

Distributed by:



WESTLUND / EMCO

WATER SOLUTIONS



We Are Certified and Award Winning

SPECIALISTS SERVING SPECIALISTS



Westlund Water Solutions is the leading Canadian distributor of pipes, valves, fittings, and all related equipment found 'inside the fence' for wastewater treatment plants, reservoirs, and pumping stations.



Ontario Office: 905-624-4575
Alberta Office: 780-577-8808
WaterSolutions@WestlundPVF.com
www.everythinginsidethefence.com

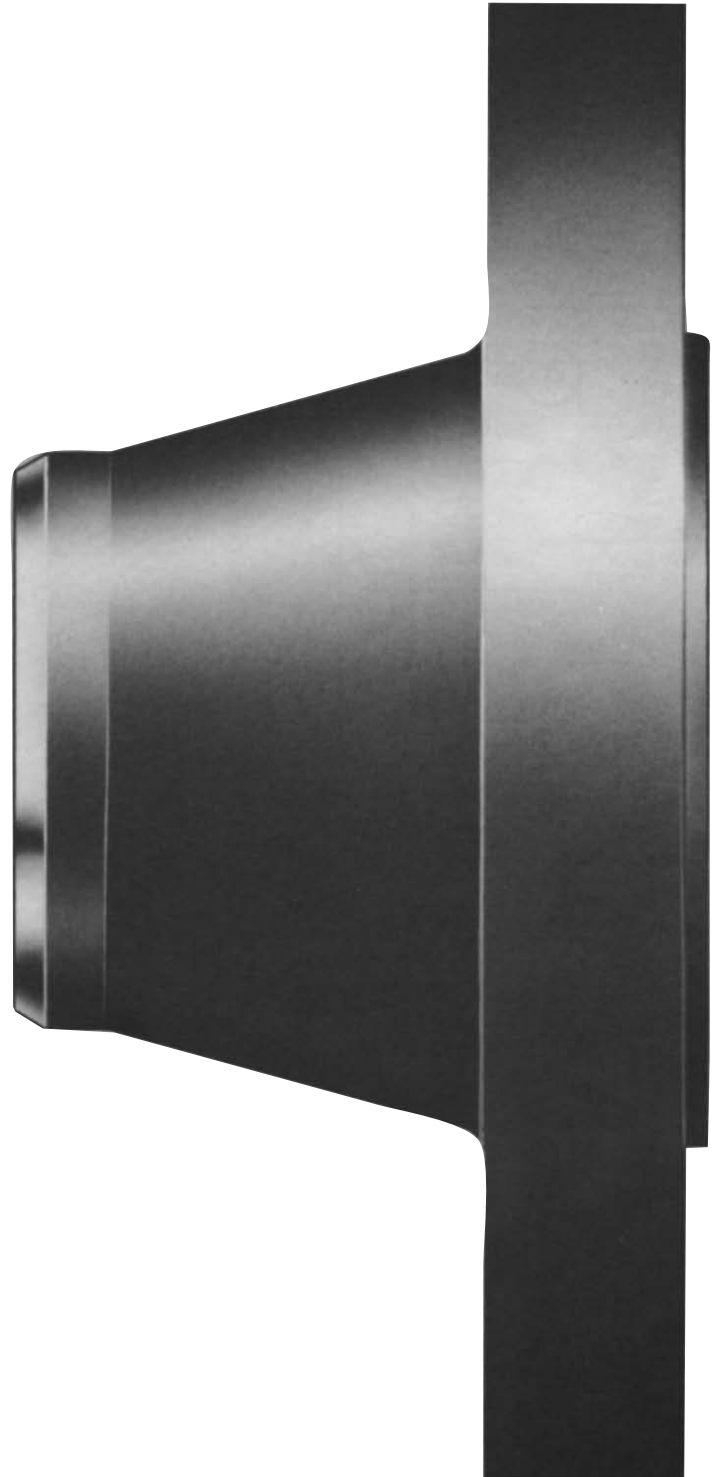


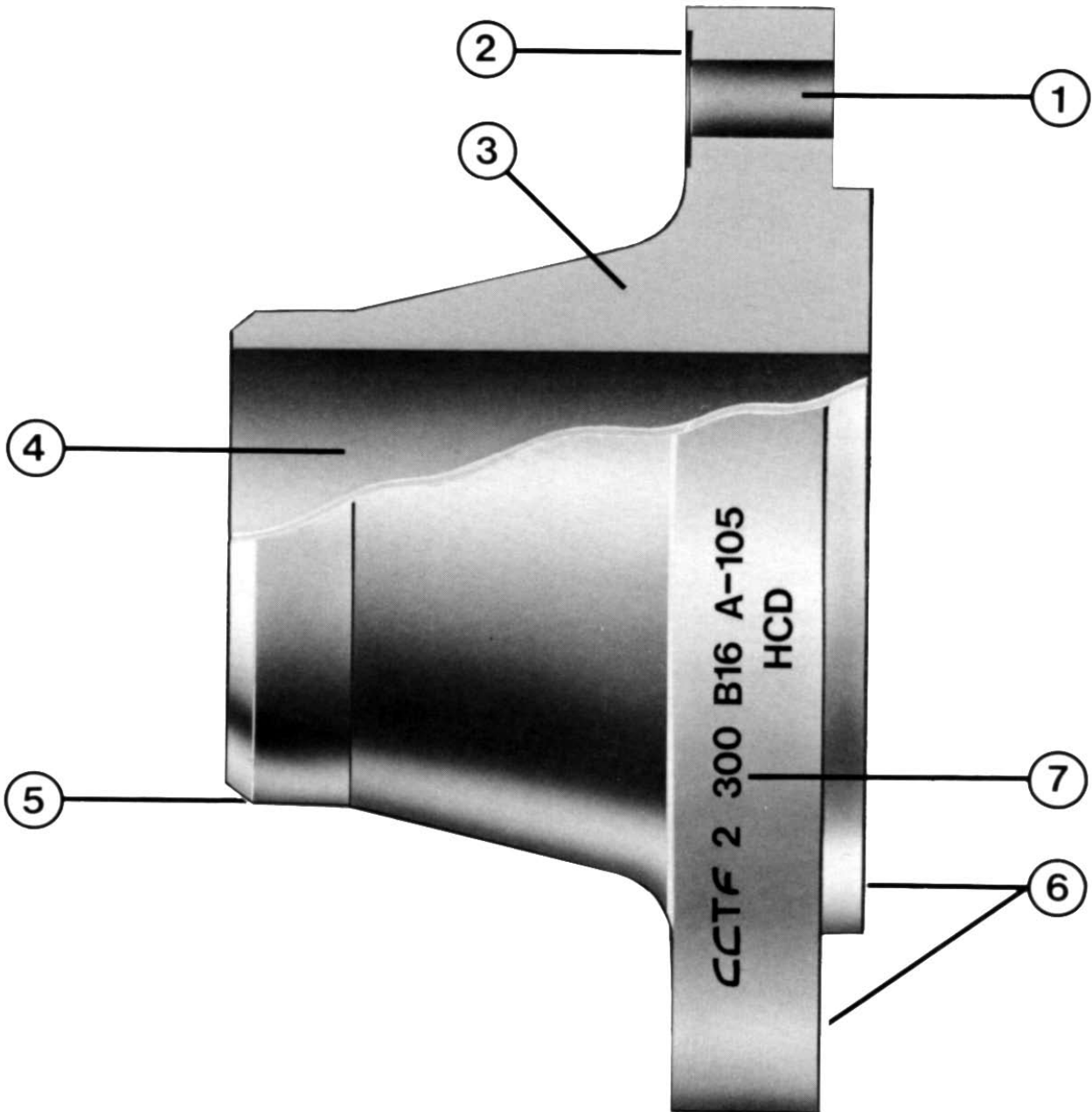
Distributed by:

WESTLUND / EMCO
WATER SOLUTIONS



FORGED STEEL FLANGES





1. Hole
2. Spot facing ensures seating of fasteners true and square.
3. Grain flow controlled for maximum strength.
4. Smooth accurate bore for unrestricted flow.
5. Machined bevel and land facilitate good welding.
6. All faces machined within tolerances to ensure true alignment.
7. Full identification of size, pressure class, material and heat code.

FORGED STEEL FLANGES INDEX



FLANGES CLASS 150 (PN20) to CLASS 2500 (PN 420)

| | |
|--|---------|
| Welding Neck, Slip-on, Threaded, Socket Welding Lap Joint, Blind | Page 36 |
|--|---------|

REDUCING FLANGES

| | |
|---------------------------------------|---------|
| Welding Neck, Threaded, Slip-on | Page 18 |
|---------------------------------------|---------|



ORIFICE FLANGES CLASS 300 - 1500 (PN 50-250)

| | |
|---------------------------------------|---------|
| Welding Neck, Slip-on, Threaded | Page 24 |
|---------------------------------------|---------|



| | |
|--------------------------|---------|
| LONG WELDING NECKS | Page 33 |
|--------------------------|---------|



LARGE DIAMETER FLANGES

| | |
|--|---------|
| Class 125 LW Slip-on | Page 34 |
| Class 125 Welding Neck, Slip-on, Blind | Page 35 |
| Class 250 | Page 36 |
| Class 75 | Page 37 |
| Class 175 | Page 38 |
| Class 350 | Page 39 |
| AWWA Class B, D, E, Slip-on | Page 40 |
| Class 150 Series A ASME B16.47 | Page 41 |
| Class 150 Series B ASME B16.47 | Page 46 |

ENGINEERING AND DESIGN DATA

| | |
|---|---------|
| Bolt and Stud Dimensions | Page 22 |
| Flange Facing Dimensions | Page 20 |
| Flange Facing and Finish Data | Page 4 |
| Gasket Dimensions | Page 20 |
| Identification, Marking | Page 47 |
| Manufacturing Standards, Specifications | Page 5 |
| Materials | Page 5 |
| Ring Joint Dimensions | Page 30 |
| Tolerances | Page 47 |
| Welding Bevels | Page 48 |

FLANGE TYPES, FACINGS AND FINISHES

ANSI FLANGES

Most forged steel flanges correspond to the requirements of the American Standards Association (ASME/ANSI Standard B16.5) and the ASTM Specification A-105.

The following types are manufactured and stocked:

Welding Neck flanges, available in all pressure ratings and sizes, are butt-welded to the end of the pipe, and are usually specified when service conditions are severe and excellent workmanship necessary. Since the inside diameter of the flange must match that of the pipe, the flange bore should be specified in ordering.

Slip-on flanges, also available in most pressure ratings and sizes, are a popular type due to their ease of application. This flange slips over the end of the pipe and is usually set so that the flange face is about .375" (9.5mm) beyond the end of the pipe. This permits double-welding of the flange - one strength fillet weld to join the hub of the flange to the pipe, and a seal fillet weld inside the flange at the end of the pipe. Where operating conditions permit, the seal weld is omitted.

Slip-on flanges are most frequently used at lower pressure - Class 150 (PN 20) or Class 300 (PN 50) primary service pressure ratings. Many pipe designers are reluctant to use slip-ons for higher pressures, since (1) the joint between the flange and pipe is not as strong as in the welding neck type; and (2) the junction of the flange and pipe is more susceptible to corrosion.

Screwed or Threaded flanges are attached to the pipe like any other screwed fittings, and may be back-welded to seal the joint between pipe and flange. Although still available in most sizes and pressure ratings, screwed fittings today are used almost exclusively in smaller pipe sizes and at low pressures.

Lap Joint or Van Stone flanges are used on piping equipped with lap joint stub ends or with lapped pipe. They may be used at all pressures and are available in a full size range. These flanges slip over the pipe, and are not welded or otherwise fastened to it; bolting pressure is transmitted to the gasket by the pressure of the flange against the back of the pipe lap.

Lap Joint flanges have certain special advantages: (1) freedom to swivel around the pipe facilitates the lining up of opposing flange bolt holes; (2) lack of contact with the fluid in the pipe often permits the use of inexpensive carbon steel flanges with corrosion resistant pipe or tubing; (3) in systems which erode or corrode quickly, the flanges may be salvaged for re-use.

Socket-welding flanges contain a recess in the back of the flange to receive the end of the pipe, which is attached by a fillet weld around the hub of the flange. Since socket-welding connections are not as strong as butt-welded joints, the use of this type of flange is almost always confined to NPS 4 (DN 100) and smaller sizes, and to the lower pressure ratings. Its chief advantage lies in the ease of preparation and installation.

Blind flanges, available in all sizes and pressure ratings, are solid forgings used to close off the end of a piping system and to gain easy access to the interior of the line.

Reducing flanges are available. Refer to page 18.

FLANGE FACINGS

Unless otherwise specified, Class 150 (PN 20) and Class 300 (PN 50) flanges in all types except lap joint (or Van Stone) flanges are furnished with a .06" (1.6mm) raised face (which is included in the flange thickness dimension). Heavier pressure ratings are machined with a .25" (6.4 mm) raised face, in addition to the designated flange thickness.

When so ordered, these flange types can be furnished with a variety of other facings, such as male and female, ring joint, tongue and groove, etc.

Lap Joint flanges are machined with a flat face and a fillet radius to accommodate the stub end or pipe lap.

FLANGE FINISHES

The finish of contact faces of pipe flanges and connecting end flanges of fittings shall be judged by visual comparison with AARR Standards and not by instruments having stylus tracers and electronic amplification (see ANSI/ASME B46.1)

The finishes required are given below. Other finishes may be furnished upon application.

RAISED FACE AND LARGE MALE AND FEMALE: Either a serrated-concentric or serrated-spiral finish having from 45 to 55 grooves per inch (0.6 to 1mm pitch) shall be used. The cutting tool employed shall have an approximate 0.06" (1.6mm) or larger radius. The resultant surface shall have a 125 to 250 microinch roughness.

TONGUE AND GROOVE AND SMALL MALE AND FEMALE: The gasket contact shall not exceed 125 microinch roughness.

RING JOINT: The side wall surface of gasket groove shall not exceed 63 microinch roughness.

OTHER TYPES

In addition to the ANSI flanges, the following types are carried in stock:

Orifice flanges are used for measuring fluid flow in piping systems. Their design conforms to the recommendations of the American Gas Association's Committee on Gas Measurement. Commonly furnished as either welding neck or slip-on type, they may also be ordered as screwed flanges. Orifice unions are available in Class 300 (PN 50) and heavier pressure ratings.

Each Orifice flange is equipped with two radially-drilled, tapped holes for metering, and with jack-screws to facilitate separation of the joint for removal of the orifice metering plate. Orifice flanges, unless otherwise specified, are furnished in pairs as a flange union, complete with bolts, nuts and jack-screws - but without the orifice plate. Gaskets are supplied with raised face flange unions, but not for ring-joint faced flanges, which use an integral gasket and orifice plate.

Light Weight Slip-on flanges, drilled to Class 125 ANSI Standards but of lighter construction than the regular slip-on type, are available for low-pressure systems.

Large Diameter flanges, in sizes beyond the B16.5 range, are available for special installations. Dimensions given herein are those most commonly used; however, flanges and rolled rings for large diameter pipe or for vessels and tanks can readily be made to other specifications.

Long Welding Necks are used primarily for outlets for vessels and tanks. Drilled to ANSI Standards, they are forged with long, heavy-wall, straight hubs, and finished with square cut ends.

MATERIAL AND MANUFACTURING STANDARDS

The manufacturing of forged steel flanges is governed by industry standards written by (1) the American Society for Testing and Materials (ASTM); (2) the American National Standards Institute (ANSI); (3) the Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS); (4) the American Petroleum Institute (API); (5) the Canadian Standards Association (CSA); (6) the American Society of Mechanical Engineers (ASME); and (7) the Pipe Fabrication Institute (PFI). They cover specifications for materials, methods of manufacture, dimensions and quality control procedures. WESTLUND forged steel flanges conform to all applicable standards.

ASTM SPECIFICATIONS

ASTM specifications are, basically, materials specifications. They regulate approved raw materials from which flanges can be made - ingots, or blooms, billets, slabs or bars. In addition, they govern the methods of manufacture, quality control procedures and markings of forged steel flanges. ASTM specifications are divided into five categories:

- A105 - Carbon grades for high temperature service
- A181 - Carbon grades for general service
- * A182 - Alloy and stainless grades for high temperature service
- A350 - Carbon and alloy grades for low temperature service

*WESTLUND flanges are available in a wide range of alloy and stainless steels, including grades F304, F304L, F316, F316L. Please refer to WESTLUND catalogue "Stainless Steel Flanges" for the popular Classes 150 and 300 (PN 20 and 50).

MSS, API, AWWA, ANSI AND CSA STANDARDS

ANSI, MSS and API standards govern flange dimensions and tolerances. ASME/ANSI B16.5, titled "Steel Pipe Flanges and Flanged Fittings", is the basic standard. It covers forged steel flanges, sizes NPS 1/2 (DN 15) through NPS 24 (DN 600). CSA standard CAN3-Z245 12-M96 covers the manufacture, dimensions, tolerances and material requirements for pipe line flanges. ASME/ANSI B16.36 covers Orifice flanges. The following MSS, API and AWWA standards are written to supplement B16.5:

| | |
|------------|--|
| MSS SP-6: | Flange facings |
| MSS SP-9: | Spot facing for bronze, iron and steel flanges |
| MSS SP-25: | Marking of flanges |
| MSS SP-39: | Bolts and nuts for flanges |
| API6A: | Wellhead equipment |
| AWWA C207: | Hub flanges |

The following codes are not flange specifications, but they influences the manufacture of forged steel flanges:

| | |
|--------------------|---|
| ASME: | Boiler and Pressure Vessel Code |
| ASME/ANSI B31.1: | Power Piping |
| ASME/ANSI B31.3: | Petroleum and refinery piping |
| ASME/ANSI B31.4: | Liquid petroleum transportation piping systems |
| ASME/ANSI B31.5: | Refrigeration piping |
| ASME/ANSI B31.8: | Gas transmission and distribution piping systems |
| ANSI/ASME B36.10M: | Standard for wrought steel pipe |
| ANSI/ASME B36.19M: | Standard for stainless steel pipe |
| ANSI/ASME B16.47: | Large diameter pipe line flanges NPS 22 (DN 550) and NPS 26 (DN 650) through NPS 36 (DN900) |

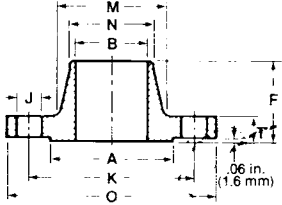
METRIC EQUIVALENTS

The International System (SI) metric equivalent of British units are shown throughout this catalogue.

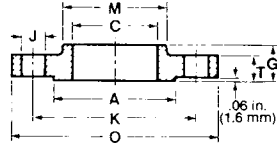
| | |
|--------------------------|------------------------------|
| NPS (Nominal Pipe Size) | = DN* (Nominal Diameter) |
| Operating Pressure Class | = PN* (Pressure Number) |
| 1 inch | = 25.4 millimetres |
| 1 pound, weight | = 0.4536 kilograms |
| 1 pound, pressure | = 0.06895 bars |
| 1 p.s.i., stress | = 0.006895 megapascals (MPa) |

*From the SI designations, Diamètre Nominal and Pression Nominale.

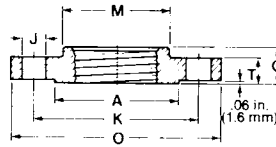
WELDING NECK



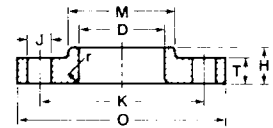
SLIP-ON



THREADED



LAP JOINT



| NPS | DN | FLANGE OUTSIDE DIAMETER O | FLANGE ¹ THICKNESS MIN. T | RAISED FACE DIA. A | BORE | | | LENGTH TRU HUB ² | | |
|-------|-----|------------------------------------|---|-----------------------------|--|---|---------------------------|-----------------------------|---|-------------------|
| | | | | | WELDING NECK & SOCKET WELDING B ³ | SLIP-ON & SOCKET WELD SOCKET MIN. C | LAP JOINT MIN. D | WELDING NECK F | SLIP-ON, THREADED & SOCK. WELD G | LAP JOINT H |
| 1/2 | 15 | 3.50 | .44 | 1.38 | .62 | .88 | .90 | 1.88 | .62 | .62 |
| 3/4 | 20 | 3.88 | .50 | 1.69 | .82 | 1.09 | 1.11 | 2.06 | .62 | .62 |
| 1 | 25 | 4.25 | .56 | 2.00 | 1.05 | 1.36 | 1.38 | 2.19 | .69 | .69 |
| 1 1/4 | 32 | 4.62 | .62 | 2.50 | 1.38 | 1.70 | 1.72 | 2.25 | .81 | .81 |
| 1 1/2 | 40 | 5.00 | .69 | 2.88 | 1.61 | 1.95 | 1.97 | 2.44 | .88 | .88 |
| 2 | 50 | 6.00 | .75 | 3.62 | 2.07 | 2.44 | 2.46 | 2.50 | 1.00 | 1.00 |
| 2 1/2 | 65 | 7.00 | .88 | 4.12 | 2.47 | 2.94 | 2.97 | 2.75 | 1.12 | 1.12 |
| 3 | 80 | 7.50 | .94 | 5.00 | 3.07 | 3.57 | 3.60 | 2.75 | 1.19 | 1.19 |
| 3 1/2 | 90 | 8.50 | .94 | 5.50 | 3.55 | 4.07 | 4.10 | 2.81 | 1.25 | 1.25 |
| 4 | 100 | 9.00 | .94 | 61.9 | 4.03 | 4.57 | 4.60 | 3.00 | 1.31 | 1.31 |
| 5 | 125 | 10.00 | .94 | 7.31 | 5.05 | 5.66 | 5.69 | 3.50 | 1.44 | 1.44 |
| 6 | 150 | 11.00 | 1.00 | 8.50 | 6.07 | 6.72 | 6.75 | 3.50 | 1.56 | 1.56 |
| 8 | 200 | 13.50 | 1.12 | 10.62 | 7.98 | 8.72 | 8.75 | 4.00 | 1.75 | 1.75 |
| 10 | 250 | 16.00 | 1.19 | 12.75 | 10.02 | 10.88 | 10.92 | 4.00 | 1.94 | 1.94 |
| 12 | 300 | 19.00 | 1.25 | 15.00 | 12.00 | 12.88 | 12.92 | 4.50 | 2.19 | 2.19 |
| 14 | 350 | 21.00 | 1.38 | 16.25 | To be specified by purchaser | 14.14 | 14.18 | 5.00 | 2.25 | 3.12 |
| 16 | 400 | 23.50 | 1.44 | 18.50 | | 16.16 | 16.19 | 5.00 | 2.50 | 3.44 |
| 18 | 450 | 25.00 | 1.56 | 21.00 | | 18.18 | 18.20 | 5.50 | 2.69 | 3.81 |
| 20 | 500 | 27.50 | 1.69 | 23.00 | | 20.20 | 20.25 | 5.69 | 2.88 | 4.06 |
| 24 | 600 | 32.00 | 1.88 | 27.25 | | 24.25 | 24.25 | 6.00 | 3.25 | 4.38 |
| | | 815 | 48.0 | 692.2 | | 615.9 | 615.9 | 152.4 | 83 | 111 |

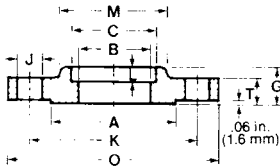
¹ Socket Welding Flanges, sizes NPS 3 1/2 (DN 90) and larger are not covered by ASME/ANSI B16.5.

² Includes .06" (1.6 mm) raised face.

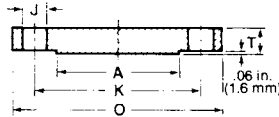
³ These dimensions correspond to inside diameters of pipe as given in ANSI/ASME B36.10M for Standard Wall Pipe. Thickness of Standard Wall is the same as Schedule 40 in size NPS 10 (DN 250) and smaller.

INCHES
MILLIMETRES

SOCKET WELDING



BLIND



CLASS 150 (PN20) FLANGES FORGED STEEL ASTM A-105 1 ASME/ANSI B16.5

| NPS | DN | DRILLING | | | DEPTH OF SOCKET | DIAMETER OF HUB | | LAP JOINT FILLET RADIUS | APPROXIMATE WEIGHT | | | |
|-------|-----|--------------|---------------|---------------------|-----------------|-----------------|------------|-------------------------|--------------------|---|-------|-----------|
| | | NO. OF HOLES | DIA. OF HOLES | DIA. OF BOLT CIRCLE | | AT BASE | AT CHAMFER | | WELDING NECK | SLIP-ON, THREADED & SOCKET WELDING ¹ | BLIND | LAP JOINT |
| | | J | K | L | M | N | r | | | | | |
| 1/2 | | 4 | .62 | 2.38 | .38 | 1.19 | .84 | .12 | 2 | 1 | 1 | 1 |
| | 15 | 4 | 16 | 60.3 | 10 | 30.2 | 21.4 | 3 | 0.9 | .05 | 0.5 | 0.5 |
| 3/4 | | 4 | .62 | 2.75 | .44 | 1.50 | 1.05 | .12 | 2 | 2 | 2 | 2 |
| | 20 | 4 | 16 | 69.8 | 11 | 38.1 | 26.6 | 3 | 0.9 | 0.9 | 0.9 | 0.9 |
| 1 | | 4 | .62 | 3.12 | .50 | 1.94 | 1.32 | .12 | 3 | 2 | 2 | 2 |
| | 25 | 4 | 16 | 79.4 | 13 | 49.2 | 33.5 | 3 | 1.4 | 0.9 | 0.9 | 0.9 |
| 1 1/4 | | 4 | .62 | 3.50 | .56 | 2.31 | 1.66 | .19 | 3 | 3 | 3 | 3 |
| | 32 | 4 | 16 | 88.9 | 14 | 58.7 | 42.1 | 5 | 1.4 | 1.4 | 1.4 | 1.4 |
| 1 1/2 | | 4 | .62 | 3.88 | .62 | 2.56 | 1.90 | .25 | 4 | 3 | 4 | 3 |
| | 40 | 4 | 16 | 98.4 | 16 | 65.1 | 48.3 | 6 | 1.8 | 1.4 | 1.8 | 1.4 |
| 2 | | 4 | .75 | 4.75 | .69 | 3.06 | 2.38 | .31 | 6 | 5 | 5 | 5 |
| | 50 | 4 | 20 | 120.6 | 17 | 77.6 | 60.4 | 8 | 2.7 | 2.3 | 2.3 | 2.3 |
| 2 1/2 | | 4 | .75 | 5.50 | .75 | 3.56 | 2.88 | .31 | 8 | 7 | 7 | 7 |
| | 65 | 4 | 20 | 139.7 | 19 | 90.5 | 73.0 | 8 | 3.6 | 3.2 | 3.2 | 3.2 |
| 3 | | 4 | .75 | 6.00 | .81 | 4.25 | 3.50 | .38 | 10 | 8 | 9 | 8 |
| | 80 | 4 | 20 | 152.4 | 21 | 107.9 | 88.9 | 10 | 4.5 | 3.6 | 4.1 | 3.6 |
| 3 1/2 | | 8 | .75 | 7.00 | - | 4.81 | 4.00 | .38 | 12 | 11 | 13 | 11 |
| | 90 | 8 | 20 | 177.8 | - | 122.2 | 101.6 | 10 | 5.4 | 5.0 | 5.9 | 5.0 |
| 4 | | 8 | .75 | 7.50 | - | 5.31 | 4.50 | .44 | 15 | 13 | 17 | 13 |
| | 100 | 8 | 20 | 190.5 | - | 134.9 | 114.3 | 11 | 6.8 | 5.9 | 7.7 | 5.9 |
| 5 | | 8 | .88 | 8.50 | - | 6.44 | 5.56 | .44 | 19 | 15 | 20 | 15 |
| | 125 | 8 | 23 | 215.9 | - | 163.5 | 141.3 | 11 | 8.6 | 6.8 | 9.1 | 6.8 |
| 6 | | 8 | .88 | 9.50 | - | 7.56 | 6.63 | .50 | 24 | 19 | 26 | 19 |
| | 150 | 8 | 23 | 241.3 | - | 192.1 | 168.3 | 13 | 10.9 | 8.6 | 11.8 | 8.6 |
| 8 | | 8 | .88 | 11.75 | - | 9.69 | 8.63 | .50 | 39 | 30 | 45 | 30 |
| | 200 | 8 | 23 | 298.4 | - | 246.1 | 219.1 | 13 | 17.7 | 13.6 | 20.4 | 13.6 |
| 10 | | 12 | 1.00 | 14.25 | - | 12.00 | 10.75 | .50 | 52 | 43 | 70 | 43 |
| | 250 | 12 | 26 | 361.9 | - | 304.8 | 273.0 | 13 | 23.6 | 19.5 | 31.8 | 19.5 |
| 12 | | 12 | 1.00 | 17.00 | - | 14.38 | 12.75 | .50 | 80 | 64 | 110 | 64 |
| | 300 | 12 | 26 | 431.8 | - | 365.1 | 323.8 | 13 | 36.3 | 29.0 | 49.9 | 29.0 |
| 14 | | 12 | 1.12 | 18.75 | - | 15.75 | 14.00 | .50 | 110 | 90 | 140 | 105 |
| | 350 | 12 | 29 | 476.2 | - | 400.0 | 355.6 | 13 | 50.0 | 41.0 | 63.5 | 47.6 |
| 16 | | 16 | 1.12 | 21.25 | - | 18.00 | 16.00 | .50 | 140 | 98 | 180 | 140 |
| | 400 | 16 | 29 | 539.7 | - | 457.2 | 406.4 | 13 | 64.0 | 44.5 | 81.6 | 63.5 |
| 18 | | 16 | 1.25 | 22.75 | - | 19.88 | 18.00 | .50 | 150 | 130 | 220 | 160 |
| | 450 | 16 | 32 | 577.8 | - | 504.8 | 457.2 | 13 | 68.0 | 59.0 | 99.8 | 72.6 |
| 20 | | 20 | 1.25 | 25.00 | - | 22.00 | 20.00 | .50 | 180 | 165 | 285 | 195 |
| | 500 | 20 | 32 | 635.0 | - | 558.8 | 508.0 | 13 | 81.6 | 75.0 | 129.0 | 88.5 |
| 24 | | 20 | 1.38 | 29.50 | - | 26.12 | 24.00 | .50 | 260 | 220 | 430 | 275 |
| | 600 | 20 | 35 | 749.3 | - | 663.6 | 609.6 | 13 | 118 | 99.8 | 195.0 | 125.0 |

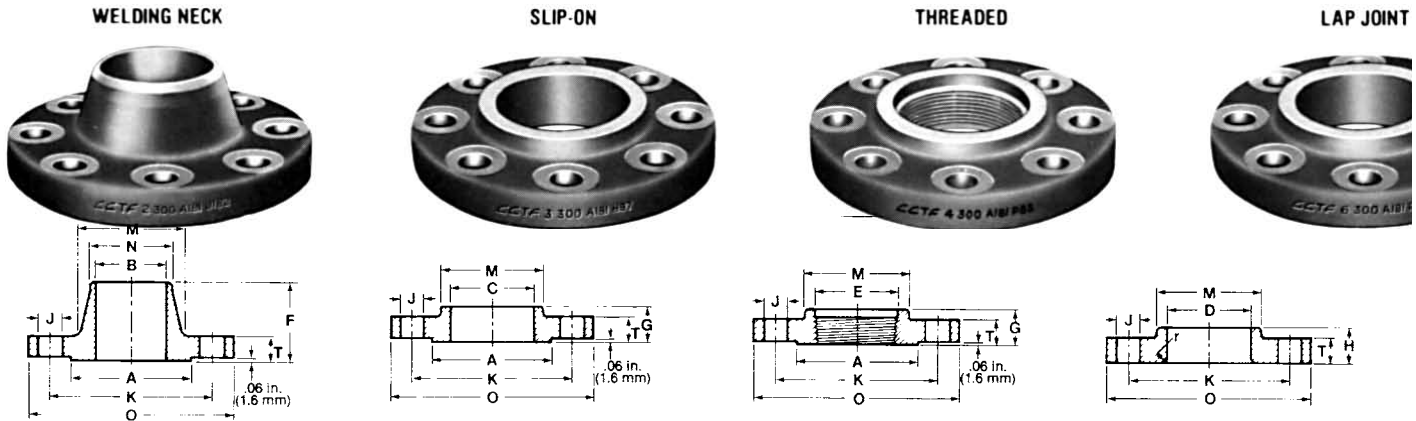
For level of Welding Neck, see page 48.

Gasket dimensions - page 20.

Bolting dimensions - page 22.

Flange facing dimensions - page 20.

| |
|-----------|
| POUNDS |
| KILOGRAMS |



| NPS | DN | FLANGE OUTSIDE DIAMETER O | FLANGE ² THICKNESS MIN. T | RAISED FACE DIA. A | BORE | | | LENGTH THRU HUB ² | | | |
|-------|-----|------------------------------|---|-----------------------|---|--|---------------------|---------------------------------|-------------------|-------------------------------------|----------------|
| | | | | | WELDING NECK & SOCKET WELDING B ¹ | SLIP-ON & SOCKET WELD SOCKET MIN. C | LAP JOINT MIN. D | THREADED COUNTER-BORE MIN. E | WELDING NECK F | SLIP-ON, THREADED & SOCK. WELD G | LAP JOINT H |
| 1/2 | | 3.75 | .56 | 1.38 | .62 | .88 | .90 | .93 | 2.06 | .88 | .88 |
| | 15 | 95 | 14.5 | 34.9 | 15.8 | 22.2 | 22.9 | 23.5 | 52.4 | 22 | 22 |
| 3/4 | | 4.62 | .62 | 1.69 | .82 | 1.09 | 1.11 | 1.14 | 2.25 | 1.00 | 1.00 |
| | 20 | 117 | 16.0 | 42.9 | 20.8 | 27.8 | 28.2 | 29.0 | 57.1 | 25 | 25 |
| 1 | | 4.88 | .69 | 2.00 | 1.05 | 1.36 | 1.38 | 1.41 | 2.44 | 1.06 | 1.06 |
| | 25 | 124 | 17.5 | 50.8 | 26.6 | 34.5 | 34.9 | 36.0 | 61.9 | 27 | 27 |
| 1 1/4 | | 5.25 | .75 | 2.50 | 1.38 | 1.70 | 1.72 | 1.75 | 2.56 | 1.06 | 1.06 |
| | 32 | 133 | 19.5 | 63.5 | 35.1 | 43.3 | 43.7 | 44.5 | 65.1 | 27 | 27 |
| 1 1/2 | | 6.12 | .81 | 2.88 | 1.61 | 1.95 | 1.97 | 1.99 | 2.69 | 1.19 | 1.19 |
| | 40 | 156 | 21.0 | 73.0 | 40.9 | 49.6 | 50.0 | 50.5 | 68.3 | 30 | 30 |
| 2 | | 6.50 | .88 | 3.62 | 2.07 | 2.44 | 2.46 | 2.50 | 2.75 | 1.31 | 1.31 |
| | 50 | 165 | 22.5 | 92.1 | 52.6 | 61.9 | 62.5 | 63.5 | 69.8 | 33 | 33 |
| 2 1/2 | | 7.50 | 1.00 | 4.12 | 2.47 | 2.94 | 2.97 | 3.00 | 3.00 | 1.50 | 1.50 |
| | 65 | 191 | 25.5 | 104.8 | 62.7 | 74.6 | 75.4 | 76 | 76.2 | 38 | 38 |
| 3 | | 8.25 | 1.12 | 5.00 | 3.07 | 3.57 | 3.60 | 3.63 | 3.12 | 1.69 | 1.69 |
| | 80 | 210 | 29.0 | 127.0 | 77.9 | 90.7 | 91.4 | 92 | 79.4 | 43 | 43 |
| 3 1/2 | | 9.0 | 1.19 | 5.50 | 3.55 | 4.07 | 4.10 | 4.13 | 3.19 | 1.75 | 1.75 |
| | 90 | 229 | 30.5 | 139.7 | 90.1 | 103.4 | 104.1 | 105 | 81.0 | 44 | 44 |
| 4 | | 10.0 | 1.25 | 6.19 | 4.03 | 4.57 | 4.60 | 4.63 | 3.38 | 1.88 | 1.88 |
| | 100 | 254 | 32.0 | 157.2 | 102.3 | 116.1 | 116.8 | 118 | 85.7 | 48 | 48 |
| 5 | | 11.0 | 1.38 | 7.31 | 5.05 | 5.66 | 5.69 | 5.69 | 3.88 | 2.00 | 2.00 |
| | 125 | 279 | 35.0 | 185.7 | 128.2 | 143.7 | 144.5 | 145 | 98.4 | 51 | 51 |
| 6 | | 12.5 | 1.44 | 8.50 | 6.07 | 6.72 | 6.75 | 6.75 | 3.88 | 2.06 | 2.06 |
| | 150 | 318 | 37.0 | 215.9 | 154.1 | 170.7 | 171.4 | 171 | 98.4 | 52 | 52 |
| 8 | | 15.0 | 1.62 | 10.62 | 7.98 | 8.72 | 8.75 | 8.75 | 4.38 | 2.44 | 2.44 |
| | 200 | 381 | 41.5 | 269.9 | 202.7 | 221.5 | 222.2 | 222 | 111.1 | 62 | 62 |
| 10 | | 17.5 | 1.88 | 12.75 | 10.02 | 10.88 | 10.92 | 10.88 | 4.62 | 2.62 | 3.75 |
| | 250 | 445 | 48.0 | 323.8 | 254.5 | 276.2 | 277.4 | 276 | 117.5 | 67 | 95 |
| 12 | | 20.5 | 2.00 | 15.00 | 12.00 | 12.88 | 12.92 | 12.94 | 5.12 | 2.88 | 4.00 |
| | 300 | 520 | 51.0 | 381.0 | 304.8 | 327.0 | 328.2 | 329 | 130.2 | 73 | 102 |
| 14 | | 23.0 | 2.12 | 16.25 | To be specified by purchaser | 14.14 | 14.18 | 14.19 | 5.62 | 3.00 | 4.38 |
| | 350 | 585 | 54.0 | 412.8 | | 359.2 | 360.2 | 360 | 142.9 | 76 | 111 |
| 16 | | 25.5 | 2.25 | 18.50 | | 16.16 | 16.19 | 16.19 | 5.75 | 3.25 | 4.75 |
| | 400 | 650 | 57.5 | 469.9 | | 410.4 | 411.2 | 411 | 146.0 | 83 | 121 |
| 18 | | 28.0 | 2.38 | 21.00 | | 18.18 | 18.20 | 18.19 | 6.25 | 3.50 | 5.12 |
| | 450 | 710 | 60.5 | 533.4 | | 461.8 | 462.3 | 462 | 158.7 | 89 | 130 |
| 20 | | 30.5 | 2.50 | 23.00 | 20.20 | 20.25 | 20.19 | 6.38 | 3.75 | 5.50 | |
| | 500 | 775 | 63.5 | 584.2 | 513.1 | 514.3 | 513 | 161.9 | 95 | 140 | |
| 24 | | 36.0 | 2.75 | 27.25 | 24.25 | 24.25 | 24.19 | 6.62 | 4.19 | 6.00 | |
| | 600 | 915 | 70.0 | 692.2 | 615.9 | 615.9 | 614 | 168.3 | 106 | 152 | |

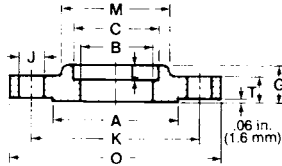
¹ Socket Welding Flanges, sizes NPS 3 1/2 (DN 90) and larger are not covered by ASME/ANSI B16.5.

² Includes .06" (1.6 mm) raised face.

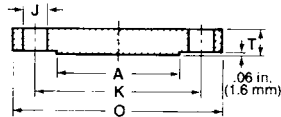
³ These dimensions correspond to inside diameters of pipe as given in ANSI/ASME B36.10M for Standard Wall Pipe. Thickness of Standard Wall is the same as Schedule 40 in size NPS 10 (DN 250) and smaller.

| |
|-------------|
| INCHES |
| MILLIMETRES |

SOCKET WELDING



BLIND



CLASS 300 (PN50) FLANGES FORGED STEEL ASTM A-105 ¹ASME/ANSI B16.5

| NPS | DN | DRILLING | | | DEPTH OF SOCKET | DIAMETER OF HUB | | | APPROXIMATE WEIGHT | | | |
|-------|-----|--------------|---------------|---------------------|-----------------|-----------------|------------|-------------------------|--------------------|---|-------|-----------|
| | | NO. OF HOLES | DIA. OF HOLES | DIA. OF BOLT CIRCLE | | AT BASE | AT CHAMFER | LAP JOINT FILLET RADIUS | WELDING NECK | SLIP-ON, THREADED & SOCKET WELDING ¹ | BLIND | LAP JOINT |
| | | J | K | L | M | N | r | | | | | |
| 1/2 | | 4 | .62 | 2.62 | .38 | 1.50 | .84 | .12 | 2 | 2 | 2 | 2 |
| | 15 | 4 | 16 | 66.7 | 10 | 38.1 | 21.4 | 3 | 0.9 | 0.9 | 0.9 | 0.9 |
| 3/4 | | 4 | .75 | 3.25 | .44 | 1.88 | 1.05 | .12 | 3 | 3 | 3 | 3 |
| | 20 | 4 | 20 | 82.5 | 11 | 47.6 | 26.6 | 3 | 1.4 | 1.4 | 1.4 | 1.4 |
| 1 | | 4 | .75 | 3.50 | .50 | 2.12 | 1.32 | .12 | 4 | 3 | 3 | 3 |
| | 25 | 4 | 20 | 88.9 | 13 | 53.8 | 33.5 | 3 | 1.8 | 1.4 | 1.4 | 1.4 |
| 1 1/4 | | 4 | .75 | 3.88 | .56 | 2.50 | 1.66 | .19 | 5 | 4 | 4 | 4 |
| | 32 | 4 | 20 | 98.4 | 14 | 63.5 | 42.1 | 5 | 2.3 | 1.8 | 1.8 | 1.8 |
| 1 1/2 | | 4 | .88 | 4.50 | .62 | 2.75 | 1.90 | .25 | 7 | 6 | 6 | 6 |
| | 40 | 4 | 23 | 114.3 | 16 | 69.9 | 48.3 | 6 | 3.2 | 2.7 | 2.7 | 2.7 |
| 2 | | 8 | .75 | 5.00 | .69 | 3.31 | 2.38 | .31 | 9 | 7 | 8 | 7 |
| | 50 | 8 | 20 | 127.0 | 17 | 84.1 | 60.3 | 8 | 4.1 | 3.2 | 3.6 | 3.2 |
| 2 1/2 | | 8 | .88 | 5.88 | .75 | 3.94 | 2.88 | .31 | 12 | 10 | 12 | 10 |
| | 65 | 8 | 23 | 149.2 | 19 | 100.0 | 73.0 | 8 | 5.4 | 4.5 | 5.4 | 4.5 |
| 3 | | 8 | .88 | 6.62 | .81 | 4.62 | 3.50 | .38 | 15 | 13 | 16 | 13 |
| | 80 | 8 | 23 | 168.3 | 21 | 117.5 | 88.9 | 10 | 6.8 | 5.9 | 7.3 | 5.9 |
| 3 1/2 | | 8 | .88 | 7.25 | - | 5.25 | 4.00 | .38 | 18 | 17 | 21 | 17 |
| | 90 | 8 | 23 | 184.1 | - | 133.3 | 101.6 | 10 | 8.2 | 7.7 | 9.5 | 7.7 |
| 4 | | 8 | .88 | 7.88 | - | 5.75 | 4.50 | .44 | 25 | 22 | 27 | 22 |
| | 100 | 8 | 23 | 200.0 | - | 146.0 | 114.3 | 11 | 11.3 | 10.0 | 12.2 | 10.0 |
| 5 | | 8 | .88 | 9.25 | - | 7.00 | 5.56 | .44 | 32 | 28 | 35 | 28 |
| | 125 | 8 | 23 | 234.9 | - | 177.8 | 141.3 | 11 | 14.5 | 12.7 | 15.9 | 12.7 |
| 6 | | 12 | .88 | 10.62 | - | 8.12 | 6.63 | .50 | 42 | 39 | 50 | 39 |
| | 150 | 12 | 23 | 269.9 | - | 206.4 | 168.3 | 13 | 19.0 | 17.7 | 22.7 | 17.7 |
| 8 | | 12 | 1.00 | 13.0 | - | 10.25 | 8.63 | .50 | 67 | 58 | 81 | 58 |
| | 200 | 12 | 26 | 330.2 | - | 260.3 | 219.1 | 13 | 30.4 | 26.3 | 36.7 | 26.3 |
| 10 | | 16 | 1.12 | 15.25 | - | 12.62 | 10.75 | .50 | 91 | 81 | 125 | 91 |
| | 250 | 16 | 29 | 387.3 | - | 320.7 | 273.0 | 13 | 41.3 | 36.7 | 56.7 | 41.3 |
| 12 | | 16 | 1.25 | 17.75 | - | 14.75 | 12.75 | .50 | 140 | 115 | 185 | 140 |
| | 300 | 16 | 32 | 450.8 | - | 374.6 | 323.8 | 13 | 63.5 | 52.2 | 83.9 | 63.5 |
| 14 | | 20 | 1.25 | 20.25 | - | 16.75 | 14.00 | .50 | 180 | 165 | 250 | 190 |
| | 350 | 20 | 32 | 514.3 | - | 425.5 | 355.6 | 13 | 81.6 | 74.8 | 113 | 86.2 |
| 16 | | 20 | 1.38 | 22.50 | - | 19.00 | 16.00 | .50 | 250 | 190 | 295 | 250 |
| | 400 | 20 | 35 | 571.5 | - | 482.6 | 406.4 | 13 | 113 | 86.2 | 134 | 113 |
| 18 | | 24 | 1.38 | 24.75 | - | 21.00 | 18.00 | .50 | 320 | 250 | 395 | 295 |
| | 450 | 24 | 35 | 628.6 | - | 533.4 | 457.2 | 13 | 145 | 113 | 179 | 134 |
| 20 | | 24 | 1.38 | 27.00 | - | 23.12 | 20.00 | .50 | 400 | 315 | 505 | 370 |
| | 500 | 24 | 35 | 685.80 | - | 587.4 | 508.0 | 13 | 181 | 143 | 229 | 168 |
| 24 | | 24 | 1.62 | 32.00 | - | 27.62 | 24.00 | .50 | 580 | 475 | 790 | 550 |
| | 600 | 24 | 42 | 812.80 | - | 701.7 | 609.6 | 13 | 263 | 215 | 358 | 249 |

¹ Socket Welding Flanges, sizes NPS 3 1/2 (DN 90) and larger are not covered by ASME/ANSI B16.5.

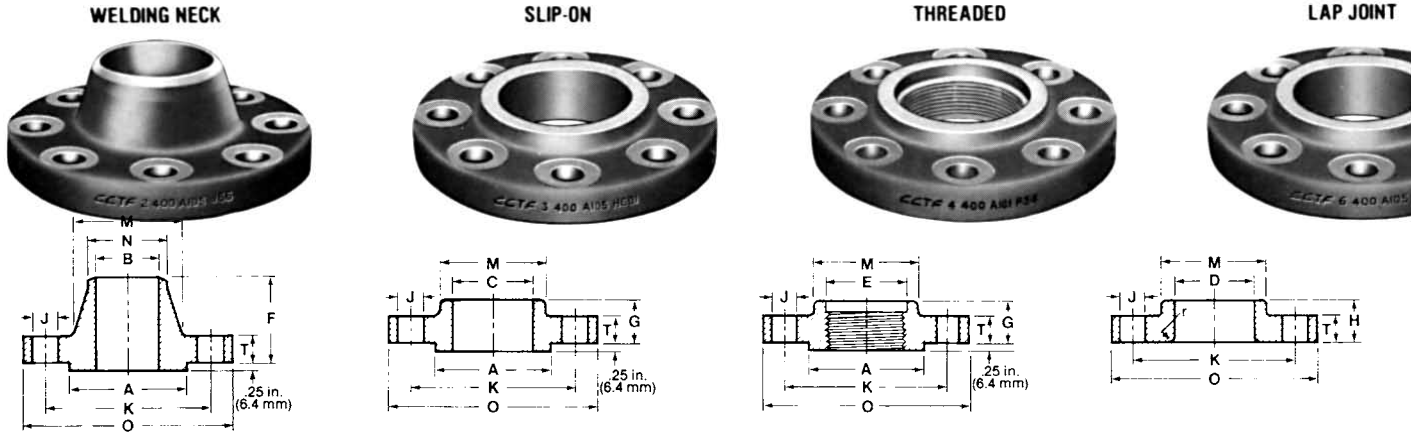
For bevel of Welding Neck, see page 48.

Gasket dimensions - page 20.

Bolting dimensions - page 22.

Flange facing dimensions - page 20.

| |
|-----------|
| POUNDS |
| KILOGRAMS |



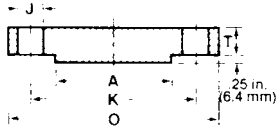
For sizes NPS 1/2 (DN 15) through NPS 3 1/2 (DN 90) use Class 600 (PN 100) flanges.¹

| NPS | DN | FLANGE OUTSIDE DIAMETER O | FLANGE ² THICKNESS MIN. T | RAISED FACE DIA. A | BORE | | | LENGTH TRU HUB ² | | | |
|-----|-----|------------------------------|---|-----------------------|------------------------------|--------------------|---------------------|---------------------------------|-------------------|------------------------|----------------|
| | | | | | WELDING NECK B | SLIP-ON, MIN. C | LAP JOINT MIN. D | THREADED COUNTER-BORE MIN. E | WELDING NECK F | SLIP-ON, THREADED G | LAP JOINT H |
| 4 | 100 | 10 | 1.38 | 6.19 | To be specified by purchaser | 4.57 | 4.60 | 4.63 | 3.5 | 2 | 2 |
| | | 254 | 35.0 | 157.2 | | 116.1 | 116.8 | 118 | 88.9 | 51 | 51 |
| 5 | 125 | 11 | 1.50 | 7.31 | | 5.66 | 5.69 | 5.69 | 4 | 2.12 | 2.12 |
| | | 279 | 38.5 | 185.7 | | 143.7 | 144.5 | 145 | 101.6 | 54 | 54 |
| 6 | 150 | 12.5 | 1.62 | 8.5 | | 6.72 | 6.75 | 6.75 | 4.06 | 2.25 | 2.25 |
| | | 318 | 41.5 | 215.9 | | 170.7 | 171.4 | 171 | 103.2 | 57 | 57 |
| 8 | 200 | 15 | 1.88 | 10.62 | | 8.72 | 8.75 | 8.75 | 4.62 | 2.69 | 2.69 |
| | | 381 | 48.0 | 269.9 | | 221.5 | 222.2 | 222 | 117.5 | 68 | 68 |
| 10 | 250 | 17.5 | 2.12 | 12.75 | | 10.88 | 10.92 | 10.88 | 4.88 | 2.88 | 4 |
| | | 445 | 54.0 | 323.8 | | 276.2 | 277.4 | 276 | 123.8 | 73 | 102 |
| 12 | 300 | 20.5 | 2.25 | 15.00 | | 12.88 | 12.92 | 12.94 | 5.38 | 3.12 | 4.25 |
| | | 520 | 57.5 | 381.0 | | 327.0 | 328.2 | 329 | 136.5 | 79 | 108 |
| 14 | 350 | 23 | 2.38 | 16.25 | | 14.14 | 14.18 | 14.19 | 5.88 | 3.31 | 4.62 |
| | | 585 | 60.5 | 412.8 | | 359.2 | 360.2 | 360 | 149.2 | 84 | 117 |
| 16 | 400 | 25.5 | 2.5 | 18.50 | | 16.16 | 16.19 | 16.19 | 6 | 3.69 | 5 |
| | | 650 | 63.5 | 469.9 | | 410.4 | 411.2 | 411 | 152.4 | 94 | 127 |
| 18 | 450 | 28 | 2.62 | 21 | | 18.18 | 18.20 | 18.19 | 6.5 | 3.88 | 5.38 |
| | | 710 | 67.0 | 533.4 | | 461.8 | 462.3 | 462 | 165.1 | 98 | 137 |
| 20 | 500 | 30.5 | 2.75 | 23 | | 20.20 | 20.25 | 20.19 | 6.62 | 4 | 5.75 |
| | | 775 | 70.0 | 584.2 | | 513.1 | 514.3 | 513 | 168.3 | 102 | 146 |
| 24 | 600 | 36 | 3 | 27.25 | | 24.25 | 24.25 | 24.19 | 6.88 | 4.5 | 6.25 |
| | | 915 | 76.5 | 692.2 | | 616.0 | 616.0 | 614 | 174.6 | 114 | 159 |

¹ Including SOCKET WELDING FLANGES

² Does not include .25" (6.4 mm) raised face.

BLIND



CLASS 400 (PN 68) FLANGES FORGED STEEL ASTM A-105 ASME/ANSI B16.5

| NPS | DN | DRILLING | | | DIAMETER OF HUB | | | LAP JOINT FILLET RADIUS r | APPROXIMATE WEIGHT | | | |
|-----|-----|--------------|------------------------|------------------------------|-----------------|-----------------|--------------|------------------------------|--------------------|-------|-----------|--|
| | | NO. OF HOLES | DIAMETER OF HOLES J | DIAMETER OF BOLT CIRCLE K | AT BASE M | AT CHAMFER N | WELDING NECK | | SLIP-ON, THREADED | BLIND | LAP JOINT | |
| 4 | | 8 | 1 | 7.88 | 5.75 | 4.50 | .44 | 35 | 26 | 33 | 25 | |
| | 100 | 8 | 26 | 200.0 | 146.0 | 114.3 | 11 | 15.8 | 11.7 | 15 | 11.3 | |
| 5 | | 8 | 1 | 9.25 | 7.0 | 5.56 | .44 | 43 | 31 | 44 | 29 | |
| | 125 | 8 | 26 | 234.9 | 177.8 | 141.3 | 11 | 19 | 14 | 20 | 13 | |
| 6 | | 12 | 1 | 10.62 | 8.12 | 6.63 | .5 | 57 | 44 | 61 | 42 | |
| | 150 | 12 | 26 | 269.9 | 206.4 | 168.3 | 13 | 25.5 | 20 | 27.5 | 19 | |
| 8 | | 12 | 1.12 | 13.0 | 10.25 | 8.63 | .5 | 89 | 67 | 100 | 64 | |
| | 200 | 12 | 29 | 330.2 | 260.3 | 219.1 | 13 | 40 | 30 | 45 | 29 | |
| 10 | | 16 | 1.25 | 15.25 | 12.62 | 10.75 | .5 | 126 | 91 | 155 | 112 | |
| | 250 | 16 | 32 | 387.3 | 320.7 | 273.0 | 13 | 57 | 41 | 70 | 50 | |
| 12 | | 16 | 1.38 | 17.75 | 14.75 | 12.75 | .5 | 177 | 129 | 226 | 152 | |
| | 300 | 16 | 35 | 450.8 | 374.7 | 323.8 | 13 | 80 | 58 | 102 | 68 | |
| 14 | | 20 | 1.38 | 20.25 | 16.75 | 14.00 | .5 | 233 | 191 | 310 | 210 | |
| | 350 | 20 | 35 | 514.3 | 425.5 | 355.6 | 13 | 105 | 86 | 140 | 95 | |
| 16 | | 20 | 1.5 | 22.5 | 19.0 | 16.00 | .5 | 294 | 253 | 398 | 280 | |
| | 400 | 20 | 39 | 571.5 | 482.6 | 406.4 | 13 | 132 | 114 | 179 | 126 | |
| 18 | | 24 | 1.5 | 24.75 | 21.0 | 18.00 | .5 | 360 | 310 | 502 | 345 | |
| | 450 | 24 | 39 | 628.7 | 533.4 | 457.2 | 13 | 162 | 140 | 226 | 155 | |
| 20 | | 24 | 1.62 | 27 | 23.12 | 20.00 | .5 | 445 | 378 | 621 | 420 | |
| | 500 | 24 | 42 | 685.8 | 587.4 | 508.0 | 13 | 200 | 170 | 279 | 189 | |
| 24 | | 24 | 1.88 | 32 | 27.62 | 24.00 | .5 | 640 | 539 | 936 | 615 | |
| | 600 | 24 | 48 | 812.8 | 701.7 | 609.6 | 13 | 288 | 243 | 421 | 277 | |

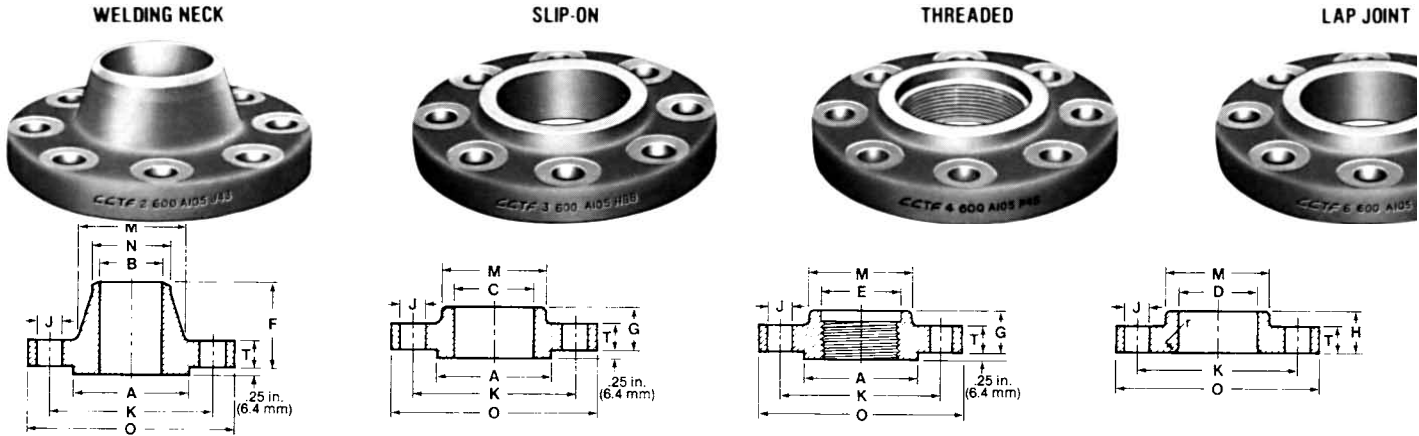
For level of Welding Neck, see page 48.

Gasket dimensions - page 20.

Bolting dimensions - page 22.

Flange facing dimensions - page 20.

| |
|-----------|
| POUNDS |
| KILOGRAMS |



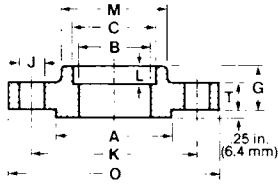
| NPS | DN | FLANGE OUTSIDE DIAMETER O | FLANGE ² THICKNESS MIN. T | RAISED FACE DIA. A | BORE | | | | LENGTH TRU HUB ² | | |
|-------|-----|------------------------------------|---|-----------------------------|---|---|---------------------------|---|-----------------------------|--|-------------------|
| | | | | | WELDING NECK & SOCKET WELDING B | SLIP-ON & SOCK. WELD. SOCKET MIN. C | LAP JOINT MIN. D | THREADED COUNTER- BORE MIN. E | WELDING NECK F | SLIP-ON, THREADED SOCKET WELDING G | LAP JOINT H |
| 1/2 | 15 | 3.75 | .56 | 1.38 | To be specified by purchaser | .88 | .90 | .93 | 2.06 | .88 | .88 |
| | | 95 | 14.5 | 34.9 | | 22.2 | 22.9 | 23.5 | 52.4 | 22 | 22 |
| 3/4 | 20 | 4.62 | .62 | 1.69 | | 1.09 | 1.11 | 1.14 | 2.25 | 1.00 | 1.0 |
| | | 117 | 16.0 | 42.9 | | 27.8 | 28.2 | 29.0 | 57.1 | 25 | 25 |
| 1 | 25 | 4.88 | .69 | 2.0 | | 1.36 | 1.38 | 1.41 | 2.44 | 1.06 | 1.06 |
| | | 124 | 17.5 | 50.8 | | 34.5 | 34.9 | 36.0 | 61.9 | 27 | 27 |
| 1 1/4 | 32 | 5.25 | .81 | 2.5 | | 1.70 | 1.72 | 1.75 | 2.62 | 1.12 | 1.12 |
| | | 133 | 21.0 | 63.5 | | 43.3 | 43.7 | 44.5 | 66.7 | 29 | 29 |
| 1 1/2 | 40 | 6.12 | .88 | 2.88 | | 1.95 | 1.97 | 1.99 | 2.75 | 1.25 | 1.25 |
| | | 156 | 22.5 | 73.0 | | 49.6 | 50.0 | 50.5 | 69.8 | 32 | 32 |
| 2 | 50 | 6.5 | 1.0 | 3.62 | | 2.44 | 2.46 | 2.50 | 2.88 | 1.44 | 1.44 |
| | | 165 | 25.5 | 92.1 | | 61.9 | 62.5 | 63.5 | 73.0 | 37 | 37 |
| 2 1/2 | 65 | 7.5 | 1.12 | 4.12 | | 2.94 | 2.97 | 3.00 | 3.12 | 1.62 | 1.62 |
| | | 191 | 29.0 | 104.8 | | 74.6 | 75.4 | 76.0 | 79.4 | 41 | 41 |
| 3 | 80 | 8.25 | 1.25 | 5.0 | | 3.57 | 3.60 | 3.63 | 3.25 | 1.81 | 1.81 |
| | | 210 | 32.0 | 127.0 | | 90.7 | 91.4 | 92.0 | 82.5 | 46 | 46 |
| 3 1/2 | 90 | 9.0 | 1.38 | 5.5 | | 4.07 | 4.10 | 4.13 | 3.38 | 1.94 | 1.94 |
| | | 229 | 35.0 | 139.7 | | 103.4 | 104.1 | 105 | 85.7 | 49 | 49 |
| 4 | 100 | 10.75 | 1.5 | 6.19 | | 4.57 | 4.60 | 4.63 | 4.0 | 2.12 | 2.12 |
| | | 273 | 38.5 | 157.2 | | 116.1 | 116.8 | 118 | 101.6 | 54 | 54 |
| 5 | 125 | 13.0 | 1.75 | 7.31 | | 5.66 | 5.69 | 5.69 | 4.5 | 2.38 | 2.38 |
| | | 330 | 44.5 | 185.7 | | 143.7 | 144.5 | 145 | 114.3 | 60 | 60 |
| 6 | 150 | 14.0 | 1.88 | 8.5 | | 6.72 | 6.75 | 6.75 | 4.62 | 2.62 | 2.62 |
| | | 356 | 48.0 | 215.9 | | 170.7 | 171.4 | 171 | 117.3 | 67 | 67 |
| 8 | 200 | 16.5 | 2.19 | 10.62 | | 8.72 | 8.75 | 8.75 | 5.25 | 3.0 | 3.0 |
| | | 419 | 55.5 | 269.9 | | 221.5 | 222.2 | 222 | 133.3 | 76 | 76 |
| 10 | 250 | 20.0 | 2.5 | 12.75 | | 10.88 | 10.92 | 10.88 | 6.0 | 3.38 | 4.38 |
| | | 510 | 63.5 | 323.8 | | 276.2 | 277.4 | 276 | 152.4 | 86 | 111 |
| 12 | 300 | 22.0 | 2.62 | 15.0 | 12.88 | 12.92 | 12.94 | 6.12 | 3.62 | 4.62 | |
| | | 560 | 66.5 | 381.0 | 327.0 | 328.2 | 329 | 155.6 | 92 | 117 | |
| 14 | 350 | 23.75 | 2.75 | 16.25 | 14.14 | 14.18 | 14.19 | 6.5 | 3.69 | 5.0 | |
| | | 605 | 70.0 | 412.8 | 359.2 | 360.2 | 360 | 165.1 | 94 | 127 | |
| 16 | 400 | 27.0 | 3.0 | 18.5 | 16.16 | 16.19 | 16.19 | 7.0 | 4.19 | 5.5 | |
| | | 685 | 76.5 | 469.9 | 410.4 | 411.2 | 411 | 177.5 | 106 | 140 | |
| 18 | 450 | 29.25 | 3.25 | 21.0 | 18.18 | 18.20 | 18.19 | 7.25 | 4.62 | 6.0 | |
| | | 745 | 83.0 | 533.4 | 461.8 | 462.3 | 462 | 184.1 | 117 | 152 | |
| 20 | 500 | 32.0 | 3.5 | 23.0 | 20.20 | 20.25 | 20.19 | 7.5 | 5.0 | 6.4 | |
| | | 815 | 89.0 | 584.2 | 513.1 | 514.3 | 513 | 190.5 | 127 | 165 | |
| 24 | 600 | 37.0 | 4.0 | 27.25 | 24.25 | 24.25 | 24.19 | 8.0 | 5.5 | 7.25 | |
| | | 940 | 102.0 | 692.2 | 615.9 | 615.9 | 614 | 203.2 | 140 | 184 | |

¹ Socket Welding Flanges, sizes NPS 3 1/2 (DN 90) and larger are not covered by ASME/ANSI B16.5.

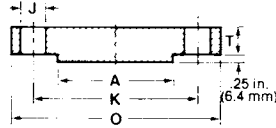
² Does not include .25" (6.4 mm) raised face.

| |
|-------------|
| INCHES |
| MILLIMETRES |

SOCKET WELDING



BLIND



CLASS 600 (PN 100) FLANGES FORGED STEEL ASTM A-105 1 ASME/ANSI B16.5

| NPS | DN | DRILLING | | | DEPTH OF SOCKET | DIAMETER OF HUB | | | APPROXIMATE WEIGHT | | | |
|-------|-----|--------------|---------------|---------------------|-----------------|-----------------|------------|-------------------------|--------------------|---|-------|-----------|
| | | NO. OF HOLES | DIA. OF HOLES | DIA. OF BOLT CIRCLE | | AT BASE | AT CHAMFER | LAP JOINT FILLET RADIUS | WELDING NECK | SLIP-ON, THREADED & SOCKET WELDING ¹ | BLIND | LAP JOINT |
| | | J | K | L | M | N | r | | | | | |
| 1/2 | 15 | 4 | .62 | 2.62 | .38 | 1.5 | .84 | .12 | 2 | 2 | 2 | 2 |
| 3/4 | 20 | 4 | .75 | 3.25 | .44 | 1.88 | 1.05 | .12 | 4 | 3 | 3 | 3 |
| 1 | 25 | 4 | .75 | 3.5 | .50 | 2.12 | 1.32 | .12 | 4 | 4 | 4 | 4 |
| 1 1/4 | 32 | 4 | .75 | 3.88 | .56 | 2.5 | 1.66 | .19 | 6 | 5 | 5 | 5 |
| 1 1/2 | 40 | 4 | .88 | 4.5 | .62 | 2.75 | 1.90 | .25 | 8 | 7 | 8 | 7 |
| 2 | 50 | 8 | .75 | 5.0 | .69 | 3.31 | 2.38 | .31 | 12 | 9 | 10 | 9 |
| 2 1/2 | 65 | 8 | .88 | 5.88 | .75 | 3.94 | 2.88 | .31 | 18 | 13 | 15 | 12 |
| 3 | 80 | 8 | .88 | 6.62 | .81 | 4.62 | 3.50 | .38 | 23 | 16 | 20 | 15 |
| 3 1/2 | 90 | 8 | 1.0 | 7.25 | - | 5.25 | 4.00 | .38 | 26 | 21 | 29 | 20 |
| 4 | 100 | 8 | 1.0 | 8.5 | - | 6.0 | 4.50 | .44 | 42 | 37 | 41 | 36 |
| 5 | 125 | 8 | 1.12 | 10.5 | - | 7.44 | 5.56 | .44 | 68 | 63 | 68 | 61 |
| 6 | 150 | 12 | 1.12 | 11.5 | - | 8.75 | 6.63 | .50 | 81 | 80 | 86 | 78 |
| 8 | 200 | 12 | 1.25 | 13.75 | - | 10.75 | 8.63 | .50 | 120 | 115 | 140 | 110 |
| 10 | 250 | 16 | 1.38 | 17.0 | - | 13.5 | 10.75 | .50 | 190 | 170 | 230 | 170 |
| 12 | 300 | 20 | 1.38 | 19.25 | - | 15.75 | 12.75 | .50 | 225 | 200 | 295 | 200 |
| 14 | 350 | 20 | 1.50 | 20.75 | - | 17.0 | 14.0 | .50 | 280 | 230 | 355 | 250 |
| 16 | 400 | 20 | 1.62 | 23.75 | - | 19.5 | 16.0 | .50 | 390 | 330 | 495 | 365 |
| 18 | 450 | 20 | 1.75 | 25.75 | - | 21.5 | 18.0 | .50 | 475 | 400 | 630 | 435 |
| 20 | 500 | 24 | 1.75 | 28.5 | - | 24.0 | 20.0 | .50 | 590 | 510 | 810 | 570 |
| 24 | 600 | 24 | 2.0 | 33.0 | - | 28.25 | 24.0 | .50 | 830 | 730 | 1250 | 810 |
| | | 24 | 51 | 838.2 | - | 717.5 | 609.6 | 13 | 376 | 331 | 567 | 367 |

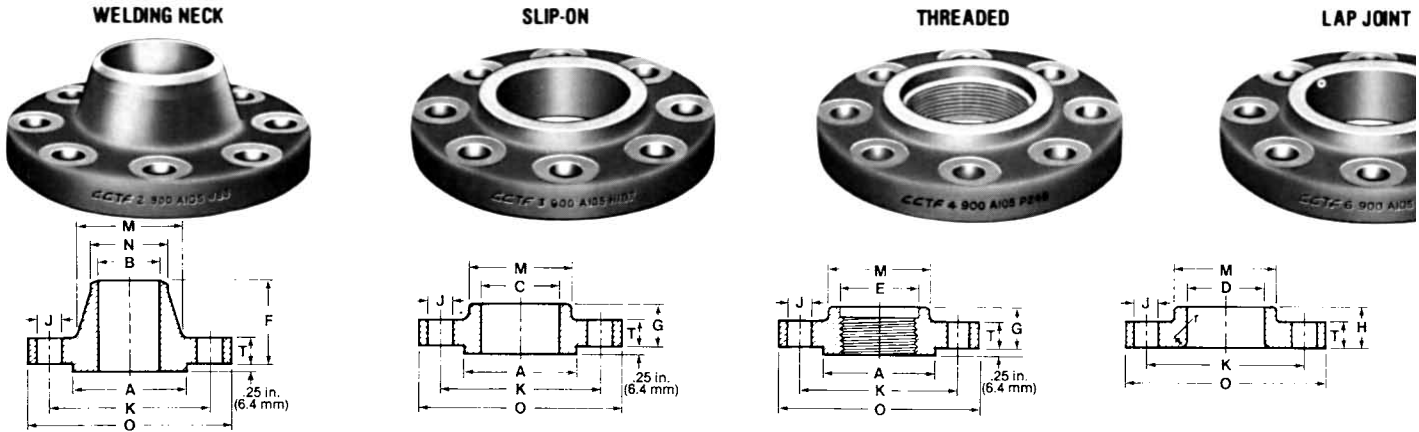
For bevel of Welding Neck, see page 48.

Gasket dimensions - page 20.

Bolting dimensions - page 22.

Flange facing dimensions - page 20.

| |
|-----------|
| POUNDS |
| KILOGRAMS |



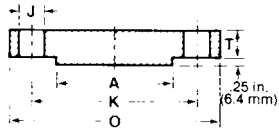
For sizes NPS 1/2 (DN 15) through NPS 2 1/2 (DN 65) use Class 1500 (PN 250) flanges.¹

| NPS | DN | FLANGE OUTSIDE DIAMETER | FLANGE ² THICKNESS MIN. | RAISED FACE DIA. | BORE | | | LENGTH TRU HUB ² | | | |
|-----|-----|-------------------------|------------------------------------|------------------|------------------------------|---------------|----------------|-----------------------------|--------------|-------------------|-----------|
| | | | | | WELDING NECK | SLIP-ON, MIN. | LAP JOINT MIN. | THREADED COUNTER-BORE MIN. | WELDING NECK | SLIP-ON, THREADED | LAP JOINT |
| | | O | T | A | B | C | D | E | F | G | H |
| 3 | | 9.50 | 1.50 | 5.00 | To be specified by purchaser | 3.57 | 3.60 | 3.63 | 4.00 | 2.12 | 2.12 |
| | 80 | 241 | 38.5 | 127.0 | | 90.7 | 91.4 | 92 | 101.6 | 54 | 54 |
| 4 | | 11.50 | 1.75 | 6.19 | | 4.57 | 4.60 | 4.63 | 4.50 | 2.75 | 2.75 |
| | 100 | 292 | 44.5 | 157.2 | | 116.1 | 116.8 | 118 | 114.3 | 70 | 70 |
| 5 | | 13.75 | 2.0 | 7.31 | | 5.66 | 5.69 | 5.69 | 5.00 | 3.12 | 3.12 |
| | 125 | 349 | 51.0 | 185.7 | | 143.7 | 144.5 | 145 | 127.0 | 79 | 79 |
| 6 | | 15.00 | 2.19 | 8.50 | | 6.72 | 6.75 | 6.75 | 5.50 | 3.38 | 3.38 |
| | 150 | 381 | 56.0 | 215.9 | | 170.7 | 171.4 | 171 | 139.7 | 86 | 86 |
| 8 | | 18.50 | 2.5 | 10.62 | | 8.72 | 8.75 | 8.75 | 67.38 | 4.00 | 4.50 |
| | 200 | 470 | 63.5 | 269.9 | | 221.5 | 222.2 | 222 | 161.9 | 102 | 114 |
| 10 | | 21.50 | 2.75 | 12.75 | | 10.88 | 10.92 | 10.88 | 7.25 | 4.25 | 5.00 |
| | 250 | 545 | 70.0 | 323.8 | | 276.2 | 277.4 | 276 | 184.2 | 108 | 127 |
| 12 | | 24.00 | 3.12 | 15.00 | | 12.88 | 12.92 | 12.94 | 7.88 | 4.62 | 5.62 |
| | 300 | 610 | 79.5 | 381.0 | | 327.0 | 328.2 | 329 | 200.0 | 117 | 143 |
| 14 | | 25.25 | 3.38 | 16.25 | | 14.14 | 14.18 | 14.19 | 8.38 | 5.12 | 6.12 |
| | 350 | 640 | 86.0 | 412.8 | | 359.2 | 360.2 | 360 | 212.7 | 130 | 156 |
| 16 | | 27.75 | 3.5 | 18.50 | | 16.16 | 16.19 | 16.19 | 8.50 | 5.25 | 6.50 |
| | 400 | 705 | 89.0 | 469.9 | | 410.4 | 411.2 | 411 | 215.9 | 133 | 165 |
| 18 | | 31.00 | 4.0 | 21.00 | | 18.18 | 18.20 | 18.19 | 9.00 | 6.00 | 7.50 |
| | 450 | 785 | 102.0 | 533.4 | | 461.8 | 462.3 | 462 | 228.8 | 152 | 191 |
| 20 | | 33.75 | 4.25 | 23.00 | | 20.20 | 20.25 | 20.19 | 9.75 | 6.25 | 8.25 |
| | 500 | 855 | 108.0 | 584.2 | | 513.1 | 514.3 | 513 | 247.6 | 159 | 210 |
| 24 | | 41.00 | 5.5 | 27.25 | | 24.25 | 24.25 | 24.19 | 11.50 | 8.00 | 10.50 |
| | 600 | 1040 | 140.0 | 692.2 | | 615.9 | 615.9 | 614 | 292.1 | 203 | 267 |

¹ Including SOCKET WELDING FLANGES

² Does not include .25" (6.4 mm) raised face.

BLIND



CLASS 900 (PN 150) FLANGES FORGED STEEL ASTM A-105 ASME/ANSI B16.5

For sizes NPS 1/2 (DN 15) through NPS 2 1/2 (DN 65) use Class 1500 (PN 250) flanges. ¹

| NPS | DN | DRILLING | | DIAMETER OF HUB | | | LAP JOINT FILLET RADIUS r | APPROXIMATE WEIGHT | | | |
|-----|-----|--------------|------------------------|------------------------------|--------------|-----------------|------------------------------|--------------------|-------------------|-------|-----------|
| | | NO. OF HOLES | DIAMETER OF HOLES J | DIAMETER OF BOLT CIRCLE K | AT BASE M | AT CHAMFER N | | WELDING NECK | SLIP-ON, THREADED | BLIND | LAP JOINT |
| 3 | | 8 | 1.00 | 7.50 | 5.00 | 3.50 | .38 | .31 | 31 | 31 | 47 |
| | 80 | 8 | 26 | 190.5 | 127.0 | 88.9 | 10 | 14.1 | 14.1 | 14.1 | 21.3 |
| 4 | | 8 | 1.25 | 9.25 | 6.25 | 4.50 | .44 | 51 | 53 | 54 | 51 |
| | 100 | 8 | 32 | 234.9 | 158.7 | 114.3 | 11 | 23.1 | 24.0 | 24.5 | 23.1 |
| 5 | | 8 | 1.38 | 11.00 | 7.50 | 5.56 | .44 | 86 | 83 | 87 | 81 |
| | 125 | 8 | 35 | 279.4 | 190.5 | 141.3 | 11 | 39.0 | 37.6 | 39.5 | 36.7 |
| 6 | | 12 | 1.25 | 12.50 | 9.25 | 6.63 | .50 | 110 | 110 | 115 | 105 |
| | 150 | 12 | 32 | 317.5 | 234.9 | 168.3 | 13 | 49.9 | 49.9 | 52.2 | 47.6 |
| 8 | | 12 | 1.50 | 15.50 | 11.75 | 8.63 | .50 | 175 | 170 | 200 | 190 |
| | 200 | 12 | 39 | 393.7 | 298.4 | 219.1 | 13 | 79.4 | 77.1 | 90.7 | 86.2 |
| 10 | | 16 | 1.50 | 18.50 | 14.50 | 10.75 | .50 | 260 | 245 | 290 | 275 |
| | 250 | 16 | 39 | 469.9 | 368.3 | 273.0 | 13 | 118 | 111 | 132 | 125 |
| 12 | | 20 | 1.50 | 21.00 | 16.50 | 12.75 | .50 | 325 | 325 | 415 | 370 |
| | 300 | 20 | 39 | 533.4 | 419.1 | 323.8 | 13 | 147 | 147 | 188 | 168 |
| 14 | | 20 | 1.62 | 22.00 | 17.75 | 14.00 | .50 | 400 | 400 | 520 | 415 |
| | 350 | 20 | 42 | 558.8 | 450.8 | 355.6 | 13 | 181 | 181 | 236 | 188 |
| 16 | | 20 | 1.75 | 24.25 | 20.00 | 16.00 | .50 | 495 | 425 | 600 | 465 |
| | 400 | 20 | 45 | 615.9 | 508.0 | 406.4 | 13 | 225 | 193 | 272 | 211 |
| 18 | | 20 | 2.00 | 27.00 | 22.25 | 18.00 | .50 | 680 | 600 | 850 | 650 |
| | 450 | 20 | 51 | 685.8 | 565.1 | 457.2 | 13 | 308 | 272 | 386 | 295 |
| 20 | | 20 | 2.12 | 29.50 | 24.50 | 20.00 | .50 | 830 | 730 | 1075 | 810 |
| | 500 | 20 | 54 | 749.3 | 622.3 | 508.0 | 13 | 376 | 331 | 488 | 367 |
| 24 | | 20 | 2.62 | 35.50 | 29.5 | 24.00 | .50 | 1500 | 1400 | 2025 | 1550 |
| | 600 | 20 | 67 | 901.7 | 749.3 | 609.6 | 13 | 680 | 635 | 918 | 703 |

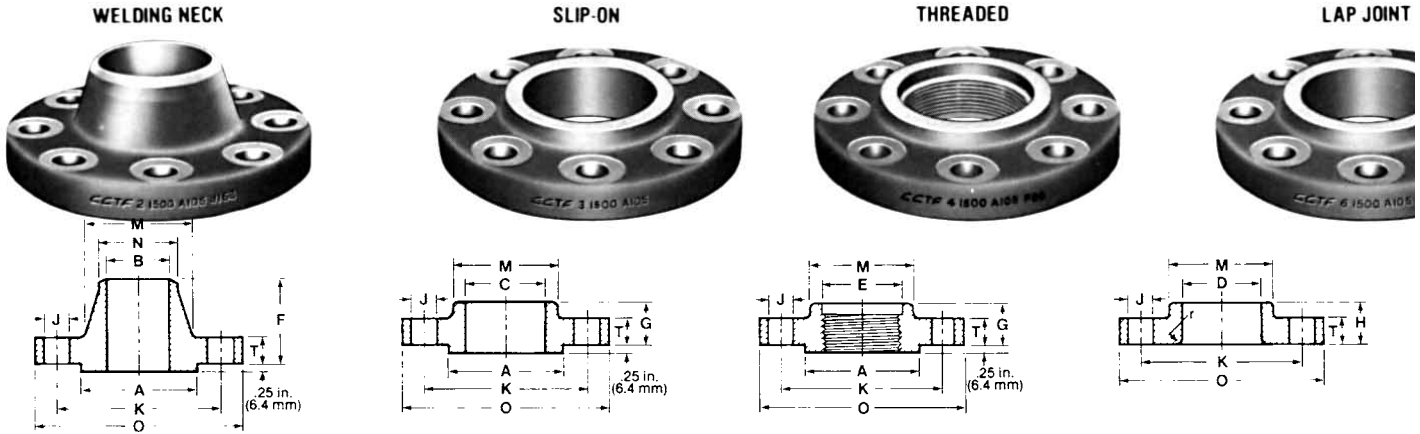
For level of Welding Neck, see page 48.

Gasket dimensions - page 20.

Bolting dimensions - page 22.

Flange facing dimensions - page 20.

| |
|-----------|
| POUNDS |
| KILOGRAMS |



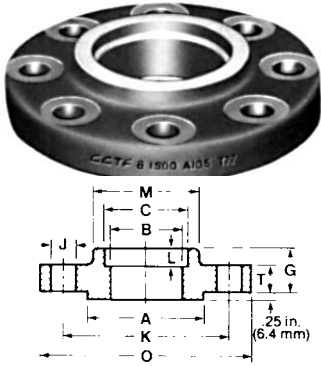
| NPS | DN | FLANGE OUTSIDE DIAMETER O | FLANGE ² THICKNESS MIN. T | RAISED FACE DIA. A | BORE | | | | LENGTH TRU HUB ² | | |
|-------|-----|------------------------------|---|-----------------------|------------------------------------|---|---------------------|---------------------------------|-----------------------------|---|----------------|
| | | | | | WELDING NECK & SOCKET WELDING B | 'SLIP-ON & SOCK. WELD. SOCKET MIN. C | LAP JOINT MIN. D | THREADED COUNTER-BORE MIN. E | WELDING NECK F | 'SLIP-ON, THREADED, SOCKET WELDING G | LAP JOINT H |
| 1/2 | 15 | 4.75 | .88 | 1.38 | To be specified by purchaser | 0.88 | .90 | .93 | 2.38 | 1.25 | 1.25 |
| | | 121 | 22.5 | 34.9 | | 22.2 | 22.9 | 23.5 | 60.3 | 32 | 32 |
| 3/4 | 20 | 5.12 | 1.00 | 1.69 | | 1.09 | 1.11 | 1.14 | 2.75 | 1.38 | 1.38 |
| | | 130 | 25.5 | 42.9 | | 27.8 | 28.2 | 29.0 | 69.8 | 35 | 35 |
| 1 | 25 | 5.88 | 1.12 | 2.00 | | 1.36 | 1.38 | 1.41 | 2.88 | 1.62 | 1.62 |
| | | 149 | 29.0 | 50.8 | | 34.5 | 34.9 | 36.0 | 73.0 | 41 | 41 |
| 1 1/4 | 32 | 6.25 | 1.12 | 2.50 | | 1.70 | 1.72 | 1.75 | 2.88 | 1.62 | 1.62 |
| | | 159 | 29.0 | 63.5 | | 43.3 | 43.7 | 44.5 | 73.0 | 41 | 41 |
| 1 1/2 | 40 | 7.00 | 1.25 | 2.88 | | 1.95 | 1.97 | 1.99 | 3.25 | 1.75 | 1.75 |
| | | 178 | 32.0 | 73.0 | | 49.6 | 50.0 | 50.5 | 82.5 | 44 | 44 |
| 2 | 50 | 8.50 | 1.50 | 3.62 | | 2.44 | 2.46 | 2.50 | 4.00 | 2.25 | 2.25 |
| | | 216 | 38.5 | 92.1 | | 61.9 | 62.5 | 63.5 | 101.6 | 57 | 57 |
| 2 1/2 | 65 | 9.62 | 1.62 | 4.12 | | 2.94 | 2.97 | 3.00 | 4.12 | 2.50 | 2.50 |
| | | 244 | 41.5 | 104.8 | | 74.6 | 75.4 | 76.0 | 104.8 | 64 | 64 |
| 3 | 80 | 10.50 | 1.88 | 5.00 | | - | 3.60 | 3.63 | 4.62 | 2.88 | 2.88 |
| | | 267 | 48.0 | 127.0 | | - | 91.4 | 92.0 | 117.5 | 73 | 73 |
| 4 | 100 | 12.25 | 2.12 | 6.19 | | - | 4.60 | 4.63 | 4.88 | 3.56 | 3.56 |
| | | 311 | 54.0 | 157.2 | | - | 116.8 | 118 | 123.8 | 90 | 90 |
| 5 | 125 | 14.75 | 2.88 | 7.31 | | - | 5.69 | 5.69 | 6.12 | 4.12 | 4.12 |
| | | 375 | 73.5 | 185.7 | | - | 144.5 | 145 | 155.6 | 105 | 105 |
| 6 | 150 | 15.50 | 3.25 | 8.50 | | - | 6.75 | 6.75 | 6.75 | 4.69 | 4.69 |
| | | 394 | 83.0 | 215.9 | | - | 171.4 | 171 | 171.4 | 119 | 119 |
| 8 | 200 | 19.00 | 3.62 | 10.62 | | - | 8.75 | 8.75 | 8.38 | 5.62 | 5.62 |
| | | 483 | 92.0 | 269.9 | | - | 222.2 | 222 | 212.7 | 143 | 143 |
| 10 | 250 | 23.00 | 4.25 | 12.75 | | - | 10.92 | 10.88 | 10.00 | 6.25 | 7.00 |
| | | 585 | 108.0 | 323.8 | | - | 277.4 | 276 | 254.0 | 159 | 178 |
| 12 | 300 | 26.50 | 4.88 | 15.00 | | - | 12.92 | 12.94 | 11.12 | 7.12 | 8.62 |
| | | 675 | 124.0 | 381.0 | | - | 328.2 | 329 | 282.6 | 181 | 219 |
| 14 | 350 | 29.50 | 5.25 | 16.25 | | - | 14.18 | - | 11.75 | - | 9.50 |
| | | 750 | 133.5 | 412.8 | | - | 360.2 | - | 298.4 | - | 241 |
| 16 | 400 | 32.50 | 5.75 | 18.50 | - | 16.19 | - | 12.25 | - | 10.25 | |
| | | 825 | 146.5 | 469.9 | - | 411.2 | - | 311.1 | - | 260 | |
| 18 | 450 | 36.00 | 6.38 | 21.00 | - | 18.20 | - | 12.88 | - | 10.88 | |
| | | 915 | 162.0 | 533.4 | - | 462.3 | - | 327.0 | - | 276 | |
| 20 | 500 | 38.75 | 7.00 | 23.00 | - | 20.25 | - | 14.00 | - | 11.50 | |
| | | 985 | 178.0 | 584.2 | - | 514.3 | - | 355.6 | - | 292 | |
| 24 | 600 | 46.00 | 8.00 | 27.25 | - | 24.25 | - | 16.00 | - | 13.00 | |
| | | 1170 | 203.5 | 692.2 | - | 615.9 | - | 406.4 | - | 330 | |

¹ Socket Welding and Slip-on Flanges, size NPS 3 1/2 (DN 80) and larger are not covered by ASME/ANSI B16.5.

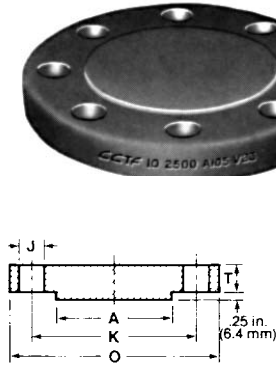
² Does not include .25" (6.4 mm) raised face.

| |
|-------------|
| INCHES |
| MILLIMETRES |

SOCKET WELDING



BLIND



CLASS 1500 (PN 250) FLANGES FORGED STEEL ASTM A-105 ASME/ANSI B16.5

| NPS | DN | DRILLING | | | DEPTH OF SOCKET L | DIAMETER OF HUB | | | APPROXIMATE WEIGHT | | | |
|-------|-----|--------------|--------------------|--------------------------|----------------------|-----------------|-----------------|------------------------------|--------------------|-------------------------------------|-------|-----------|
| | | NO. OF HOLES | DIA. OF HOLES J | DIA. OF BOLT CIRCLE K | | AT BASE M | AT CHAMFER N | LAP JOINT FILLET RADIUS r | WELDING NECK | 'SLIP-ON, THREADED & SOCKET WELDING | BLIND | LAP JOINT |
| 1/2 | 15 | 4 | .88 | 3.25 | .38 | 1.50 | .84 | .12 | 5 | 4 | 4 | 4 |
| 3/4 | 20 | 4 | .88 | 3.50 | .44 | 1.75 | 1.05 | .12 | 6 | 5 | 6 | 5 |
| 1 | 25 | 4 | 1.00 | 4.00 | .50 | 2.06 | 1.32 | .12 | 9 | 8 | 8 | 8 |
| 1 1/4 | 32 | 4 | 1.00 | 4.38 | .56 | 2.50 | 1.66 | .19 | 10 | 9 | 9 | 9 |
| 1 1/2 | 40 | 4 | 1.12 | 4.88 | .62 | 2.75 | 1.90 | .25 | 13 | 12 | 13 | 12 |
| 2 | 50 | 8 | 1.00 | 6.50 | .69 | 4.12 | 2.38 | .31 | 25 | 25 | 25 | 25 |
| 2 1/2 | 65 | 8 | 1.12 | 7.50 | .75 | 4.88 | 2.88 | .31 | 36 | 36 | 35 | 35 |
| 3 | 80 | 8 | 1.25 | 8.00 | - | 5.25 | 3.50 | .38 | 48 | 48 | 48 | 47 |
| 4 | 100 | 8 | 1.38 | 9.50 | - | 6.38 | 4.50 | .44 | 73 | 73 | 73 | 75 |
| 5 | 125 | 8 | 1.62 | 11.50 | - | 7.75 | 5.56 | .44 | 130 | 130 | 140 | 140 |
| 6 | 150 | 12 | 1.50 | 12.50 | - | 9.00 | 6.63 | .50 | 165 | 165 | 160 | 170 |
| 8 | 200 | 12 | 1.75 | 15.50 | - | 11.50 | 8.63 | .50 | 275 | 260 | 300 | 285 |
| 10 | 250 | 12 | 2.00 | 19.00 | - | 14.50 | 10.75 | .50 | 455 | 435 | 510 | 485 |
| 12 | 300 | 16 | 2.12 | 22.50 | - | 17.75 | 12.75 | .50 | 690 | 580 | 690 | 630 |
| 14 | 350 | 16 | 2.38 | 25.00 | - | 19.50 | 14.00 | .50 | 940 | - | 975 | 890 |
| 16 | 400 | 16 | 2.62 | 27.75 | - | 21.75 | 16.00 | .50 | 1250 | - | 1300 | 1150 |
| 18 | 450 | 16 | 2.88 | 30.50 | - | 23.50 | 18.00 | .50 | 1625 | - | 1750 | 1475 |
| 20 | 500 | 16 | 3.12 | 32.75 | - | 25.25 | 20.00 | .50 | 2050 | - | 2225 | 1775 |
| 24 | 600 | 16 | 3.62 | 39.00 | - | 30.00 | 24.00 | .50 | 3325 | - | 3625 | 2825 |

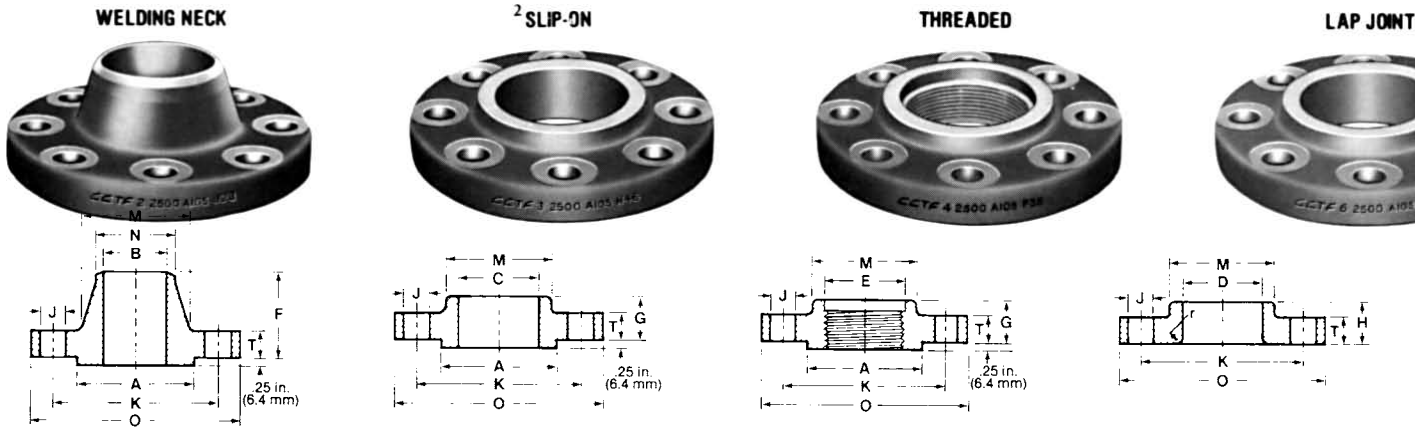
For level of Welding Neck, see page 48.

Gasket dimensions - page 20.

Bolting dimensions - page 22.

Flange facing dimensions - page 20.

| |
|-----------|
| POUNDS |
| KILOGRAMS |



| NPS | DN | FLANGE OUTSIDE DIAMETER O | FLANGE ¹ THICKNESS T | RAISED FACE DIA. A | BORE | | | | LENGTH TRU HUB ¹ | | |
|-------|-----|------------------------------|------------------------------------|-----------------------|------------------------------------|--|---------------------|---------------------------------|-----------------------------|--|----------------|
| | | | | | WELDING NECK & SOCKET WELDING B | SLIP-ON ² & SOCK. WELD. ² SOCKET MIN. C | LAP JOINT MIN. D | THREADED COUNTER-BORE MIN. E | WELDING NECK F | SLIP-ON ² THREADED SOCKET ² WELDING G | LAP JOINT H |
| 1/2 | 15 | 5.25 | 1.19 | 1.38 | To be specified by purchaser | 0.88 | .90 | 0.93 | 2.88 | 1.56 | 1.56 |
| | | 133 | 30.5 | 34.9 | | 22.2 | 22.9 | 23.5 | 73.0 | 40 | 40 |
| 3/4 | 20 | 5.50 | 1.25 | 1.69 | | 1.09 | 1.11 | 1.14 | 3.12 | 1.69 | 1.69 |
| | | 140 | 32.0 | 42.9 | | 27.8 | 28.2 | 29.0 | 79.4 | 43 | 43 |
| 1 | 25 | 6.25 | 1.38 | 2.00 | | 1.36 | 1.38 | 1.41 | 3.50 | 1.88 | 1.88 |
| | | 159 | 35.0 | 50.8 | | 34.5 | 34.9 | 36.0 | 88.9 | 48 | 48 |
| 1 1/4 | 32 | 7.25 | 1.50 | 2.50 | | 1.70 | 1.72 | 1.75 | 3.75 | 2.06 | 2.06 |
| | | 184 | 38.5 | 63.5 | | 43.3 | 43.7 | 44.5 | 95.2 | 52 | 52 |
| 1 1/2 | 40 | 8.00 | 1.75 | 2.88 | | 1.95 | 1.97 | 1.99 | 4.38 | 2.38 | 2.38 |
| | | 203 | 44.5 | 73.0 | | 49.6 | 50.0 | 50.5 | 111.4 | 60 | 60 |
| 2 | 50 | 9.25 | 2.00 | 3.62 | | 2.44 | 2.46 | 2.50 | 5.00 | 2.75 | 2.75 |
| | | 235 | 51.0 | 92.1 | | 61.9 | 62.5 | 63.5 | 127.0 | 70 | 70 |
| 2 1/2 | 65 | 10.50 | 2.25 | 4.12 | | 2.94 | 2.97 | 3.00 | 5.62 | 3.12 | 3.12 |
| | | 267 | 57.5 | 104.8 | | 74.6 | 75.4 | 76 | 142.9 | 79 | 79 |
| 3 | 80 | 12.00 | 2.62 | 5.00 | | 3.57 | 3.60 | 3.63 | 6.62 | 3.62 | 3.62 |
| | | 305 | 67.0 | 127.0 | | 90.7 | 91.4 | 92 | 168.2 | 92 | 92 |
| 4 | 100 | 14.00 | 3.00 | 6.19 | | 4.57 | 4.60 | 4.63 | 7.50 | 4.25 | 4.25 |
| | | 356 | 76.5 | 157.2 | | 116.1 | 116.8 | 118 | 190.5 | 108 | 108 |
| 5 | 125 | 16.50 | 3.62 | 7.31 | | 5.66 | 5.69 | 5.69 | 9.00 | 5.12 | 5.12 |
| | | 419 | 92.5 | 185.7 | | 143.7 | 144.5 | 145 | 228.6 | 130 | 130 |
| 6 | 150 | 19.00 | 4.25 | 8.50 | | 6.72 | 6.75 | 6.75 | 10.75 | 6.0 | 6.0 |
| | | 483 | 108.0 | 215.9 | | 170.7 | 171.4 | 171 | 273.0 | 152 | 152 |
| 8 | 200 | 21.75 | 5.00 | 10.62 | | 8.72 | 8.75 | 8.75 | 12.50 | 7.0 | 7.0 |
| | | 552 | 127.0 | 269.9 | | 221.5 | 222.2 | 222 | 317.5 | 178 | 178 |
| 10 | 250 | 26.50 | 6.50 | 12.75 | | 10.88 | 10.92 | 10.88 | 16.50 | 9.0 | 9.0 |
| | | 675 | 165.5 | 323.8 | | 276.2 | 277.4 | 276 | 419.4 | 229 | 229 |
| 12 | 300 | 30.00 | 7.25 | 15.00 | | 12.88 | 12.92 | 12.94 | 18.25 | 10.0 | 10.0 |
| | | 760 | 184.5 | 381.0 | | 327.0 | 328.2 | 329 | 463.6 | 254 | 254 |

¹ Dimensions do not include .25" (6.4 mm) raised face.

² Class 2500 (PN 420) Socket Welding and Slip-on Flanges not covered by ANSI B16.5

REDUCING FLANGES ASME/ANSI B16.5 —

Hub dimensions shall be at least as large as those of the standard flanges of the size to which the reduction is being made, except that flanges reduced to a size smaller than those shown in the accompanying table may be used without hubs.

For threaded flanges, tapped smaller than the reduced size in the table, Blind Flanges may be used.

Flange thickness, outside diameter, drilling template and

facing dimensions, shall be the same as those of a standard flange of the nominal pipe size from which the reduction is being made.

Reducing flanges are specified by giving firstly the size from which the reduction is made, followed by the reduced size.

Example: NPS 6 x 4 Class 300 reducing threaded flange. (DN 150 x 100, PN 50 reducing threaded flange.)

| |
|-------------|
| INCHES |
| MILLIMETRES |

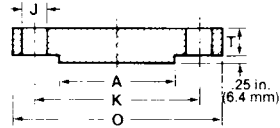
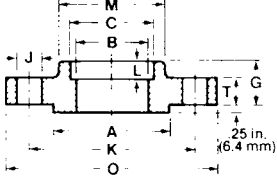
² SOCKET WELDING



BLIND



CLASS 2500 (PN 420) FLANGES* FORGED STEEL ASTM A-105 ¹ASME/ANSI B16.5



| NPS | DN | DRILLING | | | DEPTH OF SOCKET L | DIAMETER OF HUB | | LAP JOINT FILLET RADIUS r | APPROXIMATE WEIGHT | | | |
|-------|-----|--------------|--------------------|--------------------------|----------------------|-----------------|-----------------|------------------------------|--------------------|---|-------|-----------|
| | | NO. OF HOLES | DIA. OF HOLES J | DIA. OF BOLT CIRCLE K | | AT BASE M | AT CHAMFER N | | WELDING NECK | SLIP-ON, ² THREADED & SOCKET WELDING | BLIND | LAP JOINT |
| 1/2 | 15 | 4 | .88 | 3.50 | .38 | 1.69 | .84 | .12 | 7 | 7 | 7 | 7 |
| 3/4 | 20 | 4 | .88 | 3.75 | .44 | 2.00 | 1.05 | .12 | 8 | 8 | 8 | 8 |
| 1 | 25 | 4 | 1.00 | 4.25 | .50 | 2.25 | 1.32 | .12 | 12 | 11 | 11 | 11 |
| 1 1/4 | 32 | 4 | 1.12 | 5.12 | .56 | 2.88 | 1.66 | .19 | 17 | 16 | 17 | 16 |
| 1 1/2 | 40 | 4 | 1.25 | 5.75 | .62 | 3.12 | 1.90 | .25 | 25 | 22 | 23 | 22 |
| 2 | 50 | 8 | 1.12 | 6.75 | .69 | 3.75 | 2.38 | .31 | 42 | 38 | 39 | 37 |
| 2 1/2 | 65 | 8 | 1.25 | 7.75 | .75 | 4.50 | 2.88 | .31 | 52 | 55 | 56 | 53 |
| 3 | 80 | 8 | 1.38 | 9.00 | - | 5.25 | 3.50 | .38 | 94 | 83 | 86 | 80 |
| 4 | 100 | 8 | 1.62 | 10.75 | - | 6.50 | 4.50 | .44 | 145 | 125 | 135 | 120 |
| 5 | 125 | 8 | 1.88 | 12.75 | - | 8.00 | 5.56 | .44 | 245 | 210 | 225 | 205 |
| 6 | 150 | 8 | 2.12 | 14.50 | - | 9.25 | 6.63 | .50 | 380 | 325 | 345 | 315 |
| 8 | 200 | 12 | 2.12 | 17.25 | - | 12.00 | 8.63 | .50 | 580 | 485 | 530 | 470 |
| 10 | 250 | 12 | 2.62 | 21.25 | - | 14.75 | 10.75 | .50 | 1075 | 930 | 1025 | 900 |
| 12 | 300 | 12 | 2.88 | 24.38 | - | 17.38 | 12.75 | .50 | 1525 | 1100 | 1300 | 1100 |

* Class 2500 (PN 420) Socket Welding and Slip-on Flanges are not covered by ASME/ANSI B16.5.
Bevel of Welding Neck, see page 48
Flange facing and gasket dimensions, see page 20.
Bolting dimensions, see page 22.

CLASS 150 — 2500 (PN 20 - 420)

| Nominal Pipe Size | DN | Smallest Size of Reducing Outlet Requiring Hub Flanges |
|-------------------|----|--|
| 1 | 25 | 1/2 |
| 1 1/4 | 32 | 1/2 |
| 1 1/2 | 40 | 1/2 |
| 2 | 50 | 1 |
| 2 1/2 | 65 | 1 1/4 |
| 3 | 80 | 1 1/4 |

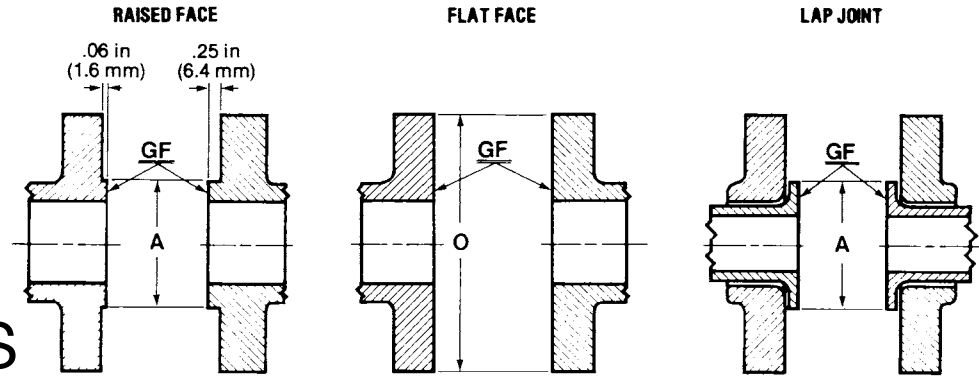
| Nominal Pipe Size | DN | Smallest Size of Reducing Outlet Requiring Hub Flanges |
|-------------------|-----|--|
| 3 1/2 | 90 | 1 1/2 |
| 4 | 100 | 1 1/2 |
| 5 | 125 | 1 1/2 |
| 6 | 150 | 2 1/2 |
| 8 | 200 | 3 1/2 |
| 10 | 250 | 3 1/2 |

| Nominal Pipe Size | DN | Smallest Size of Reducing Outlet Requiring Hub Flanges |
|-------------------|-----|--|
| 12 | 300 | 3 1/2 |
| 14 | 350 | 3 1/2 |
| 16 | 400 | 4 |
| 18 | 450 | 4 |
| 20 | 500 | 4 |
| 24 | 600 | 4 |

| |
|-----------|
| POUNDS |
| KILOGRAMS |

Reducing Flanges are generally supplied as Slip-on or Threaded; however Reducing Welding Neck flanges are available by special order.

FLANGE FACING AND GASKET DIMENSIONS



RAISED FACE, FLAT FACE, LAP JOINT

| NPS | *FLANGE FACING | | GASKET DIMENSIONS | | | | | | | | FULL FACE TYPE OUTSIDE DIAMETER | FLAT RING OR FULL FACE TYPES INSIDE DIAMETER |
|-------|----------------|-------|-------------------|--|---------|---------|---------|---------|----------|-----------------|------------------------------------|---|
| | DN | A | O | FLAT RING TYPE GASKET (EXTENDING TO INSIDES OF BOLTS) OUTSIDE DIAMETER | | | | | | INSIDE DIAMETER | | |
| | | | | CL. 150 | CL. 300 | CL. 400 | CL. 600 | CL. 900 | CL. 1500 | | | |
| 1/2 | 15 | 1.38 | 35 | 1.88 | 2.12 | 2.12 | 2.12 | 2.50 | 2.50 | 2.75 | 0.84 | |
| | | | | 48 | 54 | 54 | 54 | 64 | 64 | 70 | 21 | |
| 3/4 | 20 | 1.69 | 43 | 2.25 | 2.62 | 2.62 | 2.62 | 2.75 | 2.75 | 3.00 | 1.06 | |
| | | | | 57 | 67 | 67 | 67 | 70 | 70 | 76 | 27 | |
| 1 | 25 | 2 | 51 | 2.62 | 2.88 | 2.88 | 2.88 | 3.12 | 3.12 | 3.38 | 1.31 | |
| | | | | 67 | 73 | 73 | 73 | 79 | 79 | 86 | 33 | |
| 1 1/4 | 32 | 2.5 | 64 | 3.00 | 3.25 | 3.25 | 3.25 | 3.50 | 3.50 | 4.12 | 1.66 | |
| | | | | 76 | 83 | 83 | 83 | 89 | 89 | 105 | 42 | |
| 1 1/2 | 40 | 2.88 | 73 | 3.38 | 3.75 | 3.75 | 3.75 | 3.88 | 3.88 | 4.62 | 1.91 | |
| | | | | 86 | 95 | 95 | 95 | 98 | 98 | 117 | 49 | |
| 2 | 50 | 3.62 | 92 | 4.12 | 4.38 | 4.38 | 4.38 | 5.62 | 5.62 | 5.75 | 2.38 | |
| | | | | 105 | 111 | 111 | 111 | 143 | 143 | 146 | 60 | |
| 2 1/2 | 65 | 4.12 | 105 | 4.88 | 5.12 | 5.12 | 5.12 | 6.50 | 6.50 | 6.62 | 2.88 | |
| | | | | 124 | 130 | 130 | 130 | 165 | 165 | 168 | 73 | |
| 3 | 80 | 5 | 127 | 5.38 | 5.88 | 5.88 | 5.88 | 6.62 | 6.88 | 7.75 | 3.5 | |
| | | | | 137 | 149 | 149 | 149 | 168 | 175 | 197 | 89 | |
| 3 1/2 | 90 | 5.5 | 140 | 6.38 | 6.50 | 6.38 | 6.38 | - | - | - | 4 | |
| | | | | 162 | 165 | 162 | 162 | - | - | - | 102 | |
| 4 | 100 | 6.19 | 157 | 6.88 | 7.12 | 7.00 | 7.62 | 8.12 | 8.25 | 9.25 | 4.5 | |
| | | | | 175 | 181 | 178 | 194 | 206 | 210 | 235 | 114 | |
| 5 | 125 | 7.31 | 185 | 7.75 | 8.50 | 8.38 | 9.50 | 9.75 | 10.00 | 11.00 | 5.56 | |
| | | | | 197 | 216 | 213 | 241 | 248 | 254 | 279 | 141 | |
| 6 | 150 | 8.5 | 216 | 8.75 | 9.88 | 9.75 | 10.50 | 11.38 | 11.12 | 12.50 | 6.62 | |
| | | | | 222 | 251 | 248 | 267 | 289 | 2.83 | 318 | 168 | |
| 8 | 200 | 10.62 | 270 | 11.00 | 12.12 | 12.00 | 12.62 | 14.12 | 13.88 | 15.25 | 8.62 | |
| | | | | 279 | 308 | 305 | 321 | 359 | 352 | 387 | 219 | |
| 10 | 250 | 12.75 | 324 | 13.38 | 14.25 | 14.12 | 15.75 | 17.12 | 17.12 | 18.75 | 10.75 | |
| | | | | 340 | 362 | 359 | 400 | 435 | 435 | 476 | 273 | |
| 12 | 300 | 15 | 381 | 16.12 | 16.62 | 16.50 | 18.00 | 19.62 | 20.50 | 21.62 | 12.75 | |
| | | | | 410 | 422 | 419 | 457 | 498 | 520 | 550 | 324 | |
| 14 | 350 | 16.25 | 413 | 17.75 | 19.12 | 19.00 | 19.38 | 20.50 | 22.75 | - | 14 | |
| | | | | 451 | 486 | 483 | 492 | 520 | 580 | - | 356 | |
| 16 | 400 | 18.5 | 470 | 20.25 | 21.25 | 21.12 | 22.25 | 22.62 | 25.25 | - | 16 | |
| | | | | 515 | 540 | 537 | 565 | 575 | 640 | - | 407 | |
| 18 | 450 | 21 | 533 | 21.62 | 23.50 | 23.38 | 24.12 | 25.12 | 27.75 | - | 18 | |
| | | | | 550 | 595 | 595 | 615 | 640 | 705 | - | 457 | |
| 20 | 500 | 23 | 584 | 23.88 | 25.75 | 25.50 | 26.88 | 27.50 | 29.75 | - | 20 | |
| | | | | 605 | 655 | 648 | 685 | 700 | 755 | - | 508 | |
| 24 | 600 | 27.25 | 692 | 28.25 | 30.5 | 30.25 | 31.12 | 33.00 | 35.50 | - | 24 | |
| | | | | 718 | 775 | 770 | 790 | 839 | 902 | - | 610 | |

Same as flange outside diameter, see pages 6 - 19.

Same as flange outside diameter, see pages 6 - 19.

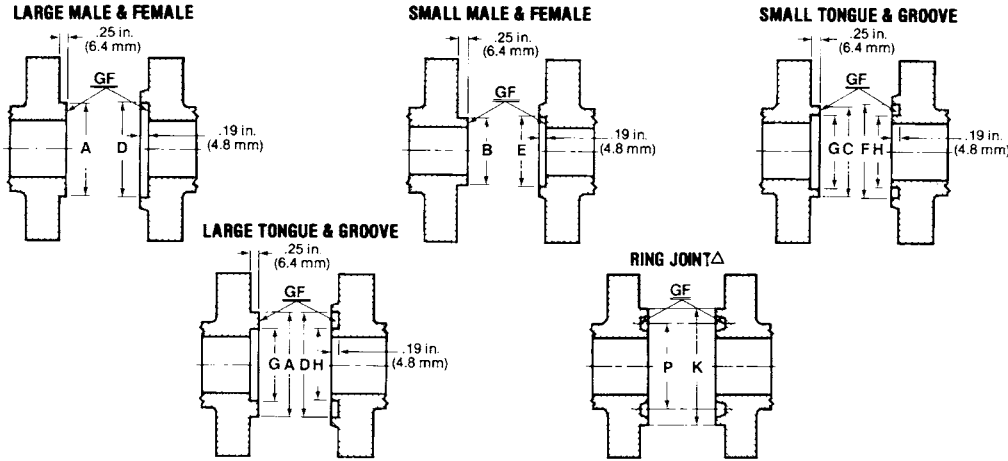
Gasket Facing is indicated on the facing drawings by "GF".

Dimensions conform to ASME/ANSI B16.5 and ANSI B16.21, where applicable.

* A tolerance of ±0.16" (0.44 mm) is allowed on the inside and outside diameters of all facings.

Δ For Ring Joint dimensions see page 30.

| |
|-------------|
| INCHES |
| MILLIMETRES |



FLANGE FACING AND GASKET DIMENSIONS

MALE & FEMALE,
TONGUE & GROOVE

| NPS | DN | *FLANGE FACINGS DIMENSIONS | | | | | | | GASKET DIMENSIONS | | | | | |
|-------|-----|-----------------------------|------------|--------------|-------------------------------|-----------------|--------------|-------------------------------|-------------------------------|---|---------------------|-----------------------|---------------------|--------------------------------|
| | | OUTSIDE DIAMETER | | | | INSIDE DIAMETER | | | OUTSIDE DIAMETER | | | INSIDE DIAMETER | | |
| | | LARGE MALE; LARGE TONGUE | SMALL MALE | SMALL TONGUE | LARGE FEMALE; LARGE GROOVE | SMALL FEMALE | SMALL GROOVE | LARGE TONGUE; SMALL TONGUE | LARGE GROOVE; SMALL GROOVE | LARGE MALE & FEMALE. LARGE TONGUE & GROOVE | SMALL MALE & FEMALE | SMALL TONGUE & GROOVE | LARGE MALE & FEMALE | LARGE OR SMALL TONGUE & GROOVE |
| 1/2 | 15 | 1.38 | 0.72 | 1.38 | 1.44 | 0.78 | 1.44 | 1.00 | 0.94 | 1.38 | 0.72 | 1.38 | 0.84 | 1.00 |
| 3/4 | 20 | 1.69 | .94 | 1.69 | 1.75 | 1.00 | 1.75 | 1.31 | 1.25 | 1.69 | .94 | 1.69 | 1.06 | 1.31 |
| 1 | 25 | 2.00 | 1.19 | 1.88 | 2.06 | 1.25 | 1.94 | 1.5 | 1.44 | 2.00 | 1.19 | 1.88 | 1.31 | 1.50 |
| 1 1/4 | 32 | 2.50 | 1.5 | 2.25 | 2.56 | 1.56 | 2.31 | 1.88 | 1.81 | 2.50 | 1.50 | 2.25 | 1.66 | 1.88 |
| 1 1/2 | 40 | 2.88 | 1.75 | 2.50 | 2.94 | 1.81 | 2.56 | 2.12 | 2.06 | 2.88 | 1.75 | 2.50 | 1.91 | 2.12 |
| 2 | 50 | 3.62 | 2.25 | 3.25 | 3.69 | 2.31 | 3.31 | 2.88 | 2.81 | 3.62 | 2.25 | 3.25 | 2.38 | 2.88 |
| 2 1/2 | 65 | 4.12 | 2.69 | 3.75 | 4.19 | 2.75 | 3.81 | 3.38 | 3.31 | 4.12 | 2.69 | 3.75 | 2.88 | 3.38 |
| 3 | 80 | 5.00 | 3.31 | 4.62 | 5.06 | 3.38 | 4.69 | 4.25 | 4.19 | 5.00 | 3.31 | 4.62 | 3.5 | 4.25 |
| 3 1/2 | 90 | 5.50 | 3.81 | 5.12 | 5.56 | 3.88 | 5.19 | 4.75 | 4.69 | 5.50 | 3.81 | 5.12 | 4 | 4.75 |
| 4 | 100 | 6.19 | 4.31 | 5.69 | 6.25 | 4.38 | 5.75 | 5.19 | 5.12 | 6.19 | 4.31 | 5.69 | 4.5 | 5.19 |
| 5 | 125 | 7.31 | 5.38 | 6.81 | 7.38 | 5.44 | 6.88 | 6.31 | 6.25 | 7.31 | 5.38 | 6.81 | 5.56 | 6.31 |
| 6 | 150 | 8.50 | 6.38 | 8.00 | 8.56 | 6.44 | 8.06 | 7.5 | 7.44 | 8.50 | 6.38 | 8.00 | 6.62 | 7.50 |
| 8 | 200 | 10.62 | 8.38 | 10.00 | 10.69 | 8.44 | 10.06 | 9.38 | 9.31 | 10.62 | 8.38 | 10.00 | 8.62 | 9.38 |
| 10 | 250 | 12.75 | 10.5 | 12.00 | 12.81 | 10.56 | 12.06 | 11.25 | 11.19 | 12.75 | 10.50 | 12.00 | 10.75 | 11.25 |
| 12 | 300 | 15.0 | 12.5 | 14.25 | 15.06 | 12.56 | 14.31 | 13.5 | 13.44 | 15.00 | 12.50 | 14.25 | 12.75 | 13.50 |
| 14 | 350 | 16.25 | 13.75 | 15.50 | 16.31 | 13.81 | 15.56 | 14.75 | 14.69 | 16.25 | 13.75 | 15.50 | 14 | 14.75 |
| 16 | 400 | 18.5 | 15.75 | 17.62 | 18.56 | 15.81 | 17.69 | 16.75 | 16.69 | 18.50 | 15.75 | 17.62 | 16 | 16.75 |
| 18 | 450 | 21.0 | 17.75 | 20.12 | 21.06 | 17.81 | 20.19 | 19.25 | 19.19 | 21.00 | 17.75 | 20.12 | 18 | 19.25 |
| 20 | 500 | 23.0 | 19.75 | 22.0 | 23.06 | 19.81 | 22.06 | 21.0 | 20.94 | 23.00 | 19.75 | 22.0 | 20 | 21.00 |
| 24 | 600 | 27.25 | 23.75 | 26.25 | 27.41 | 23.81 | 26.31 | 25.25 | 25.19 | 27.25 | 23.75 | 26.25 | 24 | 25.25 |

Gasket Facing is indicated on the facing drawings by "GF".

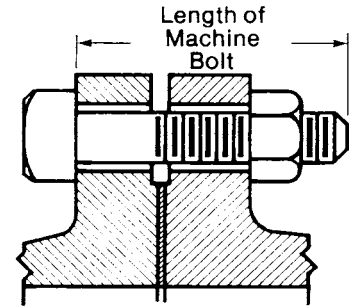
Δ For Ring Joint dimensions see page 30.

* A tolerance of ±0.16" (0.44 mm) is allowed on the inside and outside diameters of all facings.

| |
|-------------|
| INCHES |
| MILLIMETRES |

Dimensions conform to ASME/ANSI B16.5 and ANSI B16.21, where applicable.

BOLT AND STUD DIMENSIONS* CONTINUED ON PAGE 23



| NPS | CLASS 150 (PN 20) FLANGES | | | | | | CLASS 300 (PN 50) FLANGES | | | | | CLASS 400 (PN 64) FLANGES | | | | | | |
|-------|---------------------------|--------------|------------------------|---------------------|------------|---------------------|---------------------------|------------------------|---------------------|------------|---------------------|---------------------------|------------------------|----------------------|-------|--|-------------------------------|------------|
| | DN | NO. OF BOLTS | DIA. OF BOLTS (inches) | LENGTH | | | NO. OF BOLTS | DIA. OF BOLTS (inches) | LENGTH | | | NO. OF BOLTS | DIA. OF BOLTS (inches) | LENGTH OF STUD BOLTS | | | | |
| | | | | STUD BOLTS | | MACHINE BOLTS | | | STUD BOLTS | | MACHINE BOLTS | | | .25 6.4 RAISED FACE | | | MALE & FEMALE TONGUE & GROOVE | RING JOINT |
| | | | | .06 1.6 RAISED FACE | RING JOINT | .06 1.6 RAISED FACE | | | .06 1.6 RAISED FACE | RING JOINT | .06 1.6 RAISED FACE | | | | | | | |
| 1/2 | 4 | 1/2 | 2.50 | - | 2.00 | 4 | 1/2 | 2.75 | 3.00 | 2.25 | 4 | 1/2 | 3.25 | 3.00 | 3.00 | | | |
| 15 | 4 | 1/2 | 65 | - | 50 | 4 | 1/2 | 70 | 75 | 55 | 4 | 1/2 | 85 | 75 | 75 | | | |
| 3/4 | 4 | 1/2 | 2.50 | - | 2.25 | 4 | 5/8 | 3.00 | 3.50 | 2.50 | 4 | 5/8 | 3.50 | 3.25 | 3.50 | | | |
| 20 | 4 | 1/2 | 65 | - | 55 | 4 | 5/8 | 75 | 90 | 6.5 | 4 | 5/8 | 90 | 85 | 90 | | | |
| 1 | 4 | 1/2 | 2.75 | 3.25 | 2.25 | 4 | 5/8 | 3.25 | 3.75 | 2.75 | 4 | 5/8 | 3.75 | 3.50 | 3.75 | | | |
| 25 | 4 | 1/2 | 70 | 85 | 55 | 4 | 5/8 | 85 | 95 | 70 | 4 | 5/8 | 95 | 90 | 95 | | | |
| 1 1/4 | 4 | 1/2 | 2.75 | 3.25 | 2.50 | 4 | 5/8 | 3.25 | 3.75 | 2.75 | 4 | 5/8 | 4.00 | 3.75 | 4.00 | | | |
| 32 | 4 | 1/2 | 70 | 85 | 65 | 4 | 5/8 | 85 | 95 | 70 | 4 | 5/8 | 100 | 95 | 100 | | | |
| 1 1/2 | 4 | 1/2 | 3.00 | 3.50 | 2.50 | 4 | 3/4 | 3.75 | 4.25 | 3.00 | 4 | 3/4 | 4.25 | 4.00 | 4.25 | | | |
| 40 | 4 | 1/2 | 75 | 90 | 65 | 4 | 3/4 | 95 | 110 | 75 | 4 | 3/4 | 110 | 100 | 110 | | | |
| 2 | 4 | 5/8 | 3.25 | 3.75 | 2.75 | 8 | 5/8 | 3.50 | 4.25 | 3.00 | 8 | 5/8 | 4.25 | 4.00 | 4.50 | | | |
| 50 | 4 | 5/8 | 85 | 95 | 70 | 8 | 5/8 | 90 | 110 | 75 | 8 | 5/8 | 110 | 100 | 115 | | | |
| 2 1/2 | 4 | 5/8 | 3.50 | 4.00 | 3.00 | 8 | 3/4 | 4.00 | 4.75 | 3.50 | 8 | 3/4 | 4.75 | 4.50 | 5.00 | | | |
| 65 | 4 | 5/8 | 90 | 100 | 75 | 8 | 3/4 | 100 | 120 | 90 | 8 | 3/4 | 120 | 115 | 130 | | | |
| 3 | 4 | 5/8 | 3.75 | 4.25 | 3.25 | 8 | 3/4 | 4.25 | 5.00 | 3.75 | 8 | 3/4 | 5.00 | 4.75 | 5.25 | | | |
| 80 | 4 | 5/8 | 95 | 110 | 85 | 8 | 3/4 | 110 | 125 | 95 | 8 | 3/4 | 130 | 120 | 135 | | | |
| 3 1/2 | 8 | 5/8 | 3.75 | 4.25 | 3.25 | 8 | 3/4 | 4.50 | 5.25 | 3.75 | 8 | 7/8 | 5.50 | 5.25 | 5.75 | | | |
| 90 | 8 | 5/8 | 95 | 110 | 85 | 8 | 3/4 | 115 | 135 | 95 | 8 | 7/8 | 140 | 135 | 145 | | | |
| 4 | 8 | 5/8 | 3.75 | 4.25 | 3.25 | 8 | 3/4 | 4.50 | 5.25 | 4.00 | 8 | 7/8 | 5.50 | 5.25 | 5.75 | | | |
| 100 | 8 | 5/8 | 95 | 110 | 85 | 8 | 3/4 | 115 | 135 | 100 | 8 | 7/8 | 140 | 135 | 145 | | | |
| 5 | 8 | 3/4 | 4.00 | 4.50 | 3.25 | 8 | 3/4 | 4.75 | 5.50 | 4.25 | 8 | 7/8 | 5.75 | 5.50 | 6.00 | | | |
| 125 | 8 | 3/4 | 100 | 115 | 85 | 8 | 3/4 | 120 | 140 | 110 | 8 | 7/8 | 145 | 140 | 155 | | | |
| 6 | 8 | 3/4 | 4.00 | 4.50 | 3.50 | 12 | 3/4 | 5.00 | 5.75 | 4.25 | 12 | 7/8 | 6.00 | 5.75 | 6.25 | | | |
| 150 | 8 | 3/4 | 100 | 115 | 90 | 12 | 3/4 | 130 | 145 | 110 | 12 | 7/8 | 155 | 145 | 160 | | | |
| 8 | 8 | 3/4 | 4.25 | 4.75 | 3.75 | 12 | 7/8 | 5.50 | 6.25 | 4.75 | 12 | 1 | 6.75 | 6.50 | 7.00 | | | |
| 200 | 8 | 3/4 | 110 | 120 | 95 | 12 | 7/8 | 140 | 160 | 120 | 12 | 1 | 175 | 165 | 180 | | | |
| 10 | 12 | 7/8 | 4.75 | 5.25 | 4.00 | 16 | 1 | 6.25 | 7.00 | 5.50 | 16 | 1 1/8 | 7.50 | 7.25 | 7.75 | | | |
| 250 | 12 | 7/8 | 120 | 135 | 100 | 16 | 1 | 160 | 180 | 140 | 16 | 1 1/8 | 190 | 185 | 195 | | | |
| 12 | 12 | 7/8 | 4.75 | 5.25 | 4.25 | 16 | 1 1/8 | 6.75 | 7.50 | 6.00 | 16 | 1 1/4 | 8.00 | 7.75 | 8.25 | | | |
| 300 | 12 | 7/8 | 120 | 135 | 110 | 16 | 1 1/8 | 175 | 190 | 155 | 16 | 1 1/4 | 205 | 195 | 210 | | | |
| 14 | 12 | 1 | 5.25 | 4.75 | 4.50 | 20 | 1 1/8 | 7.00 | 7.75 | 6.25 | 20 | 1 1/4 | 8.25 | 8.00 | 8.50 | | | |
| 350 | 12 | 1 | 135 | 145 | 115 | 20 | 1 1/8 | 180 | 195 | 160 | 20 | 1 1/4 | 210 | 205 | 215 | | | |
| 16 | 16 | 1 | 5.50 | 6.00 | 4.75 | 20 | 1 1/4 | 7.50 | 8.25 | 6.50 | 20 | 1 3/8 | 8.75 | 8.50 | 9.00 | | | |
| 400 | 16 | 1 | 140 | 155 | 120 | 20 | 1 1/4 | 190 | 210 | 165 | 20 | 1 3/8 | 225 | 215 | 230 | | | |
| 18 | 16 | 1 1/8 | 6.00 | 6.50 | 5.00 | 24 | 1 1/4 | 7.75 | 8.50 | 6.75 | 24 | 1 3/8 | 9.00 | 8.75 | 9.25 | | | |
| 450 | 16 | 1 1/8 | 150 | 165 | 125 | 24 | 1 1/4 | 195 | 215 | 175 | 24 | 1 3/8 | 230 | 225 | 235 | | | |
| 20 | 20 | 1 1/8 | 6.25 | 6.75 | 5.50 | 24 | 1 1/4 | 8.25 | 9.00 | 7.25 | 24 | 1 1/2 | 9.75 | 9.50 | 10.00 | | | |
| 500 | 20 | 1 1/8 | 160 | 175 | 140 | 24 | 1 1/4 | 210 | 230 | 185 | 24 | 1 1/2 | 250 | 240 | 255 | | | |
| 24 | 20 | 1 1/4 | 7.00 | 7.50 | 6.00 | 24 | 1 1/2 | 9.25 | 10.25 | 8.00 | 24 | 1 3/4 | 10.75 | 10.50 | 11.25 | | | |
| 600 | 20 | 1 1/4 | 180 | 190 | 155 | 24 | 1 1/2 | 235 | 260 | 205 | 24 | 1 3/4 | 275 | 265 | 285 | | | |

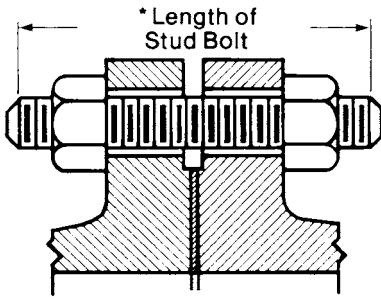
* Length of Stud Bolt does not include the height of the points.

Bolt sizes are in inches.

Length of Male & Female and Tongue & Groove Stud Bolts are .25" (6.4 mm) less than those for the same size of .25" (6.4 mm) Raised Face Stud Bolts.

| |
|-------------|
| INCHES |
| MILLIMETRES |

BOLT AND STUD DIMENSIONS CONTINUED



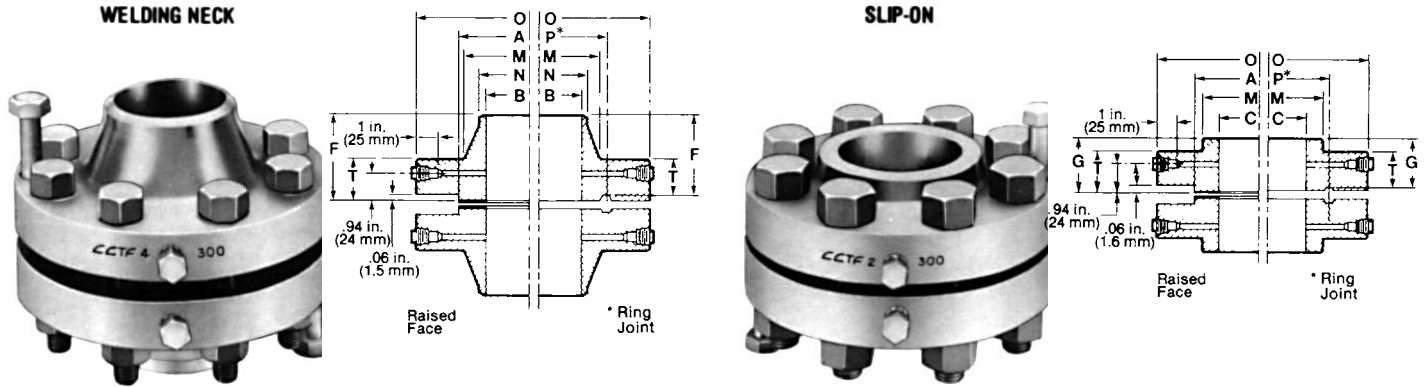
| NPS | CLASS 600 (PN 100) FLANGES | | | | CLASS 900 (PN 150) FLANGES | | | | CLASS 1500 (PN 250) FLANGES | | | | CLASS 2500 (PN 420) FLANGES | | | | |
|-------|----------------------------|--------------|------------------------|----------------------|----------------------------|--------------|------------------------|----------------------|-----------------------------|--------------|------------------------|----------------------|-----------------------------|--------------|------------------------|----------------------|------------|
| | DN | NO. OF BOLTS | DIA. OF BOLTS (inches) | LENGTH OF STUD BOLTS | | NO. OF BOLTS | DIA. OF BOLTS (inches) | LENGTH OF STUD BOLTS | | NO. OF BOLTS | DIA. OF BOLTS (inches) | LENGTH OF STUD BOLTS | | NO. OF BOLTS | DIA. OF BOLTS (inches) | LENGTH OF STUD BOLTS | |
| | | | | .25 6.4 RAISED FACE | RING JOINT | | | .25 6.4 RAISED FACE | RING JOINT | | | .25 6.4 RAISED FACE | RING JOINT | | | .25 6.4 RAISED FACE | RING JOINT |
| 1/2 | | 4 | 1/2 | 3.25 | 3.00 | 4 | 3/4 | 4.25 | 4.25 | 4 | 3/4 | 4.25 | 4.25 | 4 | 3/4 | 5.25 | 5.25 |
| | 15 | 4 | 1/2 | 85 | 75 | 4 | 3/4 | 110 | 110 | 4 | 3/4 | 110 | 110 | 4 | 3/4 | 135 | 135 |
| 3/4 | | 4 | 5/8 | 3.50 | 3.50 | 4 | 3/4 | 4.50 | 4.50 | 4 | 3/4 | 4.50 | 450 | 4 | 3/4 | 5.25 | 5.25 |
| | 20 | 4 | 5/8 | 90 | 90 | 4 | 3/4 | 115 | 115 | 4 | 3/4 | 115 | 115 | 4 | 3/4 | 135 | 135 |
| 1 | | 4 | 5/8 | 3.75 | 3.75 | 4 | 7/8 | 5.00 | 5.00 | 4 | 7/8 | 5.00 | 5.00 | 4 | 7/8 | 5.75 | 5.75 |
| | 25 | 4 | 5/8 | 95 | 95 | 4 | 7/8 | 125 | 125 | 4 | 7/8 | 125 | 125 | 4 | 7/8 | 145 | 145 |
| 1 1/4 | | 4 | 5/8 | 4.00 | 4.00 | 4 | 7/8 | 5.00 | 5.00 | 4 | 7/8 | 5.00 | 5.00 | 4 | 1 | 6.25 | 6.50 |
| | 32 | 4 | 5/8 | 100 | 100 | 4 | 7/8 | 125 | 125 | 4 | 7/8 | 125 | 125 | 4 | 1 | 160 | 165 |
| 1 1/2 | | 4 | 3/4 | 4.25 | 4.25 | 4 | 1 | 5.50 | 5.50 | 4 | 1 | 5.50 | 5.50 | 4 | 1 1/8 | 7.00 | 7.25 |
| | 40 | 4 | 3/4 | 110 | 110 | 4 | 1 | 140 | 140 | 4 | 1 | 140 | 140 | 4 | 1 1/8 | 180 | 185 |
| 2 | | 8 | 5/8 | 4.25 | 4.50 | 8 | 7/8 | 5.75 | 5.75 | 8 | 7/8 | 5.75 | 5.75 | 8 | 1 | 7.25 | 7.50 |
| | 50 | 8 | 5/8 | 110 | 115 | 8 | 7/8 | 145 | 145 | 8 | 7/8 | 145 | 145 | 8 | 1 | 185 | 190 |
| 2 1/2 | | 8 | 3/4 | 4.75 | 5.00 | 8 | 1 | 6.25 | 6.25 | 8 | 1 | 6.25 | 6.25 | 8 | 1 1/8 | 8.00 | 8.25 |
| | 65 | 8 | 3/4 | 120 | 125 | 8 | 1 | 160 | 160 | 8 | 1 | 160 | 160 | 8 | 1 1/8 | 205 | 210 |
| 3 | | 8 | 3/4 | 5.00 | 5.25 | 8 | 7/8 | 5.75 | 6.00 | 8 | 1 1/8 | 7.00 | 7.00 | 8 | 1 1/4 | 9.00 | 9.25 |
| | 80 | 8 | 3/4 | 130 | 135 | 8 | 7/8 | 145 | 155 | 8 | 1 1/8 | 180 | 180 | 8 | 1 1/4 | 230 | 235 |
| 3 1/2 | | 8 | 7/8 | 5.50 | 5.75 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 90 | 8 | 7/8 | 140 | 145 | - | - | - | - | - | - | - | - | - | - | - | - |
| 4 | | 8 | 7/8 | 5.75 | 6.00 | 8 | 1 1/8 | 6.75 | 7.00 | 8 | 1 1/4 | 7.75 | 7.75 | 8 | 1 1/2 | 10.25 | 10.75 |
| | 100 | 8 | 7/8 | 145 | 155 | 8 | 1 1/8 | 175 | 180 | 8 | 1 1/4 | 195 | 195 | 8 | 1 1/2 | 260 | 275 |
| 5 | | 8 | 1 | 6.50 | 6.75 | 8 | 1 1/4 | 7.50 | 7.75 | 8 | 1 1/2 | 9.75 | 9.75 | 8 | 1 3/4 | 12.00 | 12.75 |
| | 125 | 8 | 1 | 165 | 175 | 8 | 1 1/4 | 190 | 195 | 8 | 1 1/2 | 250 | 250 | 8 | 1 3/4 | 305 | 325 |
| 6 | | 12 | 1 | 6.75 | 7.00 | 12 | 1 1/8 | 7.75 | 7.75 | 12 | 1 3/8 | 10.25 | 10.50 | 8 | 2 | 13.75 | 14.50 |
| | 150 | 12 | 1 | 175 | 180 | 12 | 1 1/8 | 195 | 195 | 12 | 1 3/8 | 260 | 265 | 8 | 2 | 350 | 370 |
| 8 | | 12 | 1 1/8 | 7.75 | 7.75 | 12 | 1 3/8 | 8.75 | 9.00 | 12 | 1 5/8 | 11.50 | 12.00 | 12 | 2 | 15.25 | 16.00 |
| | 200 | 12 | 1 1/8 | 195 | 195 | 12 | 1 3/8 | 225 | 230 | 12 | 1 5/8 | 295 | 305 | 12 | 2 | 390 | 405 |
| 10 | | 16 | 1 1/4 | 8.50 | 8.75 | 16 | 1 3/8 | 9.25 | 9.50 | 12 | 1 7/8 | 13.25 | 13.75 | 12 | 2 1/2 | 19.50 | 20.50 |
| | 250 | 16 | 1 1/4 | 215 | 225 | 16 | 1 3/8 | 235 | 240 | 12 | 1 7/8 | 335 | 350 | 12 | 2 1/2 | 495 | 520 |
| 12 | | 20 | 1 1/4 | 8.75 | 9.00 | 20 | 1 3/8 | 10.00 | 10.25 | 16 | 2 | 14.75 | 15.50 | 12 | 2 3/4 | 21.50 | 22.50 |
| | 300 | 20 | 1 1/4 | 225 | 230 | 20 | 1 3/8 | 255 | 260 | 16 | 2 | 375 | 395 | 12 | 2 3/4 | 545 | 570 |
| 14 | | 20 | 1 3/8 | 9.25 | 9.50 | 20 | 1 1/2 | 10.75 | 11.25 | 16 | 2 1/4 | 16.00 | 17.00 | | | | |
| | 350 | 20 | 1 3/8 | 235 | 240 | 20 | 1 1/2 | 275 | 285 | 16 | 2 1/4 | 405 | 430 | | | | |
| 16 | | 20 | 1 1/2 | 10.00 | 10.25 | 20 | 1 5/8 | 11.25 | 11.75 | 16 | 2 1/2 | 17.50 | 18.50 | | | | |
| | 400 | 20 | 1 1/2 | 255 | 260 | 20 | 1 5/8 | 285 | 300 | 16 | 2 1/2 | 445 | 470 | | | | |
| 18 | | 20 | 1 5/8 | 10.75 | 11.00 | 20 | 1 7/8 | 12.75 | 13.50 | 16 | 2 3/4 | 19.50 | 20.50 | | | | |
| | 450 | 20 | 1 5/8 | 275 | 280 | 20 | 1 7/8 | 325 | 345 | 16 | 2 3/4 | 495 | 520 | | | | |
| 20 | | 24 | 1 5/8 | 11.50 | 11.75 | 20 | 2 | 13.50 | 14.25 | 16 | 3 | 21.50 | 22.50 | | | | |
| | 500 | 24 | 1 5/8 | 295 | 300 | 20 | 2 | 345 | 360 | 16 | 3 | 545 | 570 | | | | |
| 24 | | 24 | 1 7/8 | 13.00 | 13.25 | 20 | 2 1/2 | 17.25 | 18.00 | 16 | 3 1/2 | 24.50 | 25.75 | | | | |
| | 600 | 24 | 1 7/8 | 330 | 335 | 20 | 2 1/2 | 440 | 455 | 16 | 3 1/2 | 620 | 655 | | | | |

* Length of Stud Bolt does not include the height of the points

Bolt sizes are in inches.

Length of Male & Female and Tongue & Groove Stud Bolts are .25" (6.4 mm) less than those for the same size of .25" (6.4 mm) Raised Face Stud Bolts.

| |
|-------------|
| INCHES |
| MILLIMETRES |



| NPS | DN | FLANGE OUTSIDE DIAMETER O | FLANGE THICKNESS | | RAISED FACE DIAMETER A | BORE | | LENGTH TRU HUB | | | |
|-------------------|------|------------------------------------|---------------------|--------------------|---------------------------------|----------------------|--------------|---------------------|--------------------|----------------------|--------------------|
| | | | RAISED FACE T | RING JOINT T | | WELDING NECK B | SLIP-ON C | WELDING NECK | | SLIP-ON AND THREADED | |
| | | | | | | | | RAISED FACE F | RING JOINT F | RAISED FACE G | RING JOINT G |
| CLASS 300 (PN 50) | | | | | | | | | | | |
| 1 | | 4.88 | 1.50 | 1.25 | 2.00 | 1.05 | 1.36 | 3.25 | 3.00 | 1.88 | 1.62 |
| | 25 | 124 | 38.5 | 32.0 | 50.80 | 26.6 | 34.5 | 82.6 | 76.2 | 48 | 41.3 |
| 1 1/4 | □ | 5.25 | 1.50 | 1.25 | 2.50 | 1.38 | 1.70 | 3.31 | 3.06 | 1.81 | 1.56 |
| | □32 | 133 | 38.5 | 32.0 | 63.50 | 35.1 | 43.2 | 84.1 | 77.8 | 46 | 39.7 |
| 1 1/2 | | 6.12 | 1.50 | 1.25 | 2.88 | 1.61 | 1.95 | 3.38 | 3.12 | 1.88 | 1.62 |
| | 40 | 156 | 38.5 | 32.0 | 73.05 | 40.9 | 49.5 | 85.8 | 79.4 | 48 | 41.3 |
| 2 | | 6.50 | 1.50 | 1.25 | 3.62 | 2.07 | 2.44 | 3.38 | 3.12 | 1.94 | 1.69 |
| | 50 | 165 | 38.5 | 32.0 | 92.10 | 52.5 | 62.0 | 85.8 | 79.4 | 49 | 42.9 |
| 2 1/2 | | 7.50 | 1.50 | 1.25 | 4.12 | 2.47 | 2.94 | 3.50 | 3.25 | 2.00 | 1.75 |
| | 65 | 191 | 38.5 | 32.0 | 104.80 | 62.7 | 74.5 | 88.9 | 82.6 | 51 | 44.5 |
| 3 | | 8.25 | 1.50 | 1.25 | 5.00 | 3.07 | 3.57 | 3.50 | 3.25 | 2.06 | 1.81 |
| | 80 | 210 | 38.5 | 32.0 | 127.00 | 77.9 | 90.5 | 88.9 | 82.6 | 52 | 46.0 |
| 4 | | 10.0 | 1.50 | 1.25 | 6.19 | 4.03 | 4.57 | 3.62 | 3.38 | 2.12 | 1.88 |
| | 100 | 254 | 38.5 | 32.0 | 157.20 | 102.3 | 116.0 | 92.1 | 85.7 | 54 | 47.6 |
| 5 | □ | 11.0 | 1.50 | 1.38 | 7.31 | 5.05 | 5.66 | 4.00 | 3.88 | 2.12 | 2.00 |
| | □125 | 279 | 38.5 | 35.0 | 185.70 | 128.2 | 143.8 | 101.6 | 98.4 | 54 | 50.8 |
| 6 | | 12.5 | 1.50 | 1.44 | 8.50 | 6.07 | 6.72 | 3.94 | 3.88 | 2.12 | 2.06 |
| | 150 | 318 | 38.5 | 36.5 | 215.90 | 154.1 | 171.0 | 100.0 | 98.4 | 54 | 52.4 |
| 8 | | 15.0 | 1.62 | 1.62 | 10.62 | 7.98 | 8.72 | 4.38 | 4.38 | 2.44 | 2.44 |
| | 200 | 381 | 41.5 | 41.5 | 269.90 | 202.7 | 221.0 | 111.2 | 111.1 | 62 | 61.9 |
| 10 | | 17.5 | 1.88 | 1.88 | 12.75 | 10.02 | 10.88 | 4.62 | 4.62 | 2.62 | 2.62 |
| | 250 | 445 | 48.0 | 48.0 | 323.90 | 254.5 | 276.0 | 117.5 | 117.5 | 67 | 66.7 |
| 12 | | 20.5 | 2.00 | 2.00 | 15.00 | 12.00 | 12.88 | 5.12 | 5.12 | 2.88 | 2.88 |
| | 300 | 520 | 51.0 | 51.0 | 381.00 | 304.8 | 327.0 | 130.2 | 130.2 | 73 | 73.0 |
| 14 | | 23.0 | 2.12 | 2.12 | 16.25 | 13.25 | 14.14 | 5.62 | 5.62 | 3.00 | 3.00 |
| | 350 | 585 | 54.0 | 54.0 | 412.80 | 336.6 | 359.0 | 142.9 | 142.9 | 76 | 76.2 |
| 16 | | 25.5 | 2.25 | 2.25 | 18.50 | 15.25 | 16.16 | 5.75 | 5.75 | 3.25 | 3.25 |
| | 400 | 650 | 57.5 | 57.5 | 469.90 | 387.4 | 410.0 | 146.1 | 146.1 | 83 | 82.6 |
| 18 | | 28.0 | 2.38 | 2.38 | 21.00 | 17.25 | 18.18 | 6.25 | 6.25 | 3.50 | 3.50 |
| | 450 | 710 | 60.5 | 60.5 | 533.40 | 438.2 | 462.0 | 158.8 | 158.8 | 89 | 88.9 |
| 20 | | 30.5 | 2.50 | 2.50 | 23.00 | 19.25 | 20.20 | 6.38 | 6.38 | 3.75 | 3.75 |
| | 500 | 775 | 63.5 | 63.5 | 584.20 | 489.0 | 513.0 | 162.0 | 161.9 | 95 | 95.3 |
| 24 | | 36.0 | 2.75 | 2.75 | 27.25 | 23.25 | 24.25 | 6.62 | 6.62 | 4.19 | 4.19 |
| | 600 | 915 | 70.0 | 70.0 | 692.20 | 590.6 | 616.0 | 168.3 | 168.3 | 106 | 106.4 |

#ASME/ANSI B16.36 does not cover Class 300 Threaded Orifice Flanges in sizes above NPS 8 (DN 200).

□ Not included in ASME/ANSI B16.36.

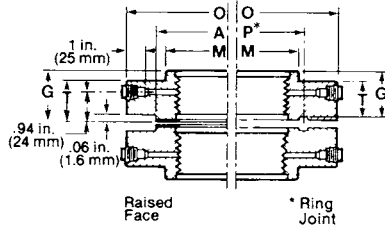
*Details of Ring Joint facings are given on page 30.

FOR FURTHER DETAILS, REFER TO PAGE 4 "OTHER TYPES".

Δ 0.06" (1.6 mm) Raised Face is included in Flange Thickness T, and length through Hub, F & G.

| |
|-------------|
| INCHES |
| MILLIMETRES |

THREADED



CLASS 300 (PN 50) FORGED ORIFICE FLANGES ASTM A-105 ASME/ANSI B16.36

| NPS | DN | DRILLING | | BOLT DIA. (inches) | BOLTING LENGTH | | DIAMETER OF HUB | | APPROXIMATE WEIGHT | | | | |
|-------------------|----|--------------|---------------|--------------------|---------------------|-------------|-----------------|-----------|--------------------|--------------|------------|----------------------|------------|
| | | NO. OF HOLES | DIA. OF HOLES | | DIA. OF BOLT CIRCLE | RAISED FACE | RING JOINT | AT BASE M | AT CHAMFER N | WELDING NECK | | SLIP-ON AND THREADED | |
| | | | | | | | | | | RAISED FACE | RING JOINT | RAISED FACE | RING JOINT |
| CLASS 300 (PN 50) | | | | | | | | | | | | | |
| 1 | 4 | 0.69 | 3.50 | 5/8 | 4.00 | 4.75 | 2.12 | 1.32 | 18 | 20 | 15 | 17 | |
| 25 | 4 | 18 | 89 | 5/8 | 102 | 121 | 54.0 | 33.5 | 8 | 9 | 7 | 7.5 | |
| 1 1/4 | 4 | 0.69 | 3.88 | 5/8 | 4.00 | 4.75 | 2.50 | 1.66 | 21 | 23 | 17 | 20 | |
| 32 | 4 | 17.5 | 99 | 5/8 | 102 | 121 | 63.5 | 42.2 | 9.5 | 10.5 | 7.5 | 9 | |
| 1 1/2 | 4 | 0.81 | 4.50 | 3/4 | 4.25 | 5.00 | 2.75 | 1.90 | 28 | 30 | 24 | 28 | |
| 40 | 4 | 18 | 114 | 3/4 | 108 | 127 | 70 | 48.5 | 12.5 | 13.5 | 11 | 13 | |
| 2 | 8 | 0.69 | 5.00 | 5/8 | 4.00 | 4.75 | 3.31 | 2.38 | 33 | 36 | 27 | 31 | |
| 50 | 8 | 18 | 127 | 5/8 | 102 | 120 | 84 | 60.5 | 15 | 16 | 12 | 14 | |
| 2 1/2 | 8 | 0.81 | 5.88 | 3/4 | 4.25 | 5.00 | 3.94 | 2.88 | 43 | 46 | 36 | 42 | |
| 65 | 8 | 21 | 149 | 3/4 | 108 | 127 | 100 | 73.0 | 19.5 | 21 | 16 | 19 | |
| 3 | 8 | 0.81 | 6.62 | 3/4 | 4.25 | 5.00 | 4.62 | 3.50 | 48 | 52 | 42 | 48 | |
| 80 | 8 | 21 | 168 | 3/4 | 108 | 127 | 117 | 89.0 | 21.5 | 23.5 | 19 | 22 | |
| 4 | 8 | 0.81 | 7.88 | 3/4 | 4.25 | 5.00 | 5.75 | 4.50 | 68 | 73 | 60 | 66 | |
| 100 | 8 | 21 | 200 | 3/4 | 108 | 127 | 146 | 114.0 | 30.5 | 33 | 27 | 30 | |
| 5 | 8 | 0.88 | 9.25 | 3/4 | 4.25 | 5.50 | 7.00 | 5.56 | 78 | 89 | 69 | 80 | |
| 125 | 8 | 23 | 235 | 3/4 | 108 | 140 | 178 | 141.2 | 35 | 40 | 31 | 36 | |
| 6 | 12 | 0.88 | 10.62 | 3/4 | 4.25 | 5.50 | 8.12 | 6.63 | 100 | 115 | 94 | 110 | |
| 150 | 12 | 23 | 270 | 3/4 | 108 | 140 | 206 | 168.0 | 45 | 52 | 42.5 | 50 | |
| 8 | 12 | 1.00 | 13.00 | 7/8 | 4.50 | 6.00 | 10.25 | 8.63 | 155 | 180 | 135 | 160 | |
| 200 | 12 | 26 | 330 | 7/8 | 115 | 153 | 260 | 219.0 | 70 | 81 | 61 | 73 | |
| 10 | 16 | 1.12 | 15.25 | 1 | 5.50 | 6.50 | 12.62 | 10.75 | 220 | 255 | 200 | 230 | |
| 250 | 16 | 29 | 387 | 1 | 140 | 165 | 321 | 273.0 | 99 | 115 | 90 | 104 | |
| 12 | 16 | 1.25 | 17.75 | 1 1/8 | 5.50 | 7.00 | 14.75 | 12.75 | 330 | 380 | 280 | 325 | |
| 300 | 16 | 32 | 451 | 1 1/8 | 140 | 178 | 375 | 324.0 | 149 | 171 | 125 | 147 | |
| 14 | 20 | 1.25 | 20.25 | 1 1/8 | 6.00 | 7.00 | 16.75 | 14.00 | 425 | 485 | 395 | 450 | |
| 350 | 20 | 32 | 514 | 1 1/8 | 153 | 178 | 425.5 | 356.0 | 191 | 218 | 178 | 204 | |
| 16 | 20 | 1.38 | 22.50 | 1 1/4 | 6.50 | 8.00 | 19.00 | 16.00 | 590 | 660 | 465 | 535 | |
| 400 | 20 | 35 | 572 | 1 1/4 | 165 | 204 | 483 | 406.0 | 266 | 297 | 209 | 243 | |
| 18 | 24 | 1.38 | 24.75 | 1 1/4 | 6.50 | 8.00 | 21.00 | 18.00 | 750 | 830 | 610 | 690 | |
| 450 | 24 | 35 | 629 | 1 1/4 | 165 | 204 | 535 | 457.0 | 338 | 374 | 275 | 313 | |
| 20 | 24 | 1.38 | 27.00 | 1 1/4 | 7.00 | 8.00 | 23.12 | 20.00 | 910 | 1025 | 740 | 840 | |
| 500 | 24 | 35 | 686 | 1 1/4 | 178 | 204 | 585 | 508.0 | 410 | 461 | 336 | 381 | |
| 24 | 24 | 1.62 | 32.00 | 1 1/2 | 7.50 | 9.00 | 27.62 | 24.00 | 1350 | 1500 | 1125 | 1300 | |
| 600 | 24 | 42 | 813 | 1 1/2 | 191 | 229 | 700 | 610.0 | 608 | 675 | 510 | 590 | |

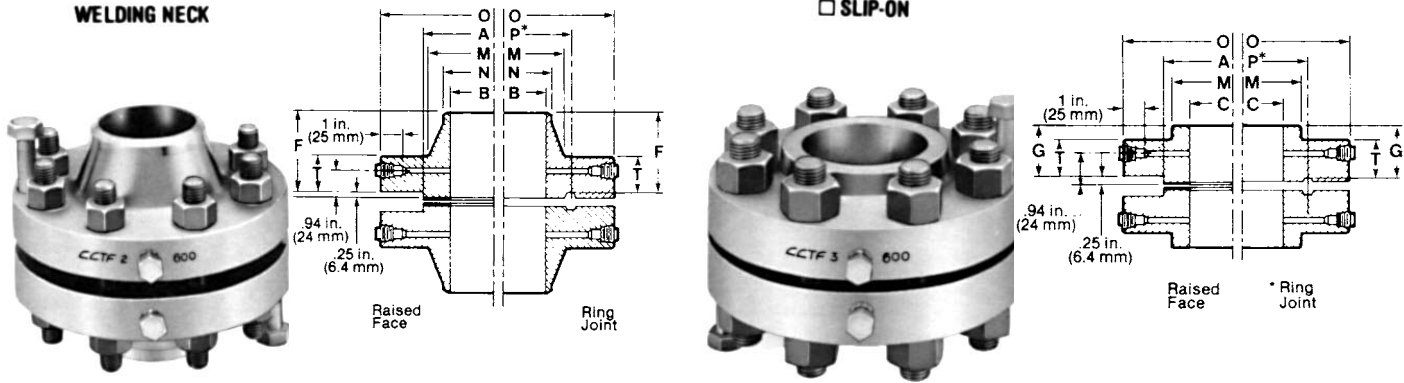
The tapped metering holes are drilled as follows:

1/2" for sizes NPS 4 (DN 100) and over

3/8" for sizes NPS 3 (DN 80)

1/4" for sizes NPS 1 1/2 (DN 65) and under.

| |
|-----------|
| POUNDS |
| KILOGRAMS |



† CLASS 400 (PN 68)

| NPS | DN | FLANGE OUTSIDE DIAMETER O | ‡ FLANGE THICKNESS | | RAISED FACE DIAMETER A | BORE | | ‡ LENGTH TRU HUB | | | |
|-----|------|------------------------------|--------------------|-----------------|---------------------------|---------------------------|--------------|------------------|-----------------|----------------------|-----------------|
| | | | RAISED FACE T | RING JOINT T | | WELDING NECK B | SLIP-ON C | WELDING NECK | | SLIP-ON AND THREADED | |
| | | | | | | | | RAISED FACE F | RING JOINT F | RAISED FACE G | RING JOINT G |
| 4 | 100 | 10 | 1.38 | 1.38 | 6.19 | As specified by purchaser | 4.57 | 3.5 | 3.5 | 2 | 2 |
| | | 254 | 35.0 | 35.0 | 157.2 | | 116.1 | 88.9 | 88.9 | 50.8 | 50.8 |
| 5 □ | □125 | 11 | 1.50 | 1.50 | 7.31 | | 5.66 | 4.0 | 4 | 2.12 | 2.12 |
| | | 279 | 38.5 | 38.1 | 185.7 | | 143.8 | 101.6 | 101.6 | 54.0 | 54.0 |
| 6 | 150 | 12.5 | 1.62 | 1.62 | 8.50 | | 6.72 | 4.06 | 4.06 | 2.25 | 2.25 |
| | | 318 | 41.5 | 41.5 | 215.9 | | 170.7 | 103.2 | 103.2 | 57.2 | 57.2 |
| 8 | 200 | 15 | 1.88 | 1.88 | 10.62 | | 8.72 | 4.62 | 4.62 | 2.69 | 2.69 |
| | | 381 | 48.0 | 48.0 | 269.9 | | 221.5 | 117.5 | 117.4 | 68.3 | 68.3 |
| 10 | 250 | 17.5 | 2.12 | 2.12 | 12.75 | | 10.88 | 4.88 | 4.88 | 2.88 | 2.88 |
| | | 445 | 54.0 | 54.0 | 323.9 | | 276.4 | 123.5 | 123.8 | 73.0 | 73.0 |
| 12 | 300 | 20.5 | 2.25 | 2.25 | 15.00 | | 12.88 | 5.38 | 5.38 | 3.12 | 3.12 |
| | | 520 | 57.5 | 57.5 | 381.0 | | 327.2 | 136.5 | 136.5 | 79.4 | 79.4 |

† CLASS 600 (PN 100)

| NPS | DN | FLANGE OUTSIDE DIAMETER O | ‡ FLANGE THICKNESS | | RAISED FACE DIAMETER A | BORE | | ‡ LENGTH TRU HUB | | | |
|-----|------|------------------------------|--------------------|-----------------|---------------------------|---------------------------|--------------|------------------|-----------------|----------------------|-----------------|
| | | | RAISED FACE T | RING JOINT T | | WELDING NECK B | SLIP-ON C | WELDING NECK | | SLIP-ON AND THREADED | |
| | | | | | | | | RAISED FACE F | RING JOINT F | RAISED FACE G | RING JOINT G |
| 4 | 100 | 10.75 | 1.50 | 1.50 | 6.19 | As specified by purchaser | 4.57 | 4.00 | 4.00 | 2.12 | 2.12 |
| | | 273 | 38.5 | 38.1 | 157.2 | | 116.1 | 101.6 | 101.6 | 54.0 | 54.0 |
| 5 □ | □125 | 13.00 | 1.75 | 1.75 | 7.31 | | 5.66 | 4.50 | 4.50 | 2.38 | 2.38 |
| | | 330 | 44.5 | 44.5 | 185.7 | | 143.8 | 114.3 | 114.3 | 60.5 | 60.5 |
| 6 | 150 | 14.00 | 1.88 | 1.88 | 8.50 | | 6.72 | 4.62 | 4.62 | 2.62 | 2.62 |
| | | 356 | 48.0 | 48.0 | 215.9 | | 170.7 | 117.5 | 117.5 | 66.7 | 66.7 |
| 8 | 200 | 16.50 | 2.19 | 2.19 | 10.62 | | 8.72 | 5.25 | 5.25 | 3.00 | 3.00 |
| | | 419 | 56.0 | 56.0 | 269.9 | | 221.5 | 133.4 | 133.4 | 76.2 | 76.2 |
| 10 | 250 | 20.00 | 2.50 | 2.50 | 12.75 | | 10.88 | 6.00 | 6.00 | 3.38 | 3.38 |
| | | 510 | 63.5 | 63.5 | 323.9 | | 276.4 | 152.4 | 152.4 | 85.7 | 85.7 |
| 12 | 300 | 22.00 | 2.62 | 2.62 | 15.00 | | 12.88 | 6.12 | 6.12 | 3.62 | 3.62 |
| | | 560 | 67.0 | 67.0 | 381.0 | | 327.2 | 155.6 | 155.6 | 92.1 | 92.1 |

Δ .25" (6.4 mm) Raised Face is not included in Flange Thickness T, and Length through Hub F & G.

† Flanges size NPS 3 (DN80) and smaller are identical to Class 300 flanges, except for bolting steel specifications, compliance with which then permits their use for these higher Class ratings.

□ Not covered by ASME/ANSI B16.36.

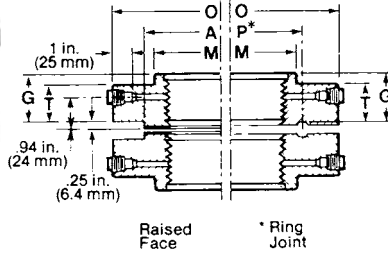
Welding Neck Orifice Flanges in sizes NPS 14 through 24 (DN 350 through 600), as covered by ASME/ANSI B16.36, are available upon application.

* Details of Ring Joint facings are given on page 30.

FOR FURTHER DETAILS, REFER TO PAGE 4 "OTHER TYPES".

| |
|-------------|
| INCHES |
| MILLIMETRES |

□ THREADED



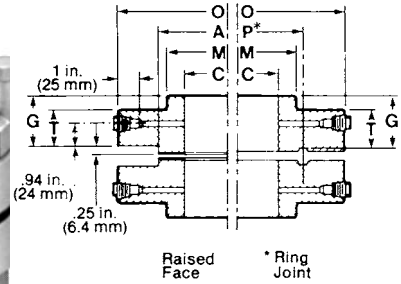
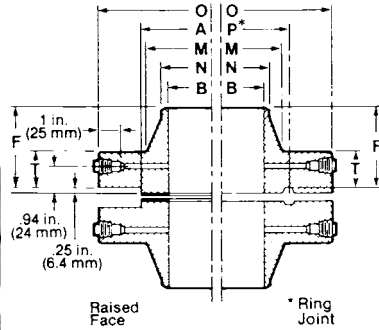
CLASS 400 (PN 68) CLASS 600 (PN 100) FORGED # ORIFICE FLANGES ASTM A-105 ASME/ANSI B16.36 ASME/ANSI B16.36a

| NPS DN | DRILLING | | | BOLT DIA. (inches) | BOLTING LENGTH | | DIAMETER OF HUB | | APPROXIMATE WEIGHT | | | |
|------------|-----------------|------------------|---------------------------|--------------------------|-------------------|---------------|--------------------|--------------------|--------------------|---------------|------------------------|---------------|
| | NO. OF HOLES | DIA. OF HOLES | DIA. OF BOLT CIRCLE | | RAISED FACE | RING JOINT | AT BASE M | AT CHAMFER N | WELDING NECK | | SLIP-ON AND SCREWED | |
| | | | | | | | | | RAISED FACE | RING JOINT | RAISED FACE | RING JOINT |
| 4 100 | 8 | 1 | 7.88 | 7/8 | 5.5 | 6.0 | 5.75 | 4.50 | 83 | 92 | 65 | 74 |
| | 8 | 26 | 200.0 | 7/8 | 140 | 153 | 146.1 | 114.3 | 37 | 41.5 | 29 | 33.5 |
| 5 □ 125 | 8 | 1 | 9.25 | 7/8 | 5.75 | 6.25 | 7.0 | 5.56 | 99 | 110 | 75 | 85 |
| | 8 | 26 | 235.0 | 7/8 | 146 | 159 | 177.8 | 141.2 | 45 | 50 | 34 | 38 |
| 6 150 | 12 | 1 | 10.62 | 7/8 | 6.25 | 6.5 | 8.12 | 6.63 | 135 | 145 | 110 | 120 |
| | 12 | 26 | 269.7 | 7/8 | 159 | 165 | 206.4 | 168.4 | 61 | 65 | 50 | 54 |
| 8 200 | 12 | 1.12 | 13.0 | 1 | 6.75 | 7.25 | 10.25 | 8.63 | 205 | 225 | 165 | 180 |
| | 12 | 29 | 330.2 | 1 | 172 | 185 | 260.4 | 219.2 | 90 | 101 | 74 | 81 |
| 10 250 | 16 | 1.25 | 15.25 | 1 1/8 | 7.5 | 8.0 | 12.62 | 10.75 | 300 | 325 | 235 | 255 |
| | 16 | 32 | 387.3 | 1 1/8 | 191 | 204 | 320.7 | 273.1 | 135 | 146 | 106 | 115 |
| 12 300 | 16 | 1.38 | 17.75 | 1 1/4 | 8.0 | 8.5 | 14.75 | 12.75 | 420 | 445 | 330 | 355 |
| | 16 | 35 | 450.8 | 1 1/4 | 205 | 216 | 374.6 | 323.8 | 189 | 200 | 149 | 160 |

| NPS DN | DRILLING | | | BOLT DIA. (inches) | BOLTING LENGTH | | DIAMETER OF HUB | | APPROXIMATE WEIGHT | | | |
|------------|-----------------|------------------|---------------------------|--------------------------|-------------------|---------------|--------------------|-----------------------------|--------------------|---------------|-------------------------|---------------|
| | NO. OF HOLES | DIA. OF HOLES | DIA. OF BOLT CIRCLE | | RAISED FACE | RING JOINT | AT BASE M | AT POINT OF WELDING N | WELDING NECK | | SLIP-ON AND THREADED | |
| | | | | | | | | | RAISED FACE | RING JOINT | RAISED FACE | RING JOINT |
| 4 100 | 8 | 1.00 | 8.50 | 7/8 | 6.00 | 6.5 | 6.00 | 4.50 | 97 | 110 | 87 | 98 |
| | 8 | 26 | 216 | 7/8 | 152 | 165 | 152 | 114 | 44 | 50 | 39 | 44 |
| 5 □ 125 | 8 | 1.13 | 10.50 | 1 | 5.50 | 7.00 | 7.44 | 5.56 | 115 | 170 | 145 | 160 |
| | 8 | 29 | 267 | 1 | 140 | 178 | 189 | 141 | 52 | 77 | 66 | 72 |
| 6 150 | 12 | 1.13 | 11.50 | 1 | 7.00 | 7.5 | 8.75 | 6.63 | 195 | 210 | 190 | 205 |
| | 12 | 29 | 292 | 1 | 178 | 191 | 222 | 168 | 89 | 95 | 86 | 92 |
| 8 200 | 12 | 1.25 | 13.75 | 1 1/8 | 7.75 | 8.25 | 10.75 | 8.63 | 285 | 305 | 275 | 295 |
| | 12 | 32 | 349 | 1 1/8 | 197 | 210 | 273 | 219 | 129 | 138 | 125 | 133 |
| 10 250 | 16 | 1.38 | 17.00 | 1 1/4 | 8.75 | 9.25 | 13.50 | 10.75 | 450 | 485 | 410 | 445 |
| | 16 | 35 | 432 | 1 1/4 | 222 | 235 | 343 | 273 | 204 | 220 | 186 | 200 |
| 12 300 | 20 | 1.38 | 19.25 | 1 1/4 | 9.00 | 9.5 | 15.75 | 12.75 | 540 | 580 | 490 | 530 |
| | 20 | 35 | 489 | 1 1/4 | 229 | 241 | 400 | 324 | 245 | 263 | 222 | 239 |

The tapped metering holes are drilled as follows:
1/2" for sizes NPS 4 (DN 100) and over.

| |
|-----------|
| POUNDS |
| KILOGRAMS |



CLASS 900 (PN 150) For sizes 2 1/2 and smaller, use Class 1500 (PN 250)

| NPS | DN | FLANGE OUTSIDE DIAMETER O | FLANGE THICKNESS | | RAISED FACE DIAMETER A | BORE | | LENGTH THRU HUB | | | |
|-----|-----|------------------------------|------------------|-----------------|---------------------------|-------------------|--------------|------------------|-----------------|----------------------|-----------------|
| | | | RAISED FACE T | RING JOINT T | | WELDING NECK B | SLIP-ON C | WELDING NECK | | SLIP-ON AND THREADED | |
| | | | | | | | | RAISED FACE F | RING JOINT F | RAISED FACE G | RING JOINT G |
| 3 | 80 | 9.50 | 1.50 | 1.50 | 5.00 | B | C | F | F | G | G |
| | | 241 | 38.5 | 38.5 | 127.0 | | | | | | |
| 4 | 100 | 11.50 | 1.75 | 1.75 | 6.19 | As specified | | | | | |
| | | 292 | 44.5 | 44.5 | 157.2 | | | | | | |
| 5 | 125 | 13.75 | 2.00 | 2.00 | 7.31 | by purchaser | | | | | |
| | | 350 | 51.0 | 51.0 | 185.7 | | | | | | |
| 6 | 150 | 15.00 | 2.19 | 2.19 | 8.50 | | | | | | |
| | | 381 | 56.0 | 56.0 | 215.9 | | | | | | |
| 8 | 200 | 18.50 | 2.50 | 2.50 | 10.63 | | | | | | |
| | | 470 | 63.5 | 63.5 | 270.0 | | | | | | |
| 10 | 250 | 21.50 | 2.75 | 2.75 | 12.75 | | | | | | |
| | | 546 | 70.0 | 70.0 | 323.9 | | | | | | |
| 12 | 300 | 24.00 | 3.12 | 3.12 | 15.00 | | | | | | |
| | | 610 | 79.5 | 79.5 | 381.0 | | | | | | |

† CLASS 1500 (PN 250)

| NPS | DN | FLANGE OUTSIDE DIAMETER O | FLANGE THICKNESS | | RAISED FACE DIAMETER A | BORE | | LENGTH THRU HUB | | | |
|-------|-----|------------------------------|------------------|-----------------|---------------------------|-------------------|--------------|------------------|-----------------|----------------------|-----------------|
| | | | RAISED FACE T | RING JOINT T | | WELDING NECK B | SLIP-ON C | WELDING NECK | | SLIP-ON AND THREADED | |
| | | | | | | | | RAISED FACE F | RING JOINT F | RAISED FACE G | RING JOINT G |
| 1 | 25 | 5.88 | 1.50 | 1.50 | 2.00 | As specified | | | | | |
| | | 149 | 38.5 | 38.5 | 50.8 | | | | | | |
| 1 1/4 | 32 | 6.25 | 1.38 | 1.38 | 2.50 | by purchaser | | | | | |
| | | 159 | 34.9 | 34.9 | 63.5 | | | | | | |
| 1 1/2 | 40 | 7.00 | 1.50 | 1.50 | 2.88 | | | | | | |
| | | 178 | 38.5 | 38.5 | 73.0 | | | | | | |
| 2 | 50 | 8.50 | 1.50 | 1.50 | 3.62 | | | | | | |
| | | 216 | 38.5 | 38.5 | 92.1 | | | | | | |
| 2 1/2 | 65 | 9.62 | 1.62 | 1.62 | 4.12 | | | | | | |
| | | 245 | 41.5 | 41.5 | 104.8 | | | | | | |
| 3 | 80 | 10.50 | 1.88 | 1.88 | 5.00 | | | | | | |
| | | 267 | 48.0 | 48.0 | 127.0 | | | | | | |
| 4 | 100 | 12.25 | 2.12 | 2.12 | 6.19 | | | | | | |
| | | 312 | 54.0 | 54.0 | 157.2 | | | | | | |
| 5 | 125 | 14.75 | 2.88 | 2.88 | 7.31 | | | | | | |
| | | 375 | 73.0 | 73.0 | 185.7 | | | | | | |
| 6 | 150 | 15.50 | 3.25 | 3.25 | 8.50 | | | | | | |
| | | 394 | 83.0 | 83.0 | 215.9 | | | | | | |
| 8 | 200 | 19.00 | 3.62 | 3.62 | 10.62 | | | | | | |
| | | 483 | 92.5 | 92.5 | 269.9 | | | | | | |
| 10 | 250 | 23.00 | 4.25 | 4.25 | 12.75 | | | | | | |
| | | 585 | 108.0 | 108.0 | 323.9 | | | | | | |
| 12 | 300 | 26.50 | 4.88 | 4.88 | 15.00 | | | | | | |
| | | 675 | 124.0 | 124.0 | 381.0 | | | | | | |

Sizes NPS 14 (DN 350) and larger, on application.

† Class 2500 (PN 400) Welding Neck Orifice Flanges, NPS 1 through 12 (DN 25 through 300), as covered by ASME/ANSI B16.36 are available upon application.

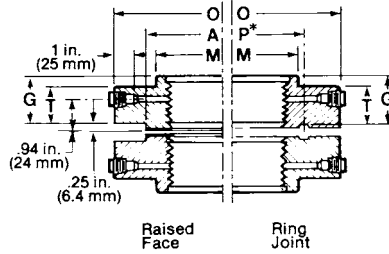
□ Not covered by ASME/ANSI B16.36.

* Details of Ring Joint facings are given on page 30.

FOR FURTHER DETAILS, REFER TO PAGE 4 "OTHER TYPES".

Δ 0.25" (6.4 mm) Raised Face is not included in Flange Thickness T, and Length through Hub F & G.

□ THREADED



CLASS 900 (PN 150) CLASS 1500 (PN 250) FORGED ORIFICE FLANGES ASTM A-105 ASME/ANSI B16.36

| NPS DN | DRILLING | | | BOLTING | | | DIAMETER OF HUB | | APPROXIMATE WEIGHT | | | |
|-----------|--------------|---------------|---------------------|--------------------|-------------|------------|-----------------|-----------------------|--------------------|------------|----------------------|------------|
| | NO. OF HOLES | DIA. OF HOLES | DIA. OF BOLT CIRCLE | BOLT DIA. (inches) | RAISED FACE | RING JOINT | AT BASE M | AT POINT OF WELDING N | WELDING NECK | | SLIP-ON AND THREADED | |
| | | | | | | | | | RAISED FACE | RING JOINT | RAISED FACE | RING JOINT |
| 3 | 8 | 1.00 | 7.50 | 7/8 | 6.0 | 6.5 | 5.00 | 3.50 | 75 | 84 | 65 | 74 |
| 80 | 8 | .26 | .191 | 7/8 | 153 | 165 | 127 | 89.0 | 34 | 38 | 30 | 33 |
| 4 | 8 | 1.25 | 9.25 | 1 1/8 | 7.00 | 7.5 | 6.25 | 4.50 | 125 | 140 | 130 | 145 |
| 100 | 8 | .32 | .235 | 1 1/8 | 178 | 191 | 159 | 114.0 | 57 | 64 | 59 | 65 |
| 5 □ | 8 | 1.38 | 11.00 | 1 1/4 | 7.50 | 8.00 | 7.50 | 5.56 | 205 | 225 | 200 | 215 |
| □125 | 8 | .36 | .279 | 1 1/4 | 191 | 204 | 191 | 141.3 | 93 | 102 | 91 | 97 |
| 6 | 12 | 1.25 | 12.50 | 1 1/8 | 7.75 | 8.25 | 9.25 | 6.63 | 260 | 290 | 260 | 285 |
| 150 | 12 | .32 | .318 | 1 1/8 | 197 | 210 | 235 | 168.0 | 118 | 132 | 118 | 128 |
| 8 | 12 | 1.50 | 15.50 | 1 3/8 | 9.00 | 9.5 | 11.75 | 8.63 | 420 | 450 | 410 | 435 |
| 200 | 12 | .39 | .394 | 1 3/8 | 229 | 241 | 298 | 219.0 | 191 | 204 | 186 | 196 |
| 10 | 16 | 1.50 | 18.50 | 1 3/8 | 9.5 | 10.0 | 14.50 | 10.75 | 610 | 660 | 580 | 620 |
| 250 | 16 | .39 | .470 | 1 3/8 | 241 | 254 | 368 | 273.0 | 277 | 299 | 263 | 279 |
| 12 | 20 | 1.50 | 21.00 | 1 3/8 | 10.25 | 10.75 | 16.50 | 12.75 | 760 | 820 | 760 | 820 |
| 300 | 20 | .39 | .533 | 1 3/8 | 260 | 273 | 419 | 324.0 | 345 | 372 | 345 | 360 |

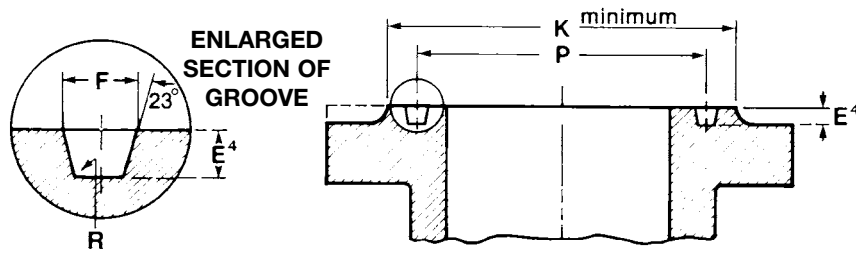
| NPS DN | DRILLING | | | BOLT DIA. (inches) | BOLTING LENGTH | | DIAMETER OF HUB | | APPROXIMATE WEIGHT | | | |
|-----------|--------------|---------------|---------------------|--------------------|----------------|------------|-----------------|-----------------------|--------------------|------------|----------------------|------------|
| | NO. OF HOLES | DIA. OF HOLES | DIA. OF BOLT CIRCLE | | RAISED FACE | RING JOINT | AT BASE M | AT POINT OF WELDING N | WELDING NECK | | SLIP-ON AND THREADED | |
| | | | | | | | | | RAISED FACE | RING JOINT | RAISED FACE | RING JOINT |
| 1 | 4 | 1.00 | 4.00 | 7/8 | 6.00 | 6.25 | 2.06 | 1.32 | 29 | 28 | 26 | 26 |
| 25 | 4 | .26 | .102 | 7/8 | 153 | 159 | 52 | 33.5 | 13 | 13 | 12 | 12 |
| 1 1/4 □ | 4 | 1.00 | 4.38 | 7/8 | 5.50 | 5.75 | 2.50 | 1.66 | 31 | 31 | 29 | 29 |
| □32 | 4 | .26 | .111 | 7/8 | 140 | 147 | 64 | 42.2 | 14 | 14 | 13 | 13 |
| 1 1/2 | 4 | 1.12 | 4.88 | 1 | 6.25 | 6.50 | 2.75 | 1.90 | 38 | 40 | 36 | 38 |
| 40 | 4 | .29 | .124 | 1 | 159 | 166 | 70 | 48.5 | 17 | 18 | 16 | 17 |
| 2 | 8 | 1.00 | 6.50 | 7/8 | 6.00 | 6.50 | 4.12 | 2.38 | 63 | 72 | 63 | 71 |
| 50 | 8 | .26 | .165 | 7/8 | 153 | 166 | 105 | 60.5 | 29 | 33 | 29 | 32 |
| 2 1/2 | 8 | 1.12 | 7.50 | 1 | 6.50 | 7.00 | 4.88 | 2.88 | 90 | 100 | 90 | 100 |
| 65 | 8 | .29 | .191 | 1 | 165 | 178 | 124 | 73.0 | 41 | 45 | 41 | 45 |
| 3 | 8 | 1.25 | 8.00 | 1 1/8 | 7.25 | 7.75 | 5.25 | 3.50 | 120 | 135 | 120 | 135 |
| 80 | 8 | .32 | .203 | 1 1/8 | 185 | 197 | 133 | 89.0 | 54 | 61 | 54 | 61 |
| 4 | 8 | 1.38 | 9.50 | 1 1/4 | 8.00 | 8.50 | 6.38 | 4.50 | 180 | 195 | 180 | 195 |
| 100 | 8 | .35 | .241 | 1 1/4 | 204 | 216 | 162 | 114.0 | 82 | 88 | 82 | 88 |
| 5 □ | 8 | 1.62 | 11.50 | 1 1/2 | 9.75 | 10.25 | 7.75 | 5.56 | 320 | 345 | 320 | 340 |
| □125 | 8 | .42 | .292 | 1 1/2 | 248 | 261 | 197 | 141.0 | 145 | 157 | 145 | 153 |
| 6 | 12 | 1.50 | 12.50 | 1 3/8 | 10.50 | 11.00 | 9.00 | 6.63 | 405 | 440 | 405 | 435 |
| 150 | 12 | .39 | .318 | 1 3/8 | 267 | 280 | 229 | 168.0 | 184 | 200 | 184 | 196 |
| 8 | 12 | 1.75 | 15.50 | 1 5/8 | 11.75 | 12.50 | 11.50 | 8.63 | 630 | 730 | 600 | 680 |
| 200 | 12 | .45 | .394 | 1 5/8 | 299 | 318 | 292 | 219.0 | 286 | 331 | 272 | 305 |
| 10 | 12 | 2.00 | 19.00 | 1 7/8 | 13.50 | 14.25 | 14.50 | 10.75 | 1100 | 1175 | 1050 | 1125 |
| 250 | 12 | .51 | .483 | 1 7/8 | 343 | 362 | 368 | 273.0 | 499 | 533 | 476 | 506 |
| 12 | 16 | 2.12 | 22.50 | 2 | 15.00 | 16.00 | 17.75 | 12.75 | 1675 | 1825 | 1475 | 1550 |
| 300 | 16 | .54 | .572 | 2 | 381 | 407 | 451 | 324.0 | 760 | 828 | 664 | 698 |

FOR FURTHER DETAILS, REFER TO PAGE 4 OF OTHER TYPES.

The tapped metering holes are drilled as follows:
1/2" for sizes NPS 4 (DN 100) and over.
3/8" for sizes NPS 3 (DN 80).
1/4" for sizes NPS 2 1/2 (DN 65) and under.

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |

RING JOINT DIMENSIONS ASME/ANSI B16.5



| CLASS PN | NOMINAL PIPE SIZE | | | | | | | RING NUMBER | GROOVE DIMENSIONS | | | | DIAMETER OF RAISED FACE K | | | | |
|-------------|-------------------|-------------|-----------|-------------|------------|-------------|-------------|----------------|--------------------|---------------|----------------|----------------------|---------------------------|------------------|--------------|--------------|-------------|
| | 150 20 | 300 50 | 400 64 | 600 100 | 900 160 | 1500 250 | 2500 400 | | PITCH DIA. P | DEPTH E | WIDTH F | BOTT. RADIUS R | 150 20 | 300 50,64,100 | 900 160 | 1500 250 | 2500 400 |
| NPS DN | | 1/2 15 | | 1/2 15 | | | | R11 R11 | 1.344 34.14 | 0.219 5.56 | 0.281 7.14 | .03 .8 | | 2 51.0 | | | |
| NPS DN | | | | | | 1/2 15 | | R12 R12 | 1.562 39.67 | 0.250 6.35 | 0.344 8.74 | .03 .8 | | | 2.38 60.5 | | |
| NPS DN | | 3/4 20 | | 3/4 20 | | | 1/2 15 | R13 R13 | 1.688 42.88 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 2.5 63.5 | | | 2.56 65.0 | |
| NPS DN | | | | | | 3/4 20 | | R14 R14 | 1.750 44.45 | 0.250 6.35 | 0.344 8.74 | .03 .8 | | | 2.62 66.5 | | |
| NPS DN | 1 25 | | | | | | | R15 R15 | 1.875 47.62 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 2.50 63.5 | | | | |
| NPS DN | | 1 25 | | 1 25 | | 1 25 | 3/4 20 | R16 R16 | 2.000 50.80 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 2.75 70.0 | | 2.81 71.5 | 2.88 73.0 | |
| NPS DN | 1 1/4 32 | | | | | | | R17 R17 | 2.250 57.15 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 2.88 73.0 | | | | |
| NPS DN | | 1 1/4 32 | | 1 1/4 32 | | 1 1/4 32 | 1 25 | R18 R18 | 2.375 60.32 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 3.12 79.5 | | 3.19 81.0 | 3.25 82.5 | |
| NPS DN | 1 1/2 40 | | | | | | | R19 R19 | 2.562 65.07 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 3.25 82.5 | | | | |
| NPS DN | | 1 1/2 40 | | 1/2 40 | | 1 1/2 40 | | R20 R20 | 2.688 68.28 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 3.56 90.5 | | 3.62 92.0 | | |
| NPS DN | | | | | | | 1 1/4 32 | R21 R21 | 2.844 72.24 | 0.312 7.92 | 0.469 11.91 | .03 .8 | | | | 4 102 | |
| NPS DN | 2 50 | | | | | | | R22 R22 | 3.250 82.55 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 4 102 | | | | |
| NPS DN | | 2 50 | | 2 50 | | | 1 1/2 40 | R23 R23 | 3.250 82.55 | 0.312 7.92 | 0.469 11.91 | .03 .8 | 4.25 108 | | | 4.5 114 | |
| NPS DN | | | | | | 2 50 | | R24 R24 | 3.750 95.25 | 0.312 7.92 | 0.469 11.91 | .03 .8 | | | 4.88 124 | | |
| NPS DN | 2 1/2 65 | | | | | | | R25 R25 | 4.000 101.60 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 4.75 121 | | | | |
| NPS DN | | 2 1/2 65 | | 2 1/2 65 | | | 2 50 | R26 R26 | 4.000 101.60 | 0.312 7.92 | 0.469 11.91 | .03 .8 | 5 127 | | | 5.25 133 | |
| NPS DN | | | | | | 2 1/2 65 | | R27 R27 | 4.250 107.95 | 0.312 7.92 | 0.469 11.91 | .03 .8 | | | 5.38 137 | | |
| NPS DN | | | | | | | 2 1/2 65 | R28 R28 | 4.375 111.12 | 0.375 9.52 | 0.531 13.49 | .06 1.5 | | | | 5.88 149 | |
| NPS DN | 3 80 | | | | | | | R29 R29 | 4.500 114.30 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 5.25 133 | | | | |
| NPS DN | | (1) (1) | | (1) (1) | | | | R30 R30 | 4.625 117.48 | 0.312 7.92 | 0.469 11.91 | .03 .8 | | | | | |
| NPS DN | | 3 (1) 80 | | 3 (1) 80 | | 3 80 | | R31 R31 | 4.875 123.82 | 0.312 7.92 | 0.469 11.91 | .03 .8 | 5.75 146 | 6.12 156 | | | |
| NPS DN | | | | | | | 3 80 | R32 R32 | 5.000 127.00 | 0.375 9.52 | 0.531 13.49 | .06 1.5 | | | | 6.62 168 | |

¹ For NPS 3 (DN 80) Lap Joint Stub Ends (ASME/ANSI B16.9) Class 300 & 600 (PN 50 & 100), Ring Number R30 is used instead of R31.

² For sizes NPS 1/2 - NPS 3 1/2 (DN 15 - DN 90), use same data as Class 600 (PN 100).

³ For sizes NPS 1/2 - NPS 2 1/2 (DN 15 - DN 65) use same data as Class 1500 (PN 250).

⁴ Height of raised portion is equal to the depth of groove dimensions "E" but is not subjected to the tolerance for "E". Former full-face contour may be used.

TOLERANCES

E (depth) + 0.16 (+ 0.40 mm) - 0.00 (-0.00 mm)

F (width) ± 0.008 (±0.20 mm)

P (pitch) ± 0.005 (± 0.13 mm)

R (radius) Max.

23° (angle) ± 1/2°

INCHES
MILLIMETRES

RING JOINT DIMENSIONS continued

| CLASS PN | NOMINAL PIPE SIZE | | | | | | | RING NUMBER | GROOVE DIMENSIONS | | | | DIAMETER OF RAISED FACE K | | | | |
|-------------|-------------------|-------------|-----------|-------------|-----------|-----------|-----------|----------------|-------------------|-------|-------|-----------------|---------------------------|---------|-------|----------|--------------|
| | 150 | 300 | 400 | 600 | 900 | 1500 | 2500 | | PITCH DIA. | DEPTH | WIDTH | BOTT. RADIUS | 150 | 300 | 900 | 1500 | 2500 |
| | 20 | 50 | 64 | 100 | 160 | 250 | 400 | | P | E' | F | R | 20 | 400,600 | 160 | 250 | 400 |
| NPS DN | 3 1/2 90 | | | | | | | R33 | 5.188 | 0.250 | 0.344 | .03 | 6.06 | | | | |
| NPS DN | | 3 1/2 90 | | 3 1/2 90 | | | | R34 | 5.188 | 0.312 | 0.469 | .03 | | 6.25 | | | |
| NPS DN | | | | | | 3 80 | | R35 | 5.375 | 0.312 | 0.469 | .03 | | | | 6.62 | |
| NPS DN | 4 100 | | | | | | | R36 | 5.875 | 0.250 | 0.344 | .03 | 6.75 | | | | |
| NPS DN | | 4 100 | 4 100 | 4 100 | 4 100 | | | R37 | 5.875 | 0.312 | 0.469 | .03 | | 6.88 | 7.12 | | |
| NPS DN | | | | | | | 4 100 | R38 | 6.188 | 0.438 | 0.656 | .06 | | | | | 8 203 |
| NPS DN | | | | | | 4 100 | | R39 | 6.375 | 0.312 | 0.469 | .03 | | | | 7.62 | |
| NPS DN | 5 125 | | | | | | | R40 | 6.750 | 0.250 | 0.344 | .03 | 7.62 | | | | |
| NPS DN | | 5 125 | 5 125 | 5 125 | 5 125 | | | R41 | 7.125 | 0.312 | 0.469 | .03 | | 8.25 | 8.5 | | |
| NPS DN | | | | | | | 5 125 | R42 | 7.500 | 0.500 | 0.781 | .06 | | | | | 9.5 241 |
| NPS DN | 6 150 | | | | | | | R43 | 7.625 | 0.250 | 0.344 | .03 | 8.62 | | | | |
| NPS DN | | | | | | 5 125 | | R44 | 7.625 | 0.312 | 0.469 | .03 | | | | 9 229 | |
| NPS DN | | 6 150 | 6 150 | 6 150 | 6 150 | | | R45 | 8.312 | 0.312 | 0.469 | .03 | | 9.5 | 9.5 | | |
| NPS DN | | | | | | 6 150 | | R46 | 8.312 | 0.375 | 0.531 | .06 | | | | 9.75 | |
| NPS DN | | | | | | | 6 150 | R47 | 9.000 | 0.500 | 0.781 | .06 | | | | | 11 279 |
| NPS DN | 8 200 | | | | | | | R48 | 9.750 | 0.250 | 0.344 | .03 | 10.75 | | | | |
| NPS DN | | 8 200 | 8 200 | 8 200 | 8 200 | | | R49 | 10.625 | 0.312 | 0.469 | .03 | | 11.88 | 12.12 | | |
| NPS DN | | | | | | 8 200 | | R50 | 10.625 | 0.438 | 0.656 | .06 | | | | 12.5 | |
| NPS DN | | | | | | | 8 200 | R51 | 11.000 | 0.562 | 0.906 | .06 | | | | | 13.38 340 |
| NPS DN | 10 250 | | | | | | | R52 | 12.000 | 0.250 | 0.344 | .03 | 13 | | | | |
| NPS DN | | 10 250 | 10 250 | 10 250 | 10 250 | | | R53 | 12.750 | 0.312 | 0.469 | .03 | | 14 | 14.25 | | |
| NPS DN | | | | | | 10 250 | | R54 | 12.750 | 0.438 | 0.656 | .06 | | | | 14.62 | |
| NPS DN | | | | | | | 10 250 | R55 | 13.500 | 0.688 | 1.188 | .09 | | | | 371 | |
| NPS DN | | | | | | | 10 250 | R55 | 342.90 | 17.48 | 30.18 | 2.4 | | | | | 16.75 425 |

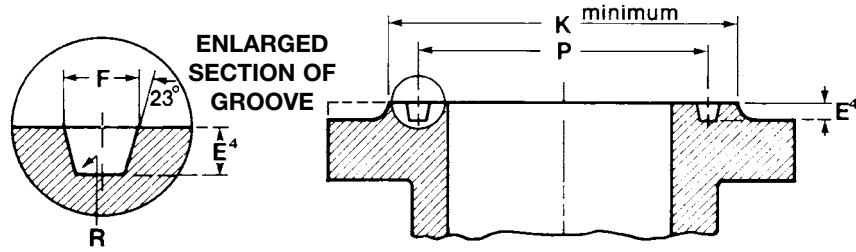
FOR FOOTNOTES, REFER TO PAGE 30

CONTINUED ON PAGE 32

| |
|-------------|
| INCHES |
| MILLIMETRES |

RING JOINT DIMENSIONS

continued

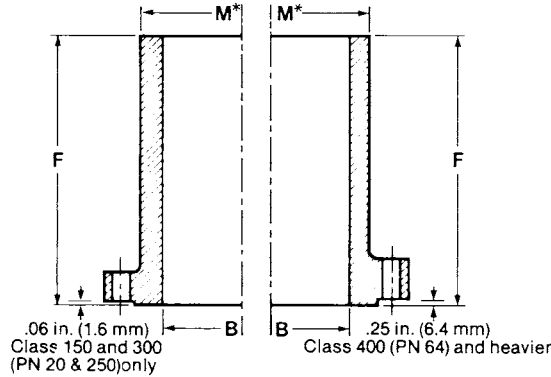


| CLASS | NOMINAL PIPE SIZE | | | | | | | RING NUMBER | GROOVE DIMENSIONS | | | | DIAMETER OF RAISED FACE K | | | | |
|-----------|-------------------|-----------|-----------|------------|------------|-------------|-------------|-------------|-------------------|----------------|----------------|-------------------|---------------------------|------------------------------|--------------|--------------|-------------|
| | 150 20 | 300 50 | 400 64 | 600 100 | 900 160 | 1500 250 | 2500 400 | | PITCH DIA. P | DEPTH E | WIDTH F | BOTT. RADIUS R | 150 20 | 300, 400,600 50,64,100 | 900 160 | 1500 250 | 2500 400 |
| NPS DN | 12 300 | | | | | | | R56 R56 | 15.000 381.00 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 16 406 | | | | |
| NPS DN | | 12 300 | 12 300 | 12 300 | 12 300 | | | R57 R57 | 15.000 381.00 | 0.312 7.92 | 0.469 11.91 | .03 .8 | | 16.25 413 | 16.5 419 | | |
| NPS DN | | | | | | 12 300 | | R58 R58 | 15.000 381.00 | 0.562 14.27 | 0.906 23.01 | .06 1.5 | | | | 17.25 438 | |
| NPS DN | 14 350 | | | | | | | R59 R59 | 15.625 396.88 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 16.75 425 | | | | |
| NPS DN | | | | | | 12 300 | | R60 R60 | 16.000 406.40 | 0.688 17.48 | 1.312 33.32 | .09 2.4 | | | | 19.5 495 | |
| NPS DN | | 14 350 | 14 350 | 14 350 | | | | R61 R61 | 16.500 419.10 | 0.312 7.92 | 0.469 11.91 | .03 .8 | | 18 457 | | | |
| NPS DN | | | | | 14 350 | | | R62 R62 | 16.500 419.10 | 0.438 11.13 | 0.656 16.66 | .06 1.5 | | | 18.38 467 | | |
| NPS DN | | | | | | 14 350 | | R63 R63 | 16.500 419.10 | 0.625 15.88 | 1.062 26.97 | .09 2.4 | | | | 19.25 489 | |
| NPS DN | 16 400 | | | | | | | R64 R64 | 17.875 454.02 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 19 483 | | | | |
| NPS DN | | 16 400 | 16 400 | 16 400 | | | | R65 R65 | 18.500 469.90 | 0.312 7.92 | 0.469 11.91 | .03 .8 | | 20 508 | | | |
| NPS DN | | | | | 16 400 | | | R66 R66 | 18.500 469.90 | 0.438 11.13 | 0.656 16.66 | .06 1.5 | | | 20.62 524 | | |
| NPS DN | | | | | | 16 400 | | R67 R67 | 18.500 469.90 | 0.688 17.48 | 1.188 30.18 | .09 2.4 | | | | 21.5 546 | |
| NPS DN | 18 450 | | | | | | | R68 R68 | 20.375 517.52 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 21.5 546 | | | | |
| NPS DN | | 18 450 | 18 450 | 18 450 | | | | R69 R69 | 21.000 533.40 | 0.312 7.92 | 0.469 11.91 | .03 .8 | | 22.62 575 | | | |
| NPS DN | | | | | 18 450 | | | R70 R70 | 21.000 533.40 | 0.500 12.70 | 0.781 19.84 | .06 1.5 | | | 23.38 594 | | |
| NPS DN | | | | | | 18 450 | | R71 R71 | 21.000 533.40 | 0.688 17.48 | 1.188 30.18 | .09 2.4 | | | | 24.12 613 | |
| NPS DN | 20 500 | | | | | | | R72 R72 | 22.000 558.80 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 23.5 597 | | | | |
| NPS DN | | 20 500 | 20 500 | 20 500 | | | | R73 R73 | 23.000 584.20 | 0.375 9.52 | 0.531 13.49 | .06 1.5 | | 25 635 | | | |
| NPS DN | | | | | 20 500 | | | R74 R74 | 23.000 584.20 | 0.500 12.70 | 0.781 19.84 | .06 1.5 | | | 25.5 648 | | |
| NPS DN | | | | | | 20 500 | | R75 R75 | 23.000 584.20 | 0.688 17.48 | 1.312 33.32 | .09 2.4 | | | | 26.5 673 | |
| NPS DN | 24 600 | | | | | | | R76 R76 | 26.500 673.10 | 0.250 6.35 | 0.344 8.74 | .03 .8 | 28 711 | | | | |
| NPS DN | | 24 600 | 24 600 | 24 600 | | | | R77 R77 | 27.250 692.15 | 0.438 11.13 | 0.656 16.66 | .06 1.5 | | 29.5 749 | | | |
| NPS DN | | | | | 24 600 | | | R78 R78 | 27.250 692.15 | 0.625 15.88 | 1.062 26.97 | .09 2.4 | | | 30.38 772 | | |
| NPS DN | | | | | | 24 600 | | R79 R79 | 27.250 692.15 | 0.812 20.62 | 1.438 36.53 | .09 2.4 | | | | 31.25 794 | |

FOR FOOTNOTES, REFER TO PAGE 30

| |
|-------------|
| INCHES |
| MILLIMETRES |

LONG WELDING NECKS



| NOMINAL SIZE AND BORE | LENGTH THRU HUB | | HUB DIAMETER CLASS 150 PN 20 *M | WEIGHTS | | | | | | |
|-----------------------|--------------------|---------------------|---------------------------------|-----------------|-----------------|-----------------|------------------|------------------|-------------------|-------------------|
| | CLASS 150 THRU 600 | CLASS 900 THRU 2500 | | CLASS 150 PN 20 | CLASS 300 PN 50 | CLASS 400 PN 64 | CLASS 600 PN 100 | CLASS 900 PN 160 | CLASS 1500 PN 250 | CLASS 2500 PN 400 |
| | PN 20 THRU 100 F | PN 160 THRU 400 F | | | | | | | | |
| 1.00 | 9 | 9 | 2.00 | 8 | 10 | 11 | 11 | 15 | 15 | 20 |
| 25.4 | 229 | 229 | 50.8 | 3.6 | 4.5 | 5 | 5 | 7 | 7 | 9 |
| 1.25 | 9 | 9 | 2.38 | 10 | 14 | 14 | 14 | 18 | 18 | 30 |
| 31.8 | 229 | 229 | 60.3 | 4.5 | 6.5 | 6.5 | 6.5 | 8 | 8 | 13.5 |
| 1.50 | 9 | 9 | 2.62 | 12 | 17 | 17 | 17 | 23 | 23 | 38 |
| 38.1 | 229 | 229 | 66.7 | 5.5 | 7.7 | 7.7 | 7.7 | 10.5 | 10.5 | 17 |
| 2.00 | 9 | 9 | 3.25 | 17 | 19 | 21 | 21 | 44 | 44 | 55 |
| 50.8 | 229 | 229 | 82.6 | 7.7 | 9 | 9.5 | 9.5 | 20 | 20 | 25 |
| 2.50 | 9 | 12 | 3.75 | 22 | 28 | 29 | 29 | 72 | 72 | 85 |
| 63.5 | 229 | 305 | 95.3 | 10 | 13 | 13 | 13 | 32.5 | 32.5 | 38.5 |
| 3.00 | 9 | 12 | 4.25 | 26 | 36 | 38 | 38 | 65 | 84 | 125 |
| 76.2 | 229 | 305 | 108.0 | 12 | 16.5 | 17.5 | 17.5 | 29.5 | 38 | 57 |
| 3.50 | 9 | - | 4.88 | 32 | 45 | 48 | 48 | - | - | - |
| 88.9 | 229 | - | 123.8 | 14.5 | 20.5 | 21.5 | 22 | - | - | - |
| 4.00 | 12 | 12 | 5.50 | 47 | 54 | 67 | 80 | 98 | 118 | 185 |
| 101.6 | 305 | 305 | 139.7 | 21.5 | 24.5 | 30 | 36.5 | 44 | 53 | 84 |
| 5.00 | 12 | 12 | 6.50 | 58 | 86 | 90 | 128 | 143 | 195 | 300 |
| 127.0 | 305 | 305 | 165.1 | 26.5 | 39 | 41 | 58 | 65 | 88 | 135 |
| 6.00 | 12 | 12 | 7.75 | 77 | 108 | 115 | 158 | 199 | 235 | 450 |
| 152.4 | 305 | 305 | 196.9 | 35 | 49 | 52 | 72 | 90 | 106 | 203 |
| 8.00 | 12 | 12 | 9.75 | 103 | 150 | 160 | 215 | 310 | 366 | 600 |
| 203.2 | 305 | 305 | 247.7 | 47 | 68 | 72 | 98 | 140 | 165 | 270 |
| 10.00 | 12 | 12 | 12.00 | 144 | 218 | 230 | 343 | 356 | 594 | 1045 |
| 254.0 | 305 | 305 | 304.8 | 66 | 99 | 104 | 156 | 161 | 268 | 471 |
| 12.00 | 12 | 12 | 14.38 | 207 | 289 | 301 | 409 | 541 | 872 | 1420 |
| 304.8 | 305 | 305 | 365.1 | 94 | 131 | 136 | 186 | 244 | 393 | 639 |
| 14.00 | 12 | 12 | 16.00 | 212 | 342 | 357 | 432 | 568 | 1030 | - |
| 355.6 | 305 | 305 | 406.4 | 96 | 155 | 161 | 196 | 256 | 464 | - |
| 16.00 | 12 | 12 | 18.00 | 250 | 426 | 443 | 564 | 670 | 1335 | - |
| 406.4 | 305 | 305 | 457.2 | 114 | 193 | 199 | 256 | 302 | 601 | - |
| 18.00 | 12 | 12 | 20.00 | 274 | 493 | 513 | 654 | 949 | 1750 | - |
| 457.2 | 305 | 305 | 508.0 | 125 | 224 | 231 | 297 | 427 | 788 | - |
| 20.00 | 12 | 12 | 22.00 | 314 | 575 | 602 | 840 | 1040 | 2130 | - |
| 508.0 | 305 | 305 | 558.8 | 143 | 261 | 271 | 381 | 468 | 959 | - |
| 24.00 | 12 | 12 | 26.25 | 426 | 823 | 856 | 1100 | 1775 | 3180 | - |
| 609.6 | 305 | 305 | 666.8 | 194 | 374 | 385 | 499 | 799 | 1431 | - |

SPECIFICATIONS: Long Welding Necks conform to ASTM specification A-105. Except as shown above, Long Welding Necks conform dimensionally to ASME/ANSI Standard B16.5.

*Dimension "M" is given here for Class 150 (PN 20) Long Welding Necks only. For Class 300 (PN 50) and higher pressure ratings, outside diameter of the neck is the same as dimension "M" of ANSI flanges of comparable pressure rating (see pages 8 to 18).

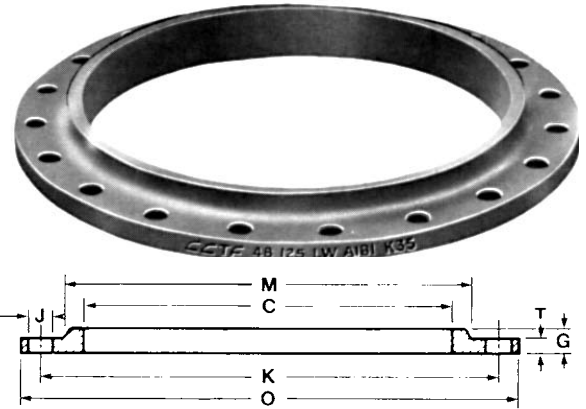
Facing and Finish: see page 4.

Gasket dimensions: see page 20.

Bolting dimensions: see page 22.

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |

LARGE DIAMETER FORGED STEEL FLANGES CLASS 125 LW¹ SLIP-ON FLANGES² ³ASTM A181 CLASS 60



| NPS | FLANGE OUTSIDE DIAMETER | FLANGE THICKNESS | 'BORE DIAMETER | LENGTH THRU HUB | DIAMETER OF HUB AT BASE | DRILLING | | | | APPROX. WEIGHT |
|------|-------------------------|------------------|---------------------------|-----------------|-------------------------|--------------|-------------------|---------------|---------------------|----------------|
| | | | | | | NO. OF HOLES | DIAMETER OF HOLES | BOLT DIAMETER | DIA. OF BOLT CIRCLE | |
| DN | O | T | C | G | M | J | K | | | |
| 26 | 34.25 | 1.00 | As specified by purchaser | 1.75 | 28.50 | 24 | 1.38 | 1 1/4 | 31.75 | 123 |
| 650 | 870 | 25.4 | | 44.5 | 723.9 | 24 | 35 | 1 1/4 | 806.5 | 56 |
| 28 | 36.5 | 1.00 | | 1.75 | 30.50 | 28 | 1.38 | 1 1/4 | 34.00 | 141 |
| 700 | 927 | 25.4 | | 44.5 | 774.7 | 28 | 35 | 1 1/4 | 863.6 | 64 |
| 30 | 38.75 | 1.00 | | 1.75 | 32.50 | 28 | 1.38 | 1 1/4 | 36.00 | 151 |
| 750 | 985 | 25.4 | | 44.5 | 825.5 | 28 | 35 | 1 1/4 | 914.4 | 68.5 |
| 32 | 41.75 | 1.12 | | 1.75 | 34.75 | 28 | 1.62 | 1 1/2 | 38.50 | 207 |
| 800 | 1061 | 28.6 | | 44.5 | 882.7 | 28 | 41 | 1 1/2 | 977.9 | 94 |
| 34 | 43.75 | 1.12 | | 1.75 | 36.75 | 32 | 1.62 | 1 1/2 | 40.50 | 218 |
| | 1111 | 28.6 | | 44.5 | 933.5 | 32 | 41 | 1 1/2 | 1028.7 | 99 |
| 36 | 46 | 1.12 | | 1.75 | 38.75 | 32 | 1.62 | 1 1/2 | 42.75 | 233 |
| 900 | 1169 | 28.6 | | 44.5 | 984.3 | 32 | 41 | 1 1/2 | 1085.9 | 106 |
| 38 | 48.75 | 1.12 | | 1.75 | 40.75 | 32 | 1.62 | 1 1/2 | 45.25 | 261 |
| | 1238 | 28.6 | | 44.5 | 1035.1 | 32 | 41 | 1 1/2 | 1149.4 | 118 |
| 40 | 50.75 | 1.12 | | 1.75 | 43.00 | 36 | 1.62 | 1 1/2 | 47.25 | 283 |
| 1000 | 1289 | 28.6 | | 44.5 | 1092 | 36 | 41 | 1 1/2 | 1200.2 | 128 |
| 42 | 53 | 1.25 | | 1.75 | 45.00 | 36 | 1.62 | 1 1/2 | 49.50 | 332 |
| 1100 | 1346 | 31.8 | | 44.5 | 1143 | 36 | 41 | 1 1/2 | 1257.3 | 151 |
| 44 | 55.25 | 1.25 | | 2.25 | 47.00 | 40 | 1.62 | 1 1/2 | 51.75 | 353 |
| | 1404 | 31.8 | | 57.2 | 1194 | 40 | 41 | 1 1/2 | 1314.5 | 160 |
| 46 | 57.25 | 1.25 | | 2.25 | 49.00 | 40 | 1.62 | 1 1/2 | 53.75 | 364 |
| | 1454 | 3.8 | | 57.2 | 1245 | 40 | 41 | 1 1/2 | 1365.3 | 165 |
| 48 | 59.5 | 1.38 | | 2.50 | 51.00 | 44 | 1.62 | 1 1/2 | 56.00 | 425 |
| 1200 | 1511 | 34.9 | | 63.5 | 1295 | 44 | 41 | 1 1/2 | 1422.4 | 193 |
| 50 | 61.75 | 1.38 | | 2.50 | 53.00 | 44 | 1.88 | 1 3/4 | 58.25 | 455 |
| | 1569 | 34.9 | | 63.5 | 1346 | 44 | 48 | 1 3/4 | 1479.6 | 206 |
| 52 | 64 | 1.38 | | 2.50 | 55.00 | 44 | 1.88 | 1 3/4 | 60.50 | 470 |
| 1300 | 1626 | 34.9 | | 63.5 | 1397 | 44 | 48 | 1 3/4 | 1536.7 | 213 |
| 54 | 66.25 | 1.38 | | 2.50 | 57.00 | 44 | 1.88 | 1 3/4 | 62.75 | 510 |
| 1400 | 1683 | 34.9 | | 63.5 | 1448 | 44 | 48 | 1 3/4 | 1593.9 | 231 |
| 60 | 73 | 1.50 | | 2.75 | 63.00 | 52 | 1.88 | 1 3/4 | 69.25 | 645 |
| 1500 | 1854 | 38.1 | | 69.9 | 1600 | 52 | 48 | 1 3/4 | 1759.0 | 293 |
| 66 | 80 | 1.50 | | 2.75 | 69.00 | 52 | 1.88 | 1 3/4 | 76.00 | 760 |
| | 2032 | 38.1 | | 69.9 | 1753 | 52 | 48 | 1 3/4 | 1930.4 | 345 |
| 72 | 86.5 | 1.50 | | 2.75 | 75.00 | 60 | 1.88 | 1 3/4 | 82.50 | 845 |
| 1800 | 2197 | 38.1 | | 69.9 | 1905 | 60 | 48 | 1 3/4 | 2095.5 | 383 |
| 84 | 99.75 | 1.75 | | 3.00 | 87.50 | 64 | 2.12 | 2 | 95.50 | 1015 |
| | 2534 | 44.5 | | 76.2 | 2223 | 64 | 54 | 2 | 2425.7 | 460 |
| 96 | 113.25 | 2.00 | | 3.25 | 100.00 | 68 | 2.38 | 2 1/4 | 108.50 | 1660 |
| 2400 | 2877 | 50.8 | | 82.6 | 2540 | 68 | 61 | 2 1/4 | 2755.9 | 753 |

¹ Class 125LW Slip-on Flanges in pipe sizes NPS 6 to 96 (DN 150 to 2400) are identical with AWWA Class D Flanges, as shown on page 40, and have the same diameter and drilling as Class 125 Cast Iron Flanges, ANSI B16.1
These flanges are designed for use with full face gaskets, but ring gaskets extending to the inside edge of the bolt holes may also be used.

² Blind Flanges are available on request.

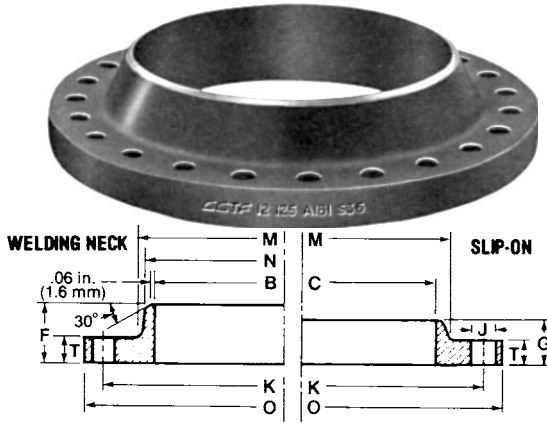
³ Can also be furnished in A181 Class 70 and A105 or any other material that can be forged or rolled.

⁴ When specifying bore it is recommended that this dimension be .19" (4.88 mm) larger than the nominal O.D. of the pipe.

NOTE: At the time of printing this catalogue the metric Pressure Number (PN) equivalent of the Class 125 pressure rating of these LW flanges had not been established, neither had the metric Nominal Diameter (DN) conversions for various NPS sizes.

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |

LARGE DIAMETER FORGED STEEL FLANGES CLASS 125 AMERICAN STANDARD WELDING NECK & SLIP-ON FLANGES ASTM A181 CLASS 60



| NPS | DN | FLANGE OUTSIDE DIA O | FLANGE THICKNESS T | DIA. OF RAISED FACE R | BORE | | LENGTH THRU HUB | | DIAMETER OF HUB | | DRILLING | | | APPROXIMATE WEIGHT | |
|-----|------|-------------------------------|--------------------------|-----------------------------------|----------------------|--------------|----------------------|--------------|--------------------|--------------------------------|--------------------|--------------------------|--------------------------------|-----------------------|---------|
| | | | | | WELDING NECK B | SLIP-ON C | WELDING NECK F | SLIP-ON G | AT BASE M | AT POINT OF WELDING N | NO. OF HOLES | DIA. OF HOLES J | DIA. OF BOLT CIRCLE K | WELDING NECK | SLIP-ON |
| 26 | | 34.25 | 2.00 | 29.25 | | 26.25 | 5.00 | 3.38 | 28.50 | 26 | 24 | 1.38 | 31.75 | 262 | 233 |
| | 650 | 870 | 50.8 | 743 | | 666.8 | 127.0 | 85.7 | 723.9 | 660 | 24 | 35 | 806.5 | 118 | 105 |
| 28 | | 36.5 | 2.06 | 31.25 | | 28.25 | 5.06 | 3.44 | 30.75 | 28 | 28 | 1.38 | 34.00 | 291 | 275 |
| | 700 | 927 | 52.4 | 794 | | 717.6 | 128.6 | 87.3 | 781.1 | 711 | 28 | 35 | 863.6 | 131 | 124 |
| 30 | | 38.75 | 2.12 | 33.75 | | 30.25 | 5.12 | 3.5 | 32.75 | 30 | 28 | 1.38 | 36.00 | 341 | 300 |
| | 750 | 985 | 54.0 | 857 | | 768.4 | 130.2 | 88.9 | 831.9 | 762 | 28 | 35 | 914.4 | 154 | 135 |
| 32 | | 41.75 | 2.25 | 35.75 | | 32.25 | 5.25 | 3.62 | 35.00 | 32 | 28 | 1.62 | 38.50 | 412 | 370 |
| | 800 | 1061 | 57.2 | 908 | | 819.2 | 133.4 | 92.1 | 889.0 | 813 | 28 | 41 | 977.9 | 186 | 167 |
| 34 | | 43.75 | 2.31 | 37.75 | | 34.25 | 5.31 | 3.69 | 37 | 34 | 32 | 1.62 | 40.50 | 439 | 410 |
| | - | 1111 | 58.7 | 959 | | 870.0 | 134.9 | 93.7 | 939.8 | 864 | 32 | 41 | 1028.7 | 198 | 185 |
| 36 | | 46 | 2.38 | 40.25 | | 36.25 | 5.38 | 3.75 | 39.25 | 36 | 32 | 1.62 | 42.75 | 495 | 460 |
| | 900 | 1169 | 60.3 | 1022 | | 920.8 | 136.5 | 95.3 | 997.0 | 914 | 32 | 41 | 1085.9 | 223 | 207 |
| 38 | | 48.75 | 2.38 | 42.25 | | 38.25 | 5.38 | 3.75 | 41.75 | 38 | 32 | 1.62 | 45.25 | 573 | 525 |
| | - | 1238 | 60.3 | 1073 | | 971.6 | 136.5 | 95.3 | 1060.5 | 965 | 32 | 41 | 1149.4 | 258 | 236 |
| 40 | | 50.75 | 2.50 | 44.25 | | 40.25 | 5.50 | 3.88 | 43.75 | 40 | 36 | 1.62 | 47.25 | 619 | 575 |
| | 1000 | 1289 | 63.5 | 1124 | | 1022.4 | 139.7 | 98.4 | 1111.3 | 1016 | 36 | 41 | 1200.2 | 279 | 259 |
| 42 | | 53 | 2.62 | 47 | | 42.25 | 5.62 | 4.00 | 46.00 | 42 | 36 | 1.62 | 49.50 | 715 | 660 |
| | 1100 | 1346 | 66.7 | 1194 | | 1073.2 | 142.9 | 101.6 | 1168.4 | 1067 | 36 | 41 | 1257.3 | 322 | 297 |
| 44 | | 55.25 | 2.62 | 49 | | 44.25 | 5.62 | 4.00 | 48.00 | 44 | 40 | 1.62 | 51.75 | 755 | 695 |
| | - | 1404 | 66.7 | 1245 | specified | 1124.0 | 142.9 | 101.6 | 1219.2 | 1118 | 40 | 41 | 1314.5 | 340 | 313 |
| 46 | | 57.25 | 2.69 | 51 | | 46.25 | 5.69 | 4.06 | 50.00 | 46 | 40 | 1.62 | 53.75 | 805 | 730 |
| | - | 1454 | 68.3 | 1295 | by | 1174.8 | 144.5 | 103.2 | 1270.0 | 1168 | 40 | 41 | 1365.3 | 362 | 329 |
| 48 | | 59.5 | 2.75 | 53.5 | | 48.25 | 5.75 | 4.12 | 52.25 | 48 | 44 | 1.62 | 56.00 | 880 | 810 |
| | 1200 | 1511 | 69.9 | 1359 | purchaser | 1225.6 | 146.1 | 104.8 | 1327.2 | 1219 | 44 | 41 | 1422.4 | 396 | 365 |
| 50 | | 61.75 | 2.75 | 55.5 | | 50.25 | 5.75 | 4.12 | 54.25 | 50 | 44 | 1.88 | 58.25 | 915 | 840 |
| | - | 1569 | 69.9 | 1410 | | 1276.4 | 146.1 | 104.8 | 1378.0 | 1270 | 44 | 48 | 1479.6 | 412 | 378 |
| 52 | | 64.0 | 2.88 | 57.5 | | 52.25 | 5.88 | 4.25 | 56.50 | 52 | 44 | 1.88 | 60.50 | 1020 | 925 |
| | 1300 | 1626 | 73.0 | 1461 | | 1327.2 | 149.2 | 108.0 | 1435.1 | 1321 | 44 | 48 | 1536.7 | 459 | 416 |
| 54 | | 66.25 | 3.00 | 59.75 | | 54.25 | 6.00 | 4.38 | 58.75 | 54 | 44 | 1.88 | 62.75 | 1110 | 1040 |
| | 1400 | 1683 | 76.2 | 1518 | | 1378.0 | 152.4 | 111.1 | 1492.3 | 1372 | 44 | 48 | 1593.9 | 500 | 468 |
| 60 | | 73.0 | 3.12 | 66 | | 60.25 | 6.12 | 4.50 | 65.25 | 60 | 52 | 1.88 | 69.25 | 1360 | 1275 |
| | 1500 | 1854 | 79.4 | 1676 | | 1530.4 | 155.6 | 114.3 | 1657.4 | 1524 | 52 | 48 | 1759.0 | 612 | 574 |
| 66 | | 80.0 | 3.38 | 73 | | 66.25 | 6.38 | 4.88 | 71.50 | 66 | 52 | 1.88 | 76.00 | 1770 | 1625 |
| | - | 2032 | 85.7 | 1855 | | 1682.8 | 161.9 | 123.8 | 1816.1 | 1676 | 52 | 48 | 1930.4 | 797 | 731 |
| 72 | | 86.5 | 3.50 | 79.5 | | 72.25 | 6.50 | 5.00 | 78.50 | 72 | 60 | 1.88 | 82.50 | 2125 | 1950 |
| | 1800 | 2197 | 88.9 | 2019 | | 1835.2 | 165.1 | 127.0 | 1993.9 | 1829 | 60 | 48 | 2095.5 | 956 | 878 |
| 84 | | 99.75 | 3.88 | 92.5 | | 84.25 | 6.88 | 5.38 | 90.50 | 84 | 64 | 2.12 | 95.50 | 2825 | 2620 |
| | - | 2534 | 98.4 | 2350 | | 2140.0 | 174.6 | 136.5 | 2298.7 | 2134 | 64 | 54 | 2425.7 | 1271 | 1179 |
| 96 | | 113.25 | 4.25 | 105.5 | | 96.25 | 7.25 | 5.75 | 102.75 | 96 | 68 | 2.38 | 108.50 | 3830 | 3295 |
| | 2400 | 2877 | 108.0 | 2680 | | 2444.8 | 184.2 | 146.1 | 2609.9 | 2438 | 68 | 61 | 2755.9 | 1724 | 1483 |

¹ These flanges have the same pressure ratings, dimensions and drillings as Class 125 Cast Iron Flanges, ASME/ANSI B16.1. Class 125 American Standard slip-on flanges are also the same as AWWA Class E flanges.

² Blind Flanges are available on request.

³ Can also be furnished in A181 Class 70 and A105 or any other material that can be forged or rolled.

⁴ When ordering Welding Necks, specify thickness and O.D. of pipe or vessel to which the flange is to be welded.

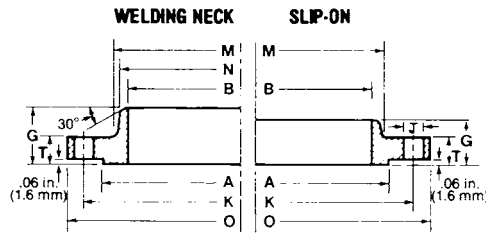
⁵ All sizes are regularly furnished with flat face. A .06" (1.6 mm) raised face can be furnished on request.

NOTE: At the time of printing this catalogue the metric Pressure Number (PN) equivalent of the Class 125 pressure rating of these flanges had not been established, neither had the metric Nominal Diameter (DN) conversions for various NPS sizes.

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |

LARGE DIAMETER FORGED STEEL FLANGES

¹ CLASS 250
 AMERICAN STANDARD
 WELDING NECK &
² SLIP-ON FLANGES
³ ASTM A181-CLASS 60



| NPS | FLANGE OUTSIDE DIAMETER DN | FLANGE THICKNESS O | BORE T | LENGTH THRU HUB B | DIA. OF HUB AT BASE G | DIA. OF HUB AT POINT OF WELDING M | DIA. OF RAISED FACE N | DRILLING | | | | APPROX. WEIGHT | |
|---------------------|-------------------------------|-----------------------|---------------|------------------------------------|--------------------------|--------------------------------------|--------------------------|-------------------|------------------------|--------------------|---------------------|----------------|------|
| | | | | | | | | NO. OF HOLES A | DIAMETER OF HOLES J | DIA. OF BOLTS K | DIA. OF BOLT CIRCLE | | |
| WELDING NECK | | | | | | | | | | | | | |
| 26 | 650 | 38.25 972 | 2.81 71.4 | As specified by purchaser | 5.81 | 30.50 | 26 | 32.44 | 28 | 1.88 | 1 3/4 | 34.50 | 535 |
| | | | | | 147.6 | 774.7 | 660 | 823.9 | 28 | 48 | 1 3/4 | 876.3 | 241 |
| 28 | 700 | 40.75 1035 | 2.94 74.6 | | 5.94 | 33.00 | 28 | 34.94 | 28 | 1.88 | 1 3/4 | 37.00 | 640 |
| | | | | | 150.9 | 838.2 | 711 | 887.5 | 28 | 48 | 1 3/4 | 939.8 | 289 |
| 30 | 750 | 43.0 1092 | 3.00 76.2 | | 6.00 | 35.25 | 30 | 37.19 | 28 | 1.88 | 1 3/4 | 39.25 | 695 |
| | | | | | 152.4 | 895.4 | 762 | 944.6 | 28 | 48 | 1 3/4 | 997.0 | 313 |
| 32 | 800 | 45.25 1150 | 3.12 79.4 | | 6.12 | 37.50 | 32 | 39.44 | 28 | 1.88 | 1 3/4 | 41.50 | 780 |
| | | | | | 155.6 | 952.5 | 813 | 1001.8 | 28 | 48 | 1 3/4 | 1054.1 | 351 |
| 34 | | 47.5 1207 | 3.25 82.6 | | 6.25 | 39.50 | 34 | 41.44 | 28 | 1.88 | 1 3/4 | 43.50 | 885 |
| | | | | | 158.8 | 1003.3 | 864 | 1052.5 | 28 | 48 | 1 3/4 | 1104.9 | 398 |
| 36 | 900 | 50 1270 | 3.38 85.7 | | 6.38 | 41.50 | 36 | 43.69 | 32 | 2.12 | 2 | 46.00 | 965 |
| | | | | | 161.9 | 1054.1 | 914 | 1109.7 | 32 | 54 | 2 | 1168.4 | 434 |
| 38 | | 52.25 1327 | 3.44 87.3 | | 6.44 | 43.50 | 38 | 45.69 | 32 | 2.12 | 2 | 48.00 | 1040 |
| | | | | | 163.5 | 1104.9 | 965 | 1160.5 | 32 | 54 | 2 | 1219.2 | 468 |
| 40 | 1000 | 54.5 1384 | 3.56 90.5 | | 6.56 | 45.75 | 40 | 47.94 | 36 | 2.12 | 2 | 50.25 | 1150 |
| | | | | | 166.7 | 1162.1 | 1016 | 1217.6 | 36 | 54 | 2 | 1276.4 | 518 |
| 42 | 1100 | 57 1448 | 3.69 93.7 | | 6.94 | 47.75 | 42 | 50.44 | 36 | 2.12 | 2 | 52.75 | 1340 |
| | | | | | 176.2 | 1212.9 | 1067 | 1281.1 | 36 | 54 | 2 | 1339.9 | 603 |
| 44 | | 59.25 1505 | 3.75 95.3 | | 7.00 | 49.75 | 44 | 52.69 | 36 | 2.12 | 2 | 55.00 | 1420 |
| | | | | | 177.8 | 1263.7 | 1118 | 1338.3 | 36 | 54 | 2 | 1397.0 | 639 |
| 46 | | 61.5 1562 | 3.88 98.4 | | 7.12 | 51.75 | 46 | 54.94 | 40 | 2.12 | 2 | 57.25 | 1525 |
| | | | | | 181.0 | 1314.5 | 1169 | 1395.4 | 40 | 54 | 2 | 1545.2 | 686 |
| 48 | 1200 | 65 1651 | 4.00 101.6 | | 7.25 | 54.00 | 48 | 58.44 | 40 | 2.12 | 2 | 60.75 | 1850 |
| | | | | | 184.2 | 1371.6 | 1219 | 1484.3 | 40 | 54 | 2 | 1543.1 | 833 |
| SLIP-ON | | | | | | | | | | | | | |
| 26 | 650 | 38.25 972 | 2.81 71.4 | 26.25 | 4.75 | 30.50 | - | 32.44 | 28 | 1.88 | 1 3/4 | 34.50 | 530 |
| | | | | 666.8 | 120.7 | 774.7 | - | 823.9 | 28 | 48 | 1 3/4 | 876.3 | 239 |
| 28 | 700 | 40.75 1035 | 2.94 74.6 | 28.25 | 5.00 | 33.00 | - | 34.94 | 28 | 1.88 | 1 3/4 | 37.00 | 630 |
| | | | | 717.6 | 127.0 | 838.2 | - | 887.5 | 28 | 48 | 1 3/4 | 939.8 | 284 |
| 30 | 750 | 43 1093 | 3.00 76.2 | 30.25 | 5.00 | 35.25 | - | 37.19 | 28 | 1.88 | 1 3/4 | 39.25 | 700 |
| | | | | 768.4 | 127.0 | 895.4 | - | 944.6 | 28 | 48 | 1 3/4 | 997.0 | 315 |
| 32 | 800 | 45.25 1150 | 3.12 79.4 | 32.25 | 5.12 | 37.50 | - | 39.44 | 28 | 1.88 | 1 3/4 | 41.50 | 800 |
| | | | | 819.2 | 130.2 | 952.5 | - | 1001.8 | 28 | 48 | 1 3/4 | 1054.1 | 360 |
| 34 | | 47.5 1207 | 3.25 82.6 | 34.25 | 5.25 | 39.50 | - | 41.44 | 28 | 1.88 | 1 3/4 | 43.50 | 895 |
| | | | | 870.0 | 133.4 | 1003.3 | - | 1052.5 | 28 | 48 | 1 3/4 | 1104.9 | 403 |
| 36 | 900 | 50 1270 | 3.38 85.7 | 36.25 | 5.38 | 41.50 | - | 43.69 | 32 | 2.12 | 2 | 46.00 | 975 |
| | | | | 920.8 | 136.5 | 1054.1 | - | 1109.7 | 32 | 54 | 2 | 1168.4 | 439 |
| 38 | | 52.25 1328 | 3.44 87.3 | 38.25 | 5.50 | 43.50 | - | 45.69 | 32 | 2.12 | 2 | 48.00 | 1070 |
| | | | | 971.6 | 139.7 | 1104.9 | - | 1160.5 | 32 | 54 | 2 | 1219.2 | 482 |
| 40 | 1000 | 54.5 1385 | 3.56 90.5 | 40.25 | 5.50 | 45.75 | - | 47.94 | 36 | 2.12 | 2 | 50.25 | 1180 |
| | | | | 1022.4 | 139.7 | 1162.1 | - | 1217.6 | 36 | 54 | 2 | 1276.4 | 531 |
| 42 | 1100 | 57 1448 | 3.69 93.7 | 42.25 | 5.62 | 47.75 | - | 50.44 | 36 | 2.12 | 3 | 52.75 | 1310 |
| | | | | 1073.2 | 142.9 | 1212.9 | - | 1281.1 | 36 | 54 | 2 | 1339.9 | 590 |
| 44 | | 59.25 1505 | 3.75 95.3 | 44.25 | 5.75 | 49.75 | - | 52.69 | 36 | 2.12 | 2 | 55.00 | 1420 |
| | | | | 1124.0 | 146.1 | 1263.7 | - | 1338.3 | 36 | 54 | 2 | 1397.0 | 639 |
| 46 | | 61.5 1562 | 3.88 98.4 | 46.25 | 5.88 | 51.75 | - | 54.94 | 40 | 2.12 | 2 | 57.25 | 1510 |
| | | | | 1174.8 | 149.2 | 1314.5 | - | 1395.4 | 40 | 54 | 2 | 1454.2 | 680 |
| 48 | 1200 | 65 1651 | 4.00 101.6 | 48.25 | 6.00 | 54.00 | - | 58.44 | 40 | 2.12 | 2 | 60.75 | 1825 |
| | | | | 1225.6 | 152.4 | 1371.6 | - | 1484.3 | 40 | 54 | 2 | 1543.1 | 821 |

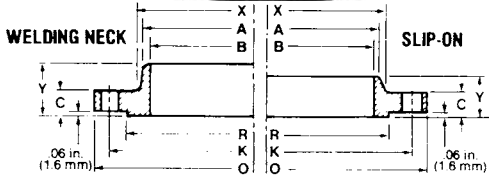
¹ These flanges have the same pressure ratings, dimensions and drillings as Class 250 Cast Iron Flanges ASME/ANSI B16.1.

² Blind Flanges are available upon application.

³ Can also be furnished in A181 Class 70, and A-105 or any other material that can be forged or rolled.

NOTE: At the time of printing this catalogue the metric Pressure Number (PN) equivalent of the Class 125 pressure rating of these LW flanges had not been established, neither had the metric Nominal Diameter (DN) conversions for various NPS sizes.

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |



LARGE DIAMETER FORGED STEEL FLANGES CLASS 75

PRESSURE VESSEL FLANGES
WELDING NECK & SLIP-ON
For Nominal I.D. Vessels
ASTM A181 - CLASS 60

| NOMINAL SIZE (INSIDE DIAMETER) | FLANGE OUTSIDE DIAMETER O | FLANGE THICKNESS C | BORE B' | LENGTH THRU HUB Y | DIA. OF HUB AT BASE X | DIA. OF HUB AT POINT OF WELDING A ¹ | DIA. OF RAISED FACE R | DRILLING | | | | APPROX. WEIGHT |
|--------------------------------|------------------------------|-----------------------|--------------|----------------------|--------------------------|---|--------------------------|--------------|-------------------|---------------|--------------------------|----------------|
| | | | | | | | | NO. OF HOLES | DIAMETER OF HOLES | DIA. OF BOLTS | DIA. OF BOLT CIRCLE K | |
| WELDING NECK | | | | | | | | | | | | |
| 26 | 31.5 | 1.25 | As specified | 3.00 | 27.12 | As specified | 28.62 | 32 | 1 | 7/8 | 29.62 | 95 |
| 660 | 800 | 31.8 | | 76.2 | 688.8 | | 727.1 | 32 | 26 | 7/8 | 752.5 | 43 |
| 28 | 33.5 | 1.25 | As specified | 3.00 | 29.12 | As specified | 30.62 | 36 | 1 | 7/8 | 31.62 | 105 |
| 711 | 85 | 31.8 | | 76.2 | 739.8 | | 777.9 | 36 | 26 | 7/8 | 803.3 | 47 |
| 30 | 35.5 | 1.25 | As specified | 3.00 | 31.12 | As specified | 32.62 | 36 | 1 | 7/8 | 33.62 | 112 |
| 762 | 902 | 31.8 | | 76.2 | 790.6 | | 828.7 | 36 | 26 | 7/8 | 854.1 | 51 |
| 32 | 38.25 | 1.25 | As specified | 3.25 | 33.38 | As specified | 35.00 | 36 | 1.12 | 1 | 36.12 | 141 |
| 813 | 972 | 31.8 | | 82.6 | 847.7 | | 889.0 | 36 | 29 | 1 | 917.6 | 64 |
| 34 | 40.25 | 1.25 | As specified | 3.25 | 35.38 | As specified | 37.00 | 40 | 1.12 | 1 | 38.12 | 153 |
| 864 | 1023 | 31.8 | | 82.6 | 898.5 | | 939.8 | 40 | 29 | 1 | 968.4 | 69 |
| 36 | 42.25 | 1.25 | As specified | 3.25 | 37.38 | As specified | 39.00 | 40 | 1.12 | 1 | 40.12 | 165 |
| 914 | 1073 | 31.8 | | 82.6 | 949.3 | | 990.6 | 40 | 29 | 1 | 1019.2 | 74 |
| 42 | 49 | 1.25 | by purchaser | 3.50 | 43.75 | by purchaser | 45.50 | 48 | 1.25 | 1 1/8 | 46.75 | 205 |
| 1067 | 1245 | 31.8 | | 88.9 | 1111.3 | | 1155.7 | 48 | 32 | 1 1/8 | 1187.5 | 92 |
| 48 | 55 | 1.25 | by purchaser | 3.75 | 49.75 | by purchaser | 51.50 | 52 | 1.25 | 1 1/8 | 52.75 | 245 |
| 1219 | 1397 | 31.8 | | 95.3 | 1263.7 | | 1308.1 | 52 | 32 | 1 1/8 | 1339.9 | 110 |
| 54 | 61.25 | 1.38 | As specified | 4.00 | 56.00 | As specified | 57.75 | 64 | 1.25 | 1 1/8 | 59.00 | 305 |
| 1372 | 1556 | 35.1 | | 101.6 | 1422.4 | | 1466.9 | 64 | 32 | 1 1/8 | 1498.6 | 137 |
| 60 | 67.25 | 1.62 | As specified | 4.38 | 62.00 | As specified | 63.75 | 72 | 1.25 | 1 1/8 | 65.00 | 410 |
| 1524 | 1708 | 41.3 | | 111.1 | 1574.8 | | 1619.3 | 72 | 32 | 1 1/8 | 1651.0 | 185 |
| 66 | 74 | 1.88 | As specified | 4.88 | 68.0 | As specified | 70.12 | 72 | 1.38 | 1 1/4 | 71.50 | 575 |
| 1676 | 1880 | 47.6 | | 123.8 | 1727.2 | | 1781.2 | 72 | 35 | 1 1/4 | 1816.1 | 259 |
| 72 | 80 | 2.25 | As specified | 5.25 | 74.00 | As specified | 76.12 | 80 | 1.38 | 1 1/4 | 77.50 | 720 |
| 1829 | 2032 | 57.2 | | 133.4 | 1879.6 | | 1933.6 | 80 | 35 | 1 1/4 | 1968.5 | 324 |
| SLIP-ON | | | | | | | | | | | | |
| 26 | 33 | 1.25 | As specified | 2.25 | 28.50 | - | 30.00 | 32 | 1 | 7/8 | 31.00 | 115 |
| 660 | 838 | 31.8 | | 57.2 | 723.9 | - | 762.0 | 32 | 26 | 7/8 | 787.4 | 52 |
| 28 | 35 | 1.25 | As specified | 2.25 | 30.50 | - | 32.00 | 36 | 1 | 7/8 | 33.00 | 140 |
| 711 | 889 | 31.8 | | 57.2 | 774.7 | - | 812.8 | 36 | 26 | 7/8 | 838.2 | 63 |
| 30 | 37 | 1.25 | As specified | 2.25 | 32.50 | - | 34.00 | 36 | 1 | 7/8 | 35.00 | 155 |
| 762 | 940 | 31.8 | | 57.2 | 825.5 | - | 863.6 | 36 | 26 | 7/8 | 889.0 | 70 |
| 32 | 39.5 | 1.25 | As specified | 2.50 | 34.62 | - | 36.25 | 40 | 1.12 | 1 | 37.38 | 165 |
| 813 | 1004 | 31.8 | | 63.5 | 879.5 | - | 920.8 | 40 | 29 | 1 | 949.3 | 74 |
| 34 | 41.5 | 1.25 | As specified | 2.50 | 36.62 | - | 38.25 | 40 | 1.12 | 1 | 39.38 | 175 |
| 864 | 1054 | 31.8 | | 63.5 | 930.3 | - | 971.6 | 40 | 29 | 1 | 1000.1 | 79 |
| 36 | 43.5 | 1.25 | As specified | 2.50 | 38.62 | - | 40.25 | 44 | 1.12 | 1 | 41.38 | 190 |
| 914 | 1105 | 31.8 | | 63.5 | 981.1 | - | 1022.4 | 44 | 29 | 1 | 1050.9 | 86 |
| 42 | 50 | 1.25 | by purchaser | 2.75 | 44.75 | - | 46.50 | 48 | 1.25 | 1 1/8 | 47.75 | 225 |
| 1067 | 1270 | 31.8 | | 69.9 | 1136.6 | - | 1181.1 | 48 | 32 | 1 1/8 | 1212.9 | 101 |
| 48 | 56 | 1.25 | by purchaser | 2.88 | 50.75 | - | 52.50 | 56 | 1.25 | 1 1/8 | 53.75 | 260 |
| 1219 | 1423 | 31.8 | | 73.0 | 1289.1 | - | 1333.5 | 56 | 32 | 1 1/8 | 1365.3 | 117 |
| 54 | 62.5 | 1.38 | As specified | 3.12 | 57.25 | - | 59.00 | 68 | 1.25 | 1 1/8 | 60.25 | 325 |
| 1372 | 1588 | 34.9 | | 79.4 | 1454.2 | - | 1498.6 | 68 | 32 | 1 1/8 | 1530.4 | 146 |
| 60 | 68.5 | 1.62 | As specified | 3.62 | 63.25 | - | 65.00 | 72 | 1.25 | 1 1/8 | 66.25 | 440 |
| 1524 | 1740 | 41.3 | | 92.1 | 1606.6 | - | 1651.0 | 72 | 32 | 1 1/8 | 1682.8 | 198 |
| 66 | 75.5 | 1.75 | As specified | 4.00 | 69.50 | - | 71.62 | 72 | 1.38 | 1 1/4 | 73.00 | 575 |
| 1676 | 1918 | 44.5 | | 101.6 | 1765.3 | - | 1819.2 | 72 | 35 | 1 1/4 | 1854.2 | 259 |
| 72 | 81.5 | 2 | As specified | 4.50 | 75.50 | - | 77.62 | 80 | 1.38 | 1 1/4 | 79.00 | 725 |
| 1829 | 2070 | 50.8 | | 114.3 | 1917.7 | - | 1971.7 | 80 | 35 | 1 1/4 | 2006.6 | 326 |

¹ Alternate designation: 50 lb PRESSURE AT 100°F (38°C).

² Blind Flanges available upon application.

³ When ordering these flanges specify thickness and O.D. of the pipe or component with which they will be used. Pressure ratings are based on I.D. of pipe or vessel as listed in

"Nominal Size" column, with pipe or vessel thickness in the 0.25" (6.4 mm) to 0.5" (12.7 mm) range.

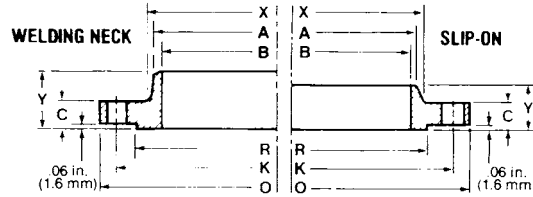
⁴ These flanges can also be supplied in any other material that can be forged or rolled.

LARGE DIAMETER
FORGED STEEL FLANGES

CLASS 175⁵

WELDING NECK & SLIP-ON FLANGES¹

⁴ASTM A-105 & A181-CLASS 60



| NOMINAL SIZE | FLANGE THICKNESS | | BORE B ² | LENGTH THRU HUB | | DIA. OF HUB AT BASE X | DIA. OF HUB AT POINT OF WELDING A ² | DIA. OF RAISED FACE R | DRILLING | | | | APPROX. WEIGHT | | |
|--------------|-----------------------|----------------|---------------------|-----------------|----------------|-----------------------|--|-----------------------|-----------|--------------|---------------|-----------|-----------------------|--------------|---------|
| | FLANGE OUTSIDE DIA. O | WELDING NECK C | | SLIP-ON C | WELDING NECK Y | | | | SLIP-ON Y | NO. OF HOLES | DIA. OF HOLES | BOLT DIA. | DIA. OF BOLT CIRCLE K | WELDING NECK | SLIP-ON |
| | | | | | | | | | | | | | | | |
| 26 | 31.5 | 1.38 | 1.38 | | 3.38 | 2.75 | 27.62 | 29.00 | 28 | .88 | 3/4 | 29.88 | 125 | 110 | |
| 660 | 800 | 34.9 | 34.9 | | 85.7 | 69.9 | 701.7 | 736.6 | 28 | 23 | 3/4 | 758.8 | 56 | 50 | |
| 28 | 33.5 | 1.38 | 1.38 | | 3.38 | 2.75 | 29.62 | 31.00 | 28 | .88 | 3/4 | 31.88 | 130 | 120 | |
| 711 | 851 | 34.9 | 34.9 | | 85.7 | 69.9 | 752.5 | 787.4 | 28 | 23 | 3/4 | 809.6 | 59 | 54 | |
| 30 | 35.75 | 1.38 | 1.38 | | 3.62 | 2.75 | 31.88 | 33.25 | 36 | .88 | 3/4 | 34.12 | 145 | 135 | |
| 762 | 908 | 34.9 | 34.9 | | 92.1 | 69.9 | 809.6 | 844.6 | 36 | 23 | 3/4 | 866.8 | 65 | 61 | |
| 32 | 37.75 | 1.38 | 1.38 | | 3.62 | 2.75 | 33.88 | 32.25 | 36 | .88 | 3/4 | 36.12 | 165 | 145 | |
| 813 | 959 | 34.9 | 34.9 | | 92.1 | 69.9 | 860.4 | 895.4 | 36 | 23 | 3/4 | 917.6 | 74 | 65 | |
| 34 | 40.25 | 1.50 | 1.75 | | 3.75 | 3.38 | 35.88 | 37.38 | 36 | 1 | 7/8 | 38.38 | 190 | 205 | |
| 864 | 1023 | 38.1 | 44.5 | | 95.3 | 85.7 | 911.2 | 949.3 | 36 | 26 | 7/8 | 974.7 | 86 | 92 | |
| 36 | 42.25 | 1.50 | 1.75 | | 3.75 | 3.38 | 37.88 | 39.38 | 36 | 1 | 7/8 | 40.38 | 210 | 215 | |
| 914 | 1074 | 38.1 | 44.5 | | 95.3 | 85.7 | 962.2 | 1000.1 | 36 | 26 | 7/8 | 1025.5 | 95 | 97 | |
| 38 | 44.25 | 1.75 | 2.00 | | 4.12 | 3.75 | 39.88 | 41.38 | 36 | 1 | 7/8 | 42.38 | 235 | 255 | |
| 965 | 1124 | 44.5 | 50.8 | | 104.8 | 95.3 | 1012.8 | 1050.9 | 36 | 26 | 7/8 | 1076.3 | 106 | 115 | |
| 40 | 46.25 | 1.75 | 2.00 | | 4.12 | 4.00 | 41.88 | 43.38 | 40 | 1 | 7/8 | 44.38 | 250 | 275 | |
| 1016 | 1175 | 44.5 | 50.8 | | 104.8 | 101.6 | 1063.6 | 1101.7 | 40 | 26 | 7/8 | 1127.1 | 113 | 124 | |
| 42 | 49 | 2.00 | 2.38 | | 4.50 | 4.38 | 44.12 | 45.75 | 40 | 1.12 | 1 | 46.88 | 345 | 370 | |
| 1067 | 1245 | 50.8 | 60.3 | As | 114.3 | 111.1 | 1120.8 | 1162.1 | 40 | 29 | 1 | 1190.6 | 155 | 167 | |
| 44 | 51 | 2.00 | 2.38 | specified | 4.50 | 4.38 | 46.12 | 47.75 | 40 | 1.12 | 1 | 48.88 | 365 | 385 | |
| 1118 | 1296 | 50.8 | 60.3 | by | 114.3 | 111.1 | 1171.6 | 1212.9 | 40 | 29 | 1 | 1241.4 | 164 | 173 | |
| 46 | 53 | 2.00 | 2.38 | | 4.50 | 4.62 | 48.12 | 49.75 | 40 | 1.12 | 1 | 50.88 | 380 | 410 | |
| 1168 | 1347 | 50.8 | 60.3 | by | 114.3 | 117.5 | 1222.4 | 1263.7 | 40 | 29 | 1 | 1292.2 | 71 | 185 | |
| 48 | 55 | 2.25 | 2.62 | | 4.88 | 4.88 | 50.12 | 51.75 | 44 | 1.12 | 1 | 52.88 | 425 | 455 | |
| 1219 | 1397 | 57.2 | 66.7 | purchaser | 123.8 | 123.8 | 1273.2 | 1314.5 | 44 | 29 | 1 | 1343.0 | 191 | 205 | |
| 50 | 57 | 2.25 | 2.62 | | 4.88 | 4.88 | 52.12 | 53.75 | 44 | 1.12 | 1 | 54.88 | 455 | 475 | |
| 1270 | 1448 | 57.2 | 66.7 | | 123.8 | 123.8 | 1324.0 | 1365.3 | 44 | 29 | 1 | 1393.8 | 205 | 214 | |
| 52 | 59.5 | 2.62 | 3.00 | | 5.38 | 5.38 | 54.25 | 56.00 | 44 | 1.25 | 1 1/8 | 57.25 | 550 | 605 | |
| 1321 | 1512 | 66.7 | 76.2 | | 136.5 | 136.5 | 1378.0 | 1422.4 | 44 | 32 | 1 1/8 | 1454.2 | 248 | 272 | |
| 54 | 61.5 | 2.62 | 3.00 | | 5.38 | 5.38 | 56.25 | 58.00 | 44 | 1.25 | 1 1/8 | 59.25 | 590 | 625 | |
| 1372 | 1562 | 66.7 | 76.2 | | 136.5 | 136.5 | 1428.8 | 1473.2 | 44 | 32 | 1 1/8 | 1505.0 | 266 | 281 | |
| 60 | 67.5 | 2.75 | 3.12 | | 5.75 | 5.88 | 62.25 | 64.00 | 48 | 1.25 | 1 1/8 | 65.25 | 675 | 725 | |
| 1524 | 1715 | 69.9 | 79.4 | | 146.1 | 149.2 | 1581.2 | 1625.6 | 48 | 32 | 1 1/8 | 1657.4 | 304 | 326 | |
| 66 | 73.5 | 3.12 | 4.00 | | 6.12 | .688 | 68.50 | 70.00 | 56 | 1.25 | 1 1/8 | 71.25 | 825 | 1020 | |
| 1676 | 1867 | 79.4 | 101.6 | | 155.6 | 174.6 | 1739.9 | 1778.0 | 56 | 32 | 1 1/8 | 1809.8 | 371 | 459 | |
| 72 | 80 | 3.62 | 5.00 | | 6.62 | 8.00 | 74.50 | 76.50 | 64 | 1.25 | 1 1/8 | 77.75 | 1060 | 1400 | |
| 1829 | 2032 | 92.1 | 127.0 | | 168.3 | 203.2 | 1892.3 | 1943.1 | 64 | 32 | 1 1/8 | 1974.9 | 477 | 630 | |
| 84 | 94 | 3.00 | 5.00 | | 7.00 | 8.50 | 88.00 | 90.12 | 72 | 1.38 | 1 1/4 | 91.50 | 1550 | 2225 | |
| 2134 | 2388 | 76.2 | 127.0 | | 177.8 | 215.9 | 2235.2 | 2289.2 | 72 | 35 | 1 1/4 | 2324.1 | 698 | 1001 | |
| 96 | 106 | 3.5 | 5.00 | | 7.50 | 9.00 | 100.0 | 102.12 | 88 | 1.38 | 1 1/4 | 103.50 | 1975 | 2575 | |
| 2438 | 2693 | 88.9 | 127.0 | | 190.5 | 288.6 | 2540.0 | 2594.0 | 88 | 35 | 1 1/4 | 2628.9 | 889 | 1159 | |

¹ Blind Flanges are available upon application.

² When ordering, specify thickness and O.D. of pipe vessel to which flange is to be welded.

³ Sizes are INSIDE diameters of pipe or shell used with Welding Neck Flanges, and NOMINAL outside diameters of pipe or shell used with Slip-on Flanges.

⁴ These flanges can also be furnished in any other material that can be forged or rolled.

⁵ Alternate designation, 150 lb. WSP. at 750°F (399°C).

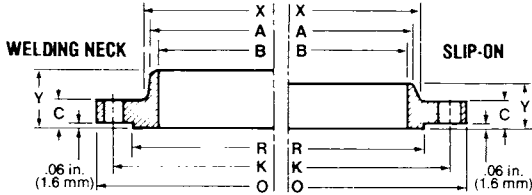


LARGE DIAMETER FORGED STEEL FLANGES

⁵ CLASS 300

WELDING NECK & SLIP-ON FLANGES¹

⁴ ASTM A-105 & A181- CLASS 60



| NOMINAL SIZE | FLANGE OUTSIDE DIA. | FLANGE THICKNESS | | BORE | LENGTH THRU HUB | | DIA. OF HUB AT BASE | DIA. OF HUB AT POINT OF WELDING | DIA. OF RAISED FACE | DRILLING | | | | APPROX. WEIGHT | |
|--------------|---------------------|------------------|---------|---------------------------|-----------------|---------|---------------------|---------------------------------|---------------------|--------------|---------------|-----------|---------------------|----------------|---------|
| | | WELDING NECK | SLIP-ON | | WELDING NECK | SLIP-ON | | | | NO. OF HOLES | DIA. OF HOLES | BOLT DIA. | DIA. OF BOLT CIRCLE | WELDING NECK | SLIP-ON |
| | | | | | | | | | | | | | | | |
| 26 | 32.75 | 2.50 | 2.50 | As specified by purchaser | 5.00 | 4.50 | 27.88 | As specified by purchaser | 29.50 | 28 | 1.12 | 1 | 30.62 | 250 | 230 |
| 660 | 832 | 63.5 | 63.5 | | 127.0 | 114.3 | 708.0 | | 749.3 | 28 | 29 | 1 | 777.9 | 113 | 104 |
| 28 | 34.75 | 2.50 | 2.50 | | 5.00 | 4.50 | 29.88 | | 31.50 | 28 | 1.12 | 1 | 32.62 | 265 | 255 |
| 711 | 883 | 63.5 | 63.5 | | 127.0 | 114.3 | 758.8 | | 800.1 | 28 | 29 | 1 | 828.7 | 119 | 115 |
| 30 | 37 | 2.62 | 2.62 | | 5.25 | 4.75 | 32.12 | | 33.75 | 32 | 1.12 | 1 | 34.88 | 310 | 290 |
| 762 | 940 | 66.7 | 66.7 | | 133.4 | 120.7 | 816.0 | | 857.3 | 32 | 29 | 1 | 885.8 | 140 | 131 |
| 32 | 39 | 2.75 | 2.75 | | 5.50 | 5.00 | 34.12 | | 35.75 | 36 | 1.12 | 1 | 36.88 | 340 | 325 |
| 813 | 991 | 69.9 | 69.9 | | 139.7 | 127.0 | 866.8 | | 908.1 | 36 | 29 | 1 | 936.6 | 153 | 146 |
| 34 | 41 | 2.88 | 2.88 | | 5.75 | 5.12 | 36.12 | | 37.75 | 40 | 1.12 | 1 | 38.88 | 385 | 350 |
| 864 | 1042 | 73.0 | 73.0 | | 146.1 | 130.2 | 917.6 | | 958.9 | 40 | 29 | 1 | 987.4 | 173 | 158 |
| 36 | 43.75 | 3.12 | 3.12 | | 6.13 | 5.62 | 38.5 | | 40.25 | 40 | 1.25 | 1 1/8 | 41.50 | 475 | 460 |
| 914 | 1112 | 79.4 | 79.4 | | 155.6 | 142.9 | 977.9 | | 1022.4 | 40 | 32 | 1 1/8 | 1054.1 | 214 | 207 |
| 38 | 45.75 | 3.12 | 3.12 | | 6.13 | 5.62 | 40.5 | | 42.25 | 40 | 1.25 | 1 1/8 | 43.50 | 520 | 485 |
| 965 | 1162 | 79.4 | 79.4 | | 155.6 | 142.9 | 1028.7 | | 1073.2 | 40 | 32 | 1 1/8 | 1104.9 | 234 | 218 |
| 40 | 47.75 | 3.25 | 3.25 | | 6.25 | 5.88 | 42.5 | | 44.25 | 44 | 1.25 | 1 1/8 | 45.50 | 550 | 525 |
| 1016 | 1213 | 82.6 | 82.6 | | 158.8 | 149.2 | 1079.5 | | 1224.0 | 44 | 32 | 1 1/8 | 1155.7 | 248 | 236 |
| 42 | 50 | 3.50 | 3.50 | | 6.50 | 6.12 | 44.75 | | 46.50 | 48 | 1.25 | 1 1/8 | 47.75 | 650 | 625 |
| 1067 | 1270 | 88.9 | 88.9 | | 165.1 | 155.6 | 1136.7 | | 1181.1 | 48 | 32 | 1 1/8 | 1212.9 | 293 | 281 |
| 44 | 52.75 | 3.75 | 3.75 | | 6.75 | 6.75 | 46.75 | | 48.88 | 44 | 1.38 | 1 1/4 | 50.25 | 770 | 760 |
| 1118 | 1340 | 95.3 | 95.3 | | 171.5 | 171.5 | 1187.5 | | 1241.4 | 44 | 35 | 1 1/4 | 1276.4 | 347 | 342 |
| 46 | 54.75 | 4.25 | 4.25 | 7.25 | 7.25 | 48.75 | 50.88 | 48 | 1.38 | 1 1/4 | 52.25 | 895 | 880 | | |
| 1168 | 1391 | 108.0 | 108.0 | 184.2 | 184.2 | 1238.3 | 1292.2 | 48 | 35 | 1 1/4 | 1327.2 | 403 | 396 | | |
| 48 | 56.75 | 4.25 | 4.25 | 7.25 | 7.25 | 50.75 | 52.88 | 48 | 1.38 | 1 1/4 | 54.25 | 925 | 925 | | |
| 1219 | 1442 | 108.0 | 108.0 | 184.2 | 184.2 | 1289.1 | 1343.0 | 48 | 35 | 1 1/4 | 1378.0 | 416 | 416 | | |
| 52 | 61.5 | 4.25 | - | 7.50 | - | 55 | 57.25 | 52 | 1.5 | 1 3/8 | 58.75 | 1075 | - | | |
| 1321 | 1562 | 108.0 | - | 190.5 | - | 1397.0 | 1454.2 | 52 | 35 | 1 3/8 | 1492.3 | 484 | - | | |
| 54 | 63.5 | 4.50 | 4.75 | 7.75 | 8.25 | 57 | 59.25 | 52 | 1.5 | 1 3/8 | 60.75 | 1225 | 1160 | | |
| 1372 | 1613 | 114.3 | 120.7 | 196.9 | 209.6 | 1447.8 | 1505.0 | 52 | 35 | 1 3/8 | 1543.1 | 551 | 522 | | |
| 60 | 69.5 | 4.50 | 5.00 | 8.00 | 8.50 | 63 | 65.25 | 60 | 1.5 | 1 3/8 | 66.75 | 1325 | 1470 | | |
| 1524 | 1766 | 114.3 | 127.0 | 203.2 | 215.9 | 1600.2 | 1657.4 | 60 | 35 | 1 3/8 | 1695.5 | 596 | 662 | | |
| 66 | 77 | 4.00 | - | .50 | - | 70 | 72.38 | 60 | 1.62 | 1 1/2 | 74.00 | 1680 | - | | |
| 1676 | 1956 | 101.6 | - | 215.9 | - | 1778.0 | 1838.3 | 60 | 42 | 1 1/2 | 1879.6 | 756 | - | | |
| 72 | 83 | 4.00 | - | 9.00 | - | 76 | 78.38 | 72 | 1.62 | 1 1/2 | 80.00 | 1875 | - | | |
| 1829 | 2109 | 101.6 | - | 228.6 | - | 1930.4 | 1990.7 | 72 | 42 | 1 1/2 | 2032.0 | 844 | - | | |
| 84 | 96.5 | 5.00 | - | 10.00 | - | 89 | 91.50 | 80 | 1.75 | 1 5/8 | 93.25 | 2950 | - | | |
| 2134 | 2451 | 127.0 | - | 254.0 | - | 2260.6 | 2324.1 | 80 | 45 | 1 5/8 | 2368.6 | 1328 | - | | |
| 96 | 109.25 | 6.25 | - | 11.25 | - | 101.25 | 103.88 | 84 | 1.88 | 1 3/4 | 105.75 | 4300 | - | | |
| 2438 | 2775 | 158.85 | - | 285.8 | - | 2571.8 | 2638.4 | 84 | 48 | 1 3/4 | 2686.1 | 1935 | - | | |

¹ Blind Flanges are available upon application.

² When ordering, specify thickness and O.D. of pipe vessel to which flange is to be welded.

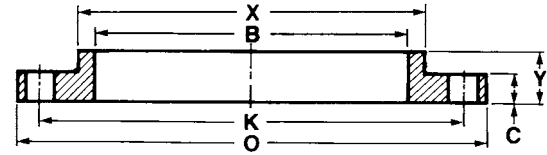
³ Sizes are INSIDE diameters of pipe or shell used with Welding Neck Flanges, and nominal OUTSIDE diameters of pipe or shell used with Slip-on Flanges.

⁴ These flanges can also be furnished in any other material that can be forged or rolled.

⁵ Alternate designation, 300 lb. WSP. at 750°F (399°C).

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |

LARGE DIAMETER FORGED STEEL FLANGES AWWA C207-55 HUB FLANGES² ASTM A181-CLASS 60



| NPS ¹ | FLANGE OUTSIDE DIA. | FLANGE THICKNESS C | | BORE DIA. P | LENGTH THRU HUB Y | | DIA. OF HUB AT BASE X | | NO. OF HOLES | DIA. OF BOLT CIRCLE K | DIA. OF HOLES | | APPROX. WEIGHT | | |
|------------------|---------------------|--------------------|---------|---------------------------|-------------------|---------|-----------------------|---------|--------------|-----------------------|---------------|-------------|----------------|---------|------|
| | | CLASS B & D | CLASS E | | CLASS B & D | CLASS E | CLASS B & D | CLASS E | | | CLASS B | CLASS D & E | CLASS B & D | CLASS E | |
| 6 | 11 | .56 | 1.00 | As specified by purchaser | 1.25 | 1.56 | 7.56 | 7.56 | 8 | 9.50 | .75 | .88 | 14 | 19 | |
| | 150 | 280 | 14.3 | | 25.4 | 31.8 | 39.7 | 192.1 | 192.0 | 8 | 241.3 | 20 | 23 | 6.3 | 9 |
| 8 | 13.5 | .56 | 1.25 | | 1.25 | 1.75 | 9.69 | 9.69 | 8 | 11.75 | .75 | .88 | 18 | 32 | |
| | 200 | 343 | 14.3 | | 31.8 | 31.8 | 44.5 | 246.1 | 246.0 | 8 | 298.5 | 20 | 23 | 8 | 14.5 |
| 10 | 16 | .69 | 1.19 | | 1.25 | 1.94 | 12.00 | 12.00 | 12 | 14.25 | .75 | 1 | 27 | 42 | |
| | 250 | 407 | 17.5 | | 30.2 | 31.8 | 49.2 | 304.8 | 304.8 | 12 | 362.0 | 20 | 26 | 12 | 19 |
| 12 | 19 | .69 | 1.25 | | 1.25 | 2.19 | 14.38 | 14.38 | 12 | 17.00 | .75 | 1 | 41 | 65 | |
| | 300 | 483 | 17.5 | | 31.8 | 31.8 | 55.6 | 365.1 | 365.1 | 12 | 431.8 | 20 | 26 | 18.5 | 29 |
| 14 | 21 | .75 | 1.38 | | 1.25 | 2.25 | 15.75 | 15.75 | 12 | 18.75 | .88 | 1.12 | 45 | 86 | |
| | 350 | 534 | 19.1 | | 34.9 | 31.8 | 57.2 | 400.1 | 400.0 | 12 | 476.3 | 23 | 29 | 20 | 39 |
| 16 | 23.5 | .75 | 1.44 | | 1.25 | 2.50 | 18.00 | 18.00 | 16 | 21.25 | .88 | 1.12 | 57 | 92 | |
| | 400 | 597 | 19.1 | | 36.5 | 31.8 | 63.5 | 457.2 | 457.2 | 16 | 559.8 | 23 | 29 | 25.5 | 42 |
| 18 | 25 | .75 | 1.56 | | 1.25 | 2.69 | 19.88 | 19.88 | 16 | 22.75 | .88 | 1.25 | 59 | 118 | |
| | 450 | 635 | 19.1 | | 39.7 | 31.8 | 68.3 | 504.8 | 504.8 | 16 | 577.9 | 23 | 32 | 26.5 | 53 |
| 20 | 27.5 | .75 | 1.69 | | 1.25 | 2.88 | 22.00 | 22.00 | 20 | 25.00 | .88 | 1.25 | 68 | 153 | |
| | 500 | 699 | 19.1 | | 42.9 | 31.8 | 73.0 | 558.8 | 558.8 | 20 | 635.0 | 23 | 32 | 31 | 69 |
| 22 | 29.5 | 1 | 1.81 | | 1.75 | 3.12 | 24.25 | 24.25 | 20 | 27.25 | .88 | 1.38 | 75 | 177 | |
| | 550 | 750 | 25.4 | | 46.0 | 44.5 | 79.4 | 616.0 | 616.0 | 20 | 692.2 | 23 | 35 | 34 | 80 |
| 24 | 32 | 1 | 1.88 | | 1.75 | 3.25 | 26.12 | 26.12 | 20 | 29.50 | .88 | 1.38 | 117 | 212 | |
| | 600 | 813 | 25.4 | | 47.6 | 44.5 | 82.6 | 663.6 | 663.6 | 20 | 749.3 | 23 | 35 | 53 | 96 |
| 26 | 34.25 | 1 | 2.00 | | 1.75 | 3.38 | 28.50 | 28.50 | 24 | 31.75 | .88 | 1.38 | 126 | 235 | |
| | 650 | 870 | 25.4 | | 50.8 | 44.5 | 85.7 | 723.9 | 723.9 | 24 | 806.5 | 23 | 35 | 57 | 106 |
| 28 | 36.5 | 1 | 2.06 | | 1.75 | 3.44 | 30.50 | 30.75 | 28 | 34.00 | .88 | 1.38 | 139 | 273 | |
| | 700 | 927 | 25.4 | | 52.4 | 44.5 | 87.3 | 774.7 | 781.1 | 28 | 863.6 | 23 | 35 | 63 | 123 |
| 30 | 38.75 | 1 | 2.12 | | 1.75 | 3.50 | 32.50 | 32.75 | 28 | 36.00 | 1 | 1.62 | 152 | 310 | |
| | 750 | 985 | 25.4 | | 54.0 | 44.5 | 88.9 | 825.5 | 831.9 | 28 | 914.4 | 26 | 42 | 68 | 140 |
| 32 | 41.75 | 1.12 | 2.25 | | 1.75 | 3.62 | 34.75 | 35.00 | 28 | 38.50 | 1 | 1.62 | 208 | 370 | |
| | 800 | 1061 | 28.6 | | 57.2 | 44.5 | 92.1 | 882.7 | 889.0 | 28 | 977.9 | 26 | 42 | 94 | 167 |
| 36 | 46 | 1.12 | 2.38 | | 1.75 | 3.75 | 38.75 | 39.25 | 32 | 42.75 | 1 | 1.62 | 235 | 460 | |
| | 900 | 1169 | 28.6 | | 60.3 | 44.5 | 95.3 | 984.3 | 997.0 | 32 | 1085.9 | 26 | 42 | 106 | 207 |
| 40 | 50.75 | 1.12 | 2.50 | 1.75 | 3.88 | 43.00 | 43.75 | 36 | 47.25 | 1 | 1.62 | 281 | 527 | | |
| | 1000 | 1289 | 28.6 | 63.5 | 44.5 | 98.4 | 1092.2 | 1111.3 | 36 | 1200.2 | 26 | 42 | 127 | 259 | |
| 42 | 53 | 1.25 | 2.62 | 1.75 | 4.00 | 45.00 | 46.00 | 36 | 49.50 | 1.12 | 1.62 | 327 | 660 | | |
| | 1100 | 1347 | 31.8 | 66.7 | 44.5 | 101.6 | 1143.0 | 1168.4 | 36 | 1257.3 | 29 | 42 | 147 | 297 | |
| 48 | 59.5 | 1.38 | 2.75 | 2.50 | 4.12 | 51.00 | 52.25 | 44 | 56.00 | 1.12 | 1.62 | 420 | 800 | | |
| | 1200 | 1512 | 34.9 | 69.9 | 63.5 | 104.8 | 1295.4 | 1327.3 | 44 | 1422.4 | 29 | 42 | 189 | 360 | |
| 60 | 73 | 1.5 | 3.12 | 2.75 | 4.50 | 63.00 | 65.25 | 52 | 69.25 | 1.38 | 1.88 | 645 | 1275 | | |
| | 1500 | 1855 | 38.1 | 79.4 | 69.9 | 114.3 | 1600.2 | 1657.4 | 52 | 1759.0 | 35 | 48 | 291 | 574 | |
| 72 | 86.5 | 1.5 | 3.50 | 2.75 | 5.00 | 75.00 | 78.50 | 60 | 82.50 | 1.38 | 1.88 | 855 | 1950 | | |
| | 1800 | 2197 | 38.1 | 88.9 | 69.9 | 127.0 | 1905.0 | 1993.9 | 60 | 2095.5 | 35 | 48 | 385 | 878 | |
| 96 | 113.25 | 2.0 | 4.25 | 3.25 | 5.75 | 100.0 | 102.75 | 68 | 108.5 | 1.88 | 2.38 | 1730 | 3250 | | |
| 2400 | 2877 | 50.8 | 108.0 | 82.6 | 146.1 | 2540.0 | 2609.9 | 68 | 2755.9 | 48 | 61 | 779 | 1463 | | |

CLASS B FLANGES have a water service rating at atmospheric temperature of 86 psi. These flanges have the same outside diameter, bolt circle and number of bolts as ASME/ANSI B16.1 (25 psi cast-iron pipe flanges and flanged fittings).

In sizes NPS 48 (DN 1200) and under they have the same bolts, and in sizes over NPS 48 (DN 1200) they use larger bolts than specified by this 25 psi standard.

They also have the same outside diameter, bolt circle, and number of bolts as ASME/ANSI B16.1 (125 psi cast-iron pipe flanges and flanged fittings), but use smaller bolts.

CLASS D FLANGES have a water service rating at atmospheric temperature;

sizes NPS 6 to NPS 12 (DN 150 to DN 300) inclusive, 175 psi; sizes larger than NPS 12 (DN 300) 150 psi. These flanges have the same diameter and drilling as Class 125 cast-iron flanges. (ASME/ANSI B16.1).

CLASS E FLANGES have a water service rating at atmospheric temperature of 275 psi. These flanges have the same diameter and drilling as Class 125 cast-iron flanges (ASME/ANSI B16.1). In sizes NPS 24 (DN 600) and smaller they also match ASME/ANSI B16.5 150 psi standard for steel flanges.

All Flanges: Carbon steel bolts should be used. Cloth-inserted rubber gaskets .06" (1.6 mm) thick should be used and should extend from the I.D. of flange to at least the inside edge of the bolt holes.

¹ Can also be furnished in A181 CLASS 70 and A-105, or any other material that can be forged or rolled.

³ For sizes other than those shown full information is available upon request.

² Ring and Blind flanges to match AWWA Hub flanges are available upon application.

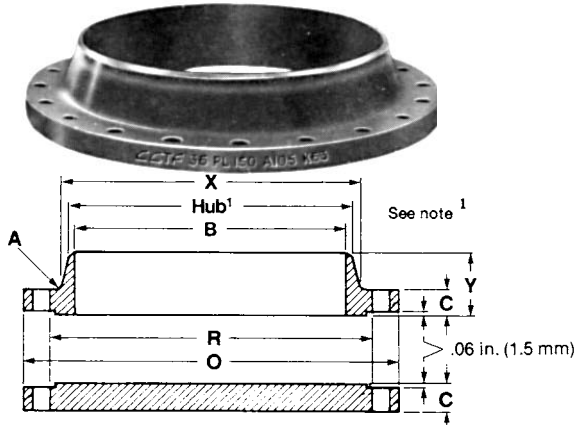
LARGE DIAMETER
FORGED STEEL FLANGES

PIPE LINE FLANGES

CLASS 150 (PN 20)

WELDING NECK & BLIND

²ASTM A-105



| NPS | FLANGE OUTSIDE DIA. | FLANGE THICKNESS (MIN.) ² | LENGTH THRU HUB | HUB DIA. AT BASE | HUB DIA. AT POINT OF WELDING | RAISED FACE DIA. | DRILLING | | | FILLET RADIUS (MIN.) | APPROX. WEIGHT | |
|------|---------------------|--------------------------------------|-----------------|------------------|------------------------------|------------------|-------------------|--------------------|---------------------|----------------------|----------------|-------|
| | | | | | | | NO. OF BOLT HOLES | DIA. OF BOLT HOLES | DIA. OF BOLT CIRCLE | | WELDING NECK | BLIND |
| 26 | 34.25 | 2.69 | 4.75 | 26.62 | 26.00 | 29.50 | 24 | 1.38 | 31.75 | .38 | 300 | 677 |
| 650 | 870 | 68.5 | 121 | 675 | 660 | 749 | 24 | 35 | 806 | 10 | 136 | 307 |
| 28 | 36.50 | 2.81 | 4.94 | 28.62 | 28.00 | 31.50 | 28 | 1.38 | 34.00 | .44 | 315 | 833 |
| 700 | 925 | 71.5 | 125 | 725 | 711 | 800 | 28 | 35 | 863 | 11 | 143 | 378 |
| 30 | 38.75 | 2.94 | 5.38 | 30.75 | 30.00 | 33.75 | 28 | 1.38 | 36.00 | .44 | 360 | 963 |
| 750 | 985 | 74.5 | 137 | 780 | 762 | 857 | 28 | 35 | 914 | 11 | 163 | 437 |
| 32 | 41.75 | 3.18 | 5.69 | 32.75 | 32.00 | 36.00 | 28 | 1.62 | 38.50 | .44 | 435 | 1200 |
| 800 | 1060 | 81.0 | 144 | 830 | 813 | 914 | 28 | 41 | 978 | 11 | 197 | 544 |
| 34 | 43.75 | 3.25 | 5.88 | 34.75 | 34.00 | 38.00 | 32 | 1.62 | 40.50 | .50 | 465 | 1342 |
| | 1110 | 82.5 | 149 | 380 | 863 | 965 | 32 | 41 | 1029 | 13 | 211 | 609 |
| 36 | 46.00 | 3.56 | 6.18 | 36.75 | 36.00 | 40.25 | 32 | 1.62 | 42.75 | .50 | 520 | 1540 |
| 900 | 1170 | 90.5 | 157 | 935 | 914 | 1022 | 32 | 41 | 1086 | 13 | 236 | 698 |
| 38 | 48.75 | 3.44 | 6.19 | 39.00 | 38.00 | 42.25 | 32 | 1.62 | 45.25 | .50 | 778 | 1780 |
| | 1240 | 87.4 | 157 | 990 | 965 | 1073 | 32 | 41 | 1150 | 13 | 353 | 807 |
| 40 | 50.75 | 3.56 | 6.44 | 41.00 | 40.00 | 44.25 | 36 | 1.62 | 47.25 | .50 | 831 | 1992 |
| 1000 | 1290 | 90.5 | 164 | 1040 | 1016 | 1124 | 36 | 41 | 1200 | 13 | 377 | 903 |
| 42 | 53.00 | 3.81 | 6.75 | 43.00 | 42.00 | 47.00 | 36 | 1.62 | 49.50 | .50 | 966 | 2332 |
| 1100 | 1345 | 97.0 | 171 | 1090 | 1067 | 1194 | 36 | 41 | 1257 | 13 | 438 | 1058 |
| 44 | 55.25 | 4.00 | 7.00 | 45.00 | 44.00 | 49.00 | 40 | 1.62 | 51.75 | .50 | 1058 | 2656 |
| | 1405 | 102.0 | 178 | 1145 | 1118 | 1245 | 40 | 41 | 1314 | 13 | 480 | 1205 |
| 46 | 57.25 | 4.06 | 7.31 | 47.12 | 46.00 | 51.00 | 40 | 1.62 | 53.75 | .50 | 1131 | 2903 |
| | 1455 | 103.0 | 186 | 1195 | 1168 | 1295 | 40 | 41 | 1365 | 13 | 513 | 1317 |
| 48 | 59.50 | 4.25 | 7.56 | 49.12 | 48.00 | 53.50 | 44 | 1.62 | 56.00 | .50 | 1248 | 3276 |
| 1200 | 1510 | 108.0 | 192 | 1250 | 1219 | 1359 | 44 | 41 | 1422 | 13 | 566 | 1486 |
| 50 | 61.75 | 4.38 | 8.00 | 51.25 | 50.00 | 55.50 | 44 | 1.88 | 58.25 | .50 | 1351 | 3605 |
| | 1570 | 111.0 | 203 | 1300 | 1270 | 1410 | 44 | 48 | 1480 | 13 | 613 | 1635 |
| 52 | 64.00 | 4.56 | 8.25 | 53.25 | 52.00 | 57.50 | 44 | 1.88 | 60.50 | .50 | 1508 | 4043 |
| 1300 | 1625 | 116.0 | 210 | 1355 | 1321 | 1460 | 44 | 48 | 1537 | 13 | 684 | 1834 |
| 54 | 66.25 | 4.75 | 8.50 | 55.25 | 54.00 | 59.50 | 44 | 1.88 | 62.75 | .50 | 1667 | 4521 |
| 1400 | 1685 | 121.0 | 216 | 1405 | 1372 | 1511 | 44 | 48 | 1594 | 13 | 756 | 2051 |
| 56 | 68.75 | 4.88 | 9.00 | 57.38 | 56.00 | 62.00 | 48 | 1.88 | 65.00 | .50 | 1817 | 4981 |
| | 1745 | 124.0 | 229 | 1455 | 1422 | 1575 | 48 | 48 | 1651 | 13 | 824 | 2259 |
| 58 | 71.00 | 5.06 | 9.25 | 59.38 | 58.00 | 64.00 | 48 | 1.88 | 67.25 | .50 | 2006 | 5540 |
| | 1805 | 129.0 | 235 | 1510 | 1473 | 1626 | 48 | 48 | 1708 | 13 | 910 | 2513 |
| 60 | 73.00 | 5.19 | 9.44 | 61.38 | 60.00 | 66.00 | 52 | 1.88 | 69.25 | .50 | 2108 | 6000 |
| 1500 | 1855 | 132.0 | 240 | 1560 | 1524 | 1676 | 52 | 48 | 1759 | 13 | 956 | 2722 |

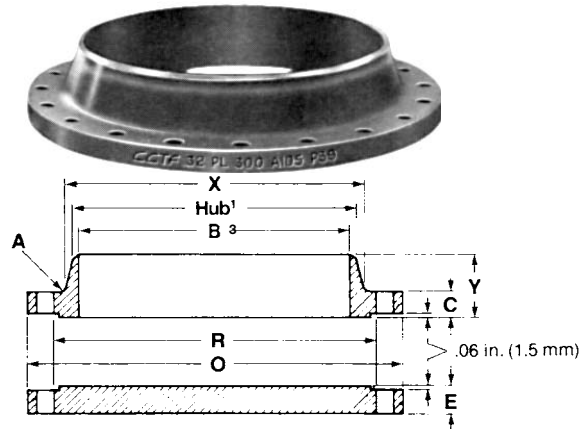
¹ Includes .06" (1.5mm) raised face.

² Materials covered in this Standard are as in ASME/ANSI B16.5 except nickel based alloys are excluded.

³ Bore diameter as specified by Purchaser.

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |

LARGE DIAMETER
FORGED STEEL FLANGES
WELDING NECK & BLIND
CLASS 300 (PN 50)
ASME B16.47 SERIES A
²ASTM A-105



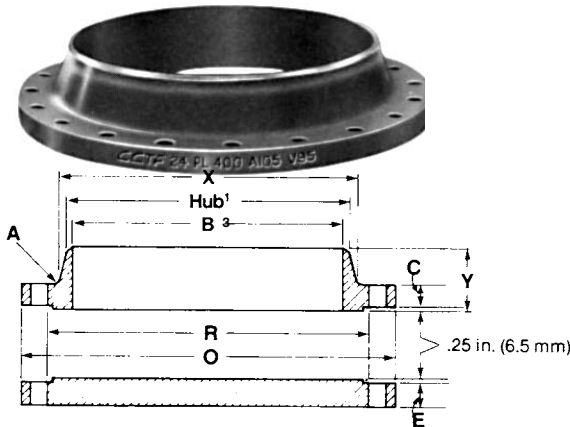
| NPS | DN | FLANGE THICKNESS ¹ | | LENGTH THRU HUB | HUB DIA. AT BASE | HUB DIA. AT POINT OF WELDING | RAISED FACE DIA. | DRILLING | | | FILLET RADIUS (MIN.) | APPROX. WEIGHT | | |
|-----|------|-------------------------------|-------|-----------------|------------------|------------------------------|------------------|-------------------|--------------------|---------------------|----------------------|----------------|-------|------|
| | | WELDING NECK | BLIND | | | | | NO. OF BOLT HOLES | DIA. OF BOLT HOLES | DIA. OF BOLT CIRCLE | | WELDING NECK | BLIND | |
| | O | C | E | Y | X | A | R | | | | r | | | |
| 26 | 650 | 38.25 | 3.12 | 3.31 | 7.25 | 28.38 | 26.00 | 29.50 | 28 | 1.75 | 34.50 | .38 | 615 | 1116 |
| | | 970 | 79.5 | 84.0 | 184 | 720 | 660 | 749 | 28 | 44 | 876 | 10 | 279 | 506 |
| 28 | 700 | 40.75 | 3.38 | 3.56 | 7.75 | 30.50 | 28.00 | 31.50 | 28 | 1.75 | 37.00 | .44 | 750 | 1362 |
| | | 1035 | 85.5 | 90.5 | 197 | 775 | 711 | 800 | 28 | 44 | 940 | 11 | 340 | 618 |
| 30 | 750 | 43.00 | 3.62 | 3.75 | 8.25 | 32.56 | 30.00 | 33.75 | 28 | 1.88 | 39.25 | .44 | 858 | 1590 |
| | | 1090 | 92.0 | 95.0 | 210 | 825 | 762 | 857 | 28 | 48 | 997 | 11 | 390 | 721 |
| 32 | 800 | 45.25 | 3.88 | 3.94 | 8.75 | 34.69 | 32.00 | 36.00 | 28 | 2.00 | 41.50 | .44 | 960 | 1862 |
| | | 1150 | 98.5 | 100 | 222 | 880 | 813 | 914 | 28 | 51 | 1054 | 11 | 435 | 845 |
| 34 | | 47.50 | 4.00 | 4.12 | 9.12 | 36.88 | 34.00 | 38.00 | 28 | 2.00 | 43.50 | .50 | 1110 | 2134 |
| | | 1205 | 102 | 105 | 232 | 935 | 863 | 965 | 28 | 51 | 1105 | 13 | 504 | 968 |
| 36 | 900 | 50.00 | 4.12 | 4.38 | 9.50 | 39.00 | 36.00 | 40.25 | 32 | 2.12 | 46.00 | .50 | 1223 | 2586 |
| | | 1270 | 105 | 111 | 241 | 990 | 914 | 1022 | 32 | 54 | 1168 | 13 | 560 | 1173 |
| 38 | | 46.00 | 4.25 | 4.25 | 7.12 | 39.12 | 38.00 | 40.50 | 32 | 1.62 | 43.00 | .50 | | |
| | | 1170 | 108 | 108 | 181 | 995 | 965 | 1029 | 32 | 41 | 1092 | 13 | | |
| 40 | 1000 | 48.75 | 4.50 | 4.50 | 7.62 | 41.25 | 40.00 | 42.75 | 32 | 1.75 | 45.50 | .50 | | |
| | | 1240 | 114 | 114 | 194 | 1050 | 1016 | 1086 | 32 | 44 | 1156 | 13 | | |
| 42 | 1100 | 50.75 | 4.69 | 4.69 | 7.88 | 43.25 | 42.00 | 44.75 | 32 | 1.75 | 47.50 | .50 | | |
| | | 1290 | 119 | 119 | 200 | 1100 | 1067 | 1137 | 32 | 44 | 1206 | 13 | | |
| 44 | | 53.25 | 4.88 | 4.88 | 8.12 | 45.25 | 44.00 | 47.00 | 32 | 1.88 | 49.75 | .50 | | |
| | | 1355 | 124 | 124 | 206 | 1150 | 1118 | 1194 | 32 | 48 | 1264 | 13 | | |
| 46 | | 55.75 | 5.06 | 5.06 | 8.50 | 47.38 | 46.00 | 49.00 | 28 | 2.00 | 52.00 | .50 | | |
| | | 1415 | 129 | 129 | 216 | 1205 | 1168 | 1245 | 28 | 51 | 1321 | 13 | | |
| 48 | 1200 | 57.75 | 5.25 | 5.25 | 8.81 | 49.38 | 48.00 | 51.25 | 32 | 2.00 | 54.00 | .50 | | |
| | | 1465 | 133 | 133 | 224 | 1255 | 1219 | 1314 | 32 | 51 | 1372 | 13 | | |
| 50 | | 60.25 | 5.50 | 5.50 | 9.12 | 51.38 | 50.00 | 53.50 | 32 | 2.12 | 56.25 | .50 | | |
| | | 1530 | 140 | 140 | 232 | 1305 | 1270 | 1359 | 32 | 54 | 1429 | 13 | | |
| 52 | 1300 | 62.25 | 5.69 | 5.69 | 9.38 | 53.38 | 52.00 | 55.50 | 32 | 2.12 | 58.25 | .50 | | |
| | | 1580 | 144 | 144 | 238 | 1355 | 1321 | 1410 | 32 | 54 | 1480 | 13 | | |
| 54 | 1400 | 65.25 | 6.00 | 6.00 | 9.94 | 55.50 | 54.00 | 57.75 | 28 | 2.38 | 61.00 | .50 | | |
| | | 1660 | 152 | 152 | 252 | 1410 | 1372 | 1467 | 28 | 60 | 1549 | 13 | | |
| 56 | | 67.25 | 6.06 | 6.06 | 10.25 | 57.62 | 56.00 | 59.75 | 28 | 2.38 | 63.00 | .50 | | |
| | | 1710 | 154 | 154 | 260 | 1465 | 1422 | 118 | 28 | 60 | 1600 | 13 | | |
| 58 | | 69.25 | 6.25 | 6.25 | 10.50 | 59.62 | 58.00 | 62.00 | 32 | 2.38 | 65.00 | .50 | | |
| | | 1760 | 159 | 159 | 267 | 1515 | 1473 | 1575 | 32 | 60 | 1651 | 13 | | |
| 60 | 1500 | 71.25 | 6.44 | 6.44 | 10.75 | 61.62 | 60.00 | 64.00 | 32 | 2.38 | 67.00 | .50 | | |
| | | 1810 | 164 | 164 | 273 | 1565 | 1524 | 1626 | 32 | 60 | 1702 | 13 | | |

¹ Includes .06" (1.5 mm) raised face.

² Materials covered in this Standard are as in ASME/ANSI B16.47 except nickel based alloys are excluded.

³ Bore diameter as specified by Purchaser.

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |



LARGE DIAMETER
FORGED STEEL FLANGES

PIPE LINE FLANGES

CLASS 400 (PN 68)

WELDING NECK & BLIND

ASME B16.47 SERIES A

²ASTM A-105

| NPS | FLANGE OUTSIDE DIA. | FLANGE THICKNESS ¹ | | LENGTH THRU HUB | HUB DIA. AT BASE | HUB DIA. AT POINT OF WELDING | RAISED FACE DIA. | DRILLING | | | FILLET RADIUS (MIN.) | APPROX. WEIGHT | |
|------|---------------------|-------------------------------|-------|-----------------|------------------|------------------------------|------------------|-------------------|--------------------|---------------------|----------------------|----------------|-------|
| | | WELDING NECK | BLIND | | | | | NO. OF BOLT HOLES | DIA. OF BOLT HOLES | DIA. OF BOLT CIRCLE | | WELDING NECK | BLIND |
| DN | O | C | E | Y | X | A | R | | | | r | | |
| 26 | 38.25 | 3.50 | 3.88 | 7.62 | 28.62 | 26.00 | 29.50 | 28 | 1.88 | 34.50 | .44 | 769 | 1226 |
| 650 | 970 | 89.0 | 98.5 | 194 | 725 | 660 | 749 | 28 | 48 | 876 | 11 | 349 | 556 |
| 28 | 40.75 | 3.75 | 4.12 | 8.12 | 30.81 | 28.00 | 31.50 | 28 | 2.00 | 37.00 | .50 | 902 | 1483 |
| 700 | 1035 | 95.0 | 105 | 206 | 785 | 711 | 800 | 28 | 51 | 940 | 13 | 409 | 673 |
| 30 | 43.00 | 4.00 | 4.38 | 8.62 | 32.94 | 30.00 | 33.75 | 28 | 2.12 | 39.25 | .50 | 1025 | 1760 |
| 750 | 1090 | 102 | 111 | 219 | 835 | 762 | 857 | 28 | 54 | 997 | 13 | 465 | 798 |
| 32 | 45.25 | 4.25 | 4.56 | 9.12 | 35.00 | 32.00 | 36.00 | 28 | 2.12 | 41.50 | .50 | 1188 | 2036 |
| 800 | 1150 | 108 | 116 | 232 | 890 | 813 | 914 | 28 | 54 | 1054 | 13 | 539 | 924 |
| 34 | 47.50 | 4.38 | 4.81 | 9.50 | 37.19 | 34.00 | 38.00 | 28 | 2.12 | 43.50 | .56 | 1340 | 2374 |
| | 1205 | 111 | 122 | 241 | 945 | 863 | 965 | 28 | 54 | 1105 | 14 | 608 | 1077 |
| 36 | 50.00 | 4.50 | 5.06 | 9.88 | 39.38 | 36.00 | 40.25 | 32 | 2.12 | 46.00 | .56 | 1520 | 2756 |
| 900 | 1270 | 114 | 129 | 251 | 1000 | 914 | 1022 | 32 | 54 | 1168 | 14 | 689 | 1250 |
| 38 | 47.50 | 4.88 | 4.88 | 8.12 | 39.50 | 38.00 | 40.5 | 32 | 1.88 | 44.00 | .56 | | |
| | 1205 | 124 | 124 | 206 | 1005 | 965 | 1035 | 32 | 48 | 1118 | 14 | | |
| 40 | 50.00 | 5.12 | 5.12 | 8.50 | 41.50 | 40.00 | 43.00 | 32 | 2.00 | 46.25 | .56 | | |
| 1000 | 1270 | 130 | 130 | 216 | 1055 | 1016 | 1092 | 32 | 51 | 1175 | 14 | | |
| 42 | 52.00 | 5.25 | 5.25 | 8.81 | 43.62 | 42.00 | 45.00 | 32 | 2.00 | 48.25 | .56 | | |
| 1100 | 1320 | 133 | 133 | 224 | 1110 | 1067 | 1143 | 32 | 51 | 1226 | 14 | | |
| 44 | 54.50 | 5.50 | 5.50 | 9.18 | 45.62 | 44.00 | 47.25 | 32 | 2.12 | 50.50 | .56 | | |
| | 1385 | 140 | 140 | 233 | 1160 | 1118 | 1200 | 32 | 54 | 1283 | 14 | | |
| 46 | 56.75 | 5.75 | 5.75 | 9.62 | 47.75 | 46.00 | 49.50 | 36 | 2.12 | 52.75 | .56 | | |
| | 1440 | 146 | 146 | 244 | 1215 | 1168 | 1257 | 36 | 54 | 1340 | 14 | | |
| 48 | 59.50 | 6.00 | 6.00 | 10.12 | 49.88 | 48.00 | 51.50 | 28 | 2.38 | 55.25 | .56 | | |
| 1200 | 1510 | 152 | 152 | 257 | 1265 | 1219 | 1308 | 28 | 60 | 1403 | 14 | | |
| 50 | 61.75 | 6.19 | 6.25 | 10.56 | 52.00 | 50.00 | 53.62 | 32 | 2.38 | 57.50 | .56 | | |
| | 1570 | 157 | 159 | 268 | 1320 | 1270 | 1362 | 32 | 60 | 1460 | 14 | | |
| 52 | 63.75 | 6.38 | 6.44 | 10.88 | 54.00 | 52.00 | 55.62 | 32 | 2.38 | 59.50 | .56 | | |
| 1300 | 1620 | 162 | 164 | 276 | 1370 | 1321 | 1413 | 32 | 60 | 1511 | 14 | | |
| 54 | 67.00 | 6.69 | 6.75 | 11.38 | 56.12 | 54.00 | 57.88 | 28 | 2.62 | 62.25 | .56 | | |
| 1400 | 1700 | 170 | 171 | 289 | 1425 | 1372 | 1470 | 28 | 67 | 1581 | 14 | | |
| 56 | 69.00 | 6.88 | 6.94 | 11.75 | 58.25 | 56.00 | 60.12 | 32 | 2.62 | 64.25 | .56 | | |
| | 1755 | 175 | 176 | 298 | 1480 | 1422 | 1527 | 32 | 67 | 1632 | 14 | | |
| 58 | 71.00 | 7.00 | 7.12 | 12.06 | 60.25 | 58.00 | 62.12 | 32 | 2.62 | 66.25 | .56 | | |
| | 1805 | 178 | 181 | 306 | 1530 | 1473 | 1527 | 32 | 68 | 1683 | 14 | | |
| 60 | 74.25 | 7.31 | 7.44 | 12.56 | 62.38 | 60.00 | 64.38 | 32 | 2.88 | 69.00 | .56 | | |
| 1500 | 1885 | 186 | 189 | 319 | 1585 | 1524 | 1527 | 32 | 73 | 1753 | 14 | | |

¹ Does not include .25" (6.5mm) raised face.

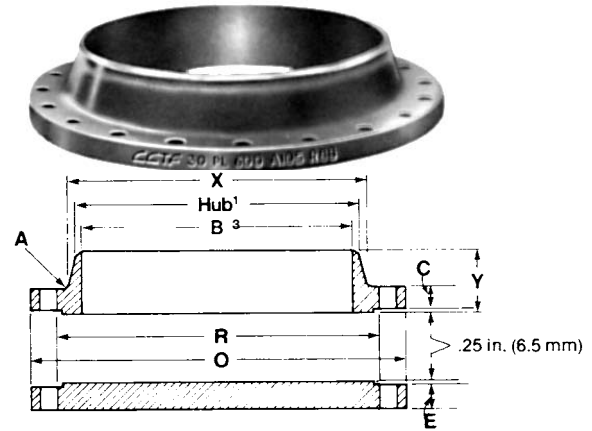
² Material covered in this Standard are as in ASME/ANSI B16.5 except nickel based alloys are excluded.

³ Bore diameter as specified by Purchaser.

⁴ These flanges can also be supplied in any material that can be forged or rolled.

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |

LARGE DIAMETER
FORGED STEEL FLANGES
PIPE LINE FLANGES
CLASS 600 (PN 100)
WELDING NECK & BLIND
ANSI/ASME B16.47 SERIES A
²ASTM A-105



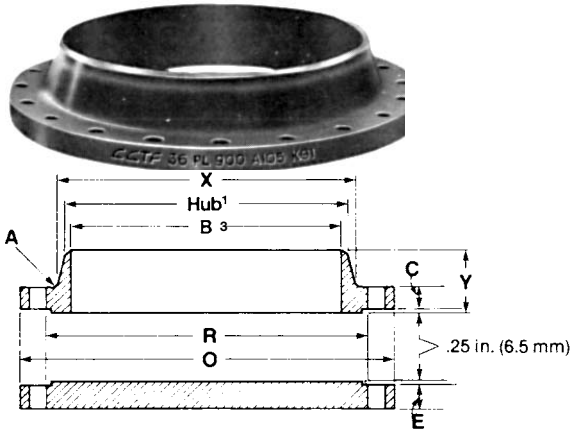
| NPS | DN | FLANGE THICKNESS ¹ | | | LENGTH THRU HUB Y ³ | HUB DIA. AT BASE X | HUB DIA. AT POINT OF WELDING A | RAISED FACE DIA. R | DRILLING | | | FILLET RADIUS (MIN.) r | APPROX. WEIGHT | |
|-----|------|-------------------------------|-------------------|------------|-----------------------------------|-----------------------|-----------------------------------|-----------------------|-------------------|--------------------|---------------------|---------------------------|----------------|-------|
| | | FLANGE OUTSIDE DIA. O | WELDING NECK C | BLIND E | | | | | NO. OF BOLT HOLES | DIA. OF BOLT HOLES | DIA. OF BOLT CIRCLE | | WELDING NECK | BLIND |
| 26 | | 40.00 | 4.25 | 4.94 | 8.75 | 29.44 | 26.00 | 29.50 | 28 | 2.00 | 36.00 | .50 | 963 | 1734 |
| | 650 | 1015 | 108 | 125 | 222 | 748 | 660 | 749 | 28 | 51 | 914 | 13 | 437 | 786 |
| 28 | | 42.25 | 4.38 | 5.19 | 9.25 | 31.62 | 28.00 | 31.50 | 28 | 2.12 | 38.00 | .50 | 1120 | 1029 |
| | 700 | 1075 | 111 | 132 | 235 | 803 | 711 | 800 | 28 | 54 | 965 | 13 | 508 | 916 |
| 30 | | 44.50 | 4.50 | 5.50 | 9.75 | 33.94 | 30.00 | 33.75 | 28 | 2.12 | 40.25 | .50 | 1232 | 2398 |
| | 750 | 1130 | 114 | 140 | 248 | 862 | 762 | 857 | 28 | 54 | 1022 | 13 | 559 | 1088 |
| 32 | | 47.00 | 4.62 | 5.81 | 10.25 | 36.12 | 32.00 | 36.00 | 28 | 2.38 | 42.50 | .50 | 1500 | 2815 |
| | 800 | 1195 | 117 | 148 | 260 | 917 | 813 | 914 | 28 | 60 | 1080 | 13 | 680 | 1277 |
| 34 | | 49.00 | 4.75 | 6.06 | 10.62 | 38.31 | 34.00 | 38.00 | 28 | 2.38 | 44.50 | .56 | 1580 | 3206 |
| | | 1245 | 121 | 154 | 270 | 973 | 863 | 965 | 28 | 60 | 1130 | 14 | 717 | 1454 |
| 36 | | 51.75 | 4.88 | 6.38 | 11.12 | 40.62 | 36.00 | 40.25 | 28 | 2.38 | 47.00 | .56 | 1750 | 3744 |
| | 900 | 1315 | 124 | 162 | 283 | 1032 | 914 | 1022 | 28 | 60 | 1194 | 14 | 794 | 1698 |
| 38 | | 50.00 | 6.00 | 6.12 | 10.00 | 40.25 | 38.00 | 41.50 | 28 | 2.38 | 45.75 | .56 | | |
| | | 1270 | 152 | 156 | 254 | 1022 | 965 | 1054 | 28 | 60 | 1162 | 14 | | |
| 40 | | 52.00 | 6.25 | 6.38 | 10.38 | 42.25 | 40.00 | 43.75 | 32 | 2.38 | 47.75 | .56 | | |
| | 1000 | 1320 | 159 | 162 | 264 | 1073 | 1016 | 1111 | 32 | 60 | 1213 | 14 | | |
| 42 | | 55.25 | 6.62 | 6.75 | 11.00 | 44.28 | 42.00 | 46.00 | 28 | 2.62 | 50.50 | .56 | | |
| | 1100 | 1405 | 168 | 171 | 279 | 1125 | 1067 | 1168 | 28 | 67 | 1283 | 14 | | |
| 44 | | 57.25 | 6.81 | 7.00 | 11.38 | 46.50 | 44.00 | 48.25 | 32 | 2.62 | 52.50 | .56 | | |
| | | 1455 | 173 | 178 | 289 | 1181 | 1118 | 1226 | 32 | 67 | 1327 | 14 | | |
| 46 | | 59.50 | 7.06 | 7.31 | 11.81 | 48.62 | 46.00 | 50.25 | 32 | 2.62 | 54.75 | .56 | | |
| | | 1510 | 179 | 186 | 300 | 1235 | 1168 | 1276 | 32 | 67 | 1391 | 14 | | |
| 48 | | 62.75 | 7.44 | 7.69 | 12.44 | 50.75 | 48.00 | 52.50 | 32 | 2.88 | 57.50 | .56 | | |
| | 1200 | 1595 | 189 | 195 | 316 | 1289 | 1219 | 1283 | 32 | 73 | 1467 | 14 | | |
| 50 | | 65.75 | 7.75 | 8.00 | 12.94 | 52.88 | 50.00 | 54.50 | 28 | 3.12 | 60.00 | .56 | | |
| | | 1670 | 198 | 203 | 329 | 1343 | 1270 | 1384 | 28 | 79 | 1524 | 14 | | |
| 52 | | 67.75 | 8.00 | 8.25 | 13.25 | 54.88 | 52.00 | 56.50 | 32 | 3.12 | 62.00 | .56 | | |
| | 1300 | 1720 | 203 | 210 | 337 | 1394 | 1321 | 1435 | 32 | 79 | 1575 | 14 | | |
| 54 | | 70.00 | 8.25 | 8.56 | 13.75 | 57.00 | 54.00 | 58.75 | 32 | 3.12 | 64.25 | .56 | | |
| | 1400 | 1780 | 210 | 217 | 349 | 1448 | 1372 | 1492 | 32 | 79 | 1632 | 14 | | |
| 56 | | 73.00 | 8.56 | 8.88 | 14.25 | 59.12 | 56.00 | 60.75 | 32 | 3.38 | 66.75 | .62 | | |
| | | 1855 | 217 | 225 | 362 | 1502 | 1422 | 1543 | 32 | 86 | 1695 | 16 | | |
| 58 | | 75.00 | 8.75 | 9.12 | 14.56 | 61.12 | 58.00 | 63.00 | 32 | 3.38 | 68.75 | .62 | | |
| | | 1905 | 222 | 232 | 370 | 1552 | 1473 | 1600 | 32 | 86 | 1746 | 16 | | |
| 60 | | 78.50 | 9.19 | 9.56 | 15.31 | 63.38 | 60.00 | 65.25 | 28 | 3.62 | 71.75 | .69 | | |
| | 1500 | 1995 | 233 | 243 | 389 | 1610 | 1524 | 1657 | 28 | 92 | 1822 | 17 | | |

¹ Includes .25" (6.5 mm) raised face.

² Materials covered in this Standard are as in ASME/ANSI B16.5 except nickel based alloys are excluded.

³ Bore diameter as specified by Purchaser.

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |



LARGE DIAMETER
FORGED STEEL FLANGES
PIPE LINE FLANGES
²**CLASS 900 (PN 150)**
WELDING NECK & BLIND
ANSI/ASME B16.47 SERIES A
⁴**ASTM A-105**

| NPS | DN | FLANGE THICKNESS ¹ | | | LENGTH THRU HUB | HUB DIA. AT BASE | HUB DIA. AT POINT OF WELDING | RAISED FACE DIA. | DRILLING | | | FILLET RADIUS (MIN.) | APPROX. WEIGHT | |
|-----|------|-------------------------------|--------------|-------|-----------------|------------------|------------------------------|------------------|-------------------|--------------------|---------------------|----------------------|----------------|-------|
| | | FLANGE OUTSIDE DIA. | WELDING NECK | BLIND | | | | | NO. OF BOLT HOLES | DIA. OF BOLT HOLES | DIA. OF BOLT CIRCLE | | WELDING NECK | BLIND |
| | | O | C | E | Y | X | A | R | | | r | | | |
| 26 | | 42.75 | 5.50 | 6.31 | 11.25 | 30.50 | 26.00 | 29.50 | 20 | 2.88 | 37.50 | .44 | 1614 | 2423 |
| | 650 | 1085 | 140 | 160 | 286 | 775 | 660 | 749 | 20 | 73 | 952 | 11 | 732 | 1099 |
| 28 | | 46.00 | 5.62 | 6.75 | 11.75 | 32.75 | 28.00 | 31.50 | 20 | 3.12 | 40.25 | .50 | 1894 | 3012 |
| | 700 | 1170 | 143 | 171 | 298 | 832 | 711 | 800 | 20 | 79 | 1022 | 13 | 859 | 1366 |
| 30 | | 48.50 | 5.88 | 7.18 | 12.25 | 35.00 | 30.00 | 33.75 | 20 | 3.12 | 42.75 | .50 | 2196 | 3564 |
| | 750 | 1230 | 149 | 183 | 311 | 889 | 762 | 857 | 20 | 79 | 1086 | 13 | 996 | 1617 |
| 32 | | 51.75 | 6.25 | 7.62 | 13.00 | 37.25 | 32.00 | 36.00 | 20 | 3.38 | 45.50 | .50 | 2628 | 4286 |
| | 800 | 1315 | 159 | 194 | 330 | 946 | 813 | 914 | 20 | 86 | 1156 | 13 | 1192 | 1944 |
| 34 | | 55.00 | 6.50 | 8.06 | 13.75 | 39.62 | 34.00 | 38.00 | 20 | 3.62 | 48.25 | .56 | 3100 | 5207 |
| | | 1395 | 165 | 205 | 349 | 1006 | 864 | 965 | 20 | 92 | 1226 | 14 | 1407 | 2362 |
| 36 | | 57.50 | 6.75 | 8.44 | 14.25 | 41.88 | 36.00 | 40.25 | 20 | 3.62 | 50.75 | .56 | 3535 | 6003 |
| | 900 | 1460 | 171 | 214 | 362 | 1064 | 914 | 1022 | 20 | 92 | 1289 | 14 | 1603 | 2723 |
| 38 | | 57.50 | 7.50 | 8.50 | 13.88 | 42.75 | 38.00 | 43.25 | 20 | 3.62 | 50.75 | .75 | | |
| | | 1460 | 190 | 216 | 352 | 1073 | 965 | 1099 | 20 | 92 | 1289 | 19 | | |
| 40 | | 59.50 | 7.75 | 8.81 | 14.31 | 44.38 | 40.00 | 45.75 | 24 | 3.62 | 52.75 | .81 | | |
| | 1000 | 1510 | 197 | 224 | 364 | 1127 | 1016 | 1162 | 24 | 92 | 1340 | 21 | | |
| 42 | | 61.50 | 8.12 | 9.12 | 14.62 | 46.31 | 42.00 | 47.75 | 24 | 3.62 | 54.75 | .81 | | |
| | 1100 | 1560 | 206 | 232 | 37 | 1176 | 1067 | 1213 | 24 | 92 | 1391 | 21 | | |
| 44 | | 64.88 | 8.44 | 9.56 | 15.38 | 48.62 | 44.00 | 50.00 | 24 | 3.88 | 57.62 | .88 | | |
| | | 1650 | 214 | 243 | 391 | 1235 | 1118 | 1270 | 24 | 98 | 1464 | 22 | | |
| 46 | | 68.25 | 8.88 | 10.06 | 16.18 | 50.88 | 46.00 | 52.50 | 24 | 4.12 | 60.50 | .88 | | |
| | | 1735 | 225 | 256 | 411 | 1292 | 1168 | 1334 | 24 | 105 | 1537 | 22 | | |
| 48 | | 70.25 | 9.19 | 10.38 | 16.50 | 52.88 | 48.00 | 54.50 | 24 | 4.12 | 62.50 | .94 | | |
| | 1200 | 1785 | 233 | 264 | 419 | 1343 | 1219 | 1384 | 24 | 105 | 1588 | 24 | | |

¹ Does not include .25" (6.5 mm) raised face.

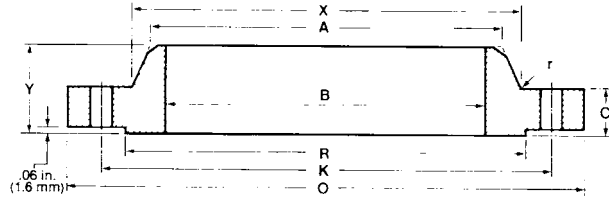
² Materials covered in this Standard are as in ASME/ANSI B16.5, except nickel based alloys are excluded.

³ Bore diameter as specified by Purchaser.

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |

LARGE DIAMETER STEEL FLANGES

CLASS 150 (PN 20) AND CLASS 300 (PN 50) WELDING NECK ASTM A-105²



| NPS | DN | FLANGE DIAMETER O | FLANGE THICKNESS C | RAISED FACE DIA. R | BORE B | HUB DIA. AT POINT OF WELDING A | HUB DIA. AT BASE X | LENGTH THRU HUB Y | FILLET RADIUS r | DRILLING | | | APPROX. WEIGHT | |
|------------------|------|-------------------|--------------------|--------------------|--------------------------|--------------------------------|--------------------|-------------------|-----------------|--------------|---------------|-----------------------|----------------|------------|
| | | | | | | | | | | NO. OF HOLES | DIA. OF HOLES | DIA. OF BOLT CIRCLE K | | |
| CLASS 150 | | | | | | | | | | | | | | |
| 26 | 650 | 30.94 786 | 1.62 41.3 | 28.00 711.2 | As specified by Customer | 26.06 662.0 | 26.94 684.2 | 3.50 88.9 | .38 9.5 | 36 36 | .88 22.2 | 29.31 744.5 | 139 63 | |
| 28 | 700 | 32.94 837 | 1.75 44.4 | 30.00 762.0 | | 28.06 712.8 | 28.94 735.0 | 3.75 95.2 | .38 9.5 | 40 40 | .88 22.2 | 31.31 795.3 | 163 74 | |
| 30 | 750 | 34.94 887 | 1.75 44.4 | 32.00 812.8 | | 30.06 763.6 | 31.00 787.4 | 3.94 100.0 | .38 9.5 | 44 44 | .88 22.2 | 33.31 846.1 | 176 80 | |
| 32 | 800 | 37.06 941 | 1.81 46.0 | 34.00 863.6 | | 32.06 814.4 | 33.06 839.8 | 4.25 108.0 | .38 9.5 | 48 48 | .88 22.2 | 35.44 900.1 | 203 92 | |
| 34 | 850 | 39.56 1005 | 1.94 49.2 | 36.25 920.8 | | 34.06 865.2 | 35.12 892.2 | 4.34 110.3 | .38 9.5 | 40 40 | 1.00 25.4 | 37.69 957.3 | 249 113 | |
| 36 | 900 | 41.62 1057 | 2.06 52.4 | 38.25 971.6 | | 36.06 916.0 | 37.19 944.6 | 4.62 117.5 | .38 9.5 | 44 44 | 1.00 25.4 | 39.75 1009.6 | 284 129 | |
| 42 | 1100 | 48.25 1226 | 2.31 58.7 | 44.50 1130.3 | | 42.12 1070.0 | 43.38 1101.7 | 5.25 133.4 | .44 11.1 | 48 48 | 1.12 28.6 | 46.12 1171.6 | 406 184 | |
| 48 | 1200 | 54.81 1392 | 2.56 65.1 | 50.75 1289.0 | | 48.12 1222.4 | 49.50 1257.3 | 5.88 149.2 | .44 11.1 | 44 44 | 1.25 31.8 | 52.56 1335.1 | 509 231 | |
| 54 | 1400 | 61.00 1549 | 2.81 71.4 | 56.75 1441.4 | | 54.12 1374.8 | 55.62 1412.9 | 6.38 161.9 | .44 11.1 | 56 56 | 1.25 31.8 | 58.75 1492.2 | 632 287 | |
| 60 | 1500 | 67.94 1726 | 3.00 76.2 | 63.00 1600.2 | | 60.12 1527.2 | 61.81 1570.0 | 7.06 179.4 | .56 14.3 | 52 52 | 1.38 34.9 | 65.44 1662.1 | 855 388 | |
| CLASS 300 | | | | | | | | | | | | | | |
| 26 | 650 | 34.12 867 | 3.50 88.9 | 29.00 736.6 | | As specified by Customer | 26.19 665.2 | 27.62 701.7 | 5.69 144.5 | .56 14.3 | 32 32 | 1.38 34.9 | 31.62 803.3 | 399 181 |
| 28 | 700 | 36.25 921 | 3.50 88.9 | 31.00 787.4 | 28.19 716.0 | | 29.75 755.6 | 5.88 149.2 | .56 14.3 | 36 36 | 1.38 34.9 | 33.75 857.2 | 447 203 | |
| 30 | 750 | 39.00 991 | 3.69 93.7 | 33.25 844.6 | 30.25 768.4 | | 32.00 812.8 | 6.22 158.0 | .56 14.3 | 36 36 | 1.50 38.1 | 36.25 920.8 | 590 268 | |
| 32 | 800 | 41.50 1054 | 4.06 103.2 | 35.50 901.7 | 32.25 819.2 | | 34.00 863.6 | 6.62 168.3 | .62 15.9 | 32 32 | 1.62 41.3 | 38.50 977.9 | 727 330 | |
| 34 | 850 | 43.62 1108 | 4.06 103.2 | 37.50 952.5 | 34.25 870.0 | | 36.12 917.6 | 6.81 173.0 | .62 15.9 | 36 36 | 1.62 41.3 | 40.62 1031.9 | 787 357 | |
| 36 | 900 | 46.12 1172 | 4.06 103.2 | 39.75 1009.6 | 36.25 920.8 | | 38.00 965.2 | 7.12 181.0 | .62 15.9 | 32 32 | 1.75 44.4 | 42.88 1089.0 | 893 405 | |
| 42 | 1100 | 52.50 1334 | 4.69 119.1 | 46.00 1168.4 | 42.31 1074.7 | | 44.00 1117.6 | 8.06 204.8 | .62 15.9 | 36 36 | 1.88 47.6 | 49.00 1244.6 | 1252 568 | |
| 48 | 1200 | 59.50 1511 | 5.06 128.6 | 52.25 1327.2 | 48.31 1227.1 | | 50.31 1277.9 | 8.81 223.8 | .62 15.9 | 40 40 | 2.00 50.8 | 55.75 1416.0 | 1611 731 | |
| 54 | 1400 | 65.88 1673 | 5.38 136.5 | 58.25 1479.6 | 54.31 1379.5 | | 56.50 1435.1 | 9.44 239.7 | .62 15.9 | 48 48 | 2.00 50.8 | 62.12 1578.0 | 1979 898 | |
| 60 | 1500 | 73.94 1878 | 5.94 150.8 | 65.00 1651.0 | 60.31 1531.9 | | 62.94 1598.6 | 10.69 271.5 | .69 17.5 | 40 40 | 2.38 60.3 | 69.44 1736.7 | 2890 1311 | |

¹ Also available in Class 75. Particulars upon request.

² Materials covered in this Standard are the same as ASME/ANSI B16.5 except nickel base alloys are excluded.

³ Flange Thickness C and Length through Hub Y includes .06" (1.6 mm) raised face.

Materials extracted from API STANDARD 605, Second Edition, October 1978, Large Diameter Carbon Steel Flanges (Nominal Pipe Size 26 to 60, inclusive; Classes 75, 150 and 300) Tables 3, B-2 and B-3, reprinted by courtesy of the American Petroleum Institute.

| | |
|-------------|-----------|
| INCHES | POUNDS |
| MILLIMETRES | KILOGRAMS |

IDENTIFICATION

WESTLUND flanges, where the size and design permits, are marked with the following identification data in accordance with ASME/ANSI B16.5:

| | |
|--------------------------|------------------------|
| Trade Mark or name | Nominal size |
| Primary service pressure | B16 (ANSI designation) |
| Material designation | Heat code |

FORGED FLANGE TOLERANCES

Millimetres in brackets

| DIMENSION | | WELDING NECK & SOCK. WELD | SLIP-ON & SOCK. WELD. | THREADED | LAP JOINT | BLIND |
|--|---------------------------------|---|----------------------------------|----------------------------------|----------------------------------|---------------------|
| Outside Diameter | Flange O.D. 24 or less (609.6) | $\pm .06$ (1.6) | $\pm .06$ (1.6) | $\pm .06$ (1.6) | $\pm .06$ (1.6) | $\pm .06$ (1.6) |
| | Flange O.D. over 24 (609.6) | $\pm .12$ (3.2) | $\pm .12$ (3.2) | $\pm .12$ (3.2) | $\pm .12$ (3.2) | $\pm .12$ (3.2) |
| Bore | NPS 10 (DN 250) & less | $\pm .03$ (0.8) ² | $+ .03$ (0.8) ⁴ —0 | $+ .03$ (0.8) —0 | $+ .03$ (0.8) —0 | — |
| | NPS 12 - 18 (DN 300 - 450) | $\pm .06$ (1.6) ² | $+ .06$ (1.6) ⁴ —0 | $+ .06$ (1.6) —0 | $+ .06$ (1.6) —0 | — |
| | NPS 20 (DN 500) & over | $+ .12$ (3.2) ² — $.06$ (1.6) | $+ .06$ (1.6) ⁴ —0 | $+ .06$ (1.6) —0 | $+ .06$ (1.6) —0 | — |
| Flange Thickness | NPS 18 (DN 450) & less | $+ .12$ (3.2) —0 | $+ .12$ (3.2) —0 | $+ .12$ (3.2) —0 | $+ .12$ (3.2) —0 | $+ .12$ (3.2) —0 |
| | NPS 20 (DN 500) & over | $+ .19$ (4.8) —0 | $+ .19$ (4.8) —0 | $+ .19$ (4.8) —0 | $+ .19$ (4.8) —0 | $+ .19$ (4.8) —0 |
| Raised Face Diameter | .06 (1.6) raised face | $\pm .03$ (0.8) | $\pm .03$ (0.8) | $\pm .03$ (0.8) | — | $\pm .03$ (0.8) |
| | .25 (6.4) raised face | $\pm .02$ (0.5) | $\pm .02$ (0.5) | $\pm .02$ (0.5) | — | $\pm .02$ (0.5) |
| Drilling | Bolt circle | $\pm .06$ (1.6) | $\pm .06$ (1.6) | $\pm .06$ (1.6) | $\pm .06$ (1.6) | $\pm .06$ (1.6) |
| | Bolt hole spacing | $\pm .03$ (0.8) | $\pm .03$ (.08) | $\pm .03$ (0.8) | $\pm .03$ (0.8) | $\pm .03$ (0.8) |
| Eccentricity ³ | NPS 2 1/2 (DN 65) & less | .03 (0.8) max. | .03 (0.8) max. | .03 (0.8) max. | .03 (0.8) max. | — |
| | NPS 3 (DN 80) & larger | .06 (1.6) max. | .06 (1.6) max. | .06 (1.6) max. | .06 (1.6) max. | — |
| Length Thru Hub (Welding Neck Flanges) | NPS 4 & less $\pm .06$ | — | — | — | — | — |
| | NPS 5 to 10 $+ .06$ - $.12$ | — | — | — | — | — |
| | NPS 12 & larger $+ .12$ - $.18$ | — | — | — | — | — |
| Diameter of Hub at Base | NPS 12 (DN 300) & less | $\pm .09$ (2.4) — $.06$ (1.6) | $\pm .09$ (2.4) — $.06$ (1.6) | $\pm .09$ (2.4) — $.06$ (1.6) | $\pm .09$ (2.4) — $.06$ (1.6) | — |
| | NPS 14 (DN 350) & over | $\pm .12$ (3.2) | $\pm .12$ (3.2) | $\pm .12$ (3.2) | $\pm .12$ (3.2) | — |
| Diameter of Hub at Bevel | NPS 5 (DN 125) & less | $+ .09$ (2.4) — $.03$ (0.8) | — — | — — | — — | — — |
| | NPS 6 (DN 150) & over | $+ .16$ (4.0) $\pm .03$ (0.8) | — — | — — | — — | — — |
| Thickness of Hub at Bevel | All sizes of welding neck | Minimum, — $12 \frac{1}{2}$ & of matching nominal pipe wall thickness | | | | |

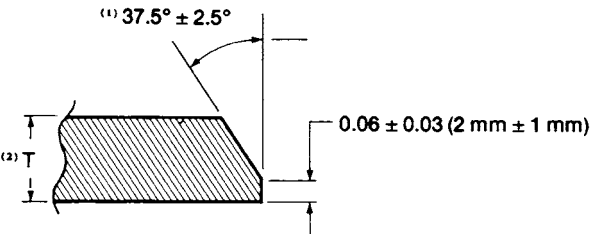
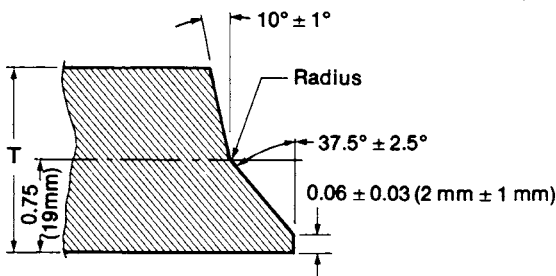
¹ These tolerances not covered by ASME/ANSI B16.5.

² Welding Neck and Socket Welding small bore.

³ Between bolt circle diameter and machined facing diameter.

⁴ Socket Welding Socket.

WELDING BEVELS - (WELD NECK FLANGES NO BACKING RINGS)

| | |
|---|---|
|  | <p style="text-align: right;">Compound bevel</p>  |
| <p>ASME/ANSI B16.5, ASME B16.47</p> <p>Nominal pipe wall thickness $T = 0.88$ (22.2 mm) max. For wall thickness less than 0.19 in. (4.8 mm) for carbon and ferritic alloy steel, and 0.125 in. (3.2 mm) austenitic alloy steel, ends may be cut square or slightly chamfered at manufacturer's option.</p> | <p>ASME/ANSI B16.5, ASME B16.47</p> <p>$T = \text{more than } 0.88''$ (22.4 mm)</p> |