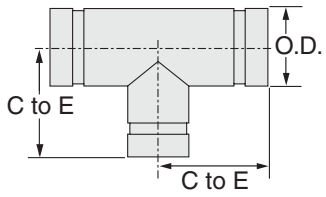


FIGURE 7061SS
STAINLESS STEEL REDUCING TEE

Nominal Size	Center to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1½ x 1½ x ¾ *40 x 40 x 20*	2¾ *70*	1.3 *0.6*
1½ x 1½ x 1 *40 x 40 x 25*	2¾ *70*	1.4 *0.6*
1½ x 1½ x 1¼ *40 x 40 x 32*	2¾ *70*	1.5 *0.7*
2 x 2 x ¾ *50 x 50 x 20*	3¼ *83*	2.0 *0.9*
2 x 2 x 1 *50 x 50 x 25*	3¼ *83*	2.1 *1.0*
2 x 2 x 1¼ *50 x 50 x 32*	3¼ *83*	2.3 *1.0*
2 x 2 x 1½ *50 x 50 x 40*	3¼ *83*	2.5 *1.1*
2½ x 2½ x ¾ *65 x 65 x 20*	3¾ *95*	2.8 *1.3*
2½ x 2½ x 1 *65 x 65 x 25*	3¾ *95*	3.0 *1.4*
2½ x 2½ x 1½ *65 x 65 x 40*	3¾ *95*	3.5 *1.6*
2½ x 2½ x 2 *65 x 65 x 50*	3¾ *95*	3.8 *1.7*
3 x 3 x ¾ *80 x 80 x 20*	4¼ *108*	4.0 *1.8*
3 x 3 x 1 *80 x 80 x 25*	4¼ *108*	4.1 *1.9*
3 x 3 x 1¼ *80 x 80 x 32*	4¼ *108*	4.2 *1.9*
3 x 3 x 1½ *80 x 80 x 40*	4¼ *108*	4.3 *1.9*
3 x 3 x 2 *80 x 80 x 50*	4¼ *108*	4.5 *2.0*
3 x 3 x 2½ *80 x 80 x 65*	4¼ *108*	4.8 *2.2*
4 x 4 x 2 *100 x 100 x 50*	5 *127*	5.8 *2.6*
4 x 4 x 2½ *100 x 100 x 65*	5 *127*	5.9 *2.7*
4 x 4 x 3 *100 x 100 x 80*	5 *127*	6.0 *2.7*
6 x 6 x 3 *150 x 150 x 80*	6½ *165*	14.0 *6.4*
6 x 6 x 4 *150 x 150 x 100*	6½ *165*	14.5 *6.6*
8 x 8 x 4 *200 x 200 x 100*	7¾ *197*	29.6 *13.5*
8 x 8 x 6 *200 x 200 x 150*	7¾ *197*	31.1 *14.1*

FIG. 7072SS

Stainless Steel Concentric Reducers
Type 316

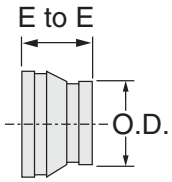


FIGURE 7072SS
STAINLESS STEEL CONCENTRIC REDUCER

Nominal Size	End to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1½ x 1 *40 x 25*	6½ *165*	0.7 *0.3*
1½ x 1¼ *40 x 32*	6½ *165*	0.7 *0.3*
2 x 1 *50 x 25*	7 *178*	0.9 *0.4*
2 x 1¼ *50 x 32*	7 *178*	0.9 *0.4*
2 x 1½ *50 x 40*	7 *178*	1.2 *0.5*
2½ x 1 *65 x 25*	7½ *191*	1.1 *0.5*
2½ x 1½ *65 x 40*	7½ *191*	1.2 *0.5*
2½ x 2 *65 x 50*	7½ *191*	1.2 *0.5*
3 x 1¼ *80 x 32*	7½ *191*	1.8 *0.8*
3 x 1½ *80 x 40*	7½ *191*	1.9 *0.9*
3 x 2 *80 x 50*	7½ *191*	2.0 *0.9*
3 x 2½ *80 x 65*	7½ *191*	2.0 *0.9*
4 x 2 *100 x 50*	8 *203*	2.9 *1.3*
4 x 2½ *100 x 65*	8 *203*	3.1 *1.4*
4 x 3 *100 x 80*	8 *203*	3.1 *1.4*
6 x 2½ *150 x 65*	9½ *241*	7.1 *3.2*
6 x 3 *150 x 80*	9½ *241*	7.0 *3.2*
6 x 4 *150 x 100*	9½ *241*	7.0 *3.2*
8 x 4 *200 x 100*	10 *254*	11.7 *5.3*
8 x 6 *200 x 150*	10 *254*	11.5 *5.2*

FIG. 7073SS

Stainless Steel Eccentric Reducers
Type 316

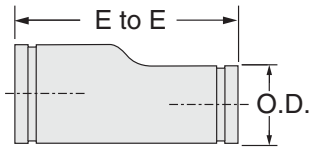


FIGURE 7073SS
STAINLESS STEEL ECCENTRIC REDUCER

Nominal Size	End to End*	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1½ x 1 *40 x 25*	8½ *216*	1.7 *0.8*
1½ x 1¼ *40 x 32*	8½ *216*	4.5 *2.0*
2 x 1 *50 x 25*	9 *229*	2.2 *1.0*
2 x 1¼ *50 x 32*	9 *229*	2.4 *1.1*
2 x 1½ *50 x 40*	9 *229*	2.5 *1.1*
2½ x 1 *65 x 25*	9½ *241*	3.2 *1.5*
2½ x 1½ *65 x 40*	9½ *241*	3.6 *1.6*
2½ x 2 *65 x 50*	9½ *241*	4.0 *1.8*
3 x 1 *80 x 25*	9½ *241*	4.0 *1.8*
3 x 1¼ *80 x 32*	9½ *241*	4.3 *2.0*
3 x 1½ *80 x 40*	9½ *241*	4.5 *0.9*
4 x 2 *100 x 50*	10 *254*	6.7 *3.0*
4 x 2½ *100 x 65*	10 *254*	7.3 *3.3*
4 x 3 *100 x 80*	10 *254*	7.9 *3.6*
6 x 2½ *150 x 65*	11½ *292*	12.8 *5.8*
6 x 3 *150 x 80*	11½ *292*	13.6 *6.2*
6 x 4 *150 x 100*	11½ *292*	14.9 *6.8*
8 x 4 *200 x 100*	12 *305*	19.7 *8.9*
8 x 6 *200 x 150*	12 *305*	23.2 *10.5*

Notes:

1) *Dimensions may differ from those shown above. Contact an Anvil Representative for more information.
2) Fabricated fittings weights are based on Schedule 10 pipe.
3) Fabricated Schedule 10, 316SS and Schedule 40 Center to End dimensions are the same.
4) The pressure rating for the Gruvlok Schedule 10 Stainless Steel Fittings are equal to the pressure rating of the coupling used on Schedule 10 pipe as shown in the Working Pressure Ratings Chart for Stainless Steel Roll Grooved Pipe on page 173.
5) The pressure rating for the reducing tees, concentric reducers and eccentric reducers should be based upon the dimension of the weakest end.

NSF Certified to ANSI/NSF 61

Center to End dimensions differ from the 304 A Series, when ordering verify if 304 dimensions are required.

MODEL 1007 & 3007

Roll Groovers

A. 1007 STANDARD EQUIPMENT - Roll Groover complete with groove and drive rolls for 2" - 12" steel pipe, Steel/CTS Dual Guide Roll Assembly, one and one-half horsepower electric motor drive with foot switch. Two stage hydraulic hand pump, mounting base with footed support legs. Complete set-up and operating instructions; 2" - 6" rolls on tool, 8" - 12" rolls stored in box, and three depth gauges covering the range of 2" through 12" pipe are mounted on the tool.

Shipped in closed wood crate that can be used for storage or rental tool return.

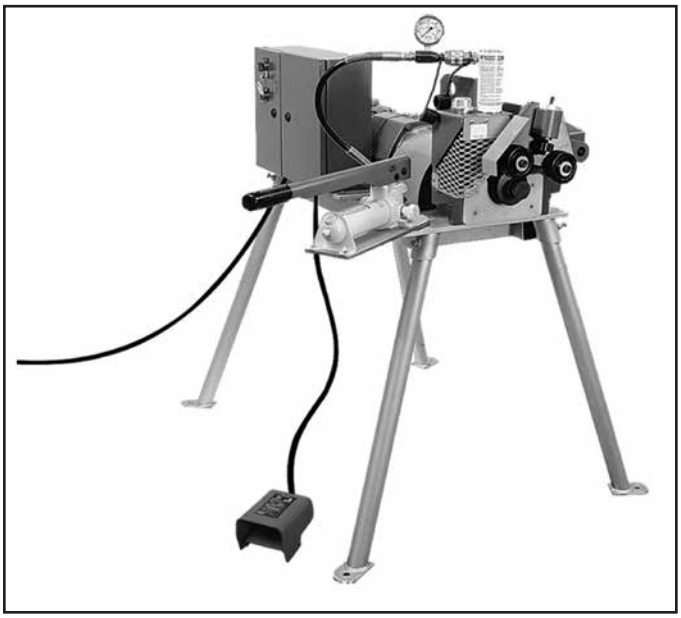
Shipping Weight: 620 lbs.

A. 3007 STANDARD EQUIPMENT – Roll Groover complete with groove and drive rolls for 2" - 12" steel pipe, Steel/CTS Dual Guide Roll Assembly, two stage hydraulic hand pump, mounting base with footed support legs for direct attachment to your Ridgid® 300 Power Drive. Complete set-up and operating instructions; 2" - 6" rolls on tool; 8" - 12" rolls stored in box, and three depth gauges covering the range of 2"-12" pipe are mounted on the tool. Required Ridgid 300 Power Drive not included.

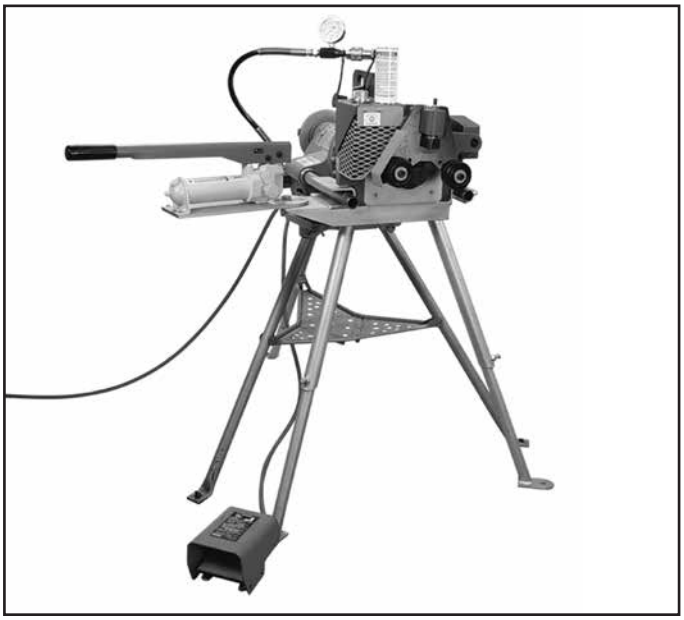
Shipped in closed wood crate that can be used for storage or rental tool return.

Shipping Weight: 330 lbs.

MODEL 1007 ROLL GROOVERS



MODEL 3007 ROLL GROOVERS



B. OPTIONAL EQUIPMENT

Steel Pipe:

- 2"-12" Schedule 10 & 40 Rolls: Consisting of 2"-6" and 8"-12" roll sets.
- 14"-16" Steel Grooving Rolls (Model 1007 only).

CTS Copper System Option:

- 2"-8" CTS Copper System Grooving Rolls, 2"-4" CTS Depth Gauge, and 5"-8" CTS Depth Gauge.

Stainless Steel System Option:

- 2"-12" Schedule 10SS & 40SS: Consisting of 2"-6" and 8"-12" roll sets.

Other:

- Optional 230 volt, 60Hz, 15 amp, single phase electrical panel with motor is available for the 1007 Roll Groover.

MODEL 1007 & 3007

Roll Groovers

C - GROOVER CAPABILITY

GROOVER CAPABILITY											
Pipe Material	Pipe Size/Wall Thickness (Schedule)										
In.	*2*	*2½*	*3*	*4*	*5*	*6*	*8*	*10*	*12*	*14*	*16*
DN(mm)	*50*	*65*	*80*	*100*	*125*	*150*	*200*	*250*	*300*	*350*	*400*
Steel	Schedule 10, 40									Std.	Std.
Stainless	Steel Schedule 10S, 40S									n/a	n/a
Copper	K, L, M & DWV							n/a	n/a	n/a	n/a

NOTES:

(1) All wall thickness shown are the maximum wall thickness for the indicated pipe material.

(2) Minimum wall thickness for each pipe materials and size is:

Steel: 2" - 12" – Sch. 10, 14" & 16" Standard Wall
Stainless Steel: 2" - 12" – Sch. 10S, 40
Copper: 2" - 2½" – Type M
3" - 8" – Type DWV

(3) Contact an Anvil Representative for information on grooving alternate materials

(4) Some sizes may require optional equipment.

(5) Schedule 80 pipe and above must be cut grooved.

D - GROOVER TIMES

MODEL 1007 & MODEL 3007 STEEL PIPE GROOVING TIMES (MIN: SEC.)										
Pipe Size (In./DN(mm)) – Sch. 40 (Std. Wall) Steel Pipe										
2	*2½*	*3*	*4*	*5*	*6*	*8*	*10*	*12*	*14*	*16*
50	*65*	*80*	*100*	*125*	*150*	*200*	*250*	*300*	*350*	*400*
0:20	0:20	0:25	0:30	1:00	1:20	1:35	1:50	2:20	2:40	3:00

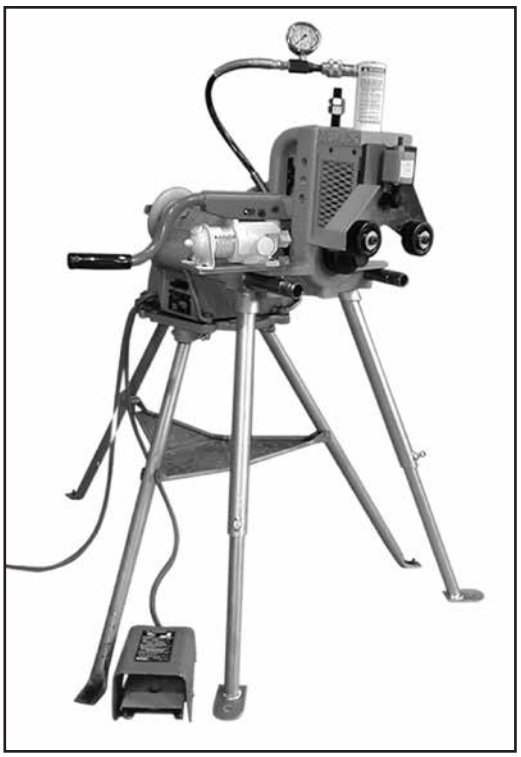
This chart shows approximate grooving times with the groover setup for the proper size and groove diameter and the pipe properly positioned on the groover. The times shown are average times from the start of rotation of the pipe in the grooving rolls to completed groove.

- WIDE GROOVING RANGE— 2" thru 16" standard wall & schedule 10 steel pipe, 2" thru 12" Schedule 10S and 40S Stainless Steel and 2" thru 8" copper tube type K, L, M, and DWV.
- PIPE LENGTHS—20' random schedule 40 (standard wall) to 5" groove by groove nipples. The shortest roll groove nipple capability in the industry; hands-clear operation.
- HANDS CLEAR GROOVING OF PIPE AND NIPPLES— Enhanced operator safety provided by outboard guide roll assembly.
- ACCURATE, REPEATABLE-GROOVE DIAMETER CONTROL— Simplified direct action design provides positive, repeatable, control for grooving carbon and stainless piping. For grooving copper, universal diameter gauge must be utilized.
- FAST GROOVING TIMES— Large capacity two-stage pump. Two-stage design saves time engaging pipe while providing smooth application of optimum grooving force with reduced operator effort.
- BETTER CONTROL OF PIPE FLARE— Outboard guide roll assembly registers pipe for proper orientation.
- QUICK, EASY SETUP AND ROLL CHANGE
- RUGGED DESIGN REQUIRES ZERO MAINTENANCE— Sealed bearings eliminate need for periodic maintenance.
- USER FRIENDLY DESIGN— Pump location is adjustable for operator comfort and safety.
- EASE OF OPERATION— High grooving forces obtained through use of larger capability ram requires less pump effort.
- FOOT SWITCH POWER APPLICATION
- OPERATOR SAFE DESIGN

MODEL 3006

Roll Groover

The Gruvlok Model 3006 roll groover features a low maintenance quick roll change out design with the capability to groove 2" - 12" steel pipe, as well as 2" - 6" stainless steel. This machine is also compatible with the CTS Copper System for accurate and repeatable grooving of tube as small as 2" in diameter. Standard with each machine is the patented Gruvlok hands free nipple guide system. This one of a kind nipple guide system allows for the shortest nipple grooving in the business and is hands free for increased operator safety. A special hydraulic pump with a reduced height handle and pivoting location allow each operator to customize the machine for maximum comfort while grooving. Low cost, lightweight, user friendly, and reliable, the Model 3006 Roll Groover follows the quality Gruvlok tradition started with 1007/3007 models and takes the future of roll grooving one step further.



Gruvlok roll grooving technology is protected by U.S. Patents 5450738, 5570603, 5778715 and others pending.

- **WIDE GROOVING RANGE—** 2" thru 8" Schedule 40 (standard wall) steel pipe, 10" (.188" Wall), 12" (.219" wall), and 2" thru 12" Sch. 10 2" thru 8" copper type K, L, M, and DWV.
- **PIPE LENGTHS—** 20' random Schedule 40 (standard wall) to 5" groove by groove nipples. The shortest roll groove nipple capability in the industry: hands clear
- **HANDS-CLEAR GROOVING OF PIPE AND NIPPLES—** Enhanced operator safety provided by outboard guide roll assembly
- **ACCURATE, REPEATABLE GROOVE DIAMETER CONTROL—** Simplified direct action provided positive, repeatable control for grooving carbon and stainless piping. For grooving copper, universal diameter gauge must be utilized.
- **BETTER CONTROL OF PIPE FLARE—** Outboard guide roll assembly registers pipe for proper orientation.
- **QUICK, EASY SETUP AND ROLL CHANGE**
- **RUGGED DESIGN REQUIRES MINIMAL MAINTENANCE—** Only periodic application of grease via grease fittings required.
- **USER FRIENDLY DESIGN—** Pump has a special reduced height handle and adjustable location for operator comfort and safety.
- **EASE OF OPERATION—** High grooving forces obtained though use of large capacity ram requires less pump effort.

MODEL 3006

Roll Groover

TECHNICAL DATA – MODEL 3006

STANDARD EQUIPMENT:

Roll Groover complete with Adjustable Support Leg Assembly and roller sets for grooving 2"-6" and 8"-12" steel pipe, Steel/CTS Dual Guide Roll Assembly, hydraulic pump with pressure gauge, and two depth adjustment gauges. This unit is designed for direct attachment to your Ridgid® 300 Power Drive. Complete with comprehensive setup, operating and trouble-shooting instructions.

Shipped in a reusable wooden storage crate.

Approximate shipping weight: 225 pounds.

Required Ridgid® 300 Power Drive not included.

OPTIONAL EQUIPMENT:

Advanced Copper Method (IPS Copper) Option:

- Consisting of 2"-6" Advanced Copper Method roll set, Advanced Copper Method Guide Roll Assembly, and a 2"-6" Universal Diameter Gauge.
- 2"-6" Universal Diameter Gauge.

CTS Copper System Option:

- Consisting of 2"-8" roll set, 2"-6" CTS Depth Gauge, and 8" CTS Depth Gauge.

GROOVER CAPABILITY

GROOVER CAPABILITY

Pipe Material	Pipe Size/Wall Thickness (Schedule)[1,2]								
In.	*2*	*2½*	*3*	*4*	*5*	*6*	*8*	*10*	*12*
DN(mm)	*50*	*65*	*80*	*100*	*125*	*150*	*200*	*250*	*300*
Steel	Schedule 10, 40							0.188"	0.219"
Stainless Steel	Schedule 10S, 40S						n/a	n/a	n/a
CTS Copper System	K, L, M & DWV							n/a	n/a

NOTES:

(1) All wall thickness shown are the maximum wall thickness for the indicated pipe material.

(2) Minimum wall thickness for each pipe materials and size is:
Steel: All sizes – Sch. 10
Stainless Steel: 2" - 6" Sch. 10S, 40S
Copper: 2", 2½" – Type M
3" - 8" – Type DWV

(3) Please contact an Anvil Representative for more information on grooving alternate materials & wall thickness.

GROOVER TIMES

MODEL 3006 STEEL PIPE GROOVING TIMES (MIN: SEC.)

Pipe Size (In./DN(mm))/Max Steel Pipe Wall Thickness							
2	*2½*	*3*	*4*	*6*	*8*	*10*	*12*
50	*65*	*80*	*100*	*150*	*200*	*250*	*300*
0:20	0:20	0:25	0:30	1:20	1:55	1:40	1:20

GROOVING TIMES: This chart shows approximate grooving times with the groover set-up for the proper size and groove diameter and the pipe properly positioned on the groover. The times shown are average times from the start of rotation of the pipe in the grooving rolls to completed groove.

COUPLING INSTALLATION & ASSEMBLY

Installation & Assembly

TABLE OF CONTENTS

The instructions are based on pipe grooved in accordance with Gruvlok® grooving specifications. Check pipe ends for proper groove dimensions and assure that the pipe ends are free of indentations and projections which would prevent proper sealing.

ALWAYS USE A GRUVLOK® LUBRICANT FOR PROPER COUPLING ASSEMBLY. Thorough lubrication of the external surface of the gasket is essential to prevent pinching and possible damage to the gasket. For temperatures above 150° F (65.6° C) use Gruvlok Xtreme™ Lubricant and lubricate all gasket surfaces, internal and external. See Gruvlok Lubricants in the Technical Data section of the Gruvlok catalog for additional important information.

SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on Gruvlok® couplings and flanges. The nuts must be tightened alternately and evenly until fully tightened.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

ANSI SPECIFIED BOLT TORQUE

Bolt Size	Wrench Size	Specified Bolt Torque *
In.	*In.*	*Ft.-Lbs*
3/8	11/16	30-45
1/2	7/8	80-100
5/8	1 1/16	100-130
3/4	1 1/4	130-180
7/8	1 7/16	180-220
1	1 5/8	200-250
1 1/8	1 13/16	225-275
1 1/4	2	250-300

* Non-lubricated bolt torques.

METRIC SPECIFIED BOLT TORQUE

Bolt Size	Wrench Size	Specified Bolt Torque *
mm	*mm*	*N-m*
M10	16	40-60
M12	22	110-150
M16	24	135-175
M20	30	175-245
M22	34	245-300
M24	36	270-340

* Non-lubricated bolt torques.

NOTE:

Specified torques are to be used unless otherwise noted on Product Installation Instructions.

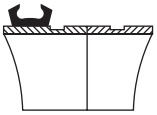
Maximum Working Pressure Rating is for schedule 40 steel pipe. For light wall, stainless steel, aluminum and ISO pipe pressure ratings, please refer to the technical data section.

FIG. 7401
Rigidlok® Coupling

1 CHECK & LUBRICATE GASKET— Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to the exterior surface and sealing lips of the gasket. Some applications require lubrication of the entire gasket surface. Be careful that foreign particles do not adhere to lubricated surfaces.

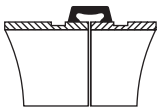
2 GASKET INSTALLATION— Slip the gasket over the pipe end making sure the gasket lip does not overhang the pipe end.

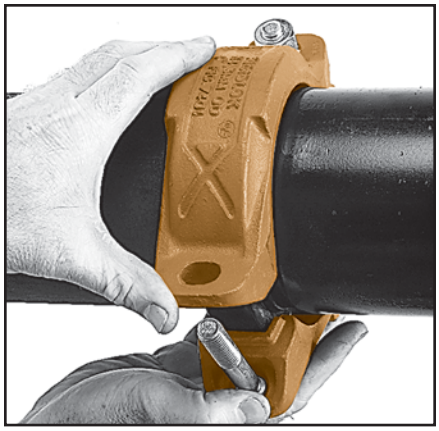
On couplings 10" and larger it may be easier to turn the gasket inside out then lubricate and slide the gasket over the pipe end as shown.



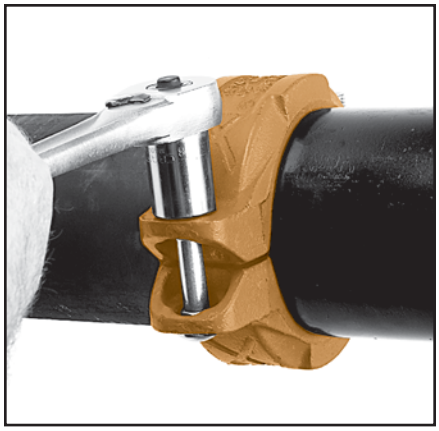
3 ALIGNMENT— After aligning the two pipe ends, pull the gasket into position centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.

On couplings 10" and larger, flip or roll the gasket into centered position.



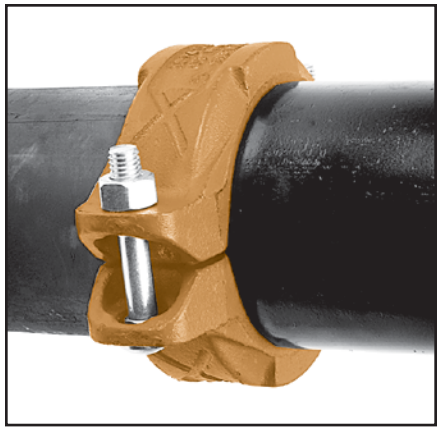


4 HOUSINGS— Remove one nut and bolt and loosen the other nut. Place one housing over the gasket, making sure the housing keys fit into the pipe grooves. Swing the other housing over the gasket and into the grooves on both pipes, making sure the tongue and recess of each housing is properly mated. Reinsert the bolt and run-up both nuts finger tight.



5 TIGHTEN NUTS— Securely tighten nuts alternately and equally to the specified bolt torque, keeping the gaps at the bolt pads evenly spaced.

CAUTION: Uneven tightening may cause the gasket to pinch. Gasket should not be visible between segments after bolts are tightened.



6 ASSEMBLY IS COMPLETE— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves. The bolt pads are to have equal gaps on each side of the coupling.

NOTE: Sizes 16" and larger are cast in multiple segments. To install the larger sizes align the tongue and pocket of the couplings appropriately and tighten the nuts alternately to the specified bolt torque. When properly assembled there will be a small equal gap between the adjacent bolt pads.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

FIG. 74

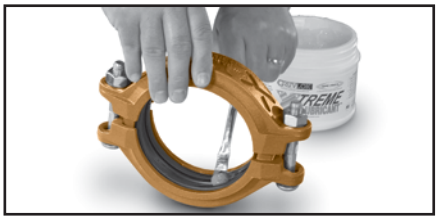
SlideLOK® Ready for Installation Coupling

INSTALLATION

READY FOR INSTALLATION - RIGHT OUT OF THE BOX

Do not disassemble the SlideLOK Coupling. The Figure 74 coupling is ready for installation. The bolt and gasket do not need to be removed.

1 PIPE PREPARATION— Pipe ends are to be rolled or cut grooved according to Anvil specifications. Not for use on "EG" rolled or cut grooved pipe ends. The pipe end must be smooth and free from metal burrs or projections.

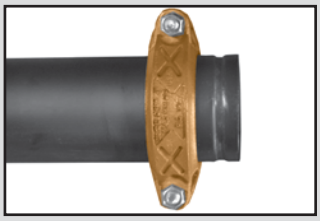


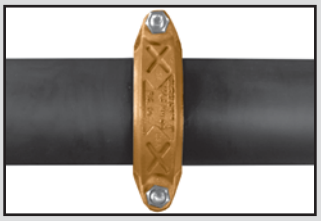
2 GASKET PREPARATION— Ensure the gasket is suitable for the intended application by referring to the Anvil gasket compatibility chart. Apply a light coating of Gruvlok® Xtreme™ Lubricant to exposed gasket surfaces.

3 ASSEMBLY— The SlideLOK Figure 74 may be installed by one of two methods. The preferred method depends on the type of pipe components being joined and their orientation. Please review both methods before installing.

METHOD #1

Slide the SlideLOK coupling completely over the grooved pipe end. This will allow a clear and un-obstructed view of the pipe for correct alignment.





A. Slide the coupling on the pipe past the groove. The bolts and nuts can be hand tightened to position the coupling in place.

B. Align the mating pipe end. Align the two adjoining pipes together.

C. Slide the coupling back over the grooves so that the coupling keys are located over the respective grooves on both pipe ends.

D. Follow the instructions on fastening the coupling as shown in Step 4.

METHOD #2

Slide the SlideLOK coupling half way onto the pipe end or fitting. This will better accommodate fitting, and valve accessories during installation.

A. Slide the coupling on the fitting so that the groove and keys are aligned.

B. Bring the pipe end or fitting towards the coupling and insert so that the groove and coupling keys are aligned.

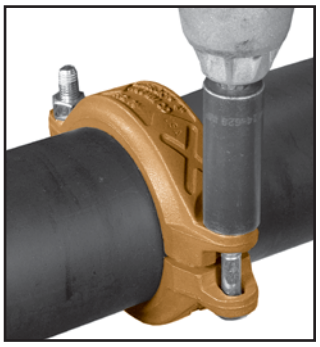
C. Hand tighten the nuts to correctly position the couplings keys over the respective grooved ends.

D. Follow the instructions on fastening the coupling as shown in Step 4.

4 TIGHTEN NUTS

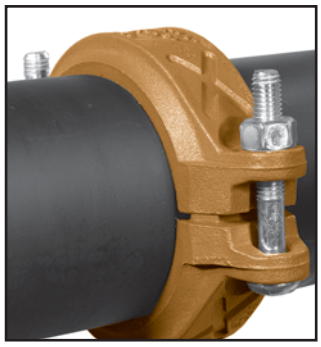
Securely tighten nuts alternately and equally to the specified bolt torque, keeping the gaps at the bolt pads evenly spaced.

CAUTION: Uneven tightening may cause the gasket to pinch. Gasket should not be visible between segments after bolts are tightened.



5 ASSEMBLY IS COMPLETE

Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves. The bolt pads are to have equal gaps on each side of the coupling.



CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

FIG. 74

SlideLOK® Ready for Installation Coupling

RE-INSTALLATION

REINSTALLATION OF THE FIGURE 74 SLIDELOK COUPLING

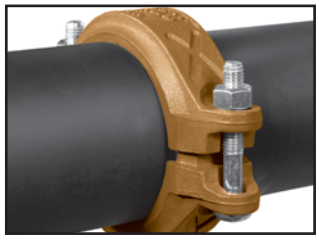
The SlideLOK coupling is designed to be installed in the ready for installation assembly position once. After the initial assemble the following steps are to be taken to re-install the Fig. 74 SlideLOK coupling.

1 DE-PRESSURIZE THE SYSTEM— De-pressurize the system before removing the SlideLOK Coupling. Dis-assemble the couplings by removing the nuts, bolts and gasket from the housing halves. A wrench is required to overcome the epoxy used to secure the nuts on the bolts.

2 PIPE PREPARATION Pipe ends are to be rolled or cut grooved according to Anvil specifications. Not for use on "EG" rolled or cut grooved pipe ends. The pipe end must be smooth and free from metal burrs or projections.

3 GASKET PREPARATION Ensure the gasket is suitable for the intended application by referring to the Anvil gasket compatibility chart. A light coating of Gruvlok® XTreme™ lubricant must be applied to the gasket prior to installation.

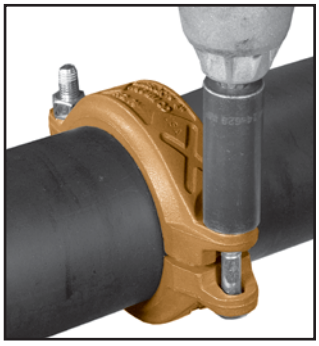
4 PIPE ALIGNMENT AND GASKET INSTALLATION Slide the gasket onto the pipe then align the two pipe ends together. Pull the gasket into position, centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.



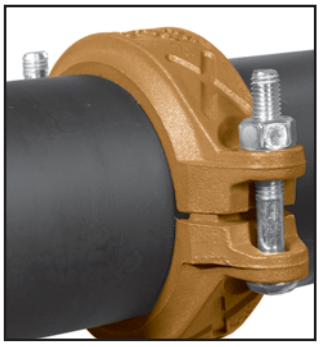
5 HOUSING ASSEMBLY Place each housing halves on the pipe making sure the housing key fits into the groove. Be sure that the tongue and recess portions of the housing mate properly. Insert the bolts.

6 TIGHTEN NUTS Securely tighten nuts alternately and equally to the specified bolt torque, keeping the gaps at the bolt pads evenly spaced.

CAUTION: Uneven tightening may cause the gasket to pinch. Gasket should not be visible between segments after bolts are tightened.



7 ASSEMBLY IS COMPLETE Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves. The bolt pads are to have equal gaps on each side of the coupling.



CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

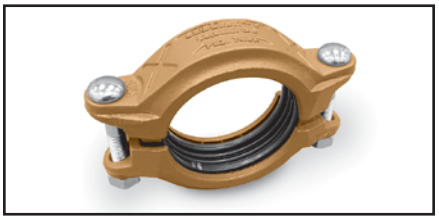
FIG. 7402

SlideLOK® Ready for Installation Coupling

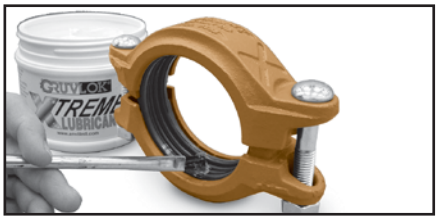
INSTALLATION

READY FOR INSTALLATION - RIGHT OUT OF THE BOX

Do not disassemble the SlideLOK Coupling. The Figure 7402 coupling is ready for installation. The bolt and gasket do not need to be removed.



1 Pipe Preparation— Pipe ends are to be rolled or cut grooved according to Anvil specifications. Not for use on "EG" rolled or cut grooved pipe ends. The pipe end must be smooth and free from metal burrs or projections.

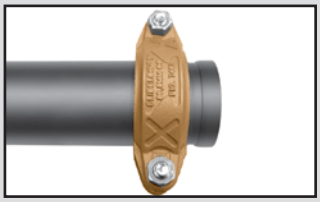


2 Gasket Preparation— Ensure the gasket is suitable for the intended application by referring to the Anvil gasket compatibility chart. Apply a light coating of Gruvlok® Xtreme™ Lubricant to exposed gasket surfaces.

3 Assembly— The SlideLOK Figure 7402 may be installed by one of two methods. The preferred method depends on the type of pipe components being joined and their orientation. Please review both methods before installing.

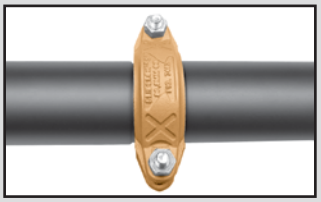
METHOD #1

Slide the SlideLOK coupling completely over the grooved pipe end. This will allow a clear and un-obstructed view of the pipe for correct alignment.



A. Slide the coupling on the pipe past the groove. The bolts and nuts can be hand tightened to position the coupling in place.

B. Align the mating pipe end. Align the two adjoining pipes together.

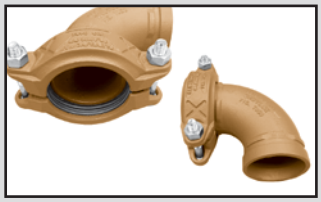


C. Slide the coupling back over the grooves so that the coupling keys are located over the respective grooves on both pipe ends.

D. Follow the instructions on fastening the coupling as shown in Step 4.

METHOD #2

Slide the SlideLOK™ coupling half way onto the pipe end or fitting. This will better accommodate fitting, and valve accessories during installation.



A. Slide the coupling on the fitting so that the groove and keys are aligned.

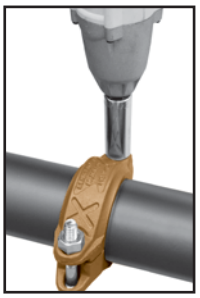
B. Bring the pipe end or fitting towards the coupling and insert so that the groove and coupling keys are aligned.

C. Hand tighten the nuts to correctly position the couplings keys over the respective grooved ends.

D. Follow the instructions on fastening the coupling as shown in Step 4.

4 Final Assembly

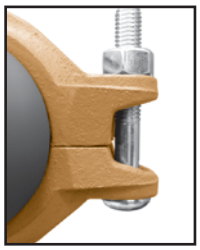
The SlideLOK coupling is designed to achieve pad to pad (metal-to-metal contact) using either an impact wrench* or wrench. The intended torque range for the coupling is located in the Table 1. Securely tighten nuts alternately and equally until the housing halves are in metal-to-metal contact.



*** CAUTION:** When using an impact wrench, verify that the output of the impact wrench is within the required torque range. It is recommended that a torque wrench be used for accurate assembly in order to obtain specified performance.

5 Final Inspection

Ensure the coupling is properly aligned in the grooves and the housing halves are in metal-to-metal contact, depicted in the pictures to the right.



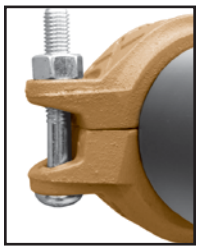


TABLE 1 – TORQUE RANGES

Sizes	Torque
In.	*Ft.-Lbs*
2 - 4	80 - 100
5 - 6	100 - 130
8	130 - 180

FIG. 7402

SlideLOK® Ready for Installation Coupling

RE-INSTALLATION

REINSTALLATION OF THE FIGURE 7402 SLIDELOK COUPLING

The SlideLOK coupling is designed to be installed in the ready for installation assembly position once. After the initial assemble the following steps are to be taken to re-install the Fig. 7402 SlideLOK coupling.

1 De-pressurize the System— De-pressurize the system before removing the SlideLOK Coupling. Dis-assemble the couplings by removing the nuts, bolts and gasket from the housing halves. A wrench is required to overcome the epoxy used to secure the nuts on the bolts.

2 Pipe Preparation

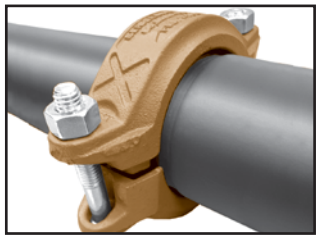
Pipe ends are to be rolled or cut grooved according to Anvil specifications. Not for use on "EG" rolled or cut grooved pipe ends. The pipe end must be smooth and free from metal burrs or projections.

3 Gasket Preparation

Ensure the gasket is suitable for the intended application by referring to the Anvil gasket compatibility chart. A light coating of Gruvlok® XTreme™ lubricant must be applied to the gasket prior to installation.

4 Pipe Alignment and Gasket Installation

Slide the gasket onto the pipe then align the two pipe ends together. Pull the gasket into position, centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.

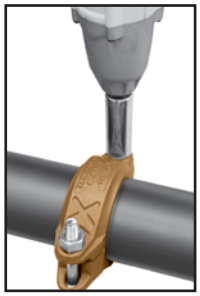


5 Housing Assembly

Place each housing halves on the pipe making sure the housing key fits into the groove. Be sure that the tongue and recess portions of the housing mate properly. Insert the bolts.

6 Final Assembly

The SlideLOK coupling is designed to achieve pad to pad (metal-to-metal contact) using either an impact wrench* or wrench. The intended torque range for the coupling is located in the Table 1. Securely tighten nuts alternately and equally until the housing halves are in metal-to-metal contact.



*** CAUTION:** When using an impact wrench, verify that the output of the impact wrench is within the required torque range. It is recommended that a torque wrench be used for accurate assembly in order to obtain specified performance.

7 Final Inspection

Ensure the coupling is properly aligned in the grooves and the housing halves are in metal-to-metal contact, depicted in the pictures to the right.

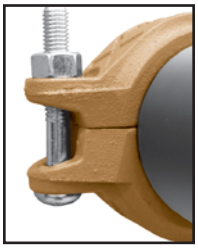
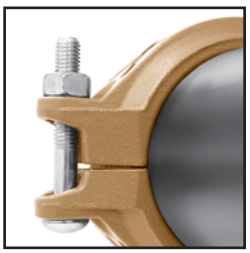


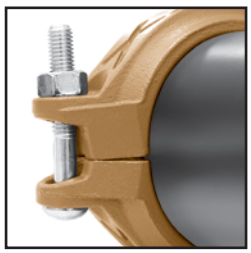
TABLE 1 – TORQUE RANGES

Sizes	Torque
In.	*Ft.-Lbs*
2 - 4	80 - 100
5 - 6	100 - 130
8	130 - 180

Incorrect Installation Examples



Low Torque or Out of Groove



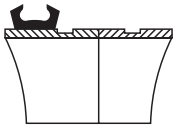
Excess Torque or Shallow Groove Dimension

FIG. 7001
Flexible Coupling

1 CHECK & LUBRICATE GASKET— Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to the exterior surface and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

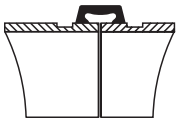
2 GASKET INSTALLATION— Slip the gasket over the pipe end making sure the gasket lip does not overhang the pipe end.

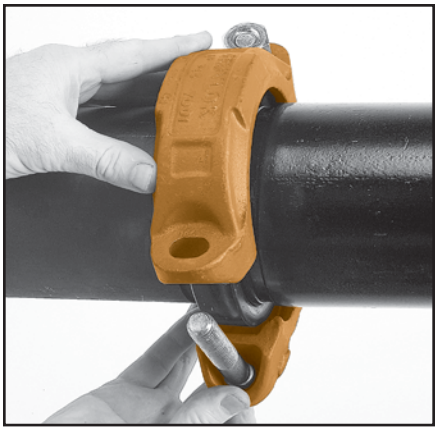
On couplings 10" and larger it may be easier to turn the gasket inside out then lubricate and slide the gasket over the pipe end as shown.



3 ALIGNMENT— After aligning the two pipe ends, pull the gasket into position centering it between the grooves on each should not extend into the groove on either pipe.

On couplings 10" and larger, flip or roll the gasket into centered position.

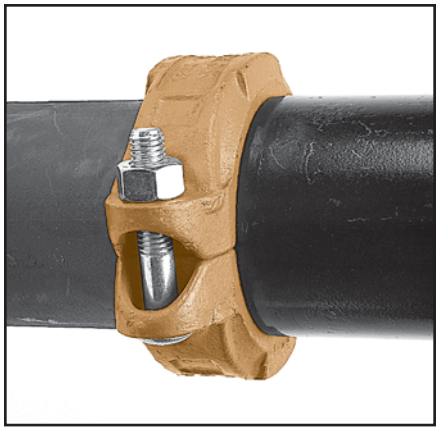




4 HOUSINGS— Place the coupling housing halves over the gasket making sure the housing keys engage the grooves. Insert bolts and turn nuts finger tight.

5 TIGHTEN NUTS— Tighten the nuts alternately and equally to the specified bolt torque. The housing bolt pads must make metal-to-metal contact.

CAUTION: Uneven tightening may cause the gasket to pinch.



6 ASSEMBLY IS COMPLETE— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves and the bolt pads are in firm even metal-to-metal contact on both sides of the coupling.

NOTE: The housings for sizes 16" and larger are cast in four or more segments.

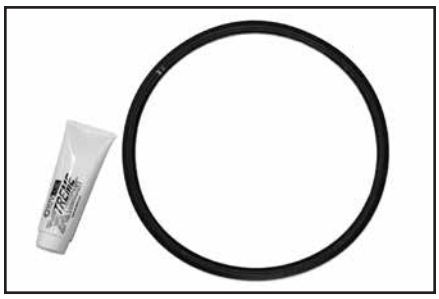
TO INSTALL: Loosely pre-assemble the segments into two "Housing Halves" making sure that the alignment tang(s) and slot(s) on the bolt pad(s) are properly mated. Install the "Housing Halves" as shown in steps 4 & 5. The coupling is properly installed when all bolt pads are firmly together - Metal-to-Metal.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

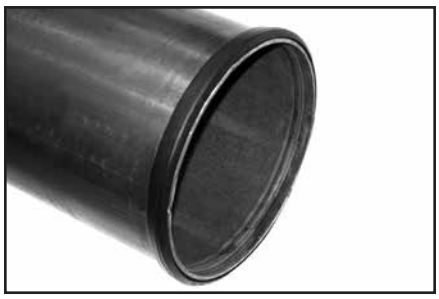
FIG. 7001-2 & FIG. 7401-2

2-Piece Large Diameter Groove Couplings

- 7001-2 & 7401-2 bolts must be lightly coated with Gruvlok Xtreme™ lube before installation. See chart for torque requirements.
- Minimum wall pipe suitable for 14" – 24": 7001-2 & 7401-2 roll grooved installation is 0.250" wall thickness
- Pipe preparation Grooved dimensions must conform to the Gruvlok Roll/Cut groove specification



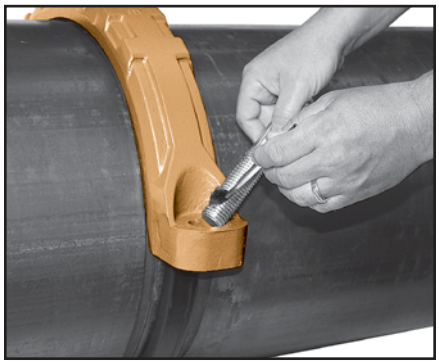
1 CHECK & LUBRICATE GASKET— Check gasket to be sure it is compatible for the intended service. Apply a thin coat of Gruvlok lubricant to the exterior surface and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.



2 GASKET INSTALLATION— Slip the gasket over the pipe end, making sure the gasket lip does not overhang the pipe end.

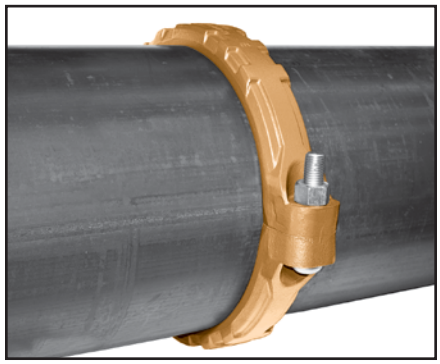
3 ALIGNMENT— After aligning the two pipe ends together, pull the gasket into position, centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.

4 HOUSING— Place each housing half on the pipe and into each groove making sure that the gasket does not slip out of position in between the pipe ends or groove.



5 BOLTS— Apply a thin coat of Xtreme lube to the bolt threads. Tighten the nuts alternately and equally to the specified bolt torque.

CAUTION: Uneven tightening may cause the gasket to pinch.



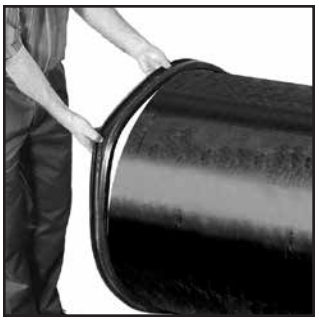
6 FINAL ASSEMBLY— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves, the bolt pads are in firm even metal-to-metal contact on both sides of the coupling, and gasket is not visible.

ANSI SPECIFIED BOLT TORQUE			
Pipe Sizes	Bolt Size	Specified Bolt Torque	Lubrication
In.	*In.*	*Ft.-Lbs*	–
14	7/8	180 - 220	Gruvlok Xtreme™ Lubricant
16	1	250 - 300	
18	1	250 - 300	
20	1 1/8	375 - 425	
24	1 1/8	375 - 425	

CAUTION: When using an impact wrench, verify that the torque output on the impact wrench is within the required torque range.

FIG. 7011
Standard Coupling

1 PIPE PREPARATION
Inspect the pipe ends making sure the criteria, in the Gruvlok Large Diameter Pipe Roll and Cut Groove Specifications, are met.



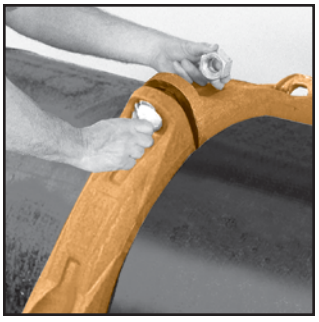
2 GASKET INSTALLATION
Turn the gasket inside out and slide the gasket completely over one of the pipe ends. Turning the gasket inside out will reduce the stretching necessary to put the gasket into position. Ideally, approximately 75% of the pipe's gasket-sealing surface, (Dimension A) should be visible when the gasket is in proper position. This will aid in step 4.

3 LUBRICATE GASKET
Lubricate the gasket sealing lips. The use of Gruvlok lubricants ensures compatibility between the lubricant and the gasket.

4 ALIGNMENT—Pull the two pipes into contact aligning the pipe ends.

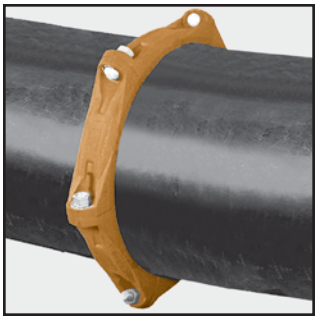
CAUTION: Be careful not to pinch fingers during this step. Working your way around the circumference of the pipe, flip the gasket toward the pipe end so that the proper side is facing out. The end of this procedure will result in the gasket snapping into place. Position the gasket centrally between the grooves of the two pipe ends.

5 LUBRICATE GASKET
Lubricate the exterior surface of the gasket. This helps prevent pinching of the gasket during assembly.



6 HOUSINGS—Secure the housings about the pipes making sure the coupling keys are engaged in the pipe end grooves. Hint: For horizontal assembly, place housing segment on top of the pipe to support the weight of the housing segment. Secure the adjacent housing with an oval neck track bolt and heavy hex nut and then rotate the secured housings, again balancing the weight of the housings on the top of the pipe. Continue this procedure for all segments.

7 TIGHTEN NUTS—
Firmly torque each bolt. The specified minimum torque for each nut is 600 ft.-lbs. The specified maximum torque for each nut is 800 ft.-lbs.



8 ASSEMBLY IS COMPLETE
Installation of the Figure 7011 Standard Coupling is completed.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

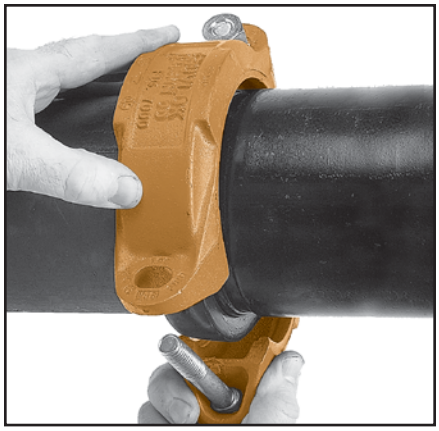
FIG. 7000

Lightweight Flexible Coupling

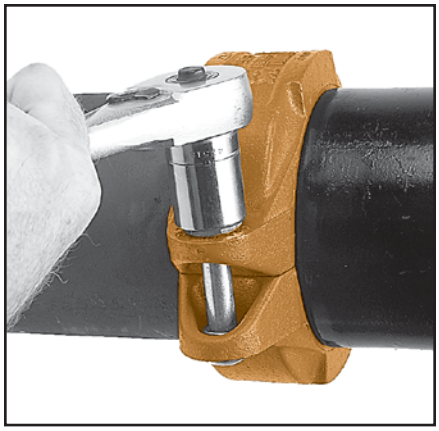
1 CHECK & LUBRICATE GASKET— Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to the exterior surface and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

2 GASKET INSTALLATION— Slip the gasket over the pipe end, making sure the gasket lip does not overhang the pipe end.

3 ALIGNMENT— After aligning the two pipe ends together, pull the gasket into position, centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.



4 HOUSINGS— With one nut unthreaded to the end of the bolt, unthread the other nut completely and swing the coupling housing halves over the gasket, making sure the housing keys engage the grooves. Insert the bolt and turn the nuts finger tight.



5 TIGHTEN NUTS— Tighten the nuts alternately and equally to the specified bolt torque. The housing bolt pads must make metal-to-metal contact.

CAUTION: Uneven tightening may cause the gasket to pinch.

6 ASSEMBLY IS COMPLETE— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves and the bolt pads are in firm even metal-to-metal contact on both sides of the coupling.

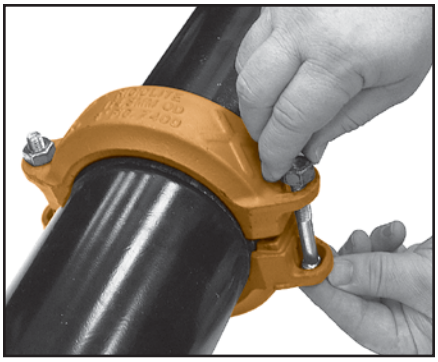
CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

FIG. 7400
Rigidlite® Coupling

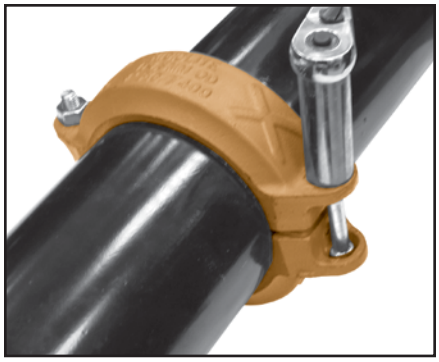
1 CHECK & LUBRICATE GASKET— Check the gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok Xtreme Lubricant to the entire surface, both internal and external, of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

2 GASKET INSTALLATION— Slip the gasket over the one pipe, making sure the gasket lip does not overhang the pipe end.

3 ALIGNMENT— After aligning the two pipe ends together, pull the gasket into position, centering it between the grooves on each pipe. The gasket should not extend into the groove on either pipe.



4 HOUSINGS— Remove one nut and bolt and loosen the other nut. Place one housing over the gasket, making sure the housing keys fit into the pipe grooves. Swing the other housing over the gasket and into the grooves on both pipes, making sure the tongue and recess of each housing is properly mated. Reinsert the bolt and run-up both nuts finger tight.



5 TIGHTEN NUTS— Securely tighten nuts alternately and equally to the specified bolt torque, keeping the gaps at the bolt pads evenly spaced.

CAUTION: Uneven tightening may cause the gasket to pinch. Gasket should not be visible between segments after bolts are tightened.

6 ASSEMBLY IS COMPLETE— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves. The bolt pads are to have equal gaps on each side of the coupling.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

FIG. 6402

CTS SlideLOK® Rigid Coupling

INSTALLATION

READY FOR INSTALLATION - RIGHT OUT OF THE BOX

Do not disassemble the CTS SlideLOK Coupling. The Figure 6402 coupling is ready for installation. The bolt and gasket do not need to be removed.

1 Copper Tube Preparation— Copper tube ends are to be roll grooved copper tube according to Anvil specifications. The tube end must be smooth and free from metal burrs or projections.

2 Gasket Preparation— Ensure the gasket is suitable for the intended application by referring to the Anvil gasket compatibility chart. Apply a light coating of Gruvlok® Xtreme™ Lubricant to exposed gasket surfaces.

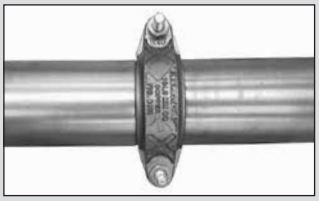
3 Assembly— The CTS SlideLOK Figure 6402 may be installed by one of two methods. The preferred method depends on the type of components being joined and their orientation. Please review both methods before installing.

METHOD #1

Slide the CTS SlideLOK coupling completely over the grooved copper tube end. This will allow a clear and un-obstructed view of the tube for correct alignment.

A. Slide the coupling on the copper tube past the groove. The bolts and nuts can be hand tightened to position the coupling in place.

B. Align the mating copper tube end. Align the two adjoining tubes together.



C. Slide the coupling back over the grooves so that the coupling keys are located over the respective grooves on both copper tube ends.

D. Follow the instructions on fastening the coupling as shown in Step 4.

METHOD #2

Slide the CTS SlideLOK™ coupling half way onto the copper tube end or fitting. This will better accommodate fitting, and valve accessories during installation.

A. Slide the coupling on the fitting so that the groove and keys are aligned.

B. Bring the copper tube end or fitting towards the coupling and insert so that the groove and coupling keys are aligned.

C. Hand tighten the nuts to correctly position the couplings keys over the respective grooved ends.

D. Follow the instructions on fastening the coupling as shown in Step 4.

4 Final Assembly

The CTS SlideLOK coupling is designed to achieve pad to pad (metal-to-metal contact) using either an impact wrench* or wrench. The intended torque range for the coupling is located in Table 1. Securely tighten nuts alternately and equally until the housing halves are in metal-to-metal contact.

*** CAUTION:** When using an impact wrench, verify that the output of the impact wrench is within the required torque range. It is recommended that a torque wrench be used for accurate assembly in order to obtain specified performance.

5 Final Inspection

Ensure the coupling is properly aligned in the grooves and the housing halves are in metal-to-metal contact, depicted in the pictures to the right.

TABLE 1 – TORQUE RANGES

Sizes	Torque
In.	*Ft.-Lbs*
2 - 4	80 - 100

FIG. 6402

CTS SlideLOK® Rigid Coupling

RE-INSTALLATION

REINSTALLATION OF THE FIGURE 6402 CTS SLIDELOK COUPLING

The CTS SlideLOK coupling is designed to be installed in the ready for installation assembly position once. After the initial assemble the following steps are to be taken to re-install the Fig. 6402 CTS SlideLOK coupling.

1 De-pressurize the System— De-pressurize the system before removing the CTS SlideLOK Coupling. Disassemble the couplings by removing the nuts, bolts and gasket from the housing halves. A wrench is required to overcome the epoxy used to secure the nuts on the bolts.

2 Copper Tube Preparation Copper tube ends are to be roll grooved copper tube according to Anvil specifications. The tube end must be smooth and free from metal burrs or projections.

3 Gasket Preparation Ensure the gasket is suitable for the intended application by referring to the Anvil gasket compatibility chart. A light coating of Gruvlok® XTreme™ lubricant must be applied to the gasket prior to installation.

4 Copper Tube Alignment and Gasket Installation Slide the gasket onto the copper tube then align the two tube ends together. Pull the gasket into position, centering it between the grooves on each copper tube. Gasket should not extend into the groove on either copper tube.

5 Housing Assembly Place each housing halves on the copper tube making sure the housing key fits into the groove. Be sure that the tongue and recess portions of the housing mate properly. Insert the bolts.

6 Final Assembly The CTS SlideLOK coupling is designed to achieve pad to pad (metal-to-metal contact) using either an impact wrench* or wrench. The intended torque range for the coupling is located in Table 1. Securely tighten nuts alternately and equally until the housing halves are in metal-to-metal contact.

* **CAUTION:** When using an impact wrench, verify that the output of the impact wrench is within the required torque range. It is recommended that a torque wrench be used for accurate assembly in order to obtain specified performance.

7 Final Inspection Ensure the coupling is properly aligned in the grooves and the housing halves are in metal-to-metal contact, depicted in the pictures to the right.

TABLE 1 – TORQUE RANGES

Sizes	Torque
In.	*Ft.-Lbs*
2 - 4	80 - 100

Incorrect Installation Examples

Low Torque or Out of Groove

Excess Torque or Shallow Groove Dimension

FIG. 6400
Rigid Coupling

The Fig. 6400 Coupling from Gruvlok is specially designed to provide a rigid pipe connection to meet the specific demands of copper tubing installation. Fast and easy swing-over installation of the rugged lightweight housing produces a secure, rigid pipe joint. Available with the EPDM flush gap style gasket as the standard gasket.

CAUTION: Uneven tightening may cause the gasket to pinch. The gasket should not be visible between segments after the bolts are tightened. Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation.

SPECIFIED BOLT TORQUE

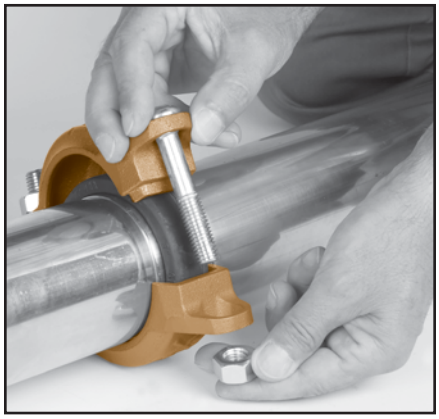
Bolt Size	Wrench Size	Specified Bolt Torque*
In.	*In.*	*Ft.-Lbs*
3/8	11/16	30-45
1/2	7/8	30-45
5/8	1 1/16	60-90

* Non-lubricated bolt torques.

1 CHECK & LUBRICATE GASKET– Check the gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok® Xtreme Lubricant to the entire surface, both internal and external, of the gasket. Be careful that foreign particles do not adhere to the lubricated surfaces.

2 GASKET INSTALLATION– Slip the gasket over one tube, making sure the gasket lip does not overhang the tube end.

3 ALIGNMENT– After aligning the two tube ends together, pull the gasket into position, centering it between the grooves on each tube. The gasket should not extend into the groove on either tube or between the tube ends.



4 HOUSINGS– Remove one nut and bolt and loosen the other nut. Place one housing over the gasket, making sure the housing keys fit into the tube grooves. Swing the other housing over the gasket and into the grooves on both tubes, making sure the tongue and recess of each housing is properly mated. Re-insert the bolt and run-up both nuts finger tight.

5 TIGHTEN NUTS– Securely tighten nuts alternately and equally to the specified bolt torque, keeping the gaps at the bolt pads evenly spaced. Assembly is complete. Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves. The bolt pads are to have equal gaps on each side of the coupling.

NOTE: Copper is a soft material, in some cases, the bolt pads may come close to metal-to-metal contact.

CAUTION: Uneven tightening may cause the gasket to pinch. The gasket should not be visible between segments after the bolts are tightened. Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation.

FIG. 7003

Hingelok™ Coupling

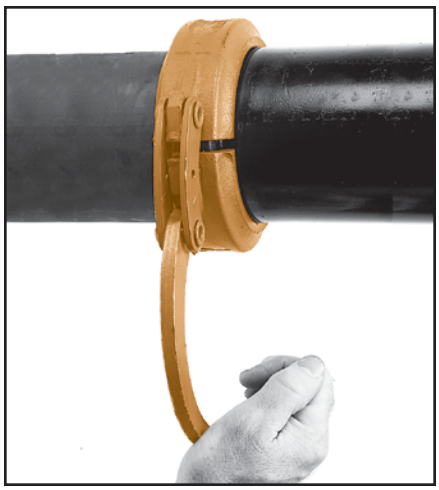
NOTE: Remove locking pin from handle before opening coupling.

1 CHECK & LUBRICATE GASKET— Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to the exterior surface and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

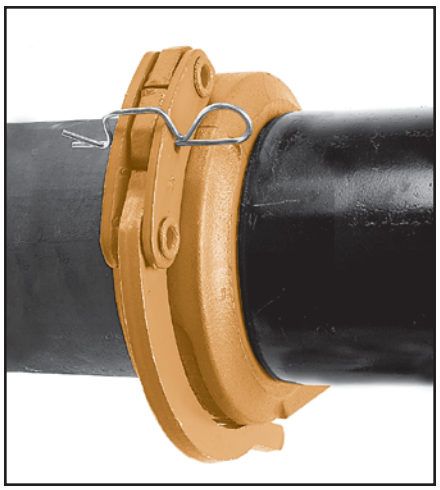
2 GASKET INSTALLATION— Slip the gasket over the pipe end making sure the gasket lip does not overhang the pipe end.

3 ALIGNMENT— After aligning the two pipe ends, pull the gasket into position centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.

4 HOUSINGS— Put one half of the open coupling over the gasket as the coupling keys fit firmly into the grooves on each pipe end. Swing the other half of the coupling into position around the gasket and into the grooves.



5 LOCK COUPLING— Fit the nose of the locking handle in the notch of the opposite housing. Press firmly down on the handle until it makes contact with the coupling housing. Insert locking pin into handle linkage to secure handle in closed position. (See Caution.)



6 ASSEMBLY IS COMPLETE— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves and the bolt pads are in firm even metal-to-metal contact on both sides of the coupling.

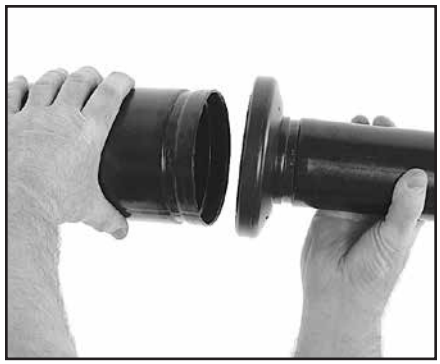
CAUTION:

1) Hammering or banging on the handle or coupling housing could cause serious damage to the locking device and coupling assembly. The result may be an unsuitable pipe joint and unusable coupling assembly.
2) Care needs to be taken so that fingers do not get caught or pinched when handle is placed in locked position as a result of cam action of handle assembly.
3) When re-using coupling and gasket, always inspect gasket for damage and hinge/handle assembly for looseness, distortion or any other damage.

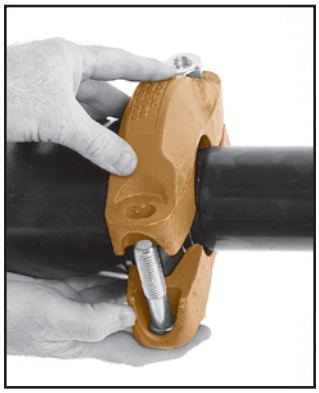
FIG. 7010
Reducing Coupling

1 CHECK & LUBRICATE GASKET— check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to the exterior surface and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

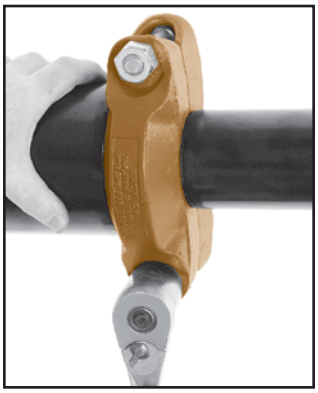
2 GASKET INSTALLATION— Place the smaller opening of the gasket over the smaller pipe. Angle the gasket over the pipe end and pull the gasket lip open around the circumference of the pipe. The center leg of the gasket should make flush contact with the pipe end and will prevent telescoping of the smaller pipe inside the larger.



3 ALIGNMENT— Align the adjoining pipe center lines, and insert the larger pipe end into the gasket. Angle the pipe end slightly to the face of the gasket and tilt the pipe into the gasket to ease assembly.

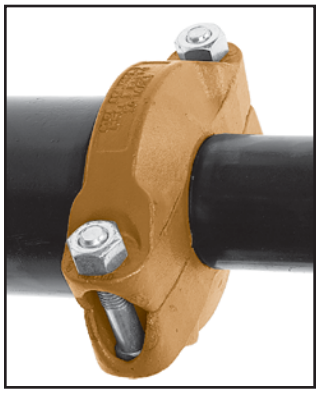


4 HOUSINGS— Place the coupling housing halves over the gasket making sure the housing keys engage the grooves. Insert bolts and turn nuts finger tight.

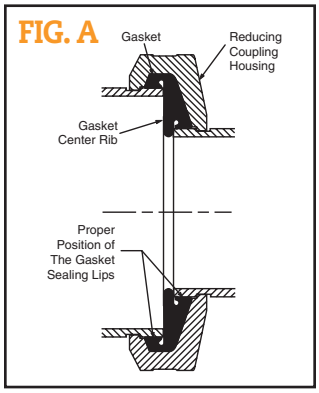


5 TIGHTEN NUTS— Tighten the nuts alternately and equally to the specified bolt torque. The housing bolt pads must make metal-to-metal contact.

CAUTION: Uneven tightening may cause the gasket to pinch.



6 ASSEMBLY COMPLETE— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves and the bolt pads are in firm even metal-to-metal contact on both sides of the coupling.



NOTE: Fig. A illustrates the correct position of the Fig. 7010 Reducing Coupling gasket and housing properly assembled onto adjacent pipe ends.
CAUTION: In vertical installations the pipes must be supported to prevent telescoping during installation.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

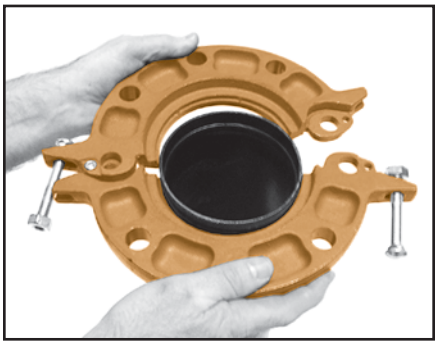
FIG. 7012

Gruvlok Flange (2"–12")

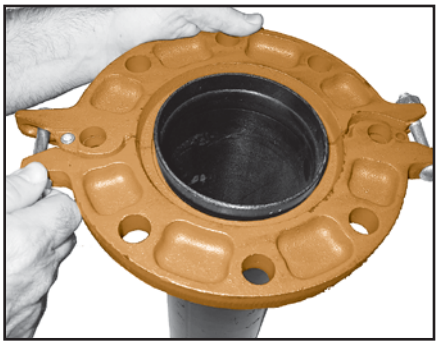
APPLICATIONS WHICH REQUIRE A GRUVLOK® FLANGE ADAPTER INSERT:

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruvlok Flange Adapter Insert between the valve and the Gruvlok Flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard full-faced flange gasket is installed against the serrated flange face, and the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the standard flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.

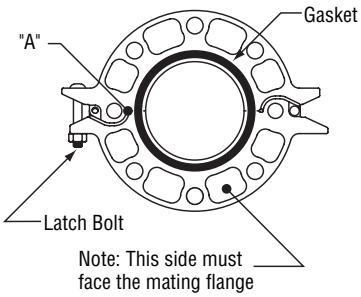
Check pipe end for proper grooved dimensions and to assure that the pipe end is free of indentations and projections that would prevent proper sealing of the Gruvlok flange gasket.



1 INSTALL HOUSINGS—On the side without the hinge pin, loosen the latch bolt nut to the end of the bolt thread. (It is not necessary to remove the nut from the latch bolt.) Swing the latch bolt out of the slot. Open the Gruvlok Flange and place around the grooved pipe end with the key section fitting into the groove. The flange gasket cavity must face the pipe end.



2 LATCH HOUSINGS—Place the latch bolt back into the slotted hole. Tighten the nut until there is a 1/16" gap between the flange halves at location "A". (See Figure below)



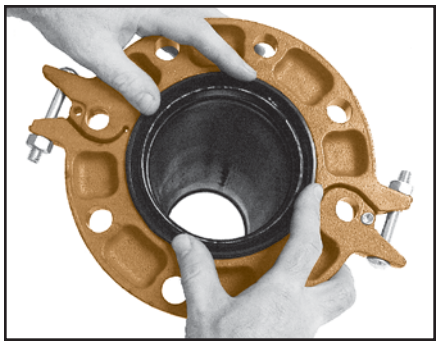
3 CHECK & LUBRICATE GASKET—Check the gasket to assure that it is properly suited for the intended service. Lubricate the entire exterior surface of the gasket, including the sealing lips, using the proper Gruvlok lubricant.

⚠ WARNING

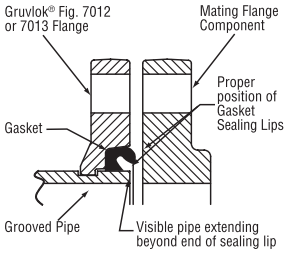
The Gruvlok Flange gasket must be inserted so that the sealing lips face toward the pipe end and the mating flange. The lip of the gasket, sealing on the pipe, should not extend beyond the pipe end. The pipe should extend out beyond the end of the sealing lip by approximately 1/8" on the 2"-6" sizes and 3/16" on the 8"-12" sizes.

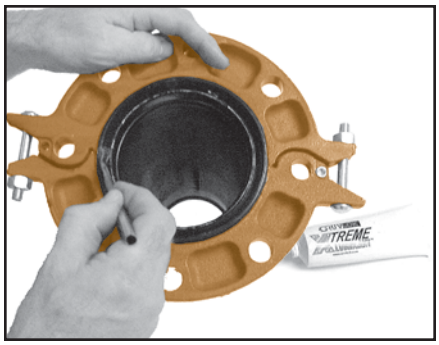
FIG. 7012

Gruvlok Flange (2"–12")

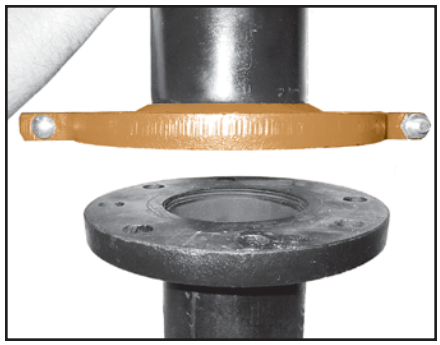


4 INSTALL GASKET—Stretch the Gruvlok gasket around the pipe end and then press the gasket into the cavity between the pipe O.D. and the flange. The gasket must be properly positioned as shown in the figure below.

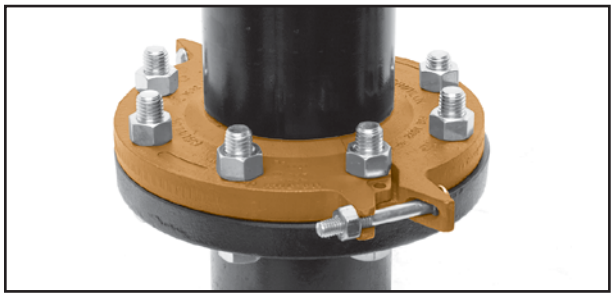




5 LUBRICATE GASKET LIP—With the gasket in place apply lubricant to the exposed gasket tip, which will seal on the mating flange. **Tighten the nuts on the latch bolts alternately to the specified latch bolt torque. The flange housings must be in firm metal-to-metal contact.**



6 INSPECT MATING FLANGE—Verify that the mating flange face is hard, flat and smooth, free of indentations, which would prevent proper sealing of the Gruvlok Flange gasket. Assure the gasket is still in the proper position and align Gruvlok Flange bolt holes with the mating flange, pump, tank, etc., bolt holes.



7 INSTALL BOLTING—Insert a flange bolt or stud with material properties of SAE J429 Grade 5 or higher through the bolt holes and thread a nut on hand tight. Continue this procedure until all bolt holes have been fitted. Tighten the nuts alternately and evenly so the flange faces remain parallel. All the bolts or studs must be torqued to the mating flange bolts specified torque. The flange faces should have metal-to-metal contact.

⚠ WARNING It is important to line up the bolt holes before bringing the two flanges together. Sliding the flanges into place will dislodge the gasket and cause leakage to occur. When using a flange insert, it is important that the insert is properly aligned with the gasket prior to tightening the bolts.

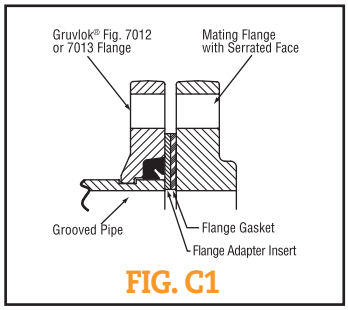


FIG. C1

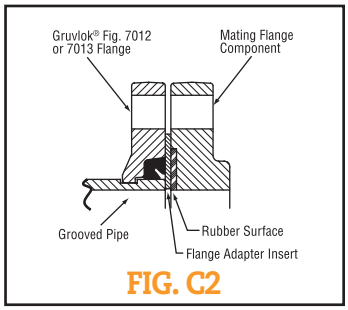


FIG. C2

NOTE: The Gruvlok Fig. 7012 Flange requires the use of a Flange Adapter Insert when used against rubber surfaces (Figure C1), serrated flange surfaces or mating flanges with inserts (Figure C2). The Flange Adapter Insert will be exposed to the fluids in the system. Ensure that the Insert is compatible with the fluids in the systems and with adjacent piping components.

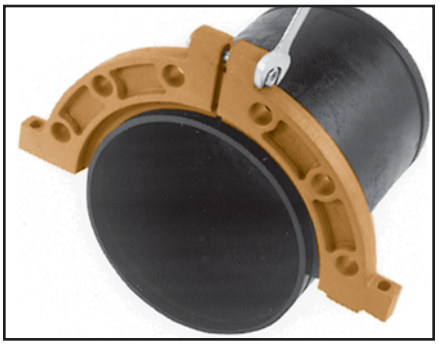
⚠ WARNING Do not use a steel Flange Adapter Insert in copper systems or in systems where galvanic corrosion is possible.

CAUTION: Proper torquing of flange bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

FIG. 7012

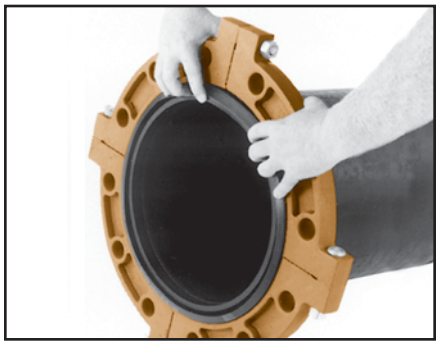
Gruvlok Flange (14"–24")

Gruvlok® Flanges of 14" size and larger are cast in four segments to ease handling during assembly. Figure 7012 Gruvlok Flanges should not be used with tie rods nor in a configuration with a wafer valve between two 7012 flanges.

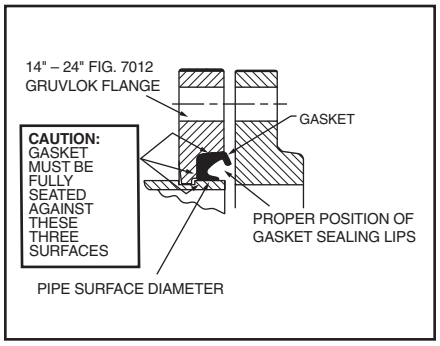


1 INSTALL HOUSING—Place each Gruvlok Flange segment around the grooved pipe with the key section fitting into the groove and the flange gasket cavity facing the pipe end. Loosely assemble the segments using the four segment-bolts-and nuts. Alternately and equally tighten the latch bolts and nuts to the specified latch bolt torque. Bring the four flange segments into full, firm metal-to-metal contact.

NOTE: An alternative method of assembly is to loosely preassemble two segments into two equal halves of the flange leaving a small gap (approximately 1/8") between the two segments of each flange-half. Place the flange halves around the pipe and complete the assembly as described in Step 1, above.

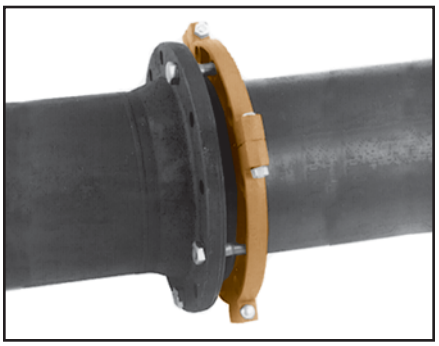


2 INSTALL GASKET—Check the gasket grade to verify that it is properly suited for the intended service. Lubricate the entire surface of the gasket and the flange cavity using the appropriate Gruvlok Lubricant. Place the Gruvlok Flange Gasket around the pipe end by pressing the gasket into the cavity between the pipe O.D. and flange recess. Move around the gasket in both directions until the gasket is fully seated in the flange gasket cavity.



3 GASKET POSITION—The correct position and relationship of the components of the Gruvlok Flange assembly is shown in the Figure above. The wide gasket lip must seal on the pipe surface diameter and the narrow gasket lip must face the mating flange. Be careful that foreign particles do not adhere to lubricated surfaces.

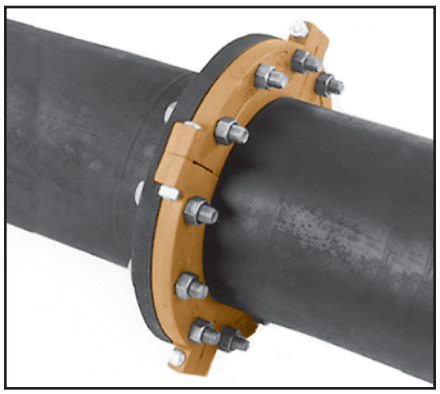
NOTE: Design of the Gruvlok Flange provides sealing only with the special Gruvlok Flange gasket. Only Gruvlok Flange gaskets may be used with Fig. 7012 flanges.



4 INSPECT & MATE FLANGE

Align the Gruvlok Flange bolt holes with mating flange bolt holes. Insert a flange bolt or stud with material properties of SAE J429 Grade 5 or higher through the bolt holes and thread a nut on hand tight. Insert the next bolt or stub opposite the first and again thread the nut on hand tight. Continue this procedure until all bolt holes have been fitted. Insertion of the flange bolts prior to contact of the flanges will help in the alignment of the flanges. Pull the two flanges into contact using care to assure that the gasket remains fully seated within the gasket cavity during assembly.

NOTE: Take care to assure that the gasket lip is not bent backwards and pinched between the two flanges.



5 INSTALL BOLTING

Tighten the nuts evenly to the specified mating face bolt torque so that the flange faces remain parallel and make firm even contact around the entire flange.

CAUTION: Proper torquing of flange bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

FIG. 7042
Outlet Coupling

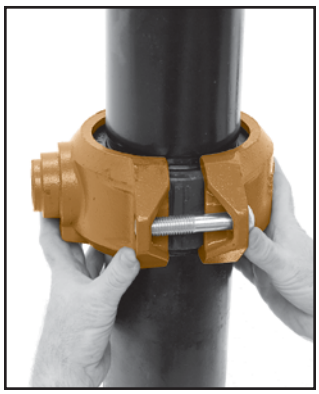
These instructions are based on pipe grooved in accordance with Gruvlok® grooving specifications. Check pipe ends for proper groove dimensions and to assure that the pipe ends are free of indentations and projections which would prevent proper sealing. Fig. 7042 Outlet Coupling is recommended for use on straight runs of pipe, not recommended for use with Gruvlok End Cap or Gruvlok Cast Fittings.

ALWAYS USE A GRUVLOK LUBRICANT FOR PROPER COUPLING ASSEMBLY. Thorough lubrication of the gasket is essential to prevent pinching and possible damage to the gasket.

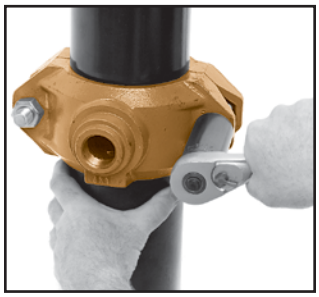
1 CHECK & LUBRICATE GASKET— Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to the exterior surface and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

2 GASKET INSTALLATION— Slip the gasket over one pipe end making sure the pipe abuts the gasket's center ribs.

3 ALIGNMENT— Align the pipe ends and pull the pipe into the gasket until the center ribs are in contact with the pipe ends. The gasket should not extend into the groove on either pipe. Rotate the gasket to align the outlet of the gasket to the same direction as the branch outlet.

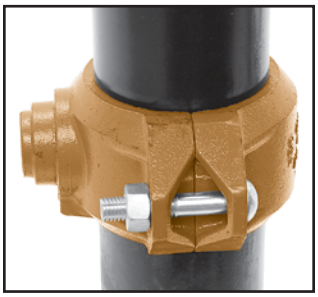


4 HOUSING ASSEMBLY— With one nut and bolt removed and the other loosened, place one side of the housing over the gasket. Make sure the ribs on the outside of the gasket align with the recesses in the housing and the keys in the housing are in the grooves on both pipes. Swing the other housing over the gasket and into the grooves on both sides of the pipe. Make sure the recess in the outlet of the housing is properly aligned with gasket outlet.



5 TIGHTEN NUTS— Re-insert the bolt and run-up both nuts finger tight. Securely tighten the nuts alternately and equally until they are completely tightened and there is no gap between the bolt pads. Continue tightening the nuts alternately and equally until the specified bolt torque is reached.

CAUTION: Make sure the ribs on the exterior of the gasket are enclosed in the housing recesses.



6 ASSEMBLY IS COMPLETE

FIG. 7042 – SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on Gruvlok® couplings and flanges. The nuts must be tightened alternately and evenly until fully tightened. Caution: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

ANSI SPECIFIED BOLT TORQUE

Coupling Size	Bolt Size	Wrench Size	Specified Bolt Torque *
In.	*In.*	*In.*	*Ft.-Lbs.*
1½	⅜ x 2⅛	11⁄16	30-45
2	⅜ x 2½	11⁄16	30-45
2½	½ x 2⅜	⅞	80-100
3	½ x 3	⅞	80-100
4	⅝ x 3½	1 1⁄16	100-130
6	⅝ x 3½	1 1⁄16	100-130

* Non-lubricated bolt torques.

FIG. 7045 & FIG. 7046

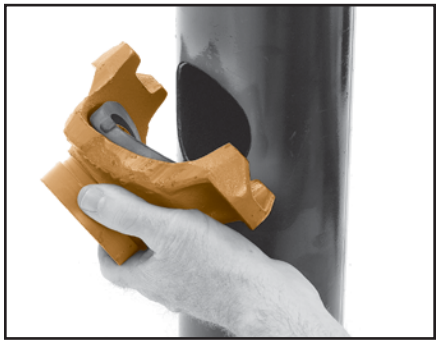
Clamp-T® Branch Outlets

ALWAYS USE A GRUVLOK LUBRICANT FOR PROPER COUPLING ASSEMBLY.
Thorough lubrication of the gasket is essential to assist the gasket into the proper sealing position.

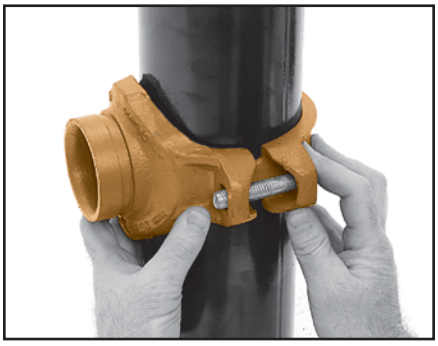
1 PIPE PREPARATION—Cut the appropriate size hole in the pipe and remove any burrs. Be sure to remove any debris from inside the pipe. Clean the gasket sealing surface within 5/8" of the hole and visually inspect the sealing surface for defects that may prevent proper sealing of the gasket.

BRANCH SIZE	HOLE SAW SIZE
(Inches)	*(Inches) (+1/8, -0)*
½, ¾, 1	1½
1¼, 1½	2
2	2½
2½	2¾
3	3½
4	4½

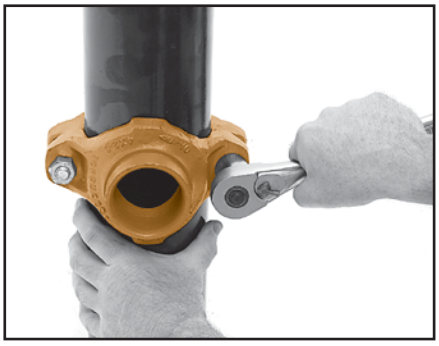
2 CHECK & LUBRICATE GASKET—Check the gasket to be sure it is compatible for the intended service. Apply a thin layer of Gruvlok lubricant to the back surface of the gasket. Be careful that foreign particles do not adhere to the lubricated surfaces. Insert the gasket back into the outlet housing making sure the tabs in the gasket line up with the tab recesses in the housing.



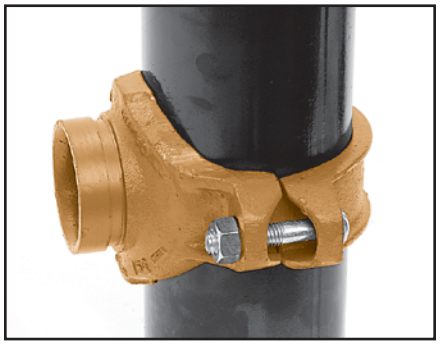
3 GASKET INSTALLATION—Lubricate the exposed surface of the gasket. Align the outlet housing over the pipe hole making sure that the locating collar is in the pipe hole.



4 ALIGNMENT—Align the strap around the pipe, insert the bolts and tighten the nuts finger tight. Some sizes use a U-bolt design.



5 TIGHTEN NUTS—Alternately and evenly tighten the nuts to the specified bolt torque.



6 ASSEMBLY IS COMPLETE

FIGS. 7045 & 7046—SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts and U-bolts used on the Gruvlok® Clamp-T's. The nuts must be tightened alternately and evenly until fully tightened. Caution: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure, battery strength and operational variations.

CAUTION: Proper torquing of the bolts or U-bolts is required to obtain the specified performance. Overtorquing the bolts or U-bolts may result in damage to the bolt, U-bolt and/or casting which could result in lower pressure retention capabilities, lower bend load capabilities, pipe joint leakage and pipe joint separation.

ANSI SPECIFIED BOLT TORQUE		
Bolt Size	Wrench Size	Specified Bolt Torque *
In.	*In.*	*Ft.-Lbs.*
U-Bolt	⅞	30-40
½	⅞	60-80
⅝	1 1/16	100-130
¾	1¼	130-180

* Non-lubricated bolt torques

FIG. 7043
Branch Outlet

ALWAYS USE A GRUVLOK LUBRICANT FOR PROPER BRANCH OUTLET ASSEMBLY. Thorough lubrication of the gasket is essential to to assist the gasket into the proper sealing position.

SPECIFIED BOLT TORQUE

The nuts must be tightened alternately and evenly until fully tightened. **CAUTION:** Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure, battery strength and operational variations.

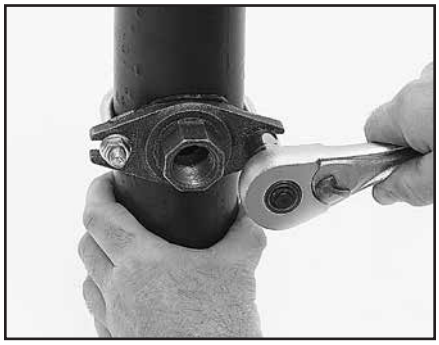
CAUTION: Proper torquing of the U-bolts is required to obtain the specified performance. Over-torquing the U-bolts may result in damage to the U-bolt and/or casting which could result in lower pressure retention capabilities, lower bend load capabilities, pipe joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

1 PIPE PREPARATION AND GASKET LUBRICATION— Cut a 1 3/16" hole in the pipe and remove any burrs. Be sure to remove the slug from inside the pipe. Clean the gasket sealing surface within 5/8" of the hole and visually inspect the sealing surface for defects that may prevent proper sealing of the gasket. Remove the gasket from the housing and apply a thin layer of Gruvlok® lubricant to the back surface of the gasket. Be careful that foreign particles do not adhere to the lubricated surfaces. Insert the gasket back into the outlet housing making sure the tabs in the gasket line up with the tab recesses in the housing.

2 GASKET INSTALLATION— Lubricate the exposed surface of the gasket with Gruvlok® lubricant.

3 ALIGNMENT— Align the outlet housing over the pipe hole making sure that the locating collar is in the pipe hole.

4 HOUSING ASSEMBLY— Attach the U-bolt from the other side and fasten the nuts finger tight.



5 TIGHTEN NUTS— Making sure the fitting is properly located over the pipe hole, tighten the nuts alternately and evenly to the specifed torque of 27 to 33 Lbs.-Ft. (37 to 45 N-m).

6 ASSEMBLY IS COMPLETE— Visually inspect the assembly, the gasket will extrude out from under the housing.

FIG. 7005

Roughneck® Coupling

1 PIPE PREPARATION—Make certain the pipe ends are free of indentations, projections, weld splatter, or other imperfections which could prevent proper sealing of the gasket.

2 PIPE MARKING—Mark each pipe at a distance from the pipe end according to the pipe run size. See Image 1 and the chart.

3 CHECK & LUBRICATE GASKET—Check the gasket color code to verify that the gasket grade is properly suited for the intended service. Apply a thin coating of Gruvlok Lubricant to the gasket lips and the exterior surface of the gasket and slip the gasket over one pipe. See Image 2. Make sure the gasket does not overhang the pipe end.

Pipe Size	Distance from pipe end mark	Bolt Torque	
		Min.	Max
In./DN(mm)	*In./mm*	*Ft.-Lbs./N-m*	*Ft.-Lbs./N-m*
2 - 2½ *50-65*	1 *25.4*	150 *203*	190 *257*
3 - 4 *80-100*	1 *25.4*	200 *271*	250 *339*
5 - 8 *125-200*	1¼ *31.8*	250 *339*	300 *406*
10 *250*	1¾ *44.5*	500 *678*	600 *814*
12 *300*	1¾ *44.5*	550 *746*	700 *949*
14 - 16 *350-400*	1¾ *44.5*	550 *746*	700 *949*

4 PIPE ALIGNMENT—Align the second pipe and while holding the pipe in the butted position slide the gasket back over the second pipe end. The gasket should be equally spaced between the lines scribed on each pipe.

5 HOUSING—Place each half of the Roughneck coupling over the gasket, making sure that the tongue on one housing half is aligned with the recess on the other housing half. See Image 3.

6 TIGHTEN NUTS—Tighten the nuts alternately and uniformly until the required bolt torque is reached. See Image 4 and chart for bolt torque.

7 REINSTALLATION—Reinstallation after a disassembly will require that the threads on the bolt and in the nut are clean and lubricated with a light oil.

NOTE: Torque requirements must be met and housing halves must be assembled with equal gaps between bolt pads.

Image 1

Image 2

Image 3

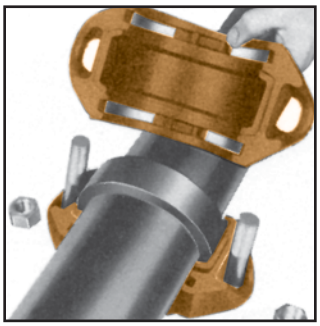
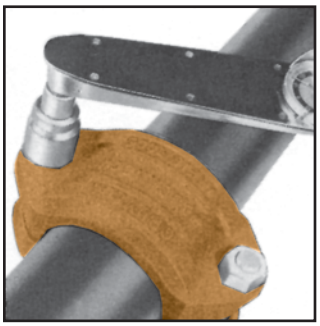


Image 4



Working pressure and end load are based on a properly assembled Roughneck coupling with bolts fully torqued to the above specifications, on plain-end or beveled standard wall steel pipe and Gruvlok Plain-End Fittings.

Roughneck Couplings are designed to be used on plain-end pipe and Gruvlok Plain-End Fittings only. For externally coated pipe applications, contact an Anvil International Representative.

Not recommended for use on steel pipe with a hardness greater than 150 Brinell, plastic, HDPE, cast iron or other brittle pipe.

Re-Installation: The 7005 roughneck coupling may be re-installed following a quick visual inspection of the gripper and pipe ends. Any damage on the gripper and or pipe ends may compromise the integrity of the joint and it is advised that the coupling and or individual gripper be replaced and the pipe end cut back to where they are free from damage.

*Bolt torque ratings shown must be applied at installation.

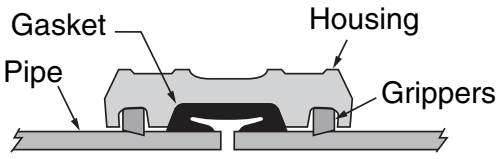
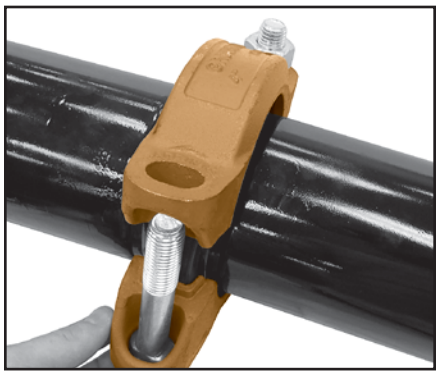


FIG. 7004
High Pressure Coupling

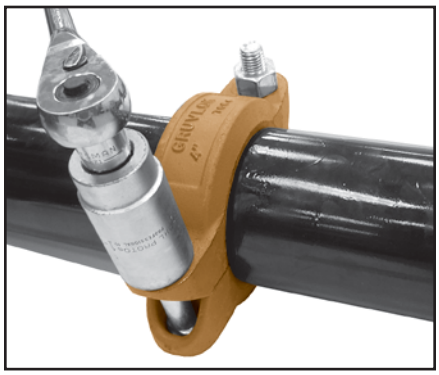
1 CHECK & LUBRICATE GASKET— Check gasket to be sure it is compatible for the intended service. Apply a thin coat of Gruvlok Lubricant to the exterior surface and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

2 GASKET INSTALLATION— Slip the gasket over the pipe end, making sure the gasket lip does not overhang the pipe end.

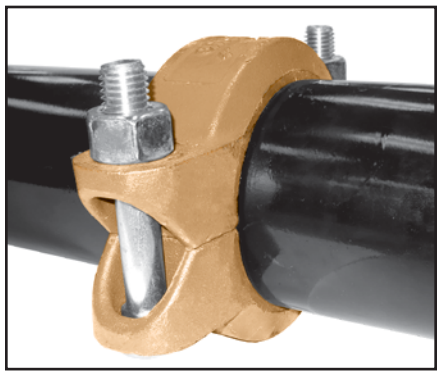
3 ALIGNMENT— After aligning the two pipe ends together, pull the gasket into position, centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe



4 HOUSINGS— Place each housing halves on the pipe making sure the housing key fits into the groove. Be sure that the tongue and recess portions of the housing mate properly. Insert the bolts and run up the nuts finger tight.



5 TIGHTEN NUTS— Securely tighten nuts alternately and equally to the required indicator. For 2" - 4" 7004 couplings, please use the table below for required torque values. For 7004 5" and larger, tighten nuts till housings are in metal-to-metal contact.



6 ASSEMBLY IS COMPLETE— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves. For 2" - 4", ensure the gaps on each side are evenly spaced, and for 5" and larger couplings ensure the housings are in firm even metal-to-metal contact on both sides.

SPECIFIED BOLT TORQUE

Size	Bolt Size	Torque
In.	*In.*	*Ft.-Lbs*
2	5/8	100 - 130
2½	5/8	100 - 130
3	5/8	100 - 130
4	3/4	130 - 180
5	7/8	*

Size	Bolt Size	Torque
In.	*In.*	*Ft.-Lbs*
6	7/8	*
8	1	*
10	1	*
12	1	*

* Torque required to bring housing metal-to-metal contact.

CAUTION: When using an impact wrench, verify that the output of the impact wrench is within the required torque range. It is recommended that a torque wrench be used for accurate assembly in order to obtain specified performance.

FIG. 7004 with EG® Gasket

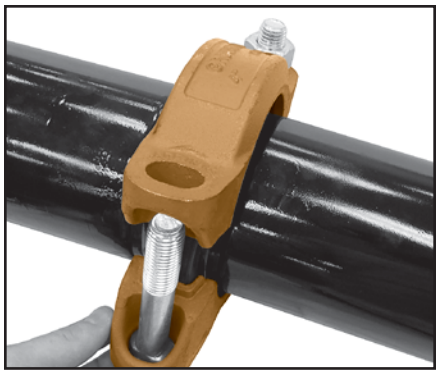
High Pressure Coupling with End Guard® Gasket

Figure 7004 with EG® gasket requires specified pipe end groove dimensions and fittings, see page 244 for groove dimensions.

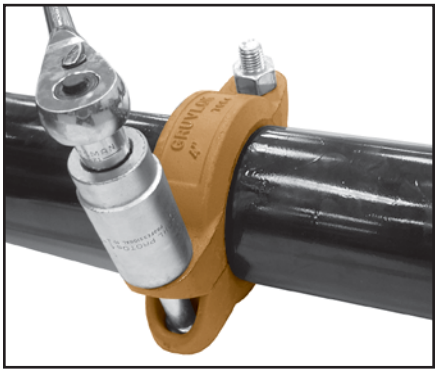
CAUTION: Not using the correct groove dimensions will result in pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

1 CHECK & LUBRICATE GASKET— Check gasket to be sure it is compatible for the intended service. Apply a thin coat of Gruvlok Lubricant to the exterior surface and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

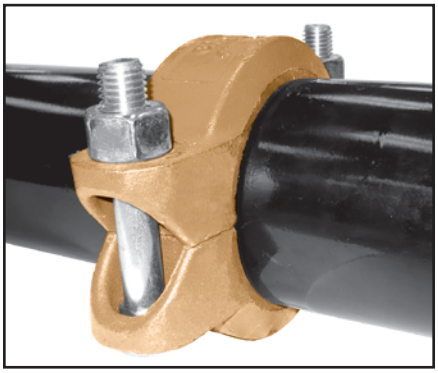
2 GASKET & PIPE INSTALLATION— Slip the gasket half way on to the pipe end, stop when the center gasket leg comes in contact with the pipe end. Slide the second pipe end half way into the gasket, stopping then the pipe end comes in contact with the center gasket leg. Ensure pipes are aligned properly.



3 HOUSINGS— Place each housing halves on the pipe making sure the housing key fits into the groove. Be sure that the tongue and recess portions of the housing mate properly. Insert the bolts and run up the nuts, finger tight.



4 TIGHTEN NUTS— Securely tighten nuts alternately and equally to the required indicator. For 2" - 4" couplings, please use the table below for required torque values. For 5" and larger, tighten nuts till housings are in firm metal-to-metal contact.



5 ASSEMBLY IS COMPLETE— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves. For 2" - 4", ensure the gaps on each side are evenly spaced, and for 5" and larger couplings ensure the housings are in firm even metal-to-metal contact on both sides.

SPECIFIED BOLT TORQUE

Size	Bolt Size	Torque
In.	*In.*	*Ft.-Lbs*
2	5/8	100 - 130
2½	5/8	100 - 130
3	5/8	100 - 130
4	3/4	130 - 180
5	7/8	*

Size	Bolt Size	Torque
In.	*In.*	*Ft.-Lbs*
6	7/8	*
8	1	*
10	1	*
12	1	*

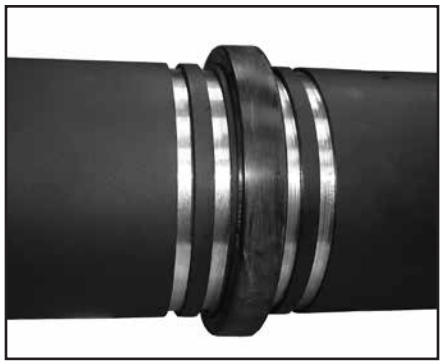
* Torque required to bring housing metal-to-metal contact.

CAUTION: When using an impact wrench, verify that the output of the impact wrench is within the required torque range. It is recommended that a torque wrench be used for accurate assembly in order to obtain specified performance.

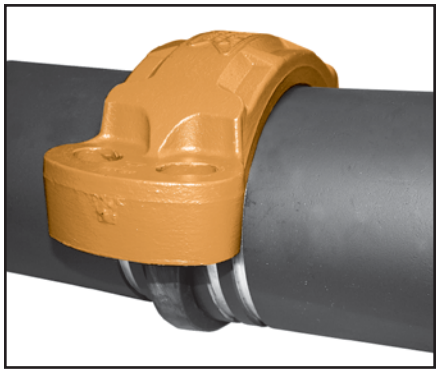
FIG. 7377
Double Groove Coupling

1 CHECK & LUBRICATE GASKET— Check gasket to be sure it is compatible for the intended service. Apply a thin coat of Gruvlok Lubricant to the exterior surface and sealing lips of the gasket. Ensure that foreign particles do not adhere to the lubricated surfaces.

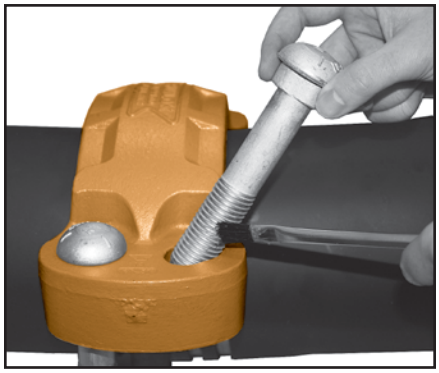
2 GASKET INSTALLATION— Slip the gasket over the pipe end, making sure the gasket lip does not overhang the pipe end.



3 ALIGNMENT— After aligning the two pipe ends, pull the gasket into position, centering it between the grooves on each pipe. The gasket lip should not engage with either of the pipe grooves.

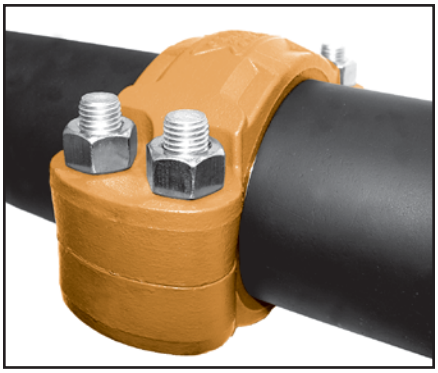


4 HOUSINGS— Place each half of the coupling housing over the gasket, making sure the housing keys engage the pipe grooves.



5 BOLTS— Apply a thin coat of Xtreme Lube to the bolt threads. Tighten the nuts alternately and equally to the specified bolt torque.

CAUTION: Uneven tightening may result in the housings pinching the gasket and causing an improper seal.



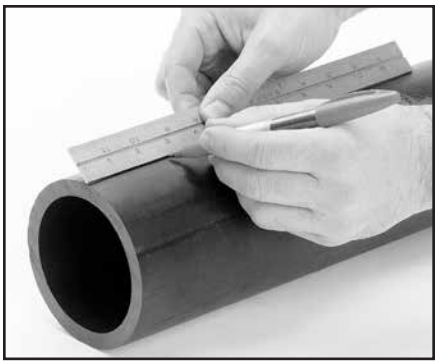
6 FINAL ASSEMBLY— Visually inspect the pipe joint to ensure the coupling keys are fully engaged in the pipe grooves, both bolt pads are a firm and even metel-to-metal contact, and the gasket is not visible.

ANSI SPECIFIED BOLT TORQUE			
Pipe Sizes	Bolt Size	Specified Bolt Torque	Lubrication
In.	*In.*	*Ft.-Lbs*	–
6	1	450 - 525	Gruvlok Xtreme™ Lubricant
8	1⅛	500 - 600	
10	1⅛	500 - 600	

CAUTION: When using an impact wrench, verify that the torque output on the impact wrench is within the required torque range. It is recommended that a torque wrench be used for accurate assembly in order to obtain specified performance.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

FIG. 7305
HDPE Coupling



1 PIPE PREPARATION— Ensure the HDPE pipe ends are square cut to 1/8" maximum for 2" to 4" sizes and 5/32" maximum for 6" sizes and larger. Ensure the gasket seating surface on each pipe end is clean and smooth for proper gasket sealing. Mark each pipe at a distance from the end as follows:

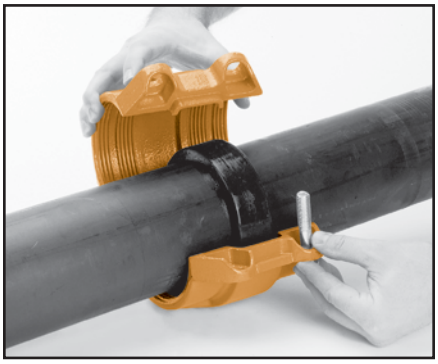
Size Inches	Distance to Mark
2" - 4" (51 - 102 mm)	1" (25.4 mm)
5" - 12" (127 - 305 mm)	1½" (38.1 mm)
14" - 18" (355 - 457 mm)	1¾" (44.5 mm)

CAUTION: For proper coupling performance, the gasket seating surface of each pipe end must be free of scratches, indentations, projections, or other imperfections that could prevent proper sealing of the gasket.

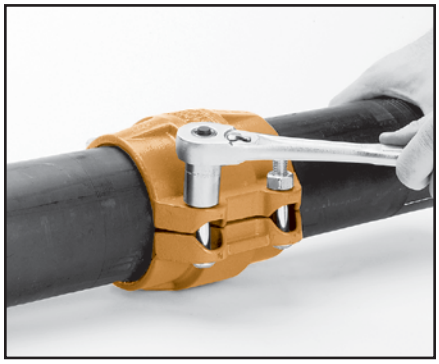
2 CHECK & LUBRICATE GASKET— Check to assure the gasket material is acceptable for the intended service. The Gasket color code is green for EPDM and orange for Nitrile (Buna-N).

CAUTION: Use only Gruvlok Xtreme™ Lubricant. Gruvlok Xtreme Lubricant contains silicone. If silicone is unacceptable for the application contact Gruvlok for the lubrication recommendation. Apply a thin coating of Gruvlok Xtreme Lubricant to the gasket lip and the exterior surface of the gasket.

3 GASKET INSTALLATION— Slip the gasket over one of the pipe ends. Make sure the gasket does not overhang the pipe end. Align the second pipe and while keeping the pipes in the butted position slide the gasket back over the second pipe end. The gasket must be positioned centrally between the lines on the pipe ends.



4 HOUSINGS— Place the Figure 7305 housing casting over the gasket, making sure the tongue on one casting is aligned with the recess of the other casting.



5 TIGHTEN NUTS— Insert the bolts and secure the nuts alternately and uniformly until the bolt pads make contact. Torque all bolts to the required bolt torque levels shown in the Specified Bolt Torque Table. Alternate and even tightening of the bolts will significantly reduce the torque needed to close the coupling.

CAUTION: To ensure proper performance, the Figure 7305 HDPE coupling should always be installed with the bolt pads making metal to metal contact.

SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on Gruvlok® couplings. The nuts must be tightened alternately and evenly until fully tightened.

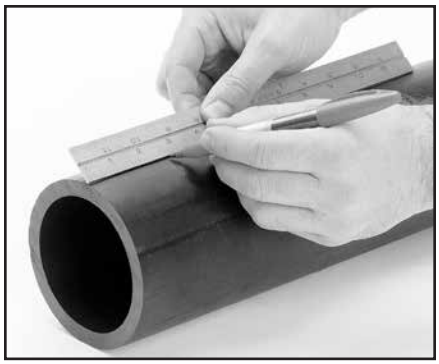
CAUTION: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. **Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation.** Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

FIG. 7305 SPECIFIED BOLT TORQUE

Coupling Bolts	Minimum	Maximum
In.	*Ft.-Lbs./N-m*	*Ft.-Lbs./N-m*
½ x 2⅜	80 *110*	100 *150*
½ x 3	80 *110*	100 *150*
⅝ x 3½	100 *135*	130 *175*
⅝ x 3¾	100 *135*	130 *175*
¾ x 4¾	130 *175*	180 *245*
1 x 5½	200 *270*	250 *340*

FIG. 7307
HDPE Transition Coupling



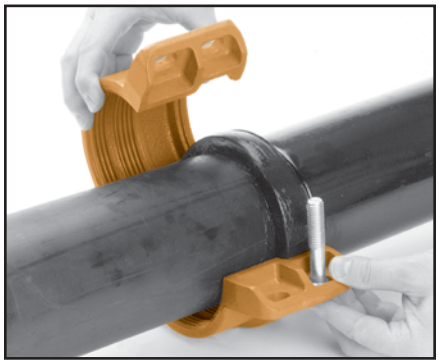
1 PIPE PREPARATION— Ensure the HDPE pipe ends are square cut to 1/8" maximum for 2" to 4" sizes and 5/32" maximum for 6" sizes and larger. The steel pipe must be grooved in accordance with Gruvlok Grooving Specification for Steel Pipe in the Technical Data Section. Ensure the gasket seating surface on each pipe end is clean and smooth for proper gasket sealing.

CAUTION: For proper coupling performance, the gasket seating surface of the HDPE pipe must be free of scratches, indentations, projections, or other imperfections that could prevent proper sealing of the gasket.

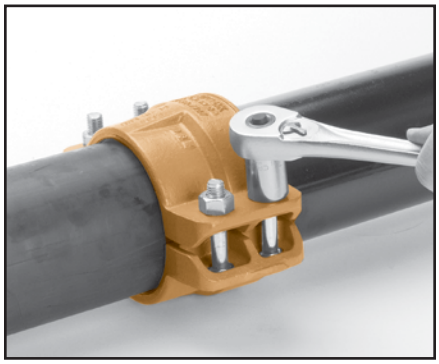
2 CHECK & LUBRICATE GASKET— Check to assure the gasket material is acceptable for the intended service. The Gasket color code is green for EPDM and orange for Nitrile (Buna-N).

CAUTION: Use only Gruvlok Xtreme™ Lubricant. Gruvlok Xtreme Lubricant contains silicone. If silicone is unacceptable for the application contact Gruvlok for the lubrication recommendation. Apply a thin coating of Gruvlok Xtreme Lubricant to the gasket lip and the exterior surface of the gasket.

3 GASKET INSTALLATION— Slip the gasket over one of the pipe ends. Make sure the gasket does not overhang the pipe end. Align the second pipe and while holding it in the butted position, slide the gasket back over the second pipe end. The gasket must be positioned on the gasket seat surface of the grooved steel pipe. Make sure the gasket does not overhang into the pipe groove.



4 HOUSINGS— Place each half of the coupling housing over the gasket, making sure the housing grooved end is directed into the pipe groove.



5 TIGHTEN NUTS— Insert the bolts and secure the nuts alternately and uniformly until the bolt pads make contact. Torque all bolts to the required bolt torque levels shown in the Specified Bolt Torque Table. Alternate and even tightening of the bolts will significantly reduce the torque needed to close the coupling.

CAUTION: To ensure proper performance, the Figure 7307 HDPE Transition Coupling should always be installed with the bolt pads making metal to metal contact.

SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on Gruvlok® couplings. The nuts must be tightened alternately and evenly until fully tightened.

CAUTION: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. **Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation.** Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

FIG. 7307 SPECIFIED BOLT TORQUE

Coupling Bolts	Minimum	Maximum
In.	*Ft.-Lbs./N-m*	*Ft.-Lbs./N-m*
½ x 2⅜	80 *110*	100 *150*
½ x 3	80 *110*	100 *150*
⅝ x 3½	100 *135*	130 *175*
⅝ x 3¾	100 *135*	130 *175*
¾ x 4¾	130 *175*	180 *245*
⅞ x 5½	180 *245*	220 *300*

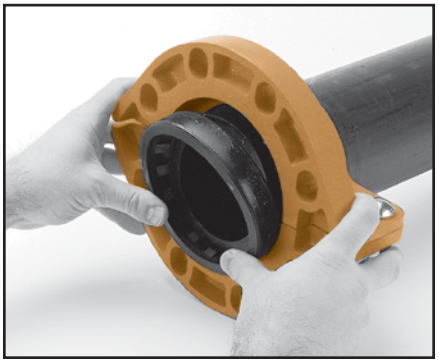
FIG. 7312
HDPE Flange Adapter

1 PIPE PREPARATION— Ensure the HDPE pipe ends are square cut to 1/8" maximum for 2" to 4" sizes and 5/32" maximum for 6" sizes and larger. Inspect the surface of the mating flange to ensure the gasket seating surface is clean and smooth for proper gasket sealing.

CAUTION: For proper coupling performance, the gasket seating surfaces must be free of scratches, indentations, projections, or other imperfections that could prevent proper sealing of the gasket.

2 CHECK & LUBRICATE GASKET— Check to assure the gasket material is acceptable for the intended service. The gasket color code is green for EPDM and orange for Nitrile (Buna-N).

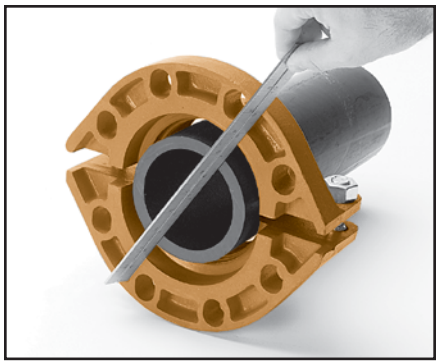
CAUTION: Use only Gruvlok Xtreme™ Lubricant. Gruvlok Xtreme Lubricant contains silicone. If silicone is unacceptable for the application contact Gruvlok for the lubrication recommendation. Apply a thin coating of Gruvlok Xtreme Lubricant to the gasket lip and the exterior surface of the gasket.



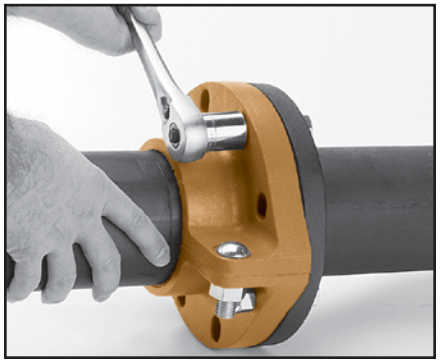
5 INSTALL GASKET— Position the Gruvlok Flange gasket around the pipe end and press the gasket into the flange gasket pocket. Be sure the flange sealing lips are facing out.

6 ALIGN PIPE— Align the Gruvlok Flange bolt holes with the mating flange bolt holes. Insert a standard bolt or stud through one bolt hole and thread the nut on hand tight. Insert the next bolt or stud opposite the first and thread the nut on hand tight. Continue this procedure until all holes have been fitted.

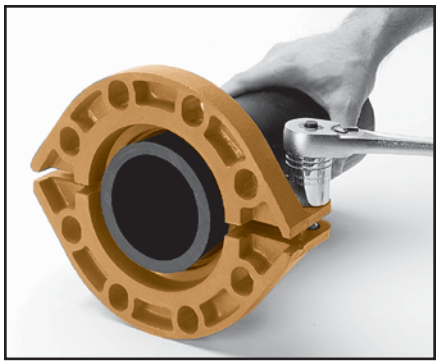
CAUTION: Take care to assure the gasket lip is not bent backwards and pinched between the two flanges.



3 HOUSING— Place the housing over the end of the pipe and using a straight edge, align the face and the flange face with the end of the pipe. Do not let the pipe extend beyond the flange face.



7 TIGHTEN BOLTS— Tighten the flange face nuts alternately and evenly so that the flange faces remain parallel and make firm contact around the entire flange. Torque all bolts to the required mating flange joint torque levels. Refer to the Specified Mating Flange Bolt Torque Table.



4 LATCH HOUSING— Tighten the housing nut until the housing bolt pads make firm metal to metal contact. Torque all bolts to the required latch bolt torque levels. Refer to the Specified Latch Bolt Torque Table.

CAUTION: For proper performance, the Figure 7312 HDPE Flange adapter should always be installed with the housing bolt pads making metal to metal contact.

SPECIFIED BOLT TORQUE FOR LATCH & MATING FLANGE BOLTS

Specified bolt torque is for the latch and mating flange bolts used on Gruvlok® flanges. The nuts must be tightened alternately and evenly until fully tightened.

CAUTION: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of latch and mating flange bolts is required to obtain specified performance. **Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation.** Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

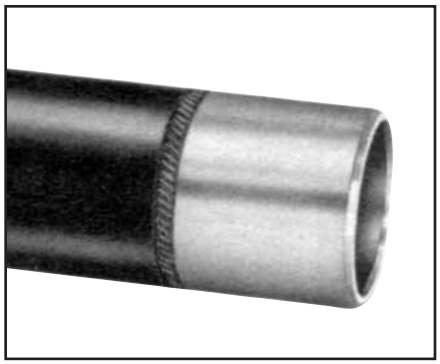
FIG. 7312 LATCH BOLT TORQUE

Coupling Bolts	Minimum	Maximum
In.	*Ft.-Lbs./N-m*	*Ft.-Lbs./N-m*
5/8 x 2	100 *135*	130 *175*
3/4 x 3½	130 *175*	180 *245*

FIG. 7312 MATING FLANGE BOLT TORQUE

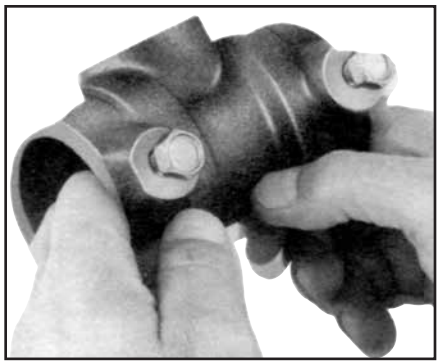
Coupling Bolts	Minimum	Maximum
In.	*Ft.-Lbs./N-m*	*Ft.-Lbs./N-m*
5/8 x 3	110 *149*	140 *190*
3/4 x 3½	220 *298*	250 *339*

Gruvlok Sock-It® Fitting

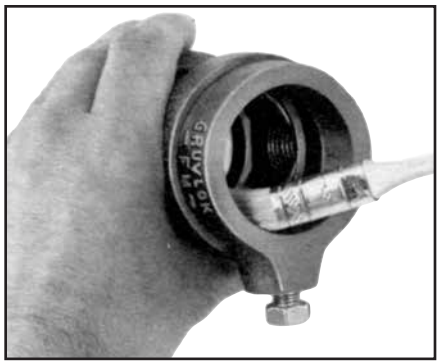


1 PIPE PREPARATION—Pipe surface shall be cleaned at least 1" from the end of the pipe to remove any coating, indentations, projections, and sharp edges which could affect proper gasket sealing. As a guide for installation, mark the pipe at a distance of 1½" from the end for 1", 1¼", and 1½" size fittings and 1¾" for the 2" & 2½" size fittings.

NOTE: When Allied XL pipe is used it is necessary only to remove sharp edges and burrs at the end of the pipe. No additional cleaning is required.

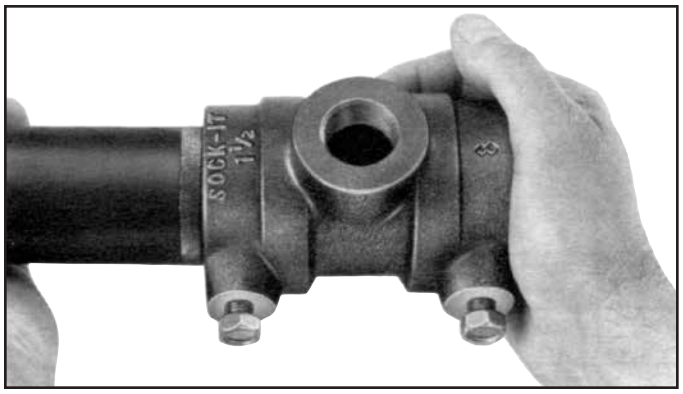


2 CHECK BOLTS—Check all lock bolts to be sure they do not extend into the I.D. of the Sock-It Fittings as this would prevent proper insertion of the pipe.



3 LUBRICATE GASKETS—Apply a light coating of GRUVLOK Lubricant to the gaskets located in each end of the Sock-It Fitting. Also apply a light coating of lubricant to the pipe ends to further ease insertion of the the pipe into the Sock-It Fitting.

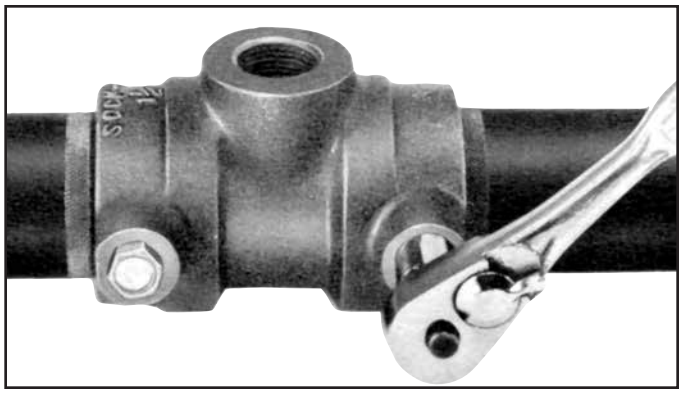
NOTE: Use only Gruvlok Lubricants. Other lubricants may affect gasket performance.



4 INSERT PIPE & TIGHTEN BOLTS—Insert the prepped and lubricated pipe end into the Sock-It Fitting until the pipe end makes contact with the internal pipe stop. A slight twist while pushing fitting and pipe together will ease the required insertion force. The end of the Sock-It Fitting should be within 1/16" from the edge of the marking on the pipe. (See Step 1). Rotate the fitting until the desired position is obtained. Tighten the lock bolt until the bolt head bottoms against the threaded boss. (NOTE: The 2½" Sock-It fitting has 2 locking bolts for each pipe end.)

Install the other prepped and lubricated pipe end into the Sock-It fitting in the same manner.

CAUTION: Do NOT hammer fitting on.



5 ASSEMBLY IS COMPLETE—Sock-It Fittings may be removed by loosening the lock bolts. Reinstallation may be accomplished as described in Steps 1-4.

WARNING: System pressure must be relieved and vented, and the system drained of fluid prior to loosening the lock bolts to remove or reposition the Sock-It Fitting.

Bolt end must be inspected to assure bolts ability to cut into pipe. Replace bolts in cases where bolt end sharpness has been comprised.

FTV-S (Straight) & FTV-A (Angle Body)

Tri-Service Valve

INSTALLATION:

1 The valve should be mounted to a spool piece on the discharge side of the pump. Spool piece required is based on a minimum recommended space of 12" for pump sizes 2" x 2" to 6" x 6" and 24" for pump sizes 8" x 8" to 12" x 12".

2 It is not recommended to mount a valve directly to the pump as this could cause undesirable noise in the system.

3 Sufficient clearance around the valve should be left for valve removal or repair.

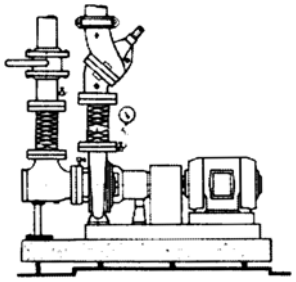
4 Install valve in the direction of the flow arrows on the valve body.

5 The valve can be mounted to flanged equipment using Gruvlok Flange Adapter or industry standard grooved coupling, suitable for system pressure and temperatures encountered.

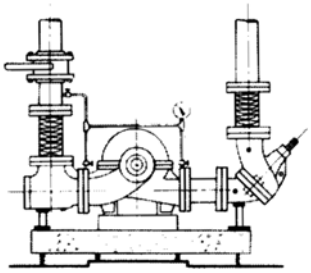
6 The Gruvlok Tri-Service valve bodies have anti-rotation lugs on the inlet and outlet. These lugs, combined with the Flange Adapters, provide a ridged rotation free installation.

7 The valve body has been designed to handle the weight of the pump on vertical in-line installations. The body is not designed to support the piping weight. It is recommended that the piping be supported by hangers. Pipe supports should be provided under the valve and strainer bodies.

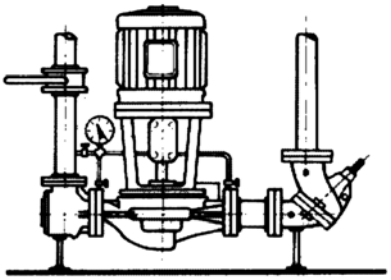
TYPICAL INSTALLATIONS



Base-Mounted Single Suction



Base-Mounted Double Suction



Vertical In-Line

FIELD CONVERSION (Straight to Angle Pattern Valve)

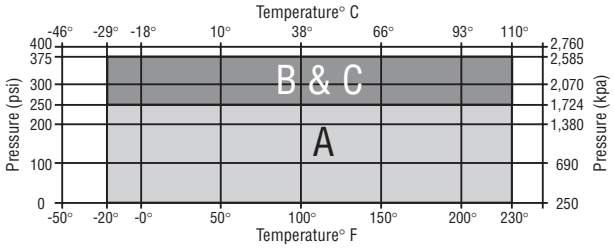
1 Open valve at least one complete turn,

2 Remove the body bolts from valve body using Allen Key.

3 Rotate one half of the valve body 180° making sure the lower valve seat and "O" Ring stay in position. Inspect the "O" Ring for any cuts or nicks and replace if necessary.

4 Replace body bolts and torque evenly to 70 ft./lbs.

PRESSURE – TEMPERATURE LIMITS



Note: for temperatures between 230°F and 300°F (110°C and 149°C) specify Viton Elastomers.

LEGEND	
A	Gruvlok ductile iron flange adapters for ANSI 150# flanges
B	Gruvlok ductile iron flange adapters for ANSI 300# flanges
C	Grooved end with 375 psi rated pipe coupling

FLOW MEASUREMENT

Where approximate indication of flow is acceptable the Gruvlok Tri-Service valve can be used.

FLOW MEASUREMENT VALVE IN WIDE OPEN POSITION

Measure and record the differential pressure across the valve using a Flow Meter with high pressure range transducer or pressure gauges with PMP adapters.

Refer to Tri-Service Performance Curves with valve in full open position (See Determining Flow Rate with Valve in Throttled Position Section on page 213). Locate Pressure Differential on left hand side of chart and extend line horizontally across to valve size being used. Drop line vertically down and read flow rate from bottom of chart.

CAUTION:
Safety glasses should be used and the probe should not be left inserted into fittings for prolonged periods of time (overnight, etc.), as leakage from the PMP may occur when probe is removed.

FTV-S (Straight) & FTV-A (Angle Body)

Tri-Service Valve

DETERMINING FLOW RATE WITH VALVE IN THROTTLED POSITION:

1 Record the size of valve and stem position using the Flow Indicator Scale (See Flow Indicator Section at bottom of page). Calculate percentage of valve opening referring to table below:

VALVE SIZE	2½	3	4	5	6	8	10	12
Number of Rings (valve full open)	5	5	6	9	10	12	18	28

2 Measure and record the differential pressure across the valve in the throttled position.

3 Locate percentage of valve opening on the bottom scale of Flow Characteristic Curve. Project line vertically up to intersect with the Valve Characteristic Curve and from this point project line horizontally across to the left of the chart and record the percentage of maximum flow rate.

4 On the Tri-Service Performance Curve locate the differential pressure obtained in Step 2 and project line horizontally across to intercept with Valve Performance Curve. Drop a line vertically down to read the flow rate at the bottom of the chart.

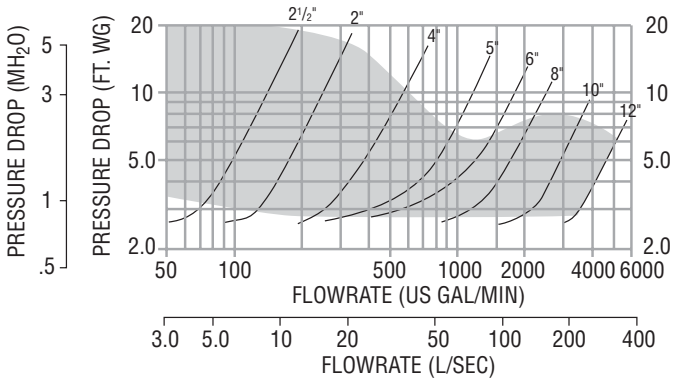
5 To calculate flow rate of valve in the throttled position, multiply the flow rate from Step 4 by the percentage flow rate from Step 2 divided by 100.

Example: Valve size 4 in.
Differential Pressure in 5.4 ft. (1.65 m)
Number of rings open 3, (3 rings ⁄ 6 rings X 100) = 50% throttle

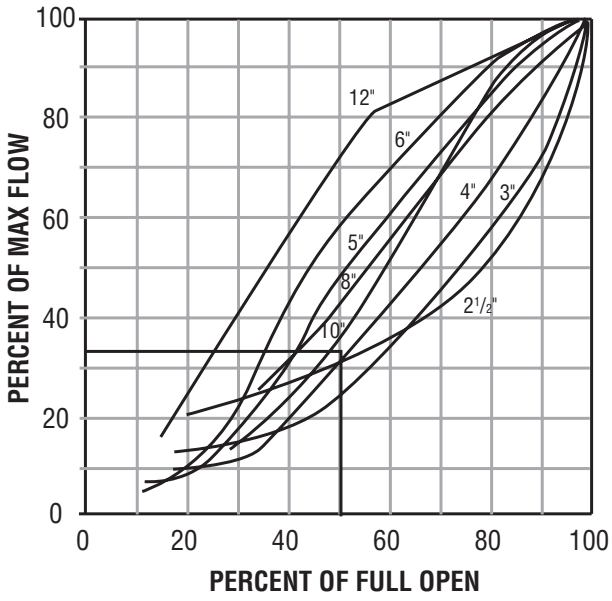
Solution:
- From the Tri-Service Performance Curve (fig. 5), a 4 in. valve with 5.4 ft. pressure drop (1.65 m) represents a flow of 400 USgpm (25.2 L⁄s).
- From Flow Characteristic Curve (fig, 6), a 4 in. valve, 50% open, represents 34% of maximum flow.
- Approximate flow of a 4 in. valve, with a 5.4 ft. (1.65 m) pressure drop when 50% throttled is:
  (400 x 34)⁄100 = 136 USgpm
  (25.2 x 34)⁄100 = 8.57 L⁄sec.

Note: To prevent premature valve failure it is not recommended that the valve operate in the throttled position with more than 25 ft. pressure differential. Instead the pump impeller should be trimmed or valves located elsewhere in the system to partially throttle the flow.

Tri-Service Performance Curve with Valve in Full Open Position



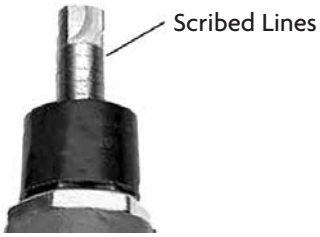
Inherent Flow Characteristic Curve with Valve in Throttled Position



FLOW INDICATOR SCALE

The valve stem with its grooved rings and positioning sleeve indicates the throttled position of the valve. The quarter turn graduations on the sleeve, with the scribed line on the stem, provide for approximate flow measurement.

Note: The valve is shipped in the closed position. The indicator on the plastic sleeve is aligned with the vertical scribed line on the stem.



FTV-S (Straight) & FTV-A (Angle Body)

Tri-Service Valve

OPERATION

To assure tight shut off the valve must be closed using a wrench with 25 to 30 ft./lbs of torque.

To assure trouble-free check valve operation and shut off operation, the valve should be periodically opened and closed to keep valve seat and valve disc guide stem free of build up of system contaminants.

REPACKING OF FTV VALVE UNDER FULL SYSTEM PRESSURE

Should it be necessary, stem "O" Ring can be changed under full system pressure.

CAUTION: Safety glasses should be worn.

1. Record the valve setting.
2. Turn the valve stem counterclockwise until the valve is fully open and will not turn any further. Torque to a maximum force of 45 ft./lbs. This will ensure good metal-to-metal contact and minimum leakage.
3. The valve bonnet may now be removed. There may be a slight leakage, as the metal-to-metal backseating does not provide a drip-tight seal.
4. Clean exposed portion of valve stem (Do not scratch).
5. Remove and replace the "O" Ring and gasket.
6. Install the valve bonnet.
7. Tightening valve bonnet is necessary to stop any leaks.
8. Open valve to balance set point as recorded in Step 1.

MAXIMUM NUMBER OF TURNS FULL OPEN VALVE

On valve sizes 2 1/2" and 3", full open position of valve is 5 turns. However, valve will open to 5 1/2 turns which is just back of seating of valve.

SEAT REPLACEMENT

1. Drain system and remove valve from piping.
2. Remove the body bolts from the body using an Allen Key.
3. Remove seat and "O" Ring. "O" Ring is not used on valves 8" and larger.
4. Clean exposed portion of valve stem (Do not scratch).
5. Remove and replace the "O" Ring and gasket.
6. Inspect and clean "O" Ring cavity and install new "O" Ring and seat. Valve disc stem also should be inspected and replaced if worn. Valve stem "O" Ring should be replaced at this time.

ANVILFLEX® FIG. AF-21-GG, -GF & -FF

Flex Connectors

Installation

1 Avoid torque. Do not twist the hose assembly during installation when aligning the bolt holes in a flange or in making up pipe threads. The utilization of lap joint flanges or pipe unions will minimize this condition.

2 To install a thread end braided metal hose assembly unions must be used. Do not place wrenches on the braided portion or the collar of the braided metal hose assembly. Use care not to torque the braided metal hose assembly while tightening the union. It is recommended that two wrenches be used in making the union connection; one to prevent the hose from twisting and the other to tighten the coupling.

3 Install the braided metal hose assembly with neutral face-to-face dimension as shown on the submittal drawing. Do not install a braided metal hose assembly compressed (bagged braid). The corrugated inner hose contains the fluid, the braid is designed to take the stress of system pressurization and contain the core.

4 If the braided metal hose assembly must be installed with an initial offset then the maximum allowable movement is reduced by the amount of the initial deflection.

5 Avoid over bending. The repetitive bending of a hose assembly to a radius smaller than the radius specified will result in early hose failure. Always provide sufficient length to prevent over bending and to eliminate strain on the hose assembly. Utilize sound geometric configurations that avoid sharp bends, especially near the end fittings of the assembly.

6 Verify that the movements of the system are within the design parameters of the braided metal hose assembly being installed.

7 Prevent out-of-plane flexing in an installation. Always install the hose assembly so that the flexing takes place in only one plane—this being the plane in which the bending occurs.

8 The maximum system test pressure must not exceed 150% of the maximum rated working pressure as shown.

9 Check system pressure and temperature and do not exceed recommended performance limits. Operation beyond design limits will result in premature failure.

10 The corrugated metal hose alloy must be chemically compatible with the media in the piping system. If in doubt as to suitability, refer to a Chemical Resistance Data table or contact your Anvil rep. for guidance.

11 The flanges on a concentric increasing braided metal hose assembly have the bolt holes straddling the hose centerline. The mating flanges should also straddle the centerline to avoid torque on the braided metal hose assembly.

12 When installing weld end, or sweat end, braided metal hose assemblies, or when welding in the area of a braided metal hose assembly, extreme care is necessary in ensure no weld spatter comes in contact with the braided hose sections.

13 A piping system, which utilizes braided metal hose to absorb movement, must be properly anchored and/or guided. Always support the piping to prevent excessive weight from compressing the hose and relaxing the braid tension.

14 Use care when handling the braided metal hose assembly during transportation, storage, and installation. The braided hose sections must not be allowed to bend, deflect, sag, or otherwise extend beyond their rated capabilities.

15 The shipping sticks, on flanged units, are to keep the braided metal hose assembly in its neutral end-to-end dimension during shipping and installation. After installation, the shipping sticks should be removed.

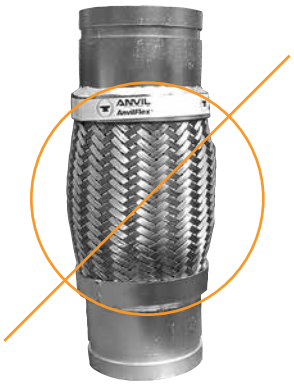
Maintenance

1 The braided metal hose assembly should be inspected during routine maintenance to ensure there are no signs of external damage. Inspect for frayed or broken braid wires. Also inspect to ensure there is no damage to the hose. In the event that such damage is found, the braided metal hose assembly should be replaced.

2 During system shutdown braided metal hose assembly should be examined to verify no thermal axial motion has occurred causing compression of the assembly.

Groove x Groove
Proper Installation

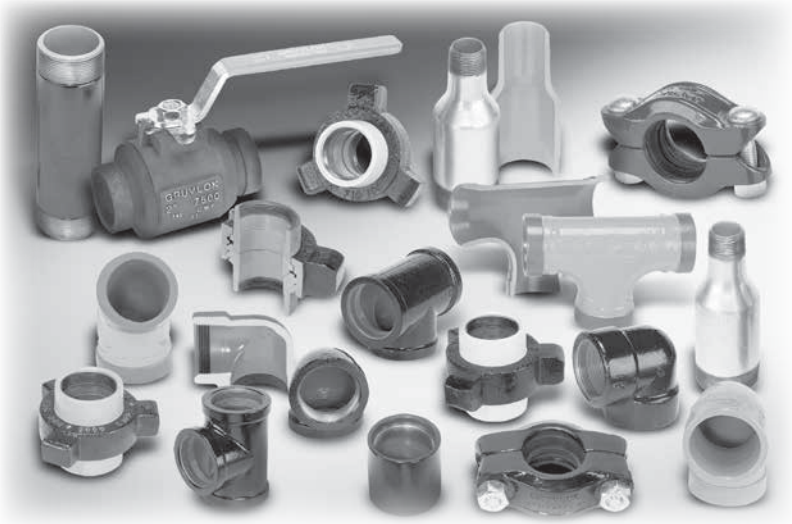
Groove x Groove
Improper Installation
Parallel



Groove x Groove
Improper Installation
Compressed

PROTECT YOUR PRODUCTS AND YOUR INVESTMENT WITH *ANVIL COATINGS.*

Did you know that Anvil can provide you with **significant cost-savings** for your underground piping applications?



Your drilling or recovery efforts stir up, push down and release corrosive chemicals that attack your piping products, destroying their performance— and your investment.

Anvil's field-proven, cost-effective coatings are designed to protect all grades of Malleable, Cast Iron, Forged Steel and Ductile piping products against a wide range of environmental concerns, including soil stress, soil acids, bacteria and fungus, and alkalis. Our coatings include:

- **Scotchcote 134** — A fusion bonded epoxy coating designed to resist wastewater, corrosive soils, hydrocarbons, harsh chemicals, brine and saltwater.
- **Corvel 1660** — Specially designed to protect the inside diameter of tubular goods from corrosive conditions such as H2S, CO2, harsh chemicals, brine and saltwater.
- **Additional Coatings** — We offer other coatings as well, including: *Nickel, Chrome, Teflon, Nap-Guard, Powder* and many more.

Let us help you prolong your piping product investment and save you money.

Did you know...

Anvil International is the only manufacturer to stock, offer and warranty coated piping product solutions.

Anvil's protective coatings are ideal for both internal and external applications, including:

- Natural Gas
- Petroleum
- Water and Sewage
- Refineries
- Petrochemical Plants
- Power Plants
- Paper Mills

ANVIL DESIGN SERVICES

offers both Basic and Extended Services...

Contact your Anvil representative for more information.

BASIC SERVICES

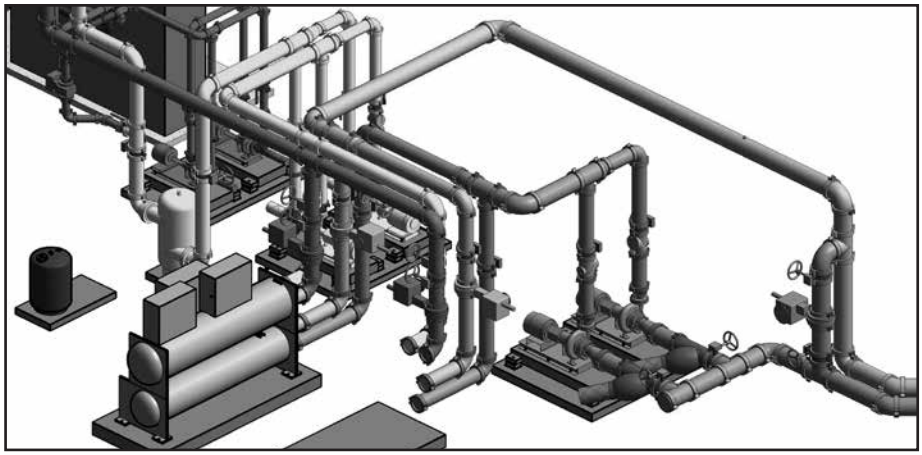
Anvil Design Services produces fabrication drawings of mechanical room piping 2½" and larger including chillers, heat exchangers, boilers, and pumps from contractor supplied flow diagrams, mechanical drawings, and approved submittals and specifications.

The drawings include a Bill of Materials with tags referencing the components in the mechanical room. The piping is color coded by service and is represented in 3-D with plan, isometric, and elevation views.

Initially, Anvil personnel meet with you to determine your piping preferences. The project scope and fee is agreed upon in a Design Services contract.

The plans and specifications are then interpreted in terms of economy, accuracy, and compliance. We may suggest modifications in arrangement, construction, equipment location, or product to attain the desired results. Piping layouts are carefully analyzed to determine whether further economies can be attained in the piping system.

Piping drawings are then prepared to determine the most efficient pipe routing, taking equipment location and any interferences into consideration. Preliminary prints are sent to you for revision or approval.



Upon approval, (4) sets of drawings with tags and Bills of Materials of the included system components are sent to you. Copies of the electronic data file of the project drawings are available at no extra charge. This brochure is an example of the finished product.

With Basic Services, you can plan the mechanical room. The preliminary drawings can be taken to coordination meetings with other trades to "reserve" space by "getting in" first. Also, your field supervisor can spend more time supervising and not calculating pipe lengths and pipe routing. The components can be grouped from the finished drawings for better workflow planning.

We usually reduce fitting counts by 10%-15% by moving equipment whenever possible, usually less than a foot. The more movement that is allowed, the more savings can be realized.

EXTENDED SERVICES:

Extended Services include any scope beyond Basic Services. There are many different types of services offered as extended:

- BOM by component (pump, chiller) or by system
- Unique Tagging – adding unique tags to individual components
- Air Handling Units – with associated ductwork
- Single Line Routing – non-dimensional
- Distribution Piping
- Dimensioned Floor Penetrations
- AWWA Piping - Total Scope
- Commercial Piping
- Oil Field Piping
- Retrofit Projects - Field Survey
- Hybrid Systems
- Anything Else

Contact your Anvil representative for more information.

BIM INTEGRATION

Contact Dave Campbell at dcampbell@anvilintl.com for BIM Integration Questions or Requests.

ANVIL DESIGN SERVICES

DESIGN SERVICES PROCESS:

1. Send in Contract Drawings, BidClerk Project Link, or other project drawing file retrieval information. Include Project Name in email Subject Line.
2. Anvil will provide a Design Analysis. A Conceptual Drawing may be generated. A quotation may be written for the Fabrication Drawing service.

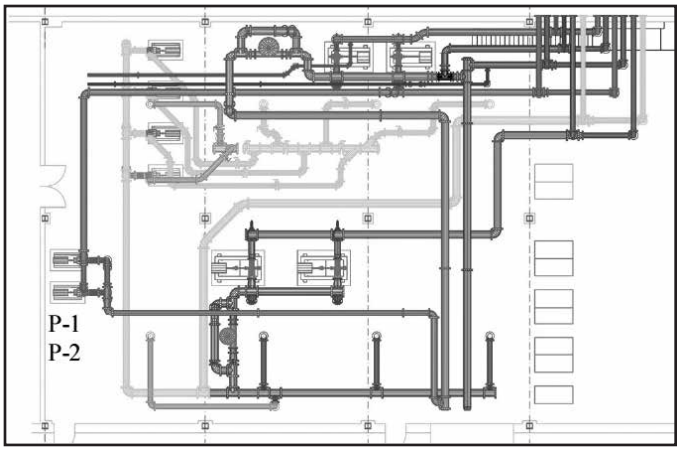
DESIGN ANALYSIS:

Written Description of Potential Savings. No Fee, Quick Turnaround

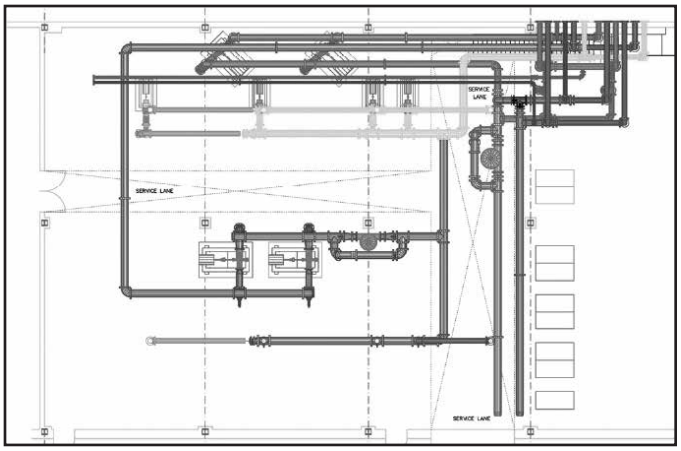
Example: *"1. Move P-1 & 2 to the top right under the stairs, rotate 90 degrees CW, saves approx. 110 feet of 10" pipe, (4) 10" elbows, and (12) 10" couplings."*

CONCEPTUAL DRAWINGS:

When Available with Mechanical Room (only) BOM, No Fee. Takes Approximately 2 weeks. Comes with **Design Analysis**



Typical Contract Drawing



Anvil Conceptual Drawing

FABRICATION DRAWINGS:

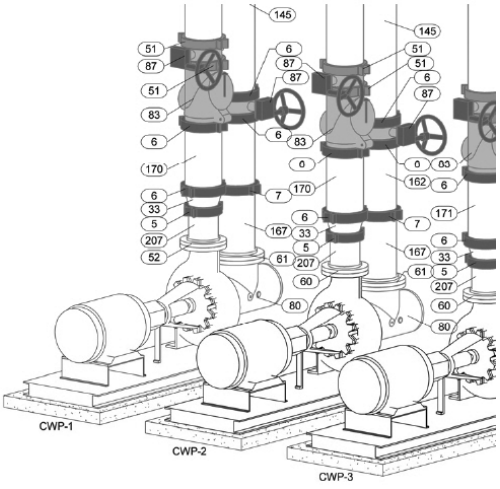
Fully Dimensional with Tagged BOM & Cut Pipe Lengths Pipe 2 ½" and Larger

- Fee Based -

1	2"	0' - 1 11/16"	GRVDxGRVD

CONDENSER WATER SUPPLY AND RETURN FITTINC

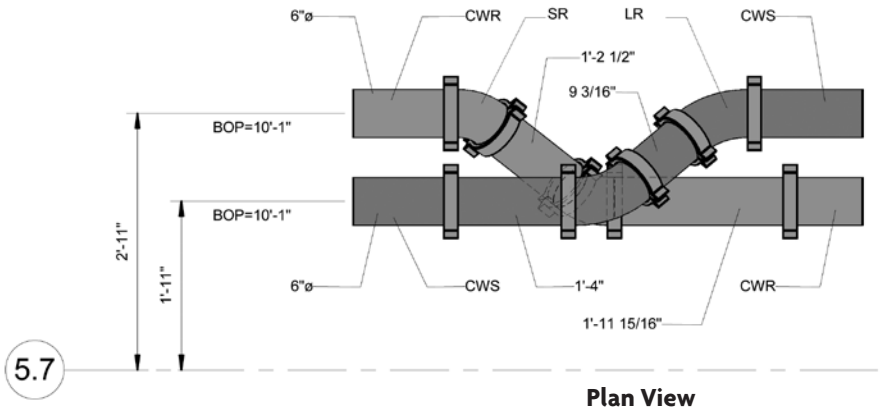
Count	Size	Part Number	
3	8"x8"	GRUVLOK, FIG.7001	STANDARD FLE
12	10"x10"	GRUVLOK, FIG.7001	STANDARD FLE
3	10"x10"	GRUVLOK, FIG.7001	STANDARD FLE
4	8"x8"	GRUVLOK, FIG.7050	90 ELBOW,GRV
12	10"x10"	GRUVLOK, FIG.7050	90 ELBOW,GRV
2	12"x12"	GRUVLOK, FIG.7050	90 ELBOW,GRV
10	20"x20"	GRUVLOK, FIG.7050LR	90 LONG RADIL
1	10"x10"x10"	GRUVLOK, FIG.7060	STANDARD TEE
4	10"x10"x8"	GRUVLOK, FIG.7061	REDUCING TEE
12	20"x20"x10"	GRUVLOK, FIG.7061	REDUCING TEE
3	10"x8"	GRUVLOK, FIG.7072	CONCENTRIC F
4	12"x10"	GRUVLOK, FIG.7072	CONCENTRIC F
6	14"x10"	GRUVLOK, FIG.7072	CONCENTRIC F
5	10"	GRUVLOK, FIG.7074	CAP, GRVD.
4	20"	GRUVLOK, FIG.7074	CAP, GRVD.
12	8"x8"	GRUVLOK, FIG.7401	RIGIDLOK COU



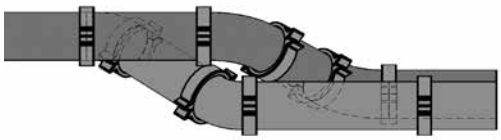
ANVIL DESIGN SERVICES

GEOMETRIC CHALLENGES

Engineer changed supply and return



Plan View



Elevation View

GRUVLOK TRAINING

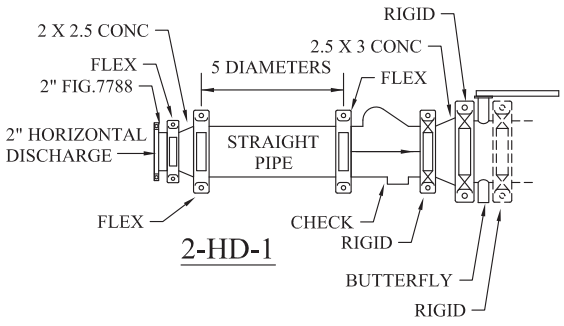
Pump Trim Assembly Training

Portable Training Setup

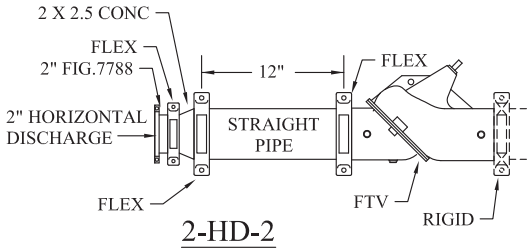
- 108 Pump Trim Combinations with less than 40 components
- Adaptable to Permanent Locations, such as Tech Schools, Union Halls etc.
- Setup and Orientation by Request

2" HORIZONTAL DISCHARGE CONFIGURATIONS

2-HD-X



2-HD-1



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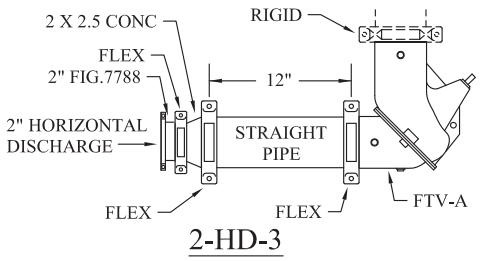
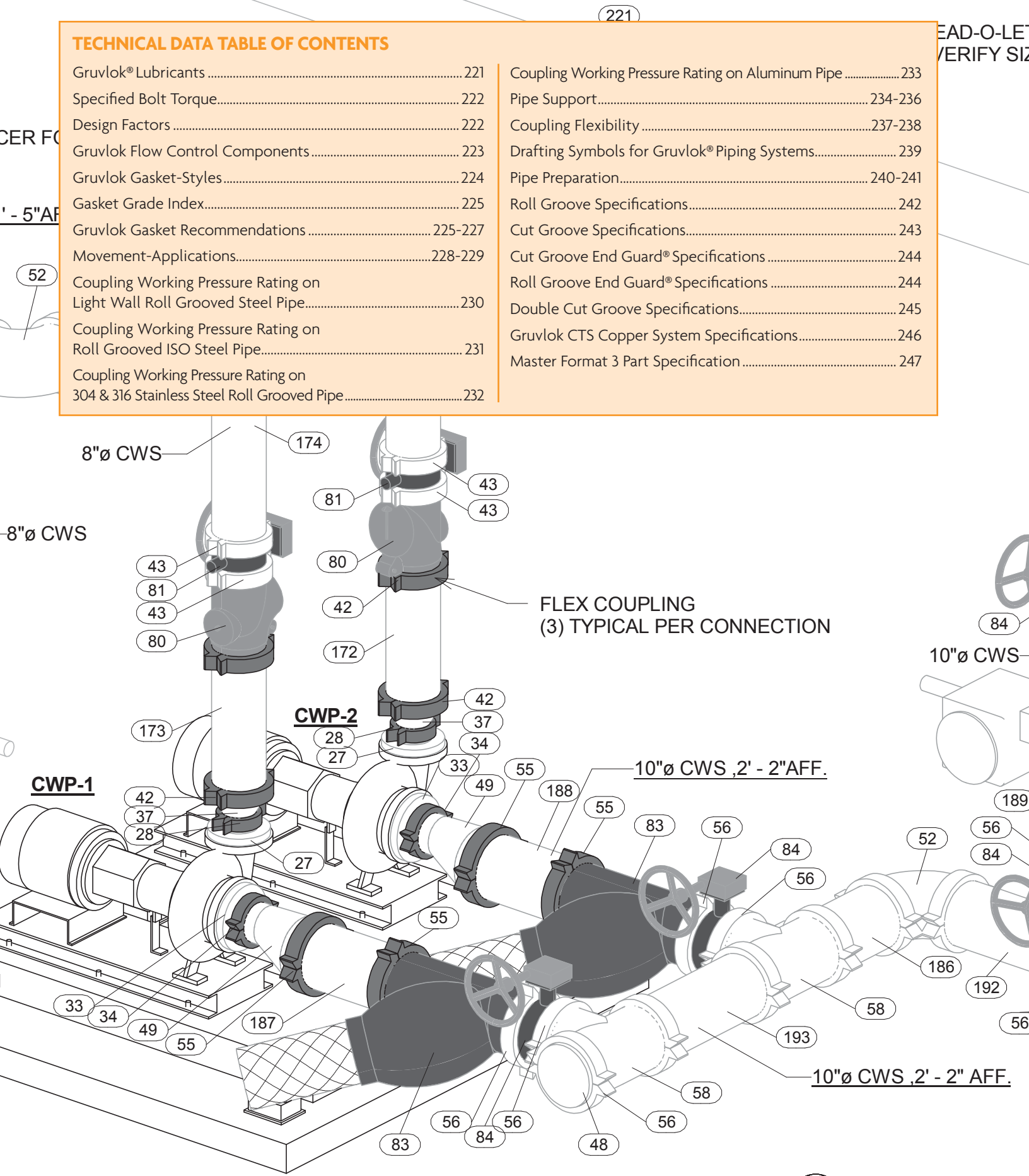


2-HD-3

TECHNICAL DATA TABLE OF CONTENTS



GRUVLOK® LUBRICANTS

GRUVLOK® XTREME™ LUBRICANT

Gruvlok® Xtreme™ Lubricant has been developed for use with Gruvlok couplings in services where improved lubrication is beneficial. This lubricant has an operating temperature range from -65°F to 400°F (-53.8°C to 204°C), well exceeding the temperature range of Gruvlok gaskets. This lubricant is waterproof, thereby eliminating water wash-out and it will not dry out in the absence of water. There are five primary applications where the Xtreme Lubricant will provide increased benefits: low temperature applications below 32°F (0°C), high temperature applications above 150°F (65.6°C), applications where increased pipe joint flexibility is needed, lubrication of gaskets in copper systems, and for the lubrication of gaskets on HDPE couplings. Since it is formulated from a non-hydro carbon base, it can be used with EPDM, Nitrile and Fluoroelastomer gasket materials. **It is not to be used with Silicone gaskets.**

- In low temperature applications the gasket will shrink, thereby lowering the sealing force on the gasket sealing lips. The temperature change will also force the gasket to slightly re-position itself. This will cause pipe end sealing surfaces, with small cuts or damage, to become more susceptible to leakage. Gruvlok Xtreme Lubricant will maintain it's lubricating properties at lower temperatures allowing a properly lubricated pipe end and gasket (assembly) to reposition itself during temperature cycles.
- For high temperature service and copper systems, it is required that the gasket be lubricated with a light thin coating on the inside of the gasket. Gruvlok Xtreme lubrication will maintain its lubricating properties at higher temperatures, allowing a properly lubricated pipe end and gasket assembly to re-position itself during temperature cycles. Lubrication of the pipe end and gasket will help the gasket to adjust into the proper sealing position during temperature cycles. The lubricant on the interior of the gasket will act to improve the chemical resistance of the gasket material by providing a thin lubricant barrier between the piping system fluid and the gasket surface. This is particularly important at higher temperatures where oxidizing agents in the piping system become more aggressive. **However, gasket chemical compatibility must still be considered.**
- The Gruvlok Xtreme Lubricant has been formulated from low viscosity, non-petroleum based oils to ease spreading of the lubricant. In applications where pipe movement is expected, proper lubrication of the gasket's exterior assists the gasket into the proper sealing position as pipe system movement occurs. This lubricating film enhances our flexible coupling gasket's ability to compensate for axial, transverse and rotational pipe movements.
- Gruvlok Xtreme Lubricant is the only Gruvlok lubricant that is to be used with Gruvlok couplings and gaskets in HDPE and copper piping systems. It's low temperature capability and lubricity ensure a highly reliable connection.

Gruvlok® Xtreme™ Lubricant is a Teflon® fortified white, tasteless and odorless grease made from Silicone Oil and other ingredients that are safe to ingest. It is sanctioned by the FDA under C.F.R. 21.172.878 & 21.177.1550 (Incidental Food Contact). It is NSF approved for use with potable water.

CAUTION: Silicone based lubricants are not allowed in some facilities. ®Teflon is a registered trademark of Dupont.

GRUVLOK® QUICK DRY LUBRICANT

Gruvlok® Quick Dry Lubricant is a fast drying lubricant that has been developed for applications where the piping system is exposed. The service temperature range for this lubricant is from 0° F to 150° F (-17.8°C to 65.6°C) and may be used with all Gruvlok gasket material grades. The lubricant is made from a water emulsion that is non-toxic, it will not impart taste or odor, and does not support bacterial growth. Gruvlok Quick Dry Lubricant is non-corrosive, non-flammable, and is NSF approved for use with potable water.

This lubricant is easy to apply by brush or hand, and it quickly dries to a thin film when in contact with air. It is water-soluble. The quick drying quality of the lubricant eliminates lubricant drips caused by over lubrication. If necessary, reapply lubricant prior to assembly. Do not thin or mix with solvents.

GRUVLOK® LUBRICANT

Gruvlok® Lubricant is the standard lubricant that has been provided for use with Gruvlok products for years. Gruvlok Lubricant is water soluble, non-toxic, non-corrosive, non-flammable, and will not impart taste or odor. It is NSF approved for use with potable water. This lubricant is acceptable for most applications, however, the Gruvlok Xtreme Lubricant and Gruvlok Quick Dry Lubricant are now available to improve the performance of the couplings and flanges in certain applications.

CAUTION: HDPE pipe requires the use of Gruvlok Xtreme Lubricant and should not be used with Gruvlok Lubricant.

SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on Gruvlok couplings and flanges. The nuts must be tightened alternately and evenly until fully tightened.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. **Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation.** Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

NOTE: Use specified bolt torque unless otherwise indicated on product installation pages.

ANSI SPECIFIED BOLT TORQUE

Bolt Size	Wrench Size	Specified Bolt Torque *
In.	*In.*	*Ft.-Lbs.*
3/8	11/16	30-45
1/2	7/8	80-100
5/8	1 1/16	100-130
3/4	1 1/4	130-180
7/8	1 7/16	180-220
1	1 5/8	200-250
1 1/8	1 13/16	225-275
1 1/4	2	250-300

* Non-lubricated bolt torques

METRIC SPECIFIED BOLT TORQUE

Bolt Size	Wrench Size	Specified Bolt Torque *
mm	*mm*	*N-m*
M10	16	40-60
M12	22	110-150
M16	24	135-175
M20	30	175-245
M22	34	245-300
M24	36	270-340

* Non-lubricated bolt torques

DESIGN FACTORS

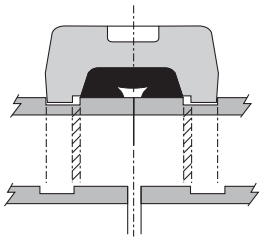
MOVEMENT:

Each flexible design Gruvlok coupling can provide for pipe system movement up to the design maximum for the specific size and type of coupling being utilized. Movement is possible in the Gruvlok coupling due to two factors: (1) designed-in clearance between the key of the coupling and the groove diameter and groove width, and (2) the gap between pipe ends joined by the coupling.

LINEAR MOVEMENT:

FLEXIBLE COUPLING LINEAR MOVEMENT

Linear movement is accommodated within the coupling by allowing the pipe ends to move together or apart in response to pressure thrusts and temperature changes. The available linear movement provided by Standard Gruvlok couplings is shown below:



Represents Linear Movement Capabilities

LINEAR MOVEMENT

Sizes	Roll Groove Pipe	Cut Groove Pipe
1" through 3½"	1/32"	1/16"
4" though 24"	3/32"	3/16"

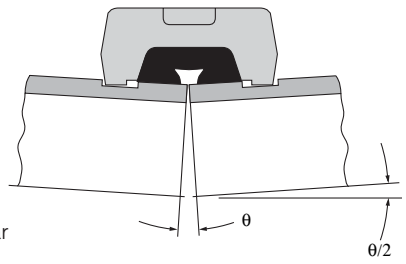
RIGID COUPLINGS

Gruvlok rigid couplings Fig. 7400, Fig. 7401 and Fig. 7004 HPR are designed to provide a joint with the attributes of a welded or flanged connection. Therefore, these joints would remain in strict alignment and would resist deflection and linear movement during service.

ANGULAR MOVEMENT:

FLEXIBLE COUPLING ANGULAR MOVEMENT

Designed-in clearances allow limited deflection of the pipe joint within the coupling, without introducing eccentric loads into the coupling joint.



The maximum available angular movement of Gruvlok flexible couplings on roll groove joints is shown in the performance data for each coupling. The amount of angular flexibility varies for each coupling size and type. The values account for pipe, groove, and coupling tolerances.

FLEXIBLE COUPLINGS

Figs. 7000, 7001, 7003, 7010 are the flexible couplings provided in the Gruvlok product line. The following information on movement applies to these flexible couplings.

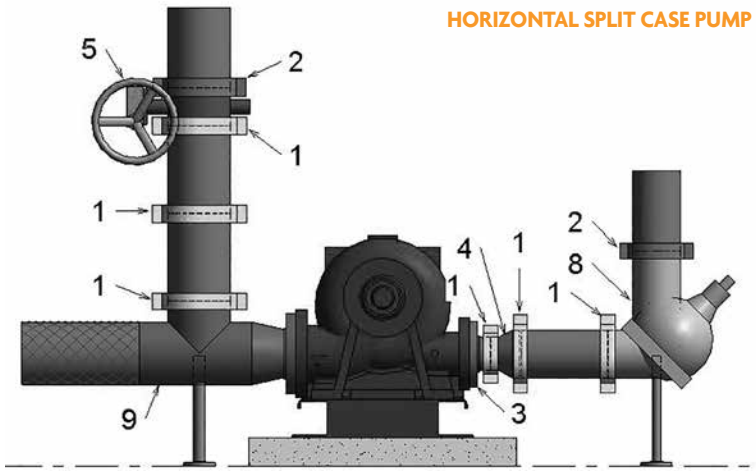
GRUVLOK® FLOW CONTROL

Components

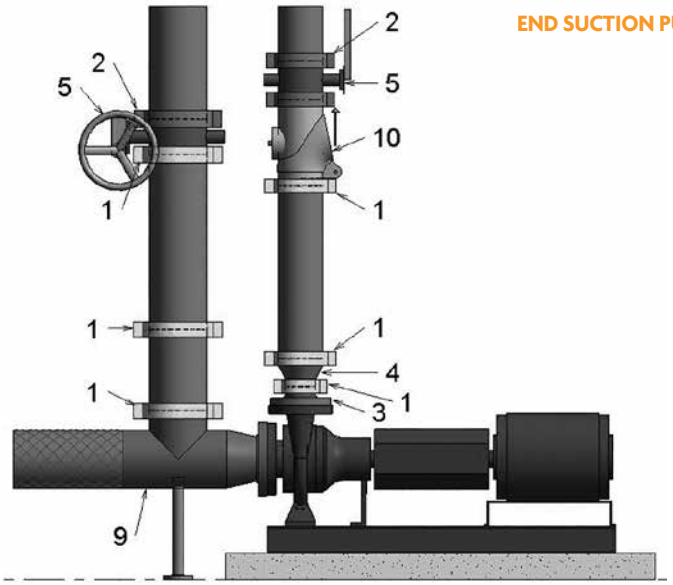
Anvil has put together a complete array of Gruvlok components necessary to provide pump protection for HVAC and industrial piping needs. With the combination of the Fig. 7401 Rigidlok and Fig. 7001 Standard coupling, flex connectors can be eliminated thus reducing cost. The Series 7700 Gruvlok® Butterfly valve has superior flow characteristics. The Gruvlok® Series 7800 Check Valve is full waterway valve and can be stacked directly to the Series 7700 Butterfly Valve. The Fig. 7250 Suction Diffuser and Fig. 7260 Tee Strainer complete the Gruvlok® pump protection package.

1. Fig 7001 Flex Coupling HD
2. Fig 7402 SlideLOK HD
3. Fig. 7788 Flange Adapter
4. Fig 7072 Concentric Reducer
5. Series 7700 Butterfly Valve
6. Model 758G / 768G Wye Strainer
7. Model FTV-S Tri-Service Valve
8. Model FTV-A Tri-Service Valve
9. Fig 7250 Suction Diffuser
10. Series 7700 Check Valve

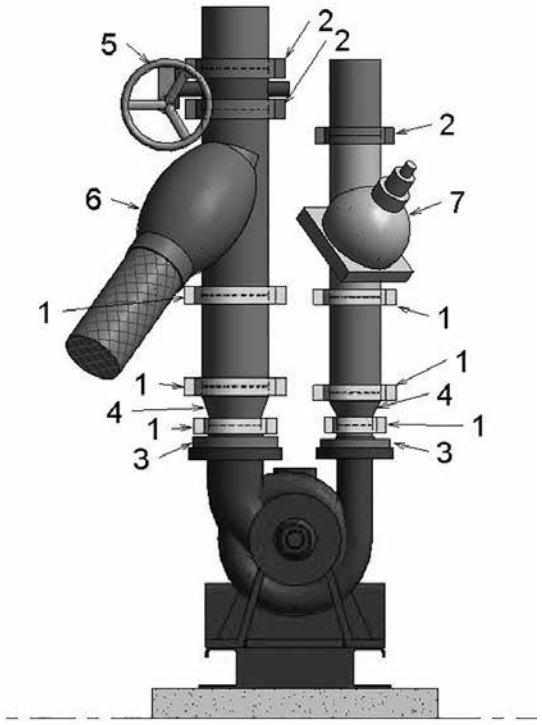
HORIZONTAL SPLIT CASE PUMP



END SUCTION PUMP



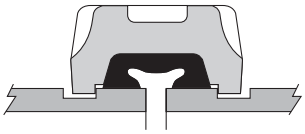
VERTICAL SPLIT CASE PUMP



GRUVLOK GASKET-STYLES

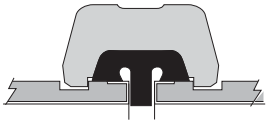
Gruvlok offers a variety of pressure responsive gasket styles. Each serves a specific function while utilizing the same basic sealing concept. Proper installation of the gasket compresses the inclined gasket lips on the pipe O.D., forming a leak tight seal. This sealing action is reinforced when the gasket is encompassed and compressed by the coupling housings. The application of internal line pressure energizes the elastometric gasket and further enhances the gasket sealing action.

"C" STYLE



The "C" Style cross section configuration is the most widely used gasket. It is the gasket style provided as standard in many Gruvlok Couplings (Fig. 7000, 7001, 7003, 7004HPR, 7307, 7400 and 7401). Grade "E" and "T" are standard grades while other grades are available for special applications.

END GUARD™

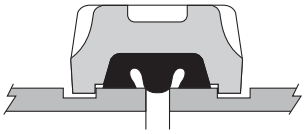


The projecting rib fits between the ends of lined pipe to prevent damage to unprotected pipe ends during coupling joint assembly.

The E.G. gasket is provided as standard with the Fig. 7004 E.G. Coupling.

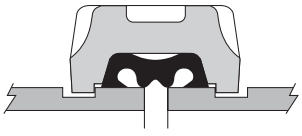
Grade "E" and "T" gaskets are available.

FLUSH GAP™



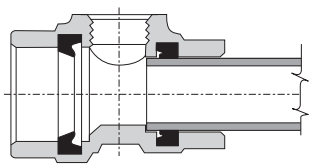
Designed to prohibit contaminates from building up in the gasket cavity. The centering rib fits flush over the gap between the two pipe ends thus closing off the gasket cavity. It can be used with Fig. 7000, 7001, 7400 and 7401 Couplings for many applications. Recommended for use in dry fire protection systems.

SLIDELOK™ PRESSURE RESPONSIVE



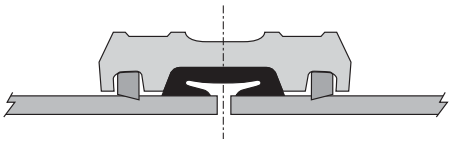
SlideLOK gasket patent pending design easily slides over the grooved pipe end for quick installation. The gasket design provides a 360° consistent compression seal when fully installed. The internal ribs are design to prohibit contaminants from building in the gasket cavity by engaging individually with each pipe end.

SOCK-IT®



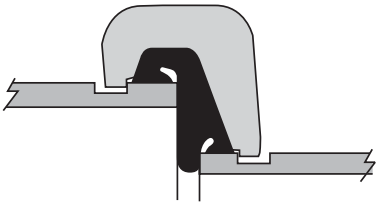
Used in Sock-It fittings only, this pressure energized gasket provides a leak-tight seal on plain end seal pipe. Available in Grade "E" material only.

ROUGHNECK®



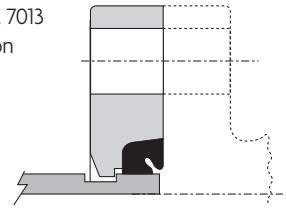
This "C" style gasket is similar in appearance and design to the Standard gasket but is only used with Fig. 7005 Roughneck Couplings and Fig. 7305 HDPE Couplings. The Roughneck gasket is wider, which allows for minor pipe end separation as line pressure sets the grippers into the plain end pipe.

REDUCING COUPLING



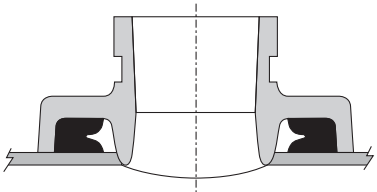
The centering rib allows for pipe positioning and serves to keep the smaller pipe from telescoping during installation. Used only with the Fig. 7010 Reducing Coupling.

FLANGE



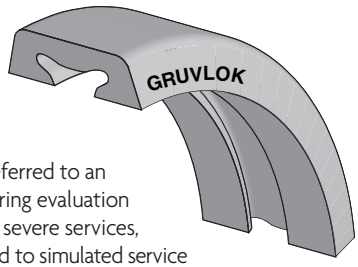
A specially designed gasket for the Fig. 7012, 7013 and 7312 Flange provides for a reliable seal on both the pipe and the mating flange.

CLAMP-T™



These gaskets conform to the curved exterior of the pipe to provide a pressure responsive seal. This unique design is only used with Fig. 7045, 7046 Clamp-T and Fig. 7047, 7048, and 7049 Clamp-T Crosses.

GASKET GRADE INDEX & GASKET RECOMMENDATION



The lists are provided as an aid in selecting the optimum gasket grade for a specific application to assure the maximum service life.

The recommendations have been developed from current information supplied by manufacturers of the elastomers, technical publications, and industry applications. The information supplied should be considered as a basis for evaluation but not as a guarantee.

Selection of the optimum gasket grade for a specific service requires the consideration of many factors; primarily temperature, fluid concentration, and continuity of service. Unless otherwise noted, all gasket recommendations are based on 100°F (38°C) maximum temperature service condition. Where more than one gasket grade is shown, the preferred grade is listed first.

Combinations of fluids should be referred to an Anvil Representative for an engineering evaluation and recommendation. In unusual or severe services, gasket materials should be subjected to simulated service conditions to determine the most suitable gasket grade.

Gasket recommendations apply only to Gruvlok gaskets. Contact an Anvil Representative for recommendations for services not listed. These listings do not apply to Gruvlok Butterfly Valves.

All Gruvlok products marked with UL/ULC Listed, FM approved VdS and/or LPC symbols are Listed/Approved with EPDM material. For other Listed/Approved materials, please contact an Anvil Representative for more information.

GASKET GRADE INDEX

STANDARD GASKETS

Grade	Temp. Range	Compound	Color Code	General Service Applications
EP	-40°F to +250°F (-40°C to 121°C)	EPDM	Green and Red	Water, dilute acids, alkalies, salts, and many chemical services not involving hydrocarbons, oils, or gases. Excellent oxidation resistance. **NOT FOR USE WITH HYDROCARBONS**
E	-40°F to +230°F (-40°C to 110°C)	EPDM	Green	Water, dilute acids, alkalies, salts, and many chemical services not involving hydrocarbons, oils, or gases. Excellent oxidation resistance. **NOT FOR USE WITH HYDROCARBONS**
T	-20°F to +180°F (-29°C to 82°C)	Nitrile (Buna-N)	Orange	Petroleum products, vegetable oils, mineral oils, and air contaminated with petroleum oils. **NOT FOR USE IN HOT WATER SERVICES**

SPECIAL GASKETS

Grade	Temp. Range	Compound	Color Code	General Service Applications
O	+20°F to +300°F (-20°C to 149°C)	Fluoro Elastomer	Blue	High temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated, hydrocarbons and lubricants
L	-40°F to +350°F (-40°C to 177°C)	Silicone	Red Gasket	Dry, hot air and some high temperature chemical services.
E Type A	-40°F to +150°F (-40°C to 66°C)	Pre-Lubricated	Violet	Wet & Dry (oil free air) Pipe in Fire Protection Systems. For dry pipe systems, Gruvlok Xtreme™ Temperature Lubricant is required.

GASKET RECOMMENDATION LISTING

WATER & AIR

Service	Gasket Grade
Air, (no oil vapors) Temp. -40°F to 250°F (-40°C to 121°C)	EP
Air, (no oil vapors) Temp. -40°F to 350°F (-40°C to 177°C)	L
Air, Oil vapor Temp. -20°F to 150°F (-29°C to 66°C)	T
Air, Oil vapor Temp. 20°F to 300°F (-7°C to 149°C)	O
Water, Temp to 150°F (66°C)	E/EP/T
Water, Temp to 250°F (121°C)	EP
Water, Acid Mine	E/T
Water, Chlorine	(E/EP/O)
Water, Deionized	E/EP/T
Water, Seawater	E/EP/T
Water, Waste	E/EP/T
Water, Lime	E/EP/T

Where more than one gasket grade is shown the preferred gasket grade is listed first. Where the gasket grade is shown in parentheses, Contact an Anvil Representative for an engineering evaluation and recommendation. Specify gasket grade when ordering. Use Gruvlok lubricant on gasket. Check gasket color code to be certain it is recommended for the service intended.

PETROLEUM PRODUCTS

Service	Gasket Grade
Biodiesel	O
Crude Oil - Sour	T
Diesel Oil	T
Fuel Oil	T
Gasoline, Leaded	T
Gasoline, Unleaded*	(O)
Hydraulic Oil	T
JP-3, JP-4 and JP-5	T/O
JP-6, 100°F (38°C) Maximum Temp.	O
Kerosene	T
Lube Oil, to 150°F (66°C)	T
Motor Oil	T
Natural Gas**	T
Tar and Tar Oil	T
Transmission Fluid —Type A	O
Turbo Oil #15 Diester Lubricant	O

Unless otherwise noted, all gasket listings are based upon 100°F (38°C) maximum temperature service conditions.

For services not listed, contact an Anvil Representative for recommendation.

*Contact an Anvil Representative for service evaluation.

**Extreme caution and care is required when installing Gruvlok couplings on a natural gas system. Must be located in a well ventilated area.

VACUUM SERVICE

VACUUM SERVICE

Size	Vacuum Level	Gasket Recommendation
1" - 12" (25 - 300mm)	0" - 10" Hg	Standard
14" - 16" (350 - 400mm)	0" - 10" Hg	Standard
1½" - 24" (40 - 600mm)	10" - 29.9" Hg	Flush Gap
2" - 8" (50 - 200mm)	10" - 29.9" Hg	SlideLOK

LARGER SIZES: Contact an Anvil Representative for more information.

GRUVLOK GASKET-RECOMMENDATIONS

CHEMICAL SERVICES	
Chemical Composition	Gasket Grade
Acetic Acid 50%	E/EP
Acetic Acid Glacial	L/E/EP
Acetone	E/EP
Acethlene	E/EP/T
Alkalis	T/E/EP
Alums	E/EP/T/O
Aluminum Chloride	E/EP/T
Aluminum Fluoride	E/EP/T/O
Aluminum Hydroxide	E/EP/O
Aluminum Nitrate	E/EP/T
Aluminum Salts	E/EP
Ammonia Gas, Cold	E/EP
Ammonia Liquid	E/EP
Ammonium Chloride	T/E/EP
Ammonium Fluoride	E/EP
Ammonium Hydroxide	E/EP
Ammonium Nitrate	T/E/EP
Amyl Acetate	E/EP
Amyl Alcohol	E/EP
Aniline	E/EP
Animal Fats	T
Argon-Gas	L
Arsenic Acid, to 75%	T/E/EP/O
Barium Carbonate	E/EP/T
Barium Chloride	E/EP/T
Barium Hydroxide	E/EP/T
Barium Nitrate	E/EP/O
Barium Sulphide	E/EP/T
Beet Sugar Liquors	T
Benzene	O
Benzene Sulfonic (Aromatic Acid)	(E/EP)
Benzoic Acid	O
Benzyl Alcohol	E/EP
Benzyl Chloride	E/EP
Biodeisel	O
Black Sulphate Liquor	T
Bleach, 5% Active Cl2	E/EP/O
Borax	E/EP/O
Boric Acid	E/EP/T
Bromine	O
Butyl Alcohol	E/EP/T
Butyl Stearate	E/EP
Butylene	T/O
Calcium Bisulfate	T/O
Calcium Bisulphide	T/O
Calcium Bisulphite	T/O
Calcium Carbonate	E/EP/T
Calcium Chloride	E/EP/T

CHEMICAL SERVICES	
Chemical Composition	Gasket Grade
Calcium Hydroxide (Lime)	E/EP/T
Calcium Sulfate	E/EP/T
Calcium Sulfide	E/EP/T
Caliche Liquors	E/EP/T
Cane Sugar Liquors	T
Carbitol	E/EP/T
Carbon Dioxide, Dry	E/EP/T
Carbon Dioxide, Wet	E/EP/T
Carbon Monoxide	E/EP
Carbon Tetrachloride	O
Castor Oil	T
Caustic Potash	E/EP
Caustic Soda	E/EP
Cellosolve	E/EP
Chlorine Dry	(O)
Chlorinate Solvents	(O)
Chlorobenzene	O
Chlorobenzene Chloride	O
Chlorobromomethane	O
Chloroform	O
Chrome Alum	E/T
Chrome Plating Solutions	O
Chromic Acid, to 50%	O
Citric Acid	E/EP/T
Coconut Oil	T
Cod Liver Oil	T
Coke Oven Gas	T/O
Copper Carbonate	E/EP/T
Copper Chloride	E/EP/T
Copper Cyanide	E/EP/T
Copper Sulphate	E/EP/T
Corn Oil	T
Cotton Seed Oil	T
Cresole, Cresylic Acid	T/O
Creosote, Coal Tar	(T/O)
Creosote, Wood	T/O
Cupric Chloride	E/EP/T
Cupric Fluoride	E/EP/T
Cupric Sulphate	E/EP/T
Cychohexanol	O
Diacetone Alcohol	E/EP
Dichlorobenzene	O
Dichloroethylene	O
Dioctyl Phthalate	(E/EP)
Epson-Salt	E/EP/T
Ethane	E/EP
Ethanolamine	E/EP
Ethyl Acetate	(E/EP)

CHEMICAL SERVICES	
Chemical Composition	Gasket Grade
Ethyl Alcohol	E/EP/T
Ethyl-Chloride	E/EP/T
Ethyl Ether	(T)
Ethylene Chloride	E/EP
Ethylene Chlorohydrin	E/EP
Ethylene Diamine	E/EP/T
Ethylene Dichloride (Dichloroethane)	O
Ethylene Glycol	E/EP/T
Ethylene Oxide	(E/EP)
Ferric Chloride, to 35%	E/EP/T
Ferric Nitrate	E/EP/T
Ferric Sulphate	E/EP/T
Ferrous Chloride	E/EP/T
Fish Oils	T
Fluroboric Acid	E/EP
Fluorosilicic Acid	E/EP
Fly-Ash	E/EP
Formaldehyde	E/EP/T
Formamide	E/EP/T
Formic Acid	E/EP/O
Freon 11, 130°F (54°C) Max.	T
Freon 12, 113, 114, 115, 130°F (54°C) Max.	T
Fructose	T
Furfuryl Alcohol	(E/EP)
Glucose	E/EP/T
Glue	T
Glycerin	E/EP/T
Glycerol	E/EP/T
Glycol	E/EP/T
Heptane	T
Hexaldehyde	E/EP
Hexane	T
Hexylene Glycol	T
Hydrochloric Acid, to 36%, 75°F (24°C)-Max.	E/EP
Hydrochloric Acid, to 36%, 158°F (70°C)-Max.	(O)
Hydrofluoric Acid, to 75%, 158°F (70°C)-Max.	(O)
Hydrofluosilicic Acid	T/E/EP
Hydrogen Peroxide, to 50%	E/EP/T/O
Hydrogen Peroxide, to 90%	(L/O)
Hydroquinone	T/O
Iodine,-Wet	E/EP
Isoamyl Alcohol	E/EP
Isooctane	T
Isobutyl Alcohol	E/EP
Isopropyl Alcohol	E/EP
Lacquer	(O)
Lacquer Solvent	(O)
Lactic Acid	T

Where more than one gasket grade is shown the preferred gasket grade is listed first.
Where the gasket grade is shown in parentheses, Contact an Anvil Representative for an engineering evaluation and recommendation.
Check gasket grade when ordering. Use Gruvlok lubricant on gasket.

Unless otherwise noted, all gasket listings are based upon 100°F (38°C) maximum temperature service conditions. For services not listed, Contact an Anvil Representative for recommendation.
Check gasket color code to be certain it is recommended for the service intended.

GRUVLOK GASKET-RECOMMENDATIONS (CONT.)

CHEMICAL SERVICES	
Chemical Composition	**Gasket Grade**
Lard Oil	T
Latex (1% Styrene &-Butadiene)	0
Lead Acetate	E/EP/T
Linseed Oil	T
Lithium Bromide	T/0
Magnesium Chloride	E/EP/T
Magnesium Hydroxide	E/EP/T
Magnesium Nitrate	E/EP
Magnesium Sulphate	E/EP/T
Malonyl Nitrile	E/EP/T
Mercuric Chloride	E/EP/T
Mercuric Cyanide	E/EP/T
Mercury	E/EP/T
Methyl Acetate	(E/EP)
Methyl Alcohol, Methanol	E/EP/T
Methyl Cellosolve (Ether)	E/EP
Methyl Chloride	(0)
Methyl Ethyl Ketone	(E/EP)
Methyl Formate	E/EP
Methyl Isobutyl Carbinol	E/EP/T
Methyl Isobutyl Ketone	(E/EP)
Mineral Oils	T
Naphtha, 160°F (71°C)-Max.	0
Naphthalene 176°F	0
Nickel Chloride	E/EP/T
Nickel Nitrate	E/EP
Nickel Plating Solution 125°F (52°C)-Max.	E/EP
Nitric Acid, to 10%, 75°F-(24°C)-Max.	E/EP
Nitric Acid, 10-50%, 75°F-(24°C)-Max.	0
Nitric Acid, 50-86%, 75°F (24°C)-Max.	(0)
Nitric Acid, Red Fuming	(0)
Nitro Benzene	(0)
Nitrous Oxide	E/EP
Octyl Alcohol	T
Olive Oil	T
Oxalic Acid	E/EP
Ozone	E/EP
Phenol (Carbolic acid) 300°F (149°C)-Max.	0
Phenylhydrazine	(0)
Phosphate Ester	E/EP

CHEMICAL SERVICES	
Chemical Composition	**Gasket Grade**
Phosphoric Acid, to 75% & 70°F (21°C)-Max.	E/EP/T
Phosphoric Acid, to 85% & 150°F (66°C) Max.	0
Photographic Solutions	T
Potassium Bromide	E/EP/T
Potassium Carbonate	E/EP/T
Potassium Chloride	E/EP/T
Plating Solutions (gold, brass cadmium, copper, lead, silver, tin, zinc)	E/EP
Potassium Chromate	T
Potassium Cyanide	E/EP/T
Potassium Ferricyanide	E/EP/T
Potassium Ferrocyanide	E/EP/T
Potassium Hydroxide	T
Potassium Iodide	E/EP/T
Potassium Nitrate	E/EP/T
Potassium Permanganate, saturated, to 25%	E/EP
Potassium Sulphate	E/EP/T
Propanol	E/EP
Propyl Alcohol	E/EP/T
Propylene Glycol	E/EP/T
Pydraul 312C	0
Pyroguard "C" &-"D"	T
Pyroguard 55	E/EP
Pyrrole	E/EP
Salicylic Acid	E/EP/T
Silver Cyanide	E/EP
Silver Nitrate	E/EP
Skydrol, 200°F (93°C)-Max.	L
Skydrol 500 Phosphate Ester	(L/E/EP)
Soda Ash,-Sodium Carbonate	E/EP/T
Sodium Bicarbonate	E/EP/T
Sodium Bisulphate	E/EP/T
Sodium Bisulphite (black liquor)	E/EP/T
Sodium Bromide	E/EP/T
Sodium Chlorate	E/EP/T
Sodium Chloride	E/EP/T
Sodium Cyanide	E/EP/T
Sodium Hydroxide, to 50%	E/EP
Sodium Hypochlorite, to 20%	E/EP
Sodium Metaphosphate	E/EP/T

CHEMICAL SERVICES	
Chemical Composition	**Gasket Grade**
Sodium Nitrate	E/EP/T
Sodium Peroxide	E/EP
Sodium Phosphate	E/EP/T
Sodium Silicate	E/EP/T
Sodium Sulphide	E/EP/T
Sodium Sulphite Solution, to 20%	E/EP/T
Sodium Thiosulphate, "Hypo"	E/EP/T
Soybean Oil	T
Stannous Chloride, to 15%	E/EP/T/O
Starch	E/EP/T
Stearic Acid	T
Styrene	0
Sucrose Solutions	T
Sulphur	E/EP
Sulphuric Acid, to 25%, 150°F (66°C)-Max.	E/EP
Sulphuric Acid, 25-50%, 200°F (93°C) Max.	0
Sulphuric Acid, 50-95%, 150°F-(66°C)-Max.	0
Sulphuric Acid, Fuming	(0)
Sulphuric Acid, Oleum	(0)
Sulphurous Acid	(0)
Tetrachloroethylene	0
Toluene	0
Tributyl Phosphate	(E/EP)
Trichloroethylene, 200°F-(93°C)-Max	0
Triethanolamine	E/EP/T
Trisodium Phosphate	(E/EP/T)
Turpentine 158°F-(70°C)-Max.	T/0
Urea	E/EP/T
Vegetable Oils	T
Vinegar	T
Vinyl Acetate	(E/EP)
White Liquor	E/EP
Xylene (Xylol)-158°F (70°C)-Max.	0
Zinc Sulphate	E/EP/T

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Where the gasket grade is shown in parentheses, Contact an Anvil Representative for an engineering evaluation and recommendation.
Check gasket grade when ordering. Use Gruvlok lubricant on gasket.

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MOVEMENT-APPLICATIONS

THERMAL MOVEMENT

A sufficient amount of coupling joints must be provided to accommodate the calculated movement (expansion or contraction) in a pipe run or segment thereof .

EXAMPLE:
A 200 foot long straight run of 4" steel cut grooved pipe between anchor points . Minimum Temperature: 40° F (4 .4° C) . (at time of installation) .
Maximum Oper . Temperature: 160° F (71 .1° C) .

Thermal expansion tables show this system will expand a total of 1 .80" due to the temperature change .

DESIGN QUESTION:
How many couplings are required to account for the thermal growth?

AVAILABLE LINEAR MOVEMENT PER FLEXIBLE COUPLING:
Using the table on page 222, we see that there is 0 .188" linear movement per coupling (4" Flexible Coupling)

COUPLINGS REQUIRED
As indicated above, the total movement is 1 .80". Thus, the number of couplings is determined as follows:

No . of Couplings = Tot . Movement / Avail . Movement per Coupling

FOR OUR EXAMPLE:
No . of Couplings = (1 .80") / (0 .187") = 9 .6,
Therefore 10 couplings are needed

POSITION OF COUPLINGS
In order for the couplings to provide for the movement indicated by the above example, it would be necessary to install all couplings with the maximum gap between pipe ends. Conversely, if the thermal movement was contraction due to a reduction of system temperature, the coupling joints would have be installed with the pipe ends butted, thus accommodating the "shrink" of the pipe system.

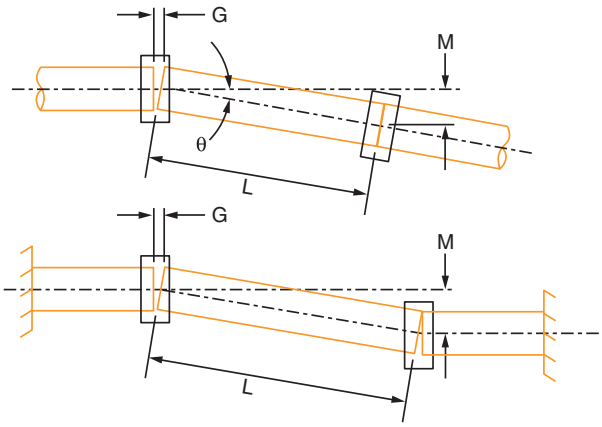
In either case the pipe run in question would have to be anchored at the proper locations to direct pipe system expansion or contraction into the coupling joints.

As can be seen from the above example, the pipe end gap within the coupling joint must be considered when designing a grooved end pipe system to accommodate thermal movement. The couplings do not automatically provide for expansion and contraction of piping.

MISALIGNMENT & DEFLECTION

The angular movement capability of the Gruvlok coupling permits the assembly of pipe joints where the piping is not properly aligned. At least two couplings are required to provide for lateral pipe misalignment. Deflection (longitudinal misalignment) may be accommodated within a single coupling as long as the angle of deflection does not exceed the value shown in the coupling performance data for the particular size and coupling type.

A pipe joint that utilizes the angular deflection capability of the Gruvlok coupling will react to pressure and thermal forces dependent upon the manner in which it is restrained. An unrestrained joint will react to these forces by straightening, thus reducing, if not eliminating, the deflection at the joint. If joint deflection has been designed into the pipe layout and must be maintained, then sufficient anchors must be provided to resist the lateral forces and hold the joint in the deflected condition.



The amount of deflection from pipe run centerline can be calculated utilizing the following equations:

$M = L (\text{Sin } \theta)$
$\theta = \text{ArcSin } (G/D)$
$M = (G \times L)/D$

WHERE:
M = Misalignment (inches)

G = Maximum Allowable Pipe End Movement (Inches) as shown under "Performance Data"

θ = Maximum Deflection (Degrees) from centerline as shown under "Performance Data"

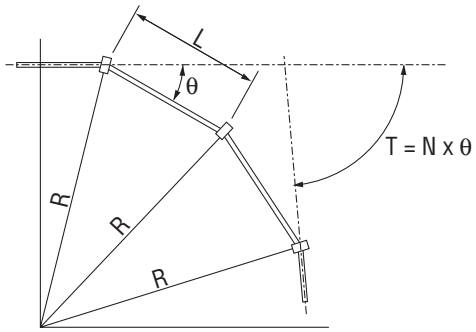
D = Pipe Outside Diameter (Inches)

L = Pipe Length (Inches)

MOVEMENT-APPLICATIONS (CONT.)

CURVE LAYOUT:

Utilizing the angular deflection at each coupling joint curves may be laid out using straight pipe lengths and Gruvlok Couplings.



This example shows how to calculate the curve radius, required pipe lengths, and number of required couplings.

$$R = L/(2 \times \sin(\theta/2))$$
$$L = 2 \times R \times \sin(\theta/2)$$
$$N = T/\theta$$

WHERE:

N = Number of Couplings

R = Radius of Curve (feet)

L = Pipe Length (feet)

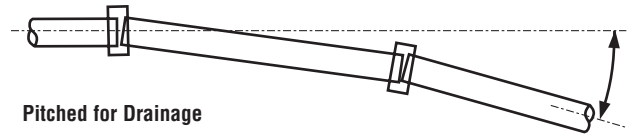
θ = Deflection from centerline (Degrees, Minutes) of each Coupling (See coupling performance data)

T = Total Angular Deflection of all Couplings.

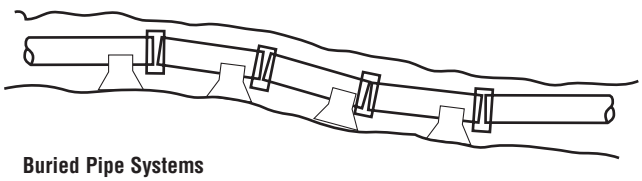
DRAINAGE, BURIED SYSTEMS, ETC.:

The flexible design of the Gruvlok coupling makes it ideal for use in a wide variety of systems in which random changes of the pipe direction can be accommodated by the Gruvlok coupling's angular deflection capability rather than requiring the use of special fittings.

Pitched drainage systems, buried pipe systems where pipe laying conditions are subject to settlement, and exposed pipe systems laid on rough ground are but a few of the many types of pipe installations that present conditions where the functional capability of the Gruvlok coupling are useful.



Pitched for Drainage

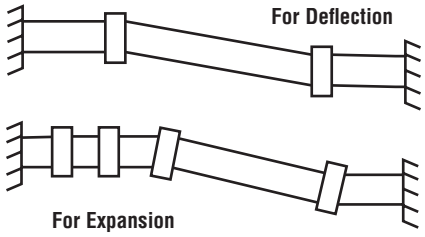


Buried Pipe Systems

COMBINED LINEAR & ANGULAR MOVEMENT:

The clearance in the grooved coupling joint, will allow a limited capability for combined linear and angular movement. A partially deflected joint will not provide full linear movement capability. A fully deflected coupling joint provides no linear movement capability. The Gruvlok coupling will not allow for both maximum linear and maximum angular movement simultaneously.

In systems where both are expected, additional joints may be required.



NOTE: Fully Deflected Joint Will Not Allow For Linear Expansion.

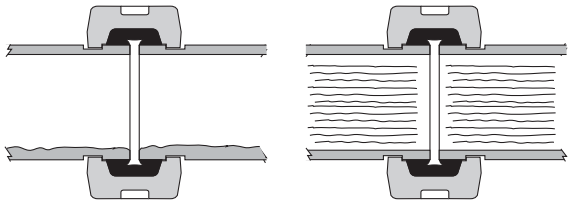
In the example above, two couplings were added to account for thermal expansion and the other couplings accommodate only the misalignment.

The additional stress from the combined movement is therefore relieved.

ROTATIONAL MOVEMENT:

Piping systems designed with Gruvlok Couplings can accommodate minor rotational movement from thermal expansion, settlement, vibration, or other similar movements. However, Gruvlok Couplings ***should never be used as a continuous swivel joint.***

EXAMPLE:



Before Pipe Rotation **After Pipe Rotation**

Utilizing the rotational capability of the Gruvlok Coupling, the pipe life of a slurry or similar coarse material piping system can be extended.

For pipe rotation, the system must be shut down and internal pressure relieved.

The pipe may then be rotated one-quarter turn, the couplings re-tightened, and service resumed. If performed on a regular basis, pipe rotation will evenly distribute wear over the entire inner surface of the pipe.

COUPLING WORKING PRESSURE RATING

on Light Wall Roll Grooved Steel Pipe

GRUVLOK COUPLING WORKING PRESSURE RATING (PSI) ON LIGHT WALL ROLL GROOVED STEEL PIPE

Nominal Size	O.D.	Nom. Wall Thickness	Pipe Schedule	Maximum Working Pressure (PSI*)										
				Fig. 7000	Fig. 7001	Fig. 7003	Fig. 7004	Fig. 7005	Fig. 7010*	Fig. 7012	Fig. 7013	Fig. 7400	Fig. 7401	Fig. 74/7402
In./DN(mm)	*In./mm*	*In.*	*Number*	*Lightweight*	*Standard*	*Hingelok®*	*High Pressure*	*Roughneck®*	*Reducing*	*Flange*	*Flange*	*Rigidlite®*	*Rigidlok®*	*SlideLOK®*
1 *25*	1.315 *33.4*	0.065 0.085 0.109	5 XL 10	300 300 600	500 300 750	– – –	– – –	– – –	– – –	– – –	– – –	175 300 300	– – –	– – –
1¼ *32*	1.660 *42.2*	0.065 0.085 0.109	5 XL 10	300 300 600	500 300 750	– – –	– – –	– – –	– – –	– – –	– – –	175 300 300	– – –	– – –
1½ *40*	1.900 *48.3*	0.065 0.090 0.109	5 XL 10	300 300 600	500 300 750	200 250 300	– – –	– – –	– – –	– – –	– – –	175 300 300	500 300 750	– – –
2 *50*	2.375 *60.3*	0.065 0.090 0.109	5 XL 10	300 300 600	500 300 750	200 250 300	500 300 800	– – 500	250 300 350	200 300 300	500 300 720	175 300 300	500 300 750	– – 600
2½ *65*	2.875 *73.0*	0.083 0.130 0.120	5 XL 10	300 300 600	500 300 750	200 250 300	500 300 800	– – 500	250 300 350	200 300 300	500 300 720	175 300 300	500 300 750	– – 600
3 *80*	3.500 *88.9*	0.083 0.130 0.120	5 XL 10	300 300 600	500 300 750	200 250 300	500 300 800	– – 500	250 300 350	200 300 300	500 300 720	175 300 300	500 300 750	– – 600
3½ *90*	4.000 *101.6*	0.083 0.120	5 10	300 600	500 750	– –	– –	– –	– –	– –	– –	– –	– –	– –
4 *100*	4.500 *114.3*	0.083 0.120	5 10	300 600	500 750	200 300	400 600	– 400	200 300	200 300	500 720	175 300	500 750	– 500
5 *125*	5.563 *141.3*	0.109 0.134	5 10	250 500	400 500	200 250	400 600	– 400	200 300	200 300	400 500	175 300	400 500	– 500
6 *150*	6.625 *168.3*	0.109 0.134 0.188	5 10 –	250 400 400	350 500 500	150 200 200	400 500 700	– 300 –	200 300 350	200 300 300	350 500 500	175 300 300	350 500 500	– 500 –
8 *200*	8.625 *219.1*	0.109 0.148 0.188 0.250	5 10 – 20	250 350 350 350	300 400 400 500	150 200 200 250	300 400 500 600	– 300 – –	150 250 300 300	200 300 300 300	300 400 400 500	175 175 300 300	300 400 400 500	– 300 – –
10 *250*	10.750 *273.1*	0.134 0.165 0.188 0.250	5 10 – 20	– – – –	250 350 350 400	– – – –	300 400 400 500	– – – –	– – – –	200 200 300 300	250 350 350 400	– – – –	250 350 350 400	– – – –
12 *300*	12.750 *323.9*	0.156 0.180 0.188 0.250	5 10 – 20	– – – –	200 350 350 400	– – – –	200 300 300 400	– – – –	– – – –	200 200 300 300	200 350 350 400	– – – –	200 350 350 400	– – – –
14 *350*	14.000 *355.6*	0.156 0.250 0.312	5 10 20	– – –	125 250 275	– – –	– – –	– – –	– – –	125 250 250	– – –	– – –	125 250 275	– – –
16 *400*	16.000 *406.4*	0.165 0.250 0.312	5 10 20	– – –	125 175 275	– – –	– – –	– – –	– – –	100 175 250	– – –	– – –	100 175 275	– – –
18 *450*	18.000 *457.2*	0.250 0.312	10 20	– –	100 175	– –	– –	– –	– –	100 175	– –	– –	100 175	– –
20 *500*	20.000 *508.0*	0.250 0.375	10 20	– –	100 300	– –	– –	– –	– –	100 250	– –	– –	100 250	– –
24 *600*	24.000 *609.6*	0.250 0.375	10 20	– –	75 300	– –	– –	– –	– –	75 250	– –	– –	75 250	– –

Maximum line pressure, including surge, to which a joint should be subjected on pipe roll grooved to standard roll grooving specification with coupling properly assembled. For coupling performance on standard wall steel pipe, refer to individual Gruvlok Coupling performance listing.

* Rating based on larger pipe size.

COUPLING WORKING PRESSURE RATING

on Roll Grooved ISO Size Steel Pipe

GRUVLOK COUPLING WORKING PRESSURE RATING (BAR) ON ROLL GROOVED ISO SIZE STEEL PIPE

Nominal Size	O.D.	Nom. Wall Thickness	Maximum Working Pressure (bar)									
			Fig. 7000	Fig. 7001	Fig. 7003	Fig. 7004	Fig. 7010*	Fig. 7012	Fig. 7013	Fig. 7400	Fig. 7401	Fig. 74/7402
In./DN(mm)	*In./mm*	*mm*	*Lightweight*	*Standard*	*Hingelok®*	*High Pressure*	*Reducing*	*Flange*	*Flange*	*Rigidlite®*	*Rigidlok®*	*SlideLOK®*
1 *25*	1.315 *33.4*	1.8 2.9 3.2	20.7 41.4 41.4	34.5 51.7 69.0	– – –	– – –	– – –	– – –	– – –	12.1 20.7 20.7	– – –	– – –
1¼ *32*	1.660 *42.2*	1.8 2.9 3.6	20.7 41.4 41.4	34.5 51.7 69.0	– – –	– – –	– – –	– – –	– – –	12.1 20.7 20.7	– – –	– – –
1½ *40*	1.900 *48.3*	1.8 2.9 3.6	20.7 41.4 41.4	34.5 51.7 69.0	13.8 17.2 20.7	– – –	– – –	– – –	– – –	12.1 20.7 20.7	34.5 51.7 51.7	– – –
2 *50*	2.375 *60.3*	1.8 2.9 3.6	20.7 41.4 41.4	34.5 51.7 69.0	13.8 17.2 20.7	34.5 55.2 82.3	17.2 24.1 24.1	13.8 20.7 20.7	34.5 51.7 69.0	12.1 20.7 20.7	34.5 51.7 51.7	– 41.1 51.7
2½ *65*	2.875 *73.0*	2.0 3.2 5.0	20.7 41.4 41.4	34.5 51.7 69.0	13.8 17.2 20.7	34.5 55.2 82.3	17.2 24.1 24.1	13.8 20.7 20.7	34.5 51.7 69.0	12.1 20.7 20.7	34.5 51.7 51.7	– 41.1 51.7
3 O.D. 76.1	*2.996* 76.1	2.0 3.2 5.0	20.7 41.4 41.4	34.5 51.7 69.0	– – –	– – –	– – –	13.8 20.7 20.7	– – –	12.1 20.7 20.7	34.5 51.7 51.7	– – –
3 *80*	3.500 *88.9*	2.0 3.2 5.6	20.7 41.4 41.4	34.5 51.7 69.0	13.8 17.2 20.7	34.5 55.2 82.3	17.2 24.1 24.1	13.8 20.7 20.7	34.5 51.7 69.0	12.1 20.7 20.7	34.5 51.7 51.7	– 41.1 51.7
3½ *90*	4.000 *101.6*	2.0 3.2 5.6	20.7 41.4 41.4	34.5 51.7 69.0	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –
4 *100*	4.500 *114.3*	2.0 3.2 5.6	20.7 41.4 41.4	34.5 51.7 69.0	13.8 17.2 20.7	27.6 41.4 82.3	13.8 20.7 24.1	13.8 20.7 20.7	34.5 51.7 69.0	12.1 20.7 20.7	34.5 51.7 51.7	– 34.5 51.7
4¼ O.D. 108.0	*4.250* 108.0	2.0 3.2 5.6	20.7 41.4 41.4	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –
5 *125*	5.563 *141.3*	2.9 3.6 6.3	17.2 34.5 34.5	27.6 34.5 69.0	10.3 13.8 20.7	27.6 41.4 82.3	13.8 20.7 24.1	13.8 20.7 20.7	27.6 34.5 69.0	12.1 20.7 20.7	27.6 34.5 51.7	– 34.5 51.7
5¼ O.D. 133.0	*5.236* 133.0	2.9 3.6 6.3	17.2 34.5 34.5	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –
5½ O.D. 139.7	*5.500* 139.7	2.9 3.6 6.3	17.2 34.5 34.5	– – –	– – –	– – –	– – –	13.8 20.7 20.7	– – –	12.1 20.7 20.7	– – –	– – –
6 *150*	6.625 *168.3*	2.9 3.6 7.1	17.2 27.6 27.6	24.1 34.5 69.0	10.3 13.8 20.7	27.6 34.5 82.3	13.8 20.7 24.1	13.8 20.7 20.7	24.1 34.5 69	12.1 20.7 20.7	24.1 34.5 51.7	– 34.5 48.3
6¼ O.D. 159.0	*6.259* 159.0	2.9 3.6 7.1	17.2 27.6 27.6	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –	– – –
6½ O.D. 165.1	*6.500* 165.1	2.9 3.6 7.1	17.2 27.6 27.6	24.1 34.5 69.0	– – –	– – –	– – –	13.8 20.7 20.7	– – –	12.1 20.7 20.7	24.1 34.5 51.7	– – –
8 *200*	8.625 *219.1*	2.9 5.0 8.0	17.2 24.1 24.1	20.7 34.5 55.2	10.3 13.8 20.7	20.7 35.4 69	10.3 24.1 24.1	13.8 20.7 20.7	20.7 34.5 55.2	12.1 20.7 20.7	20.7 34.5 51.7	– 20.7 41.4
10 *250*	10.750 *273.1*	3.6 5.0 8.0	– – –	17.2 24.1 55.2	– – –	20.7 27.6 55.2	– – –	13.8 20.7 20.7	17.2 24.1 55.2	– – –	17.2 24.1 51.7	– – –
12 *300*	12.750 *323.9*	4.0 5.0 8.0	– – –	17.2 24.1 55.2	– – –	13.8 20.7 55.2	– – –	13.8 20.7 20.7	17.2 24.1 55.2	– – –	17.2 24.1 51.7	– – –
14 *350*	14.000 *355.6*	4.0 6.3 8.8	– – –	8.6 17.2 20.7	– – –	– – –	– – –	8.6 17.2 20.7	– – –	– – –	8.6 17.2 20.7	– – –
16 *400*	16.000 *406.4*	4.0 6.3 8.8	– – –	6.9 12.1 20.7	– – –	– – –	– – –	6.9 12.1 20.7	– – –	– – –	6.9 12.1 20.7	– – –
18 *450*	18.000 *457.2*	5.0 6.3 8.8	– – –	5.2 6.9 17.2	– – –	– – –	– – –	5.2 6.9 17.2	– – –	– – –	5.2 6.9 17.2	– – –
20 *500*	20.000 *508.0*	5.0 6.3 8.8	– – –	3.4 6.9 17.2	– – –	– – –	– – –	3.4 6.9 17.2	– – –	– – –	3.4 6.9 17.2	– – –
24 *600*	24.000 *609.6*	5.0 6.3 8.8	– – –	1.7 5.2 17.2	– – –	– – –	– – –	1.7 5.2 17.2	– – –	– – –	1.7 5.2 17.2	– – –

Maximum line pressure, including surge, to which a joint should be subjected on pipe roll grooved to standard roll grooving specification with coupling properly assembled. For coupling performance on standard wall steel pipe, refer to individual Gruvlok Coupling performance listing.

* Rating based on larger pipe size.

COUPLING & FLANGE WORKING PRESSURE RATING

on 304 and 316 Stainless Steel Roll Grooved Pipe

The following are pressure ratings for Gruvlok Stainless Steel Piping Systems. The ratings for Schedule 10S pipe are based upon the use of roll-groover roll sets that have been specifically designed for use on Schedule 10 Stainless Steel pipe. Using roll sets that were designed for roll grooving standard wall pipe may significantly reduce the pressure ratings that can be obtained. The Model 1007/3007 roll groovers require the use of the optional Schedule 10 roll set to groove Schedule 5S and 10S. For grooving Schedule 40S on the Model 1007/3007 roll groovers, the standard steel roll grooving set should be used.

GRUVLOK COUPLING & FLANGE WORKING PRESSURE RATINGS (PSI)
ON 304 AND 316 STAINLESS STEEL ROLL GROOVED PIPE

Nominal Pipe Size	Pipe O.D.	Nominal Wall Thickness	Pipe Schedule Number	Coupling and Flanges										
				Fig. 7000 Lightweight	Fig. 7001 Standard	Fig. 7003 Hingelok®	Fig. 7004 High Pressure	Fig. 7010* Reducing	Fig. 7012 Flange	Fig. 7013 Flange	Fig. 7400 Rigidlite®	Fig. 7401 Rigidlok®	Fig. 7400SS Coupling	Fig. 74/7402 SlideLOK®
In./DN(mm)	*In./mm*	*Inches*	–	*PSI*										
1 *25*	1.315 *33.4*	0.065	5S	400	400	–	–	–	–	–	300	–	–	–
		0.109	10S	400	500	–	–	–	–	–	300	–	–	–
		0.133	40	500	750	–	–	–	–	–	300	–	–	–
1¼ *32*	1.660 *42.4*	0.065	5S	400	400	–	–	–	–	–	300	–	275	–
		0.109	10S	500	500	–	–	–	–	–	300	–	300	–
		0.140	40	500	750	–	–	–	–	–	300	–	300	–
1½ *40*	1.900 *48.3*	0.065	5S	400	400	275	–	–	–	–	300	400	275	–
		0.109	10S	500	500	300	–	–	–	–	300	500	300	–
		0.145	40	500	750	300	–	–	–	–	300	750	300	–
2 *50*	2.375 *60.3*	0.065	5S	250	325	250	325	250	250	275	250	325	275	–
		0.109	10S	500	500	300	500	500	300	300	300	500	300	500
		0.154	40	500	750	300	750	500	300	300	300	750	300	750
2½ *65*	2.875 *73.0*	0.083	5S	250	325	250	325	250	250	275	250	325	200	–
		0.120	10S	500	500	300	500	500	300	300	300	500	300	325
		0.203	40	500	750	300	750	500	300	300	300	750	300	400
3 *80*	3.500 *88.9*	0.083	5S	250	325	250	325	250	250	275	250	325	200	–
		0.120	10S	500	500	300	500	500	300	300	300	500	300	300
		0.216	40	500	750	300	750	500	300	300	300	750	300	400
4 *100*	4.500 *114.3*	0.083	5S	200	250	200	250	200	200	250	200	250	200	–
		0.120	10S	300	400	300	400	300	300	300	300	400	300	200
		0.237	40	500	750	300	750	500	300	300	300	750	300	400
5 *125*	5.563 *141.3*	0.109	5S	125	200	125	200	125	125	200	125	200	–	–
		0.134	10S	200	300	200	300	200	200	300	200	300	–	200
		0.258	40	300	500	300	500	300	300	300	300	500	–	300
6 *150*	6.625 *168.3*	0.109	5S	75	125	75	125	75	75	125	75	125	125	–
		0.134	10S	200	200	200	200	200	200	200	200	200	250	175
		0.280	40	300	500	300	500	300	300	300	300	500	275	250
8 *200*	8.625 *219.1*	0.109	5S	50	75	50	75	50	50	75	50	75	75	–
		0.148	10S	150	200	150	200	150	150	200	150	200	150	Application
		0.322	40	300	400	300	400	300	300	300	300	400	275	Application
10 *250*	10.750 *273.0*	0.134	5S	–	50	–	50	–	50	50	–	50	–	–
		0.165	10S	–	100	–	100	–	100	100	–	100	–	–
		0.365	40	–	400	–	400	–	300	300	–	400	–	–
12 *300*	12.750 *323.9*	0.156	5S	–	75	–	75	–	50	75	–	75	–	–
		0.180	10S	–	125	–	125	–	100	125	–	125	–	–
		0.375	40	–	400	–	400	–	300	300	–	400	–	–

Notes:

1) Pressure ratings based on ASTM A312 Type 304 stainless steel pipe or equivalent.
2) Failure to use Rollers specifically designed for Stainless Steel Pipe may significantly reduce pressure retention capabilities.
3) Pressure ratings on cut grooved pipe meet or exceed the schedule 40 pressure ratings listed above. For information regarding higher ratings contact Anvil.
4) * For pressure ratings on Figure 7010 Reducing Couplings use larger pipe size.
5) For pressure ratings for the reducing tees, concentric reducers and eccentric reducers, use the rating of the weakest end.
6) Pressure ratings on schedule 10 stainless steel pipe may be decreased by not using Anvil's 1007/3007 roll groovers with the schedule 10 roller set. Contact Anvil for details.

For pressure tests exceeding the published load, please contact an Anvil Representative.

COUPLING & FLANGE WORKING PRESSURE RATING

on Aluminum Pipe

GRUVLOK COUPLING & FLANGE WORKING PRESSURE RATINGS (PSI) ON ALUMINUM PIPE

Nominal Pipe Size	Pipe O.D.	Wall Thickness	Schedule	R/C	Coupling and Flanges				
					Fig. 7401 Rigidlok®	Fig. 7001 Standard	Fig. 7400 Rigidlite®	Fig. 7000 Light Weight	Fig. 7012 Flange
In./DN(mm)	*In./mm*	*Inches*	–	–	*PSI*				
1 *25*	1.315 *33.4*	0.179	80	C	–	1000	500	500	–
		0.133	40	R/C	–	800	500	500	–
		0.109	10	R	–	600	500	500	–
		0.065	5	R	–	500	500	500	–
1¼ *32*	1.660 *42.4*	0.191	80	C	–	1000	500	500	–
		0.140	40	R/C	–	800	500	500	–
		0.109	10	R	–	600	500	500	–
		0.065	5	R	–	500	500	500	–
1½ *40*	1.900 *48.3*	0.200	80	C	750	1000	500	500	–
		0.145	40	R/C	750	800	500	500	–
		0.109	10	R	600	600	500	500	–
		0.065	5	R	500	500	500	500	–
2 *50*	2.375 *60.3*	0.218	80	C	750	1000	500	500	–
		0.154	40	R/C	750	800	500	500	250
		0.109	10	R	600	600	500	500	250
		0.065	5	R	500	500	500	500	150
2½ *65*	2.875 *73.0*	0.276	80	C	750	1000	500	500	250
		0.203	40	R/C	750	800	500	500	250
		0.120	10	R	600	600	500	500	150
		0.083	5	R	500	500	500	500	250
3 *80*	3.500 *88.9*	0.300	80	C	750	1000	500	500	250
		0.216	40	R/C	750	800	500	500	150
		0.120	10	R	500	600	500	500	150
		0.083	5	R	400	400	500	500	250
4 *100*	4.500 *114.3*	0.337	80	C	750	800	500	500	250
		0.237	40	R/C	600	600	500	500	150
		0.121	10	R	350	350	350	350	250
		0.083	5	R	250	250	250	250	250
5 *125*	5.563 *141.3*	0.375	80	C	750	800	450	450	150
		0.258	40	R/C	600	600	450	450	150
		0.134	10	R	350	300	300	300	250
		0.109	5	R	250	250	250	250	250
6 *150*	6.625 *168.3*	0.432	80	C	600	600	450	450	150
		0.280	40	R/C	600	600	450	450	250
		0.134	10	R	200	200	200	200	250
		0.109	5	R	200	200	200	200	150
8 *200*	8.625 *219.1*	0.322	80	C	400	400	300	300	150
		0.277	40	R/C	300	300	150	150	250
		0.148	10	R	–	–	100	100	250
		0.109	5	R	–	–	100	100	100
10 *250*	10.750 *273.0*	0.365	80	C	300	300	–	–	250
		0.307	40	R/C	200	200	–	–	250
12 *300*	12.750 *323.9*	0.375	80	C	300	300	–	–	250
		0.330	40	R/C	200	200	–	–	250

Note: Field grooving for 6061-T4/6064-T4 aluminum pipe only. 6061-T6/6064-T6 must be roll grooved prior to T6 temperament. Field roll grooving 6061-T6/6064-T6 may result in stress cracking, Field cut grooving is required. Mechanical properties may vary from pipe to pipe and it is advised to review the roll/cut grooving properties with the aluminum pipe manufacturer.

PIPE SUPPORT

When designing the hangers, supports and anchors for a grooved-end pipe system, the piping designer must consider certain unique characteristics of the grooved type coupling in addition to many universal pipe hanger and support design factors. As with any pipe system, the hanger or support system must provide for

1) the weight of the pipe, couplings, fluid and pipe system components;

2) reduce stresses at pipe joints; and

3) permit required pipe system movement to relieve stress.

The following factors should be considered when designing hangers and supports for a grooved-end pipe system.

PIPE HANGER SPACING:

The following charts show the maximum span between pipe hangers for straight runs of standard weight steel pipe filled with water or other similar fluids.

Do not use these values where critical span calculations are made or where there are concentrated loads between supports.

For straight runs without concentrated loads and where full linear movement is ***NOT*** required use the table on right.

HANGER SPACING LINEAR MOVEMENT NOT REQ'D

Nominal Pipe Size Range	Maximum Span Between Supports
In./DNmm	*Feet/meters*
1 *25*	7 *2.1*
1¼-2 *32-50*	10 *3.0*
2½-4 *65-100*	12 *3.7*
5-8 *125-200*	14 *4.3*
10-12 *250-300*	16 *4.9*
14-16 *350-400*	18 *5.5*
18-24 *450-600*	20 *6.1*

For straight runs without concentrated loads and where full linear movement ***IS*** required use the following tables.

HANGER SPACING - FLEXIBLE SYSTEM, STEEL PIPE FULL LINEAR MOVEMENT IS REQ'D AVERAGE HANGERS PER PIPE LENGTH EVENLY SPACED

Nominal Pipe Size Range	Pipe Length in Feet/Meters									
In.	*7*	*10*	*12*	*15*	*20*	*22*	*25*	*30*	*35*	*40*
DNmm	*2.1*	*3.3*	*3.7*	*4.6*	*6.1*	*6.7*	*7.6*	*9.1*	*10.7*	*12.2*
1-2 *25-50*	1	2	2	2	3	3	4	4	5	6
2½-4 *65-100*	1	1	2	2	2	2	2	3	4	4
5-24 *125-600*	1	1	1	2	2	2	2	3	3	3

HANGER SPACING - RIGID SYSTEMS SUGGESTED MAXIMUM SPAN BETWEEN SUPPORTS

Nominal Size	Steel Pipe Suggested Maximum Span Between Supports-Feet/Meters						Copper Tube	
	Water Service			Air Service			Water Service	Gas & Air Service
In./DNmm	*	**	***	*	**	***	**	**
1 *25*	7 *2.1*	9 *2.7*	12 *3.7*	9 *2.7*	10 *3.0*	12 *3.7*	–	–
1¼ *32*	7 *2.1*	11 *3.4*	12 *3.7*	9 *2.7*	12 *3.6*	12 *3.7*	–	–
1½ *40*	7 *2.1*	12 *3.7*	15 *4.6*	9 *2.7*	13 *4*	15 *4.6*	–	–
2 *50*	10 *3*	13 *4*	15 *4.6*	13 *4*	15 *4.6*	15 *4.6*	9 *2.7*	12 *3.6*
2½ *65*	11 *3.4*	15 *4.6*	15 *4.6*	14 *4.3*	17 *5.1*	15 *4.6*	9 *2.7*	12 *3.6*
3 O.D. 76.1	*11* 3.4	*15* 4.6	*15* 4.6	*14* 4.3	*17* 5.1	*15* 4.6	–	–
3 *80*	12 *3.7*	16 *4.8*	15 *4.6*	15 *4.6*	19 *5.7*	15 *4.6*	10 *3*	14 *4.2*
3½ *90*	13 *4*	18 *5.4*	15 *4.6*	15 *4.6*	21 *6.3*	15 *4.6*	–	–
4 *100*	14 *4.3*	18 *5.4*	15 *4.6*	17 *5.2*	21 *6.4*	15 *4.6*	12 *3.7*	17 *5.1*
4¼ O.D. 108.0	*14* 4.3	*18* 5.4	*15* 4.6	*17* 5.2	*19* 5.7	*15* 4.6	–	–
5 *125*	16 *4.9*	20 *6.0*	15 *4.6*	20 *6.1*	24 *7.3*	15 *4.6*	13 *4*	18 *5.7*
5¼ O.D. 133.0	*15* 4.6	*18* 5.5	*15* 4.6	*19* 5.2	*22* 6.6	*15* 4.6	–	–
5½ O.D. 139.7	*16* 4.9	*19* 5.8	*15* 4.6	*20* 6.1	*24* 7.3	*15* 4.6	–	–
6 *150*	17 *5.2*	21 *6.3*	15 *4.6*	21 *6.4*	26 *7.8*	15 *4.6*	14 *4.2*	21 *6.3*
6¼ O.D. 159.0	*16* 4.9	*20* 6.0	*15* 4.6	*20* 6.1	*24* 7.3	*15* 4.6	–	–
6½ O.D. 165.1	*17* 5.2	*21* 6.3	*15* 4.6	*21* 6.4	*25* 7.6	*15* 4.6	–	–
8 *200*	19 *5.8*	23 *6.9*	15 *4.6*	24 *7.3*	29 *8.7*	15 *4.6*	–	–
10 *250*	19 *5.8*	25 *7.5*	15 *4.6*	24 *7.3*	33 *9.9*	15 *4.6*	–	–
12 *300*	23 *7*	26 *7.8*	15 *4.6*	30 *9.1*	36 *10.8*	15 *4.6*	–	–
14 *350*	23 *7*	26 *7.8*	15 *4.6*	30 *9.1*	37 *11.1*	15 *4.6*	–	–
16 *400*	27 *8.2*	26 *7.8*	15 *4.6*	35 *10.7*	40 *12.0*	15 *4.6*	–	–
18 *450*	27 *8.2*	27 *8.1*	15 *4.6*	35 *10.7*	42 *12.6*	15 *4.6*	–	–
20 *500*	30 *9.1*	27 *8.1*	15 *4.6*	39 *11.9*	45 *13.5*	15 *4.6*	–	–
24 *600*	32 *9.8*	26 *7.8*	15 *4.6*	42 *12.8*	48 *14.7*	15 *4.6*	–	–

* Spacing by ANSI-B31.1 Power Piping Code.

** Spacing by ANSI-B31.9 Building Service Piping Code, (1996 Edition), Fig. 921.1.3c, Table a, 250 psi and Fig. 921.1.3D, table a

*** Spacing by NFPA-13 Installation of Sprinkler Systems, (1999 Edition), Table 6-2.2.

PIPE SUPPORT

Considerations for the Hanging or Supporting of Grooved Piping Systems

Grooved piping products have an excellent maintenance track record out in the field. Whenever there is a "perceived" problem with installed grooved product, a high percentage are often related to the hanging or supporting method or application chosen. Although supported very similarly to welded piping systems, a few considerations should be given to assure the proper selection and application of hangers and supports used on a grooved piping system such as Anvil's Gruvlok® brand.

REVIEW REQUIREMENTS AND LOGISTICS

A variety of hangers and supports are typically used on grooved piping systems, ranging from a simple band hanger, clevis hanger, and trapeze supports to more intricate rack designs using structural steel or a mechanical framing/strut system. All of these are acceptable hanging or supporting methods but they are dependent on the project's type, design and specification requirements. With this in mind, a vital first step is to refer to the project and code requirements when choosing the proper hanging or supporting method.

Project logistics is another consideration regardless of system type. Quite often hangers and supports are an afterthought on a project simply because the big-ticket items, such as labor, major equipment and schedule, are the focus of the project team. However, hangers and supports are one of the first components needed on a project since you cannot hang pipe without them.

In nearly every hanger or support assembly there are three components that make up the assembly. These components are an upper attachment (beam or structural attachment), intermediate attachment (rod, couplings, eye nuts, etc.) and the lower attachment (pipe clamps, U-bolts, trapezes). See accompanying illustrations for examples of typical assemblies. All three components should arrive on the project site together and early. To save costly field labor hours, consideration might be given to having the hangers or supports pre-assembled by the manufacturer or fabricated in the contractor's shop. Components can also be bundled and tagged by system or area of the project so they can be easily assembled and located on-site.

MAKE A MATCH

The type of grooved coupling used on a project is the next consideration to choosing the correct hanger or support method. The proper maximum spacing allowables governed by project specifications, the applicable code and/or the hanger manufacturer's recommendations all must also be reviewed. Flexible couplings used on horizontal runs of pipe need to be supported at every coupling and usually require intermediate supports to satisfy the maximum spacing allowable requirements. Rigid couplings, on the other hand, can be hung or supported based on the maximum spacing requirements only. In addition, wherever there is a change in direction of the piping system a hanger or support is usually required immediately following that change in direction and then the system is hung or supported accordingly.

PRESSURE POINT

System pressurization should also be reviewed when choosing the proper hanging or support method. As the couplings are installed, the pipe ends can either be butted up tight to one another or a gap can exist. Once the system is pressurized, those areas or joints where the pipe ends are butted up tight and held by a grooved coupling can "pop" or grow to the maximum gap depending on the coupling chosen. The joint at a flexible grooved coupling can expand about $^{1}/_{4}$" at each coupling whereas the joint at a rigid grooved coupling can grow about $^{3}/_{32}$". If there is a long run of horizontal or vertical pipe with multiple joints the overall length of the system will grow depending upon which grooved coupling you have chosen.

For example, if you have a grooved piping system that is 400 ft. long there will be roughly 19 grooved joints (assuming 21 ft. lengths of pipe are used). If you multiply the number of joints by the growth of each joint you can determine the overall growth of the system due to pressurization. If it is a flexible system, 19 joints x .25" = 4.75" of overall growth. A rigid system would be 19 joints x .0938" = 1.78" of overall growth.

As one can see, this growth due to pressurization can have a significant impact on the hangers or supports used on a project. One way to avoid this growth is to install the grooved joints at full gap so that pressurization has no impact at testing or start up. If this is not possible, then periodic air pressurization as the system is installed will expand the grooved joints to full gap and the hangers or supports can be adjusted accordingly.

HOT AND COLD

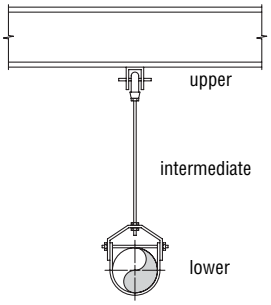
Thermal expansion is another important consideration when choosing hangers or supports for a grooved system. This is especially important on hot systems versus chilled systems since the amount of thermal expansion will be greater on hot systems as opposed to the thermal contraction that will occur on chilled systems. This is all due to the temperature variation from ambient conditions when the pipe is installed to operating conditions.

For example, if you again take 400 ft. of grooved piping, let us assume the system is heating hot water that will operate at 170°F. The pipe is installed under ambient conditions assumed to be at 70°F so you have a 100°F variation in temperature. At 70°F the pipe has a coefficient of thermal expansion of 0.0 in/ft but at 170°F the pipe has a coefficient of thermal expansion of 0.0076 in/ft. To determine the total thermal expansion of the pipe from ambient temperature to operating temperature you multiply the length of pipe by the coefficient of thermal expansion. In this case 400 ft. x 0.0076 in/ft. = 3.04 in. In other words the pipe has grown in length over 3 inches because of the thermal expansion.

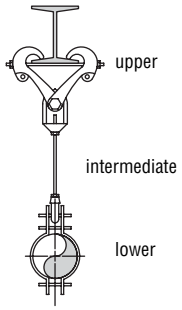
This is significant growth especially if there is a change of direction at the end of the 400 ft. pipe run or there are branch lines coming off the main run. If this thermal growth exceeds the allowable deflection of a grooved joint, especially where a change of direction or a branch line connects, then problems could occur.

PIPE SUPPORT

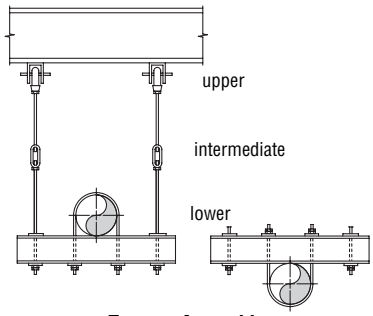
Considerations for the Hanging or Supporting of Grooved Piping Systems



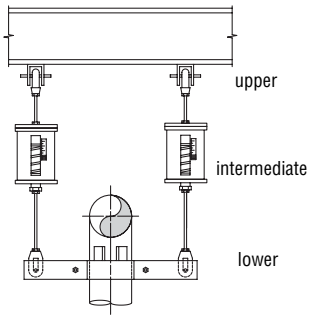
Clevis Hanger Assembly



Double Bolt Pipe Clamp Assembly



Trapeze Assembly



Spring Riser Hanger Assembly

Thermal growth cannot be stopped. It can only be controlled by the use of anchors and expansion joints or expansion loops.

It is also important to hang or support the pipe with rolls or slides and use guides to control the thermal expansion of the pipe into an expansion joint or expansion loop. The use of static hangers, such as clevis hangers, should not be considered on pipe that is thermally expanding. When using trapeze hangers for multiple systems it is important to have "like" systems on the trapeze, that is, systems that are operating near the same temperature. If you combine hot systems with cold systems on a trapeze, the thermal expansion of the hot system can cause the trapeze to possibly twist and fail or excessive stress could be induced on the grooved joints on all of the systems on the trapeze. Hot systems should be hung or supported independently of cold or ambient systems or a means should be provided, such as pipe rolls or pipe slides, to allow the hot systems to thermally expand on the trapeze.

If the pipe is a vertical riser then consideration must be given to the use of spring hangers to allow the pipe to grow vertically up or down depending upon how the pipe is anchored while still supporting the pipe. Vertical pipe thermally expands the same amount as horizontal pipe and this has to be taken into consideration relating to supports, expansion joints or expansion loops. If the vertical pipe is supported by friction/riser clamps only and the pipe expands vertically upward, the clamps will grow with the pipe off the penetration or supporting structure and no longer provide support. If the growth is downward, the friction clamps resting on the penetration or supporting structure can either fail or the pipe may overcome the friction force and push it's way through the clamp as the pipe thermally expands downward. In either case the clamps are no longer supporting the pipe as intended and this may induce excessive stress on the grooved joints.

Whether it is horizontal or vertical grooved pipe, growth of the piping system due to pressurization and thermal expansion must be considered. On hot systems, both must be taken into account and added together to determine the overall growth of the system and the effect on the hangers or supports that are used. In the previous examples, pressurization expansion on the 400 ft. run of pipe was 4.75" for a flexible joint system and 1.78" for a rigid joint system and the thermal expansion was 3.04". Adding these combinations together would result in a total pipe growth of 7.79" for a flexible system or 4.82" for a rigid system, regardless of the horizontal or vertical orientation of the pipe. Again, this is a significant amount of growth relating to hangers and supports and the resulting stresses induced on grooved joints.

CONSIDER SOME RESTRAINT

Although grooved systems in seismic zones perform extremely well, consideration should be given to how a grooved system is seismically restrained. If you have growth due to pressurization and/or thermal expansion consideration should be given on how to restrain the system while still allowing growth to occur. Seismic restraints in the longitudinal direction of a long pipe run may restrict the growth of the pipe inducing stresses into the grooved couplings. Seismic restraints in the lateral direction should have little impact on expansion except where the system has a change in direction. If the seismic restraints are placed laterally after a change in direction at the end of a long run of pipe, the expansion of the long pipe run may be restricted and this could induce excessive stress into the grooved joints.

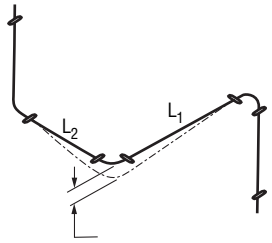
By reviewing the couplings to be used on a project, pressurization, thermal expansion and seismic restraints, one can best determine the proper selection and application of hangers and supports for a grooved piping system. This will, in turn, help ensure that grooved piping systems will continue to enjoy a solid reputation in the areas of maintenance and downtime.

COUPLING FLEXIBILITY:

The grooved coupling's capability to allow angular and rotational movement within the coupling joint must be considered when deciding hanger and support locations. Spring hangers and supports providing for movement in more than one plane are often used to allow the pipe system to move without introducing additional stress into the pipe system.

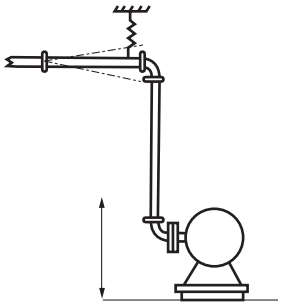
EXAMPLE 1

This example demonstrates the need for each pipe length in a grooved system to be supported. The sag due to the flexibility of the Gruvlok joint could be eliminated with the proper positioning of hangers on both pipe segments "L1" and "L2".



EXAMPLE 2

This illustrates the effect of pump oscillation on a piping system. A spring hanger should be used to support the pipe section and also respond to the induced vibrations. The couplings in the horizontal run above the riser, should accommodate the deflection without transmitting bending stresses through the pipe system.



PRESSURE THRUSTS:

Gruvlok couplings react to the application of system pressure and restrain the pipe ends from separation due to the pressure force. However, the coupling joint may not be in the self-restraining configuration prior to the application of system pressure. The Gruvlok coupling does not restrain adjacent pipe sections from separation due to pressure forces until the coupling key sections engage the groove walls.

Random flexible coupling joint installation will produce installed coupling conditions ranging from pipe ends full butted to fully separated to the maximum available gap. Thus, only after system pressurization will the self-restraining function of the coupling be in effect.

The designer must account for the movement to be encountered when the system is pressurized and the joints are fully separated. Anchor and guide positions must be defined to direct the pipe joint movement that it is not detrimental to the pipe system.

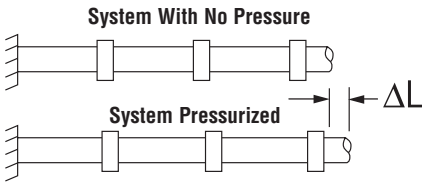
Examples of the effect of pressure thrust are shown in the following illustrations.

EXAMPLE 1

The coupling joints have been installed butted or partially open. When pressurized the pipe ends in the coupling joints will separate to the maximum amount permitted by the coupling design.

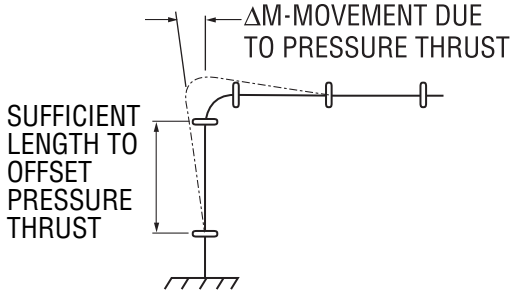
The coupling key sections will make contact with the groove walls and restrain the pipe from further separation.

The movement at each coupling joint will add with all other joints and produce ΔL.



EXAMPLE 2

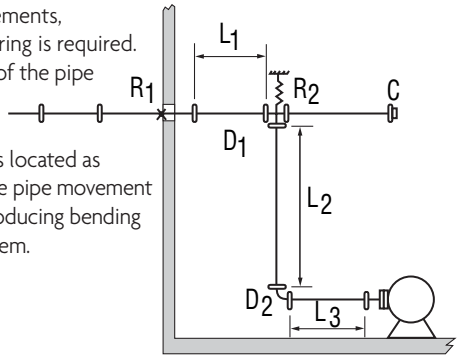
In the system shown here, the pipe will move and deflect at the elbow joint due to pressure thrust.



The pipe designer must assure himself that the system has the capability of deflecting sufficiently to absorb this movement without introducing additional stresses into the pipe system. In the deflected condition shown, temperature increases would produce further expansion of the pipe system thus increasing the deflection.

EXAMPLE 3

To restrain this system provide a pressure thrust anchor at "R1" to resist the pressure thrust acting through the tee "D1" at the cap "C". Provide a hanger at Point "R2", or a base support at Point "D2" to support the vertical column. If the offsets L1, L2, and L3 are of adequate length to handle expected pipe movements, no additional anchoring is required. Thermal movement of the pipe system should also be considered, and intermediate anchors located as required, to direct the pipe movement so as to prevent introducing bending stresses into the system.

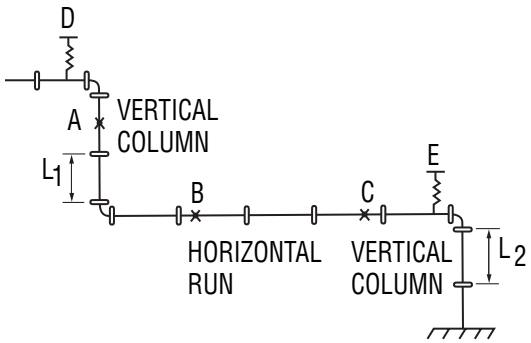


COUPLING FLEXIBILITY (CONT.)

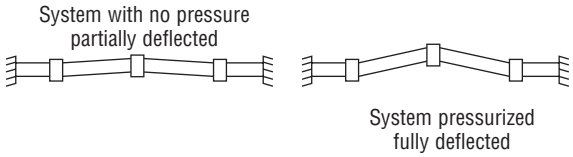
EXAMPLE 4

Anchor at "A" to support weight of vertical water column. Use spring hanger at "D" and "E" to allow movement of vertical piping.

Anchors at "B" and "C" if offsets at L1 and L2 are insufficiently long to handle expected pipe movements.



LATERAL RESTRAINT



EXAMPLE 5

A grooved coupling joint installed in a partially deflected condition between anchor locations will deflect to its fully deflected condition when pressurized. Hangers and supports must be selected with consideration of the hanger's capability to provide lateral restraint.

Light duty hangers, while acceptable in many installations, may deflect against the application of lateral forces and result in "snaking" conditions of the pipe system.

RISER DESIGN:

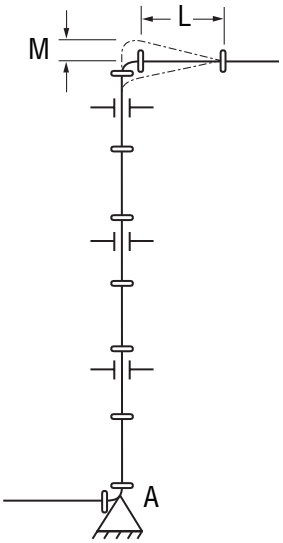
Risers assembled with Gruvlok Flexible couplings are generally installed in either of two ways. In the most common method, the pipe ends are butted together within the coupling joint. Note that when installing risers, the gasket is first placed onto the lower pipe and rolled back away from the pipe end prior to positioning the upper pipe. Anchoring of the riser may be done prior to pressurization with the pipe ends butted or while pressurized, when, due to pressure thrust, the pipe ends will be fully separated.

An alternative method or riser installation is to place a metal spacer of a predetermined thickness, between the pipe ends when an additional length of pipe is added to the riser stack. The upper pipe length is anchored, the spacer removed and the coupling is then installed. This method creates a predetermined gap at each pipe joint which can be utilized in pipe systems where thermal movement is anticipated and in systems with rigid (threaded, welded, flanged) branch connections where shear forces due to pressure thrust could damage the rigid connections.

The following examples illustrate methods of installing commonly encountered riser designs.

RISERS WITHOUT BRANCH CONNECTIONS

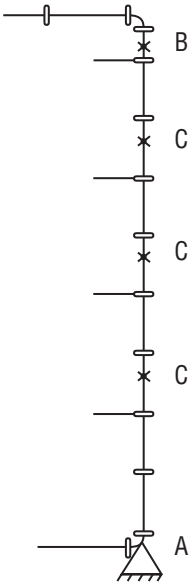
Install the riser with the pipe ends butted.



Locate an anchor at the base of the riser (A) to support the total weight of the pipe, couplings and fluid. Provide pipe guides on every other pipe length, as a minimum, to prevent possible deflection of the pipe line at the coupling joints as the riser expands due to pressure thrust or thermal growth. Note that no intermediate anchors are required.

When the system is pressurized the pipe stack will "grow" due to pressure thrust which causes maximum separation of pipe ends within the couplings. The maximum amount of stack growth can be predetermined (see Linear Movement). In this example the pipe length "L" at the top of the riser must be long enough to permit sufficient deflection (see Angular Movement) to accommodate the total movement "M" from both pressure thrust and thermal gradients.

RISERS WITH BRANCH CONNECTIONS



Install the riser with the predetermined gap method. Anchor the pipe at or near the base with a pressure thrust anchor "A" capable of supporting the full pressure thrust, weight of pipe and the fluid column. Anchor at "B" with an anchor capable of withstanding full pressure thrust at the top of the riser plus weight of pipe column. Place intermediate anchors "C" as shown, between anchors "A" and "B". Also place intermediate clamps at every other pipe length as a minimum.

When this system is pressurized, the pipe movement due to pressure thrust will be strained and there will be no shear forces acting at the branch connections.

DRAFTING SYMBOLS FOR GRUVLOK® PIPING SYSTEMS

COMPONENT	FIG. NO.	SYMBOL
BULL-PLUG	7075	
CAP	7074	
CLAMP-T		
GROOVED OUTLET	7046	
FEMALE THREADED OUTLET	7044 7045	FPT
CLAMP-T-CROSS		
GROOVED OUTLETS	7048	2, 4, 1½
FEMALE THREADED OUTLETS	7047	2 FPT, 4, 1½ FPT
COUPLINGS		
STRAIGHT	7000 7001 7003 7004 7011 7400 7401	
REDUCING	7010	6, 4
CROSS	7068	
ELBOW		
90°	7050	
45°	7051	
TURNED-DOWN	–	
TURNED-UP	–	

COMPONENT	FIG. NO.	SYMBOL
ELBOW		
90° ADAPTER	7055	MPT
45° ADAPTER	7056	MPT
EXPANSION JOINT	7092	
GRUVLOK FLANGE	7012 7013	GF, MATING FLG
LATERAL 45°		
STRAIGHT	7069	
REDUCING	7070	6, 6, 4
REDUCER		
CONCENTRIC	7072	6, 4
ECCENTRIC	7073	6, 4
TEE		
STRAIGHT	7060	
REDUCING	7061	6, 6, 4
TURNED-DOWN	–	
TURNED-UP	–	
TRUE-WYE	7071	
GRUVLOK	SERIES	
BUTTERFLY	7700	
BALL VALVE	7500	
CHECK VALVE	7800	

All fittings are shown with couplings attached at the grooved-ends.

PIPE-PREPARATION:

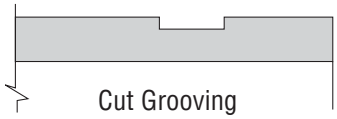
To create a Gruvlok pipe joint, all pipe must be prepared to receive a Gruvlok coupling or other Gruvlok pipe system components. Required pipe preparations may include: grooving or cleaning the pipe ends, or cutting a hole in the pipe wall.

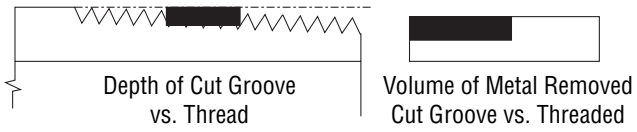
For grooved-end joints, pipe may be grooved by either of two methods; cut or roll grooving. Branch outlet connections require a properly sized and correctly located hole to be cut into the pipe. Sock-it connections require cleaning of the pipe end. Gruvlok plain-end pipe couplings require that the pipe be free of burrs and other sharp projections which could damage the gasket; grooving is not required.

Gruvlok pipe grooving and hole cutting machines are available in a wide variety of designs to meet specific or general requirements. Gruvlok roll grooving machines produce a groove to proper dimensional tolerances, concentric with the pipe O.D., even on out-of-round pipe. Gruvlok hole cutting tools properly center holes for correct assembly of Gruvlok branch outlet components.

CUT GROOVING:

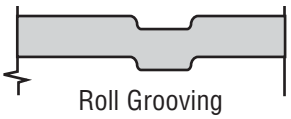
Cut grooving is intended for use with standard and heavier wall pipe. Cut grooving produces a groove in the pipe wall by removing metal from the pipe O.D. The groove removes less than one half of the pipe wall and does not cut as deeply into the pipe wall as do standard pipe threads. The square cut edge of the groove allows for the full expansion, contraction, and deflection capabilities of the Gruvlok coupling.

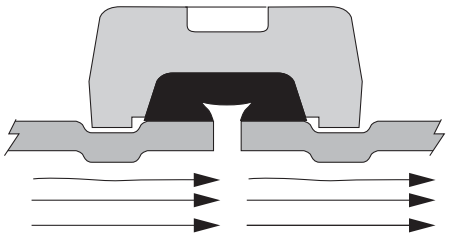




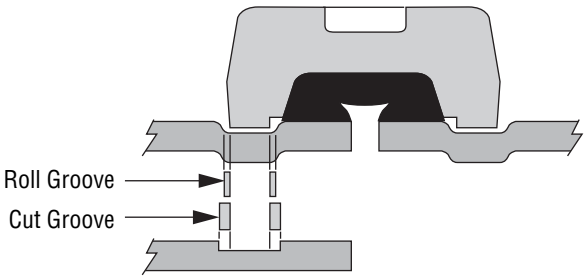
ROLL GROOVING:

Roll grooving does not remove metal. Instead, metal is displaced while a groove is formed into the outer surface of the pipe wall. The groove configuration has slightly rounded edges resulting in a less flexible joint than a cut groove joint. This reduces available pipe joint movement by 50% over cut grooved coupling joints. Roll grooving is commonly used on a wide range of pipe thicknesses up to 0.375" wall steel pipe and sizes to 24" O.D.





The I.D. “dimple" formed from roll grooving reduces the I.D. (on an average) less than 2%.

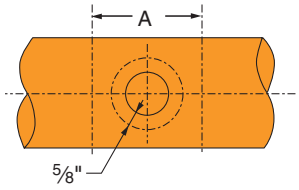


Available Movement
Roll Groove vs. Cut Groove

PIPE-PREPARATION:

BRANCH OUTLET PIPE: CLAMP-T®

Clamp-T installations require the cutting of a hole through the pipe wall. The hole must be properly sized and located on the centerline of the pipe to assure reliable performance of the Clamp-T gaskets.



After the hole has been cut into the pipe wall, any burrs and sharp or rough edges must be removed from the hole. The outside pipe surfaces within 5/8" of the hole must be clean and smooth. Any scale, projections or indentation which might effect the gasket sealing on the pipe must be removed. The surface around the entire circumference of the pipe within the "A" dimension in the charts must be free from dirt, scale, or projections which might effect the proper assembly of the Clamp-T.

CLAMP-T INSTALLATION

Branch Size	Hole Dimensions		Surface Prep. "A"
	Hole Saw Size	Max. Perm. Diameter	
DN/mm	*In./mm*	*In./mm*	*In./mm*
½, ¾, 1 *15, 20, 25*	1½ *38.1*	1⅝ *41.3*	3½ *88.9*
1¼, 1½ *32, 40*	2 *50.8*	2⅛ *54.0*	4 *101.6*
2 *50*	2½ *63.5*	2⅝ *66.7*	4½ *114.3*
2½ *65*	2¾ *69.9*	2⅞ *73.0*	4¾ *120.7*
3 *80*	3½ *88.9*	3⅝ *92.1*	5½ *139.7*
4 *100*	4½ *114.3*	4⅝ *117.5*	6½ *165.1*

SOCK-IT®

For Sock-It Fittings, the pipe ends must be square cut as measured from a true square line.

The maximum allowable tolerance is 0.030" (0.76mm) for all sizes. Any sharp edges, burrs, etc. left on the pipe from cutting must be removed. If these are not removed, they may damage the gasket as the pipe is inserted into the Sock-It Fitting.

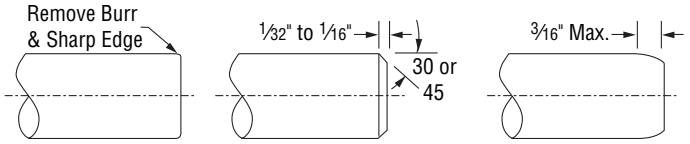
After cutting, pipe ends must be completely cleaned a minimum of 1" (25.4mm) back from the pipe end to remove all pipe coating, weld beads, rust, sharp projections, etc., which might effect gasket sealing integrity.

NOTE: When Allied XL pipe is used it is necessary only to remove sharp edges and burrs at the end of the pipe. No additional cleaning is required.

PIPE TOLERANCES

Size	Schedule 10 & 40		Min. O.D.	XL Min. O.D.
	Nom O.D.	Max. O.D.		
DN/mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*
1 *25*	1.315 *33.4*	1.325 *33.6*	1.295 *32.9*	1.285 *32.6*
1¼ *32*	1.660 *42.2*	1.670 *42.4*	1.642 *41.7*	1.630 *41.4*
1½ *40*	1.900 *48.3*	1.910 *48.5*	1.882 *47.8*	1.875 *47.6*
2 *50*	2.375 *60.3*	2.385 *60.6*	2.357 *59.9*	2.352 *59.7*
2½ *65*	2.875 *73.0*	2.904 *73.8*	2.846 *72.3*	2.837 *72.1*

ACCEPTABLE PIPE END CONFIGURATION

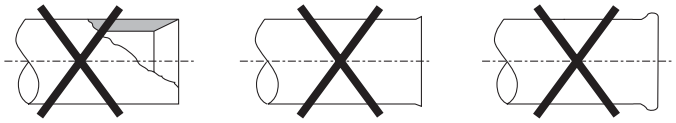


Square cut pipe with O.D. burr & sharp edge removed is preferred configuration.

Beveled pipe. Bevel not to exceed 1/16".

Soft pipe when roll cut may be swaged inward. Swaged portion not to exceed 3/16"

UNACCEPTABLE



Excessive chamfer on I.D. will tend to cut gasket during assembly.

Abrasive wheels & saws leave edge burrs especially pronounced on one side.

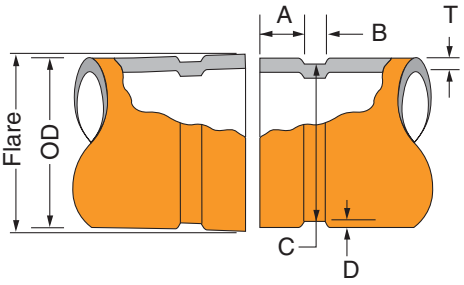
Dull wheel cutter produces a raised ridge at the pipe O.D. giving an oversize diameter.

The sharp O.D. edge left by different methods of cutting pipe ***must be removed***. If this sharp edge is not removed, it may damage the gasket as the pipe is inserted into the Sock-It Fitting.

ROUGHNECK®

Plain-End pipe for use with Fig. 7005 Roughneck Couplings must be free of any notches, bumps, weld bead, score marks, etc. for at least 1½" (38 mm) back from the pipe end to provide a smooth sealing surface for the gasket. Pipe ends (plain or beveled end) must be square cut as measured from a true square line with the maximum allowable tolerance as follows: 0.030" (0.7 mm) for 2" through 3"; 0.045 (1.1 mm) for 4" through 6"; and 0.060" (1.5 mm) for 8" sizes. The nominal outside diameter of pipe should not vary more than ±1% for sizes up to 2½", +1%-1/32" for sizes 3"-5"; +1/16"-1/32" for sizes 6" and larger. Pipe ends must be marked a distance of 1" from the pipe end for Sizes 2"-4" and 1¼" from the pipe end for Sizes 5"-8" as a guide for centering of the gasket on the pipe ends.

ROLL GROOVE SPECIFICATIONS



COLUMN 1 - Nominal IPS Pipe size. Nominal ISO Pipe size.

COLUMN 2 - IPS outside diameter. ISO outside diameter.

COLUMN 3 - Gasket seat must be free from scores, seams, chips, rust or scale which may interfere with proper sealing of the gasket. Gasket seat width (Dimension A) is to be measured from the pipe end to the vertical flank in the groove wall.

COLUMN 4 - Groove width (Dimension B) is to be measured between vertical flank of the groove size walls.

COLUMN 5 - The groove must be of uniform depth around the entire pipe circumference. (See column 6).

COLUMN 6 - Groove depth: for reference only. Groove must conform to the groove diameter "C" listed in column 5.

COLUMN 7 - Minimum allowable wall thickness which may be roll grooved.

COLUMN 8 - Maximum allowable pipe end flare diameter. Measured at the most extreme pipe end diameter of the gasket seat area.

Out of roundness: Difference between maximum O.D. and minimum O.D. measured at 90° must not exceed total O.D. tolerance listed (reference column 2).

For IPS pipe, the maximum allowable tolerance from square cut ends is 0.03" for 1" thru 3½"; 0.045" for 4" thru 6"; and 0.060" for sizes 8" and above measured from a true square line.

For ISO size pipe, the maximum allowable tolerance from square cut ends is 0.75mm for sizes 25mm-80mm; 1.15mm for sizes 100mm-150mm; and 1.50mm for sizes 200mm and above, measured from a true square line.

Beveled-End Pipe in conformance with ANSI B16.25 (37½°) is acceptable, however square cut is preferred. Seams must be ground flush with the pipe O.D. and ID prior to roll grooving. Failure to do so may result in damage to the roll grooving machine and unacceptable roll grooves may be produced.

Weld Seams must be ground flush with the pipe O.D. and ID prior to roll grooving. Failure to do so may result in damage to the roll grooving machine and unacceptable roll grooves may be produced.

▼ "A" tolerance +0.030" / -0.060" (+0.77 / -1.54 mm)

GRUVLOK STANDARD ROLL GROOVE SPECIFICATION FOR STEEL & OTHER IPS OR ISO SIZE PIPE

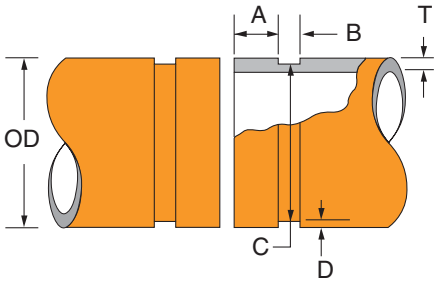
-1-	-2-			-3-	-4-	-5-		-6-	-7-	-8-
Nominal Pipe Size	O.D.			"A" ±0.030/ ±0.76	"B" ±0.030/ ±0.76	"C" Actual	"C" Tol. +0.000	"D" (Ref. Only)	"T" Min. Allow. Wall Thick	Max. Flare Dia.
	Actual	Tolerance								
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*
1 25	1.315 33.4	+0.015 +0.38	-0.015 -0.38	0.625 15.88	0.281 7.14	1.190 30.23	-0.015 -0.38	0.063 1.60	0.065 1.7	1.430 36.3
1¼ 32	1.660 42.2	+0.016 +0.41	-0.016 -0.41	0.625 15.88	0.281 7.14	1.535 38.99	-0.015 -0.38	0.063 1.60	0.065 1.7	1.770 45.0
1½ 40	1.900 48.3	+0.019 +0.48	-0.019 -0.48	0.625 15.88	0.281 7.14	1.775 45.09	-0.015 -0.38	0.063 1.60	0.065 1.7	2.010 51.1
2 50	2.375 60.3	+0.024 +0.61	-0.024 -0.61	0.625 15.88	0.344 8.74	2.250 57.15	-0.015 -0.38	0.063 1.60	0.065 1.7	2.480 63.0
2½ 65	2.875 73.0	+0.029 +0.74	-0.029 -0.74	0.625 15.88	0.344 8.74	2.720 69.09	-0.018 -0.46	0.078 1.98	0.083 2.1	2.980 75.7
3 O.D. 76.1	*2.996* 76.1	*+0.030* +0.76	*-0.030* -0.76	*0.625* 15.88	*0.344* 8.74	*2.845* 72.26	*-0.018* -0.46	*0.076* 1.93	*0.083* 2.1	*3.100* 78.7
3 80	3.500 88.9	+0.035 +0.89	-0.031 -0.79	0.625 15.88	0.344 8.74	3.344 84.94	-0.018 -0.46	0.078 1.98	0.083 2.1	3.600 91.4
3½ 90	4.000 101.6	+0.040 +1.02	-0.031 -0.79	0.625 15.88	0.344 8.74	3.834 97.38	-0.020 -0.51	0.083 2.11	0.083 2.1	4.100 104.1
4¼ O.D. 108.0	*4.250* 108.0	*+0.042* +1.07	*-0.031* -0.79	*0.625* 15.88	*0.344* 8.74	*4.084* 103.73	*-0.020* -0.51	*0.083* 2.11	*0.083* 2.1	*4.350* 110.5
4 100	4.500 114.3	+0.045 +1.14	-0.031 -0.79	0.625 15.88	0.344 8.74	4.334 110.08	-0.020 -0.51	0.083 2.11	0.083 2.1	4.600 116.8
5¼ O.D. 133.0	*5.236* 133.0	*+0.052* +1.32	*-0.031* -0.79	*0.625* 15.88	*0.344* 8.74	*5.084* 129.13	*-0.020* -0.51	*0.076* 1.93	*0.109* 2.8	*5.350* 135.9
5½ O.D. 139.7	*5.500* 139.7	*+0.055* +1.40	*-0.031* -0.79	*0.625* 15.88	*0.344* 8.74	*5.334* 135.48	*-0.020* -0.51	*0.083* 2.11	*0.109* 2.8	*5.600* 142.2
5 125	5.563 141.3	+0.056 +1.42	-0.031 -0.79	0.625 15.88	0.344 8.74	5.395 137.03	-0.022 -0.56	0.084 2.13	0.109 2.8	5.660 143.8
6¼ O.D. 159.0	*6.259* 159.0	*+0.063* +1.60	*-0.031* -0.79	*0.625* 15.88	*0.344* 8.74	*6.084* 154.53	*-0.022* -0.56	*0.088* 2.24	*0.109* 2.8	*6.350* 161.3
6½ O.D. 165.1	*6.500* 165.1	*+0.063* +1.60	*-0.031* -0.79	*0.625* 15.88	*0.344* 8.74	*6.334* 160.88	*-0.022* -0.56	*0.085* 2.16	*0.109* 2.8	*6.600* 167.6
6 150	6.625 168.3	+0.063 +1.60	-0.031 -0.79	0.625 15.88	0.344 8.74	6.455 163.96	-0.022 -0.56	0.085 2.16	0.109 2.8	6.730 170.9
8 200	8.625 219.1	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.469 11.91	8.441 214.40	-0.025 -0.64	0.092 2.34	0.109 2.8	8.800 223.5
10 250	10.750 273.1	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.469 11.91	10.562 268.27	-0.027 -0.69	0.094 2.39	0.134 3.4	10.920 277.4
12 300	12.750 323.9	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.469 11.91	12.531 318.29	-0.030 -0.76	0.109 2.77	0.156 4.0	12.920 328.2
14 O.D. 355.6	14.000 355.6	+0.063 +1.60	-0.031 -0.79	0.938 23.83	0.469 11.91	13.781 350.04	-0.030 -0.76	0.109 2.77	0.156 4.0	14.100 358.1
16 O.D. 406.4	16.000 406.4	+0.063 +1.60	-0.031 -0.79	0.938 23.83	0.469 11.91	15.781 400.84	-0.030 -0.76	0.109 2.77	0.165 4.2	16.100 408.9
18 O.D. 457.2	18.000 457.2	+0.063 +1.60	-0.031 -0.79	1.000 25.40	0.469 11.91	17.781 451.64	-0.030 -0.76	0.109 2.77	0.165 4.2	18.160 461.3
20 O.D. 508.0	20.000 508.0	+0.063 +1.60	-0.031 -0.79	1.000 25.40	0.469 11.91	19.781 502.44	-0.030 -0.76	0.109 2.77	0.188 4.8	20.160 512.1
24 O.D. 609.6	24.000 609.6	+0.063 +1.60	-0.031 -0.79	1.000 25.40	0.500 12.70	23.656 600.86	-0.030 -0.76	0.172 4.37	0.218 5.5	24.200 614.7
30 O.D. 762.0	30.000 762.0	+0.093 2.36	-0.031 0.79	1.750 ▼ 44.45	0.625 15.88	29.500 749.30	-0.063 1.60	0.250 6.35	0.250 6.35	30.200 761.1

NOTE: VdS - Roll Grooving Approval Specifications, see the Technical Data/Install Instructions section on Anvil's web site - www.anvilintl.com

CUT GROOVE SPECIFICATIONS

GRUVLOK STANDARD CUT GROOVE SPECIFICATION FOR STEEL & OTHER IPS OR ISO SIZE PIPE

-1-	-2-			-3-	-4-	-5-		-6-	-7-
Nominal IPS Pipe Size	O.D.			Gasket Seat "A" ±0.030/ ±0.76	Groove Width "B" ±0.030/ ±0.76	Groove Diameter "C"		Actual Groove Depth "D" (Ref. Only)	Min. Allow. Wall Thick. "T"
	Actual	Tolerance				Actual	Tol. +0.000		
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*In./mm*
1 25	1.315 33.4	+0.015 +0.38	-0.015 -0.38	0.625 15.88	0.312 7.92	1.190 30.23	-0.015 -0.38	0.062 1.6	0.133 3.4
1¼ 32	1.660 42.2	+0.016 +0.41	-0.016 -0.41	0.625 15.88	0.312 7.92	1.535 38.99	-0.015 -0.38	0.062 1.6	0.140 3.6
1½ 40	1.900 48.3	+0.019 +0.48	-0.019 -0.48	0.625 15.88	0.312 7.92	1.775 45.09	-0.015 -0.38	0.062 1.6	0.145 3.7
2 50	2.375 60.3	+0.024 +0.61	-0.024 -0.61	0.625 15.88	0.312 7.92	2.250 57.15	-0.015 -0.38	0.062 1.6	0.154 3.9
2½ 65	2.875 73.0	+0.029 +0.74	-0.029 -0.74	0.625 15.88	0.312 7.92	2.720 69.09	-0.018 -0.46	0.078 2.0	0.187 4.8
3 O.D. 76.1	*2.996* 76.1	*+0.030* +0.76	*-0.030* -0.76	*0.625* 15.88	*0.312* 7.92	*2.845* 72.26	*-0.018* -0.46	*0.076* 1.9	*0.188* 4.8
3 80	3.500 88.9	+0.035 +0.89	-0.031 -0.79	0.625 15.88	0.312 7.92	3.344 84.94	-0.018 -0.46	0.078 2.0	0.188 4.8
3½ 90	4.000 101.6	+0.040 +1.02	-0.031 -0.79	0.625 15.88	0.312 7.92	3.834 97.38	-0.020 -0.51	0.083 2.1	0.188 4.8
4¼ O.D. 108.0	*4.250* 108.0	*+0.042* +1.07	*-0.031* -0.79	*0.625* 15.88	*0.375* 9.53	*4.084* 103.73	*-0.020* -0.51	*0.083* 2.1	*0.203* 5.2
4 100	4.500 114.3	+0.045 +1.14	-0.031 -0.79	0.625 15.88	0.375 9.53	4.334 110.08	-0.020 -0.51	0.083 2.1	0.203 5.2
5¼ O.D. 133.0	*5.236* 133.0	*+0.052* +1.32	*-0.031* -0.79	*0.625* 15.88	*0.375* 9.53	*5.084* 129.13	*-0.020* -0.51	*0.076* 1.9	*0.203* 5.2
5½ O.D. 139.7	*5.500* 139.7	*+0.055* +1.40	*-0.031* -0.79	*0.625* 15.88	*0.375* 9.53	*5.334* 135.48	*-0.020* -0.51	*0.083* 2.1	*0.203* 5.2
5 125	5.563 141.3	+0.056 +1.42	-0.031 -0.79	0.625 15.88	0.375 9.53	5.395 137.03	-0.022 -0.56	0.084 2.1	0.203 5.2
6¼ O.D. 159.0	*6.259* 159.0	*+0.063* +1.60	*-0.031* -0.79	*0.625* 15.88	*0.375* 9.53	*6.084* 154.53	*-0.022* -0.56	*0.088* 2.2	*0.249* 6.3
6½ O.D. 165.1	*6.500* 165.1	*+0.063* +1.60	*-0.031* -0.79	*0.625* 15.88	*0.375* 9.53	*6.334* 160.88	*-0.022* -0.56	*0.085* 2.2	*0.219* 5.6
6 150	6.625 168.3	+0.063 +1.60	-0.031 -0.79	0.625 15.88	0.375 9.53	6.455 163.96	-0.022 -0.56	0.085 2.2	0.219 5.6
8 200	8.625 219.1	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.437 11.10	8.441 214.40	-0.025 -0.64	0.092 2.3	0.238 6.1
10 250	10.750 273.1	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.500 12.70	10.562 268.27	-0.027 -0.69	0.094 2.4	0.250 6.4
12 300	12.750 323.9	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.500 12.70	12.531 318.29	-0.030 -0.76	0.109 2.8	0.279 7.1
14 O.D. 355.6	14.000 355.6	+0.063 +1.60	-0.031 -0.79	0.938 23.83	0.500 12.70	13.781 350.04	-0.030 -0.76	0.109 2.8	0.281 7.1
16 O.D. 406.4	16.000 406.4	+0.063 +1.60	-0.031 -0.79	0.938 23.83	0.500 12.70	15.781 400.84	-0.030 -0.76	0.109 2.8	0.312 7.9
18 O.D. 457.2	18.000 457.2	+0.063 +1.60	-0.031 -0.79	1.000 25.40	0.500 12.70	17.781 451.64	-0.030 -0.76	0.109 2.8	0.312 7.9
20 O.D. 508.0	20.000 508.0	+0.063 +1.60	-0.031 -0.79	1.000 25.40	0.500 12.70	19.781 502.44	-0.030 -0.76	0.109 2.8	0.312 7.9
24 O.D. 609.6	24.000 609.6	+0.063 +1.60	-0.031 -0.79	1.000 25.40	0.563 14.30	23.656 600.86	-0.030 -0.76	0.172 4.4	0.375 9.5
28 I.D. 733.4	28.875 733.4	+0.063 +1.60	-0.031 -0.79	1.000 25.40	0.563 14.30	28.531 724.69	-0.030 -0.76	0.172 4.4	0.437 11.1
30 I.D. 787.4	31.000 787.4	+0.063 +1.60	-0.031 -0.79	1.250 31.75	0.625 15.88	30.594 777.09	-0.030 -0.76	0.203 5.2	0.500 12.7
30 O.D. 762.0	30.000 762.0	+0.093 2.36	-0.031 0.79	1.750▼ 44.45	0.625 15.88	29.500 749.30	0.063 1.60	0.250 6.35	0.500 12.7



COLUMN 1 -
Nominal IPS Pipe size.
Nominal ISO Pipe size.

COLUMN 2 -
IPS outside diameter.
ISO outside diameter.

COLUMN 3 & 4 -
Gasket seat must be free from scores, seams, chips, rust or scale which may interfere with proper coupling assembly.

COLUMN 5 -
The groove must be of uniform depth around the entire pipe circumference. (See column 6).

COLUMN 6 -
Groove depth: for reference only. Groove must conform to the groove diameter "C" listed in column 5.

COLUMN 7 -
Minimum allowable wall thickness which may be cut grooved.

Out of roundness: Difference between maximum O.D. and minimum O.D. measured at 90° must not exceed total O.D. tolerance listed.

For IPS pipe, the maximum allowable tolerance from square cut ends is 0.03" for 1" thru 3½"; 0.045" for 4" thru 6"; and 0.060" for sizes 8" and above measured from a true square line.

For ISO size pipe, the maximum allowable tolerance from square cut ends is 0.75mm for sizes 25mm-80mm; 1.15mm for sizes 100mm- 150mm; and 1.50mm for sizes 200mm and above, measured from a true square line.

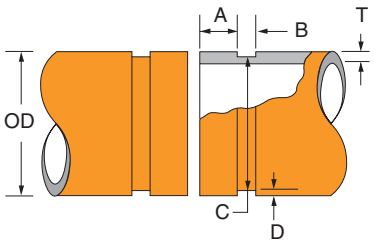
Beveled-End Pipe in conformance with ANSI B16.25 (37½°) is acceptable, however square cut is preferred.

Not to be used with End Guard gaskets.

▼ "A" tolerance +0.030" / -0.060" (+0.77 / -1.54 mm)

CUT GROOVE END GUARD® SPECIFICATION

End Guard (EG) cut groove is designed for standard or heavier wall thickness pipe to be joined by Fig. 7004 with EG® gasket couplings. Gruvlok EG fittings are grooved in accordance with these dimensions.



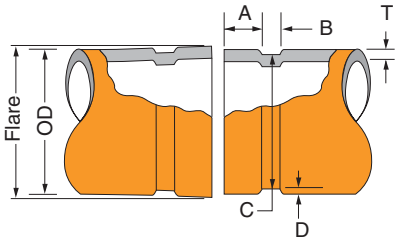
END GUARD (EG) CUT GROOVE SPECIFICATIONS*

Nominal IPS Pipe Size	Pipe Outside Diameter			Gasket Seat "A"		Groove Width "B"		Groove Diameter "C"		Groove Depth (Ref. Only) "D"	Min. Allow. Wall Thick. "T"
	Actual	Tolerance		Actual	Tol.+/-	Actual	Tol.(+0.010)	Actual	Tol.		
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
2 *50*	2.375 *60.3*	+0.024 *+0.61*	-0.024 *-0.61*	0.562 *14.27*	+0.010 *0.25*	0.255 *6.48*	-0.005 *-0.13*	2.250 *57.15*	-0.015 *-0.38*	0.062 *1.6*	0.154 *4.0*
2½ *65*	2.875 *73.0*	+0.029 *+0.74*	-0.029 *-0.74*	0.562 *14.27*	+0.010 *0.25*	0.255 *6.48*	-0.005 *-0.13*	2.720 *69.09*	-0.018 *-0.46*	0.078 *2.0*	0.188 *4.8*
3 *80*	3.500 *88.9*	+0.035 *+0.89*	-0.031 *-0.79*	0.562 *14.27*	+0.010 *0.25*	0.255 *6.48*	-0.005 *-0.13*	3.344 *84.94*	-0.018 *-0.46*	0.078 *2.0*	0.188 *4.8*
4 *100*	4.500 *114.3*	+0.045 *+1.14*	-0.031 *-0.79*	0.605 *15.37*	+0.015 *0.38*	0.305 *7.75*	-0.005 *-0.13*	4.334 *110.08*	-0.020 *-0.51*	0.083 *2.1*	0.203 *5.2*
5 *125*	5.563 *141.3*	+0.056 *+1.42*	-0.031 *-0.79*	0.605 *15.37*	+0.015 *0.38*	0.305 *7.75*	-0.005 *-0.13*	5.395 *137.03*	-0.022 *-0.56*	0.084 *2.1*	0.203 *5.2*
6 *150*	6.625 *168.3*	+0.063 *+1.60*	-0.031 *-0.79*	0.605 *15.37*	+0.015 *0.38*	0.305 *7.75*	-0.005 *-0.13*	6.455 *163.96*	-0.022 *-0.56*	0.085 *2.2*	0.219 *5.6*
8 *200*	8.625 *219.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.714 *18.14*	+0.015 *0.38*	0.400 *10.16*	-0.010 *-0.254*	8.441 *214.40*	-0.025 *-0.64*	0.092 *2.3*	0.238 *6.1*
10 *250*	10.750 *273.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.714 *18.14*	+0.015 *0.38*	0.400 *10.16*	-0.010 *-0.25*	10.562 *268.27*	-0.027 *-0.69*	0.094 *2.4*	0.250 *6.4*
12 *300*	12.750 *323.9*	+0.063 *+1.60*	-0.031 *-0.79*	0.714 *18.14*	+0.015 *0.38*	0.400 *10.16*	-0.010 *-0.25*	12.531 *318.29*	-0.030 *-0.76*	0.109 *2.8*	0.279 *7.1*

*Refer to additional notes on previous page.

ROLL GROOVE END GUARD® SPECIFICATION

End Guard (EG) roll groove is designed for standard or heavier wall thickness pipe to be joined by Fig. 7004 with EG® gasket couplings.



END GUARD (EG) ROLL GROOVE SPECIFICATIONS*

Nominal IPS Pipe Size	Pipe Outside Diameter			Gasket Seat "A"		Groove Width "B"		Groove Diameter "C"		Groove Depth (Ref. Only) "D"	Min. Allow Wall Thick. "T"
	Actual	Tolerance		Actual	Tol.+/-	Actual	Tol.(+0.010)	Actual	Tol.		
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
2 *50*	2.375 *60.3*	+0.024 *+0.61*	-0.024 *-0.61*	0.572 *+14.53*	-0.020 *-0.51*	0.250 *6.35*	+0.015 *0.38*	2.250 *57.15*	-0.015 *-0.38*	0.062 *1.6*	0.065 *1.7*
2½ *65*	2.875 *73.0*	+0.029 *+0.74*	-0.029 *-0.74*	0.572 *+14.53*	-0.020 *-0.51*	0.250 *6.35*	+0.015 *0.38*	2.720 *69.09*	-0.018 *-0.46*	0.078 *2.0*	0.083 *2.1*
3 *80*	3.500 *88.9*	+0.035 *+0.89*	-0.031 *-0.79*	0.572 *+14.53*	-0.020 *-0.51*	0.250 *6.35*	+0.015 *0.38*	3.344 *84.94*	-0.018 *-0.46*	0.078 *2.0*	0.083 *2.1*
4 *100*	4.500 *114.3*	+0.045 *+1.14*	-0.031 *-0.79*	0.610 *+15.49*	-0.020 *-0.51*	0.300 *7.62*	+0.020 *0.51*	4.334 *110.08*	-0.020 *-0.51*	0.083 *2.1*	0.083 *2.1*
5 *125*	5.563 *141.3*	+0.056 *+1.42*	-0.031 *-0.79*	0.610 *+15.49*	-0.020 *-0.51*	0.300 *7.62*	+0.020 *0.51*	5.395 *137.03*	-0.022 *-0.56*	0.084 *2.1*	0.109 *2.8*
6 *150*	6.625 *168.3*	+0.063 *+1.60*	-0.031 *-0.79*	0.610 *+15.49*	-0.020 *-0.51*	0.300 *7.62*	+0.020 *0.51*	6.455 *163.96*	-0.022 *-0.56*	0.085 *2.2*	0.109 *2.8*
8 *200*	8.625 *219.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.719 *+18.26*	-0.020 *-0.51*	0.390 *9.91*	+0.020 *0.51*	8.441 *214.40*	-0.025 *-0.64*	0.092 *2.3*	0.109 *2.8*
10 *250*	10.750 *273.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.719 *+18.26*	-0.020 *-0.51*	0.390 *9.91*	+0.020 *0.51*	10.562 *268.27*	-0.027 *-0.69*	0.094 *2.4*	0.134 *3.4*
12 *300*	12.750 *323.9*	+0.063 *+1.60*	-0.031 *-0.79*	0.719 *+18.26*	-0.020 *-0.51*	0.390 *9.91*	+0.020 *0.51*	12.531 *318.29*	-0.030 *-0.76*	0.109 *2.8*	0.156 *4.0*

*Refer to additional notes on previous page.

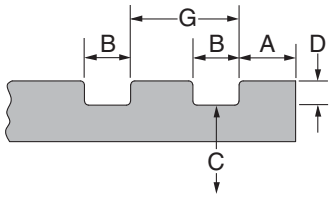
DOUBLE CUT GROOVE SPECIFICATIONS

GRUVLOK STANDARD DOUBLE CUT GROOVE SPECIFICATION FOR STEEL & OTHER IPS OR ISO SIZE PIPE

-1-	-2-			-3-	-4-	-5-	-6-		-7-	-8-
Nominal IPS Pipe Size	O.D.			Gasket Seat "A" ±0.030/ ±0.76	Groove Sep "G" ±0.005/ ±0.127	Groove Width "B" ±0.030/ ±0.76	Groove Diameter "C"		Actual Groove Depth "D" (Ref. Only)	Min. Allowable Bolt Torque Required for Assembly
	Actual	Tolerance					Actual	Tol. +0.000		
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*Ft.-Lbs./N-m*
6 *150*	6.625 *168.3*	+0.063 *+1.60*	-0.031 *-0.79*	0.625 *15.88*	0.785 *20.0*	0.375 *9.53*	6.340 *161.0*	-0.022 *-0.56*	0.142 *3.6*	450 *610.2*
8 *200*	8.625 *219.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.750 *19.05*	0.855 *21.7*	0.500 *12.70*	8.240 *209.3*	-0.022 *-0.56*	0.192 *4.9*	500 *678.0*
10 *250*	10.750 *273.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.750 *19.05*	0.855 *21.7*	0.500 *12.70*	10.350 *262.9*	-0.022 *-0.56*	0.200 *5.1*	500 *678.0*

GRUVLOK "END GUARD" DOUBLE CUT GROOVE SPECIFICATION FOR STEEL & OTHER IPS OR ISO SIZE PIPE

-1-	-2-			-3-	-4-	-5-	-6-		-7-	-8-
Nominal IPS Pipe Size	O.D.			Gasket Seat "A" ±0.010/ ±0.76	Groove Sep "G" ±0.005/ ±0.127	Groove Width "B" +0.010/ -0.005	Groove Diameter "C"		Actual Groove Depth "D" (Ref. Only)	Min. Allowable Bolt Torque Required for Assembly
	Actual	Tolerance					Actual	Tol. +0.000		
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*Ft.-Lbs./N-m*
6 *150*	6.625 *168.3*	+0.063 *+1.60*	-0.031 *-0.79*	0.605 *15.4*	0.785 *20.0*	0.375 *9.53*	6.340 *161.0*	-0.022 *-0.56*	0.142 *3.6*	450 *610.2*
8 *200*	8.625 *219.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.714 *18.1*	0.855 *21.7*	0.500 *12.70*	8.240 *209.3*	-0.022 *-0.56*	0.192 *4.9*	500 *678.0*
10 *250*	10.750 *273.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.714 *18.1*	0.855 *21.7*	0.500 *12.70*	10.350 *262.9*	-0.022 *-0.56*	0.200 *5.1*	500 *678.0*



COLUMN 1 -
Nominal IPS Pipe size.
Nominal ISO Pipe size.

COLUMN 2 -
IPS outside diameter.
ISO outside diameter.

COLUMN 3, 4 & 5 -
Gasket seat must be free from scores, seams, chips, rust or scale which may interfere with proper coupling assembly.

COLUMN 6 -
The groove must be of uniform depth around the entire pipe circumference. (See column 7).

COLUMN 7 -
Groove depth: for reference only. Groove must conform to the groove diameter "C" listed in column 6.

COLUMN 8 -
Minimum allowable bolt torque required for complete assembly.

Out of roundness: Difference between maximum O.D. and minimum O.D. measured at 90° must not exceed total O.D. tolerance listed.

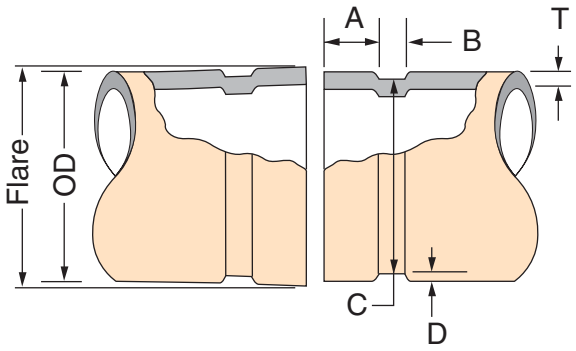
For IPS pipe, the maximum allowable tolerance from square cut ends is 0.03" for 1" thru 3½"; 0.045" for 4" thru 6"; and 0.060" for sizes 8" and above measured from a true square line.

For ISO size pipe, the maximum allowable tolerance from square cut ends is 0.75mm for sizes 25mm-80mm; 1.15mm for sizes 100mm- 150mm; and 1.50mm for sizes 200mm and above, measured from a true square line.

Beveled-End Pipe in conformance with ANSI B16.25 (37½°) is acceptable, however square cut is preferred.

GRUVLOK CTS COPPER SYSTEM

Roll Groove Specifications



GRUVLOK CTS COPPER SYSTEM – ROLL GROOVE SPECIFICATIONS

-1-	-2-			-3-	-4-	-5-		-6-	-7-	-8-
Nominal Size	Tubing Outside Diameter			Gasket Seat "A" +/– 0.03 in. +/– 0.76mm	Groove Width "B" +0.03/–0.00 in. +0.76/–0.00mm	Groove Diameter "C"		Nominal Groove Depth "D"	Min. Wall "T"	Max. Flare Diam.
	Actual	Tolerance				Actual	Tolerance +0.000			
In.	*In./mm*	*+ In./mm*	*– In./mm*	*In./mm*	*In./mm*	*In./mm*	*– In./mm*	*In./mm*	*In./mm*	*In./mm*
2	2.125 *54.0*	0.002 *0.05*	0.002 *0.05*	0.610 *15.5*	0.300 *7.6*	2.029 *51.54*	-0.020 *-0.51*	0.048 *1.2*	0.058 *1.6*	2.220 *56.4*
2½	2.625 *66.7*	0.002 *0.05*	0.002 *0.05*	0.610 *15.5*	0.300 *7.6*	2.525 *64.14*	-0.020 *-0.51*	0.050 *1.3*	0.065 *1.7*	2.720 *69.1*
3	3.125 *79.4*	0.002 *0.05*	0.002 *0.05*	0.610 *15.5*	0.300 *7.6*	3.025 *76.84*	-0.020 *-0.51*	0.050 *1.3*	DWV	3.220 *81.8*
4	4.125 *104.8*	0.002 *0.05*	0.002 *0.05*	0.610 *15.5*	0.300 *7.6*	4.019 *102.08*	-0.020 *-0.51*	0.053 *1.3*	DWV	4.220 *107.2*
5	5.125 *130.2*	0.002 *0.05*	0.002 *0.05*	0.610 *15.5*	0.300 *7.6*	4.999 *126.97*	-0.020 *-0.51*	0.053 *1.3*	DWV	5.220 *132.6*
6	6.125 *155.6*	0.002 *0.05*	0.002 *0.05*	0.610 *15.5*	0.300 *7.6*	5.999 *152.37*	-0.020 *-0.51*	0.063 *1.6*	DWV	6.220 *158.0*
8	8.125 *206.4*	0.002 *0.05*	0.004 *0.10*	0.610 *15.5*	0.300 *7.6*	7.959 *202.16*	-0.020 *-0.51*	0.083 *2.1*	DWV	8.220 *208.8*

COLUMN 1
Nominal tubing size ASTM B88

COLUMN 2
Outside diameter of copper tubing per ASTM B88. Allowable tolerance from square cut ends is 0.030"/0.76mm for sizes 2"-3"; 0.045"/1.14mm for sizes 4-8"

COLUMN 3
Gasket seat must be free from scores, roll marks, indentations, grease and dirt which may interfere with gasket sealing.

COLUMN 4
Groove width is to be free from chips, dirt, etc. which may interfere with proper coupling assembly.

COLUMN 5
Groove diameter must be of uniform depth for the entire circumference of the tubing. See column 6.

COLUMN 6
Groove depth is for reference only; the groove diameter must conform to column 5.

COLUMN 7
DWV (Drain, Waste and Vent Piping) per ASTM B306.

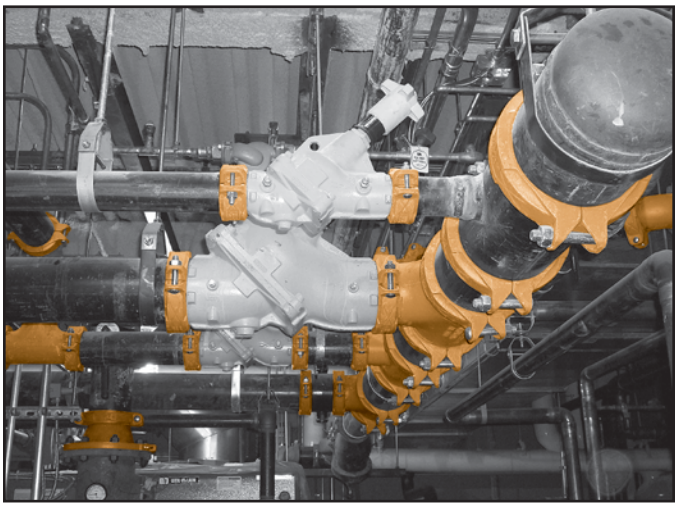
COLUMN 8
Maximum flare diameter is the OD at the most extreme tubing diameter.

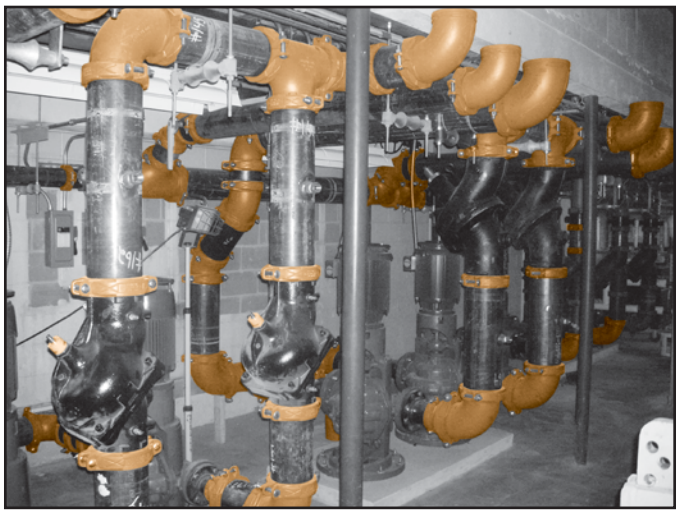
MASTER FORMAT 3 PART SPECIFICATION

Anvil international provides our customers with master specification formats for a wide range of piping construction needs. Anvil's customers can utilize our specifications to help update and revise their current internal building specifications. These master specifications include a three part format; Part 1: General, Part 2: Product, & Part 3: Execution that included the complete catalog of Anvil products.

Anvil provides a master specification format for all building and construction needs including:

- Basic Mechanical Methods and Materials
- Hanger & Supports
- Pipes, Valves, & Fittings for Fire Protection
- Pipes, Valves, & Fittings for Plumbing Systems
- Pipes, Valves, & Fittings for HVAC Heating and Cooling Systems





All Master Format Specification are available for download in WORD and PDF format.

Please follow the web address below for download links.

http://www.anvilintl.com/engineering-resources/master-specifications.aspx

PIPE FITTINGS

MALLEABLE IRON FITTINGS

Malleable Iron Threaded Fittings – Class 150 (Standard)

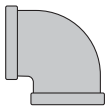


Fig. 1101 – 90˚ Elbow
Size Range: 1/8" - 6" NPS

Fig. 1102 – 45˚ Elbow
Size Range: 1/8" - 6" NPS

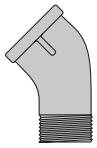


Fig. 1104 – 45˚ Street Elbow
Size Range: 1/8" - 2" NPS

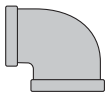


Fig. 1101R – Reducing Elbow
Size Range: 1/4" x 1/8" thru 4" x 3" NPS

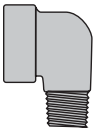


Fig. 1103 – Straight
Fig. 1003R – Reducing 90˚ Street Elbow
Size Range
Fig. 1103: 1/8" - 4"
Fig. 1103R: 1/2" x 3/8" thru 2" x 1 1/2"

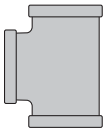


Fig. 1105 – Straight
Fig. 1105R – Reducing
Size Range
Fig. 1105: 1/8" - 6" NPS
Fig. 1105R: 1/8" x 1/8" x 1/4" thru 4" x 4" x 3" NPS

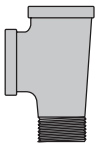


Fig. 1106 – Straight
Fig. 1106R – Reducing Street or Service Tee
Size Range
Fig. 1106: 1/4" - 2" NPS
Fig. 1106R: 1 1/4" x 1" x 1 1/4"

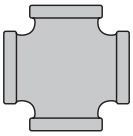


Fig. 1107 – Cross
Size Range: 1/8" - 4" NPS

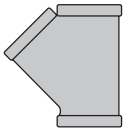


Fig. 1108
45˚ Y-Branch or Lateral
Size Range: 3/8" - 4" NPS

Fig. 1121
Coupling
Size Range: 1/8" - 4" NPS

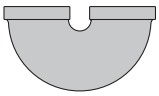


Fig. 1119
Return Bends
Open Pattern – Right Hand
Size Range: 1/2" - 2" NPS

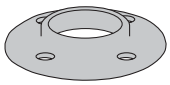


Fig. 1190 – Floor Flange (Ductile Iron)
Size Range: 1/4" - 2" NPS

Fig. 1125 – Reducer
Size Range: 1/4" x 1/8" thru 6" x 4" NPS

Fig. 1124 – Cap
Size Range: 1/2" - 6" NPS

Fig. 1134 – Hex Locknut
Size Range: 1/4" - 2" NPS

Malleable Iron Plain Fittings

NOTE: Not to be used for pressure service.

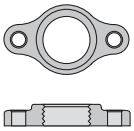


Fig. 1133 – Waste Nut
Sizes: 1/2" & 3/4" NPS

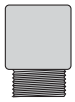


Fig. 1138 – Extension Piece
Size Range: 1/2" - 1" NPS

Malleable Iron Threaded Fittings – Class 300 (XS/XH)

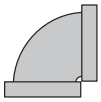


Fig. 1161 – Straight
Fig. 1161R – Reducing 90˚ Elbow
Size Range
Fig. 1161: 1/4" - 4" NPS
Fig. 1161R: 3/8" x 1/4" thru 2" x 1 1/2" NPS

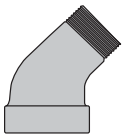


Fig. 1160
45˚ Street Elbow
Size Range: 1/2" - 2" NPS

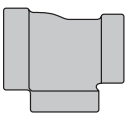


Fig. 1164R
Reducing Tee
Size Range: 3/8" x 3/8" x 1/4" thru 3" x 3" x 2" NPS

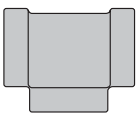


Fig. 1164
Straight Tee
Size Range: 1/4" - 4" NPS

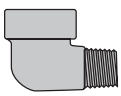


Fig. 1170
90˚ Street Elbow
Size Range: 1/4" - 3" NPS

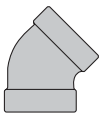


Fig. 1162
45˚ Elbow
Size Range: 1/4" - 4" NPS

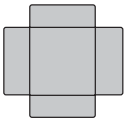


Fig. 1165 – Cross
Size Range: 1/4" - 2" NPS

Fig. 1167 – Reducer
Size Range: 3/8" x 1/4" thru 4" x 3" NPS

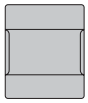


Fig. 1166 – Coupling
Size Range: 1/4" - 3" NPS

Fig. 1163 – Cap
Size Range: 1/4" - 3" NPS

Fig. 390
Countersunk Plugs
Size Range: 1/2" - 3/4" NPS

PIPE FITTINGS (Continued)

MALLEABLE IRON UNIONS – Class 150; 250; 300

Copper or Copper Alloy to Iron

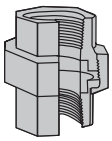


Fig. 463 – Class 150 Union
150 Lb. WSP; 300 Lb. WOG, Non-Shock
Size Range: 1/8" - 3" NPS

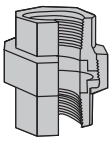


Fig. 554 – Class 250 Union
250 Lb. WSP; 500 Lb. WOG, Non-Shock
Size Range: 1/8" - 4" NPS

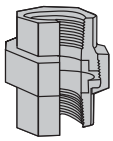


Fig. 459 – Class 300 Union
300 Lb. WSP; 600 Lb. WOG, Non-Shock
Size Range: 1/8" - 4" NPS

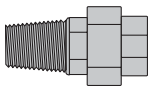


Fig. 551 – Class 300 Union (Male/Female)
300 Lb. WSP; 600 Lb. WOG, Non-Shock
Size Range: 1/2" - 2" NPS

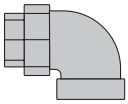


Fig. 552 – Class 300 90° Elbow Female Union
300 Lb. WSP
Size Range: 3/4" - 1" NPS

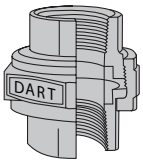


Fig. 832 – Dart Union
Bronze to Bronze Seat Union
Size Range: 3/8" - 2" NPS

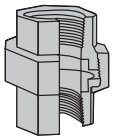


Fig. J-3300 – Class 300 All Iron Union
Size Range: 1/4" - 3" NPS

CAST IRON FITTINGS

Cast Iron Threaded Fittings – Class 125 (Standard)

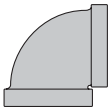


Fig. 351 – 90° Elbow
Size Range: 1/4" - 8" NPS

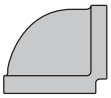


Fig. 352
90° Reducing Elbow
Size Range: 1/2" x 1/4" thru 6" x 5"

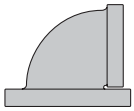


Fig. 371 – 90° Elbow
Flange & Screw
Size Range: 2 1/2" - 6" NPS

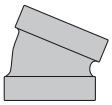


Fig. 356A – 22 1/2° Elbow
Size Range: 3/4" - 2 1/2" NPS

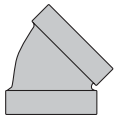


Fig. 356 – 45° Elbow
Size Range: 1/4" - 8" NPS

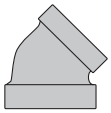


Fig. 356R
45° Reducing Elbow
Size: 1" x 1/2" NPS

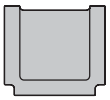


Fig. 358
Straight Tee
Size Range: 1/4" - 8" NPS

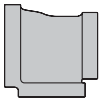


Fig. 359
Reducing Tee
Size Range: 1/2" x 1/2" x 1/4" thru 6" x 6" x 5" NPS

Fig. 360
Straight Cross
Size Range: 1/2" - 6" NPS

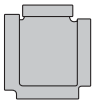


Fig. 361
Reducing Cross
Size Range
1" x 1" x 3/4" x 3/4" thru 4" x 4" x 2" x 2" NPS

Fig. 366
Screwed Hex Coupling
Size: 1" NPS

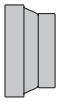


Fig. 367
Concentric Reducer
Size Range: 3/4" x 1/2" thru 8" x 6" NPS

Fig. 368
Eccentric Reducer
Size Range: 3/4" x 1/2" thru 6" x 4" NPS

Fig. 383 – Hex Bushing
Size Range: 1 1/2" x 1/4" thru 10" x 8" NPS

Fig. 385 – Face Bushing
Size Range: 3" x 2" thru 4" x 3" NPS

Fig. 387 – Square Head Plug (Cored)
Size Range: 3/4" - 4" NPS

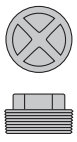


Fig. 380 – Solid
Fig. 389 – Cored
Bar Plugs
Size Range: 4" - 8" NPS

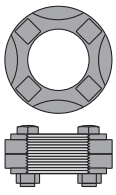


Fig. 487 – Flange Union Gasket Type
Size Range: 1/2" - 8" NPS
(Assembled with Gaskets)

Fig. 388 – Square Head Plug (Solid)
Size Range: 1/2" - 3 1/2" NPS

Fig. 390
Countersunk Plugs
Size Range: 1" - 4" NPS

Fig. 381 – Cap
Size Range: 2 1/2" - 8" NPS

Fig. 370 – Locknut
Size Range: 2 1/2" - 4" NPS

PIPE FITTINGS (Continued)

CAST IRON FITTINGS (Continued)

Cast Iron Threaded Fittings – Class 250 (Extra Heavy)

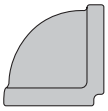


Fig. 421 – 90˚ Elbow
Size Range: 1/4" - 3" NPS

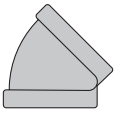


Fig. 424 – 45˚ Elbow
Size Range: 1/2" - 2 1/2" NPS

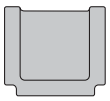


Fig. 425 – Tee
Size Range: 1/4" - 4" NPS

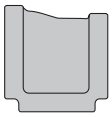


Fig. 426 – Reducing Tee
Size Range: 3/4" x 3/4" x 1/2" thru 2" x 2" x 1 1/2"

Cast Iron Threaded – Safety Valve Discharge Elbow

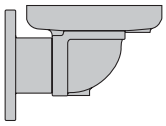


Fig. 1538 – Screwed Cast Iron
Size Range: 2 1/2" - 4" NPS

Cast Iron Drainage Fittings

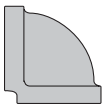


Fig. 701
90˚ Short Turn Elbow
Size Range: 1 1/2" - 4" NPS

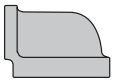


Fig. 701R – 90˚ Reducing Short Turn Elbow
Sizes: 1 1/2" x 1 1/4" & 2" x 1 1/2" NPS

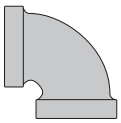


Fig. 702
90˚ Long Turn Elbow
Size Range: 1 1/2" - 4" NPS

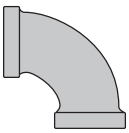


Fig. 702A
90˚ Extra Long Turn Elbow
Sizes: 1 1/2" & 2" NPS

Fig. 703
60˚ Short Turn Elbow
Size: 1 1/2" NPS

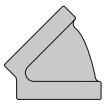


Fig. 705
45˚ Short Turn Elbow
Size Range: 1 1/2" - 4" NPS

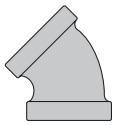


Fig. 706
45˚ Long Turn Elbow
Size: 1 1/2" NPS

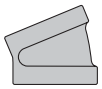


Fig. 707 – 22 1/2˚ Elbow
Sizes: 1 1/2" & 2" NPS

Fig. 708 – 11 1/4˚ Elbow
Sizes: 1 1/2" & 2" NPS

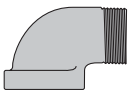


Fig. 718 – 90˚ Street Elbow
Sizes: 1 1/2" & 2" NPS

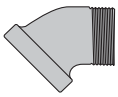


Fig. 719 – 45˚ Street Elbow
Sizes: 1 1/2" & 2" NPS

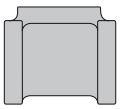


Fig. 722 – Tee
Sizes: 1 1/2" & 2" NPS

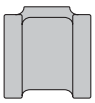


Fig. 723 – Reducing Tee
Size: 2" x 2" x 1 1/2" NPS

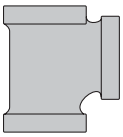


Fig. 726 – Sanitary Tee
90˚ Short Turn
Size Range: 1 1/2" - 4" NPS

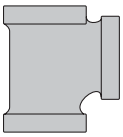


Fig. 727 – Sanitary Tee
90˚ Reducing Short Turn
Sizes:
2" x 2" x 1 1/2" & 2" x 1 1/2" x 1 1/2"

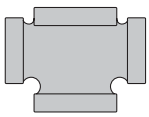


Fig. 729 – Sanitary Tee
90˚ Reducing Double Short Turn
Size: 2" x 1 1/2" NPS

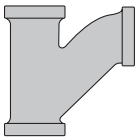


Fig. 730 – Y-Branch
90˚ Long Turn
Sizes: 1 1/2" & 2" NPS

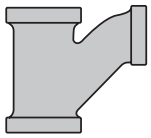


Fig. 731 – Y-Branch
90˚ Reducing Long Turn
Size: 2" x 2" x 1 1/2" NPS

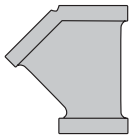


Fig. 734 – 45˚ Y-Branch
Sizes: 1 1/2" - 4" NPS

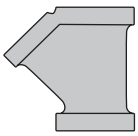


Fig. 735 – 45˚ Reducing Y-Branch
Sizes: 2" x 2" x 1 1/2" & 4" x 4" x 3"

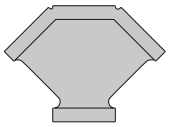


Fig. 736 – 45˚ Double Y-Branch
Size: 1 1/2" NPS

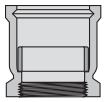


Fig. 744 – Tucker Connection
Size Range: 1 1/2" - 4" NPS

Fig. 753 – Coupling
Size: 1 1/2" NPS

Fig. 752 – P-Trap
Size Range: 1 1/2" - 3" NPS

Fig. 754 – Bath P-Trap
Sizes: 1 1/2" & 2" NPS

PIPE FITTINGS (Continued)

CAST IRON FITTINGS (Continued)

Cast Iron Flanged Fittings – Class 125 (Standard)

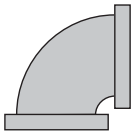


Fig. 801
90˚ Straight Elbow
Size Range: 1½" - 12" NPS

Fig. 802
45˚ Straight Elbow
Size Range: 1½" - 12" NPS

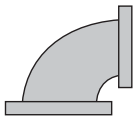


Fig. 803
90˚ Taper Reducing Elbow
Size Range:
2½" x 2" thru 12" x 10" NPS

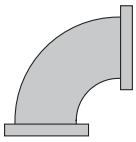


Fig. 804 – Straight
Fig. 804R – Reducing
Long Radius Elbow
Size Range:
Fig. 804: 2" - 12" NPS
Fig. 804R: 4" x 3" thru 10" x 8"

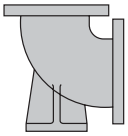


Fig. 805 – Base Elbow
Size Range: 3" - 12" NPS

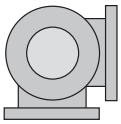


Fig. 808 – Side Outlet Elbow
Size Range: 4" - 8" NPS

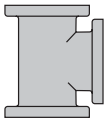


Fig. 811 – Straight Tee
Size Range: 1½" - 12" NPS

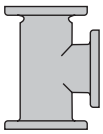


Fig. 812 – Reducing Tee
Size Range:
3" x 2" x 3" thru 12" x 12" x 10"

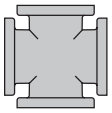


Fig. 821 – Cross
Size Range: 2" - 10" NPS

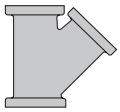


Fig. 823 – Lateral
Size Range: 2" - 8" NPS

Fig. 825
Concentric Reducer
Size Range: 2" x 1½" thru 12" x 10" NPS

Fig. 826
Eccentric Reducer
Size Range: 3" x 2" thru 12" x 10" NPS

Iron Flanges – Class 125 (Standard)

Fig. 1011 – Cast Iron
Companion Flange
Size Range:
Fig: 1011: ¾" x 3⅞" thru 12" x 19" NPS

Fig. 1016 – Reducing
Companion Flange
Size Range:
1" x 5" thru 8" x 19" NPS

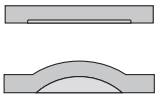


Fig. 1018 – Cast Iron Blind
Flange
Size Range:
1" x 4¼" thru 12" x 19" NPS

Iron Flanges – Class 250 (Extra Heavy)

Fig. 1021 – Cast Iron
Blind Flange
Size Range:
1½" x 6⅛" thru 8" x 15" NPS

Fig. 1025 – Cast Iron
Companion Flange
Size Range:
1¼" x 5¼" thru 8" x 15" NPS

Fig. 1030 – Cast Iron
Companion Flange
Size Range:
2" x 8¼" thru 4" x 11" NPS

PIPE FITTINGS (Continued)

PIPE NIPPLES

Seamless/Welded – Black & Galvanized

Seamless Pipe Nipples
Std. Sch. 40, XH Sch. 80, Sch. 160, XXH
Size Range: 1/8" thru 6"

Welded Pipe Nipples
Std. Sch. 40, XH Sch. 80
Size Range: 1/8" thru 6"

STEEL FITTINGS

Steel Pipe Couplings

Fig. 336
Standard, Full & Half
Size Range: 1/8" - 6" NPS

Fig. 337
Extra Strong (XS), Full & Half
Size Range: 1/8" - 6" NPS

Fig. 346
Standard, Right & Left
Size Range: 1/2" - 2" NPS

Fig. 347
Extra Strong (XS), Right & Left
Size Range: 1/2" - 2" NPS

Fig. 348
API Line Pipe Coupling
Size Range: 1/8" - 12" NPS

Fig. 379
Shallow Well Coupling
Size Range: 1 1/4" - 2" NPS

Fig. 349
Water Well Reamed and
Drifted Coupling
Size Range: 1 1/4" - 12" NPS

Fig. 350
#9 Drive Coupling
Size Range: 1 1/4" - 2" NPS

Merchant Steel Bushings, Caps & Plugs

Hex Bushing
Size Range: 1/4" x 1/8" thru 1" x 3/4" NPS

Countersunk Plug
(Square & Hex Socket)
Size Range: 1/8" - 2" NPS

Flush Bushing
Size Range: 1/4" x 1/8" thru 1/2" x 3/8" NPS

Cap
Size Range: 1/8" - 3/4" NPS

Solid Square Head Plug
Size Range: 1/8" - 2" NPS

PIPE FITTINGS (Continued)

FORGED STEEL FITTINGS

Class 2000 Threaded

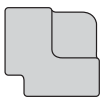


Fig. 2101 – 90˚ Elbow
Size Range: 1/4" - 4" NPS


Fig. 2102 – 45˚ Elbow
Size Range: 1/4" - 4" NPS

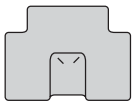


Fig. 2103 – Tee
Size Range: 1/4" - 4" NPS

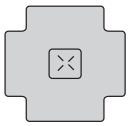


Fig. 2104 – Cross
Size Range: 1/4" - 4" NPS

Class 3000 Threaded

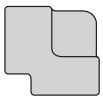


Fig. 2111 – 90˚ Elbow
Size Range: 1/8" - 4" NPS


Fig. 2112 – 45˚ Elbow
Size Range: 1/8" - 4" NPS

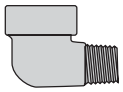


Fig. 2113 – 90˚ Street Elbow
Size Range: 1/8" - 2" NPS

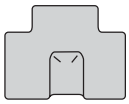


Fig. 2114 – Tee
Size Range: 1/8" - 4" NPS

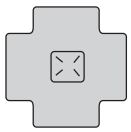


Fig. 2115 – Cross
Size Range: 1/8" - 4" NPS

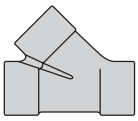


Fig. 2116 – Lateral
Size Range: 1/2" - 2" NPS

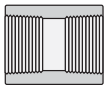


Fig. 2117 – Coupling
Size Range: 1/8" - 4" NPS

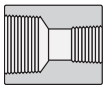


Fig. 2118 – Reducing Coupling
Size Range: 1/4" x 1/8"- 4" x 1 1/2" NPS


Fig. 2119 – Half Coupling
Size Range: 1/8" - 4" NPS


Fig. 2120 – Pipe Cap
Size Range: 1/8" - 4" NPS

Class 6000 Threaded

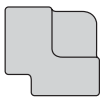


Fig. 2131 – 90˚ Elbow
Size Range: 1/8" - 4" NPS


Fig. 2132 – 45˚ Elbow
Size Range: 1/2" - 3" NPS

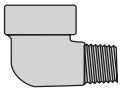


Fig. 2133 – 90˚ Street Elbow
Size Range: 1/2" - 1 1/2" NPS

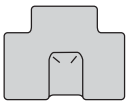


Fig. 2134 – Tee
Size Range: 1/4" - 3" NPS (4" POA)

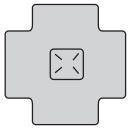


Fig. 2135 – Cross
Size Range: 1/2" - 3" NPS (1/4" POA)

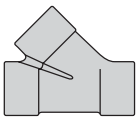


Fig. 2136 – Lateral
Size Range: 1/2" - 1 1/2" NPS

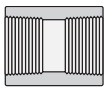


Fig. 2137 – Coupling
Size Range: 1/8" - 4" NPS

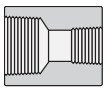


Fig. 2138 – Reducing Coupling
Size Range: 1/4" x 1/8"- 4" x 2" NPS


Fig. 2141 – Half Coupling
Size Range: 1/4" - 2" NPS (1/8" POA)


Fig. 2143 – Pipe Cap
Size Range: 1/2" - 3" NPS
(1/8" - 3/8", 4" POA)

Class 3000 Socket-Weld

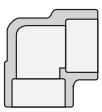


Fig. 2150 – 90˚ Elbow
Size Range: 1/8" - 4" NPS

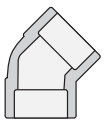


Fig. 2151 – 45˚ Elbow
Size Range: 1/8" - 4" NPS

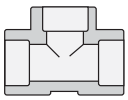


Fig. 2152 – Tee
Size Range: 1/8" - 4" NPS

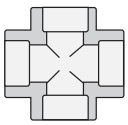


Fig. 2153 – Cross
Size Range: 1/2" - 3" NPS
(1/8" - 3/8" POA)

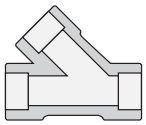


Fig. 2158 – Lateral
Size Range: 1/2" - 2" NPS


Fig. 2154 – Couplings
Size Range: 1/8" - 4" NPS


Fig. 2156 – Reducing Coupling
Size Range: 1/4" x 1/8"- 4" x 2" NPS


Fig. 2155 – Half Coupling
Size Range: 1/2" - 4" NPS
(1/8" - 3/8" POA)


Fig. 2157 – Pipe Cap
Size Range: 1/8" - 4" NPS

PIPE FITTINGS (Continued)

FORGED STEEL FITTINGS (Continued)

Class 6000 Socket-Weld

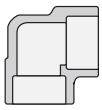


Fig. 2170 – 90˚ Elbow
Size Range: 1/2" - 4" NPS

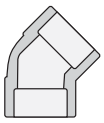


Fig. 2171 – 45˚ Elbow
Size Range: 1/2" - 4" NPS

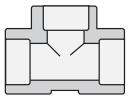


Fig. 2172 – Tee
Size Range: 1/2" - 4" NPS

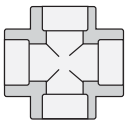


Fig. 2173 – Cross
Size Range: 1/2" - 2" NPS

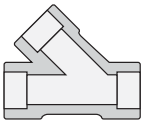


Fig. 2178 – Lateral
Size Range: 1/2" - 2" NPS

Fig. 2174 – Couplings
Size Range: 1/2" - 2" NPS
(2 1/2" - 4" POA)

Fig. 2176 – Reducing Coupling
Size Range: 3/4" x 1/4" - 4" x 2" NPS

Fig. 2175 – Half Couplings
Size Range: 1/2" - 2" NPS
(2 1/2" - 4" POA)

Fig. 2177 – Pipe Caps
Size Range: 1/2" - 2" NPS
(2 1/2" - 4" POA)

High Pressure Plugs & Bushings

Anvil High Pressure Plugs and Bushings satisfy the requiement of ASME B16.11 Class 2000, 3000, and 6000.

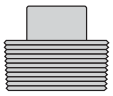


Fig. 2122 – Plugs
Square Head
Size Range: 1/8" - 4" NPS

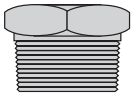


Fig. 2142 – Plugs
Hex Head
Size Range: 1/8" - 4" NPS

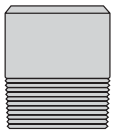


Fig. 2121 – Plugs
Round Head
Size Range: 1/8" - 2" NPS

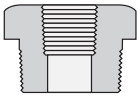


Fig. 2139 – Bushings
Hex Head
Size Range: 1/4" x 1/8" - 4" x 1 1/2" NPS

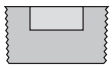


Fig. 2140 – Bushings
Flush
Size Range: 1/4" x 1/8" - 2" x 1/4" NPS
(All sizes are POA)

Socket-Weld Reducer Inserts

Reducer inserts comply with MSS Standard SP-79. They enable standard socket-weld fittings to be used for making any combination of pipe line reductions quickly and economically. Socket-weld reducer inserts serve the same purpose as threaded reducing bushings with threaded fittings.

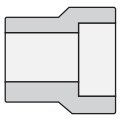


Fig. 2159 (Type 1)

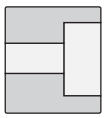


Fig. 2179 (Type 2)

CLASS 3000

For use with Schedule 40 & 80 Pipe

Type 1 – Reducer Insert
Size Range: 1/2" x 3/8" thru 3" x 2 1/2" NPS

Type 2 – Reducer Insert
Size Range: 1/2" x 3/8" thru 3" x 2 1/2" NPS

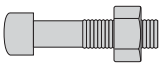
CLASS 6000

For use with Schedule 160 Pipe

Type 1 – Reducer Insert
Size Range: 3/4" x 1/2" thru 2" x 1 1/2" NPS

Type 2 – Reducer Insert
Size Range: 3/4" x 1/2" thru 2" x 1 1/2" NPS

MISCELLANEOUS



When ordering, specify bolt size & length required.
Bolts are furnished in sizes:
1/4", 5/16", 3/8", 7/16", 1", 1 1/8", 1 1/4" (6.3, 7.9, 9.5, 11, 25, 29 and 32 mm) in varying lengths.
Length of bolts are measured from under head to extreme point.

Floor & Ceiling Plates

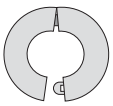


Fig. 1 – with Springs
Fig. 2 – with Set Screw
Stamped Steel for Copper Tube
Size Range: 1/4" - 6" NPS

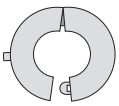


Fig. 10 – with Springs
Fig. 13 – with Set Screw
Stamped Steel for Pipe
Size Range: 1/4" - 6" NPS

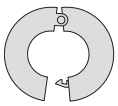


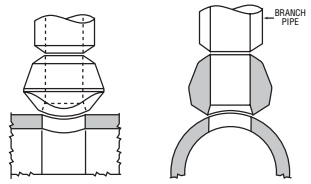
Fig. 20 – with Springs &
exposed Rivet Hinge
Stamped Steel for Pipe
Size Range: 1/4" - 6" NPS

PIPE FITTINGS (Continued)

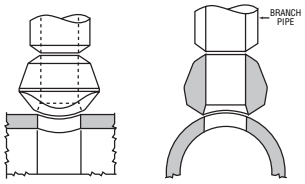
ANVIL UNIVERSAL ANVILETS

Universal Buttweld Anvilets

Full & Reducing Sizes Class 3000 & 6000

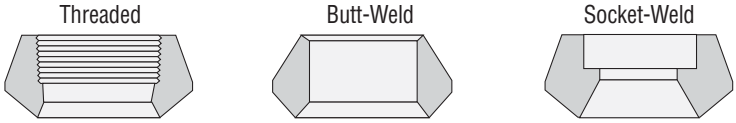


Schedule 160 & XXS
Size Range: 1/2" - 4" NPS



Standard Weight
XS/XH
For Outlet Sizes: 1/8" - 24" NPS
Size Range: 1/8" - 24" NPS

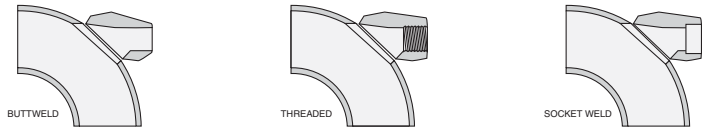
Universal Flat Anvilets



Class 3000 Threaded, Buttweld & Socket-Weld
Size Range: 1/2" - 4" NPS (1/8" - 3/8" POA)

Universal Elbow Anvilets

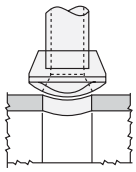
Class 3000 & 6000 Butt-Weld, Threaded, and Socket-Weld



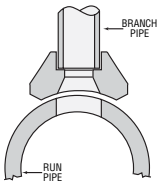
Class 3000
Threaded & Socket-Weld/Standard & XS/XH Buttweld
Size Range: 1/2" - 2" NPS

Class 6000
Threaded & Socket-Weld
Size Range: 1/2" - 1 1/2" NPS

Universal Socket-Weld Anvilets



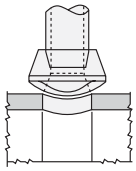
Class 3000
For Outlet Sizes: 1/2" - 4" NPS



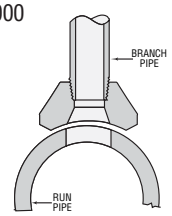
Class 6000
For Outlet Sizes: 1/2" - 2" NPS

Universal Threaded Anvilets

Full & Reducing Sizes Class 3000 & 6000



Class 3000
For Outlet Sizes: 1/8" - 4" NPS

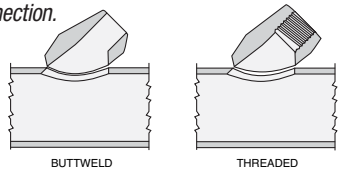


Class 6000
For Outlet Sizes: 1/2" - 2" NPS

Universal Lateral Anvilets

Class 3000 & 6000 Buttweld and Threaded

Lateral Anvilets provide a strong, readily attached 45° lateral outlet connection.



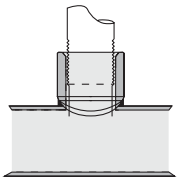
Class 3000
Standard/XS Buttweld
Size Range: 1/2" - 2" NPS

Class 3000
Threaded/Standard
Size Range: 1/2" - 2" NPS

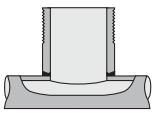
MERIT® OUTLET FITTINGS

Merit 300 Tee-Let

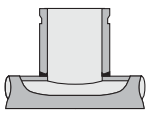
Welding Outlet Fittings



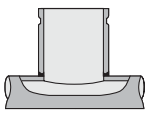
Merit 300 – Female Thread
Size Range: 1/2" - 4"



Type B – Male Thread
Standard Weight
Size Range: 1" - 8"



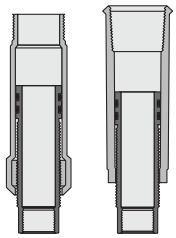
Type C – Cut Groove
Standard Weight
Size Range: 1 1/4" - 8"



Type C/R – Roll Groove Schedule 10
Size Range: 1 1/4" - 6"

Eliminator

Adjustable Drop Nipples
Size Range: 1"x 1/2" thru 1"x 3/4"



Type M Type F

PIPE FITTINGS (Continued)

JB SMITH OIL COUNTRY

Carbon Steel – Swage Nipples

Concentric Swage Nipples
Size Range:
1/4" x 1/8" thru 1" x 3/4"
1 1/4" x 1/4" thru 8" x 6"

Eccentric Swage Nipples
Size Range: 1/4" x 1/8" thru 4" x 3 1/2"

Stainless Steel – Swage Nipples

Stainless & Alloy Steel Swage Nipples
Size Range: 1/4" x 1/8" thru 4" x 3 1/2"

Carbon Steel – Bull Plugs

Carbon Steel Bull Plugs
Size Range: 1/8" - 8"

Solid Refinery Plugs
Black (Non-Plated)
Carbon Steel
Size Range: 1/8" - 2"

Oil Country Fittings – Tubing Swages & Casing Swages

Large End Upset
Reduced to Regular or Upset
Size Range: 1" x 3/4" thru 4" x 3 1/2"

Large End Non-Upset
Reduced to Upset
Size Range: 1" x 3/4" thru 4" x 3"

Swage Nipples Oil Country
Tubing & Casing Non EUE Ends
Size Range: 1" - 4"

Oil Country Fittings – Adapter Nipples

Tubing Nipples
Standard Weight
Size Range: 1" - 4"

Tubing Nipples
Extra Heavy Weight
Size Range: 1" - 4"

Oil Country Couplings – Casing Couplings

API Casing Couplings
Short Thread
Size Range: 4 1/2" - 20"

API Casing Couplings
Long Thread
Size Range: 4 1/2" - 13 3/8"

Combination Couplings J-55
Size Range: 2" - 4"

Bell Nipple
Size Range: 4 1/2" - 8 5/8"

Adapter Nipples
Seamless Sch. 40
Size Range: 3/4" - 12"

Oil Country Couplings – Tubing Couplings

API Tubing Couplings
Size Range: 2" - 4"

Special Clearance
Tubing Couplings
Size Range: 2" - 3"

Sub Tubing Couplings J-55
Size Range: 2" EUE x 2" Reg thru
4" EUE x 4" Reg

Oil Country Fittings – Casing Nipples

Oil Country Casing Nipples
Size Range: 4 1/2" - 16"

Oil Country Fittings – Chamber Vessels

Chambers/Pressure Vessels
Size Range: 2" - 8"

Oil Country Fittings – Bull Plugs

Tubing Bull Plugs
Size Range: 3/4" EUE - 3" EUE

Casing Bull Plugs
Size Range: 4 1/2" - 10 3/4" API

API Bull Plug Female
Size Range: 3/4" EUE - 4" EUE

Oil Country Fitting – Pumping Tee

Pumping Tee
Size Range: 2" 8RD EUE x 2" 8RD EUE x 2" 11 1/2"V REG -
3" 8RD EUE x 3" 8RD EUE x 3" 8V LP

PIPE FITTINGS (Continued)

CATAWISSA UNIONS

Hammer Unions

Fig. 100
Threaded Ends
1,000 psi cwp - 1,500 psi test
Size Range: 2" - 8"

Fig. 100C
Threaded Ends - Lug Union
1,000 psi cwp - 1,500 psi test
Size: 2"

Fig. 200
Threaded Ends
2,000 psi cwp - 3,000 psi test
Size Range: 1" - 6"

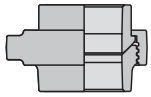


Fig. 200
Buttweld Ends - Sch. 40
2,000 psi cwp - 3,000 psi test
Size Range: 1"- 6"

Fig. 200C
Threaded Ends - Lug Union
2,000 psi cwp - 3,000 psi test
Size Range: 1" - 2"

Fig. 206
Threaded Ends
2,000 psi cwp - 3,000 psi test
Size Range: 1" - 6"

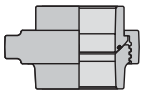


Fig. 206
Buttweld Ends - Sch. 40
2,000 psi cwp - 3,000 psi test
Size Range: 2" - 6"

Fig. 211
Threaded Ends
Insulating Union
2,000 psi cwp - 3,000 psi test
Sizes: 1" & 2"

Fig. 300
Flat-Face Union
2,000 psi cwp - 3,000 psi test
Size Range: 1" - 4"

Fig. 301
Steam Service Union
3,000 psi cwp - 4,500 psi test
Size Range: 1" - 3"

Fig. 400
Threaded Ends
4,000 psi cwp - 6,000 psi test
Size Range: 2" - 4"

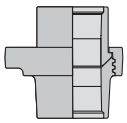


Fig. 400
Buttweld Ends - Sch. 80
4,000 psi cwp - 6,000 psi test
Size: 2"

Fig. 600
Threaded Ends
6,000 psi cwp - 9,000 psi test
Size Range: 1" thru 4"

Fig. 602
Threaded Ends
6,000 psi cwp - 9,000 psi test
Size Range: 1" thru 4"

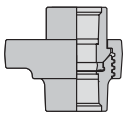


Fig. 602
Buttweld Ends - Sch. 80
6,000 psi cwp - 9,000 psi test
Size Range: 2" thru 4"

Fig. 607
Threaded Ends
Well Service Union
2,000 psi cwp - 3,000 psi test
Sizes: 1½" & 2"

Fig. 1002
Threaded Ends
10,000 psi cwp - 15,000 psi test
Size Range: 1" - 4"

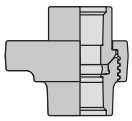


Fig. 1002
Buttweld Ends - Sch. 160
10,000 psi cwp - 15,000 psi test
Size Range: 2" - 4"

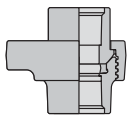


Fig. 1002
Buttweld Ends - Sch. XXH
10,000 psi cwp - 15,000 psi test
Size Range: 2" - 4"

Fig. 1502
Threaded Ends
15,000 psi cwp - 22,500 psi test
Sizes: 2" & 3"

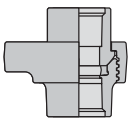


Fig. 1502
Buttweld Ends - Sch. XXH
15,000 psi cwp - 22,500 psi test
Sizes: 2" & 3"

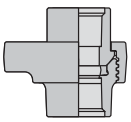


Fig. 1502
Buttweld Ends - Sch. 160
15,000 psi cwp - 22,500 psi test
Sizes: 2" & 3"

Fig. 202
Blanking Cap Only
with O-Ring
Size: 4"

Fig. S1A
High Speed Union
3,000 psi cwp - 4,500 psi test
Size Range: 1" - 3"

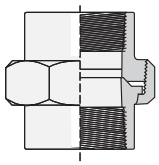
Fig. 3L S1A
Tri-Lug High Speed Union
3,000 psi cwp - 4,500 psi test
Size Range: 1" - 2"

Forged Steel Unions

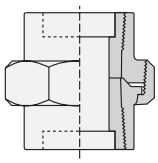
Manufactured to MSS Standard Practice SP83 (Class 6000 by method of MSS SP83).

CLASS 3000
Fig. 2125 – Threaded
Fig. 2126 – Socket-Weld
Size Range: ⅛" - 3" NPS

CLASS 6000
Fig. 2127 – Threaded
Fig. 2128 – Socket-Weld
Size Range: ¼" - 2" NPS



THREADED



SOCKET WELD

Forged Steel Handle Bar Unions

CLASS 3000
Threaded
Size Range: ½" - 4" NPS

PIPE HANGERS

Copper Tubing Hangers

Fig. CT-69
Adjustable Swivel Ring
Size Range: 1/2" - 4"

Fig. CT-65
Light Weight
Adjustable Clevis
Size Range: 1/2" - 4"

Fig. 69F
Adjustable Swivel Ring
Felt Lined
Size Range: 1/2" - 6"

Fig. 67F
Copper Tube Felt Lined
Hanger
Size Range: 1/2" - 6"

Fig. CT-121
Copper Tubing
Riser Clamp
Size Range: 1/2" - 4"

Fig. CT-128R
Rod Threaded
Ceiling Flange
Sizes: 3/8" thru 1/2"

Fig. CT-138R
Extensions Split
Tubing Clamp
Size Range: 1/2" - 2"

Fig. CT-255
Copper Tubing
Alignment Guide
Size Range: 1" - 4"

CPVC Pipe Hangers

Fig. 185
One Hole Pipe Strap
Size Range: 3/4" - 2"

Fig. 186
Two Hole Pipe Strap
Size Range: 3/4" - 2"

Fig. 187
Two Hole 90° Side
Mount Strap
Size Range: 3/4" - 2"

Fig. 188
Two Hole Stand Off
Strap
Size Range: 3/4" - 2"

Steel Pipe Clamps

Fig. 261
Extension Pipe or
Riser Clamp
Size Range: 3/4" - 24"

Fig. 40
Riser Clamp Standard
Size Range: 2" - 24"

Fig. 103
Offset Pipe Clamp
Size Range: 3/4" - 8"

Fig. 100
Extended Pipe Clamp
Size Range: 1/2" - 8"

Fig. 212
Medium Pipe Clamp
Size Range: 1/2" - 30"

Fig. 212FP
Earthquake
Bracing Clamp
Size Range: 2 1/2" - 12"

Fig. 216
Heavy Pipe Clamp
Size Range: 3" - 42"

Fig. 295
Double Bolt
Pipe Clamp
Size Range: 3/4" - 36"

Fig. 295A
Alloy Double Bolt
Pipe Clamp
Size Range: 1 1/2" - 24"

Fig. 295H
Heavy Duty Double
Bolt Pipe Clamp
Size Range: 6" - 36"

Fig. 224 & 246
Alloy Steel Pipe Clamp
Size Range: 4" - 24"

Clevis

Fig. 67
Pipe or Conduit
Hanger
Size Range: 1/2" - 6"

Fig. 65
Light Duty
Adjustable Clevis
Size Range: 3/8" - 4"

Fig. 260
Adjustable Clevis
Hanger
Size Range: 1/2" - 30"

Fig. 260 ISS
Clevis Hanger with
Insulation Saddle
System
Size Range: 2" - 16"

Fig. 300
Adjustable Clevis for
Insulated Lines
Size Range: 3/4" - 12"

Fig. 590
Adjustable Clevis for
Ductile or Cast Iron
Size Range: 3" - 24"

Pipe Shields & Saddles

Fig. 167
Insulation
Protection Shield
Size Range: 1/2" thru 24" pipe
with up to 2" thick insulation.

Fig. 168
Rib-Lok Shield
Size Range: 1/2" thru 8" pipe
or copper tube with up to
2" thick insulation.

Fig. 160 to 166A
Pipe Covering Protection Saddle
Size Range: 3/4" thru 36"

Socket Clamps

Fig. 595 & Fig. 594
Socket Clamp
For Ductile Iron or
Cast Iron Pipe
& Socket Clamp Washer
Size Range: 4" - 24" pipe

Fig. 600 & Fig. 599
Socket Clamp
For Ductile Iron or
Cast Iron Pipe
& Socket Clamp Washer
Size Range: 3" - 24" pipe

PIPE HANGERS (Continued)

Beam Clamps


Fig. 86 & 88
C-Clamp with Set Screw and Lock Nut
Size Range: 3/8" - 3/4"


Fig. 95
C-Clamp with Lock Nut
Sizes: 3/8" and 1/2"


Fig. 89
Retaining Clip
Size Range: 3/8" - 1/2"


Fig. 89X
Retaining Clip
Size Range: 3/8" - 3/4"


Fig. 92
Universal C-Type Clamp
Standard Throat
Sizes: 3/8" and 1/2"


Fig. 93
Universal C-Type Clamp
Wide Throat
Sizes: 3/8" and 1/2"


Fig. 94
Wide Throat Top Beam C-Clamp
Sizes: 5/8" and 3/4"


Fig. 227
Top Beam Clamp


Fig. 217
Adjustable Side Beam Clamp
Size Range: 3" - 7 5/8"


Fig. 14
Adjustable Side Beam Clamp
Sizes: 3/8" - 5/8"


Fig. 133
Standard Duty Beam Clamp
Size Range: 4" - 12"


Fig. 134
Heavy Duty Beam Clamp
Size Range: 4" - 12"


Fig. 218
Malleable Beam Clamp without Extension Piece


Fig. 228
Universal Forged Steel Beam Clamp


Fig. 292 & 292L
Beam Clamp with Weldless Eye Nut

Trapeze


Fig. 46
Universal Trapeze Assembly


Fig. 45
Channel Assembly


Fig. 50
Equal Leg Angle for Trapeze Assembly

Brackets


Fig. 202
Iron Side Beam Bracket
Size Range: 3/8" - 5/8"


Fig. 206
Steel Side Beam Bracket
Size Range: 3/8" - 5/8"


Fig. 207
Threaded Steel Side Beam Bracket
Sizes: 3/8" and 1/2"


Fig. 194
Light Welded Steel Bracket


Fig. 195
Medium Welded Steel Bracket


Fig. 199
Heavy Welded Steel Bracket

Ceiling Plates & Flanges


Fig. 395
Cast Iron Ceiling Plate
Size Range: 1/2" - 8"


Fig. 127
Plastic Ceiling Plate
Sizes: 3/8" and 1/2"


Fig. 128R
Rod Threaded, Ceiling Flange
Sizes: 3/8" & 1/2"


Fig. 153
Pipe Hanger Flange
Size Range: 3/8" - 3/4"

U-Bolts


Fig. 137 & 137S
Standard U-Bolt
Size Range: 1/2" - 36"


Fig. 137C
Plastic Coated U-Bolt
Size Range: 1/2" - 8"


Fig. 120
Light Weight U-Bolt
Size Range: 1/2" - 10"

Structural Attachments


Fig. 55 & Fig. 55L
Structural Welding Lug
Size Range:
Fig. 55: 1/2" - 3 3/4"
Fig. 55L: 1/2" - 2"


Fig. 54
Two Hole Welding Beam Lug
Size Range: 1/2" - 2 1/4"

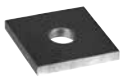


Fig. 60
Steel Washer Plate
Size Range: 3/8" - 3 3/4"


Fig. 66
Welded Beam Attachment
Size Range: 3/8" - 3 1/2"


Fig. 112 & 113
Brace Fitting Compete
Sizes: 1" and 1 1/4"

PIPE HANGERS (Continued)

Concrete Inserts & Attachments

Fig. 152
Screw Concrete Insert
Size Range: 3/8" - 7/8"

Fig. 282
Universal Concrete Insert
Size Range: 3/8" - 7/8"

Fig. 281
Wedge Type Concrete Insert
Size Range: 1/4" - 7/8"

Fig. 285
Light Weight Concrete Insert
Size Range: 1/4" - 5/8"

Fig. 286
Iron Cross Design
Size Range: 3/4" - 1 1/2"

Fig. 284
Metal Deck Hanger
Size Range: 3/8" - 3/4"

Fig. 52
Concrete Rod Attachment Plate
Size Range: 3/8" - 1 1/4"

Fig. 47
Concrete Single Lug Plate
Size Range: 1/2" - 2"

Fig. 49
Concrete Clevis Plate
Size Range: 3/8" - 1 3/4"

Pipe Supports

Fig. 62
Type A, B & C Pipe Stanchion
Size Range: 2" - 18"

Fig. 63
Type A, B & C Pipe Stanchion
Size Range: 2 1/2" - 42"

Fig. 192
Adjustable Pipe Saddle Support
Size Range: 2" - 12"

Fig. 191
Adjustable Pipe Saddle with U-Bolt
Size Range: 2" - 12"

Fig. 264
Adjustable Pipe Saddle Support
Size Range: 2 1/2" - 36"

Fig. 265
Adjustable Pipe Saddle Support
Size Range: 4" - 36"

Fig. 258
Stanchion Pipe Saddle Support
Size Range: 4" - 36"

Fig. 259
Adjustable Pipe Saddle Support
Size Range: 4" - 36"

Hanger Rods & Accessories

Fig. 142
Coach Screw Rods Machine Threaded on Opposite End
Sizes: 3/8" and 1/2"

Fig. 146
Continuous Thread
Sizes: 1/4" - 1 1/2"
Stocked in six, ten & twelve foot lengths. Other even foot lengths can be furnished to order.

Fig. 140 & 253
Machine Threaded Rods Threaded Both Ends
Sizes: 3/8" - 5"

Fig. 248 & 248L
Eye Rod Not Welded
Size Range: 3/8" - 2 1/2"

Fig. 278 & 278L
Eye Rod Welded
Size Range: 3/8" - 2 1/2"

Fig. 248X
Linked Eye Rods
Size Range: 3/8" - 2 1/2"

Fig. 278X
Linked Eye Rods Welded
Size Range: 3/8" - 2 1/2"

Fig. 148
Rod with Eye End
Size Range: 2 3/4" - 5"

Fig. 135, 135E & 135R
Rod Coupling
Size Range:
Fig. 135: 3/8" - 1"
Fig. 135E: 1/4" - 1"
Fig. 135R: 3/8" x 1/4" - 7/8" x 3/4"

Fig. 136 & 136R
Straight Rod Coupling
Size Range: 1/4" - 1"

Fig. 114
Turnbuckle Adjuster
Size Range: 1/4" - 3/4"

Fig. 110R
Socket, Rod Threaded
Size Range: 1/4" - 7/8"

Fig. 157
Extension Piece
Size Range: 3/8" - 7/8"

Fig. 299
Forged Steel Clevis
Size Range: 3/8" - 4"

Fig. 233
Turnbuckle
Size Range: 1 1/4" - 5"

Fig. 230
Turnbuckle
Size Range: 3/8" - 2 1/2"

Fig. 290 & 290L
Weldless Eye Nut
Size Range: 3/8" - 2 1/2"

Fig. 291
Clevis Pin with Cotters
Size Range: 1/2" - 4"

Pipe Rings

Fig. 108
Split Pipe Ring
Size Range: 3/8" - 8"

Fig. 138R
Extension Split Pipe Clamp
Size Range: 3/8" - 3"

Fig. 104
Adjustable Swivel Ring, Split Ring Type
Size Range: 3/8" - 8"

Fig. 69
Adjustable Swivel Ring
Size Range: 1/2" - 8"

PIPE HANGERS (Continued)

Straps

Fig. 126
One-Hole Clamp
Size Range: 3/8" - 4"

Fig. 262
Strap Short
Size Range: 1/2" - 4"

Fig. 243
Pipe Strap
Size Range: 1/2" - 6" pipe

Fig. 244
Pipe Strap
Size Range: 1/2" - 6" pipe

Pipe Rolls

Fig. 177
Adjustable Pipe
Roll Support
Size Range: 1" - 30"

Fig. 171
Single Pipe Roll
Size Range: 1" - 30"

Fig. 178
Spring Cushion Hanger

Fig. 181
Adjustable Steel Yoke
Pipe Roll
Size Range: 2 1/2" - 24"

Fig. 175
Roller Chair
Size Range: 2" - 30" pipe

Fig. 277
Pipe Roll & Base Plate
Size Range: 2" - 24"

Fig. 271
Pipe Roll Stand
Size Range: 2" - 42"

Fig. 274, 274P & 275
Adjustable Pipe
Roll Stand
Size Range: 2" - 42"

Fig. 75LL
Longitudinal &
Lateral Roller

Fig. 76CP
Non-Conducive Roller

Pipe Guides & Slides

Fig. 255
Pipe Alignment Guide
Size Range: 1" - 24" and Insulation Thickness of 1" thru 4" (Also available in copper tube sizes)

Fig. 256
Pipe Alignment Guide
Size Range: 1" - 24" Pipe and Insulation Thickness of 1" thru 4"

Fig. 257 & 257A
Structural Tee
Slide Assembly
Size Range: All Sizes within Maximum Load Rating

Fig. 436 & 436A
Fabricated Tee
Slide Assembly
Size Range: All Sizes within Maximum Load Rating

Fig. 439 & 439A
Structural "H"
Slide Assembly
Size Range: 6" - 36"

Fig. 432
Special Clamp
Size Range: 2" - 24"

Fig. 212
Medium Pipe Clamp
Size Range: 2" - 30"

Fig. HS436

Sway Strut Assembly

Fig. 211, C-211,
640, C-640
Sway Strut Assembly

Fig. 222 & C-222
Mini-Sway Strut
Assembly

Spring Hangers

Fig. 82 & C-82
Short Spring

Fig. B-268 & C-268
Standard Spring

Triple Spring,
Triple Spring-CR

Fig. 98 & C-98
Double Spring

Quadruple Spring,
Quadruple Spring-CR

Constant Supports

Model R 80-V
Vertical Constant
Support

Model R 81-H
Horizontal Constant
Support

Size Range: Anvil Model R constant support hangers are made in two basic designs, 80-V & 81-H constant supports are made in nine different frame sizes & 110 spring sizes to accomodate travels from 1 1/2" to 20" & loads from 27 lbs to 87,500 lbs.

PIPE HANGERS (Continued)

Snubbers

Fig. 3306 & 3307
Hydraulic Shock & Sway Suppressor (Snubber)
Size Range: Seven Standard Sizes with Load Ratings from 350 to 120,000 (LBS).

Fig. 312
Tapered Pin
Size Range: 3/8" - 2 1/2"

Fig. 200 & C-200 / Fig. 201 & C-201
Hydraulic Shock & Sway Suppresor (Snubber)
Size Range: Nine standard sizes with load ratings from 3,000 (LBS) to 128,000 (LBS).

Horizontal Traveler & Sway Brace

Fig. 170
Horizontal Traveler
Size Range: Available in Four Sizes to Take Loads to 20,700 (LBS). All sizes provide for 12" of Horizontal Travel.

Fig. 296, 297, 298, 301, 302 & 303
Sway Brace
Size Range: Pre-Loads from 50 to 1,800 Pounds & maximum forces from 200 to 7,200 Pounds.

Stainless Steel Hangers

Fig. 137SS
Standard U-Bolt
Size Range: 1/2" - 12"

Fig. 260SS
Adjustable Clevis Hanger
Size Range: 1/2" - 12"

Fig. 261SS
Extension Pipe or Riser Clamp
Size Range: 1/2" - 8"

Fig. 590SS
Adjustable Clevis for D.I. or C.I. Pipe
Size Range: 4" - 12"

PIPE HANGERS • SWAY BRACE - SEISMIC

Pipe Brace Clamps

Fig. 770
Q Brace Clamp
Size Range: 1" - 6"
Service Pipe

Fig. 776
Brace Clamp
Size Range: 2 1/2" - 8"
Service Pipe

Fig. 775
Lateral/Longitudinal Brace Clamp
Size Range: 2 1/2" - 8"
Service Pipe

Structural Attachments

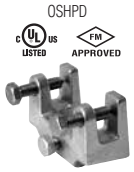


Fig. 778
Bar Joist and Beam Attachment (WF)
Size Range: Flange Thickness 1/8" thru 3/4"

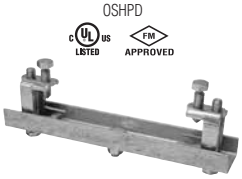


Fig. 772
Adjustable Steel Beam Attachment
Size Range: Flange Widths 4" thru 15"

Fig. 779
Multi-Connector Adapter
Size Range: 1" - 8"
Service Pipe

Restraints

Fig. 773
Surge Restrainer
Size Range: 3/4" - 2"
Swivel Ring Hanger

Fig. 777
Swivel Joint Connector Rod Tap
Size Range: 3/8" Rod Diameter

Sway Brace Attachment

Fig. 771
Sway Brace Swivel Attachment
Size Range: 1" and 1 1/4" Brace Pipe

Refer to www.anvilintl.com/OPA for State of California Office of Statewide Health Planning and Development (OSHPD) for design information relating to OSHPD projects.

ANVIL-STRUT™
A BRAND OF ANVIL INTERNATIONAL

Channels

AS 100
Channel
Size: 1 5/8" x 3 1/4" x 12 GA.

AS 100EH
Channel with Elongated Holes
Size: 1 5/8" x 3 1/4" x 12 GA.
9/16" x 1 1/8" Elongated Holes on 2" Centers.

AS 100KO
Channel with Knock Outs
Size: 1 5/8" x 3 1/4" x 12 GA.
7/8" Knock Outs on 6" Centers.

AS 100H
Channel with Holes
Size: 1 5/8" x 3 1/4" x 12 GA.
9/16" Holes on 1 7/8" Centers.

AS 100S
Channel with Long Slots
Size: 1 5/8" x 3 1/4" x 12 GA.
13/32" x 3" Slots on 4" Centers

AS 100BTB
Welded Channel
Size: 1 5/8" x 6 1/2" x 12 GA.
Two Pcs. AS 100 Welded Back-to-Back.

AS 150
Channel
Size: 1 5/8" x 2 7/16" x 12 GA.

AS 150EH
Channel with Elongated Holes
Size: 1 5/8" x 2 7/16" x 12 GA.
9/16" x 1 1/8" Elongated Holes on 2" Centers.

AS 150KO
Channel with Knock Outs
Size: 1 5/8" x 2 7/16" x 12 GA.
7/8" Knock Outs on 6" Centers.

AS 150H
Channel with Holes
Size: 1 5/8" x 2 7/16" x 12 GA.
9/16" Holes on 1 7/8" Centers.

AS 150S
Channel with Long Slots
Size: 1 5/8" x 2 7/16" x 12 GA.
13/32" x 3" Slots on 4" Centers.

AS 150BTB
Welded Channel
Size: 1 5/8" x 4 7/8" x 12 GA.
Two Pcs. AS 150 Welded Back-to-Back.

AS 200
Channel
Size: 1 5/8" x 1 5/8" x 12 GA.

AS 200EH
Channel with Elongated Holes
Size: 1 5/8" x 1 5/8" x 12 GA.
9/16" x 1 1/8" Elongated Holes on 2" Centers.

AS 200KO
Channel with Knock Outs
Size: 1 5/8" x 1 5/8" x 12 GA.
7/8" Knock Outs on 6" Centers.

AS 200H
Channel with Holes
Size: 1 5/8" x 1 5/8" x 12 GA.
9/16" Holes on 1 7/8" Centers.

AS 200S
Channel with Long Slots
Size: 1 5/8" x 1 5/8" x 12 GA.
13/32" x 3" Slots on 4" Centers.

AS 200H3
Channel with Holes on all Three Sides
Size: 1 5/8" x 1 5/8" x 12 GA.
9/16" Holes on all three sides are on 1 7/8" Centers.

AS 200BTB
Welded Channel
Size: 1 5/8" x 3 1/4" x 12 GA.
Two Pcs. AS 200 Welded Back-to-Back.

AS 200EH BTB
Welded Channel
Size: 1 5/8" x 3 1/4" x 12 GA.
Two Pcs. AS 200EH Welded Back-to-Back.
9/16" x 1 1/8" Elongated Holes on 2" Centers.

AS 200STS
Welded Channel
Size: 1 5/8" x 3 1/4" x 12 GA.
Two Pcs. AS 200 Welded Back-to-Back.

AS 200BTS
Welded Channel
Size: 1 5/8" x 3 1/4" x 12 GA.
Two Pcs. AS 200 Welded Side-to-Back.

AS 200STSR
Welded Channel
Size: 1 5/8" x 3 1/4" x 12 GA.
Two Pcs. AS 200 Welded Side-to-Opposite Side.

AS 210
Channel
Size: 1 5/8" x 1 5/8" x 14 GA.

AS 210EH
Channel with Elongated Holes
Size: 1 5/8" x 1 5/8" x 14 GA.
9/16" x 1 1/8" Elongated Holes on 2" Centers.

AS 210KO
Channel with Knock Outs
Size: 1 5/8" x 1 5/8" x 14 GA.
7/8" Knock Outs on 6" Centers.

AS 210H
Channel with Holes
Size: 1 5/8" x 1 5/8" x 14 GA.
9/16" Holes on 1 7/8" Centers.

AS 210S
Channel with Long Slots
Size: 1 5/8" x 1 5/8" x 14 GA.
13/32" x 3" Slots on 4" Centers.

AS 210BTB
Welded Channel
Size: 1 5/8" x 3 1/4" x 14 GA.
Two Pcs. AS 210 Welded Back-to-Back.

AS 300
Channel
Size: 1 5/8" x 1 3/8" x 12 GA.

AS 300EH
Channel with Elongated Holes
Size: 1 5/8" x 1 3/8" x 12 GA.
9/16" x 1 1/8" Elongated Holes on 2" Centers.

AS 300KO
Channel with Knock Outs
Size: 1 5/8" x 1 3/8" x 12 GA.
7/8" Knock Outs on 6" Centers.

AS 300H
Channel with Holes
Size: 1 5/8" x 1 3/8" x 12 GA.
9/16" Holes on 1 7/8" Centers.

AS 300S
Channel with Long Slots
Size: 1 5/8" x 1 3/8" x 12 GA.
13/32" x 3" Slots on 4" Centers.

AS 300BTB
Welded Channel
Size: 1 5/8" x 2 3/4" x 12 GA.
Two Pcs. AS 300 Welded Back-to-Back.

ANVIL-STRUT™ (Continued)

Channels *(continued)*

AS 400
Channel
Size: 1⅝" x 1" x 12 GA.

AS 400EH
Channel with Elongated Holes
Size: 1⅝" x 1" x 12 GA.
9/16" x 1⅛" Elongated Holes on 2" Centers.

AS 400KO
Channel with Knock Outs
Size: 1⅝" x 1" x 12 GA.
⅞" Knock Outs on 6" Centers.

AS 400H
Channel with Holes
Size: 1⅝" x 1" x 12 GA.
9/16" Holes on 1⅞" Centers.

AS 400S
Channel with Long Slots
Size: 1⅝" x 1" x 12 GA.
13/32" x 3" Slots on 4" Centers.

AS 400BTB
Welded Channel
Size: 1⅝" x 2" x 12 GA.
Two Pcs. AS 400 Welded Back-to-Back.

AS 500
Channel
Size: 1⅝" x 13/16" x 14 GA.

AS 500EH
Channel with Elongated Holes
Size: 1⅝" x 13/16" x 14 GA.
9/16" x 1⅛" Elongated Holes on 2" Centers.

AS 500H
Channel with Holes
Size: 1⅝" x 13/16" x 14 GA.
9/16" Holes on 1⅞" Centers.

AS 500S
Channel with Long Slots
Size: 1⅝" x 13/16" x 14 GA.
13/32" x 3" Slots on 4" Centers.

AS 500BTB
Welded Channel
Size: 1⅝" x 1⅝" x 14 GA.
Two Pcs. AS 500 Welded Back-to-Back.

AS 520
Channel
Size: 1⅝" x 13/16" x 12 GA.

AS 520EH
Channel with Elongated Holes
Size: 1⅝" x 13/16" x 12 GA.
9/16" x 1⅛" Elongated Holes on 2" Centers.

AS 520H
Channel with Holes
Size: 1⅝" x 13/16" x 12 GA.
9/16" Holes on 1⅞" Centers.

AS 520S
Channel with Long Slots
Size: 1⅝" x 13/16" x 12 GA.
13/32" x 3" Slots on 4" Centers.

AS 520BTB
Welded Channel
Size: 1⅝" x 1⅝" x 12 GA.
Two Pcs. AS 520 Welded Back-to-Back.

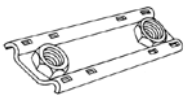
AS 560
Channel
Size: 1⅝" x 13/16" x 16 GA.

AS 560EH
Channel with Elongated Holes
Size: 1⅝" x 13/16" x 16 GA.
9/16" x 1⅛" Elongated Holes on 2" Centers.

AS 707
Metal Raceway Closure Strip
For All 1⅝" Width Channels.
(10' Length)

AS 707P
Metal Painted Closure Strip
For All 1⅝" Width Channels.
(10' Length)

Channel Hardware



AS 3281
Double Conveyer Adjusting Nut
Use with all 1⅝" wide channel

AS 83
Hexagon Nut

Fig. 135
Rod Coupling

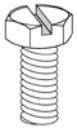
Fig. 146
Continuous Threaded Rod

AS 209
Flat Washer

AS 203
Linked Eyelet with Stud

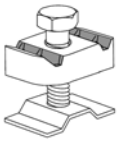
AS 211
Lock Washer

AS 230
Fender Washer

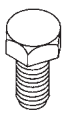


AS 6075
Slotted Hex Head Machine Screw

AS 6108
Square Nut



AS 3500
Seismic Rod Stiffener



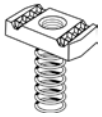
AS 6024
Hex Head Cap Screw

Channel Nuts

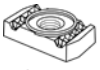
AS NS - Clamping Nut without Spring
Use with all 1⅝" wide channel

AS SS - Clamping Nut with Short Spring
Use with AS 400 and AS 500

AS RS - Clamping Nut with Regular Spring
Use with AS 200, AS 210 and AS 300



AS LS - Clamping Nut with Long Spring
Use with AS 100 & AS 150



AS TG - Top Grip Nut with Spring on Top
Use with all 1⅝" wide channel

AS 517
Stud Nut with RS Spring

ANVIL-STRUT™ (Continued)

Clamps & Accessories

AS 85
Rod or Insulator Support

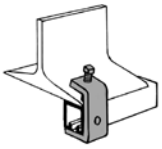
Fig. 86
Clamp with Lock Nut

Fig. 93
Top Beam "C" Clamp
Size Range: 3/8" - 1/2"

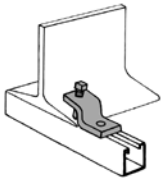
Fig. 94
Top Beam "C" Clamp
Size Range: 5/8" - 3/4"

Fig. 95
Clamp with Lock Nut

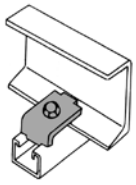
AS 135X
Light Duty Beam Clamp



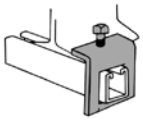
AS 684
Beam Clamp



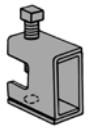
AS 685
Beam Clamp



AS 686
Beam Clamp



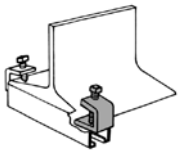
AS 855
Angular "C" Beam Clamp
AS 855 1 - Use with AS 200 and AS 210.
AS 855 2 - Use with AS 500.



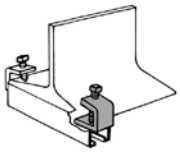
AS 858
Heavy Duty Suspension Rod Beam Clamp
Safety Anchor Strap AS 871 sold separately.

AS 865
Wide Throat Heavy Duty Beam Clamp
Safety Anchor Strap AS 871 sold separately.

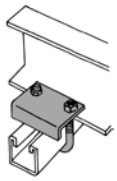
AS 871
Safety Anchor Strap
(For Heavy Duty Beam Clamps)



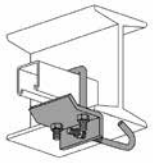
AS 907
"I" Beam Clamp
Includes Cup Point Set Screw.



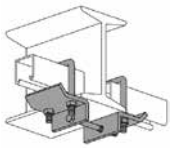
AS 998
"I" Beam Clamp
Includes Set Screw.



AS 2651
Beam Clamp



AS 2656
"U" Bolt Beam Clamp with Hook



AS 2657
Double "U" Bolt Beam Clamp

Splice Clevis

AS 631
Two Hole Splice Clevis
Use with AS 200 & AS 210.

AS 644
Two Hole Splice Clevis
Use with AS 500 & AS 520.

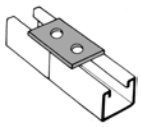
AS 629
Three Hole Splice Clevis
Use with AS 200 & AS 210.

AS 645
Three Hole Splice Clevis
Use with AS 500 & AS 520.

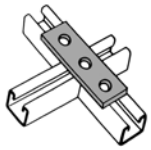
AS 616
Four Hole Splice Clevis
Use with AS 200 & AS 210.

AS 646
Four Hole Splice Clevis
Use with AS 500.

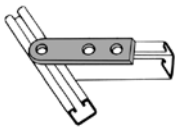
Plates



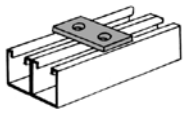
AS 601
Two Hole Splice Plate



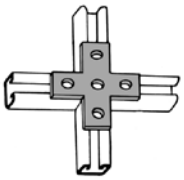
AS 602
Three Hole Splice Plate



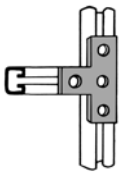
AS 617
Three Hole Swivel Plate



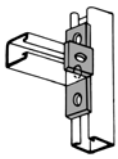
AS 620
Two Hole Connecting Plate



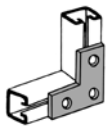
AS 712
Cross Plate



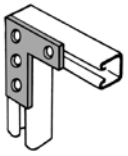
AS 714
"T" Plate



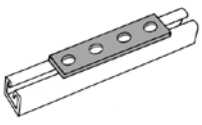
AS 715
"T" Plate - 90°



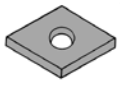
AS 718
Flat Angle Plate



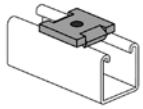
AS 719
Four Hole Corner Plate



AS 888
Four Hole Splice Plate



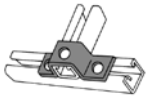
AS 619
Square Washer



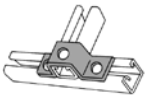
AS 2504
Square Washer with Channel Guide

ANVIL-STRUT™ (Continued)

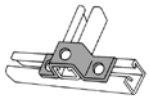
"U" Supports



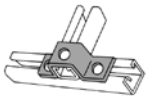
AS 613
"U" Support
Use with AS 200, AS 210 and AS 500BTB.



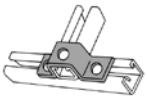
AS 679
"U" Support
Use with AS 100, AS 200BTB and AS 210BTB.



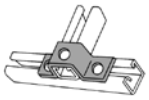
AS 710
"U" Support
Use with AS 300.



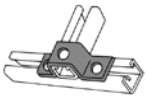
AS 929
"U" Support
Use with AS 500 & AS 520.



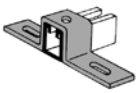
AS 978
"U" Support
Use with AS 400.



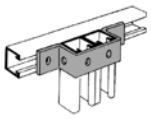
AS 2119
"U" Connector



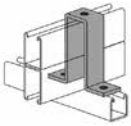
AS 2648
"U" Support
Use with AS 150.



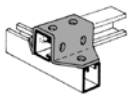
AS 687
Slotted "U" Support
Use with AS 200 & AS 210.



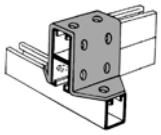
AS 721
"U" Support
Use with AS 100, AS 200BTB and AS 210BTB.



AS 678
Three Hole "U" Support
Use with AS 150BTB.

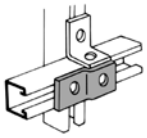


AS 733
Six Hole "U" Support
Use with AS 200 & AS 210.

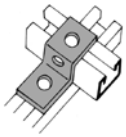


AS 735
Eight Hole "U" Support
Use with AS 200BTB.

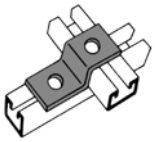
"Z" Supports



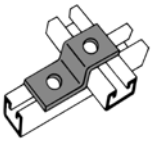
AS 609
Two Hole Offset "Z" Support



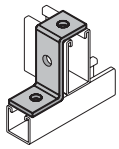
AS 611
"Z" Support
Use with AS 200, AS 210 and AS 500BTB.



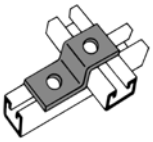
AS 612
"Z" Support
Use with AS 400.



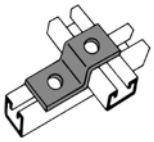
AS 711
"Z" Support
Use with AS 300.



AS 756
"Z" Support
Use with AS 100, AS 200BTB & AS 210BTB.

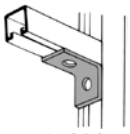


AS 928
"Z" Support
Use with AS 500 & AS 520.

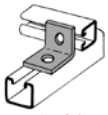


AS 2601
"Z" Support
Use with AS 150.

Angle Fittings and Connectors



AS 603
Two Hole End Angle

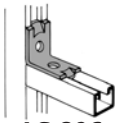


AS 604
Two Hole Corner Angle

AS 624
Two Hole Closed Angle Connector

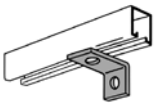
AS 633
Two Hole Open Angle Connector

AS 763, AS 764
Slotted Adjustment Corner Angle



AS 806
Two Hole Angle with Impressions on Both Legs

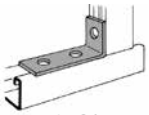
AS 921
One Hole Angle



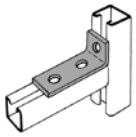
AS 2144
Corner Angle

AS 2520
Two Hole Adjustment Angle

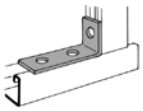
AS 2545
Slotted 90˚ Angle



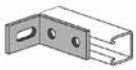
AS 605
Three Hole Corner Angle



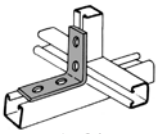
AS 606
Three Hole Corner Angle



AS 745
Three Hole Corner Angle

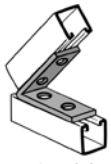


AS 3049
Two Hole Slotted 90˚ Corner Connector

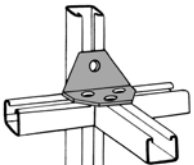


AS 607
Four Hole Corner Angle

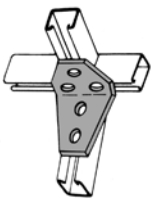
AS 781
Four Hole Open Angle Connector



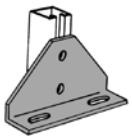
AS 793
Four Hole Closed Angle Connector



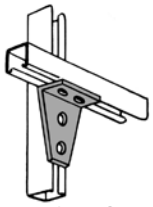
AS 614
Four Hole Joint Corner Connector



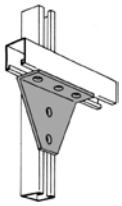
AS 615
Four Hole Shelf Joint Angle Connector



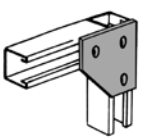
AS 689
Adjustable Double Slotted Corner Connector



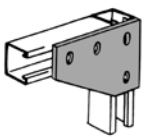
AS 748
Four Hole Corner Joint Connector



AS 927
Five Hole Corner Connector



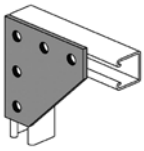
AS 744
Flat Corner Connector



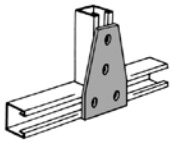
AS 750
Four Hole Corner Connector

ANVIL-STRUT™ (Continued)

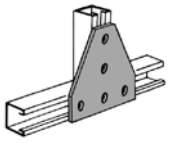
Angle Fittings and Connectors *(continued)*



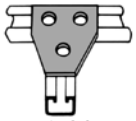
AS 2190
Flat Corner Connector



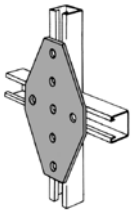
AS 747
Symmetrical Four Hole Connector



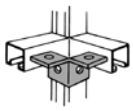
AS 854
Flat Connector



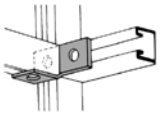
AS 925
Symmetrical Three Hole Joint Connector



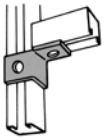
AS 2112
Cross Connector



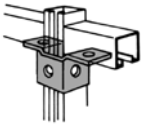
AS 665
Four Hole Double Corner Connector



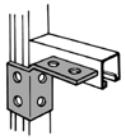
AS 720
RH & LH Angle Plate Connector



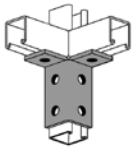
AS 922 RH & LH
Two Hole Single Corner Angle Connector



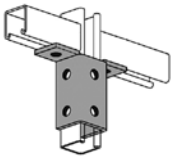
AS 923
Five Hole Two Angle Connector



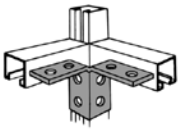
AS 2128 RH & LH
Six Hole Corner Connector



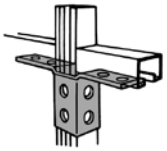
AS 666
Six Hole Double Corner Connector



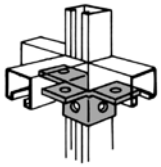
AS 821
Eight Hole Double Angle Connector



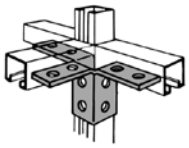
AS 667
Eight Hole Double Corner Connector



AS 913
Ten Hole Two Angle Clevis Connector

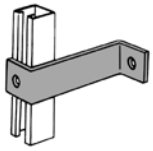


AS 668
Six Hole Three Angle Connector



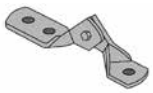
AS 669
Twelve Hole Three Angle Clevis Connector

AS 2560 & AS 2561
Conduit Connector Fitting Assembly

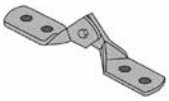


AS 3060
Offset Connector

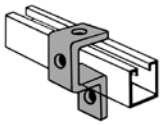
AS 9402
Two Hole Hinge Connector



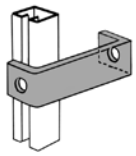
AS 9403
Three Hole Hinge Connector



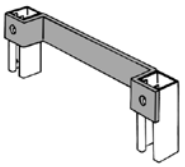
AS 9404
Four Hole Hinge Connector



AS 677
Cup Support for Standard Single Strut
Use with AS 200 and AS 210.

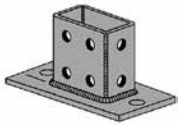


AS 993
Inside Clevis

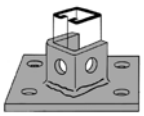


AS 2401 thru AS 2403
Ladder Rung

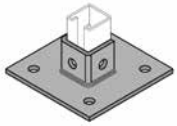
Post Bases



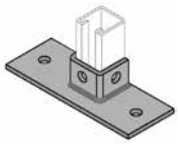
AS 2064
Double Column Post Base
Use with AS 100, AS 200BTB, AS 200STS, AS 200BTS and AS 200STR Channel



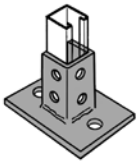
AS 3013
Single Column Post Base
Use with AS 200 and AS 210 Channel.



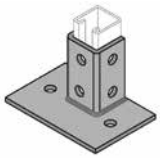
AS 3013 SQ
Single Column Post Base
Use with AS 200 and AS 210 Channel.



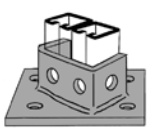
AS 3013 FL
Single Column Post Base
Use with AS 200 and AS 210 Channel.



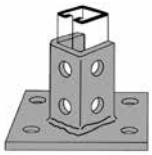
AS 3025
Post Base
Use with AS 200 and AS 210 Channel.



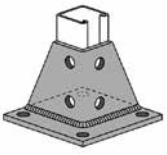
AS 3025 FL
Post Base
Use with AS 200 and AS 210 Channel.



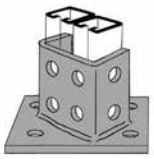
AS 3029
Double Column Post Base
Use with all 3¼" Channels.



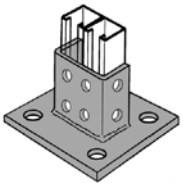
AS 3033
Post Base
Use with AS 200 and AS 210 Channel.



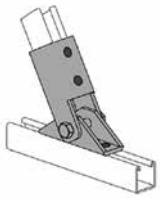
AS 3040
Post Base
Use with AS 200 and AS 210 Channel.



AS 3064
Double Column Post Base
Use with all 3¼" Channels.



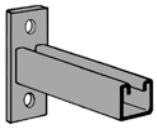
AS 3064 SQ
Double Column Post Base
Use with all 3¼" Channels.



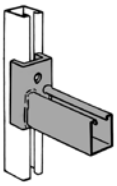
AS 9400
Adjustable Base

ANVIL-STRUT™ (Continued)

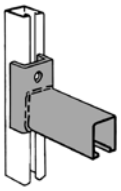
Brackets



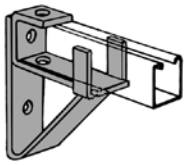
AS 651
Reversible Strut Bracket



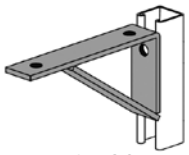
AS 661 T1
Strut Bracket
(Slot Up)



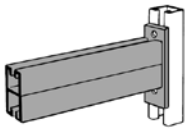
AS 661 T2
Strut Bracket
(Slot Down)



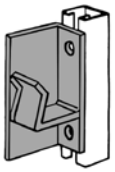
AS 708
Single Channel
Bracket Support
Use with AS 200, AS 210 and AS 500BTB.



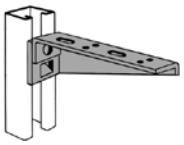
AS 732
Shelf Bracket



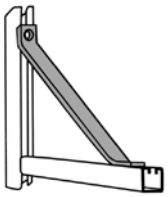
AS 809
Double Channel Bracket



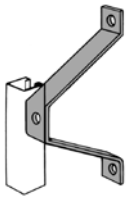
AS 825 RH/LH
Pipe Axle Support



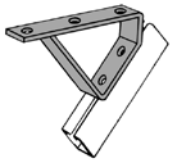
AS 838 RH/LH
6" thru 30" Shelf Bracket



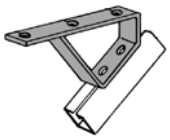
AS 926
Strut Brace



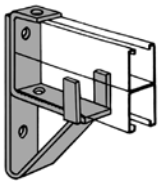
AS 2404 thru AS 2408
Wall Ladder Bracket



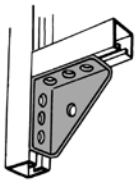
AS 2421
45° Stair Tread Support



AS 2422
34½° Stair Tread Support

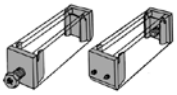


AS 3164
Double Channel
Bracket Support
Use with all 3¼" Channels.



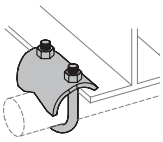
AS 3373
Universal Angle Bracket

AS 2627
Spacer Clevis



AS 2654 & AS 2654A
Column Attachment

Pipe and Conduit Supports



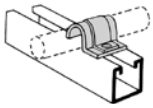
AS 51
Right Angle Pipe or
Conduit Clamp

Fig. 67
Pipe or Conduit Hanger

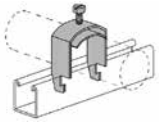
Fig. 69
Swivel Ring Hanger

Fig. 137
"U" Bolt with Nuts
Long Tangent

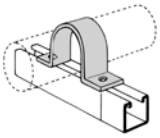
AS 270
Conduit Clamp



AS 1450
One Hole Clamp for
O.D. Tubing



AS 3101 thru AS 3115
One Piece Cable and
Conduit Clamp



AS 3126
Hold Down Clamp

AS 1000
EMT Conduit Clamps
Offered in Pre-Assembled only.

AS 1100
Rigid Steel Conduit Clamps
Offered in Pre-Assembled only.

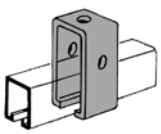
AS 1200
O.D. Tubing Clamp
Offered in Pre-Assembled only.

AS 1300
Universal Pipe Clamp
Offered in Pre-Assembled only.

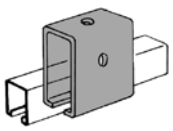
Trolleys & Accessories

AS 2521
Two Wheel Trolley
Use with AS 200 Channel.

AS 2522
Four Wheel Trolley
Use with AS 200 Channel.



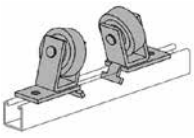
AS 2528
Trolley Beam Standard Support
Use with AS 200 and AS 210 Channel.



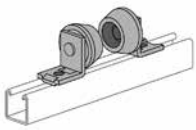
AS 2528-1
Trolley Beam Joint Support
Use with AS 200 and AS 210 Channel.

ANVIL-STRUT™ (Continued)

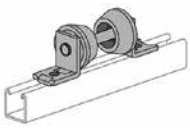
Pipe and Conduit Supports *(continued)*



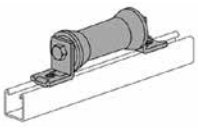
AS 815
(6" to 18" Pipe)
Double Roller Pipe Support



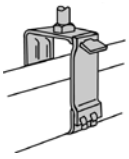
AS 1901
(1" to 8" Pipe)
Pipe Roller Support



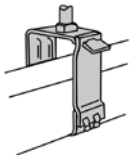
AS 1902
(1" to 8" Pipe)
Pipe Roller Support



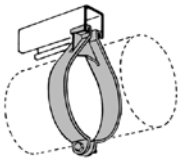
AS 1911
(2" to 14" Pipe)
Pipe Roller Support



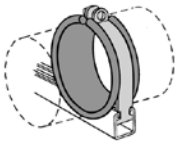
AS 2631
Swing Gate Fixture Hanger
Use with AS 200, AS 210, AS 300, AS 400 and AS 500 Channels.



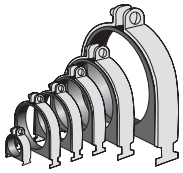
AS 2631D
Swing Gate Fixture Hanger
Use with AS 100, AS 150, AS 200BTB and AS 210BTB Channels.



AS 3138
Parallel Pipe Clamp



AS 3792
Cushion Strip



AS 0040D thru AS 106P
Cushion Clamp Assembly

Klo-Shure® Strut-Mounted
Insulation Couplings with Strut Clamp

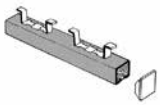
Klo-Shure® Strut-Mounted
Insulation Couplings with Non Metallic Strut Clamp

Klo-Shure® Strut-Mounted
Insulation Couplings for Fiberglass Insulation

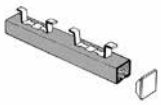
Concrete Inserts

Fig. 152
Screw Concrete Insert

Fig. 285
Light Weight Concrete Insert



AS 349
Continuous Concrete Insert
with or without Closure Strip and End Cap Installed.



AS 449
Continuous Concrete Insert
with or without Closure Strip and End Cap Installed.

AS 6151
Plastic Closure Strip

End Caps

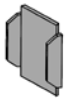
AS 653
Type "B" End Cap Anchor
Use with AS 349 Insert.

AS 654
Type "B" End Cap Anchor
Use with AS 449 Insert.

AS 655 & AS 656
Type "A" End Cap
Use with AS 200 Channel. Use with AS 300 Channel and AS 349 Insert.

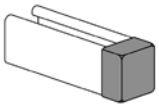
AS 901 & AS 902
Type "A" End Cap
Use with AS 100 and AS 400 Channel.

AS 930
Type "A" End Cap
Use with AS 500 Channel.



AS 2580
Type "A" End Cap
Use with AS 150 Channel.

AS 2511
End Cap with Knockout
AS 2511 1 – Use with AS 100.
AS 2511 2 – Use with AS 200 and AS 210.
AS 2511 3 – Use with AS 300.



AS 6153
Safety End Cap
AS 6153 1 – Use with AS 100.
AS 6153 2 – Use with AS 200 and AS 210.
AS 6153 3 – Use with AS 300.
AS 6153 5 – Use with AS 500.

1. CONTROLLING PROVISIONS:
These terms and conditions shall control with respect to any purchase order or sale of Seller's products. No waiver, alteration or modification of these terms and conditions whether on Buyer's purchase order or otherwise shall be valid unless the waiver, alteration or modification is specifically accepted in writing and signed by an authorized representative of Seller.

2. DELIVERY:
Seller will make every effort to complete delivery of products as indicated on Seller's acceptance of an order, but Seller assumes no responsibility or liability, and will accept no backcharge, for loss or damage due to delay or inability to deliver caused by acts of God, war, labor difficulties, accident, delays of carriers, by contractors or suppliers, inability to obtain materials, shortages of fuel and energy, or any other causes of any kind whatever beyond the control of Seller. Seller may terminate any contract of sale of its products without liability of any nature, by written notice to Buyer, in the event that the delay in delivery or performance resulting from any of the aforesaid causes shall continue for a period of sixty (60) days. Under no circumstances shall Seller be liable for any special or consequential damages or for loss, damage, or expense (whether or not based on negligence) directly or indirectly arising from delays or failure to give notice of delay.

3. WARRANTY:
Seller warrants for one year from the date of shipment Seller's manufactured products to the extent that Seller will replace those having defects in material or workmanship when used for the purpose and in the manner which Seller recommends. If Seller examination shall disclose to its satisfaction that the products are defective, and an adjustment is required, the amount of such adjustment shall not exceed the net sales price of the defective products only and no allowance will be made for labor or expense of repairing or replacing defective products or workmanship of damage resulting from the same. Seller warrants the products which it sells of other manufacturers to the extent of the warranties of their respective makers. Where engineering design or fabrication work is supplied. Buyer's acceptance of Seller's design or of delivery of work shall relieve Seller of all further obligation, other than expressed in Seller's product warranty. THIS IS SELLER'S SOLE WARRANTY. SELLER MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FOR A PARTICULAR PURPOSE WHICH EXCEED SELLER'S AFORESTATED OBLIGATION ARE HEREBY DISCLAIMED BY SELLER AND EXCLUDED FROM THIS WARRANTY. Seller neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of its engineering designs or products. This warranty shall not apply to any products or parts of products which (a) have been repaired or altered outside of Seller's factory, in any manner: (b) have been subjected to misuse, negligence or accidents; (c) have been used in a manner contrary to Seller's instructions or recommendations. Seller shall not be responsible for design errors due to inaccurate or incomplete information supplied by Buyer or its representatives.

4. SELLER'S LIABILITY:
Seller will not be liable for any loss, damage, cost of repairs, incidental or consequential damages of any kind, whether based upon warranty (except for the obligation accepted by Seller under "Warranty" above), contract or negligence, arising in connection with the design, manufacture, sale, use or repair of the products or of the engineering designs supplied to Buyer.

5. RETURNS:
Seller cannot accept return of any products unless its written permission has been first obtained, in which case same will be credited subject to the following (a) All material returned must, on its arrival at Seller's Plant, be found to be in first-class condition; if not, cost of putting in saleable condition will be deducted from credit memoranda; (b) A handling charge deduction of twenty percent (20%) will be made from all credit memoranda issued for material returned; (c) Transportation charges, if not prepaid will be deducted from credit memoranda.

6. SHIPMENTS:
All products sent out will be carefully examined, counted and packed. The cost of any special packing or special handling caused by Buyer's requirements or requests shall be added to the amount of the order. No claim for shortages will be allowed unless made in writing within ten (10) days of receipt of a shipment.

Claims for products damaged or lost in transit should be made on the carrier, as Seller's responsibility ceases, and title passes, on delivery to the carrier.

7. SPECIAL PRODUCTS:
Orders covering special or nonstandard products are not subject to cancellation except on such terms as Seller may specify on application.

8. PRICES AND DESIGNS:
Prices and designs are subject to change without notice. All prices are F.O.B. Point of shipment, unless otherwise stated.

9. TAXES:
The amount of any sales, excise or other taxes, if any, applicable to the products covered by this order, shall be paid by Buyer unless Buyer provides Seller with an exemption certificate acceptance to the taxing authorities.

10. NUCLEAR PLANTS:
Where the products, engineering design or fabrication is for nuclear plant applications. Buyer agrees (a) to take all necessary steps to add Seller as an insured under the American Nuclear Insurers' (ANI) pool and under the Mutual Atomic Energy Reinsurance Pool (MAERP) for property damage and liability insurance and if necessary steps could have been taken, but are not taken, Buyer shall hold Seller harmless against all such losses which could have been thus covered (b) Buyer agrees to hold Seller harmless with respect to any personal injury (or death), property damage or other loss in a nuclear incident which is caused directly or indirectly by defective design, material, workmanship furnished by Buyer (or which could be so covered but with respect to which Buyer has elected to self-insure), and further agrees to waive subrogation by its carriers of such insurance against Seller, and (c) as to nuclear hazards for which Buyer cannot obtain insurance coverage, the liability of Seller for any personal injury (or death), property damage or other loss directly caused by defective design, material, or workmanship furnished by Seller shall not exceed the value at the time of the loss occurrence.

11. MINIMUM INVOICE:
Domestic: $100 plus transportation.
International: $500 plus transportation.

12. TERMS:
Cash, net 30 days unless otherwise specified.

NOTE: All orders are accepted on the basis of prices in effect at the time of shipment.

NOTICE: The prices and terms quoted, there will be added any manufacturers or sales tax payable on the transaction under any effective statute.

FREIGHT ALLOWANCE: All prices are F.O.B. point of shipment. On shipments weighing 2,500 pounds or more, rail freight or motor freight at the lowest published rate, is allowed to all continental U.S. rail points or all U.S. highway points listed in published tariffs (Alaska and Hawaii excluded). In no case will more than actual freight be allowed. Shipments (weighing less than 2,500 pounds) will be shipped prepaid. The buyer will be invoiced for freight costs at the applicable published class, exception or commodity rate(s) or charge(s). Anvil reserves the right to select the carrier for all shipments.

Victaulic®	Gruvlok®	Couplings & Gaskets
07	7400	Rigidlite® Coupling
07	7401	Rigidlok® Coupling
45/46	7084/7085	Flg x Grv Adapter-150/300#
72	7042	Outlet Coupling
75	7000	Lt. Wt. Flexible Coupling
77	7001	Flexible Coupling
78	7003	Hingelok® Coupling
99	7005	Roughneck® Coupling
741/743	7012/7013	Grooved Flange-150/300#
995/997	7305/7307	HDPE Coupling
ES	EG	End Guard Gasket
FS	FG	Flush Gap Gasket
Grade E	Grade E	Gasket EPDM
Grade L	Grade L	Gasket Silicone
Grade O	Grade O	Gasket Fluoroelastomer
Grade T	Grade T	Gasket Nitrile
HP-70	7004HPR	HPR Coupling
HP-70ES	7004EG	End Guard Coupling
107	74/7402	SlideLOK® Coupling
89	7004	Galvanized Coupling for Stainless Steel Pipe
44	7022	GruvRing Coupling
808	7377	Double Groove Coupling

Victaulic®	Gruvlok®	Fittings
10	7050	90° Ell
10-P	7050P	Plain-End 90° Ell
11	7051	45° Ell
12	7052	22 1/2° Ell
13	7053	11 1/4° Ell
20	7060	Tee
25	7061	Reducing Tee
29M	7063	Tee with Threaded Branch
29T	7064	Reducing Tee with Threaded Branch
30	7069	Lateral 45°
30R	7070	Reducing Lateral 45°
32	7066	True Wye
32R	7067	Reducing Tee Wye
33	7071	True Wye
43/40	7080/7081	Nipples, G x G/G x T
50	7072	Concentric Reducer
51	7073	Eccentric Reducer
52	7076	Reducer Groove x Thread
53	7077	Swaged Reducer Nipple
60	7074	Cap
80	7087	Female Threaded Adapter
100	7050LR	Long Radius 90° Ell
110	7051LR	Long Radius 45° Ell

Victaulic®	Gruvlok®	Fire Protection
001	7450	90° Ell (Short Pattern)
002	7460	Tee (Short Pattern)
75	7000A	Lt. Wt. Flexible Coupling
005	7400A	Lt. Wt. Rigid Coupling
27	7065	Standpipe Tee
61	7075	Bull Plug
96	7105	Sock-It® Reducing Tee
705W	7722-3A	UL/FM Butterfly Valve w/s
717	78FP	UL/FM Valve
750	7010	Reducing Coupling
920	7045	Clamp Tee Female, NPT Outlet
920	7046	Clamp Tee Grooved Outlet
920	7047/7048/7049	Clamp Cross
925	7044	Branch Outlet
961	7100	Sock-It® 90° Ell

Victaulic®	Gruvlok®	Mechanical
47	7088/7089	Di-Electric Nipple
155	7240	Expansion Joint
300	7700	Butterfly Valves
416	400G	Large Silent Check Valve
700	7600	Butterfly Valve
709	8000	Large Butterfly Valve
716	7811	Check Valve
721	7500	Ball Valve
730	7260	Tee Strainer
731	7250	Suction Diffuser
732	758, 768	Wye Strainer
789	GBV-G	Balancing Valve
NA	722	Triple Service Valve
NA	SF21-GF	Flex Connector, F x G
R-10F	7050RF	Base Ell Reducing, F x G
VE272	3006/C	Grooving Tools
VE416	3007	Grooving Tools

Copper Victaulic®	Gruvlok®	CTS Copper Product
607	6402	CTS SlideLOK Coupling
606	6400	Rigid Coupling - Copper
608	6721	Copper Butterfly Valve
610	6050	Copper 90° Ell
611	6051	Copper 45° Ell
620	6060	Copper Tee
625	6061	Copper Reducing Tee, G x G
626	6064	Copper Reducing Tee, G x C
641	6084	Flange - Copper
650	6072	Copper Conc. Reducer, G x G
652	6075	Copper Conc. Reducer, G x C
660	6074	Copper Cap
NA	7500B	Copper Ball Valve

Victaulic®	Gruvlok®	Stainless Steel
489	7400SS	Rigid Coupling - 316SS
89	7401	Rigid Coupling - Ductile Iron
20-SS	7060-SS04	Sch. 10 Tee 304L
20-SS-SW	7061-SS04	Sch. 10 Reducing Tee 304L
50-SSLT	7072-SS04	Sch. 10 Conc. Reducer 304L
51-SSLT	7073-SS04	Sch. 10 Ecc. Reducer 304L
60-SS	7074-SS04	Sch. 10 Cap 304L
100-SS	7050-SS04	Sch. 10 90° Ell 304L
110-SS	7051-SS04	Sch. 10 45° Ell 304L
721S	7500SS	SS Ball Valve

ANVIL® INTERNATIONAL

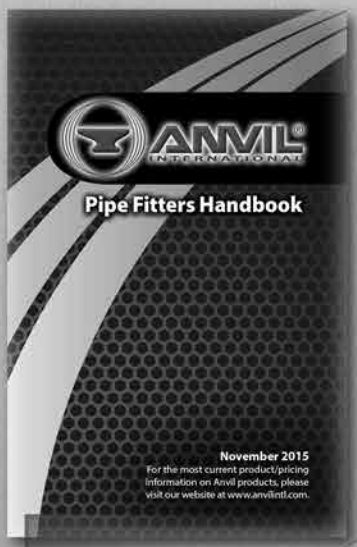
Building Connections That Last

www.anvilintl.com

Pipe Hangers & Support Catalog
Order Document #165

Pipe Fittings Catalog
Order Document #010

Anvil-Strut Metal Framing
Product & Engineering Catalog
Order Document #125



Pipe Fitters Handbook
Order Document #030

Gruvlok Mechanical
Piping Products Catalog
Order Document #040

BRANDS OF ANVIL INTERNATIONAL

ANVIL® INTERNATIONAL

Anvil product lines include malleable and cast iron fittings, unions and flanges; seamless and welded steel pipe nipples; steel pipe couplings; universal anvilets; forged steel fittings and unions; pipe hangers and supports; threaded rod; and engineered hangers.

GRUVLOK®

The Gruvlok product line consists of couplings for grooved and plain-end fittings, butterfly valves and check valves; flanges; pump protection components; pipe grooving tools; as well as copper and stainless steel system components.

SPF/ANVIL®

The SPF/Anvil product line includes a variety of internationally sourced products such as grooved couplings, fittings, cast iron, malleable iron and ductile iron threaded fittings, steel pipe nipples, as well as tee-lets.

Catawissa™
PERFORMANCE UNDER PRESSURE

Catawissa NACE and API approved hammer unions for Standard Service are offered in non-pressure seal ends as well as threaded and butt weld, and are interchangeable with most leading union manufacturers. Fully traceable and available with complete mill certifications, Catawissa's oilfield hammer union product line includes the standard ball-and-cone design plus our unique Figure 300 Flat Face design, where space and pipe line separation are a consideration.

ANVIL EPS
ENGINEERED PIPE SUPPORTS

Anvil EPS-Engineered Pipe Supports are products used to support piping systems under thermal, seismic, and other dynamic loading conditions. The product line encompasses variable spring hangers, constant supports, sway struts and snubbers as well as standard and special design clamps. Anvil EPS brings the highest quality products and innovative engineering solutions to common and uncommon piping system problems.

JBS™

JB Smith is the leading manufacturer of oil country tubular fittings, swages and bull plugs – all meeting API specifications. Offering tubing nipples, casing nipples as well as a full line of traditional line pipe and oil country threads in every schedule, JB Smith is the resource for all your oilfield needs.

MERIT®

The Merit product line includes a variety of tee-lets and drop nipples for fire protection applications. Most Merit products are UL/ULC Listed, FM Approved, and rated from 175 to 300 psi.

BECK®

Steel pipe nipples and steel pipe couplings are manufactured in accordance with the ASTM A733 Standard Specification for Welded and Seamless Carbon Steel and Stainless Steel Pipe Nipples. Steel pipe couplings are manufactured in accordance with the ASTM A865 Standard Specification for Threaded Couplings, Steel, Black or Zinc-Coated (Galvanized) Welded or Seamless, for Use in Steel Pipe Joints. API couplings are manufactured in accordance with the API Specification for line pipe.

ANVIL-STRUT™

Anvil-Strut products include a complete line of channel in stock lengths of 10 and 20 feet, with custom lengths available upon request. A variety of fittings and accessories are also offered. All products can be ordered in an assortment of finishes and material choices including SupR-Green™, Zinc Trivalent Chromium, pre-galvanized, hot-dipped galvanized, electro-galvanized, aluminum, plain, and stainless steel.

North Alabama Pipe

Founded in 1983, NAP is a manufacturer of fabrication equipment, including automatic welders, plasma cut-off equipment, hole cutting equipment, make-on machines and pipe threaders. NAP, innovators of pipe fabrication equipment.

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BUILDING CONNECTIONS THAT LAST