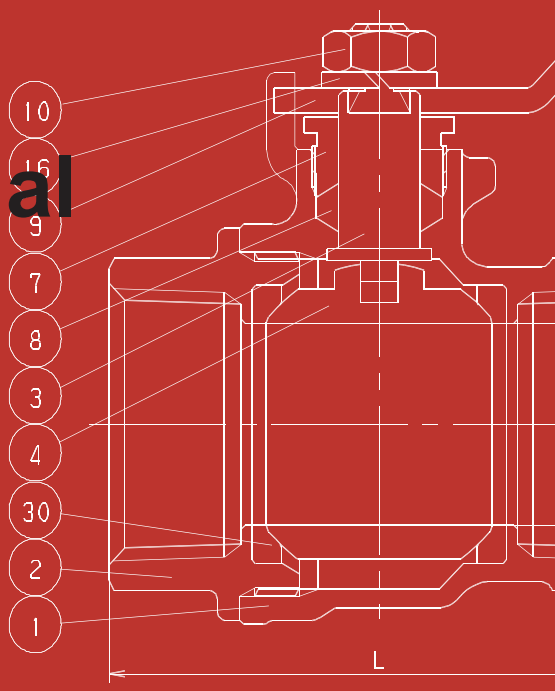
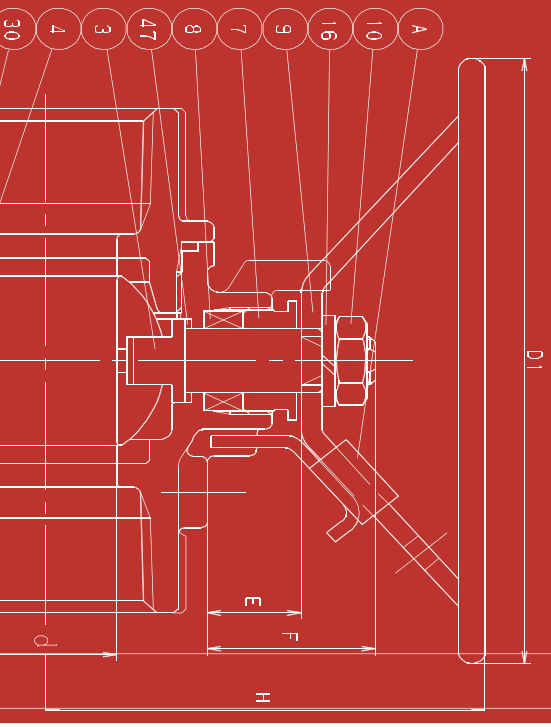
CBV-100-0711C

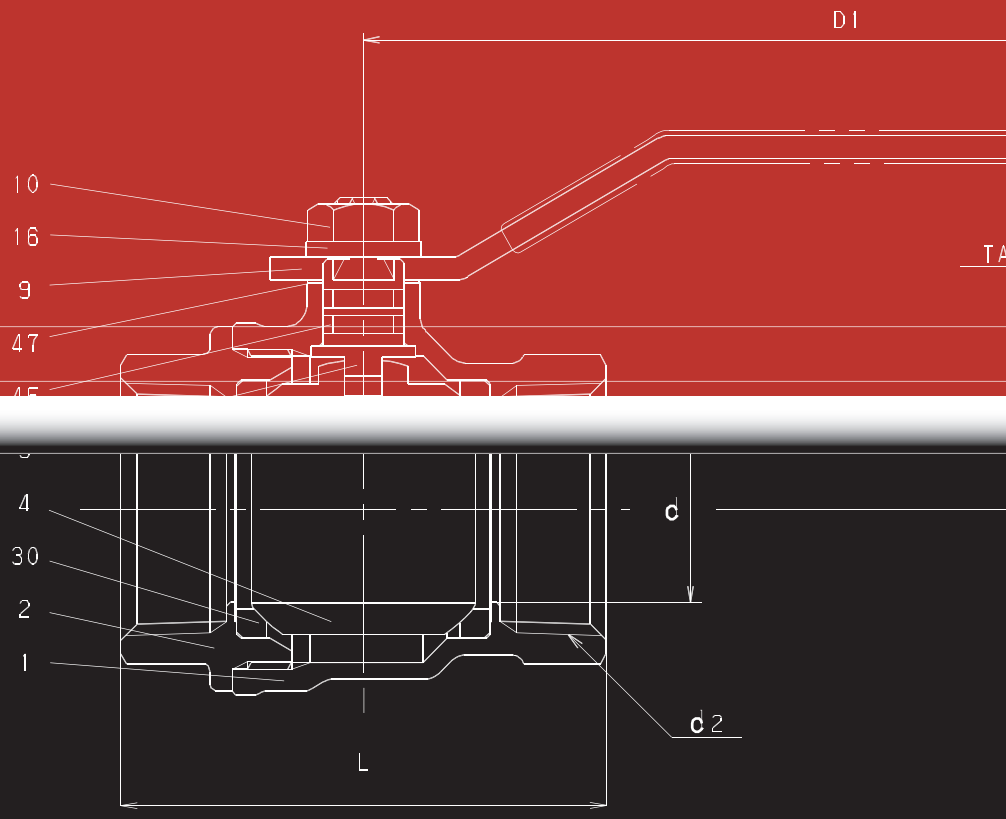
KITZ®

Commercial/Industrial Ball Valves

Brass/Bronze
Carbon and Stainless Steel







KITZ CORPORATION

KITZ®
A PRODUCT OF TECHNOLOGY

GENERAL INDEX

BALL VALVES

CODE # INDEX

BRASS/BRONZE BALL VALVES ILLUSTRATED INDEX

NUMERICAL INDEX

150 WSP/600 WOG
One Piece
Reduced Port

AKTK Code # 51
Size 1/4" - 2"
(Threaded)

150 WSP/600 WOG*
Two Piece
Full Port
CSA, UL, FM, NSF

AKSZA Code # 58
Size 1/4" - 4"
(Threaded)

CSZA Code # 59
Size 3/8" - 3"
(Solder)

*2 1/2" - 4" 400 WOG

150 WSP/600 WOG
Two Piece
Full Port
CSA, UL, FM, NSF

AKSZAW Code # 58W
Size 1/4" - 2"
(Threaded)

CSZAW Code # 59W
Size 3/8" - 2"
(Solder)

150 WSP/600 WOG
Two Piece
Full Port
CSA, UL, FM, NSF

AKTAF Code # 68
Size 1/4" - 2"
(Threaded)

CTAF Code # 69
Size 3/8" - 3"
(Solder)

150 WSP/600 WOG*
Two Piece, Mounting Pad
Full Port, UL

AKTAFP Code # 68P
Size 1/4" - 4"
(Threaded)

*2 1/2" - 4" 400 WOG

150 WSP/600 WOG
Two Piece, Full Port
CSA, UL, NSF

AKTFLL Code # 68ALL
Size 1/4" - 2"
(Threaded)

CTFLL Code # 69ALL
Size 3/8" - 2"
Double O-Ring Stem Seal Design
(Solder)
Locking Lever

150 WSP/600 WOG
316 Ball and Stem
Two Piece, Full Port
CSA, UL, NSF

AKTAFM Code # 68M
Size 1/4" - 2"
(Threaded)

CTAFM Code # 69M
Size 3/8" - 2"
(Solder)

250 WSP/600 WOG*
316 Ball and Stem
Mounting Pad, Full Port
UL

AKTAFPM Code # 68PM
Size 1/4" - 4"
(Threaded)

* 2 1/2" - 4" 400 WOG

Locking Lever 1/4" - 2"

150 WSP/600 WOG
316 Ball and Stem
Two Piece, Full Port
CSA, UL, NSF

AKTFMLL Code # 68AMLL
Size 1/4" - 2"
(Threaded)

CTFMLL Code # 69AMLL
Size 3/8" - 2"
Double O-Ring Stem Seal Design
(Solder)
Locking Lever

BRASS/BRONZE BALL VALVES
ILLUSTRATED INDEX

NUMERICAL INDEX

600 CW
Two Piece
Full Port
NSF 61-G

AKSZAN Code # 858
Size 1/4" - 4"
(Threaded)

CSZAN Code # 859
Size 3/8" - 3"
(Solder)

600 CW
Two Piece
Full Port
NSF 61-G

AKSZANW Code # 858W
Size 1/4" - 2"
(Threaded)

CSZANW Code # 859W
Size 3/8" - 2"
(Solder)

600 CW
Two Piece
Full Port
NSF 61-G

AKTAFN Code # 868
Size 1/4" - 2"
(Threaded)

CTAFN Code # 869
Size 3/8" - 3"
(Solder)

200 WOG
K-PRESS Ends, Full Port

Code # 101XL
NSF 61, FM
Size 1/2" - 4"

Code # 101XLC
Size 2 1/2" - 4"

200 WOG
K-PRESS Ends, Lead Free
Full Port

Code # 801XL
NSF 61-G
Size 1/2" - 2"

150 PSI @ 300˚/600 WOG
Single Union
Full Port

AKTAFU Code # 68U
Size 1/4" - 2"
(Threaded)

CTAFU Code # 69U
Size 3/8" - 2"
(Solder)

150 WSP/600 WOG
Cap & Chain
Full Port

AKTAFC Code # 68C
Size 1/2", 3/4"
(Threaded)

CTAFC Code # 69C
Size 1/2", 3/4"
(Solder)

150 WSP/600 WOG
Full Port

AKTAFO Code # 68O
Size 1/4" - 1"
(IPS x Male)

CTAFO Code # 69O
Size 1/4" - 1"
(C x Male)

200 WOG
Safety Exhaust, Locking Handle
Full Port

AKTAFS Code # 68S
Size 1/4" - 2"
(Threaded)

KITZ®
A PRODUCT OF TECHNOLOGY

BRASS/BRONZE BALL VALVES
ILLUSTRATED INDEX

NUMERICAL INDEX

200˚F @ 400 PSI/600 WOG
Drainable
Full Port

AKTFD Code # 68AD
Size 1/2" - 1"
(Threaded)

CTFD Code # 69AD
Size 1/2" - 1"
(Solder)

150 WSP/600 WOG
Three Piece, Mounting Pad
Full Port
NSF

AK3TM Code # 62
Size 1/4" - 2"
(Threaded)

C3TM Code # 63
Size 3/8" - 2"
(Solder)

150 WSP/600 WOG
Three Piece, S.S.Trim,
Mounting Pad, Full Port
NSF

AK3TMM Code # 62M
Size 1/4" - 2"
(Threaded)

C3TMM Code # 63M
Size 3/8" - 2"
(Solder)

150 PSI @ 300º F/400 WOG
3-Way, Mounting Pad
L-Port

AKTNP Code # 54P
Size 1/2" - 2"
(Threaded)

CTNP Code # 55P
Size 1/2" - 1"
(Solder)

150 PSI @ 300º F/400 WOG
3-Way
L-Port

AKTN Code # 54
Size 1/4", 3/8", 2 1/2", 3"
(Threaded)

CTN Code # 55
Size 1 1/4" - 2"
(Solder)

600 WOG
Full Port

AKTFB Code # 68AB
Size 1/2" - 1"
(Threaded x Barbed)

175 WOG
Regular Port

Code # 60
Size 3/8" - 1"
(FIPS x FIPS)

Code # 60SQ
(Not Shown)

175 WOG
Regular Port

Code # 60F
Size 3/8" x 1/2"
1/2" x 1/2"
5/8" x 3/4"
(Flare x FIPS)

175 WOG
Regular Port

Code # 60FF
Size 3/8" x 3/8"
1/2" x 1/2"
5/8" x 5/8"
(Flare x Flare)

175 WOG
Regular Port

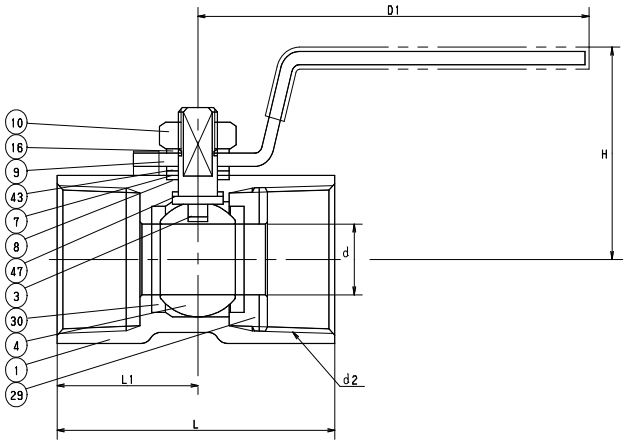
Code # 60FO
Size 3/8" x 1/2"
1/2" x 1/2"
(Flare x MIPS)

KITZ®

FORGED BRASS BALL VALVE

One Piece Body • Reduced Port
G/F + PTFE Seats/Seals • Blowout Proof Stem
Chrome Plated Ball • Stainless Steel Lever Handle

CODE # 51 (AKTK)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
3	STEM	SPECIAL BRASS (KITZ "K" METAL)
4	BALL	(1) FORGED BRASS (B283, C37700)
7	GLAND	STAINLESS STEEL (A276 TYPE 430)
8	GLAND PACKING	G/F PTFE
9	HANDLE	(2) STAINLESS STEEL (A276 TYPE 430)
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
29	INSERT	FORGED BRASS (B124, C37700)
30	BALL SEATS	G/F PTFE
43	SPRING	STAINLESS STEEL (A276 TYPE 304)
47	THRUST WASHER	REINFORCED PTFE

NOTES: (1) CR. PLATING
(2) WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	APPROX. NET WT.	CARTON QTY
in.	1/4	0.18	1.22	2.36	1.535	22	120
mm.		4.5	30.0	60.0	39.0	10.0	
in.	3/8	0.268	1.417	2.76	1.732	26	120
mm.		6.8	36.0	70.0	44.0	11.8	
in.	1/2	0.362	1.614	3.35	2.224	51	120
mm.		9.2	41.0	85.0	56.5	23.2	
in.	3/4	0.492	1.732	3.35	2.323	61	96
mm.		12.5	44.0	85.0	59.0	27.7	
in.	1	0.63	1.89	3.94	2.80	54	54
mm.		16.0	48.0	100.0	71.0	24.5	
in.	1 1/4	0.787	2.126	3.94	3.07	52	32
mm.		20.0	54.0	100.0	78.0	23.6	
in.	1 1/2	0.965	2.56	4.92	3.268	47	24
mm.		24.5	65.0	125.0	83.0	21.4	
in.	2	1.26	2.835	4.921	3.937	52	16
mm.		32.0	72.0	125.0	100.0	23.6	

SPECIFICATION

Approved valve shall have one piece forged brass body, blowout proof stem, G/F + PTFE seats/seals, chrome plated ball, stainless steel handle and reduced port design. Valves shall be pressure rated to 150 WSP/600 WOG.

KITZ Code No. 51 (AKTK) Threaded Ends

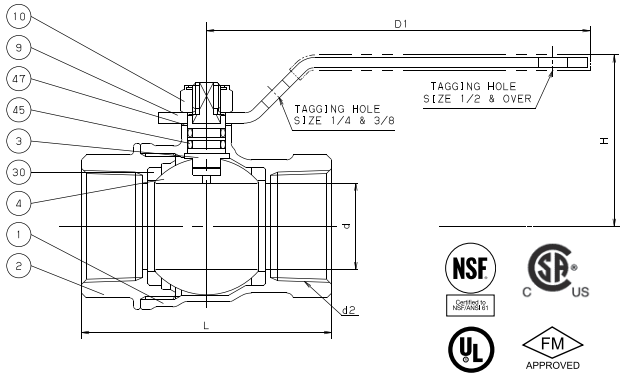
FORGED BRASS BALL VALVE

MAINTENANCE FREE DOUBLE O-RING STEM SEALS

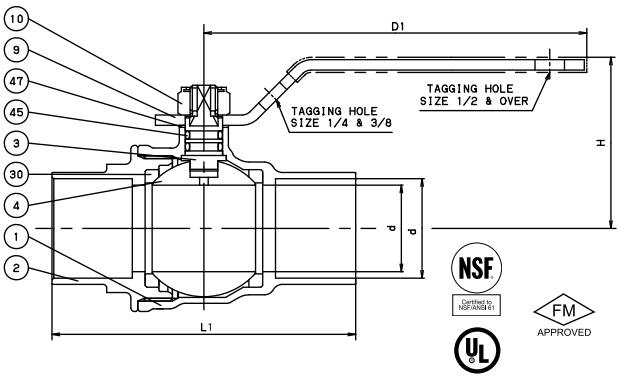
Two Piece Body • Full Port • Chrome Plated / Vented Ball
Blowout Proof Stem (Ni Plated) • PTFE Seats

CSA (US/C) • UL • FM • NSF

CODE # 58 (AKSZA)
THREADED



CODE # 59 (CSZA)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (Ni Plated), PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and certified to CSA, UL & FM.

KITZ Code No. 58 (AKSZA) Threaded Ends
59 (CSZA) Solder Ends

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ

CONFORMS TO MSS-SP 110 - REPLACES US. FED. SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3

PRESSURE/TEMPERATURE

150 PSI SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) BRASS ROD (B16)
4	BALL (Vented)	(2) FORGED BRASS (B283, C37700) STRAIGHT OR HOLLOW BALL
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
30	BALL SEATS	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	PBT

NOTES:
(1) Ni PLATING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.46	2.76	1.65	1.05	.381	.377	29	120
mm.		9.9	37.1	70.1	41.9	26.7	9.7	9.6	13.2	
in.	3/8	0.39	1.46	2.76	1.65	1.11	.506	.502	29	120
mm.		9.9	37.1	70.1	41.9	28.2	12.9	12.8	13.2	
in.	1/2	0.59	1.57	3.15	2.08	1.13	.631	.627	29	96
mm.		14.0	39.9	80.0	52.8	28.7	16.0	15.9	13.2	
in.	3/4	0.79	1.69	3.15	2.36	1.37	.881	.877	45	60
mm.		20.1	42.9	80.0	59.9	34.8	22.4	22.3	20.5	
in.	1	0.98	1.97	4.33	2.83	1.64	1.132	1.128	60	36
mm.		24.9	50.0	50.038	71.9	41.7	28.8	28.7	27.3	
in.	1 1/4	1.26	2.16	4.33	3.31	2	1.382	1.378	68	24
mm.		32.0	54.9	54.864	84.1	50.8	35.1	35.0	30.9	
in.	1 1/2	1.57	2.52	5.9	3.62	2.35	1.633	1.628	50	16
mm.		39.9	64.0	149.9	91.9	59.7	41.5	41.4	22.7	
in.	2	1.97	2.83	5.9	4.33	2.83	2.133	2.128	71	16
mm.		50.0	71.9	149.9	149.86	71.9	54.2	54.1	32.3	

CERTIFICATIONS:
NSF/ANSI STANDARDS 61-8, C-HOT (180°F/82ºC)
CSA (US/C) -40ºC~65ºC (-40ºF~149ºF)
CGA 9.1b-2001/ANSI 21.15b-2006 - .5 PSI
CGA CR 91-002 - 2 PSI
ASME B16.44 - 5 PSI
CAN/CGA 3.16-M88 - 125 PSI
ASME B16.33-2002 - 125 PSI
UL-258 - 175 WWP (Fire Trim Protection Valves)
FM-1140 - 175 WWP (Fire Protection Systems)

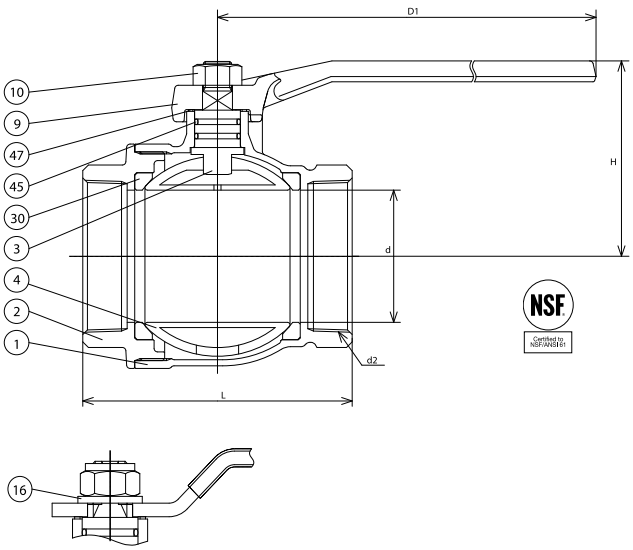
CAST BRONZE BALL VALVE

MAINTENANCE FREE DOUBLE O-RING STEM SEALS

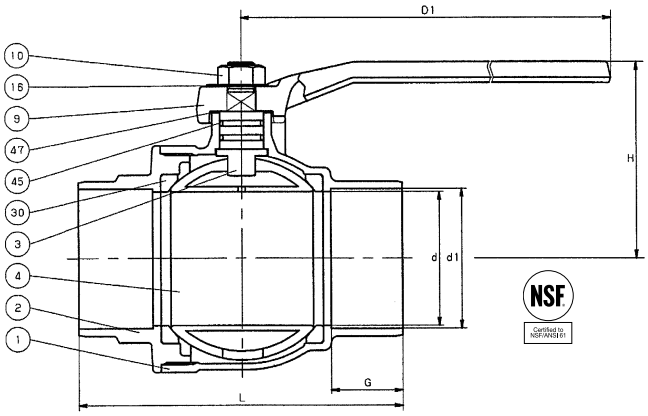
Two Piece Body • Full Port • Chrome Plated / Vented Ball
Blowout Proof Stem (Ni Plated) • PTFE Seats

NSF

CODE # 58 (AKSZA)
THREADED



CODE # 59 (CSZA)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (Ni Plated), PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design. Valves shall be pressure rated to 150 WSP/400 WOG and conform to MSS-SP 110.

KITZ Code No. 58 (AKSZA) Threaded Ends
59 (CSZA) Solder Ends

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110 - REPLACES US. FED.	
SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3	

PRESSURE/TEMPERATURE
150 PSI SATURATED STEAM TO 366ºF
400* PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST BRONZE (B62)
2	BODY CAP	CAST BRONZE (B62)
3	STEM	(1) BRASS ROD (B16)
4	BALL (Vented) (2½")	(2) FORGED BRASS
	(3"&4″)	(2) CAST BRASS STRAIGHT OR HOLLOW BALL
9	HANDLE (2½")	(3) CARBON STEEL
	(3"&4")	DUCTILE IRON
10	HANDLE NUT	CARBON STEEL
16	WASHER (2½")	CARBON STEEL
30	BALL SEATS	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	PTFE

NOTES: (1) Ni PLATING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES										
	d2 SIZE	d	H	D1	L	L1	d1 Min.	d1 Max.	APPROX. NET WT.	CARTON QTY
in.	2 1/2	2.56	3.93	7.87	5.43	3.51	2.633	2.628	21	2
mm.		65.0	99.8	199.9	137.9	89.2	66.9	66.8	9.5	
in.	3	2.99	4.42	11.81	6.57	4.06	3.133	3.128	30	2
mm.		75.9	112.3	299.0	166.9	103.1	79.6	79.5	13.6	
in.	4	3.94	5.15	11.81	7.6	-	-	-	44.3	2
mm.		100.1	130.8	299.0	193.0	-	-	-	20.1	

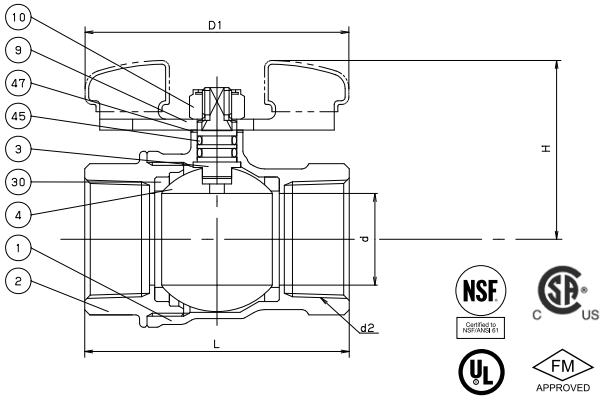
CERTIFICATIONS:
NSF/ANSI STANDARDS 61-8, C-HOT (180°F/82ºC) (2½" - 3")

FORGED BRASS BALL VALVE

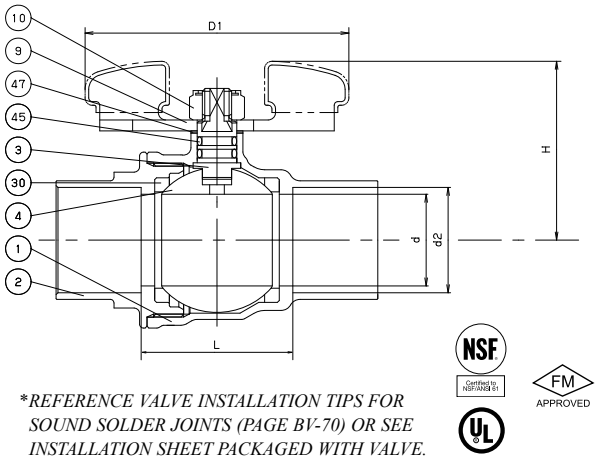
MAINTENANCE FREE DOUBLE O-RING STEM SEALS

Two Piece Body • Full Port • Chrome Plated / Vented Ball
Blowout Proof Stem (Ni Plated) • PTFE Seats
NSF • CSA (US/C) • UL • FM**

CODE # 58W (AKSZAW)
THREADED



CODE # 59W (CSZAW)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem (Ni Plated), PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design with wing handle. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and NSF, CSA, UL & FM.

KITZ Code No. 58W (AKSZAW) Threaded Ends
59W (CSZAW) Solder Ends

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110 - REPLACES US. FED.	
SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3	

PRESSURE/TEMPERATURE
150 PSI SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) BRASS ROD (B16)
4	BALL (Vented)	(2) FORGED BRASS (B283, C37700) STRAIGHT OR HOLLOW BALL
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
30	BALL SEATS	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	PBT

NOTES: (1) Ni PLATING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.32	2.17	1.65	1.05	-	-	29	120
mm.		9.9	33.5	55.1	41.9	26.7	-	-	13.2	
in.	3/8	0.39	1.32	2.17	1.65	1.11	.506	.502	29	120
mm.		9.9	33.5	55.1	41.9	28.2	12.9	12.8	13.2	
in.	1/2	0.59	1.55	3.76	2.08	1.13	.631	.627	29	96
mm.		14.0	39.4	95.5	52.8	28.7	16.0	15.9	13.2	
in.	3/4	0.79	1.7	3.15	2.36	1.37	.881	.877	45	60
mm.		20.1	43.2	80.0	59.9	34.8	22.4	22.3	20.5	
in.	1	0.98	2.06	4.33	2.83	1.64	1.132	1.128	60	36
mm.		24.9	52.3	52.324	71.9	41.7	28.8	28.7	27.3	
in.	1 1/4	1.26	2.27	4.33	3.31	2	1.382	1.378	68	24
mm.		32.0	57.7	57.658	84.1	50.8	35.1	35.0	30.9	
in.	1 1/2	1.57	2.88	5.9	3.62	2.35	1.633	1.628	50	16
mm.		39.9	73.2	149.9	91.9	59.7	41.5	41.4	22.7	
in.	2	1.97	3.17	5.9	4.33	2.83	2.133	2.128	71	16
mm.		50.0	80.5	149.9	149.86	71.9	54.2	54.1	32.3	

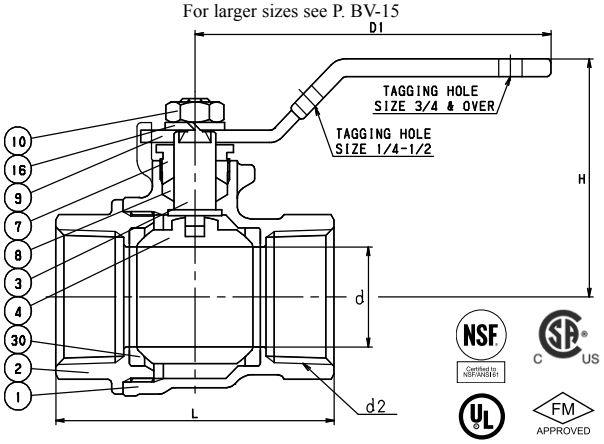
CERTIFICATIONS:
NSF/ANSI STANDARDS 61-8, C-HOT (180°F/82ºC)
CSA (US/C) -40ºC~65ºC (-40ºF~149ºF)
CGA 9.1b-2001/ANSI 21.15b-2006 - .5 PSI
CGA CR 91-002 - 2 PSI
ASME B16.44 - 5 PSI
CAN/CGA 3.16-M88 - 125 PSI
ASME B16.33-2002 - 125 PSI
UL-258 - 175 WWP (Fire Trim Protection Valves)
FM-1140 - 175 WWP (Fire Protection Systems)

FORGED BRASS/CAST BRONZE BALL VALVE

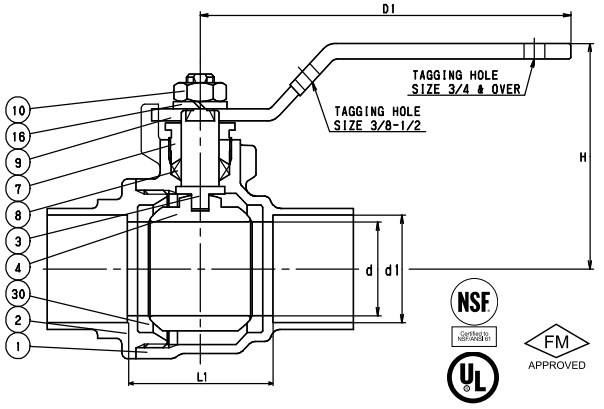
Two Piece Body • Full Port
Blowout Proof Stem • Chrome Plated / Vented Ball • PTFE Seats and Seals
NSF • CSA (US/C) • UL • FM

CODE # 68 (AKTAF)
THREADED (1/4" - 2")

For larger sizes see P. BV-15



CODE # 69 (CTAF)
SOLDER* (3/8" - 3")
UL • FM



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass or cast bronze body, blowout proof stem, PTFE seats/seals, vented chrome plated ball and full port design. Valves sizes 1/4" - 2" shall be pressure rated to 150 WSP/600 WOG, conform to MSS-SP 110 and certified to NSF, CSA, UL & FM. Valve sizes 2 1/2" - 3" shall be pressure rated to 150 WSP/400 WOG and conform to MSS-SP 110.

KITZ Code No. 68 (AKTAF) Threaded Ends
69 (CTAF) Solder Ends

CERTIFICATIONS:
NSF/ANSI STANDARDS 61-8, C-HOT (180°F/82ºC)
CSA (US/C) -40ºC~65ºC (-40ºF~149ºF)
CGA 9.1b-2001/ANSI 21.15b-2006 - .5 PSI
CGA CR 91-002 - 2 PSI
ASME B16.44 - 5 PSI
CAN/CGA 3.16-M88 - 125 PSI
ASME B16.33-2002 - 125 PSI
UL-125, -258, -842, -1769
FM-1140 - 175 WWP (Fire Protection Systems)

STANDARDS

END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ

CONFORMS TO MSS-SP 110 - REPLACES US. FED. SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3

PRESSURE/TEMPERATURE

150 PSI - SATURATED STEAM TO 366ºF
600 PSI NON-SHOCK COLD WATER, OIL OR GAS (1/4" - 2")
400 PSI NON-SHOCK COLD WATER, OIL OR GAS (2 1/4", 3")

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST

NO.	NAME OF PART		SPECIFICATION
1	BODY (1/4" -3")		FORGED BRASS (B283, C37700)
	(2 1/2" - 3")		CAST BRONZE (B584, C84400)
2	BODY CAP (1/4" - 2")		FORGED BRASS (B283, C37700)
	(2 1/2" - 3")		CAST BRONZE (B584, C84400)
3	STEM	(1)	SPECIAL BRASS (KITZ, "K-METAL")
4	BALL (Vented) (1/4" - 2")	(2)	FORGED BRASS (B283, C37700)
	(2 1/2" - 3")		CAST BRONZE (B584, C84400)
7	GLAND		BRASS ROD (B16)
8	GLAND PACKING		PTFE
9	HANDLE	(3)	CARBON STEEL
10	HANDLE NUT (1/4" - 2 1/2")		CARBON STEEL
16	SPRING WASHER		CARBON STEEL
16A	WASHER (3")		CARBON STEEL
30	BALL SEATS		PTFE
123	HANDLE BOLT (3")		CARBON STEEL

NOTES: (1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

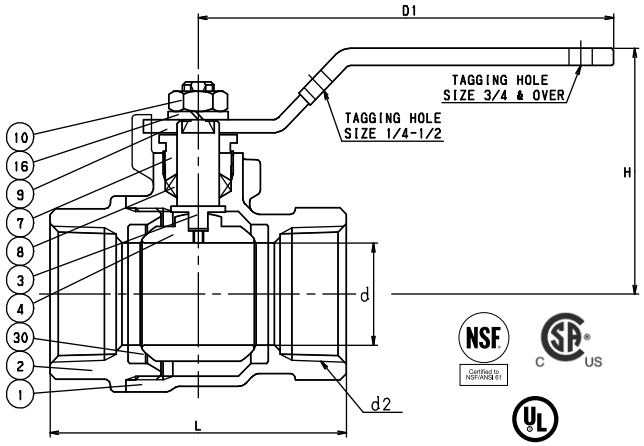
DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.54	3.23	1.61	-	-	-	48	120
mm.		9.9	39.1	82.0	40.9	-	-	-	21.8	
in.	3/8	0.39	1.54	3.23	1.65	1.05	.506	.502	48	120
mm.		9.9	39.1	82.0	41.9	26.7	12.852	12.751	21.8	
in.	1/2	0.59	1.65	3.23	2.09	1.13	.631	.627	52	96
mm.		14.0	41.9	82.0	53.1	28.7	16.027	15.926	23.6	
in.	3/4	0.79	2.01	3.94	2.36	1.37	.881	.877	50	60
mm.		20.1	51.1	100.1	59.9	34.8	22.4	22.3	22.7	
in.	1	0.98	2.32	5.12	2.83	1.64	1.132	1.128	51	36
mm.		24.9	58.9	130.0	71.9	41.7	28.8	28.7	23.2	
in.	1 1/4	1.26	2.52	5.12	3.23	2	1.382	1.378	50	24
mm.		32.0	64.0	130.0	82.0	50.8	35.1	35.0	22.7	
in.	1 1/2	1.57	2.87	5.91	3.62	2.35	1.633	1.628	54	16
mm.		39.9	72.9	150.1	91.9	59.7	41.5	41.4	24.5	
in.	2	1.97	3.15	5.91	4.13	2.83	2.133	2.128	72	16
mm.		50.0	80.0	150.1	104.9	71.9	54.2	54.1	32.7	
in.	2 1/2	2.56	4.25	7.78	-	3.48	2.633	2.628	17	2
mm.		65.0	107.0	197.6	-	88.4	66.9	66.8	7.7	
in.	3	2.99	4.8	11.81	-	4.04	3.113	3.128	26	2
mm.		75.9	121.9	299.0	-	102.6	79.1	79.5	11.8	

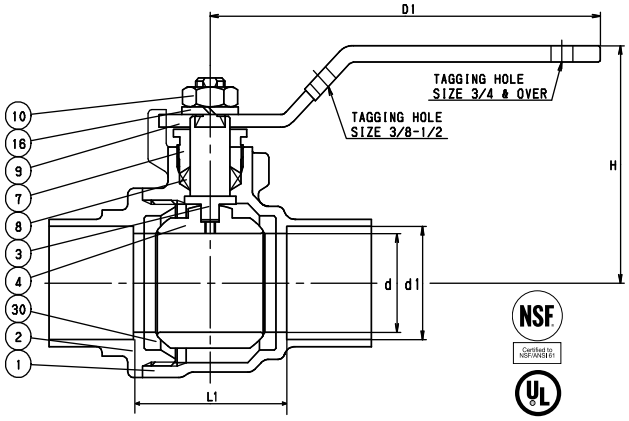
FORGED BRASS BALL VALVE

STAINLESS STEEL TRIM
Two Piece Body • Full Port
Blowout Proof Stem • Stainless Steel / Vented Ball • PTFE Seats and Seals
NSF • CSA (US/C) • UL

CODE # 68M (AKTAFM)
THREADED



CODE # 69M (CTAFM)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass body, stainless steel trim, blowout proof stem, PTFE seats/seals,and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110 and Certified to CSA, UL.

KITZ Code No. 68M (AKTAFM) Threaded Ends

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-36

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	STAINLESS STEEL (A276, TYPE 316)
4	BALL (Vented)	STAINLESS STEEL (A276, TYPE 316 or A351 Gr. CF8M)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	WASHER	CARBON STEEL
30	BALL SEATS	PTFE

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	d1 Max	d1 Min	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.54	3.23	1.61	-	-	-	48	120
mm.		9.9	39.1	82.0	40.9	-	-	-	21.8	
in.	3/8	0.39	1.54	3.23	1.65	1.1	0.5	0.5	48	120
mm.		9.9	39.1	82.0	41.9	26.7	12.9	12.8	21.8	
in.	1/2	0.59	1.65	3.23	2.09	1.1	0.6	0.6	52	96
mm.		15.0	41.9	82.0	53.1	28.7	16.0	15.9	23.6	
in.	3/4	0.79	2.01	3.94	2.36	1.4	0.9	0.9	50	60
mm.		20.1	51.1	100.1	59.9	34.8	22.4	22.3	22.7	
in.	1	0.98	2.32	5.12	2.83	1.6	1.1	1.1	51	36
mm.		24.9	58.9	130.0	71.9	41.7	28.8	28.7	23.2	
in.	1 1/4	1.26	2.52	5.12	3.23	2.0	1.4	1.4	50	24
mm.		32.0	64.0	130.0	82.0	50.8	35.1	35.0	22.7	
in.	1 1/2	1.57	2.87	5.91	3.62	2.4	1.6	1.6	54	16
mm.		39.9	72.9	150.1	91.9	59.7	41.5	41.4	24.5	
in.	2	1.97	3.15	5.91	4.13	2.8	2.1	2.1	72	8
mm.		50.0	80.0	150.1	104.9	71.9	54.2	54.1	32.7	

CERTIFICATIONS:
NSF/ANSI STANDARDS 61-8, C-HOT (180°F/82ºC)
CSA (US/C) -40ºC~65ºC (-40ºF~149ºF)
CGA 9.1b-2001/ANSI 21.15b-2006 - .5 PSI
CGA CR 91-002 - 2 PSI
ASME B16.44 - 5 PSI
CAN/CGA 3.16-M88 - 125 PSI
ASME B16.33-2002 - 125 PSI
UL-125, -842, -1769

FORGED BRASS BALL VALVE

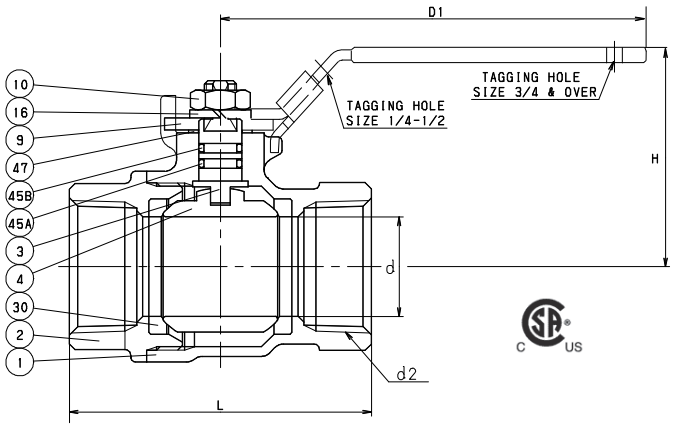
CHROME PLATED BALL

Two Piece Body • Full Port • Blowout Proof Stem

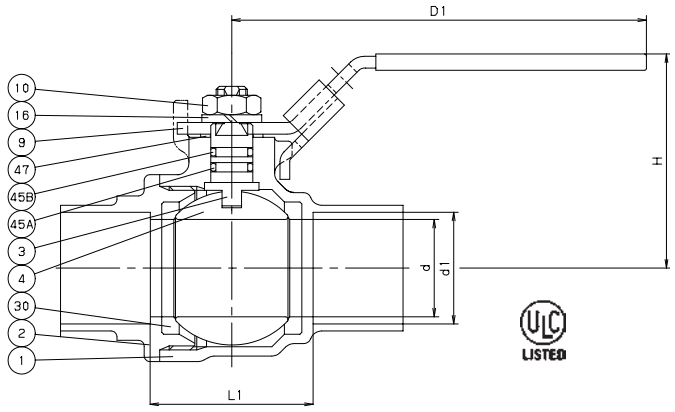
PTFE Seats/Maintenance Free Double O-Ring Stem Seals • Locking Lever

ULC* • CSA (US/C)

CODE # 68ALL (AKTFLL)
THREADED



CODE # 69ALL (CTFLL)
SOLDER



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass body, stainless steel trim, blowout proof stem, PTFE seats/maintenance free double o-ring stem seals, and full port design. Valves shall be pressure rated to 150 PSI @ 300ºF/ 600 WOG and conform to MSS-SP 110 and Certified to CSA (US/C).

KITZ Code No. 68AM (AKTFM) Threaded Ends

STANDARDS		
	END TO END	KITZ
	THREADED ENDS	ANSI B1.20.1
	WALL THICKNESS	KITZ
	CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI @ 300ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	SPECIAL BRASS(K-METAL)
4	BALL	FORGED BRASS (PLATED)
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	WASHER	CARBON STEEL
30	BALL SEATS	PTFE
45A	O-RING	FPM
45B	O-RING	NBR
47	THRUST WASHER	POM

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
* SOLDER ENDS ONLY

DIMENSIONS • WEIGHTS • QUANTITIES										
	d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.38	3.19	1.61	-	-	-	48	120
mm.		10.0	35.0	81.0	41.0	-	-	-	21.8	
in.	3/8	0.39	1.38	3.19	1.65	-	-	-	49	120
mm.		10.0	35.0	81.0	42.0	-	-	-	22.3	
in.	1/2	0.59	1.50	3.19	2.09	1.1	0.6	0.6	52	96
mm.		15.0	38.0	81.0	53.0	29.0	16.0	15.9	23.6	
in.	3/4	0.79	1.85	3.94	2.36	1.4	0.9	0.9	50	60
mm.		20.0	47.0	100.0	60.0	35.0	22.4	22.3	22.7	
in.	1	0.98	2.13	5.12	2.83	1.7	1.1	1.1	51	36
mm.		25.0	54.0	130.0	72.0	42.0	28.8	28.7	23.2	
in.	1 1/4	1.26	2.32	5.12	3.23	2.0	1.4	1.4	50	24
mm.		32.0	59.0	130.0	82.0	51.0	35.1	35.0	22.7	
in.	1 1/2	1.57	2.64	5.91	3.62	2.3	1.6	1.6	54	16
mm.		40.0	67.0	150.0	92.0	59.0	41.5	41.4	24.5	
in.	2	1.97	2.95	5.91	4.13	2.8	2.1	2.1	43	8
mm.		50.0	75.0	150.0	105.0	72.0	54.2	54.1	19.5	

CERTIFICATIONS:

CSA (US/C) -40ºC~65ºC (-40ºF~149ºF)
- CGA 9.1b-2001/ANSI 21.15b-2006 - .5 PSI
- CGA CR 91-002 - 2 PSI
- ASME B16.44 - 5 PSI
- CAN/CGA 3.16-M88 - 125 PSI
- ASME B16.33-2002 - 125 PSI

UL ULC/ORD-C125
ULC/ORD-C842

FORGED BRASS BALL VALVE

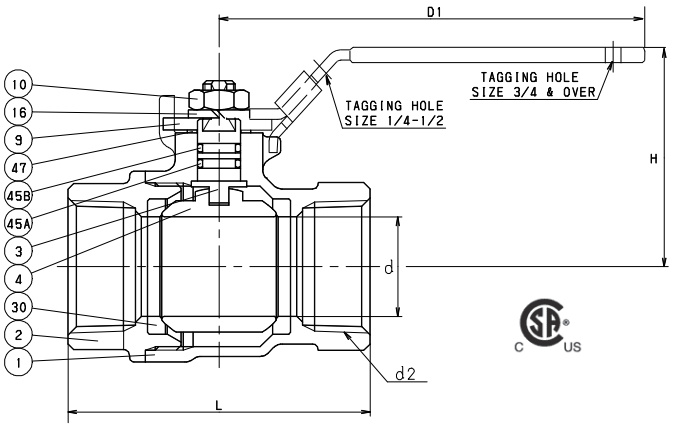
STAINLESS STEEL BALL

Two Piece Body • Full Port • Blowout Proof Stem

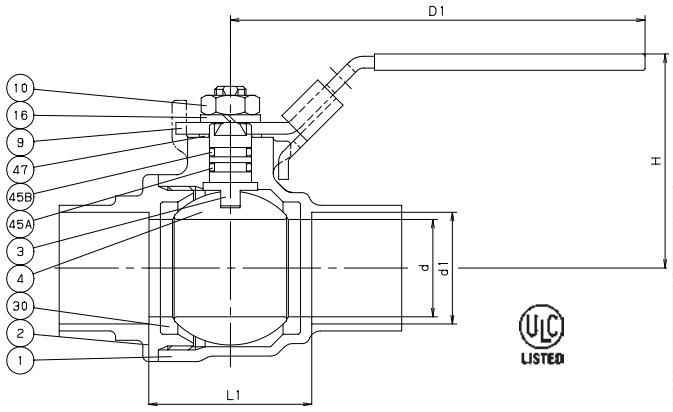
PTFE Seats/Maintenance Free Double O-Ring Stem Seals • Locking Lever

ULC* • CSA (US/C)

CODE # 68AMLL (AKTFMLL)
THREADED



CODE # 69AMLL (CTFMLL)
SOLDER



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass body, stainless steel trim, blowout proof stem, PTFE seats/maintenance free double o-ring stem seals, and full port design. Valves shall be pressure rated to 150 PSI @ 300ºF/ 600 WOG and conform to MSS-SP 110 and Certified to CSA (US/C).

KITZ Code No. 68AM (AKTFM) Threaded Ends

STANDARDS		
	END TO END	KITZ
	THREADED ENDS	ANSI B1.20.1
	WALL THICKNESS	KITZ
	CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI @ 300ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	STAINLESS STEEL (A276, TYPE 316)
4	BALL	STAINLESS STEEL (A276, TYPE 316 or A351 Gr. CF8M)
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	WASHER	CARBON STEEL
30	BALL SEATS	PTFE
45A	O-RING	FPM
45B	O-RING	NBR
47	THRUST WASHER	POM

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
* SOLDER ENDS ONLY

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.38	3.19	1.61	-	-	-	48	120
mm.		10.0	35.0	81.0	41.0	-	-	-	21.8	
in.	3/8	0.39	1.38	3.19	1.65	-	-	-	49	120
mm.		10.0	35.0	81.0	42.0	-	-	-	22.3	
in.	1/2	0.59	1.50	3.19	2.09	1.1	0.6	0.6	52	96
mm.		15.0	38.0	81.0	53.0	29.0	16.0	15.9	23.6	
in.	3/4	0.79	1.85	3.94	2.36	1.4	0.9	0.9	50	60
mm.		20.0	47.0	100.0	60.0	35.0	22.4	22.3	22.7	
in.	1	0.98	2.13	5.12	2.83	1.7	1.1	1.1	51	36
mm.		25.0	54.0	130.0	72.0	42.0	28.8	28.7	23.2	
in.	1 1/4	1.26	2.32	5.12	3.23	2.0	1.4	1.4	50	24
mm.		32.0	59.0	130.0	82.0	51.0	35.1	35.0	22.7	
in.	1 1/2	1.57	2.64	5.91	3.62	2.3	1.6	1.6	54	16
mm.		40.0	67.0	150.0	92.0	59.0	41.5	41.4	24.5	
in.	2	1.97	2.95	5.91	4.13	2.8	2.1	2.1	43	8
mm.		50.0	75.0	150.0	105.0	72.0	54.2	54.1	19.5	

CERTIFICATIONS:

CSA (US/C) -40ºC~65ºC (-40ºF~149ºF)
- CGA 9.1b-2001/ANSI 21.15b-2006 - .5 PSI
- CGA CR 91-002 - 2 PSI
- ASME B16.44 - 5 PSI
- CAN/CGA 3.16-M88 - 125 PSI
- ASME B16.33-2002 - 125 PSI

UL ULC/ORD-C125
ULC/ORD-C842

KITZ®

LEAD FREE FORGED BRASS BALL VALVE

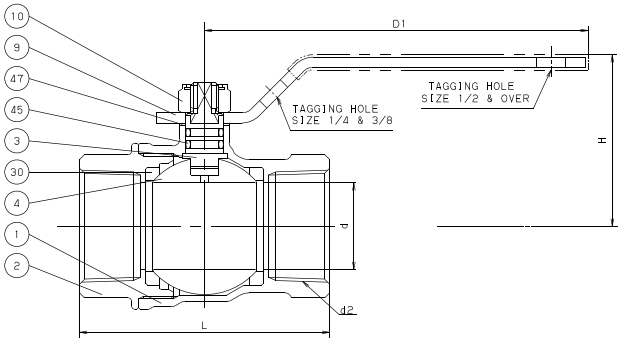
MAINTENANCE FREE DOUBLE O-RING STEM SEALS

Two Piece Body • Full Port • Plated / Vented Ball

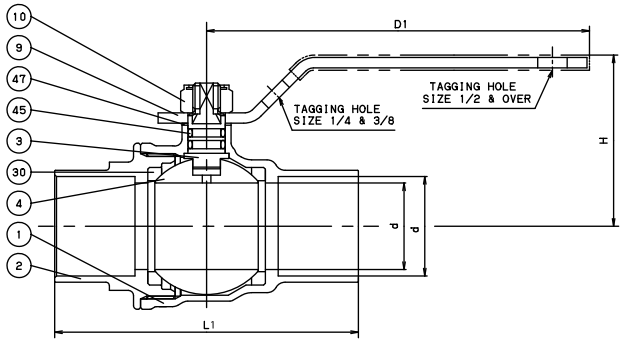
Blowout Proof Stem • PTFE Seats

NSF/ANSI 61-G*

CODE # 858 (AKSZAN) (1/4" - 2") THREADED



CODE # 859 (CSZAN) (3/8" - 2") SOLDER



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
DESIGN	MSS-SP 110

PRESSURE/TEMPERATURE
600 PSI - COLD WORKING PRESSURE **NSF/ANSI Standard 61, Annex G, C. Hot (180˚F / 82˚C)**

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (C49300)
2	BODY CAP	FORGED BRASS (C49300)
3	STEM	BRASS ROD (C49300)
4	BALL (Vented)	(1) FORGED BRASS (C49300)
9	HANDLE	(2) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
30	BALL SEATS	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	PBT

NOTES: (1) SnNi PLATED
(2) ZINC DICHROMATE PLATING AND PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES										
	d2 SIZE	d	H	D1	L	L1	d1 Max	d1 Min	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.46	2.76	1.65	-	0.381	0.377	46	120
mm.		9.9	37.1	70.1	41.9	-	9.7	9.6	21.0	
in.	3/8	0.39	1.46	2.76	1.65	1.11	0.506	0.502	46	120
mm.		9.9	37.1	70.1	41.9	28.20	12.90	12.80	21.0	
in.	1/2	0.59	1.57	3.15	2.08	1.13	0.631	0.627	37	96
mm.		14.0	39.9	80.0	52.8	28.70	16.00	15.90	16.8	
in.	3/4	0.79	1.69	3.15	2.36	1.37	0.881	0.877	36	60
mm.		20.1	42.9	80.0	59.9	34.80	22.40	22.30	16.2	
in.	1	0.98	1.97	4.33	2.83	1.64	1.132	1.128	38	36
mm.		24.9	50.0	109.9	71.9	41.70	28.80	28.70	17.1	
in.	1 1/4	1.26	2.16	4.33	3.31	2.00	1.382	1.378	38	24
mm.		32.0	54.9	109.9	84.1	50.80	35.10	35.00	17.3	
in.	1 1/2	1.57	2.52	5.9	3.62	2.35	1.633	1.628	42	16
mm.		39.9	64.0	149.9	91.9	59.70	41.50	41.40	19.2	
in.	2	1.97	2.83	5.9	4.33	2.83	2.133	2.128	72	16
mm.		50.0	71.9	149.9	149.8	71.90	54.20	54.10	32.7	

NSF Certified to NSF/ANSI 61-G

*These valves comply with CA AB1953 and VT Act 193 for 0.25% max. lead content by weight and are certified to NSF/ANSI 61 Annex G.

LEAD FREE FORGED BRASS BALL VALVE

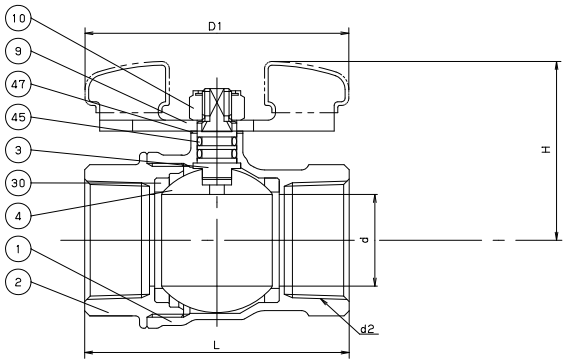
MAINTENANCE FREE DOUBLE O-RING STEM SEALS

Two Piece Body • Full Port • Plated / Vented Ball

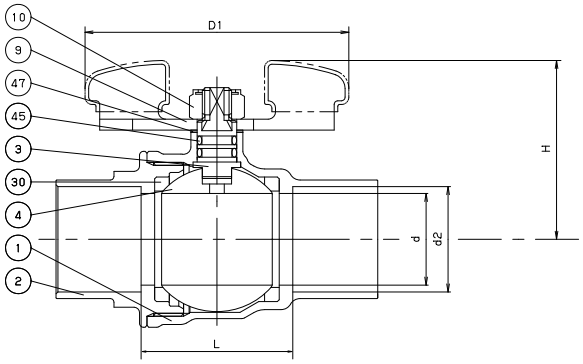
Blowout Proof Stem • PTFE Seats

NSF/ANSI 61-G*

CODE # 858W (AKSZANW) (1/4" - 2") THREADED



CODE # 859W (CSZANW) (3/8" - 2") SOLDER



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
DESIGN	MSS-SP 110

PRESSURE/TEMPERATURE
600 PSI - COLD WORKING PRESSURE
NSF/ANSI Standard 61, Annex G, C. Hot (180˚F / 82˚C)

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (C49300)
2	BODY CAP	FORGED BRASS (C49300)
3	STEM	BRASS ROD (C49300)
4	BALL (Vented)	(1) FORGED BRASS (C49300)
9	HANDLE	(2) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
30	BALL SEATS	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	PBT

NOTES: (1) SnNi PLATED
(2) ZINC DICHROMATE PLATING AND PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	d1 Max	d1 Min	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.46	2.17	1.65	-	0.381	0.377	46	120
mm.		9.9	37.1	55.1	41.9	-	9.7	9.6	21.0	
in.	3/8	0.39	1.46	2.17	1.65	1.11	0.506	0.502	46	120
mm.		9.9	37.1	55.1	41.9	28.20	12.90	12.80	21.0	
in.	1/2	0.59	1.57	3.76	2.08	1.13	0.631	0.627	23	96
mm.		14.0	39.9	95.5	52.8	28.70	16.00	15.90	16.8	
in.	3/4	0.79	1.69	3.15	2.36	1.37	0.881	0.877	36	60
mm.		20.1	42.9	80.0	59.9	34.80	22.40	22.30	16.2	
in.	1	0.98	1.97	4.33	2.83	1.64	1.132	1.128	38	36
mm.		24.9	50.0	52.3	71.9	41.70	28.80	28.70	17.1	
in.	1 1/4	1.26	2.16	4.33	3.31	2.00	1.382	1.378	38	24
mm.		32.0	54.9	57.7	84.1	50.80	35.10	35.00	17.3	
in.	1 1/2	1.57	2.52	5.9	3.62	2.35	1.633	1.628	42	16
mm.		39.9	64.0	149.9	91.9	59.70	41.50	41.40	19.2	
in.	2	1.97	2.83	5.9	4.33	2.83	2.133	2.128	72	16
mm.		50.0	71.9	149.9	149.8	71.90	54.20	54.10	32.7	

NSF Certified to NSF/ANSI 61-G

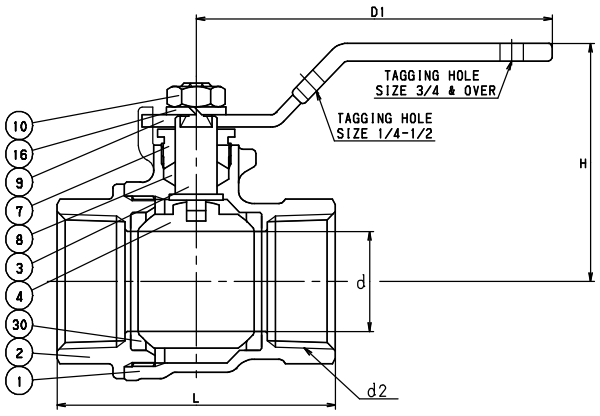
*These valves comply with CA AB1953 and VT Act 193 for 0.25% max. lead content by weight and are certified to NSF/ANSI 61 Annex G.

KITZ®

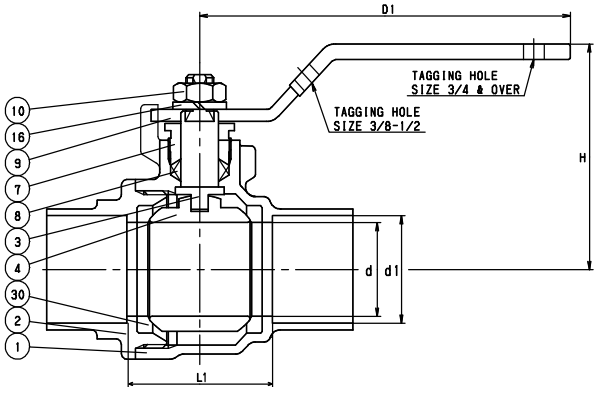
LEAD FREE FORGED BRASS BALL VALVE

Two Piece Body • Full Port • Plated / Vented Ball
Blowout Proof Stem • PTFE Seats & Seals
NSF/ANSI 61-G*

CODE # 868 (AKTAFN) (1/4" - 2") THREADED



CODE # 869 (CTAFN) (3/8" - 2") SOLDER



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
DESIGN	MSS-SP 110

PRESSURE/TEMPERATURE
600 PSI - COLD WORKING PRESSURE **NSF/ANSI Standard 61, Annex G, C. Hot (180˚F / 82˚C)**

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (C49300)
2	BODY CAP	FORGED BRASS (C49300)
3	STEM	BRASS ROD (C49300)
4	BALL (Vented)	(1) FORGED BRASS (C49300)
7	GLAND	BRASS ROD (C49300)
8	GLAND PACKING	PTFE
9	HANDLE	(2) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
30	BALL SEATS	PTFE

NOTES: (1) SnNi PLATED
(2) ZINC DICHROMATE PLATING AND PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	d1 Max	d1 Min	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.54	3.23	1.61	-	0.381	0.377	55	120
mm.		9.9	39.1	82.0	40.9	-	9.7	9.6	25.0	
in.	3/8	0.39	1.54	3.23	1.65	1.05	0.506	0.502	55	120
mm.		9.9	39.1	82.0	41.9	26.70	12.90	12.80	25.0	
in.	1/2	0.59	1.65	3.23	2.09	1.13	0.631	0.627	44	96
mm.		14.0	41.9	82.0	53.1	28.70	16.00	15.90	20.0	
in.	3/4	0.79	2.01	3.94	2.36	1.37	0.881	0.877	45	60
mm.		20.1	51.1	100.1	59.9	34.80	22.40	22.30	20.6	
in.	1	0.98	2.32	5.12	2.83	1.64	1.132	1.128	44	36
mm.		24.9	58.9	130.0	71.9	41.70	28.80	28.70	19.9	
in.	1 1/4	1.26	2.52	5.12	3.23	2.00	1.382	1.378	47	24
mm.		32.0	64.0	130.0	82.0	50.80	35.10	35.00	21.2	
in.	1 1/2	1.57	2.87	5.91	3.62	2.35	1.633	1.628	41	16
mm.		39.9	72.9	150.1	91.9	59.70	41.50	41.40	18.7	
in.	2	1.97	3.15	5.91	4.13	2.83	2.133	2.128	64	16
mm.		50.0	80.0	150.1	104.9	71.90	54.20	54.10	29.1	

NSF Certified to NSF/ANSI 61-G

*These valves comply with CA AB1953 and VT Act 193 for 0.25% max. lead content by weight and are certified to NSF/ANSI 61 Annex G.

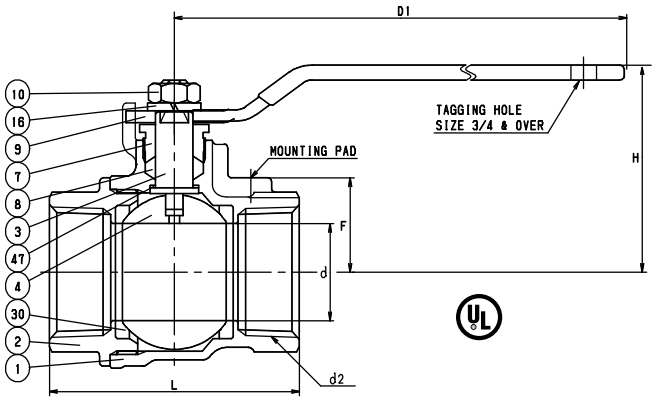
FORGED BRASS/CAST BRONZE BALL VALVE

MOUNTING PAD

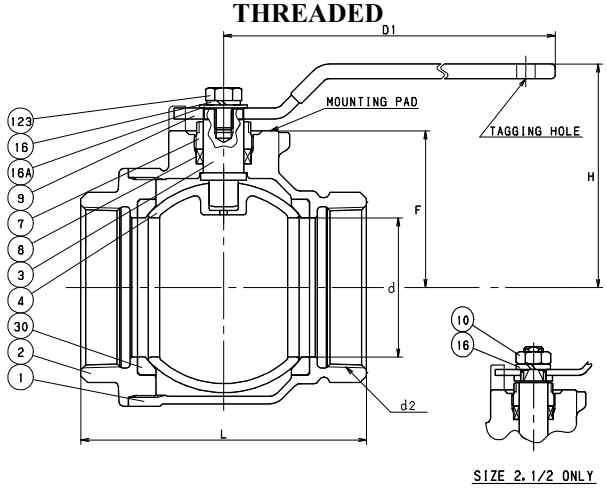
Two Piece Body • Full Port • Chrome Plated Ball
Blowout Proof Stem • PTFE Seats and Seals

UL (1/4" - 2")

CODE # 68P (AKTAFP)
THREADED



CODE # 68P (AKTAFP)
$2^1/_2$" - 4"
THREADED



SPECIFICATION

Approved valve shall have two piece forged brass or cast bronze body with mounting pad, blowout proof stem, PTFE seats/seals, chrome plated ball, and full port design. Valve sizes 1/4" - 2" shall be pressure rated to 150 WSP/600 WOG, conform to MSS-SP 110 and UL certified. Valve sizes 2 1/2" - 4" shall be pressure rated to 150 WSP/400 WOG and conform to MSS-SP 110.

KITZ Code No. 68P (AKTAFP) Threaded Ends

CERTIFICATIONS:
UL-125, -842, -1769

STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110 - REPLACES US. FED SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3	

PRESSURE/TEMPERATURE

150 PSI - SATURATED STEAM TO 366ºF
600 PSI (1/4" - 2") - NON-SHOCK COLD WATER, OIL OR GAS
400 PSI ($2^1/_2$" - 4") - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

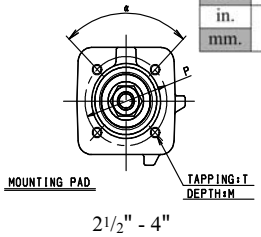
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
	($2^1/_2$" - 4")	CAST BRONZE (B584, C84400)
2	BODY CAP	FORGED BRASS (B283, C37700)
	($2^1/_2$" - 4")	CAST BRONZE (B584, C84400)
3	STEM	(1) SPECIAL BRASS (KITZ "K" METAL)
4	BALL	FORGED BRASS (B283, C37700)
	($2^1/_2$" - 4")	(2) CAST BRONZE (B584, C84400)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT ($2^1/_2$")	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
16A	WASHER (3, 4")	CARBON STEEL
30	BALL SEAT	PTFE
123	HANDLE BOLT (3, 4")	CARBON STEEL

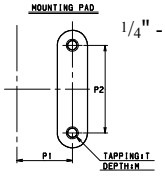
NOTES: (1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1/P	P2	F	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.55	3.23	1.61	0.5	1.12	0.55	48	120
mm.		9.9	39.4	82.0	40.9	12.7	28.4	13.0	21.8	
in.	3/8	0.39	1.55	3.23	1.65	0.5	1.12	0.55	49	120
mm.		9.9	39.4	82.0	41.9	12.7	28.4	13.0	22.3	
in.	1/2	0.59	1.67	3.23	2.09	0.5	1.12	0.72	52	96
mm.		14.0	42.4	82.0	53.1	12.7	28.4	18.3	23.6	
in.	3/4	0.79	2.03	3.94	2.36	0.87	1.37	0.75	50	60
mm.		20.1	51.6	100.1	59.9	22.1	34.8	19.1	22.7	
in.	1	0.98	2.34	5.12	2.83	0.87	1.37	0.94	51	36
mm.		24.9	59.4	130.0	71.9	22.1	34.8	23.9	23.2	
in.	1 1/4	1.26	2.54	5.12	3.23	0.93	1.5	1.26	50	24
mm.		32.0	64.5	130.0	82.0	22.1	38.1	32.0	22.7	
in.	1 1/2	1.57	2.91	5.91	3.62	0.93	1.5	1.46	54	16
mm.		39.9	73.9	150.1	91.9	23.6	38.1	37.1	24.5	
in.	2	1.97	3.19	5.91	4.13	0.93	1.5	1.77	72	16
mm.		50.0	81.0	150.1	104.9	23.6	38.1	44.0	32.7	
in.	2 1/2	2.56	4.29	7.87	5.31	1.97	-	2.95	17	2
mm.		65.0	109.0	199.9	134.9	50.0	-	74.9	7.7	
in.	3	2.99	4.84	11.81	6.14	1.97		3.37	26	2
mm.		75.9	122.9	299.0	155.0	50.0	-	85.6	11.8	
in.	4	3.94	5.55	11.81	7.56	1.97	-	4.06	44	2
mm.		100.1	141.0	299.0	192.0	50.0	-	103.1	20.0	



$2^1/_2$" - 4"



1/4" - 2"

T - 10-24 UNC (1/4" - 1")
T - 1/4-20 UNC ($1^1/_4$" - 2")
T - 4-M6 ($2^1/_2$" - 4")

M - .35 ($1^1/_4$", 2" - 4")
M - .31 (1/4"- 1", $1^1/_2$", 2")

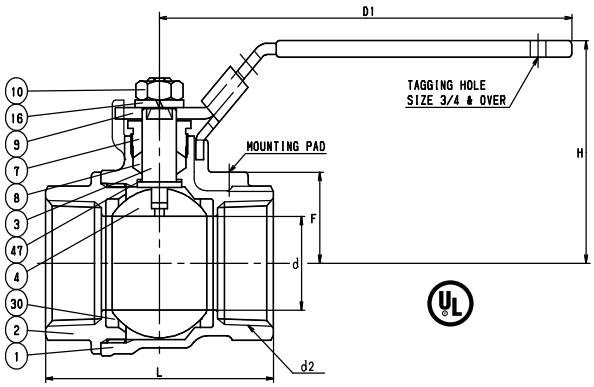
KITZ®

FORGED BRASS/CAST BRONZE BALL VALVE

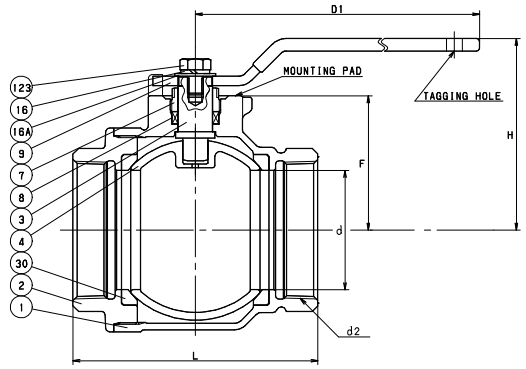
250 WSP STEAM SEATS

Two Piece Body with Mounting Pad • Full Port • Stainless Steel Trim
Blowout Proof Stem • Stainless Steel / Vented Ball • PTFE Seats and Seals • Locking Lever Handle
UL (1/4" - 2")

CODE # 68PM (AKTAFPM)
THREADED



CODE # 68PM (AKTAFPM)
2 1/2" - 4"
THREADED



SPECIFICATION

Approved valve shall have two piece forged brass or cast bronze body with mounting pad, blowout proof stem, reinforced PTFE seats/seals, stainless steel trim, and full port design with locking handle. Valve sizes 1/4" - 2" shall be pressure rated to 250 WSP/600 WOG, conform to MSS-SP 110 and UL certified. Valve sizes 2 1/2" - 4" shall be pressure rated to 250 WSP/400 WOG and conform to MSS-SP 110.

KITZ Code No. 68PM (AKTAFPM) Threaded Ends

CERTIFICATIONS:
UL-125, -842, -1769

STANDARDS		
	END TO END	KITZ
	END CONNECTION	ASME B1.20.1
	WALL THICKNESS	KITZ
	CONFORMS TO MSS-SP 110 - REPLACES US. FED. SPEC. WWW-V-35B, TYPE II, CLASS A, STYLE 3	

PRESSURE/TEMPERATURE
250 PSI - SATURATED STEAM TO 366ºF
600 PSI (1/4" - 2") - NON-SHOCK COLD WATER, OIL OR GAS
400 PSI (2 1/2" - 4") - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

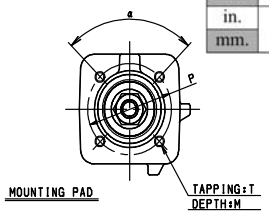
MATERIAL LIST

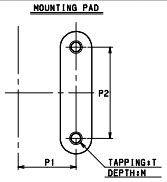
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
	(2 1/2" - 4")	CAST BRONZE (B584, C84400)
2	BODY CAP	FORGED BRASS (B283, C37700)
	(2 1/2" - 4")	CAST BRONZE (B584, C84400)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL (Vented)	STAINLESS STEEL (A276 TYPE 316 or A351 Gr. CF8M)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	REINFORCED PTFE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
16A	WASHER	CARBON STEEL
30	BALL SEATS	REINFORCED PTFE
47	THRUST WASHER	REINFORCED PTFE
123	HANDLE BOLT	CARBON STEEL

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1/P	P2	F	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.54	3.19	1.61	0.5	1.12	0.55	48	120
mm.		9.9	39.1	81.0	40.9	12.7	28.4	13.0	21.8	
in.	3/8	0.39	1.54	3.19	1.65	0.5	1.12	0.55	49	120
mm.		9.9	39.1	81.0	41.9	12.7	28.4	13.0	22.3	
in.	1/2	0.59	1.65	3.19	2.09	0.5	1.12	0.72	52	96
mm.		14.0	41.9	81.0	53.1	12.7	28.4	18.3	23.6	
in.	3/4	0.79	2.01	3.94	2.36	0.87	1.37	0.75	50	60
mm.		20.1	51.1	100.1	59.9	22.1	34.8	19.1	22.7	
in.	1	0.98	2.32	5.12	2.83	0.87	1.37	0.94	51	36
mm.		24.9	58.9	130.0	71.9	22.1	34.8	23.9	23.2	
in.	1 1/4	1.26	2.52	5.12	3.23	0.93	1.5	1.26	50	24
mm.		32.0	64.0	130.0	82.0	23.6	38.1	32.0	22.7	
in.	1 1/2	1.57	2.87	5.91	3.62	0.93	1.5	1.46	54	16
mm.		39.9	72.9	150.1	91.9	23.6	38.1	37.1	24.5	
in.	2	1.97	3.15	5.91	4.13	0.93	1.5	1.77	72	16
mm.		50.0	80.0	150.1	104.9	23.6	38.1	44.0	32.7	
in.	2 1/2	2.56	4.25	7.87	5.31	1.97	-	2.95	17	2
mm.		65.0	108.0	199.9	134.9	50.0	-	74.9	7.7	
in.	3	2.99	4.80	11.81	6.14	1.97	-	3.37	26	2
mm.		75.9	121.9	299.0	155.0	50.0	-	85.6	11.8	
in.	4	3.94	5.51	11.81	7.56	1.97	-	4.06	44	2
mm.		100.1	140.0	299.0	192.0	50.0	-	103.1	20.0	





T - 10-24 UNC (1/4" - 1")
T - 1/4-20 UNC (1 1/4" - 2")
T - 4-M6 (2 1/2" - 4")

M - .35 (1 1/4", 2" - 4")
M - .31 (1/4" - 1", 1 1/2", 2")

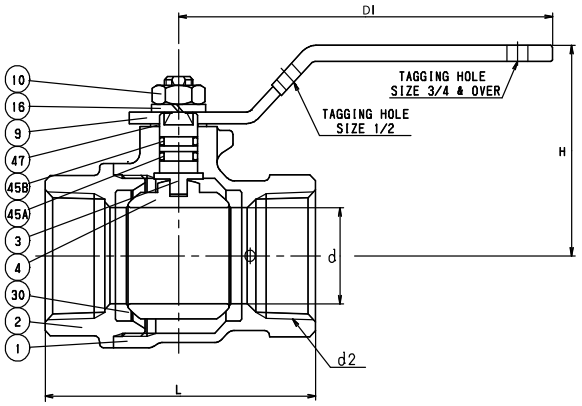
FORGED BRASS BALL VALVE

DRAINABLE

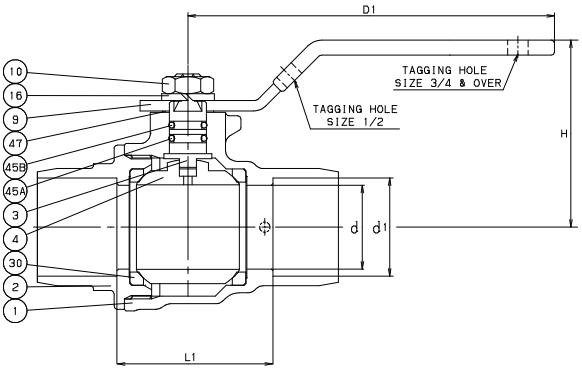
Two Piece Body • Full Port • Chrome Plated Ball

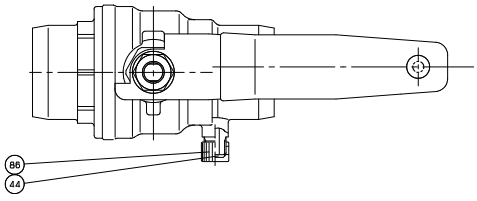
Blowout Proof Stem • PTFE Seats • Maintenance Free Double O-Ring Stem Seals

CODE # 68AD (AKTFD)
THREADED



CODE # 69AD (CTAFD)
SOLDER*





**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have drainable two piece forged brass body, blowout proof stem, PTFE seats, maintenance free double o-ring stem seals, chrome plated ball and full port design. Valves shall be pressure rated to 600 WOG and conform to MSS-SP 110.

KITZ Code No. 68AD (AKTFD) Threaded Ends
69AD (CTFD) Solder Ends

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
200ºF @ 375 PSI
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ "K-METAL")
4	BALL	(2) FORGED BRASS (B283, C37700)
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	WASHER	CARBON STEEL
30	BALL SEATS	PTFE
44	DRAIN GASKET	NBR
45A	O-RING	FPM
45B	O-RING	NBR
47	THRUST WASHER	POM
86	DRAIN CAP	BRASS ROD

NOTES: (1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/2	0.59	1.54	3.23	2.17	1.3	.631	.627	65	96
mm.		14.0	39.1	82.0	55.1	33.0	16.0	15.9	29.5	
in.	3/4	0.79	1.89	3.94	2.44	1.53	.881	.877	62	60
mm.		20.1	48.0	100.1	61.0	38.9	22.4	22.3	28.2	
in.	1	0.98	2.17	5.12	2.87	1.8	1.132	1.128	65	36
mm.		24.9	55.1	130.0	72.9	45.7	28.8	28.7	29.5	

KITZ®

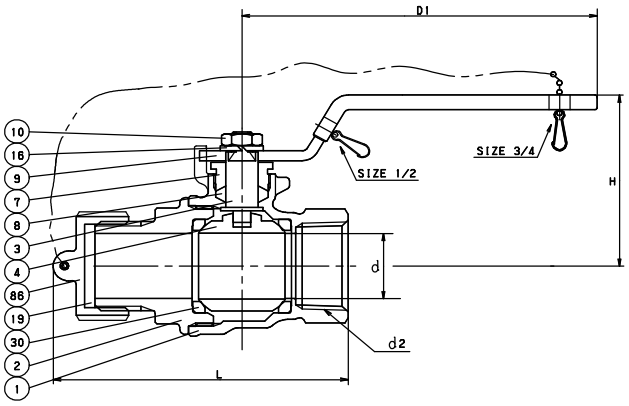
FORGED BRASS BALL VALVE

CAP & CHAIN

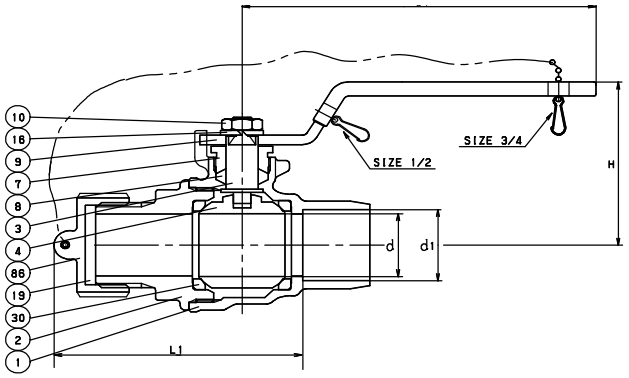
Two Piece Body • Full Port

Blowout Proof Stem • Chrome Plated Ball • PTFE Seats and Seals

CODE # 68C (AKTAFC)
THREADED x HOSE



CODE # 69C (CTAFC)
SOLDER* x HOSE



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1/ANSI B2.4 3/4 11.5 NHR
SOLDER JOINT ENDS	ANSI B16.18/ANSI B2.4 3/4 11.5 NHR
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP (3/4")	BRASS ROD (B16) FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ, "K-METAL")
4	BALL	(2) FORGED BRASS (B283, C37700)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
19	GASKET	NBR
30	BALL SEATS	PTFE
86	CAP & CHAIN	(4) PP/BRASS

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING
(4) CAP IS NOT INTENDED TO RETAIN PRESSURE

DIMENSIONS • WEIGHTS • QUANTITIES										
	d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/2	0.59	1.65	3.23	2.93	2.46	.631	.627	52	96
mm.		14.0	41.9	82.0	74.4	62.5	16.0	15.9	23.6	
in.	3/4	0.79	2.01	3.94	3.3	2.79	.881	.877	50	60
mm.		20.1	51.1	100.1	83.8	70.9	22.4	22.3	22.7	

SPECIFICATION

Approved valve shall have two piece forged brass body, chrome plated ball, blowout proof stem, PTFE seats/seals, PP or brass cap & chain and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110.

KITZ Code No. 68C (AKTAFC) Threaded Ends
69C (CTAFC) Solder Ends

FORGED BRASS BALL VALVE

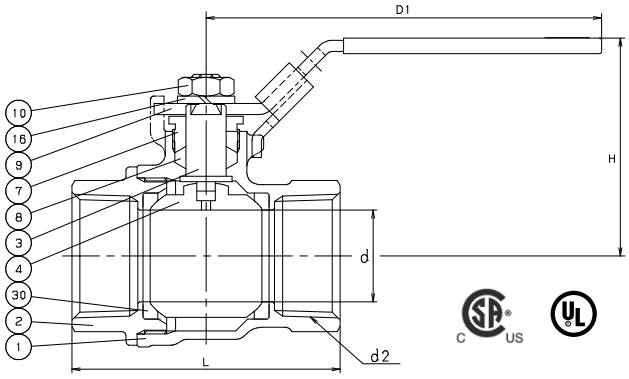
CHROME PLATED OR STAINLESS STEEL BALL

Two Piece Body • Full Port

Blowout Proof Stem • Chrome Plated / Vented Ball • PTFE Seats and Seals • Locking Lever Handle

CSA • UL

CODE # 68LL (AKTAFLL)
THREADED



STANDARDS		
	END TO END	KITZ
	THREADED ENDS	ANSI B1.20.1
	WALL THICKNESS	KITZ
	CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE	
	150 PSI @ 300ºF
	600 PSI - NON-SHOCK COLD WATER, OIL OR GAS
NOTE:	PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS(KITZ K-METAL)
4	BALL	(2) FORGED BRASS (B283, C37700)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT (1/4" - 2 1/2")	CARBON STEEL
16	SPRING WASHER (3")	CARBON STEEL
16A	WASHER	CARBON STEEL
30	BALL SEATS	PTFE

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

CERTIFICATIONS:
CSA (US/C) -40ºC~65ºC (-40ºF~149ºF)
CGA 9.1b-2001/ANSI 21.15b-2006 - .5 PSI
CGA CR 91-002 - 2 PSI
ASME B16.44 - 5 PSI
CAN/CGA 3.16-M88 - 125 PSI
ASME B16.33-2002 - 125 PSI

UL-125, -842, -1769

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.54	3.23	1.61	-	-	-	48	120
mm.		9.9	39.1	82.0	40.9	-	-	-	21.8	
in.	3/8	0.39	1.54	3.23	1.65	1.05	.506	.502	48	120
mm.		9.9	39.1	82.0	41.9	26.7	12.852	12.751	21.8	
in.	1/2	0.59	1.65	3.23	2.09	1.13	.631	.627	52	96
mm.		14.0	41.9	82.0	53.1	28.7	16.027	15.926	23.6	
in.	3/4	0.79	2.01	3.94	2.36	1.37	.881	.877	50	60
mm.		20.1	51.1	100.1	59.9	34.8	22.4	22.3	22.7	
in.	1	0.98	2.32	5.12	2.83	1.64	1.132	1.128	51	36
mm.		24.9	58.9	130.0	71.9	41.7	28.8	28.7	23.2	
in.	1 1/4	1.26	2.52	5.12	3.23	2	1.382	1.378	50	24
mm.		32.0	64.0	130.0	82.0	50.8	35.1	35.0	22.7	
in.	1 1/2	1.57	2.87	5.91	3.62	2.35	1.633	1.628	54	16
mm.		39.9	72.9	150.1	91.9	59.7	41.5	41.4	24.5	
in.	2	1.97	3.15	5.91	4.13	2.83	2.133	2.128	72	16
mm.		50.0	80.0	150.1	104.9	71.9	54.2	54.1	32.7	

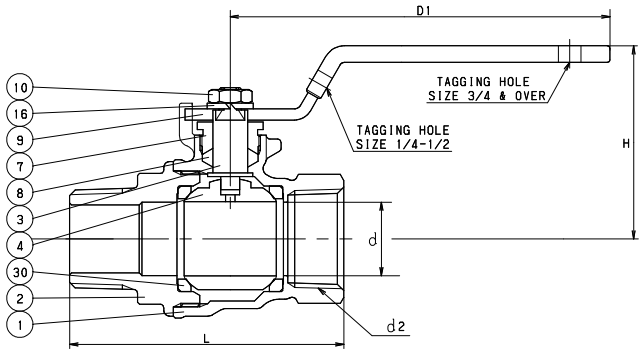
FORGED BRASS BALL VALVE

THREADED/SOLDER x MALE

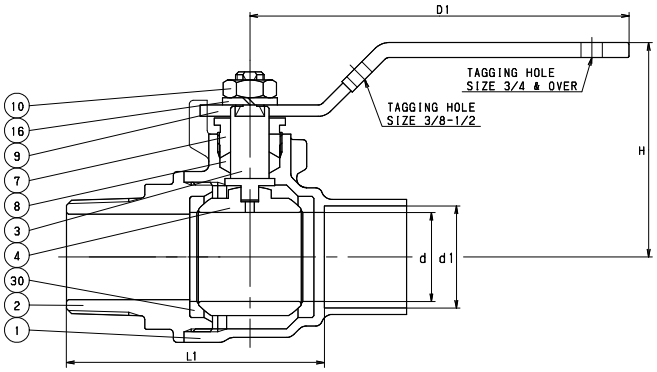
Two Piece Body • Full Port

Chrome Plated Ball • Blowout Proof Stem • PTFE Seats and Seals

CODE # 68O (AKTAFO)
MALE x FEMALE



CODE # 69O (CTAFO)
MALE x SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
SOLDER JOINT END	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP (1/4" - 3/8")	BRASS ROD (B16)
	(1/2" - 1")	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ "K METAL")
4	BALL	(2) FORGED BRASS (B283, C37700)
7	GLAND	BRASS ROD
8	GLAND PACKING	PTFE
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
30	BALL SEATS	PTFE

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES										
	d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.54	3.23	2.05	-	.381	.377	48	120
mm.		9.9	39.1	82.0	52.1	-	9.7	9.6	21.8	
in.	3/8	0.39	1.54	3.23	2.09	1.75	.506	.502	49	120
mm.		9.9	39.1	82.0	53.1	44.4	12.9	12.8	22.3	
in.	1/2	0.59	1.65	3.23	2.6	2.13	.631	.627	52	96
mm.		14.0	41.9	82.0	66.0	54.1	16.0	15.9	23.6	
in.	3/4	0.79	2.01	3.94	2.87	2.36	.881	.877	50	60
mm.		20.1	51.1	100.1	72.9	59.9	22.4	22.3	22.7	
in.	1	0.98	2.32	5.12	3.46	2.85	1.132	1.128	51	36
mm.		24.9	58.9	130.0	87.9	72.4	28.8	28.7	23.2	

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem, PTFE seats/seals, chrome plated ball, full port design with threaded/solder x male ends. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110.

KITZ Code No. 68O (AKTAFO) Threaded Ends
69O (CTAFO) Soldered Ends

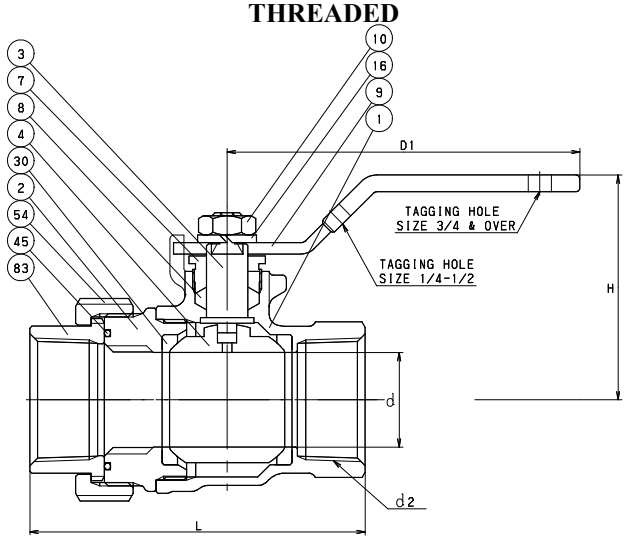
FORGED BRASS BALL VALVE

SINGLE UNION

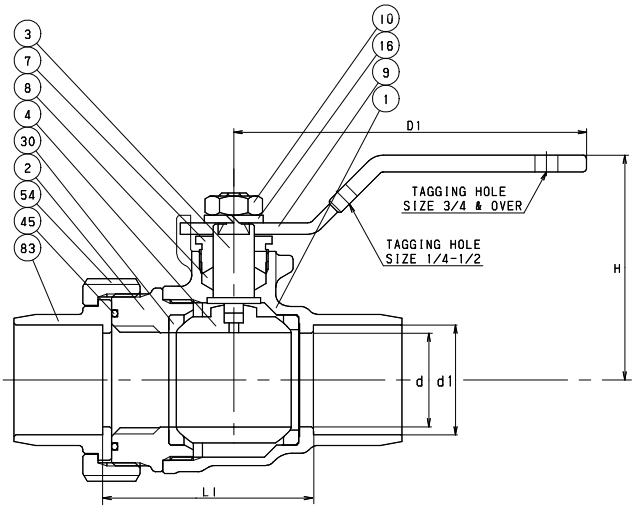
Two Piece Body • Full Port

Blowout Proof Stem • Chrome Plated Ball • PTFE Seats and Seals

CODE # 68U (AKTAFU)
THREADED



CODE # 69U (CTAFU)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have two piece forged brass body and single union connection with FPM hand-tight o-ring seal, blowout proof stem, PTFE seats/seals, chrome plated ball, and full port design. Valves shall be pressure rated to 150 PSI @ 300ºF/600 WOG and conform to MSS-SP 110.

KITZ Code No. 68U (AKTAFU) Threaded Ends
69U (CTAFU) Soldered Ends

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI @ 300ºF
600 PSI NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ "K-METAL")
4	BALL	(2) FORGED BRASS (B283, C37700)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
30	BALL SEAT	PTFE
45	O-RING	FPM
54	UNION NUT	FORGED BRASS (B283, C37700)
83	UNION NIPPLE	FORGED BRASS (B283, C37700)

NOTES: (1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.54	3.23	2.05	-	-	-	50	120
mm.		9.9	39.1	82.0	52.1	-	-	-	22.7	
in.	3/8	0.39	1.54	3.23	2.05	1.37	.506	.502	50	120
mm.		9.9	39.1	82.0	52.1	34.8	12.9	12.8	22.7	
in.	1/2	0.59	1.65	3.23	2.48	1.52	.631	.627	60	96
mm.		14.0	41.9	82.0	62.0	38.6	16.0	15.9	27.3	
in.	3/4	0.79	2.01	3.94	2.95	1.89	.881	.877	66	60
mm.		20.1	51.1	100.1	74.9	48.0	22.4	22.3	30.0	
in.	1	0.98	2.32	5.12	3.46	2.2	1.132	1.128	60	36
mm.		24.9	58.9	130.0	87.9	55.9	28.8	28.7	27.3	
in.	1 1/4	1.26	2.52	5.12	3.86	2.59	1.382	1.378	60	24
mm.		32.0	64.0	130.0	98.0	65.8	35.1	35.0	27.3	
in.	1 1/2	1.57	2.87	5.91	4.45	3.1	1.633	1.628	61	16
mm.		39.9	72.9	150.1	113.0	78.7	41.5	41.4	27.7	
in.	2	1.97	3.15	5.91	4.96	3.58	2.133	2.128	87	16
mm.		50.0	80.0	150.1	125.0	90.9	54.2	54.1	39.5	

KITZ®

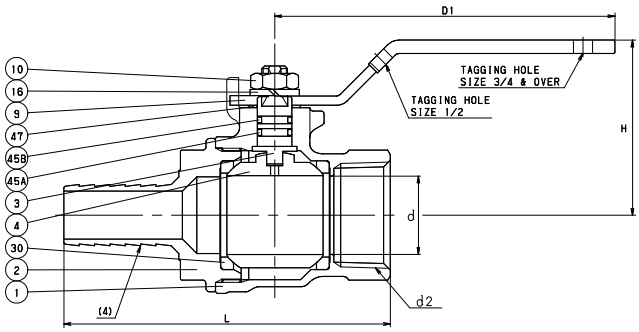
FORGED BRASS BALL VALVE

THREADED x BARBED HOSE CONNECTION

Two Piece Body • Full Port • Chrome Plated Ball

Blowout Proof Stem • PTFE Seats • Maintenance Free Double O-Ring Stem Seals

CODE # 68AB (AKTFB)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1 / BHC
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
600 PSI - NON-SHOCK COLD WATER, OIL OR GAS *OPERATING LIMITS ARE GOVERNED BY TYPE OF HOSE AND CLAMP USED.*

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ "K-METAL")
4	BALL	(2) FORGED BRASS (B283, C37700)
9	HANDLE	CARBON STEEL
10	HANDLE NUT	(3) CARBON STEEL
16	SPRING WASHER	CARBON STEEL
30	BALL SEATS	PTFE
45A	O-RING	FPM
45B	O-RING	NBR
47	THRUST WASHER	PTFE

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING
(4) BARBED CONNECTOR ACCEPTS STANDARD HOSE I.D. MATCHING VALVE PIPE SIZE.

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	Hose ID	APPROX. NET WT.	CARTON QTY
in.	1/2	0.59	1.54	3.23	2.91	0.50	0.50	96
mm.		14.99	39.1	82.04	73.91	12.70	0.23	
in.	3/4	0.79	1.89	3.94	3.35	0.63	0.83	60
mm.		20.07	48.01	100.08	85.09	16.00	0.38	
in.	1	0.98	2.17	5.12	4.06	0.75	1.42	36
mm.		24.89	55.12	130.05	103.12	19.05	0.65	

SPECIFICATION

Approved valve shall have two piece forged brass body, blowout proof stem, PTFE seats, maintenance free double o-ring stem seals, chrome plated ball, threaded x barbed hose connection and full port design. Valves shall be pressure rated to 600 WOG and conform to MSS-SP 110.

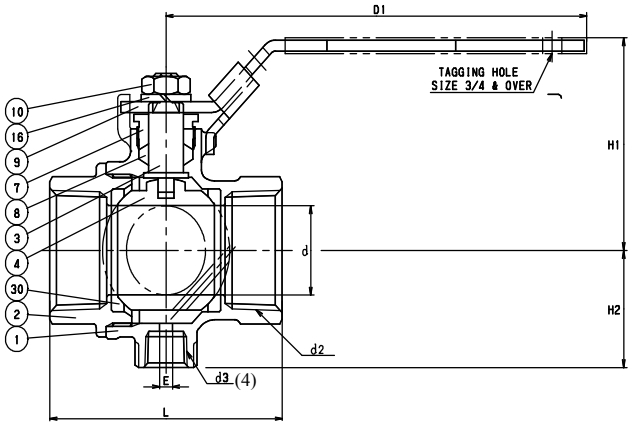
KITZ Code No. 68AB (AKZA) Threaded Ends

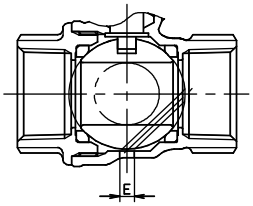
FORGED BRASS BALL VALVE

SAFETY EXHAUST

Two Piece Body • Full Port • Blowout Proof Stem
Chrome Plated Ball • PTFE Seats and Seals • Locking Lever Handle

CODE # 68S (AKTAFS)
THREADED





SIZE 1/4-3/4

STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
200 PSI NON-SHOCK COLD WATER, AIR & WATER

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ "K" METAL)
4	BALL	(2) FORGED BRASS (B283, C37700)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(3) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
30	BALL SEATS	PTFE

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING
(4) 1/4" EXHAUST PORT (d3-1" - 2")
EXHAUST MUFFLER AVAILABLE - OSHA: 1910:147 COMPLIANT

DIMENSIONS • WEIGHTS • QUANTITIES									
	d2 SIZE	d	H1	H2	D1	L	E	APPROX. NET WT.	CARTON QTY
in.	1/4	0.31	1.54	-	3.23	1.61	0.16	48	120
mm.		7.9	39.1	-	82.0	40.9	4.1	21.8	
in.	3/8	0.31	1.54	-	3.23	1.65	0.16	49	120
mm.		7.9	39.1	-	82.0	41.9	4.1	22.3	
in.	1/2	0.51	1.65	-	3.23	2.09	0.16	52	96
mm.		12.7	41.9	-	82.0	53.1	4.1	23.6	
in.	3/4	0.71	2.01	-	3.94	2.36	0.16	50	60
mm.		18.0	51.1	-	100.1	59.9	4.1	22.7	
in.	1	0.91	2.32	1.28	5.12	2.83	0.16	51	36
mm.		23.1	58.9	32.5	130.0	71.9	4.1	23.2	
in.	1 1/4	1.26	2.52	1.5	5.12	3.23	0.16	50	24
mm.		32.0	64.0	38.1	130.0	82.0	4.1	22.7	
in.	1 1/2	1.57	2.87	1.73	5.91	3.62	0.16	54	16
mm.		39.9	72.9	43.9	150.1	91.9	4.1	24.5	
in.	2	1.97	3.15	2.05	5.91	4.13	0.16	72	16
mm.		50.0	80.0	52.1	150.1	104.9	4.1	32.7	

SPECIFICATION

Approved valve shall have two piece forged brass body with safety exhaust, blowout proof stem, PTFE seats/seals, chrome plated ball, and full port design. Valves shall be pressure rated to 200 WOG and conform to MSS-SP 110.

KITZ Code No. 68S (AKTAFS) Threaded Ends

FORGED BRASS BALL VALVE

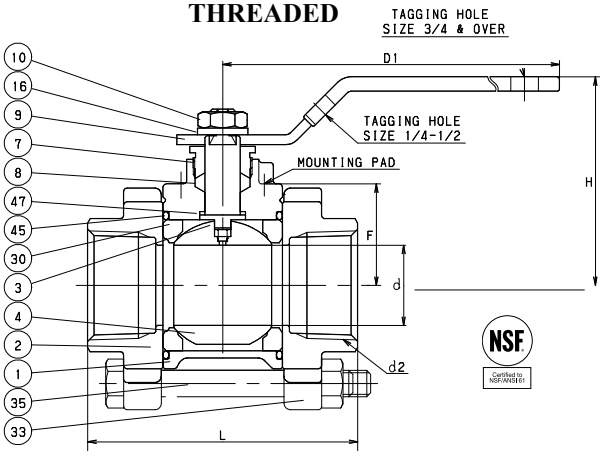
THREE PIECE BODY WITH MOUNTING PAD

Full Port • Blowout Proof Stem

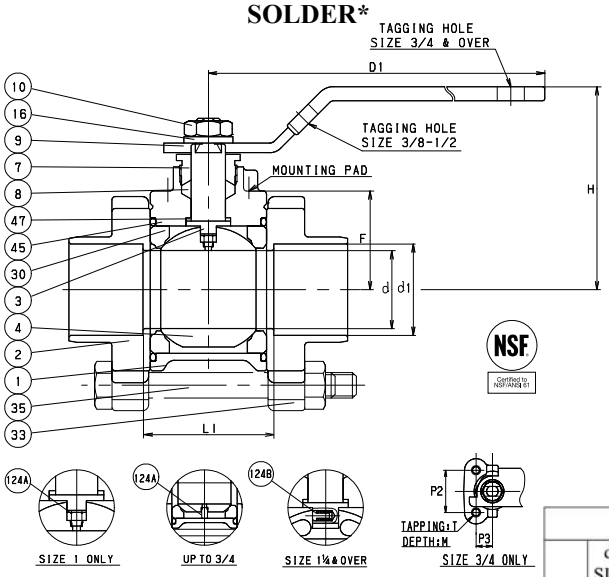
Chrome Plated Ball • PTFE Seats

NSF (4)

CODE # 62 (AK3TM)
THREADED



CODE # 63 (C3TM)
SOLDER*



**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have three piece forged brass body, blowout proof stem, PTFE seats, chrome plated ball, and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110.

KITZ Code No. 62 (AK3TM) Threaded Ends
63 (C3TM) Soldered Ends

CERTIFICATIONS:
NSF/ANSI STANDARDS 61-8, C-HOT (180°F/82ºC)

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI NON-SHOCK COLD WATER, OIL OR GAS

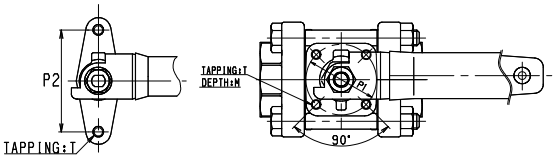
NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST			
NO.	NAME OF PART		SPECIFICATION
1	BODY		FORGED BRASS (B283, C37700)
2	CAP		FORGED BRASS (B283, C37700)
3	STEM	(1)	SPECIAL BRASS (KITZ "K-METAL")
4	BALL (Vented)	(2)	FORGED BRASS (B283, C37700)
7	GLAND		BRASS ROD (B16)
8	GLAND PACKING		PTFE
9	HANDLE		CARBON STEEL
10	HANDLE NUT		CARBON STEEL
16	SPRING WASHER	(3)	CARBON STEEL
30	BALL SEAT		PTFE
33	CAP NUT		CARBON STEEL (A307 Gr. B)
35	CAP BOLT		CARBON STEEL (A307 Gr. B)
45	O-RING		FPM
47	THRUST WASHER		REINFORCED PTFE
124A	SPRING (1/4" - 1")		STAINLESS STEEL (A313, TYPE 316)
124B	SPRING & PIN (1 1/4" - 2")		STAINLESS STEEL (A313 & A276, TYPE 316)

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL.
(2) CR. PLATING
(3) ELECTROPLATED ZINC WITH PLASTIC COVERING
(4) NSF/ANSI STANDARDS 61-8, C-HOT (180°F/82ºC)

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	L2	P1/P	P2	P	F	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.54	3.23	1.93	0.96	1.1	-	1.77	-	0.75	-	-	42	60
mm.		9.9	39.1	82.0	49.0	24.4	27.9	-	44.0	-	19.1	-	-	19.1	
in.	3/8	0.39	1.54	3.23	1.93	0.96	1.1	-	1.77	-	0.75	.506	.502	42	60
mm.		9.9	39.1	82.0	49.0	24.4	27.9	-	44.0	-	19.1	12.9	12.8	19.1	
in.	1/2	0.59	1.89	3.23	2.4	1.2	-	-	1.77	-	0.98	.631	.627	36	36
mm.		14.0	48.0	82.0	60.0	30.5	-	-	44.0	-	24.9	16.0	15.9	16.4	
in.	3/4	0.79	2.17	3.94	2.76	1.38	1.39	-	0.87	0.33	1.02	.881	.877	24	24
mm.		20.1	55.1	100.1	70.1	35.1	35.3	-	22.1	8.4	25.9	22.4	22.3	10.9	
in.	1	0.98	2.48	5.12	3.27	1.63	-	1.42	-	-	1.22	1.132	1.128	32	16
mm.		24.9	62.0	130.0	83.1	41.4	-	36.1	-	-	30.0	28.8	28.7	14.5	
in.	1 1/4	1.26	2.72	5.12	3.9	1.95	-	1.42	-	-	1.46	1.382	1.378	32	8
mm.		32.0	69.1	130.0	99.1	49.5	-	36.1	-	-	37.1	35.1	35.0	14.5	
in.	1 1/2	1.57	3.07	5.91	4.61	2.3	2.3	1.42	-	-	1.77	1.633	1.628	42	6
mm.		39.9	77.0	150.1	117.1	58.4	58.4	36.1	-	-	44.0	41.5	41.4	19.1	
in.	2	1.97	3.35	5.91	5.47	2.74	-	1.42	-	-	2.05	2.133	2.128	44	4
mm.		50.0	85.1	150.1	138.9	69.6	-	36.1	-	-	52.1	54.2	54.1	20.0	



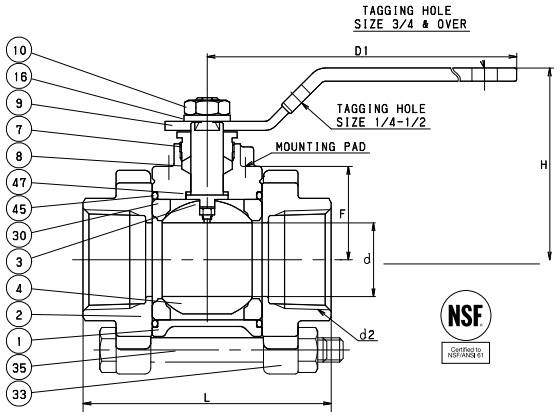
T - 10-24 UNC (1/4" - 3/4")
M5 (1" - 2")

M - .21 (1/4", 3/8")
.22 (1/2")
.39 (3/4" - 2")

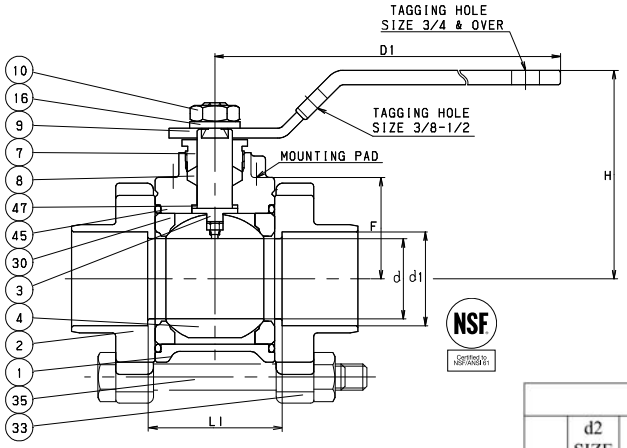
FORGED BRASS BALL VALVE

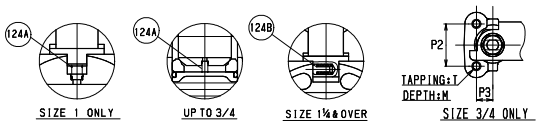
Three Piece Body with Mounting Pad • Full Port
Blowout Proof Stem • Stainless Steel Ball & Stem • PTFE Seats
NSF (2)

CODE # 62M (AK3TMM)
THREADED



CODE # 63M (C3TMM)
SOLDER*





**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have three piece forged brass body with mounting pad, blowout proof stem, PTFE seats, stainless steel ball and stem, and full port design. Valves shall be pressure rated to 150 WSP/600 WOG and conform to MSS-SP 110.

CERTIFICATIONS:
NSF/ANSI STANDARDS 61-8, C-HOT (180°F/82ºC)

STANDARDS	
END TO END	KITZ
THREADED ENDS	ASME B1.20.1
SOLDER ENDS	ASME B16.18
WALL THICKNESS	KITZ
CONFORMS TO MSS-SP 110	

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF
600 PSI NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

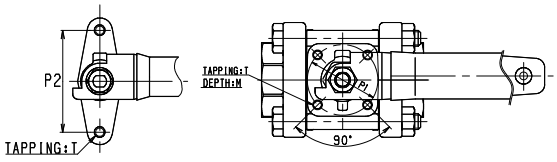
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	CAP	FORGED BRASS (B283, C37700)
3	STEM	STAINLESS STEEL (A276, TYPE 316)
4	BALL (Vented)	STAINLESS STEEL (A276, TYPE 316 or A351 Gr. CF8M)
7	GLAND	BRASS ROD (B16)
8	GLAND PACKING	PTFE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
30	BALL SEAT	PTFE
33	CAP NUT	CARBON STEEL (A307 Gr. B)
35	CAP BOLT	CARBON STEEL (A307 Gr. B)
45	O-RING	FPM
47	THRUST WASHER	REINFORCED PTFE
124A	SPRING (1/4" - 1")	STAINLESS STEEL (A313, TYPE 316)
124B	SPRING & PIN (1 1/4" - 2")	STAINLESS STEEL (A313 & A276, TYPE 316)

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
(2) NSF/ANSI STANDARDS 61-8, C-HOT (180°F/82ºC)

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	L2	P1/P	P2	P3	F	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/4	0.39	1.54	3.23	1.93	0.96	1.1	-	1.77	-	0.75	-	-	42	60
mm.		9.9	39.1	82.0	49.0	24.4	27.9	-	44.0	-	19.1	-	-	19.1	
in.	3/8	0.39	1.54	3.23	1.93	0.96	1.1	-	1.77	-	0.75	.506	.502	42	60
mm.		9.9	39.1	82.0	49.0	24.4	27.9	-	44.0	-	19.1	12.9	12.8	19.1	
in.	1/2	0.59	1.89	3.23	2.4	1.2	-	-	1.77	-	0.98	.631	.627	36	36
mm.		14.0	48.0	82.0	60.0	30.5	-	-	44.0	-	24.9	16.0	15.9	16.4	
in.	3/4	0.79	2.17	3.94	2.76	1.38	1.39	-	0.87	0.33	1.02	.881	.877	24	24
mm.		20.1	55.1	100.1	70.1	35.1	35.3	-	22.1	8.4	25.9	22.4	22.3	10.9	
in.	1	0.98	2.48	5.12	3.27	1.63	-	1.42	-	-	1.22	1.132	1.128	32	16
mm.		24.9	62.0	130.0	83.1	41.4	-	36.1	-	-	30.0	28.8	28.7	14.5	
in.	1 1/4	1.26	2.72	5.12	3.9	1.95	-	1.42	-	-	1.46	1.382	1.378	32	8
mm.		32.0	69.1	130.0	99.1	49.5	-	36.1	-	-	37.1	35.1	35.0	14.5	
in.	1 1/2	1.57	3.07	5.91	4.61	2.3	2.3	1.42	-	-	1.77	1.633	1.628	42	6
mm.		39.9	77.0	150.1	117.1	58.4	58.4	36.1	-	-	44.0	41.5	41.4	19.1	
in.	2	1.97	3.35	5.91	5.47	2.74	-	1.42	-	-	2.05	2.133	2.128	44	4
mm.		50.0	85.1	150.1	138.9	69.6	-	36.1	-	-	52.1	54.2	54.1	20.0	



T - 10-24 UNC (1/4" - 3/4")
M5 (1" - 2")

M - .21 (1/4", 3/8")
.22 (1/2")
.39 (3/4" - 2")

FORGED BRASS BALL VALVE

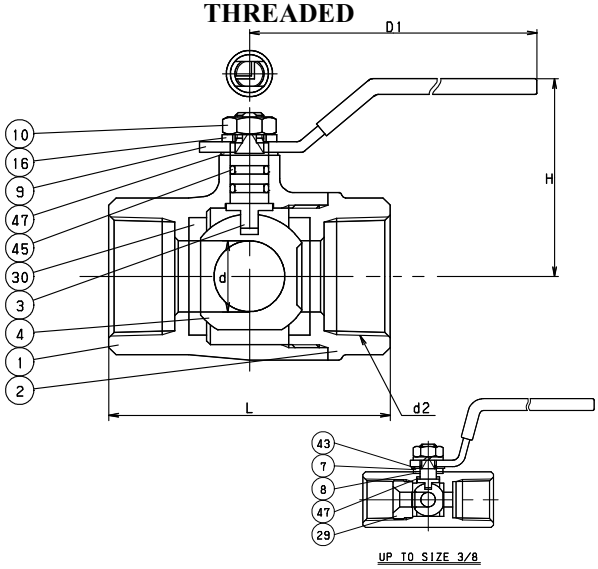
THREE WAY

Two Piece Body • Maintenance Free Double O-Ring Stem Seals • L-Port Design
Chrome Plated Ball • PTFE Seats • Blowout Proof Stem

CODE # 54 (AKTN)

$1/4$" - $3/8$" / $2\,1/2$" - 3"

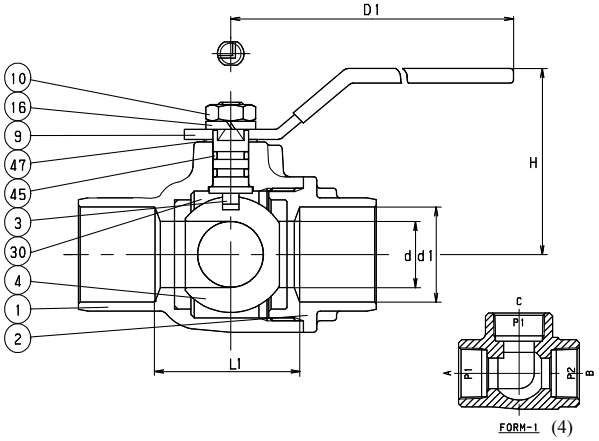
THREADED



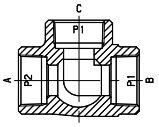
CODE # 55 (CTN)

$1\,1/4$" - 2"

SOLDER*



FORM-1 (4)



FORM-2 (5)

**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

SPECIFICATION

Approved valve shall have three way two piece forged brass body, blowout proof stem, PTFE seats, maintenance free double o-ring stem seals, chrome plated ball, and L-port design. Valves shall be pressure rated to 150 PSI @ 300ºF/400 WOG.

KITZ Code No. 54 (AKTN) Threaded Ends
55 (CTN) Soldered Ends

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
150 PSI @ 300º F
400 PSI NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
	($2\,1/2$" - 3")	CAST BRONZE
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ, K-METAL)
4	BALL	(2) FORGED BRASS (B283, C37700)
7	GLAND	STAINLESS STEEL (A276, TYPE 430)
8	GLAND PACKING	G/F PTFE
9	HANDLE	(3) STAINLESS STEEL
10	HANDLE NUT	CARBON STEEL
16	WASHER	CARBON STEEL
29	INSERT	FORGED BRASS (B124, C37700)
30	BALL SEAT	PTFE
43	SPRING	STAINLESS STEEL (A276, TYPE 304)
45	O-RINGS	FPM
47	THRUST WASHER ($1/4$" - $3/8$")	REINFORCED PTFE
	($1\,1/4$" - 3")	POM

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL
(2) CR. PLATING
(3) WITH PLASTIC COVERING
(4) FLOW IS FACILITATED BETWEEN "A" & "C" AFTER EXTENDED USE, PORT "B" MAY LEAK SLIGHTLY TO PORT "A" & "C" IF PRESSURE IN P2 IS HIGHER THAN P1.
(5) FLOW IS FACILITATED BETWEEN "C" & "B" AFTER EXTENDED USE, PORT "A" MAY LEAK SLIGHTLY TO PORT "B" & "C", IF PRESSURE IN P2 IS HIGHER THAN P1

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/4	0.18	1.18	2.36	1.57	-	-	-	22	120
mm.		4.6	29.0	59.9	39.9	-	-	-	10.0	
in.	3/8	0.27	1.77	3.15	1.81	-	-	-	44	120
mm.		6.9	44.0	80.0	45.0	-	-	-	20.0	
in.	1 1/4	0.98	2.36	5.12	-	1.99	1.132	1.128	67	24
mm.		24.9	59.9	130.0	-	50.5	28.8	28.7	30.5	
in.	1 1/2	1.26	2.56	5.12	-	2.32	1.382	1.378	62	16
mm.		32.0	65.0	130.0	-	58.9	35.1	35.0	28.2	
in.	2	1.57	2.95	5.9	-	2.81	1.633	1.628	72	12
mm.		39.9	74.9	149.9	-	71.4	41.5	41.4	32.7	
in.	2 1/2	1.97	3.58	7.87	5.43	-	-	-	71	6
mm.		50.0	90.9	199.9	137.9	-	-	-	32.3	
in.	3	2.56	4.13	11.81	6.54	-	-	-	74	4
mm.		65.0	104.9	299.0	166.1	-	-	-	33.6	

FORGED BRASS BALL VALVE

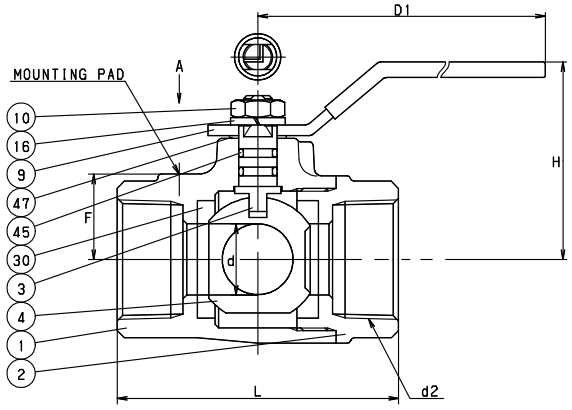
THREE WAY

Two Piece Body with Mounting Pad • Maintenance Free Double O-Ring Stem Seals
L-Port Design • Blowout Proof Stem • Chrome Plated Ball • PTFE Seats

CODE # 54P (AKTNP)

1/2" - 2"

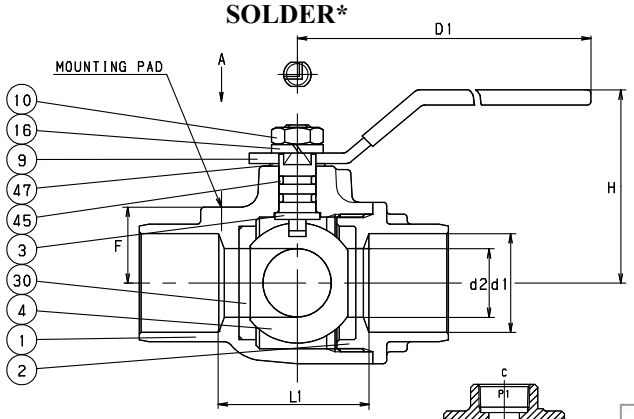
THREADED

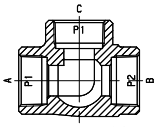


CODE # 55P (CTNP)

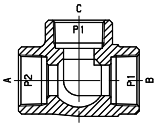
1/2" - 1"

SOLDER*





FORM-1 (4)



FORM-2 (5)

**REFERENCE VALVE INSTALLATION TIPS FOR SOUND SOLDER JOINTS (PAGE BV-70) OR SEE INSTALLATION SHEET PACKAGED WITH VALVE.*

STANDARDS	
END TO END	KITZ
THREADED ENDS	ANSI B1.20.1
SOLDER JOINT ENDS	ANSI B16.18
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
150PSI @ 300º F
400 PSI NON-SHOCK COLD WATER, OIL OR GAS

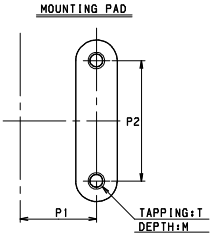
NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-35

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	(1) SPECIAL BRASS (KITZ, K-METAL)
4	BALL	(2) FORGED BRASS (B283, C37700)
9	HANDLE	(3) STAINLESS STEEL
10	HANDLE NUT	CARBON STEEL
16	WASHER	CARBON STEEL
30	BALL SEAT	PTFE
45	O-RINGS	FPM
47	THRUST WASHER	POM

NOTES:
(1) PROPRIETARY DEZINCIFICATION RESISTANT MATERIAL
(2) CR. PLATING
(3) WITH PLASTIC COVERING
(4) FLOW IS FACILITATED BETWEEN "A" & "C" AFTER EXTENDED USE, PORT "B" MAY LEAK SLIGHTLY TO PORT "A" & "C" IF PRESSURE IN P2 IS HIGHER THAN P1.
(5) FLOW IS FACILITATED BETWEEN "C" & "B" AFTER EXTENDED USE, PORT "A" MAY LEAK SLIGHTLY TO PORT "B" & "C", IF PRESSURE IN P2 IS HIGHER THAN P1.

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	L1	P1	P2	F	d1 Max.	d1 Min.	APPROX. NET WT.	CARTON QTY
in.	1/2	0.39	1.77	3.94	2.64	1.32	0.50	1.12	0.59	.631	.627	59	60
mm.		9.9	44.0	100.1	67.1	33.5	12.7	28.4	14.0	16.0	15.9	26.8	
in.	3/4	0.59	1.89	3.94	2.68	1.34	0.87	1.37	0.72	.881	.877	63	48
mm.		14.0	48.0	100.1	68.1	34.0	22.1	34.8	18.3	22.4	22.3	28.6	
in.	1	0.79	2.17	5.12	3.11	1.56	0.87	1.37	0.87	1.132	1.128	64	32
mm.		20.1	55.1	130.0	78.0	39.6	1.4	34.8	22.1	28.8	28.7	29.1	
in.	1 1/4	0.98	2.36	5.12	3.50	-	0.93	1.50	1.05	-	-	67	24
mm.		24.9	59.9	130.0	88.9	-	23.6	38.1	26.7	-	-	30.5	
in.	1 1/2	1.26	2.56	5.12	3.94	-	0.93	1.50	1.22	-	-	62	16
mm.		32.0	65.0	130.0	100.1	-	23.6	38.1	30.0	-	-	28.2	
in.	2	1.57	2.95	5.91	4.53	-	0.93	1.50	1.77	-	-	72	12
mm.		39.9	74.9	150.1	115.1	-	23.6	38.1	44.0	-	-	32.7	



T - 10-24 UNC (1/2" - 1")
1/4-24 UNC (1 1/4" - 2")

M - .31 (1/2" - 2")

SPECIFICATION

Approved valve shall have three way two piece forged brass body, blowout proof stem, PTFE seats, maintenance free double o-ring stem seals, chrome plated ball, and L-port port design. Valves shall be pressure rated to 150 PSI @ 300ºF/400 WOG.

KITZ Code No. 54P (AKTNP) Threaded Ends
55P (CTNP) Soldered Ends

KITZ®

BRASS/BRONZE GAS BALL VALVES
ILLUSTRATED INDEX

NUMERICAL INDEX

175 WOG
Regular Port

Code # 60
Size 3/8" - 1"
(FIPS x FIPS)

175 WOG
Regular Port
Square Operating Nut

Code # 60SQ
Size 3/8" - 1"
(FIPS x FIPS)

175 WOG
Regular Port

Code # 60F
Size 1/2" x 3/8"
1/2" x 1/2"
3/4" x 5/8"
(FIPS x Flare)

175 WOG
Regular Port

Code # 60FF
Size 3/8" x 3/8"
1/2" x 1/2"
5/8" x 5/8"
(Flare x Flare)

175 WOG
Regular Port

Code # 60FO
Size 1/2" x 3/8"
1/2" x 1/2"
(Flare x MIPS)

200 WOG
K-PRESS Ends, Full Port

Code # 101XL
NSF 61, FM
Size 1/2" - 4"

Code # 101XLC
Size 2 1/2" - 4"

200 WOG
K-PRESS Ends, Full Port

Code # 801XL
NSF 61-G
Size 1/2" - 2"

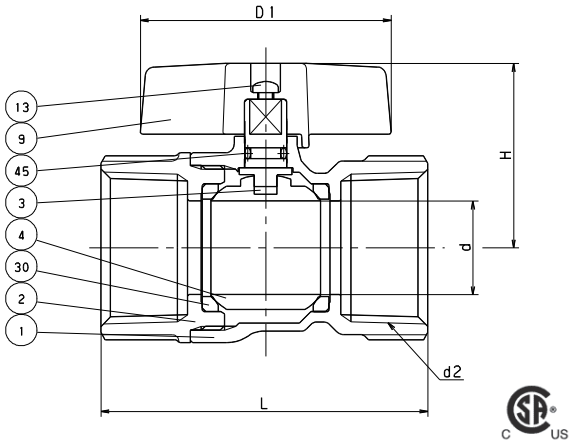
FORGED BRASS GAS BALL VALVE

WING HANDLE / SQUARE OPERATING NUT

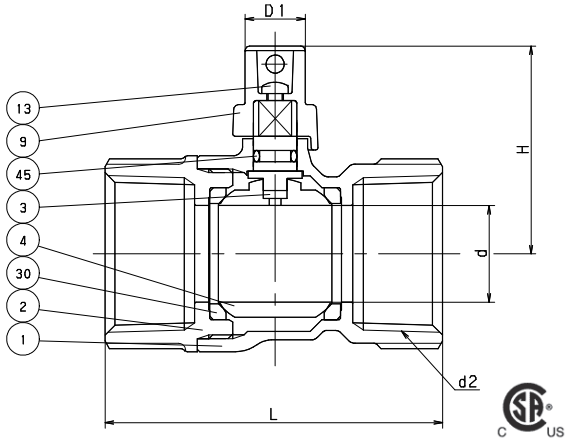
Two Piece Body • Regular Port

CSA

CODE # 60
FIPS x FIPS



CODE # 60SQ
FIPS x FIPS



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	KITZ
DESIGN	MSS SP-110

PRESSURE/TEMPERATURE
175 PSI - NON-SHOCK COLD WATER, OIL OR GAS
See Certification below.

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	BRASS ROD (B124, C37700)
4	BALL	(1) FORGED BRASS (B283, C37700)
9	HANDLE	ALUMINUM DIE-CAST (B85)
13	HANDLE BOLT	STAINLESS STEEL (A276 TYPE 304)
30	BALL SEATS	PTFE
45	O-RING	NBR

NOTES: (1) CR. PLATING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	APPROX. NET WT.	CARTON QTY
in.	3/8	0.39	1.19	1.77	1.81	26	96
mm.		9.9	30.2	44.0	45.0	11.8	
in.	1/2	0.49	1.23	1.77	2.2	26	72
mm.		12.4	31.2	44.0	55.9	11.8	
in.	3/4	0.57	1.45	2.17	2.39	32	60
mm.		14.5	36.8	55.1	60.7	14.5	
in.	1	0.77	1.59	2.17	2.82	39	48
mm.		19.6	40.4	55.1	71.6	17.7	

CERTIFICATIONS:

CSA (US/C) -40ºC~65ºC (-40ºF~149ºF)

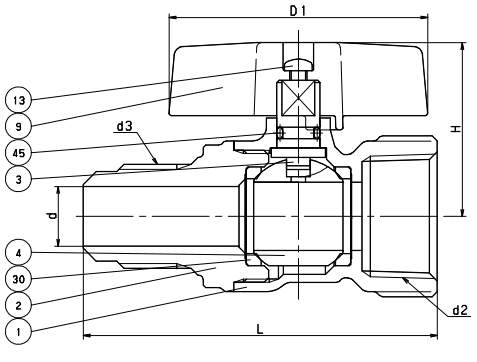
CGA 9.1b-2001/ANSI 21.15b-2006 - .5 PSI
CGA CR 91-002 - 2 PSI
ASME B16.44 - 5 PSI
CAN/CGA 3.16-M88 - 125 PSI
ASME B16.33-2002 - 125 PSI

FORGED BRASS GAS BALL VALVE

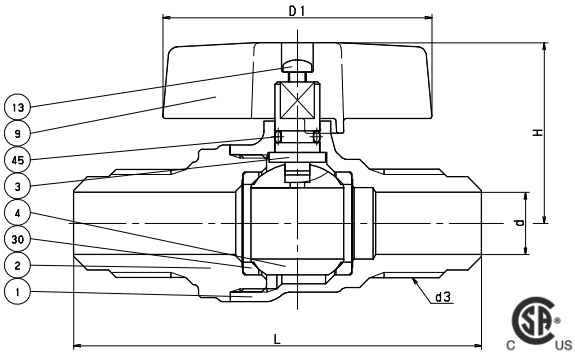
Two Piece Body • Regular Port

CSA

CODE # 60F
FIPS x FLARE



CODE # 60FF
FLARE x FLARE



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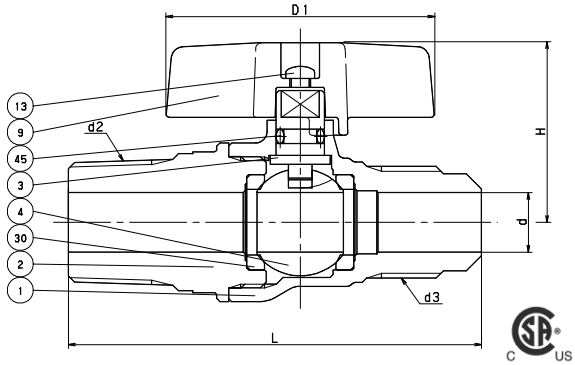
FLARE x MIPS



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1/SAE J512
WALL THICKNESS	KITZ
DESIGN	MSS SP-110

PRESSURE/TEMPERATURETANDARDS
175 PSI - NON-SHOCK COLD WATER, OIL OR GAS
See certification below.

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	FORGED BRASS (B283, C37700)
2	BODY CAP	FORGED BRASS (B283, C37700)
3	STEM	BRASS ROD (B124, C37700)
4	BALL	(1) FORGED BRASS (B283, C37700)
9	HANDLE	ALUMINUM DIE-CAST (B85)
13	HANDLE BOLT	STAINLESS STEEL (A276 TYPE 304)
30	BALL SEATS	PTFE
45	O-RING	NBR

NOTES: (1) CR. PLATING

#60F DIMENSIONS • WEIGHTS • QUANTITIES							
	d3/d2 SIZE	d	H	D1	L	APPROX. NET WT.	CARTON QTY
in.	3/8 x 1/2	0.28	1.19	1.77	2.46	26	96
mm.		7.1	30.2	44.0	62.5	11.8	
in.	1/2 x 1/2	0.39	1.19	1.77	2.57	26	72
mm.		9.9	30.2	44.0	65.3	11.8	
in.	5/8 x 3/4	0.5	1.45	2.17	2.96	36	60
mm.		12.7	36.8	55.1	75.2	16.4	

#60FF DIMENSIONS • WEIGHTS • QUANTITIES							
	d3 SIZE	d	H	D1	L	APPROX. NET WT.	CARTON QTY
in.	3/8 x 3/8	0.28	1.19	1.77	2.56	29	96
mm.		7.1	30.2	44.0	65.0	13.2	
in.	1/2 x 1/2	0.39	1.19	1.77	2.73	25	72
mm.		9.9	30.2	44.0	69.3	11.4	
in.	5/8 x 5/8	0.5	1.45	2.17	3.28	35	60
mm.		12.7	36.8	55.1	83.3	15.9	

#60FO DIMENSIONS • WEIGHTS • QUANTITIES							
	d3/d2 SIZE	d	H	D1	L	APPROX. NET WT.	CARTON QTY
in.	1/2 x 3/8	0.39	1.19	1.77	2.67	26	72
mm.		9.9	30.2	44.0	67.8	11.8	
in.	1/2 x 1/2	0.39	1.19	1.77	2.73	26	72
mm.		9.9	30.2	44.0	69.3	11.8	

CERTIFICATIONS:

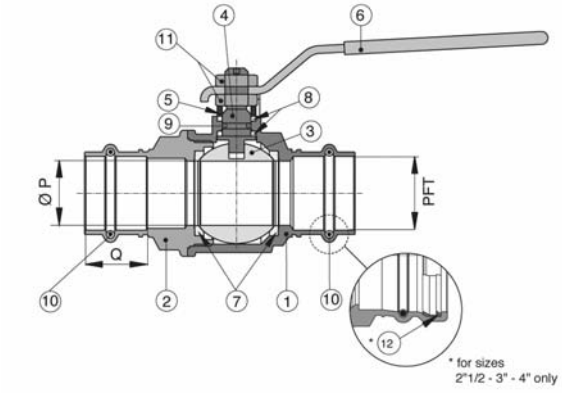
CSA (US/C) -0ºC~52ºC (-32ºF~125ºF)

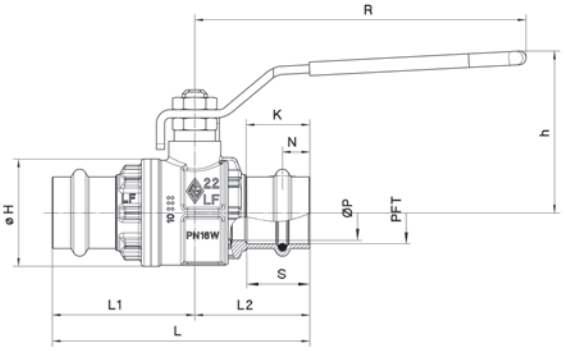
CGA 9.1b-2001/ANSI 21.15b-2006 - .5 PSI
CGA CR 91-002 - 2 PSI
ASME B16.44 - 5 PSI
CAN/CGA 3.16-M88 - 125 PSI
ASME B16.33-2002 - 125 PSI

K-PRESS, FORGED BRASS BALL VALVE
PRESS FIT

Two Piece Body • Full Port • Chrome Plated Ball • Blowout Proof Stem • PTFE Seats • Adjustable Stem Packing
NSF* • FM**

CODE # 101XL





VALVE FEATURES

Full port ball valve with PRESS connections from $^1/_2$" - 4", steel handle, yellow grip.

- 600 WOG† body rating with 200 WOG press fit rating.
- Temperature to 250ºF.
- Blow out proof stem, chrome plated brass ball.
- PTFE seats, seals and thrust washer.
- Recommended for service in the full open or full closed position.
- Adjustable stem packing.
- 100% tested in the open and closed position at 80 PSI.

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	BRASS CW 602N
2	END CONNECTION	BRASS CW 602N
3	BALL	BRASS CW 617N
4	STEM	BRASS CW 614N
5	PACKING GLAND	BRASS CW 614N
6	HANDLE	STEEL
7	BALL SEAT	PTFE
8	STEM SEAL/THRUST WASHER	PTFE
9	O-RING	NBR
10	O-RING	EPDM
11	NUT	STEEL CL 04
15	CIRCLIP ($2^1/_2$" - 4" ONLY)	STEEL S235JR

* UL certified to ANSI NSF 61-8
** FM Classification No. 1140 - 175 psig rated working pressure
† Valves shall not be used at pressures exceeding the press fit rating

CLASSIFIED UL WATER QUALITY — Acc. to NSF 61 Up to 2"

FM APPROVED — Up to 2"

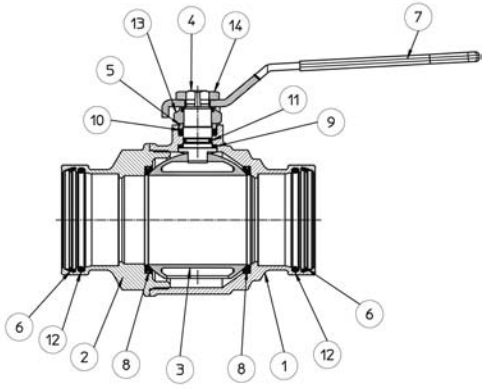
DIMENSIONS • WEIGHTS • QUANTITIES												
	PFT	ØP	Q	K	N	ØH	L	L1	L2	h	R	Lbs.
in.	1/2	0.59	0.71	0.67	0.31	1.30	3.13	1.71	1.42	1.89	3.86	0.49
mm.		15.0	18.0	17.0	7.9	33.0	79.5	43.4	36.1	48.0	98.0	
in.	3/4	0.79	0.91	0.83	0.39	1.54	3.66	2.05	1.61	2.28	4.80	0.82
mm.		20.1	23.1	21.1	9.9	39.1	93.0	52.1	40.9	57.9	121.9	
in.	1	0.98	0.94	0.83	0.39	1.93	4.13	2.32	1.81	2.44	4.80	1.25
mm.		24.9	23.9	21.1	9.9	49.0	1.4	58.9	46.0	62.0	121.9	
in.	1 1/4	1.26	1.02	0.83	0.39	2.32	4.41	2.44	1.97	3.07	6.02	1.98
mm.		32.0	25.9	21.1	9.9	58.9	112.0	62.0	50.0	78.0	152.9	
in.	1 1/2	1.57	1.42	1.02	0.49	2.87	5.63	2.91	2.72	3.35	6.02	3.4
mm.		39.9	36.1	25.9	12.4	72.9	143.0	73.9	69.1	85.1	152.9	
in.	2	1.95	1.57	1.20	0.59	3.39	6.52	3.41	3.11	3.80	6.38	4.5
mm.		49.5	39.9	30.5	15.0	86.1	165.6	86.6	79.0	96.5	162.1	
in.	2 1/2	2.40	2.17	1.54	1.08	4.37	8.33	4.43	3.90	5.08	8.07	10.87
mm.		61.0	55.1	39.1	27.4	111.0	211.6	112.5	99.1	129.0	205.0	
in.	3	2.87	2.17	1.54	1.08	5.35	9.07	4.82	4.25	5.51	8.07	15.56
mm.		72.9	55.1	39.1	27.4	135.9	230.4	122.4	108.0	140.0	205.0	
in.	4	3.82	2.56	1.54	1.08	6.54	10.63	5.51	5.12	6.30	10.24	24.54
mm.		97.0	65.0	39.1	27.4	166.1	270.0	140.0	130.0	160.0	260.1	

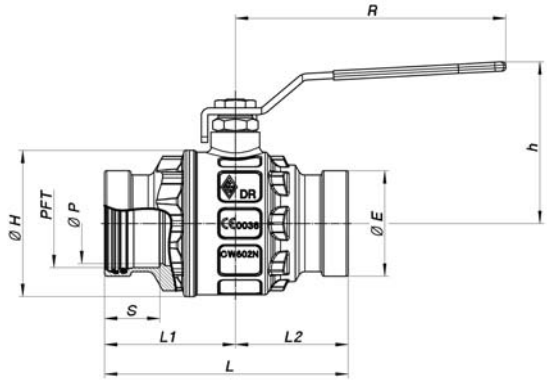
KITZ®

K-PRESS, FORGED BRASS BALL VALVE
PRESS FIT

Two Piece Body • Full Port • Chrome Plated Ball • Blowout Proof Stem
PTFE Seats • Adjustable Stem Packing

CODE # 101XLC





VALVE FEATURES
Full port ball valve with PRESS connections from 2", 1/2" - 4", steel handle, yellow grip.
• 300 WOG† body rating with 200 WOG press fit rating.
• Temperature to 250ºF.
• Blow out proof stem, chrome plated brass ball.
• PTFE seats, seals and thrust washer.
• Recommended for service in the full open or full closed position.
• Adjustable stem packing.
• 100% tested in the open and closed position at 80 PSI.

†Valves shall not be used at pressures exceeding the press fit rating

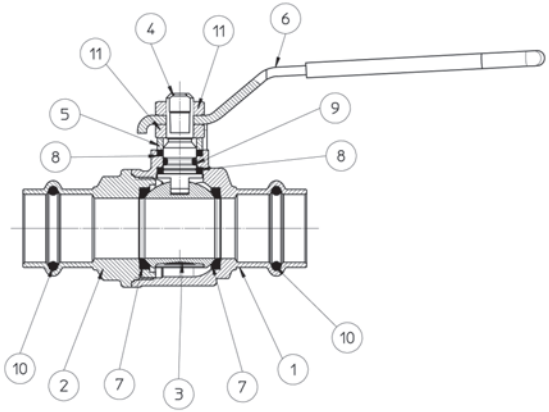
MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	BRASS CW 602N
2	END CONNECTION	BRASS CW 602N
3	BALL	BRASS CB 763-S
4	STEM	BRASS CW 614N
5	PACKING GLAND	BRASS CW 614N
6	COMPRESSION RING	STEEL
7	HANDLE	STEEL
8	BALL SEAT	PTFE
9	STEM SEAL/THRUST WASHER	PTFE
10	STEM SEAL	PTFE
11	O-RING	NBR
12	O-RING	EPDM
13	NUT	STEEL CL 04
14	NUT	STEEL CL 04

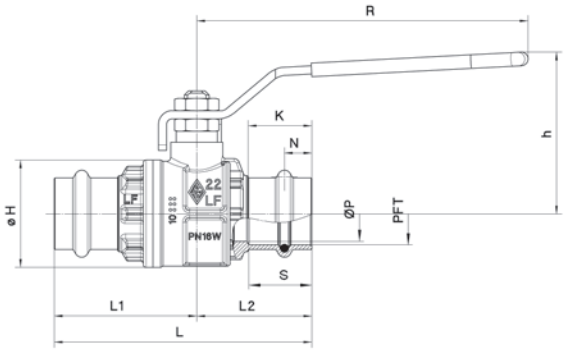
DIMENSIONS • WEIGHTS • QUANTITIES											
	PFT	ØP	S	ØH	ØE	L	L1	L2	h	R	Lbs.
in.	2 1/2	2.40	1.65	4.37	3.15	730.00	3.94	3.39	5.08	8.07	9.04
mm.		61.0	41.9	111.0	80.0	18542.0	100.1	86.1	129.0	205.0	
in.	3	2.87	1.91	5.35	3.66	8.60	4.63	4.00	5.51	8.07	14.55
mm.		72.9	48.5	135.9	93.0	218.4	117.6	101.6	140.0	205.0	
in.	4	3.82	2.42	6.54	4.69	10.26	5.30	4.98	6.30	10.24	22.49
mm.		97.0	61.5	166.1	119.1	260.6	1.4	126.5	160.0	260.1	

K-PRESS, LEAD FREE** BRASS BALL VALVE
PRESS FIT

Two Piece Body • Full Port • Chrome Plated Ball • Blowout Proof Stem • PTFE Seats • Adjustable Stem Packing
NSF*

CODE # 801XL





VALVE FEATURES
Full port ball valve with PRESS connections from 1/2" - 2", steel handle, yellow grip.
• 600 WOG† body rating with 200 WOG press fit rating.
• Temperature to 250ºF.
• Blow out proof stem, chrome plated brass ball.
• PTFE seats, seals and thrust washer.
• Recommended for service in the full open or full closed position.
• Adjustable stem packing.
• 100% tested in the open and closed position at 80 PSI.

† Valves shall not be used at pressures exceeding the press fit rating

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	BRASS CW 511L
2	END CONNECTION	BRASS CW 511L
3	BALL	BRASS CW 510L
4	STEM	BRASS CW 510L
5	PACKING GLAND	BRASS CW 614N
6	HANDLE	STEEL
7	BALL SEAT	PTFE
8	STEM SEAL/THRUST WASHER	PTFE
9	O-RING	NBR
10	O-RING	EPDM
11	NUT	STEEL CL 04

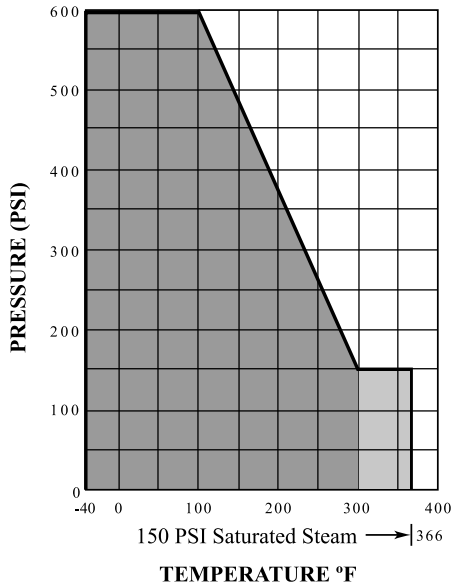
* UL certified to ANSI NSF 61-G
** Lead free refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content = 0.25%.
(Source: California Health & Safety Code (116875). Vermont Act 193)

CLASSIFIED UL WATER QUALITY
Acc. to NSF 61 Up to 2"

DIMENSIONS • WEIGHTS • QUANTITIES												
	PFT	ØP	Q	K	N	ØH	L	L1	L2	h	R	Lbs.
in.	1/2	0.59	0.71	0.67	0.31	1.30	3.13	1.71	1.42	1.89	3.86	0.49
mm.		15.0	18.0	17.0	7.9	33.0	79.5	43.4	36.1	48.0	98.0	
in.	3/4	0.79	0.91	0.83	0.39	1.54	3.66	2.05	1.61	2.28	4.80	0.82
mm.		20.1	23.1	21.1	9.9	39.1	93.0	52.1	40.9	57.9	121.9	
in.	1	0.98	0.94	0.83	0.39	1.93	4.13	2.32	1.81	2.44	4.80	1.25
mm.		24.9	23.9	21.1	9.9	49.0	1.4	58.9	46.0	62.0	121.9	
in.	1 1/4	1.26	1.02	0.83	0.39	2.32	4.41	2.44	1.97	3.07	6.02	1.98
mm.		32.0	25.9	21.1	9.9	58.9	112.0	62.0	50.0	78.0	152.9	
in.	1 1/2	1.57	1.42	1.02	0.49	2.87	5.63	2.91	2.72	3.35	6.02	3.4
mm.		39.9	36.1	25.9	12.4	72.9	143.0	73.9	69.1	85.1	152.9	
in.	2	1.95	1.57	1.20	0.59	3.39	6.52	3.41	3.11	3.80	6.38	4.5
mm.		49.5	39.9	30.5	15.0	86.1	165.6	86.6	79.0	96.5	162.1	

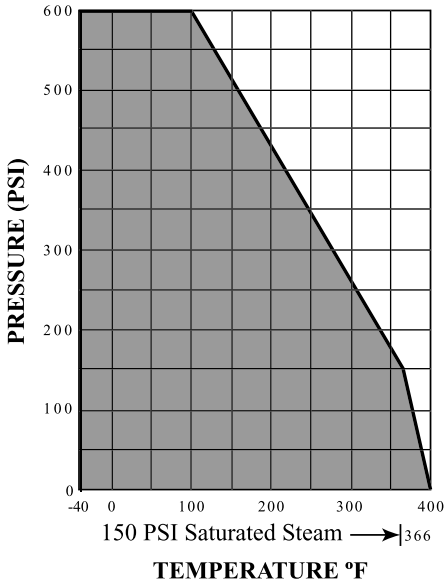
KITZ®

PRESSURE/TEMPERATURE CHART
BRASS/BRONZE BALL VALVES



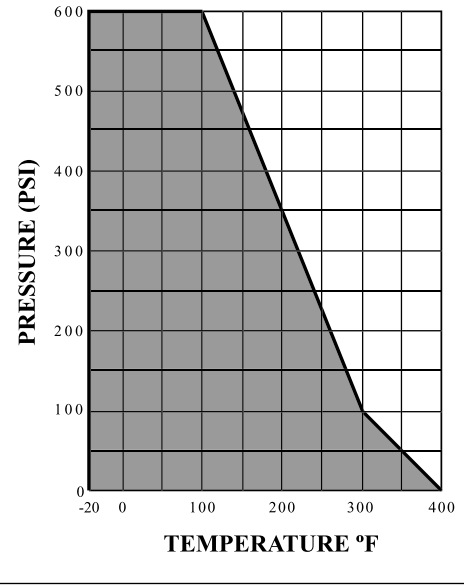
CODE #	WATER, OIL, GAS 600 PSI	MAX. TEMP 250 PSI	SATURATED STEAM
58/59, 58/59W	-40 ~ 100ºF	300ºF	366ºF
68ALL, 68AMLL	-40 ~ 100ºF	300ºF	-
69ALL, 69AMLL			

***ADVISORY NOTE:**
Please be advised that applications in the lightly shaded zone will reduce the service life of the valve.

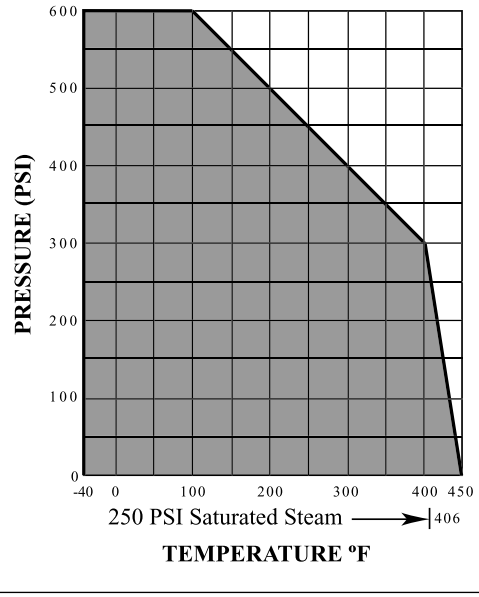


CODE #	WATER, OIL, GAS 600 PSI	MAX. TEMP. 150 PSI	SATURATED STEAM
51	-40 ~ 100ºF	300ºF	366ºF
62/63, 62M/63M	-40 ~ 100ºF	300ºF	366ºF
68/69, 68LL	-40 ~ 100ºF	300ºF	366ºF
68C/69C	-40 ~ 100ºF	300ºF	366ºF
68M, 69M	-40 ~ 100ºF	300ºF	366ºF
68P	-40 ~ 100ºF	300ºF	366ºF
68/69O	-40 ~ 100ºF	300ºF	366ºF
68/69AD	-40 ~ 100ºF	375 PSI/200ºF	-
68AB	-	375 PSI/100ºF	-
68/69U	0 ~ 100ºF	200 PSI/200ºF	-
68S	0 ~ 100ºF	200 PSI/200ºF	-

Max. Service Range



CODE #	WATER, OIL, GAS 600 PSI	MAX. TEMP. 100 PSI	SATURATED STEAM
54/55	-20 ~ 100ºF	300ºF	-
54P/55P	-20 ~ 100ºF	300ºF	-



CODE #	WATER, OIL, GAS 600 PSI	MAX. TEMP. 300 PSI	SATURATED STEAM
62M	-40 ~ 100ºF	400ºF	406ºF
68PM	-40 ~ 100ºF	400ºF	406ºF

CARBON STEEL BALL VALVE ILLUSTRATED INDEX

NUMERICAL INDEX

150 WSP/600 WOG
One Piece, Reduced Port
SS Trim

AKSCTK Code # 50
Size 1/4" - 2"
(Threaded)

2000/1500 WOG
One Piece, Reduced Port
SS Trim, API 607, NACE

AKSCTKZM-FSO
Code # 119-LOH
Size 1/4" - 1"
(Threaded)

AKSCTKZM-FS
Code # 119
Size 1 1/4" - 2"
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Mounting Pad, SS Trim

AKSCTAHM
Code # 49M
Size 1/4" - 2"
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Mounting Pad, SS Trim, NACE

AKSCTHZM-O
Code # 217-LOH
Size 1/4" - 1"
(Threaded)

AKSCTHZM
Code # 217
Size 1 1/4" - 2"
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
SS Trim, Mounting Pad
API 607, NACE

AKSCTHZM-FSO
Code # 219-LOH
Size 1/4" - 1"
(Threaded)

AKSCTHZM-FS
Code # 219
Size 1 1/4" - 2"
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
SS Trim, Mounting Pad
Seal Welded, NACE

AKSCTHWZM-O
Code # 237-LOH
Size 1/4" - 1"
(Threaded)

AKSCTHWZM
Code # 237
Size 1 1/4" - 2"
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
SS Trim, Mounting Pad
Seal Welded, API 607, NACE

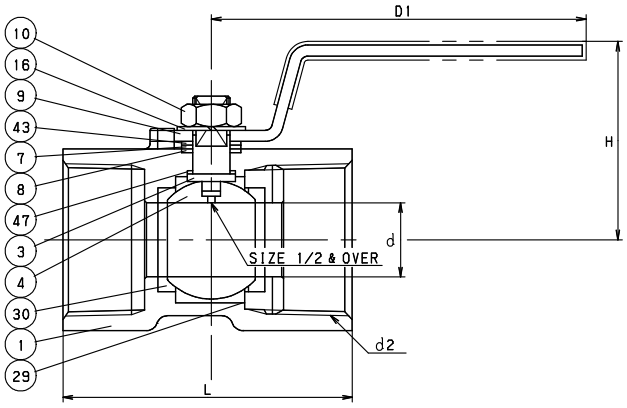
AKSCTHWZM-FSO
Code # 239-LOH
Size 1/4" - 1"
(Threaded)

AKSCTHWZM-FS
Code # 239
Size 1 1/4" - 2"
(Threaded)

CARBON STEEL BALL VALVE

One Piece Body • Reduced Port
G/F + PTFE Seats/Seals • Blowout Proof Stem
316 Stainless Steel Trim • Stainless Steel Lever Handle

CODE # 50 (AKSCTK)
THREADED



STANDARDS	
END TO END	KITZ
THREADED ENDS	ASME B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF 600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-44

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	(1) CAST STEEL (A216 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 316)
8	GLAND PACKING	G/F PTFE
9	HANDLE	(2) STAINLESS STEEL (A276 TYPE 430)
10	SELF LOCKING NUT	CARBON STEEL
16	SPRING WASHER	CARBON STEEL
29	INSERT	STAINLESS STEEL (A276 TYPE 316 or A351 Gr. CF8M)
30	BALL SEATS	G/F PTFE
43	SPRING	STAINLESS STEEL (A167 TYPE 304)
47	THRUST WASHER	REINFORCED PTFE

NOTES: (1) PHOSPHATING
(2) WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	APPROX. NET WT.	CARTON QTY
in.	1/4	0.18	1.22	2.36	1.535	22	120
mm.		4.5	30.0	60.0	39.0	10.0	
in.	3/8	0.268	1.417	2.76	1.732	26	120
mm.		6.8	36.0	70.0	44.0	11.8	
in.	1/2	0.362	1.614	3.35	2.224	51	120
mm.		9.2	41.0	85.0	56.5	23.2	
in.	3/4	0.492	1.732	3.35	2.323	61	96
mm.		12.5	44.0	85.0	59.0	27.7	
in.	1	0.63	1.89	3.94	2.80	54	54
mm.		16.0	48.0	100.0	71.0	24.5	
in.	1 1/4	0.787	2.126	3.94	3.07	52	32
mm.		20.0	54.0	100.0	78.0	23.6	
in.	1 1/2	0.965	2.56	4.92	3.268	47	24
mm.		24.5	65.0	125.0	83.0	21.4	
in.	2	1.26	2.835	4.921	3.937	52	16
mm.		32.0	72.0	125.0	100.0	23.6	

SPECIFICATION

Approved valve shall have one piece carbon steel body, blowout proof stem, R-PTFE seats/seals, stainless steel trim, stainless steel lever handle and reduced port design. Valves shall be pressure rated to 150 WSP/600 WOG.

KITZ Code No. 50 (AKSCTK) Threaded Ends

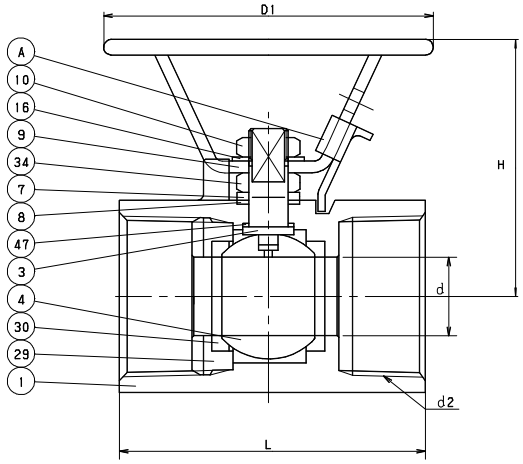
CARBON STEEL BALL VALVE

FIRE SAFE (API 607)

One Piece Body with Mounting Pad • 316 Stainless Steel Trim
Reduced Port • Blowout Proof Stem • NACE

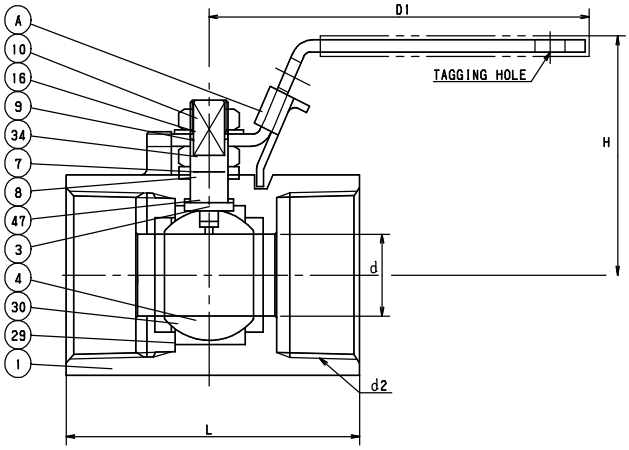
CODE # 119-LOH (AKSCTKZM-FSO)

LOCKING OVAL HANDLE (1/4" - 1")
THREADED



CODE # 119 (AKSCTKZM-FS)

LOCKING LEVER HANDLE (1 1/4" - 2")
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
BODY WALL THICKNESS	ASME B16.34, CLASS 600 (para 6.1)

PRESSURE/TEMPERATURE	
(1/4" - 1")	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4" - 2")	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-44

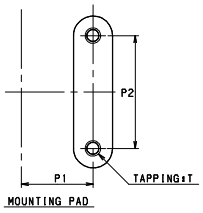
MATERIAL LIST

NO.	NAME OF PART		SPECIFICATION
1	BODY		CAST STEEL (A216 Gr. WCB)
3	STEM		STAINLESS STEEL (A276 TYPE 316)
4	BALL		STAINLESS STEEL (A276 TYPE 316)
7	GLAND		STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING		FLEXIBLE GRAPHITE
9	HANDLE	(1)	CARBON STEEL
10	NUT		STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/4", 3/8", 1" - 2")		STAINLESS STEEL (A276 TYPE 304)
29	INSERT		CAST STEEL (A216 Gr. WCB or CARBON STEEL (A105)
30	BALL SEATS		HYPATITE PTFE
34	NUT (1/2" - 2")		STAINLESS STEEL (A194 Gr. 8)
47	THRUST WASHER		G/F PTFE
A	LATCH LOCK (1/2" - 2")		STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	APPROX. NET WT.	CARTON QTY
in.	1/4	0.21	1.71	3.94	1.97	-	-	16	24
mm.		5.3	43.5	100.1	50.0	-	-	7.3	
in.	3/8	0.30	1.87	3.94	2.05	-	-	16	24
mm.		7.7	47.5	100.1	52.1	-	-	7.3	
in.	1/2	0.36	2.17	3.94	2.56	0.5	1.12	20	24
mm.		9.2	55.0	100.1	65.0	12.7	28.4	9.1	
in.	3/4	0.49	2.28	3.94	2.76	0.57	1.37	26	24
mm.		12.5	58.0	100.1	70.1	14.5	34.8	11.8	
in.	1	0.63	2.42	3.94	3.15	0.87	1.37	34	24
mm.		16.0	61.5	100.1	80.0	22.1	34.8	15.5	
in.	1 1/4	0.79	2.62	3.94	3.47	1	1.5	58	30
mm.		20.0	66.5	100.1	88.1	25.4	38.1	26.4	
in.	1 1/2	0.96	3.11	5.12	3.94	1	1.5	51	18
mm.		24.5	79.0	130.0	100.1	25.4	38.1	23.2	
in.	2	1.26	3.33	5.12	4.49	1	1.5	4	10
mm.		32.0	84.5	130.0	114.0	25.4	38.1	1.8	



T - 10-24 UNC (1/4" - 1")
1/4-24 UNC (1 1/4" - 2")

SPECIFICATION

Approved valve shall have one piece carbon steel body with mounting pad, blowout proof stem, PTFE seats/seals, stainless steel trim, and reduced port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4" - 1") *and 1500 WOG with locking lever handle* (1 1/4" - 2").

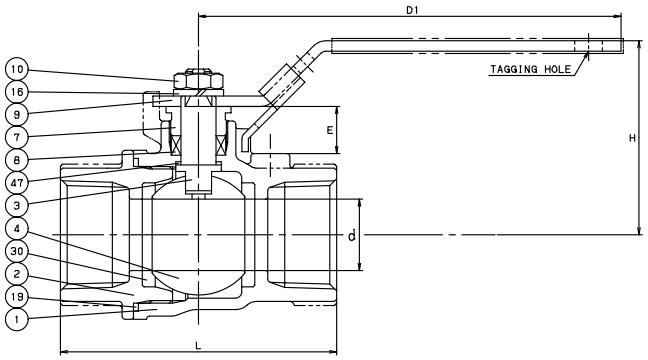
KITZ Code No. 119-LOH (AKSCTKZM-FSO)
119 (AKSCTKZM-FS)

KITZ®

CARBON STEEL BALL VALVE

Two Piece Body with Mounting Pad • 316 Stainless Steel Trim
Regular Port • Blowout Proof Stem • Locking Lever Handle

CODE # 49M (AKSCTAHM)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	KITZ

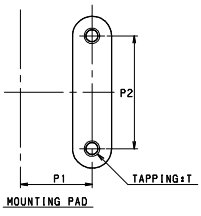
PRESSURE/TEMPERATURE
125 PSI - SATURATED STEAM TO 353ºF
2000 PSI (1/4" - 1") - NON-SHOCK COLD WATER, OIL OR GAS
1500 PSI (1 1/4" - 2") - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-44

MATERIAL LIST		
NO.	NAME OF PART	SPECIFICATION
1	BODY	(1) CAST STEEL (A276 Gr. WCB)
2	BODY CAP	(1) CAST STEEL (A276 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
	(2")	STAINLESS STEEL (A351 Gr. CF8M)
7	GLAND	STAINLESS STEEL (A276 TYPE304)
8	GLAND PACKING	PTFE
9	HANDLE	(2) CARBON STEEL
10	HANDLE NUT	(3) CARBON STEEL
16	WASHER	(3) CARBON STEEL
19	GASKET	PTFE
30	BALL SEAT	PTFE
47	THRUST WASHER	G/F PTFE

NOTES:
(1) PHOSPHATING
(2) ELECTROPLATED ZINC WITH PLASTIC COVERING
(3) ZN. PLATING
OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS • WEIGHTS • QUANTITIES										
	d2 SIZE	d	H	D1	L	P1	P2	E	APPROX. NET WT.	CARTON QTY
in.	1/4	0.374	1.89	3.94	2.05	0.50	1.12	0.57	16	24
mm.		9.5	48.0	100.1	52.1	12.7	28.4	14.5	7.3	
in.	3/8	0.37	1.89	3.94	2.047	0.50	1.12	0.57	16	24
mm.		9.5	48.0	100.0	52.0	12.7	28.4	14.5	7.3	
in.	1/2	0.492	1.93	3.937	2.244	0.50	1.12	0.57	20	24
mm.		12.5	49.0	100.0	57.0	12.7	28.4	14.5	9.1	
in.	3/4	0.689	2.21	5.12	2.992	0.87	1.37	0.57	26	24
mm.		17.5	56.0	130.0	76.0	22.1	34.8	14.5	11.8	
in.	1	0.866	2.323	5.12	3.346	0.87	1.37	0.57	34	24
mm.		21.9	59.0	130.0	84.0	22.1	34.8	14.5	15.5	
in.	1 1/4	0.984	2.60	5.91	4.016	0.93	1.5	0.59	58	30
mm.		25.0	66.0	150.0	102.0	23.6	38.1	14.0	26.4	
in.	1 1/2	1.26	2.8	5.91	4.37	0.93	1.5	0.59	51	18
mm.		32.0	71.0	150.0	110.0	23.6	38.1	14.0	23.2	
in.	2	1.575	3.386	7.87	5.51	0.93	1.5	0.59	51	10
mm.		40.0	86.0	200	139.0	23.6	38.1	14.0	23.2	



T - 10-24 UNC (1/4" - 1")
1/4-20 UNC (1 1/4" - 2")

SPECIFICATION

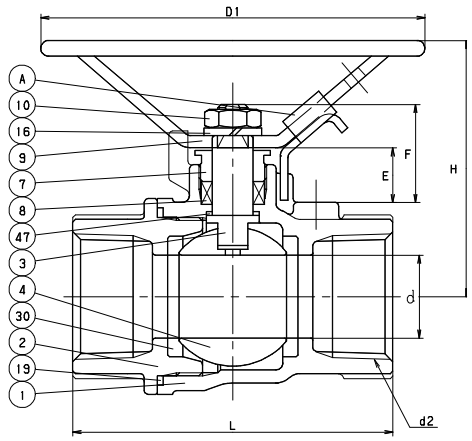
Approved valve shall have two piece carbon steel body, blowout proof stem, PTFE seats/seals, stainless steel trim, locking lever handle and regular port design. Valves shall be pressure rated to 2000 WOG (1/4" - 1") *and 1500 WOG* (1 1/4" - 2").

KITZ Code No.49M (AKSCTAHM) Threaded Ends

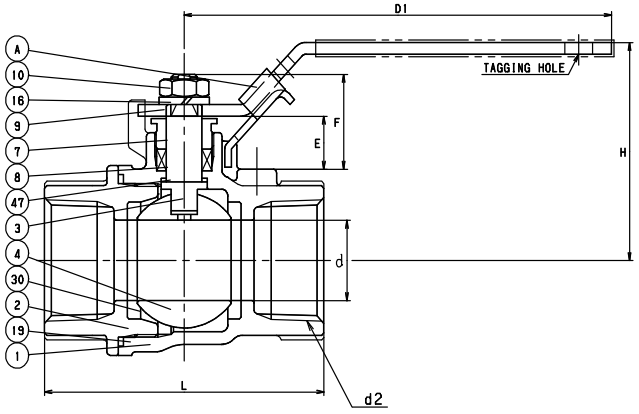
CARBON STEEL BALL VALVE

Two Piece Body with Mounting Pad • 316 Stainless Steel Trim
Regular Port • Blowout Proof Stem • NACE

CODE # 217-LOH (AKSCTHZM-O)
LOCKING OVAL HANDLE (1/4" - 1")
THREADED



CODE # 217 (AKSCTHZM)
LOCKING LEVER HANDLE (1 1/4" - 2")
THREADED



SPECIFICATION

Approved valve shall have two piece carbon steel body with mounting pad, blowout proof stem, hypatite PTFE seats/seals, stainless steel trim,and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4" - 1") and 1500 WOG with locking lever handle (1 1/4" - 2").

KITZ Code No. 217-LOH (AKSCTHZM-O)
217 (AKSCTHZM)

STANDARDS		
	END TO END	KITZ
	END CONNECTION	ANSI B1.20.1
	BODY WALL THICKNESS	ASME B16.34, CLASS 600 (para 6.1)

PRESSURE/TEMPERATURE	
(1/4" - 1")	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4" - 2")	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-44

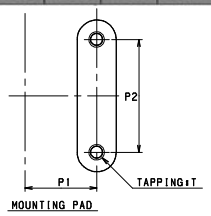
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST STEEL (A216 Gr. WCB)
2	BODY CAP	CAST STEEL (A216 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	PTFE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2" - 2")	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	PTFE
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CARTON QTY
in.	1/4	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	3/8	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	1/2	0.39	2.46	3.94	2.44	0.50	1.12	0.53	0.93	16	18
mm.		9.0	62.5	100.1	62.0	12.7	28.4	13.5	23.5	7.3	
in.	3/4	0.59	2.68	3.94	2.83	0.87	1.37	0.59	0.96	22	18
mm.		14.0	67.0	100.1	72.0	22.1	34.8	15.0	24.5	10.0	
in.	1	0.79	2.70	3.94	3.35	0.87	1.37	0.57	1.06	25	12
mm.		20.0	68.5	100.1	85.0	22.1	34.8	14.5	27.0	11.4	
in.	1 1/4	0.98	2.66	5.32	3.7	0.93	1.5	0.53	1.02	66	30
mm.		25.0	67.5	135.0	94.0	23.6	38.1	13.5	26.0	30.0	
in.	1 1/2	1.26	3.27	6.10	4.21	0.93	1.5	0.67	1.24	58	16
mm.		32.0	83.0	155.0	107.0	23.6	38.1	17.0	31.5	26.4	
in.	2	1.57	3.50	7.48	4.72	0.93	1.5	0.59	1.24	68	12
mm.		40	89.0	189.0	120.0	23.6	38.1	15.0	31.5	30.9	



T - 10-24 UNC (1/4" - 1")
1/4-20 UNC (1 1/4" - 2")

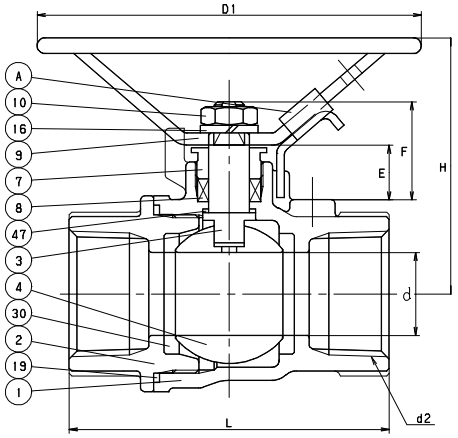
CARBON STEEL BALL VALVE

FIRE SAFE (API 607)

Two Piece Body with Mounting Pad • 316 Stainless Steel Trim
Regular Port • Blowout Proof Stem • NACE

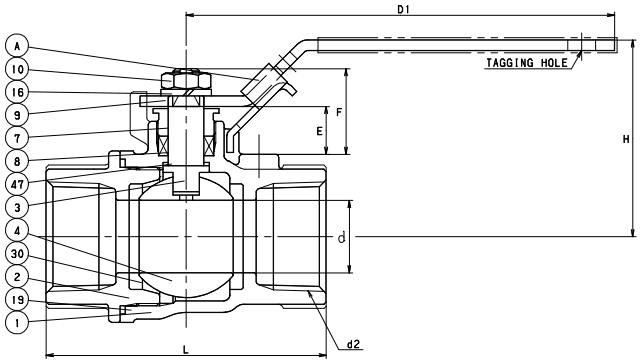
CODE # 219-LOH (AKSCTHZM-FSO)

LOCKING OVAL HANDLE (1/4" - 1")
THREADED



CODE # 219 (AKSCTHZM-FS)

LOCKING LEVER HANDLE (1 1/4" - 2")
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
BODY WALL THICKNESS	ASME B16.34, CLASS 600 (para 6.1)

PRESSURE/TEMPERATURE	
(1/4" - 1")	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4" - 2")	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-44

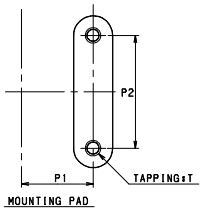
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST STEEL (A216 Gr. WCB)
2	BODY CAP	CAST STEEL (A216 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	FLEXIBLE GRAPHITE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	STAINLESS STEEL (A194 GR. 8)
16	WASHER (1/2" - 2")	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	FLEXIBLE GRAPHITE
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CARTON QTY
in.	1/4	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	3/8	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	1/2	0.39	2.46	3.94	2.44	0.50	1.12	0.53	0.93	16	18
mm.		9.0	62.5	100.1	62.0	12.7	28.4	13.5	23.5	7.3	
in.	3/4	0.59	2.68	3.94	2.83	0.87	1.37	0.59	0.96	22	18
mm.		14.0	67.0	100.1	72.0	22.1	34.8	15.0	24.5	10.0	
in.	1	0.79	2.70	3.94	3.35	0.87	1.37	0.57	1.06	25	12
mm.		20.0	68.5	100.1	85.0	22.1	34.8	14.5	27.0	11.4	
in.	1 1/4	0.98	2.66	5.32	3.7	0.93	1.5	0.53	1.02	66	30
mm.		25.0	67.5	135.0	94.0	23.6	38.1	13.5	26.0	30.0	
in.	1 1/2	1.26	3.27	6.10	4.21	0.93	1.5	0.67	1.24	58	16
mm.		32.0	83.0	155.0	107.0	23.6	38.1	17.0	31.5	26.4	
in.	2	1.57	3.50	7.48	4.72	0.93	1.5	0.59	1.24	68	12
mm.		40	89.0	189.0	120.0	23.6	38.1	15.0	31.5	30.9	



T - 10-24 UNC (1/4" - 1")
1/4-20 UNC (1 1/4" - 2")

SPECIFICATION

Approved valve shall have two piece carbon steel body with mounting pad, blowout proof stem, hypatite PTFE seats/seals, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4" - 1") and 1500 WOG with locking lever handle (1 1/4" - 2").

KITZ Code No. 219-LOH (AKSCTHZM-FSO)
219 (AKSCTHZM-FS)

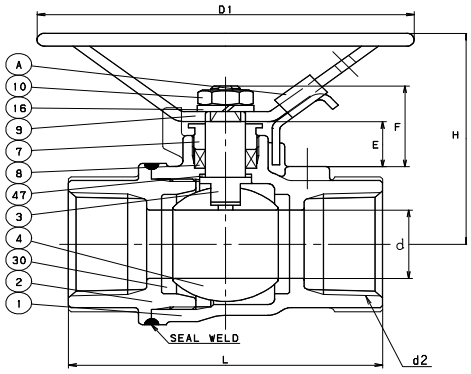
CARBON STEEL BALL VALVE

SEAL WELDED

Two Piece Body with Mounting Pad • 316 Stainless Steel Trim
Regular Port • Blowout Proof Stem • NACE

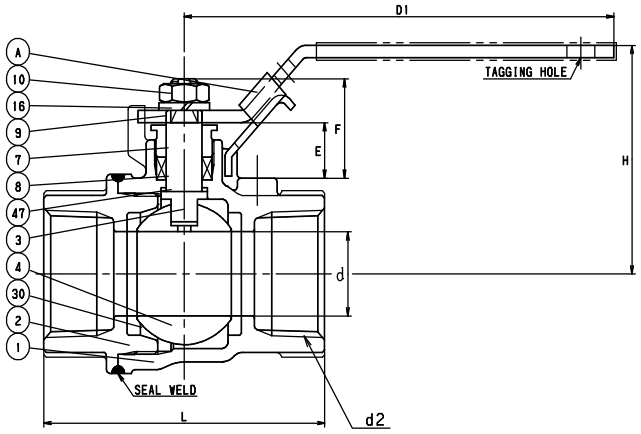
CODE # 237-LOH (AKSCTHWZM-O)

LOCKING OVAL HANDLE (1/4" - 1")
THREADED



CODE # 237 (AKSCTHWZM)

LOCKING LEVER HANDLE (1 1/4" - 2")
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
BODY WALL THICKNESS	ASME B16.34, CLASS 600 (para 6.1)

PRESSURE/TEMPERATURE	
(1/4" - 1")	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4" - 2")	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-44

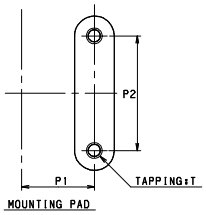
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST STEEL (A216 Gr. WCB)
2	BODY CAP	CAST STEEL (A216 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	PTFE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2" - 2")	STAINLESS STEEL (A276 TYPE 304)
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CARTON QTY
in.	1/4	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	3/8	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	1/2	0.39	2.46	3.94	2.44	0.50	1.12	0.53	0.93	16	18
mm.		9.0	62.5	100.1	62.0	12.7	28.4	13.5	23.5	7.3	
in.	3/4	0.59	2.68	3.94	2.83	0.87	1.37	0.59	0.96	22	18
mm.		14.0	67.0	100.1	72.0	22.1	34.8	15.0	24.5	10.0	
in.	1	0.79	2.70	3.94	3.35	0.87	1.37	0.57	1.06	25	12
mm.		20.0	68.5	100.1	85.0	22.1	34.8	14.5	27.0	11.4	
in.	1 1/4	0.98	2.66	5.32	3.7	0.93	1.5	0.53	1.02	66	30
mm.		25.0	67.5	135.0	94.0	23.6	38.1	13.5	26.0	30.0	
in.	1 1/2	1.26	3.27	6.10	4.21	0.93	1.5	0.67	1.24	58	16
mm.		32.0	83.0	155.0	107.0	23.6	38.1	17.0	31.5	26.4	
in.	2	1.57	3.50	7.48	4.72	0.93	1.5	0.59	1.24	68	12
mm.		40	89.0	189.0	120.0	23.6	38.1	15.0	31.5	30.9	



T - 10-24 UNC (1/4" - 1")
1/4-20 UNC (1 1/4" - 2")

SPECIFICATION

Approved valve shall have two piece seal welded carbon steel body, blowout proof stem, hypatite PTFE seats/seals, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4" - 1") and 1500 WOG with locking lever handle (1 1/4" - 2").

KITZ Code No. 237-LOH (AKSCTHWZM-O)
237 (AKSCTHWZM)

KITZ®

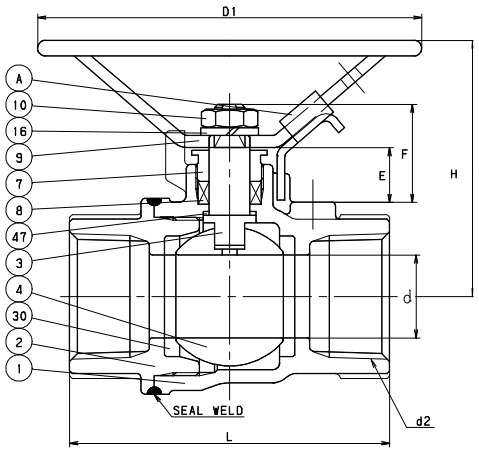
CARBON STEEL BALL VALVE

SEAL WELD/FIRE SAFE (API 607)

Two Piece Body with Mounting Pad • 316 Stainless Steel Trim
Regular Port • Blowout Proof Stem • NACE

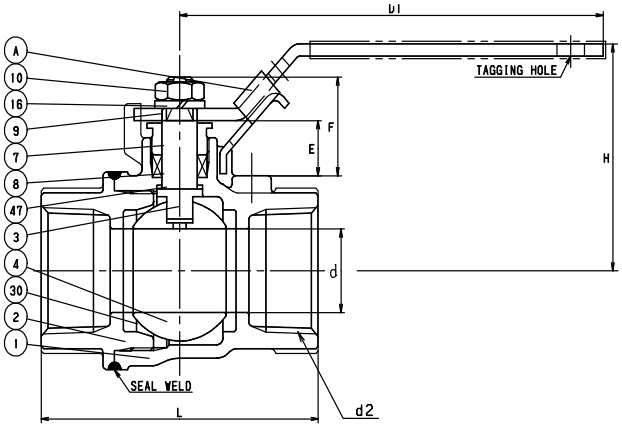
CODE # 239-LOH (AKSCTHWZM-FSO)

LOCKING OVAL HANDLE (1/4" - 1")
THREADED



CODE # 239 (AKSCTHWZM-FS)

LOCKING LEVER HANDLE (1 1/4" - 2")
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
BODY WALL THICKNESS	ASME B16.34, CLASS 600 (para 6.1)

PRESSURE/TEMPERATURE	
(1/4" - 1")	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4" - 2")	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-44

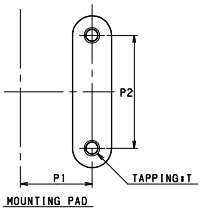
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST STEEL (A216 Gr. WCB)
2	BODY CAP	CAST STEEL (A216 Gr. WCB)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	PTFE
9	HANDLE	(1) CARBON STEEL
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2" - 2")	STAINLESS STEEL (A276 TYPE 304)
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) ELECTROPLATED ZINC WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CARTON QTY
in.	1/4	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	3/8	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	1/2	0.39	2.46	3.94	2.44	0.50	1.12	0.53	0.93	16	18
mm.		9.0	62.5	100.1	62.0	12.7	28.4	13.5	23.5	7.3	
in.	3/4	0.59	2.68	3.94	2.83	0.87	1.37	0.59	0.96	22	18
mm.		14.0	67.0	100.1	72.0	22.1	34.8	15.0	24.5	10.0	
in.	1	0.79	2.70	3.94	3.35	0.87	1.37	0.57	1.06	25	12
mm.		20.0	68.5	100.1	85.0	22.1	34.8	14.5	27.0	11.4	
in.	1 1/4	0.98	2.66	5.32	3.7	0.93	1.5	0.53	1.02	66	30
mm.		25.0	67.5	135.0	94.0	23.6	38.1	13.5	26.0	30.0	
in.	1 1/2	1.26	3.27	6.10	4.21	0.93	1.5	0.67	1.24	58	16
mm.		32.0	83.0	155.0	107.0	23.6	38.1	17.0	31.5	26.4	
in.	2	1.57	3.50	7.48	4.72	0.93	1.5	0.59	1.24	68	12
mm.		40	89.0	189.0	120.0	23.6	38.1	15.0	31.5	30.9	



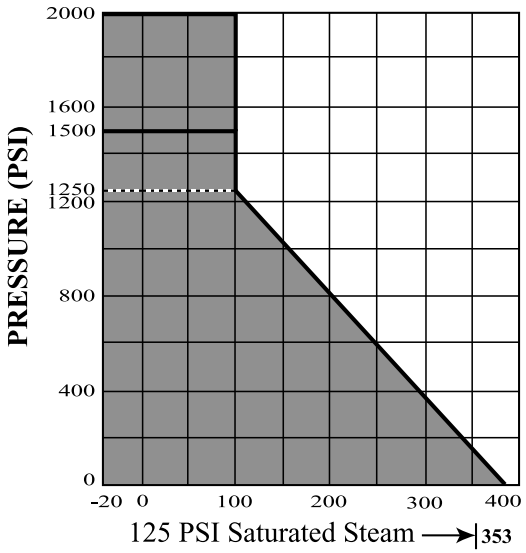
T - 10-24 UNC (1/4" - 1")
1/4-20 UNC (1 1/4" - 2")

SPECIFICATION

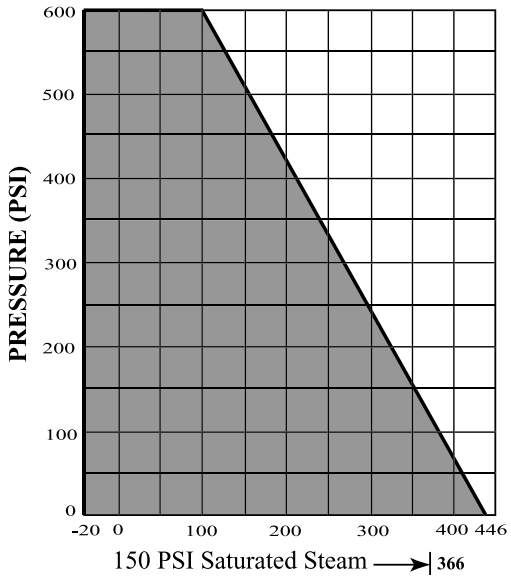
Approved valve shall have two piece seal welded carbon steel body with mounting pad, blowout proof stem, hypatite PTFE seats/seals, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4" - 1") and 1500 WOG with locking lever handle (1 1/4" - 2").

KITZ Code No. 239-LOH (AKSCTHWZM-FSO)
239 (AKSCTHWZM-FS)

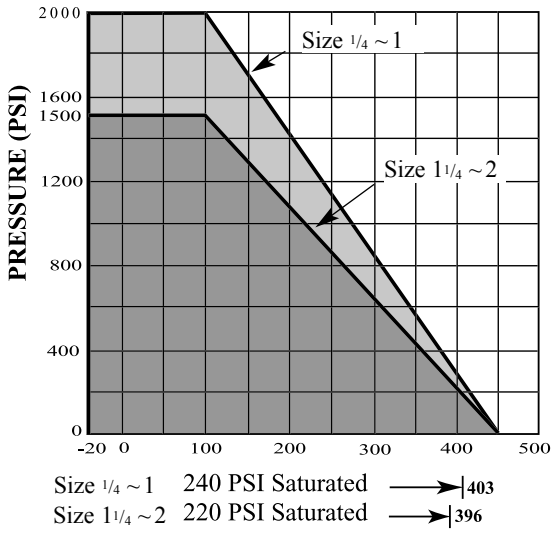
PRESSURE/TEMPERATURE CHART
CARBON STEEL BALL VALVES



CODE #	WATER, OIL, GAS 2000 PSI	MAX. TEMP 375 PSI	SATURATED STEAM
49M	-20 ~ 100ºF	300ºF	353ºF



CODE #	WATER, OIL, GAS 600 PSI	MAX. TEMP. 250 PSI	SATURATED STEAM
50	-20 ~ 100ºF	300ºF	366ºF



CODE #	WATER, OIL, GAS 2000 PSI	MAX. TEMP. 800 PSI	SATURATED STEAM
119, 217, 219, 237, 239			
Size 1/4 ~ 1	-20 ~ 100ºF	300ºF	403ºF
Size 1 1/4 ~ 2	**1500 PSI**	**650 PSI**	
	-20 ~ 100ºF	300ºF	396ºF

KITZ®
A PRODUCT OF TECHNOLOGY

STAINLESS STEEL BALL VALVE ILLUSTRATED INDEX

NUMERICAL INDEX

150 WSP/600 WOG
One Piece
Reduced Port

AKUTKM Code # 52
Size 1/4" - 2"
(Threaded)

2000/1500 WOG
One Piece, Reduced Port
Mounting Pad, API 607, NACE

AKUTKZM-FSO
Code # 129-LOH
Size 1/4" - 1"
(Threaded)

AKUTKZM-FS
Code # 129
Size 1 1/4" - 2"
(Threaded)

125 WSP/2000/1500 WOG
Two Piece, Regular Port
Mounting Pad

AKUTAHM
Code # 39
Size 1/4" - 2"
(Threaded)

125 WSP/1000 WOG
Two Piece, Full Port
Mounting Pad

AKUTFM Code # 53F
Size 1/4" - 2"
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Mounting Pad, NACE

AKUTHZM-O
Code # 227-LOH
Size 1/4" - 1"
(Threaded)

AKUTHZM
Code # 227
Size 1 1/4" - 2"
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Mounting Pad, API 607, NACE

AKUTHZM-FSO
Code # 229-LOH
Size 1/4" - 1"
(Threaded)

AKUTHZM-FS
Code # 229
Size 1 1/4" - 2"
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Seal Welded, Mounting Pad,
NACE

AKUTHWZM-O
Code # 247-LOH
Size 1/4" - 1"
(Threaded)

AKUTHWZM
Code # 247
Size 1 1/4" - 2"
(Threaded)

2000/1500 WOG
Two Piece, Regular Port
Seal Welded, Mounting Pad,
API 607, NACE

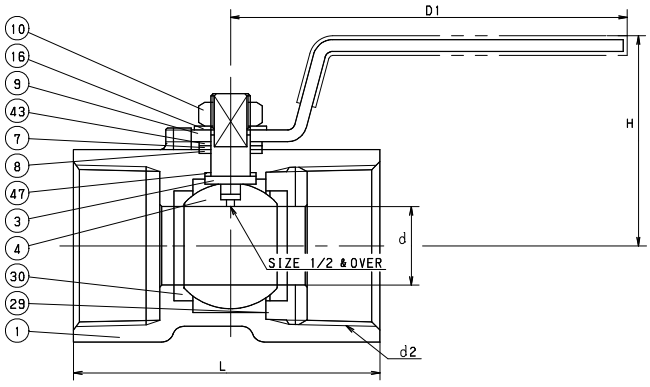
AKUTHWZM-FSO
Code # 249-LOH
Size 1/4" - 1"
(Threaded)

AKUTHWZM-FS
Code # 249
Size 1 1/4" - 2"
(Threaded)

STAINLESS STEEL BALL VALVE

One Piece Body • Reduced Port
G/F +PTFE Seats and Seals • Blowout Proof Stem
Stainless Steel Lever Handle

CODE # 52 (AKUTKM)
THREADED



STANDARDS	
END TO END	KITZ
THREADED ENDS	ASME B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
150 PSI - SATURATED STEAM TO 366ºF 600 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-54

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 316)
8	GLAND PACKING	G/F + PTFE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 430)
10	SELF LOCKING NUT	STAINLESS STEEL (A276 TYPE 304)
16	SPRING WASHER	STAINLESS STEEL (A276 TYPE 304)
29	INSERT	STAINLESS STEEL (A276 TYPE 316 or A351 Gr. CF8M)
30	BALL SEATS	G/F + PTFE
43	SPRING	STAINLESS STEEL (A167 TYPE 304)
47	THRUST WASHER	REINFORCED PTFE

NOTES: (1) WITH PLASTIC COVERING

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	APPROX. NET WT.	CARTON QTY
in.	1/4	0.18	1.22	2.36	1.535	22	120
mm.		4.5	30.0	60.0	39.0	10.0	
in.	3/8	0.268	1.417	2.76	1.732	26	120
mm.		6.8	36.0	70.0	44.0	11.8	
in.	1/2	0.362	1.614	3.35	2.224	51	120
mm.		9.2	41.0	85.0	56.5	23.2	
in.	3/4	0.492	1.732	3.35	2.323	61	96
mm.		12.5	44.0	85.0	59.0	27.7	
in.	1	0.63	1.89	3.94	2.80	54	54
mm.		16.0	48.0	100.0	71.0	24.5	
in.	1 1/4	0.787	2.126	3.94	3.07	52	32
mm.		20.0	54.0	100.0	78.0	23.6	
in.	1 1/2	0.965	2.56	4.92	3.268	47	24
mm.		24.5	65.0	125.0	83.0	21.4	
in.	2	1.26	2.835	4.921	3.937	52	16
mm.		32.0	72.0	125.0	100.0	23.6	

SPECIFICATION

Approved valve shall have one piece stainless steel body, blowout proof stem, G/F + PTFE seats/seals, stainless steel trim, stainless steel lever handle, and reduced port design. Valves shall be pressure rated to 150 WSP/600 WOG.

KITZ Code No. 52 (AKUTKM) Threaded Ends

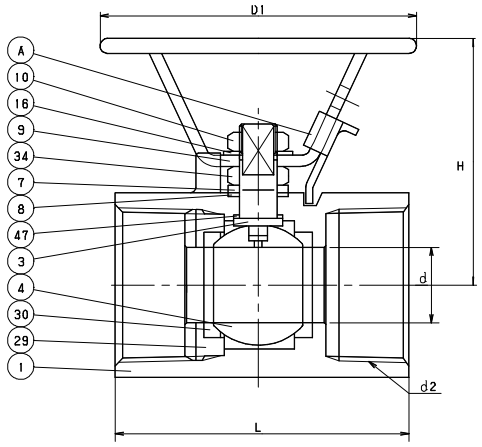
STAINLESS STEEL BALL VALVE

FIRE SAFE (API 607)

One Piece Body with Mounting Pad • Reduced Port
Blowout Proof Stem • NACE

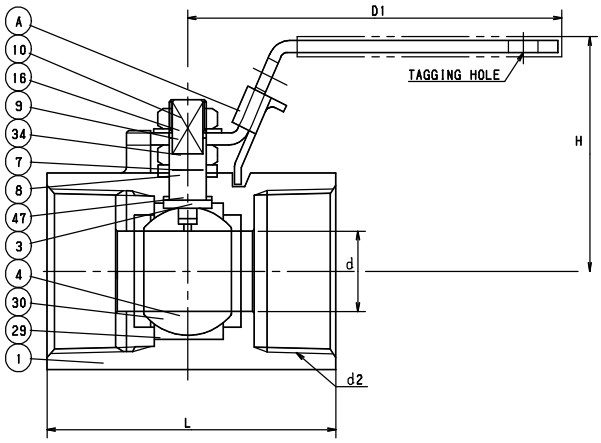
CODE # 129-LOH (AKUTKZM-FSO)

LOCKING OVAL HANDLE (1/4" - 1")
THREADED



CODE # 129 (AKUTKZM-FS)

LOCKING LEVER HANDLE (1 1/4" - 2")
THREADED



SPECIFICATION

Approved valve shall have one piece stainless steel body with mounting pad, blowout proof stem, PTFE seats, graphite packing, stainless steel trim, and reduced port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4" - 1") *and 1500 WOG with locking lever handle* (1 1/4" - 2") and fire safe certified to API 607.

KITZ Code No. 129-LOH (AKUTKZM-FSO)
129 (AKUTKZM-FS)

STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
BODY WALL THICKNESS	ASME B16.34, CLASS 600 (para 6.1)

PRESSURE/TEMPERATURE	
(1/4" - 1")	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4" - 2")	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

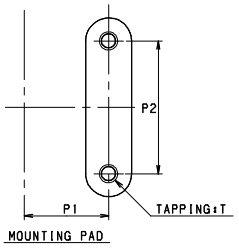
NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-54

NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	FLEXIBLE GRAPHITE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 304)
10	NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/4", 3/8", 1" - 2")	STAINLESS STEEL (A276 TYPE 304)
29	INSERT	STAINLESS STEEL (A351 Gr. CF8M)
30	BALL SEATS	HYPATITE PTFE
34	NUT	STAINLESS STEEL (A194 Gr. 8)
47	THRUST WASHER (1/2" - 2")	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE FOR ALL SIZES

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	APPROX. NET WT.	CARTON QTY
in.	1/4	0.21	1.71	3.94	1.97	-	-	16	24
mm.		5.3	43.4	100.1	50.0	-	-	7.3	
in.	3/8	0.3	1.87	3.94	2.05	-	-	16	24
mm.		7.6	47.5	100.1	52.1	-	-	7.3	
in.	1/2	0.36	2.17	3.94	2.56	0.5	1.12	20	24
mm.		9.1	55.1	100.1	65.0	12.7	28.4	9.1	
in.	3/4	0.49	2.28	3.94	2.76	0.57	1.37	26	24
mm.		12.4	57.9	100.1	70.1	14.5	34.8	11.8	
in.	1	0.63	2.42	3.94	3.15	0.87	1.37	34	24
mm.		16.0	61.5	100.1	80.0	22.1	34.8	15.5	
in.	1 1/4	0.79	2.62	3.94	3.47	1	1.5	58	30
mm.		20.1	66.5	100.1	88.1	25.4	38.1	26.4	
in.	1 1/2	0.96	3.11	5.12	3.94	1	1.5	51	18
mm.		24.4	78.0	130.0	100.1	25.4	38.1	23.2	
in.	2	1.26	3.33	5.12	4.49	1	1.5	4	10
mm.		32.0	84.6	130.0	114.0	25.4	38.1	1.8	

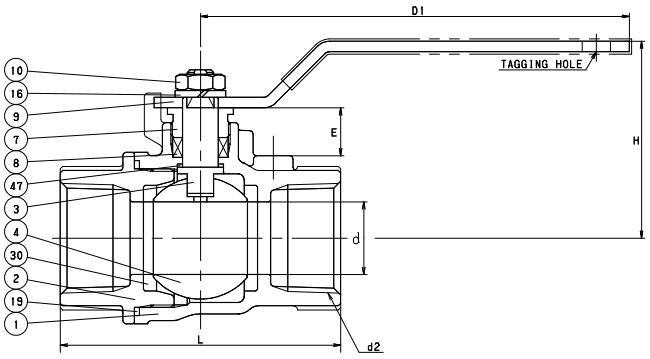


T - 10-24 UNC (1/2" - 1")
1/4-20 UNC (1 1/4" - 2")

STAINLESS STEEL BALL VALVE

Two Piece Body with Mounting Pad
Regular Port • Blowout Proof Stem • Locking Lever Handle

CODE # 39 (AKUTAHM)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE

125 PSI - SATURATED STEAM TO 353ºF
2000 PSI (1/4" - 1") - NON-SHOCK COLD WATER, OIL OR GAS
1500 PSI (1 1/4" - 2") - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-54

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
2	BODY CAP	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	(1) STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
	(2")	STAINLESS STEEL (A351 Gr. CF8M)
7	GLAND	STAINLESS STEEL (A276 TYPE 316)
8	GLAND PACKING	PTFE
9	HANDLE	(2) STAINLESS STEEL (A276 TYPE 430)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	PTFE
30	BALL SEATS	PTFE
47	THRUST WASHER	G/F + PTFE

NOTES: (1) CR. PLATING
(2) WITH PLASTIC COVERING
OVAL HANDLE OPTIONALLY AVAILABLE

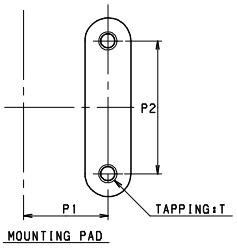
DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	E	APPROX. NET WT.	CARTON QTY
in.	1/4	0.374	1.89	3.94	2.05	0.50	1.12	0.57	16	24
mm.		9.5	48.0	100.1	52.1	12.7	28.4	14.5	7.3	
in.	3/8	0.37	1.89	3.94	2.047	0.50	1.12	0.57	16	24
mm.		9.5	48.0	100.0	52.0	12.7	28.4	14.5	7.3	
in.	1/2	0.492	1.93	3.937	2.244	0.50	1.12	0.57	20	24
mm.		12.5	49.0	100.0	57.0	12.7	28.4	14.5	9.1	
in.	3/4	0.689	2.21	5.12	2.992	0.87	1.37	0.57	26	24
mm.		17.5	56.0	130.0	76.0	22.1	34.8	14.5	11.8	
in.	1	0.866	2.323	5.12	3.346	0.87	1.37	0.57	34	24
mm.		21.9	59.0	130.0	84.0	22.1	34.8	14.5	15.5	
in.	1 1/4	0.984	2.60	5.91	4.016	0.93	1.5	0.59	58	30
mm.		25.0	66.0	150.0	102.0	23.6	38.1	14.0	26.4	
in.	1 1/2	1.26	2.8	5.91	4.37	0.93	1.5	0.59	51	18
mm.		32.0	71.0	150.0	110.0	23.6	38.1	14.0	23.2	
in.	2	1.575	3.386	7.87	5.51	0.93	1.5	0.59	51	10
mm.		40.0	86.0	200	139.0	23.6	38.1	14.0	23.2	

SPECIFICATION

Approved valve shall have two piece stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, stainless steel trim, locking lever handle and regular port design. Valves shall be pressure rated to 2000 WOG (1/4" - 1") and 1500 WOG (1 1/4" - 2").

KITZ Code No. 39 (AKUTAHM) Threaded Ends

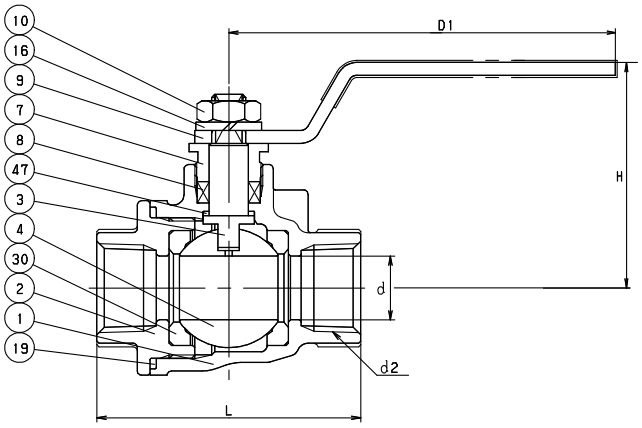


T - 10-24 UNC (1/4" - 1")
1/4-20 UNC (1 1/4" - 2")

STAINLESS STEEL BALL VALVE

Two Piece Body with Mounting Pad • Full Port
Blowout Proof Stem • Lever Handle

CODE # 53F (AKUTFM)
THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
WALL THICKNESS	KITZ

PRESSURE/TEMPERATURE
125 PSI - SATURATED STEAM TO 353ºF
1000 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-54

MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
2	BODY CAP	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	(1) STAINLESS STEEL (A276 TYPE 316)
4	BALL ($1/2$" - $1\,1/4$")	STAINLESS STEEL (A276 TYPE 316)
	($1\,1/2$" - 2")	(A351 Gr. CF8M or A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 316)
8	GLAND PACKING	PTFE
9	HANDLE	(2) STAINLESS STEEL (A276 TYPE 430)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	PTFE
30	BALL SEATS	PTFE
47	THRUST WASHER	G/F + PTFE

NOTES: (1) CR. PLATING
(2) WITH PLASTIC COVERING
OVAL HANDLE OPTIONALLY AVAILABLE

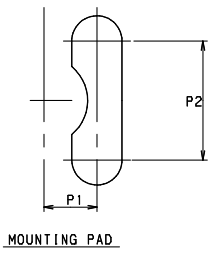
DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	APPROX. NET WT.	CARTON QTY
in.	1/2	0.59	2.09	3.94	2.44	0.50	1.12	7	8
mm.		14.0	53.1	100.1	61.0	12.7	28.4	3.2	
in.	3/4	0.79	2.28	5.12	2.87	0.87	1.37	11	8
mm.		20.1	57.9	130.0	72.9	22.1	34.8	5.0	
in.	1	0.98	2.44	5.12	3.35	0.87	1.37	12	6
mm.		24.9	61.0	130.0	85.1	22.1	34.8	5.5	
in.	1 1/4	1.26	2.83	5.91	3.86	0.93	1.5	16	6
mm.		32.0	71.9	3.9	0.9	1.5	38.1	7.3	
in.	1 1/2	1.57	3.07	5.91	4.25	0.93	1.5	9	2
mm.		39.9	77.0	150.1	107.0	23.6	38.1	4.1	
in.	2	1.97	3.7	7.87	4.88	0.93	1.5	15	2
mm.		50.0	93.0	199.9	123.0	23.6	38.1	6.8	

SPECIFICATION

Approved valve shall have two piece stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, stainless steel trim, and full port design. Valves shall be pressure rated to 125 WSP/1000 WOG.

KITZ Code No. 53F (AKUTFM) Threaded Ends



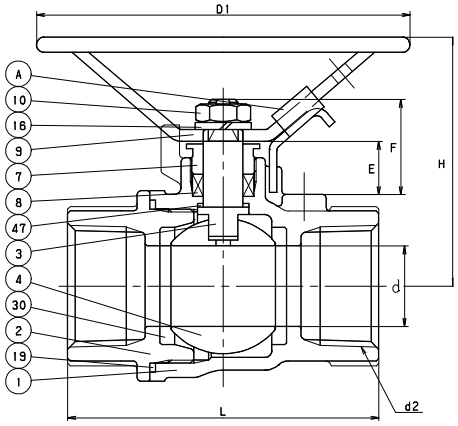
MOUNTING PAD

STAINLESS STEEL BALL VALVE

Two Piece Body with Mounting Pad • Regular Port
Blowout Proof Stem • NACE

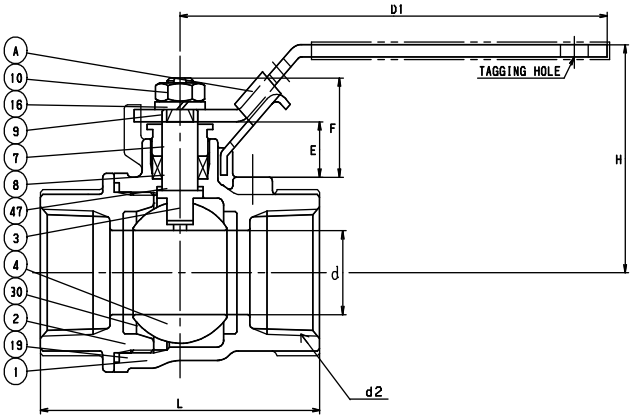
CODE # 227-LOH (AKUTHZM-O)

LOCKING OVAL HANDLE (1/4" - 1")
THREADED



CODE # 227 (AKUTHZM)

LOCKING LEVER HANDLE (1 1/4" - 2")
THREADED



SPECIFICATION

Approved valve shall have two piece stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4" - 1") and 1500 WOG with locking lever handle (1 1/4" - 2").

KITZ Code No. 227-LOH (AKUTHZM-O)
227 (AKUTHZM)

STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
BODY WALL THICKNESS	ASME B16.34, CLASS 600 (para 6.1)

PRESSURE/TEMPERATURE	
(1/4" - 1")	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4" - 2")	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-54

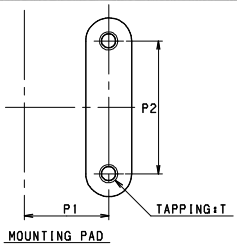
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
2	BODY CAP	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	PTFE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 304)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2" - 2")	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	PTFE
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CARTON QTY
in.	1/4	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	3/8	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	1/2	0.39	2.46	3.94	2.44	0.50	1.12	0.53	0.93	16	18
mm.		9.0	62.5	100.1	62.0	12.7	28.4	13.5	23.5	7.3	
in.	3/4	0.59	2.68	3.94	2.83	0.87	1.37	0.59	0.96	22	18
mm.		14.0	67.0	100.1	72.0	22.1	34.8	15.0	24.5	10.0	
in.	1	0.79	2.70	3.94	3.35	0.87	1.37	0.57	1.06	25	12
mm.		20.0	68.5	100.1	85.0	22.1	34.8	14.5	27.0	11.4	
in.	1 1/4	0.98	2.66	5.32	3.7	0.93	1.5	0.53	1.02	66	30
mm.		25.0	67.5	135.0	94.0	23.6	38.1	13.5	26.0	30.0	
in.	1 1/2	1.26	3.27	6.10	4.21	0.93	1.5	0.67	1.24	58	16
mm.		32.0	83.0	155.0	107.0	23.6	38.1	17.0	31.5	26.4	
in.	2	1.57	3.50	7.48	4.72	0.93	1.5	0.59	1.24	68	12
mm.		40	89.0	189.0	120.0	23.6	38.1	15.0	31.5	30.9	



T - 10-24 UNC (1/4" - 1")
1/4-20 UNC (1 1/4" - 2")

STAINLESS STEEL BALL VALVE

FIRE SAFE (API 607)

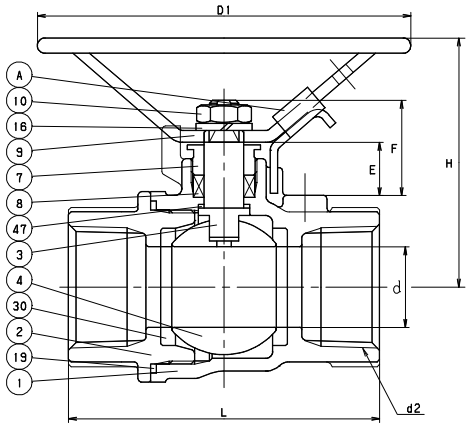
Two Piece Body with Mounting Pad

Regular Port • Blowout Proof Stem • NACE

CODE # 229-LOH (AKUTHZM-FSO)

LOCKING OVAL HANDLE (1/4" - 1")

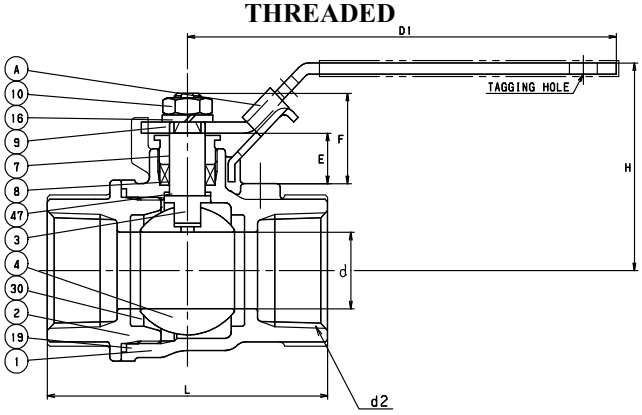
THREADED



CODE # 229 (AKUTHZM-FS)

LOCKING LEVER HANDLE (1 1/4" - 2")

THREADED



SPECIFICATION

Approved valve shall have two piece stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4" - 1") *and 1500 WOG with locking lever handle* (1 1/4" - 2") and fire safe certified to API 607.

KITZ Code No. 229-LOH (AKUTHZM-O)
229 (AKUTHZM)

STANDARDS	
END TO END	KITZ
END CONNECTION	ASME B1.20.1
BODY WALL THICKNESS	ASME B16.34, CLASS 600 (para 6.1)

PRESSURE/TEMPERATURE	
(1/4" - 1")	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4" - 2")	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-54

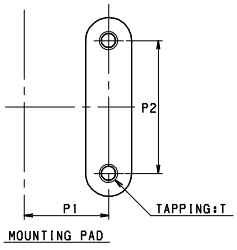
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
2	BODY CAP	STAINLESS STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	FLEXIBLE GRAPHITE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 304)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2" - 2")	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	FLEXIBLE GRAPHITE
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CARTON QTY
in.	1/4	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	3/8	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	1/2	0.39	2.46	3.94	2.44	0.50	1.12	0.53	0.93	16	18
mm.		9.0	62.5	100.1	62.0	12.7	28.4	13.5	23.5	7.3	
in.	3/4	0.59	2.68	3.94	2.83	0.87	1.37	0.59	0.96	22	18
mm.		14.0	67.0	100.1	72.0	22.1	34.8	15.0	24.5	10.0	
in.	1	0.79	2.70	3.94	3.35	0.87	1.37	0.57	1.06	25	12
mm.		20.0	68.5	100.1	85.0	22.1	34.8	14.5	27.0	11.4	
in.	1 1/4	0.98	2.66	5.32	3.7	0.93	1.5	0.53	1.02	66	30
mm.		25.0	67.5	135.0	94.0	23.6	38.1	13.5	26.0	30.0	
in.	1 1/2	1.26	3.27	6.10	4.21	0.93	1.5	0.67	1.24	58	16
mm.		32.0	83.0	155.0	107.0	23.6	38.1	17.0	31.5	26.4	
in.	2	1.57	3.50	7.48	4.72	0.93	1.5	0.59	1.24	68	12
mm.		40	89.0	189.0	120.0	23.6	38.1	15.0	31.5	30.9	



T - 10-24 UNC (1/4" - 1")
1/4-20 UNC (1 1/4" - 2")

STAINLESS STEEL BALL VALVE

SEAL WELDED

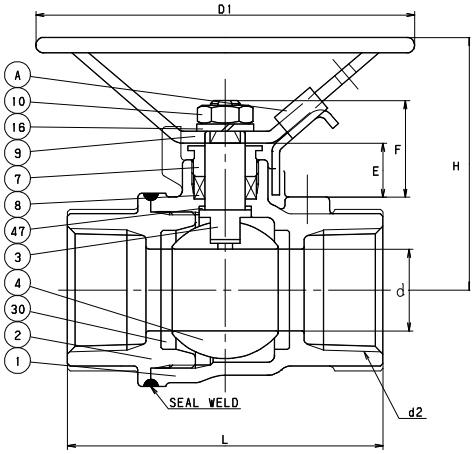
Two Piece Body with Mounting Pad

Regular Port • Blowout Proof Stem • NACE

CODE # 247-LOH (AKUTHWZM-O)

LOCKING OVAL HANDLE (1/4" - 1")

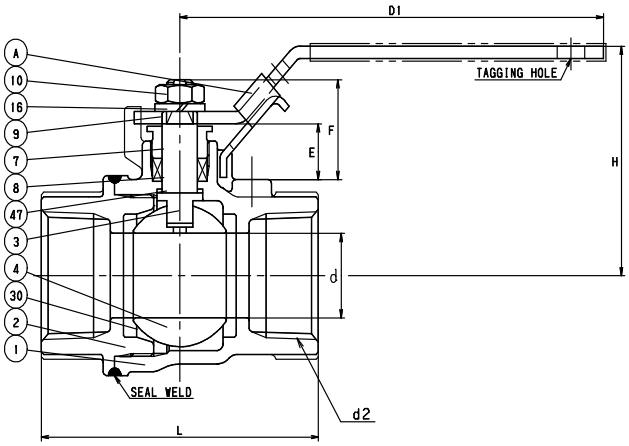
THREADED



CODE # 247 (AKUTHWZM)

LOCKING LEVER HANDLE (1 1/4" - 2")

THREADED



SPECIFICATION

Approved valve shall have two piece seal welded stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, graphite packing, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4" - 1") and 1500 WOG with locking lever handle (1 1/4" - 2").

KITZ Code No. 247-LOH (AKUTHWZM-O)
247 (AKUTHWZM)

STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
BODY WALL THICKNESS	ASME B16.34, CLASS 600 (para 6.1)

PRESSURE/TEMPERATURE	
(1/4" - 1")	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4" - 2")	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-54

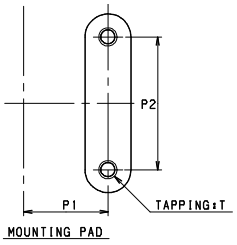
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST STEEL (A351 Gr. CF8M)
2	BODY CAP	CAST STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	FLEXIBLE GRAPHITE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 304)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2" - 2")	STAINLESS STEEL (A276 TYPE 304)
19	GASKET	PTFE
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) WITH PLASTIC COVERING
LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CARTON QTY
in.	1/4	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	3/8	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	1/2	0.39	2.46	3.94	2.44	0.50	1.12	0.53	0.93	16	18
mm.		9.0	62.5	100.1	62.0	12.7	28.4	13.5	23.5	7.3	
in.	3/4	0.59	2.68	3.94	2.83	0.87	1.37	0.59	0.96	22	18
mm.		14.0	67.0	100.1	72.0	22.1	34.8	15.0	24.5	10.0	
in.	1	0.79	2.70	3.94	3.35	0.87	1.37	0.57	1.06	25	12
mm.		20.0	68.5	100.1	85.0	22.1	34.8	14.5	27.0	11.4	
in.	1 1/4	0.98	2.66	5.32	3.7	0.93	1.5	0.53	1.02	66	30
mm.		25.0	67.5	135.0	94.0	23.6	38.1	13.5	26.0	30.0	
in.	1 1/2	1.26	3.27	6.10	4.21	0.93	1.5	0.67	1.24	58	16
mm.		32.0	83.0	155.0	107.0	23.6	38.1	17.0	31.5	26.4	
in.	2	1.57	3.50	7.48	4.72	0.93	1.5	0.59	1.24	68	12
mm.		40	89.0	189.0	120.0	23.6	38.1	15.0	31.5	30.9	



T - 10-24 UNC (1/4" - 1")
1/4-20 UNC (1 1/4" - 2")

KITZ®

STAINLESS STEEL BALL VALVE

SEAL WELD/FIRE SAFE (API 607)

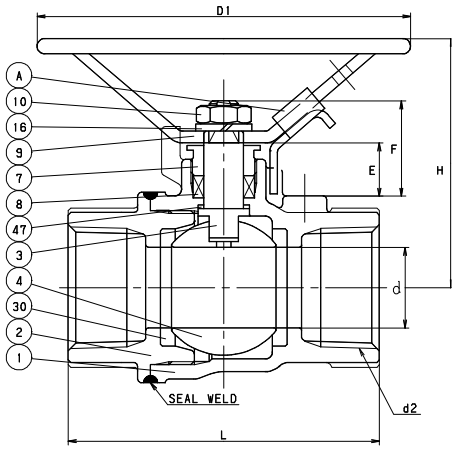
Two Piece Body with Mounting Pad • Regular Port

Blowout Proof Stem • NACE

CODE # 249-LOH (AKUTHWZM-FSO)

LOCKING OVAL HANDLE (1/4" - 1")

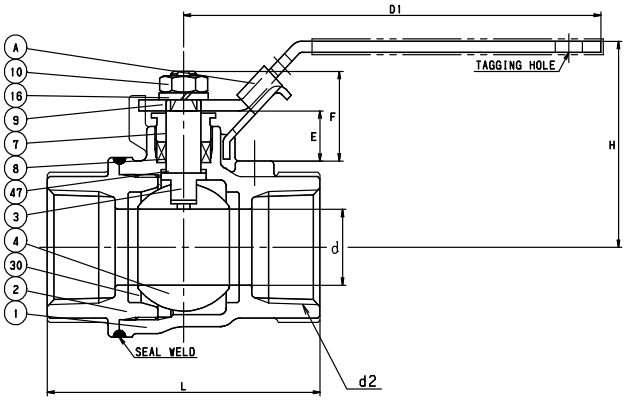
THREADED



CODE # 249 (AKUTHWZM-FS)

LOCKING LEVER HANDLE (1 1/4" - 2")

THREADED



STANDARDS	
END TO END	KITZ
END CONNECTION	ANSI B1.20.1
BODY WALL THICKNESS	ASME B16.34, CLASS 600 (para 6.1)

PRESSURE/TEMPERATURE	
(1/4" - 1")	240 PSI - SATURATED STEAM TO 403ºF 2000 PSI - NON-SHOCK COLD WATER, OIL OR GAS
(1 1/4" - 2")	220 PSI - SATURATED STEAM TO 395ºF 1500 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-54

MATERIAL LIST

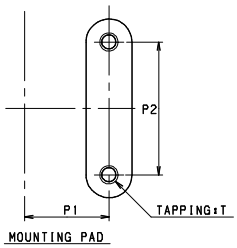
NO.	NAME OF PART	SPECIFICATION
1	BODY	STAINLESS STEEL (A351 Gr. CF8M)
2	BODY CAP	CAST STEEL (A351 Gr. CF8M)
3	STEM	STAINLESS STEEL (A276 TYPE 316)
4	BALL	STAINLESS STEEL (A276 TYPE 316)
7	GLAND	STAINLESS STEEL (A276 TYPE 304)
8	GLAND PACKING	FLEXIBLE GRAPHITE
9	HANDLE	(1) STAINLESS STEEL (A276 TYPE 304)
10	HANDLE NUT	STAINLESS STEEL (A194 Gr. 8)
16	WASHER (1/2" - 2")	STAINLESS STEEL (A276 TYPE 304)
30	BALL SEATS	HYPATITE PTFE
47	THRUST WASHER	G/F PTFE
A	LATCH LOCK	STAINLESS STEEL (A276 TYPE 304)

NOTES: (1) WITH PLASTIC COVERING

LEVER AND OVAL HANDLE OPTIONALLY AVAILABLE

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	P1	P2	E	F	APPROX. NET WT.	CARTON QTY
in.	1/4	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	3/8	0.37	2.42	3.94	2.09	0.50	1.12	0.57	0.93	17	24
mm.		9.5	61.5	100.1	53.0	12.7	28.4	14.5	23.5	7.7	
in.	1/2	0.39	2.46	3.94	2.44	0.50	1.12	0.53	0.93	16	18
mm.		9.0	62.5	100.1	62.0	12.7	28.4	13.5	23.5	7.3	
in.	3/4	0.59	2.68	3.94	2.83	0.87	1.37	0.59	0.96	22	18
mm.		14.0	67.0	100.1	72.0	22.1	34.8	15.0	24.5	10.0	
in.	1	0.79	2.70	3.94	3.35	0.87	1.37	0.57	1.06	25	12
mm.		20.0	68.5	100.1	85.0	22.1	34.8	14.5	27.0	11.4	
in.	1 1/4	0.98	2.66	5.32	3.7	0.93	1.5	0.53	1.02	66	30
mm.		25.0	67.5	135.0	94.0	23.6	38.1	13.5	26.0	30.0	
in.	1 1/2	1.26	3.27	6.10	4.21	0.93	1.5	0.67	1.24	58	16
mm.		32.0	83.0	155.0	107.0	23.6	38.1	17.0	31.5	26.4	
in.	2	1.57	3.50	7.48	4.72	0.93	1.5	0.59	1.24	68	12
mm.		40	89.0	189.0	120.0	23.6	38.1	15.0	31.5	30.9	



T - 10-24 UNC (1/4" - 1")

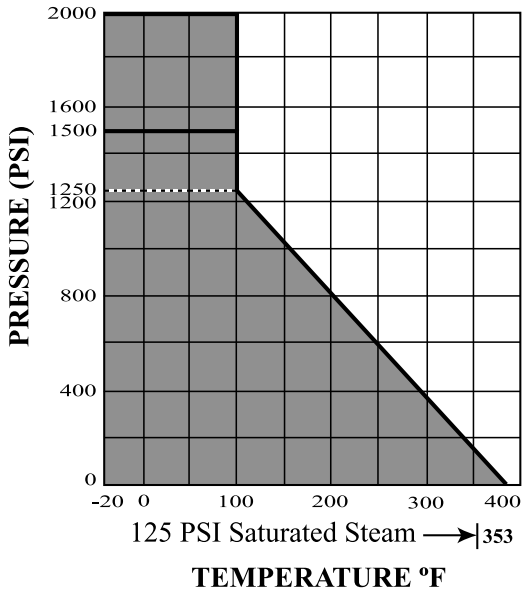
1/4-20 UNC (1 1/4" - 2")

SPECIFICATION

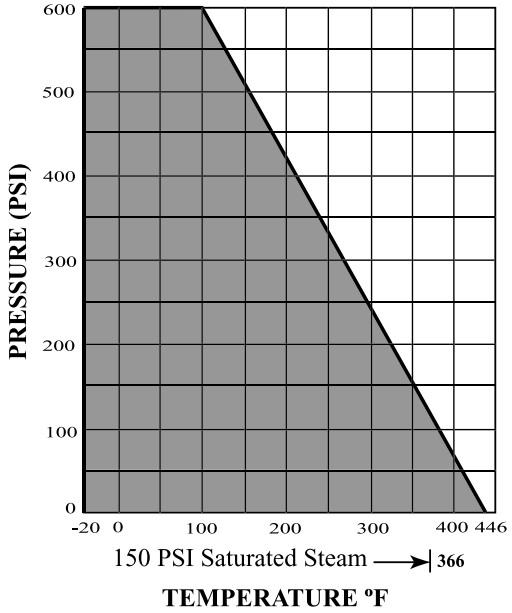
Approved valve shall have two piece seal welded stainless steel body with mounting pad, blowout proof stem, PTFE seats/seals, graphite packing, stainless steel trim, and regular port design. Valves shall be pressure rated to 2000 WOG with locking oval handle (1/4" - 1") and 1500 WOG with locking lever handle (1 1/4" - 2") and fire safe certified to API 607.

KITZ Code No. 249-LOH (AKUTHWZM-O)
249 (AKUTHWZM)

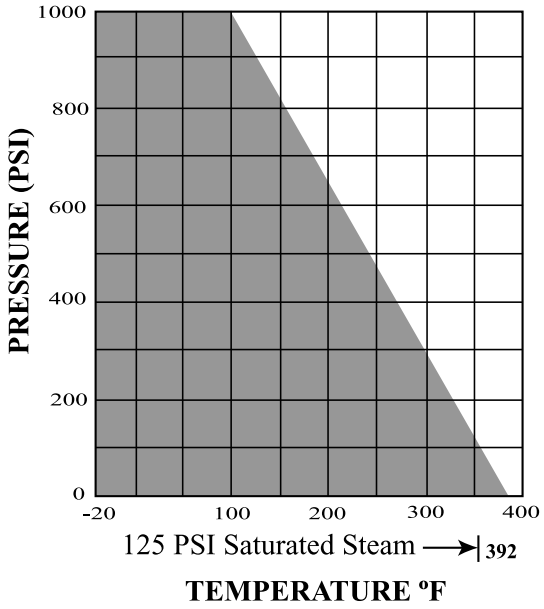
PRESSURE/TEMPERATURE CHART
STAINLESS STEEL BALL VALVES



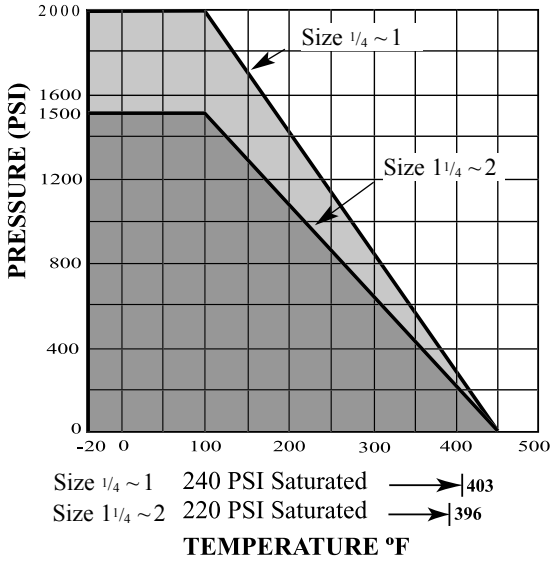
CODE #	WATER, OIL, GAS 2000 PSI	MAX. TEMP 375 PSI	SATURATED STEAM
39	-20 ~ 100ºF	300ºF	353ºF



CODE #	WATER, OIL, GAS 600 PSI	MAX. TEMP. 250 PSI	SATURATED STEAM
52	-20 ~ 100ºF	300ºF	366ºF



CODE #	WATER, OIL, GAS 1000 PSI	MAX. TEMP 150 PSI	SATURATED STEAM
53F	-20 ~ 100ºF	350ºF	353ºF



CODE #	WATER, OIL, GAS 2000 PSI	MAX. TEMP. 800 PSI	SATURATED STEAM
129, 227, 229, 247, 249			
Size 1/4 ~ 1	-20 ~ 100ºF	300ºF	403ºF
Size 1 1/4 ~ 2	**1500 PSI**	**650 PSI**	
	-20~100ºF	300ºF	396ºF

CAST IRON BALL VALVE ILLUSTRATED INDEX

NUMERICAL INDEX

125 WSP/200 WOG
Two Piece
Full Port

125FCTB Code # 90
Size 2" - 8"
(Flat Face Flanged)

125 WSP/200 WOG
Two Piece
Regular Port

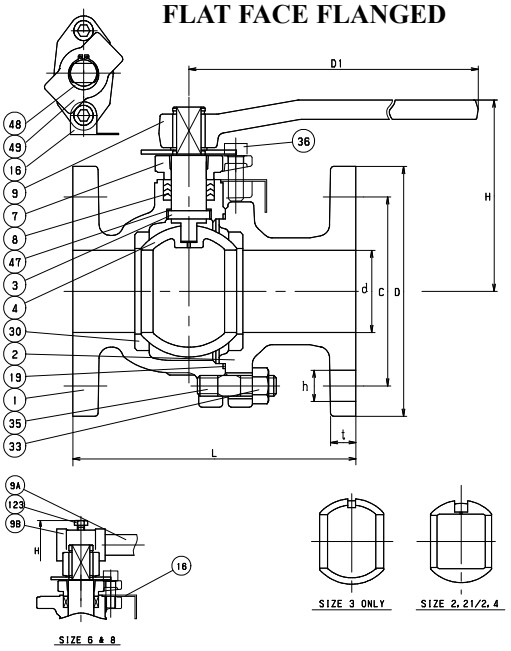
125FCTR Code # 91
Size 6" - 10"
(Flat Face Flanged)

CAST IRON BALL VALVE

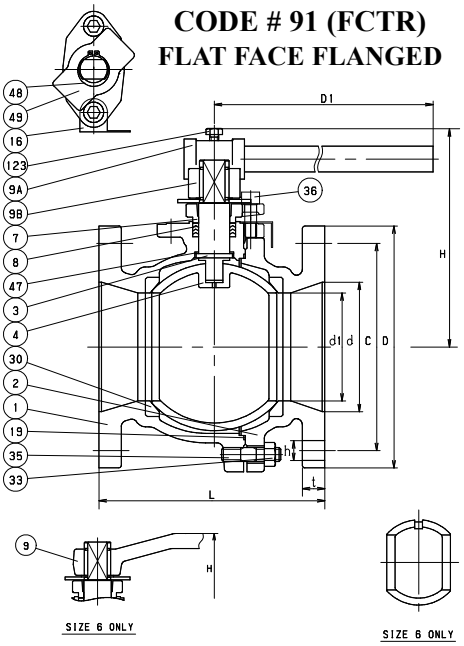
CLASS 125

Two Piece Body • Blowout Proof Stem
Full Port (#90) / Regular Port (#91)

CODE # 90 (FCTB)
FLAT FACE FLANGED



CODE # 91 (FCTR)
FLAT FACE FLANGED



SPECIFICATION

Approved valve shall have Class 125 WSP/200 WOG cast iron body, CF8 stainless steel trim, blowout proof stem, PTFE seats and seals with flat face flanged ends and conforming to MSS SP-72, ASME B16.1, ASME B16.10.

KITZ Code # 90 (125FCTB) Full Port
KITZ Code # 91 (125FCTR) Standard Port

STANDARDS	
END TO END	ASME B16.10 CLASS 125/150
END CONNECTION	ASME B16.1 CLASS 125
WALL THICKNESS	KITZ
CONFORMS TO MSS SP72	

PRESSURE/TEMPERATURE
125 PSI - SATURATED STEAM TO 353ºF 200 PSI - NON-SHOCK COLD WATER, OIL OR GAS

NOTE: PRESSURE/TEMPERATURE CHART - PAGE BV-57

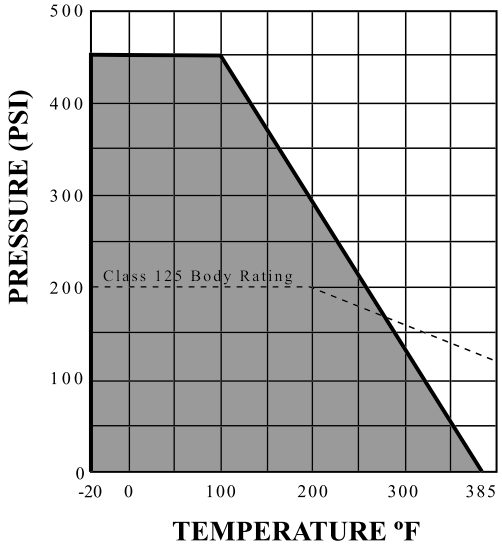
MATERIAL LIST

NO.	NAME OF PART	SPECIFICATION
1	BODY	CAST IRON (A126 Cl. B)
2	BODY CAPS	CAST IRON (A126 Cl. B)
3	STEM	STAINLESS STEEL (A276 TYPE 304)
4	BALL	STAINLESS STEEL (A276, TYPE 304 or A351 Gr. CF8)
7	GLAND	DUCTILE IRON
8	GLAND PACKING (1 SET)	PTFE
9	HANDLE	DUCTILE IRON
9A	HANDLE BAR	CARBON STEEL (6" - 10")
9B	HANDLE HEAD	DUCTILE IRON (6" - 10")
16A	NAME PLATE	ALUMINUM
16B	WASHER	CARBON STEEL
19	GASKET	PTFE
30	BALL SEATS	PTFE
33	CAP NUT (1 SET)	CARBON STEEL
35	CAP BOLT (1 SET)	CARBON STEEL
36	GLAND BOLT (1 SET)	CARBON STEEL
47	THRUST WASHER	G/F + PTFE
48	SNAP RING	CARBON STEEL
49	STOPPER	STAINLESS STEEL
123	HANDLE BOLT	CARBON STEEL (6" - 10")

DIMENSIONS • WEIGHTS • QUANTITIES

	d2 SIZE	d	H	D1	L	APPROX. NET WT.	CARTON QTY
#90 FULL PORT							
in.	2	1.97	4.72	9.06	7.01	22	1
mm.		50	120	230	178	10.0	
in.	2 1/2	2.56	6.10	15.75	7.47	37	1
mm.		65	155	400	190	16.8	
in.	3	3.15	6.50	15.75	7.99	46	1
mm.		80	165	400	203	20.9	
in.	4	3.94	7.87	18.11	9.02	70	1
mm.		100	200	460	229	31.8	
in.	6	5.91	11.61	39.37	15.51	174	1
mm.		150	295	1000	394	79.1	
in.	8	7.87	13.98	59.06	17.99	244	1
mm.		200	355	1500	457	110.9	
#91 STANDARD PORT							
in.	6	5.91	8.66	18.11	10.51	119	1
mm.		150	220	460	267	54.1	
in.	8	7.87	11.6	39.37	11.5	178	1
mm.		200	295	1000	292	80.9	
in.	10	9.84	13.98	59.06	12.99	262	1
mm.		250	355	1500	330	119.1	

PRESSURE/TEMPERATURE CHART
CAST IRON BALL VALVES



CODE #	WATER, OIL, GAS 450 PSI	MAX. TEMP 125 PSI	SATURATED STEAM
90/91	-20 ~ 100ºF	300ºF	-

ENGINEERING DATA INDEX

VALVE TERMS AND PIPING SYMBOLS
VALVE & FITTING INDUSTRY ABBREVIATIONS

AFS	American Foundrymen's Society
AGA	American Gas Association
ANSI	American National Std. Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing & Materials
AWWA	American Water Works Association
BB	Bolted Bonnet
BFV	Butterfly Valve
BHN	Brinell Hardness Number
BTU	British Thermal Unit
BW	Butt Weld
BWE	Butt Weld Ends
C	Celcius Degrees
CxC	Copper to Copper
CDA	Copper Development Association
CI	Cast Iron
Cr 13	13% Chromium Stainless Steel
CSA	Canadian Standards Association
DD	Double Disc
DI	Ductile Iron
F	Fahrenheit Degrees
FE	Flanged End
FF	Flat Faced
FM	Factory Mutual Laboratories
FOB	Free On Board
GPM	Gallons Per Minute
Hg	Hydragyrum (Mercury)
HB	Brinell Hardness
HRC	Rockwell C Hardness
IBBM	Iron Body Bronze Mounted
ID	Inside Diameter
IPS	Iron Pipe Size
ISNRS	Inside Screw Non-Rising Stem
ISO	International Standards Organization
ISRS	Inside Screw Rising Stem
MSS	Manufacturers Standardization Society
MTR	Material Test Report
NPT	National Pipe Taper (Pipe Thread)
NSR	Non-Rising Stem
OD	Outside Diameter
OS&Y	Outside Screw and Yoke
PN	Pressure Nominal (Metric)
PSI	Pounds Per Square Inch
PSIA	Pounds Per Square Inch Absolute
PSIG	Pounds Per Square Inch Gage
P–T	Pressure – Temperature
Rc	Rockwell "C"
RF	Raised Face
RPM	Revolutions Per Minute
RS	Rising Stem
SB	Screw-In-Bonnet
SE	Screwed Ends
SJ	Solder Joint
SS	Stainless Steel
STD	Standard
SWP	Steam Working Pressure
TRIM	Certain Valve Parts – Stems, Seats, Etc.
UB	Union Bonnet
UL	Underwriter's Laboratories
WOG	Working Pressure: Water, Oil and Gas
WSP	Working Steam Pressure
WWP	Water Working Pressure

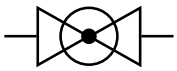
VALVE SELECTION GUIDE

GATE

Recommended for:

- Full Open/Closed Service
- Minimal Line Pressure Drop
- Infrequent Operation

GLOBE



Recommended for:

- Throttling of flow
- Frequent Operation
- Service with some line resistance to flow
- Angle Valves offer less resistance to flow than valve and elbow.

CHECK

Recommended for:

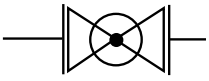
- Control of direction of flow and quick automatic reaction to flow change.
- Use in conjunction with gate valve.
  - They should not be used in air compressor service or on a reciprocating pump as these services will cause chattering and valve vibration damage.

BALL

Recommended for:

- On and Off service or throttling of flow
- When positive shut-off is necessary
- When low valve profile is necessary
- Quarter turn operation - 90º rotation from fully open/fully closed
- Easily adapts to automation
- Handle position is a quick indication of whether valve is open or closed.
- Full port ball valve design offers no resistance to flow.

BUTTERFLY



Recommended for:

- Positive shut-off is necessary
- Fully open or fully closed applications (may be used for throttling applications)
- Quarter turn operation - 90º rotation from fully open/fully closed
- Easily adapts to automation
- Light weight design offers easy installation
- Replaces costly Iron body gate valves

REFERENCED SPECIFICATIONS AND DESIGN STANDARDS

KITZ valves are manufactured under strict quality control throughout all stages of production, beginning with inspection of chemical composition and mechanical properties of materials. Extra care is given to inspection and testing at all machine shops and assembly plants, utilizing up-to-date precision equipment. All KITZ valves are subject to strict hydrostatic pressure testing of the body and seat sealing as well as other exhaustive testing to assure long life service and Quality KITZ Performance.

Manufacturers Standardization Society
MSS SP-110
Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flare Ends

MSS SP-25
Standard Marking System for Valves, Fitting, Flanges and Unions

API 607
Fire Test for Soft Seated Quarter Turn Valves

3rd PARTY CERTIFICATIONS

CSA INTERNATIONAL

CGA 9.1b-2006/ANSI Z21.15b-2006: Manually Operated Gas Valves For Appliances, Appliance Connector Valves and Hose End Valves, **0.5 psig**
CGA requirement CR91-002: Manually Operated Gas Valves For Use On Piping, **2 psig**
CAN/CGA-3.16-M88: Lever Operated Non-Lubricated Gas Shut-Off Valves, **125 psig**
ASME B16.33-2002(R2007): Manually Operated Metallic Gas Valve For use In Gas Piping Systems, **125 psig (1/2" - 2")**
ASME B16.44-2002(R2007): Manually Operated Metallic Gas Valve For use In Aboveground Gas Piping Systems, **5 psig**

UNDERWRITERS LABORATORIES

ANSI/UL125: Valves for Anhydrous Ammonia and LP-Gas (other than Safety Relief)
YSDT - LP Gas Shut-Off Valves
UL Subject 258: Outline of Investigation for Shut-off Valves for Trim and Drain Purposes
VQGU - Valves, Trim and Drain
UL842: Valves for Flammable Fluids
YRBX - Flammable Liquid Shut-Off Valves
YRPV - Gas Shut-Off Valves
MHKZ - Manual Valves, LP
UL1769: Cylinder Valves
YQNZ - Compressed Gas Shut-Off Valves
ANSI/NSF: Standard 61*
FDNP - Drinking Water System Components
* Drinking Water System Components Health Effects

FM APPROVALS

Classification No. 1140 - 175 psig (1205 kPa) rated working pressure

ANSI/NSF 61 - Drinking Water System Components

Section 8 - Mechanical Devices, Temperature: Commercial Hot (180º F/ 82º C)

Annex G - Weighted average lead content evaluation procedure to a 0.25% lead requirement

PROPERTIES OF VALVE MATERIALS

ASTM (UNS)	Alloy	Chemical Composition*															Physical Properties (min.)		
		Cu	Sn	Pb	Zn	Bi	C	Ni	S	P	CR	Mn	Mo	Si	Fe	Al	Other	Tensile (ksi)	Yield (ksi)	Elong. (%)
COPPER ALLOYS																				
B16 (C36000)	Free Cutting Brass	60.0-63.0	...	2.5-3.7	bal	...	...	...	...	...	...	...	...	...	0.35	...	...	*	*	*
B61 (C92200)	Navy "M" (Steam Bronze)	86.0-90.0	5.5-6.5	1.0-2.0	3.0-5.0	...	...	1.00	...	...	...	...	...	...	...	...	...	...	...	...
B62 (C83600)	Composition Bronze	84.0-86.0	4.0-6.0	4.0-6.0	4.0-6.0	...	...	1.00	...	...	...	...	...	...	...	...	...	30	14	20
A148 (C95400)	Aluminum Bronze	85.0	...	...	...	...	...	...	...	...	...	...	...	...	4.0	11.0	...	...	...	...
B283 (C37700)	Forged Brass	58.0-61.0	...	1.5-2.5	bal	...	...	...	...	...	...	...	...	...	0.30	...	...	50	18	25
B283 (C46400)	Naval Brass	59.0-62.0	0.50-1.0	0.20	bal	...	...	...	...	...	...	...	...	...	0.10	...	...	52	22	25
B584 (C84400)	Leaded Semi-Red Brass	81.0	3.0	7.0	9.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
B763 (C89530)	Cast Bi-Se Alloy	84.0-89.0	3.5-6.0	0.20	7.0-9.0	1.0-2.0	...	1.00	...	0.05	...	...	...	0.01	0.30	0.01	.10-.30	...	...	...
B967 (B49300)	Cu-Zn-Sn-Bi Alloy	58.0-62.0	1.3-1.8	0.01	bal	0.50-2.0	...	1.50	...	0.20	...	0.03	...	0.10	0.10	0.50	0.80	...	...	...
IRON																				
A126 Class B	Cast Gery Iron	...	...	...	...	...	...	...	0.15	0.75	...	...	...	...	bal	...	...	31	...	...
A536†	Ductile Iron (65-45-12)	...	...	...	...	...	3.5-3.8	...	0.01	.02-.05	...	.15-.40	...	2.3-2.8	bal	...	0.05	65	45	12
A395	Ductile Iron (Ferritic)	...	...	...	...	...	3.00 min	...	...	0.08	...	...	...	2.50	bal	...	...	60	40	18
A439 Type D2	Ductile Ni-Resist	...	...	...	...	...	3.00	18.0-22.0	...	0.08	2.75-4.0	0.7-1.25	...	1.5-3.0	bal	...	...	58	30	7
STAINLESS STEEL																				
A351, GR CF8	304 (Cast) J92600	...	...	...	...	...	0.08	8.0-11.0	0.04	0.04	18.0-21.0	1.50	0.50	2.00	...	...	...	70	30	35
A351, GR CF8M	316 (Cast) J92900	...	...	...	...	...	0.08	9.0-12.0	0.04	0.04	18.0-21.0	1.50	2.0-3.0	1.50	...	...	...	70	30	30
A276, Type 304	304 (Wrought) S30400	...	...	...	...	...	0.08	8.0-11.0	0.03	0.05	18.0-20.0	2.00	...	1.00	...	...	...	75	30	40
A276, Type 316	316 (Wrought) S31600	...	...	...	...	...	0.08	10.0-14.0	0.03	0.05	16.0-18.0	2.00	2.0-3.0	1.00	...	...	...	75	30	40
AISI Type 329	329 (Wrought) S32900	...	...	...	...	...	0.08	3.0-6.0	0.03	0.04	23.0-28.0	1.50	1.0-3.0	1.00	...	...	...	105	80	25
A276, Type 410	410 (Wrought) S41000	...	...	...	...	...	0.08-0.015	...	0.03	0.04	11.0-13.0	1.00	...	1.00	...	...	0.05-0.30Cb	...	...	...
CARBON STEEL																				
A105	Forged Carbon Steel	...	...	...	...	...	0.04	...	0.05	0.04	...	0.60-1.05	...	0.35	...	...	...	70	36	22
A216, Gr. WCB	Cast Carbon Steel J03002	...	...	...	...	...	0.30	...	0.05	0.04	...	1.00	...	0.60	...	...	1.0 max	70	36	22
BOLTING																				
A307, Gr. B	Carbon Steel Bolt & Stud	...	...	...	...	...	0.29	...	0.05	0.04	...	0.90	...	...	...	...	...	60	...	18
A193 Gr. B7	B-7 Alloy Stud	...	...	...	...	...	0.37-0.49	...	0.04	0.04	0.75-1.20	0.65-1.10	0.15-0.25	0.15-0.35	...	...	...	125	105	16
A193 Gr. B8 Cl.2	304 SS Stud	...	...	...	...	...	0.08	8.0-11.0	0.03	0.45	16.0-20.0	2.00	...	1.00	...	...	...	125	100	12

* SubjecttoTemper, Size and Form

† Chemical requirements are not specified under this specification, composition is subornate to the mechanical properties specified under A536.

KITZ BALL VALVE SEAT MATERIALS

PTFE

PTFE is a Tetrafluoroethylene resin. It is a first-rate all-round general purpose sealing material. PTFE has excellent resistance to chemical attack by a broad range of organic chemicals, inorganic chemicals and solvents and is generally considered chemically inert. PTFE is a self-lubricating polymer with a very low friction coefficient. Thus making it ideal for seating material for quarter-turn ball valves.

Color
PTFE resin has a natural pigment of WHITE

Temperature Range
Ball Valve Applications
-40 ~ 400 ºF

Pressure Range
See individual spec sheets.

Features
1) Excellent choice for low-pressure sealing.
2) Low friction coefficient makes it ideal for automation.

Typical Application
Cold and hot potable water, HVAC - chilled and hot water, and evaporative cooling systems

Product Availability by Code #
39, 49M, 53F
54, 55, 54P & 55P
58, 58W, 59, 59W
68, 68A, 68AB, 68AD, 68AM, 68C, 68LL, 68M, 68O, 68P, 68S, 68U, 69, 69AD, 69C, 69M, 69O, 69U, 62M, 63M, 62, 63, 858, 858W, 859, 859W, 868, 869
90 & 91
68ALL, 68AMLL, 69ALL, 69AMLL

20% GLASS REINFORCED PTFE

KITZ uses fiberglass to reinforce our mid-range ball valves. The glass reinforcement increases the pressure containing capabilities of the PTFE by reducing its tendency to cold-flow.

Color
PTFE resin has a natural pigment of WHITE

Temperature Range
Ball Valve Applications
-20 ~ 450ºF

Pressure Range
27 inches of vacuum to 600 psi non-shock water oil or gas.

Features
1) Greater resistance to cold-flow than PTFE.

Typical Application
20% glass reinforced PTFE is ideal for use on mid-range steam applications.

Product Availability by Code #
50, 51, 52

KITZ BALL VALVE SEAT MATERIALS

HYPATITE PTFE

Hypatite PTFE has been formulated to offer a unique pure white seat material, which eliminates user concerns about product contamination. Hypatite PTFE has been molecularly altered to provide a seat material, which offers the pressure and temperature of reinforced PTFE without the use of reinforcing filler material.

Color
PTFE resin has a natural pigment of WHITE

Temperature Range
Ball Valve Applications
-20 ~ 450ºF

Pressure Range
27 inches of vacuum to 2000 psi (1/4" - 1"), 1500 psi (1 1/2" - 2") non-shock water oil or gas.

Features
Eliminates user concern about product contamination from filler materials.

Typical Application
It is a first-rate all-round general purpose sealing material. Hypatite PTFE has excellent resistance to chemical attack by a broad range of organic chemicals, inorganic chemicals and solvents and is generally considered chemically inert. Hypatite PTFE is a self-lubricating polymer with a very low friction coefficient. It is excellent for mid-range steam applications.

Product Availability by Code #
119, 129, 217, 219, 227, 229, 237, 239, 247 & 249

CARBON-FILLED PTFE

Carbon-filled PTFE is an excellent seat material for steam applications as well as high efficiency oil-based thermal fluids. Other fillers including graphite enable this seat material to have better cycle life than other filled or reinforces PTFE seats. Chemical resistance is equal to other TFE/PTFE and filled TFE/PTFE products.

Color
Carbon-filled PTFE has a natural pigment of Black.

Temperature Range
Ball Valve Applications
-20 ~ 500ºF

Pressure Range
27 inches of vacuum to 600 psi (1/4" - 2"), 400 psi (2 1/2" - 4") non-shock water oil or gas.

Features
Higher cycle life than other TFE/PTFE resins.

Typical Applications
This material is excellent for high pressure steam and thermal fluid applications.

Product Availability by Code #
68PM
62M

FLOW DATA Cv VALUES

LIQUID FLOW:

$$Q = Cv \sqrt{\Delta P/S}$$

Q = liquid flow rate (gallons per minute)
ΔP = pressure drop across valve (psi)
S = specific gravity of media

Cv is defined as the flow in GPM that a valve will carry with a pressure drop of 1.0 psi when the media is water at 60º.

GAS FLOW:

$$Q = 1360\ Cv \sqrt{\Delta P \times P_1/ST}$$

Q = gas flow rate (SCFH — std. cu. ft./hr.)
S = specific gravity of gas (air = 1.0)
T = temp. - degrees rankin (ºF + 460)
ΔP = pressure drop across valve (psi)
P_1 = upstream pressure (psia) absolute

Note that ΔP must be less than .5
(Flow is critical when ΔP is greater than .5 P_1)

CODE NO.	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
BRASS/BRONZE BALL VALVES											
51	2.2	2.5	4.3	8	12	18	32	53	-	-	-
54/55	.5	1	3	6	11	17	28	37	62	110	-
54P/55P	-	-	3	6	11	17	28	37	-	-	-
58/59	4.7	8.5	22	46	77	140	236	395	696	1080	1810
62/63	-	-	22	44	74	132	222	368	-	-	-
68/69	4.7	8.5	22	46	77	140	236	395	696	1080	-
68AB	-	-	NA	NA	NA	-	-	-	-	-	-
68AD/69AD	-	-	22	46	77	-	-	-	-	-	-
68ALL/69ALL	4.7	8.5	22	46	77	140	236	395	-	-	-
68AMLL/69AMLL	4.7	8.5	22	46	77	140	236	395	-	-	-
68C/69C	-	-	22	46	-	-	-	-	-	-	-
68M/69M	4.7	8.5	22	46	77	140	236	395	-	-	-
68O/69O	4.7	8.5	22	46	77	-	-	-	-	-	-
68P	4.7	8.5	22	46	77	140	236	395	696	1080	1810
68PM	4.7	8.5	22	46	77	140	236	395	696	1080	1810
68S	4.7	8.5	22	46	77	140	236	395	-	-	-
68U/69U	4.7	8.5	22	46	77	140	236	395	-	-	-
101	-	-	19	34	50	103	266	306	624	1009	1607
801	-	-	19	34	50	103	266	306	-	-	-
858/859	-	-	22	46	77	140	236	395	-	-	-
868/869	-	-	22	46	77	140	236	395	-	-	-
CARBON & STAINLESS STEEL BALL VALVES											
39	4.1	4.1	7.7	16	26	33	58	120	-	-	-
49M	4.1	4.1	7.7	16	26	33	58	120	-	-	-
50	2.2	2.5	4.3	8	12	18	32	52	-	-	-
52	2.2	2.5	4.3	8	12	18	32	53	-	-	-
53F	-	-	22	45	75	133	229	380	-	-	-
119/129	2.2	2.3	4.3	8	12	18	32	53	-	-	-
217/219	4	4.5	5	11	24	35	74	128	-	-	-
227/229	4	4.5	5	11	24	35	74	128	-	-	-
237/239	4	4.5	5	11	24	35	74	128	-	-	-
247/249	4	4.5	5	11	24	35	74	128	-	-	-
FLANGED CAST IRON BALL VALVES											
CODE NO.	2	2 1/2	3	4	-	6	8	10	-	-	-
90	347	675	1130	1920		4260	8420	-	-	-	-
91	-	-	-	-	-	1550	1660	3290	-	-	-

BALL VALVE
OPERATING TORQUE DATA

(Unit: In. Lbs.)

FIGURE NUMBER	SIZE	101-600 PSI	601-1000 PSI	1001-1500 PSI	1501-2000 PSI
39	1/4-3/8	33			69
	1/2	41			86
	3/4	60			128
	1	77			172
	1 1/4	118		230	
	1 1/2	187		357	
	2	336		643	
49M	1/4-3/8	33			69
	1/2	41			86
	3/4	60			128
	1	77			172
	1 1/4	118		230	
	1 1/2	187		357	
	2	336		643	
53F			601-800 PSI		
	1/2	66	83		
	3/4	85	108		
	1	109	142		
	1 1/4	207	283		
	1 1/2	363	500		
	2	579	802		
55P	1/2	45			
	3/4	70			
	1	80			
54P	1/2	45			
	3/4	70			
	1	80			
	1 1/4	108			
	1 1/2	170			
	2	240			
62/63	1/4-3/8	29			
	1/2	35			
	3/4	52			
	1	81			
	1 1/4	104			
	1 1/2	173			
	2	196			
	2 1/2	-			
68P	1/4-3/8	29			
	1/2	35			
	3/4	40			
	1	52			
	1 1/4	75			
	1 1/2	126			
	2	227			
	2 1/2*	797			
	3*	1660			
*400 psi max.	4*	1935			

BALL VALVE
OPERATING TORQUE DATA

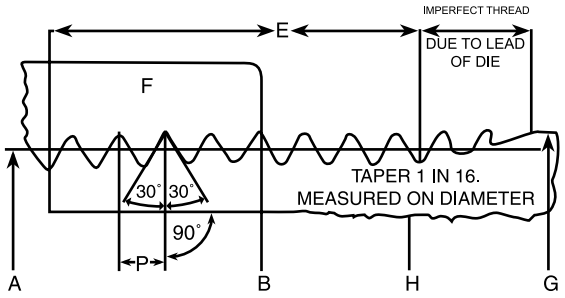
(Unit: In. Lbs.)

FIGURE NUMBER	SIZE	101-600 PSI	601-1000 PSI	1001-1500 PSI	1501-2000 PSI
68PM*	1/4-3/8	35			
	1/2	43			
	3/4	51			
	1	65			
	1 1/4	91			
	1 1/2	164			
	2	349			
	2 1/2*	965			
	3*	1892			
*400 psi max.	4*	2704			
119/129	1/4	21	23	27	31
	3/8	27	32	39	45
	1/2	42	45	52	58
	3/4	62	65	71	78
	1	97	104	117	130
	1 1/4	112	123	143	-
	1 1/2	153	169	195	-
	2	195	208	234	-
217/219 227/229 237/239 247/249	1/4	27	32	39	45
	3/8	42	45	52	58
	1/2	62	65	71	78
	3/4	97	104	117	130
	1	112	123	143	162
	1 1/4	153	169	195	-
	1 1/2	195	208	234	-
	2	208	234	260	-

SATURATED STEAM TABLE
PRESSURE/TEMPERATURE

Vacuum Inches Mercury	Pressure Absolute (P.S.I.A.)	Temperature °F	Pressure Gauge (P.S.I.G.)	Temperature °F	Pressure Gauge (P.S.I.G.)	Temperature °F	Pressure Gauge (P.S.I.G.)	Temperature °F	Pressure Gauge (P.S.I.G.)	Temperature °F
29.74	0.089	32.0	0	212.0	135	358.3	285	417.2	570	483.4
29	0.451	76.5	2	218.5	140	360.8	290	418.7	580	485.2
28	0.942	99.7	4	224.4	145	363.4	295	420.2	590	487.0
27	1.43	114.0	6	229.8	–	–	–	–	–	–
26	1.92	124.6	8	234.6	**150**	**365.9**	**300**	**421.7**	600	488.8
–	–	–	–	–	155	368.3	310	424.6	650	497.4
25	2.42	133.3	10	239.0	160	370.6	320	427.4	700	505.4
24	2.91	140.3	15	249.7	165	372.9	330	430.3	–	–
23	3.40	146.3	20	258.8	170	375.2	340	433.0	750	513.1
22	3.89	151.7	–	–	–	–	–	–	800	520.3
21	4.38	156.5	25	266.8	175	377.4	350	435.6	850	527.3
			30	274.0	180	379.5	360	438.2	900	533.9
20	4.87	161.0	35	280.6	185	381.7	370	440.8	950	540.3
19	5.36	165.2	40	286.7	190	383.7	380	443.3	–	–
18	5.85	168.9	45	292.4	195	385.8	390	445.7	1000	546.4
17	6.35	172.5	–	–	–	–	–	–	–	–
16	6.84	175.8	50	297.7	200	387.8	400	448.1	–	–
–	–	–	55	302.6	205	389.7	410	450.5	–	–
15	7.33	178.9	60	307.3	210	391.7	420	452.8	–	–
14	7.82	181.8	65	311.8	215	393.6	430	455.1	–	–
13	8.31	184.6	70	316.0	220	395.4	440	457.3	–	–
12	8.80	187.2	–	–	–	–	–	–	–	–
11	9.29	189.7	75	320.0	225	397.3	450	459.5	–	–
–	–	–	80	323.9	230	399.1	460	461.7	–	–
10	9.78	192.1	85	327.6	235	400.8	470	463.8	–	–
9	10.27	194.4	90	331.1	240	402.6	480	465.9	–	–
8	10.77	196.7	95	334.6	245	404.3	490	468.0	–	–
7	11.26	198.8	–	–	–	–	–	–	–	–
6	11.75	200.9	100	337.9	**250**	**406.0**	500	470.0	–	–
–	–	–	105	341.1	255	407.7	510	472.0	–	–
5	12.24	202.9	110	344.1	260	409.3	520	474.0	–	–
4	12.73	204.8	115	347.1	265	410.9	530	475.9	–	–
3	13.22	206.7	120	350.0	270	412.5	540	477.8	–	–
2	13.71	208.5	–	–	–	–	–	–	–	–
1	14.20	210.3	**125**	**352.8**	275	414.1	550	479.7	–	–
0	14.696	212.0	130	355.6	280	415.7	560	481.6	–	–

ASME/ANSI STANDARD IRON PIPE
TAPER THREADS



A = G–(0.05 + 1.1) P
B = A + .0625 F
E = P(0.8G + 6.8)
Depth of Thread = 0.8 P
Total Taper 3/4 in. per foot

(Inch)

	A	B	E	F	G	H		P	
Nominal Size of Pipe	Pitch Dia. at End of Pipe	Pitch Dia. at Gauging Notch	Length of Effective Thread	Normal Engagement by Hand Between Male and Female Thread	Outside Dia. of Pipe	Actual Inside Dia. of Pipe	Number of Threads	Pitch of Thread	Depth of Thread
1/8	.36351	.37476	.2638	.180	.405	.269	27	.0370	.02963
1/4	.47739	.48989	.4018	.200	.540	.364	18	.0556	.04444
3/8	.61201	.62701	.4078	.240	.675	.493	18	.0556	.04444
1/2	.75843	.77843	.5337	.320	.840	.622	14	.0714	.05714
3/4	.96768	.98886	.5457	.339	1.050	.824	14	.0714	.05714
1	1.21363	1.23863	.6828	.400	1.315	1.049	11 1/2	.0870	.06956
1 1/4	1.55713	1.58338	.7068	.420	1.660	1.380	11 1/2	.0870	.06956
1 1/2	1.79609	1.82234	.7235	.420	1.900	1.610	11 1/2	.0870	.06956
2	2.26902	2.29627	.7565	.436	2.375	2.067	11 1/2	.0870	.06956
2 1/2	2.71953	2.76216	1.1375	.682	2.875	2.469	8	.1250	.10000
3	3.34063	3.38850	1.2000	.766	3.500	3.068	8	.1250	.10000
3 1/2	3.83750	3.88881	1.2500	.821	4.000	3.548	8	.1250	.10000
4	4.33438	4.38713	1.3000	.844	4.500	4.026	8	.1250	.10000
5	5.39073	5.44929	1.4063	.937	5.563	5.047	8	.1250	.10000
6	6.44609	6.50597	1.5125	.958	6.625	6.065	8	.1250	.10000
8	8.43359	8.50003	1.7125	1.063	8.625	7.981	8	.1250	.10000
10	10.54531	10.62094	1.9250	1.210	10.750	10.020	8	.1250	.10000
12	12.53281	12.61781	2.1250	1.360	12.750	12.000	8	.1250	.10000

Data abstracted from ASME/ANSI Standard B1.20.1 – Gages and Gaging for Unified Inch Screw Threads.

ASME/ANSI STANDARD COPPER WATER TUBE & SOLDER-JOINT ENDS - VALVES & FITTINGS

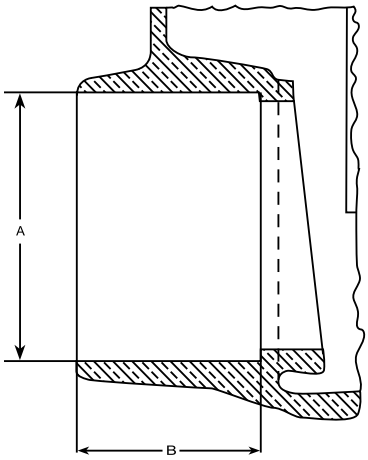
SERVICE RECOMMENDATIONS

Seamless copper water tube is used for such services as steam, water or air and oil, gas or similar fluids.

Type K Tube is especially recommended for underground use and where service conditions are severe. It is also recommended for general plumbing and heating systems and is used for gas, oil and steam.

Type L Tube is for interior use in general plumbing and heating work.

Type M Tube is for use with solder-joint fittings only, for waste, vent and interior drainage lines and other non-pressure applications.



As steam installations, the successful application of copper tube depends upon weight of tube and solder used when making joints. The solder must have a melting point high enough to remain unaffected by the temperature of the steam.

HARD COPPER TUBE: Hard copper tube is intended primarily for use in straight lengths. Without proper bending equipment, its use is not recommended for field bending.

SOFT COPPER TUBE: This tube can be bent without special bending equipment and is recommended for use when bends must be made in the field, as in concealed replacement work. Soft copper tubing may become flattened or distorted when being handled or while in transit. The ends of this tube should therefore be sized to assure a tight soldered joint.

Type K (hard and soft) and Type L (hard and soft) in sizes 3/8" to 12" and Type M (hard) in sizes 2 1/2" to 12" conform to ANSI Standard for Copper Water Tube, H23.1. Also conforms to Federal Specification WW-T-799.

DIMENSIONS OF SOLDER-JOINT ENDS

Standard Water Tube Size Inches	A Inside Diameter		B Depth
	Min. Inches	Max. Inches	Min. Inches
1/4	.377	.381	5/16
3/8	.502	.506	3/8
1/2	.627	.631	1/2
3/4	.877	.881	3/4
1	1.128	1.132	29/32
1 1/4	1.378	1.382	31/32
1 1/2	1.628	1.633	1 3/32
2	2.128	2.133	1 11/32
2 1/2	2.628	2.633	1 15/32
3	3.128	3.133	1 21/32
3 1/2	3.628	3.633	1 29/32
4	4.128	4.133	2 5/32
5	5.128	5.133	2 21/32
6	6.128	6.133	3 3/32
8	8.128	8.133	3 31/32

TUBE DIMENSIONS AND WEIGHTS

Nominal Size of Tube In.	Actual Outside Diam. of Tube In.	Type K Tube		Type L Tube		Type M Tube	
		Wall Thickness In.	Wgt. Per Foot Lbs.	Wall Thickness In.	Wgt. Per Foot Lbs.	Wall Thickness In.	Wgt. Per Foot Lbs.
1/4	3/8	—	—	.030	.126	—	—
3/8	1/2	.049	.269	.035	.198	—	—
1/2	5/8	.049	.344	.040	.285	—	—
3/4	7/8	.065	.641	.045	.455	—	—
1	1 1/8	.065	.839	.050	.655	—	—
1 1/4	1 3/8	.065	1.04	.055	.884	.042	.68
1 1/2	1 5/8	.072	1.36	.060	1.14	.049	.94
2	2 1/8	.083	2.06	.070	1.75	.058	1.46
2 1/2	2 5/8	.095	2.93	.080	2.48	.065	2.03
3	3 1/8	.109	4.00	.090	3.33	.072	2.68
3 1/2	3 5/8	.120	5.12	.100	4.29	.083	3.58
4	4 1/8	.130	6.51	.110	5.38	.095	4.66
5	5 1/8	.160	9.67	.125	7.61	.109	6.66
6	6 1/8	.192	13.90	.140	10.20	.122	8.92
8	8 1/8	.271	25.90	.200	19.30	.170	16.50
10	10 1/8	.338	40.30	.250	30.10	.212	25.60
12	12 1/8	.405	57.80	.280	40.40	.254	36.70

Data extracted from ASME/ANSI Standard 16.18 – Cast Copper Alloy Solder Joint Pressure Fittings.

VALVE INSTALLATION TIPS FOR A SOUND SOLDER JOINT

Kitz solder joint copper alloy ball, gate, globe and check valves are designed to be soft soldered into lines without disassembly, using a low temperature solder 420°F. Other solders, 95/5 tin antimony (460°F) or 96/4 tin silver (430°F) can be used, however, extreme caution must be used to prevent seat and packing damage. Carefully following the succeeding procedure will assure a durable solder connection with copper tubing for servicing distribution of water, oil and gas.

1. Solder

Recommended:
Soft solders having a maximum melting point of 420°F.

Others: 95-5 tin-antimony (460°F)
96.5-3.5 tin-silver (430°F)

2. Soldering Procedure

(1) Cut tube end square; ream, burr and size.
(2) Polish tube and cup to a bright metal finish, using sand cloth, wire brush and clean with cloth.
(3) Apply flux sparingly and evenly to polished surface of tube. No flux need be applied to solder cup.
(4) Fully open valve before applying heat. Insert tube into valve socket until it contacts internal shoulder of valve socket. Rotate the tube a few times to evenly distribute flux.
(5) Soldering procedure:
  (a) Cover the bonnet or valve body with a wet cloth to prevent gland packing and seat damage.
  (b) Preheat the tube evenly, using an open-flame torch.
  (c) Heat the joint area to an adequate temperature; remove heat and feed solder around the joint.
  (d) Check to make sure melted solder is flowing into the jointed surfaces.
  (e) Visually check joint for continuous fillet.
  (f) Cool the jointed area with a wet cloth as soon as the solder becomes solid.
  (g) After cooling, remove solder and flux to prevent surface corrosion.
  (h) Flush the tube and valve interiors with water to remove internal residue, as soon as piping installation is complete.

CAUTION

(1) *Do* apply wet cloth to body of valve or bonnet to prevent damage to seat and packing during soldering.
(2) *Do not* apply heat to the valve body to prevent damage to seats and packing.
(3) *Do* minimize heating time for solder work to prevent damage to seats and packing
(4) *Do not* forget to retighten packing nut after valve cools down for leak-free performance.
(5) *Do* remember that Service Pressure and Temperature of valve are limited by the properties of the solder.
(6) *Do not* exceed a service velocity greater than 6 feet per second to prevent erosion of copper tube.

CONVERSION TABLES

LENGTH

1 in.	=	25.4 mm
1 mm	=	.03937 in.
1 ft.	=	30.48 cm.
1 meter	=	3.28083 ft.
1 micron	=	.001 mm.

AREA

1 sq. in.	=	6.4516 sq. cm.
1 sq. ft.	=	929.03 sq. cm.
1 sq. cm.	=	0.155 sq. in.
	=	0.0010764 sq. ft.

VOLUME

1 cu. in.	=	16.387 cu. cm.
1 cu. ft.	=	1728 cu. in.
1 cu. lt.	=	7.4805 U.S. gal.
	=	6.229 British gal.
	=	28.317 liters
1 U.S. gal.	=	0.1337 cu. lt.
	=	231 cu. in.
	=	3.785 liters
1 British gal.	=	1.20094 U.S. gal.
	=	277.3 cu. in.
	=	4.546 liters
1 liter	=	61.023 cu. in.
	=	0.03531 cu. ft.
	=	0.2642 U.S. gal.

WEIGHT

1 ounce av.	=	28.35 g.
1 lb. av.	=	453.59 g.
1 gram	=	0.03527 oz. av.
1 kg.	=	2.205 lb. av.
1 cu. ft. of water	=	62.425 lb.
1 U.S. gal. of water	=	8.33 lb.
1 cu. in. of water	=	0.0361 lb.
1 British gal. of water	=	10.04 lb.
1 cu. ft. of air at 32°F & 1 atm	=	0.080728 lb.

VELOCITY

1 ft. per sec.	=	30.48 cm. per sec.
1 cm. per sec.	=	.032808 ft. per sec.

FLOW

1 cu. ft. per sec.	=	448.83 gal. per min.
	=	1699.3 liters per min.
1 U.S. gal. per min.	=	0.002228 cu. ft. per sec.
	=	0.06308 liters per sec.
1 cu. cm. per sec.	=	0.0021186 cu. ft. per min.

DENSITY

1 lb. per cu. ft.	=	16.018 kg. per cu. meter
	=	.0005787 lb. per cu. in.
1 kg. per cu. meter	=	0.06243 lb. per cu. ft.
1 g. per cu. cm.	=	0.03613 lb. per cu. in.

VISCOSITY

1 Centipoise	=	.000672 lb. per ft. sec.
	=	.00001076 sq. ft. per sec.

PRESSURE

1 in. of water	=	0.03613 lb. per sq. in.
	=	0.07355 in. of Hg.
1 ft. of water	=	0.4335 lb. per sq. in.
	=	0.88265 in. of Hg.
1 in. of mercury	=	0.49116 lb. per sq. in.
	=	13.596 in. of water
	=	1.13299 ft. of water
1 atmosphere	=	14.696 lb. per sq. in. (PSIA)
	=	760 mm. of Hg.
	=	29.921 in. of Hg.
	=	33.899 ft. of water
1 lb. per sq. in.	=	27.70 in. of water
	=	2.036 in. of Hg.
	=	.0703066 kg. per sq. cm.
1 kg. per sq. cm.	=	14.223 lb. per sq. in.
1 dyne per sq. cm.	=	.0000145 lb. per sq. in.
1 micron	=	.00001943 lb. per sq. in.
1 kPa	=	0.145 lb. per sq. in.
1 Bar	=	14.5 lb. per sq. in.

ENERGY

1 B.T.U.	=	777.97 ft. lbs.
1 erg	=	9.4805×10^{11} B.T.U.
	=	7.3756×10^{8} ft. lbs.
1 kilowatt hour	=	2.655×10^{6} ft. lbs.
	=	1.3410 h.p. hr.
1 kg. calorie	=	3.968 B.T.U.

POWER

1 horsepower	=	33,000 ft. lb. per min.
	=	550 ft. lb. per sec.
	=	2,546.5 B.T.U. per hr.
	=	745.7 watts
1 watt	=	0.00134 horsepower
	=	44.26 ft. lbs. per min.

TEMPERATURE

Temperature Fahrenheit	(F)	=	9/5 Centigrade (C) + 32 = 9/4 R + 32
Temperature Centigrade	(C)	=	5/9 Fahrenheit (F) – 32 = 5/4 R
Temperature Reaumur	(R)	=	4/9 Fahrenheit (F) – 32 = 4/5 C
Absolute Temperature Centigrade or Kelvin	(K)	=	Degrees C + 273.16
Absolute Temperature Fahrenheit or Rankine	(R)	=	Degrees F + 459.69
Fahrenheit to Centigrade		=	C = (F – 32) / 1.8

HEAT TRANSFER

1 B.T.U. per sq. ft.	=	.2712 g. cal. per sq. cm.
1 g. calorie per sq. cm.	=	3.687 B.T.U. per sq. ft.
1 B.T.U. per hr. per sq. ft. per °F	=	4.88 kg. cal. per hr. per sq. m. per °C
1 Kg. cal. per hr. per sq. m. per °C	=	.205 B.T.U. per hr. per sq. ft. per °F
1 Boiler Horsepower	=	33479 B.T.U. per hr.

CONVERSION CHART
FRACTION – DECIMAL – MILLIMETER

Fraction	Decimal	Millimeter
1/64	.015625	0.39688
1/32	.03125	0.79375
1/64	.046875	1.19063
1/16	.0625	1.58750
5/64	.078125	1.98438
3/32	.09375	2.38125
7/64	.109375	2.77813
1/8	.125	3.17501
9/64	.140625	3.57188
5/32	.15625	3.96876
11/64	.171875	4.36563
3/16	.1875	4.76251
13/64	.203125	5.15939
7/32	.21875	5.55626
15/64	.234375	5.95314
1/4	.25	6.35001
17/64	.265625	6.74689
9/32	.28125	7.14376
19/64	.296875	7.54064
5/16	.3125	7.93752
21/64	.328125	8.33439
11/32	.34375	8.73127
23/64	.359375	9.12814
3/8	.375	9.52502
25/64	.390625	9.92189
13/32	.40625	10.31877
27/64	.421875	10.71565
7/16	.4375	11.11252
29/64	.453125	11.50940
15/32	.46875	11.90627
31/64	.484375	12.30315
1/2	.5	12.70002
33/64	.515625	13.09690
17/32	.53125	13.49378
35/64	.546875	13.89065
9/16	.5625	14.28753
37/64	.578125	14.68440
19/32	.59375	15.08128
39/64	.609375	15.47816
5/8	.625	15.87503
41/64	.640625	16.27191
21/32	.65625	16.66878
43/64	.671875	17.06566
11/16	.6875	17.46253
45/64	.703125	17.85941
23/32	.71875	18.25629
47/64	.734375	18.65316
3/4	.75	19.05004
49/64	.765625	19.44691
25/32	.78125	19.84379
51/64	.796875	20.24066
13/16	.8125	20.63754
53/64	.828125	21.03442
27/32	.84375	21.43129
55/64	.859375	21.82817
7/8	.875	22.22504
57/64	.890625	22.62192
29/32	.90625	23.01880
59/64	.921875	23.41567
15/16	.9375	23.81255
61/64	.953125	24.20942
31/32	.96875	24.60630
63/64	.984375	25.00317
1	1.0	25.40005

NOTE: To convert from inches to millimeters, multiply by 25.4
To convert from millimeters to inches, multiply by .03937.
Decimal conversion, 2.54 millimeters equals .10 of an inch.

TEMPERATURE CONVERSION

DEGREES – Fahrenheit to Centigrade

-°C = 5/9 (°F+32)

+°C = 5/9 (°F-32)

DEGREES – Centigrade to Fahrenheit

-°F = (9/5 x °C) - 32

+°F =(9/5 x °C) + 32

-459.4 to 12			13 to 72			73 to 260			265 to 620			630 to 2,400		
	°C	°F		°C	°F		°C	°F		°C	°F		°C	°F
°C	°F		°C	°F		°C	°F		°C	°F		°C	°F	
-273	-459.4		- 10.6	13	55.4	22.8	73	163.4	129	265	509	332	630	1,166
-268	-450		- 10.0	14	57.2	23.3	74	165.2	132	270	518	338	640	1,184
-262	-440		- 9.4	15	59.0	23.9	75	167.0	135	275	527	343	650	1,202
-257	-430		- 8.9	16	60.8	24.4	76	168.8	138	280	536	349	660	1,220
-251	-420		- 8.3	17	62.6	25.0	77	170.6	141	285	545	354	670	1,238
-246	-410		- 7.8	18	64.4	25.6	78	172.4	143	290	554	360	680	1,256
-240	-400		- 7.2	19	66.2	26.1	79	174.2	146	295	563	366	690	1,274
-234	-390		- 6.7	20	68.0	26.7	80	176.0	149	300	572	371	700	1,292
-229	-380		- 6.1	21	69.8	27.2	81	177.8	152	305	581	377	710	1,310
-223	-370		- 5.6	22	71.6	27.8	82	179.6	154	310	590	382	720	1,328
-218	-360		- 5.0	23	73.4	28.3	83	181.4	157	315	599	388	730	1,346
-212	-350		- 4.4	24	75.2	28.9	84	183.2	160	320	608	393	740	1,364
-207	-340		- 3.9	25	77.0	29.4	85	185.0	163	325	617	399	750	1,382
-201	-330		- 3.3	26	78.8	30.0	86	186.8	166	330	626	404	760	1,400
-196	-320		- 2.8	27	80.6	30.6	87	188.6	168	335	635	410	770	1,418
-190	-310		- 2.2	28	82.4	31.1	88	190.4	171	340	644	416	780	1,436
-184	-300		- 1.7	29	84.2	31.7	89	192.2	174	345	653	421	790	1,454
-179	-290		- 1.1	30	86.0	32.2	90	194.0	177	350	662	427	800	1,472
-173	-280		- 0.6	31	87.8	32.8	91	195.8	179	355	671	432	810	1,490
-169	-273	-459.4	0.0	32	89.6	33.3	92	197.6	182	360	680	438	820	1,508
-168	-270	-454	0.6	33	91.4	33.9	93	199.4	185	365	689	443	830	1,526
-162	-260	-436	1.1	34	93.2	34.4	94	201.2	188	370	698	449	840	1,544
-157	-250	-418	1.7	35	95.0	35.0	95	203.0	191	375	707	454	850	1,562
-151	-240	-400	2.2	36	96.8	35.6	96	204.8	193	380	716	460	860	1,580
-146	-230	-382	2.8	37	98.6	36.1	97	206.6	196	385	725	466	870	1,598
-140	-220	-364	3.3	38	100.4	36.7	98	208.4	199	390	734	471	880	1,616
-134	-210	-346	3.9	39	102.2	37.2	99	210.2	202	395	743	477	890	1,634
-129	-200	-328	4.4	40	104.0	37.8	100	212.0	214	400	752	482	900	1,652
-123	-190	-310	5.0	41	105.8	41	105	221	207	405	761	488	910	1,670
-118	-180	-292	5.6	42	107.6	43	110	230	210	410	770	493	920	1,688
-112	-170	-274	6.1	43	109.4	46	115	239	213	415	779	499	930	1,706
-107	-160	-256	6.7	44	111.2	49	120	248	216	420	788	504	940	1,724
-101	-150	-238	7.2	45	113.0	52	125	257	218	425	797	510	950	1,742
- 96	-140	-220	7.8	46	114.8	54	130	266	221	430	806	516	960	1,760
- 90	-130	-202	8.3	47	116.6	57	135	275	224	435	815	521	970	1,778
- 84	-120	-184	8.9	48	118.4	60	140	284	227	440	824	527	980	1,796
- 79	-110	-166	9.4	49	120.2	63	145	293	229	445	833	532	990	1,814
- 73	-100	-148	10.0	50	122.0	66	150	302	232	450	842	538	1,000	1,832
- 68	- 90	-130	10.6	51	123.8	68	155	311	235	455	851	549	1,020	1,868
- 62	- 80	-112	11.1	52	125.6	71	160	320	238	460	860	560	1,040	1,904
- 57	- 70	- 94	11.7	53	127.4	74	165	329	241	465	869	571	1,060	1,940
- 51	- 60	- 76	12.2	54	129.2	77	170	338	243	470	878	582	1,080	1,976
- 46	- 50	- 58	12.8	55	131.0	79	175	347	246	475	887	593	1,100	2,012
- 40	- 40	- 40	13.3	56	132.8	82	180	356	249	480	896	604	1,120	2,048
- 34	- 30	- 22	13.9	57	134.6	85	185	365	252	485	905	616	1,140	2,084
- 29	- 20	- 4	14.4	58	136.4	88	190	374	254	490	914	627	1,160	2,120
- 23	- 10	14	15.0	59	138.2	91	195	383	257	495	923	638	1,180	2,156
- 17.8	0	32	15.6	60	140.0	93	200	392	260	500	932	649	1,200	2,192
- 17.2	1	33.8	16.1	61	141.8	96	205	401	266	510	950	704	1,300	2,372
- 16.7	2	35.6	16.7	62	143.6	99	210	410	271	520	968	760	1,400	2,552
- 16.1	3	37.4	17.2	63	145.4	102	215	419	277	530	986	816	1,500	2,732
- 15.6	4	39.2	17.8	64	147.2	104	220	428	282	540	1,004	871	1,600	2,912
- 15.0	5	41.0	18.3	65	149.0	107	225	437	288	550	1,022	927	1,700	3,092
- 14.4	6	42.8	18.9	66	150.8	110	230	446	293	560	1,040	982	1,800	3,272
- 13.9	7	44.6	19.4	67	152.6	113	235	455	299	570	1,058	1,038	1,900	3,452
- 13.3	8	46.4	20.0	68	154.4	116	240	464	304	580	1,076	1,093	2,000	3,632
- 12.8	9	48.2	20.6	69	156.2	118	245	473	310	590	1,094	1,149	2,100	3,812
- 12.2	10	50.0	21.1	70	158.0	121	250	482	316	600	1,112	1,204	2,200	3,992
- 11.7	11	51.8	21.7	71	159.8	124	255	491	321	610	1,130	1,260	2,300	4,172
- 11.1	12	53.6	22.2	72	161.6	127	260	500	327	620	1,148	1,316	2,400	4,352

CONVERSION CHART
PRESSURE

1 kgs./cm^2 = 14.223 lbs./in.^{2} 1 lbs./In.^{2} = 0.0703 kgs./cm^2

1 to 60			61 to 200			205 to 700			710 to 1,600			1,620 to 2,800		
	kgs./cm^2	lbs./in.^{2}		kgs./cm^2	lbs./in.^{2}		kgs./cm^2	lbs./in.^{2}		kgs./cm^2	lbs./in.^{2}		kgs./cm^2	lbs./in.^{2}
kgs./cm.^{2}	lbs./in.^{2}		kgs./cm.^{2}	lbs./in.^{2}		kgs./cm.^{2}	lbs./in.^{2}		kgs./cm.^{2}	lbs./in.^{2}		kgs./cm.^{2}	lbs./in.^{2}	
0.07	1	14.22	4.29	61	868	14.41	205	2,916	49.92	710	10,098	113.90	1,620	23,041
0.14	2	28.45	4.36	62	882	14.76	210	2,987	50.62	720	10,241	115.30	1,640	23,326
0.21	3	42.67	4.43	63	896	15.12	215	3,058	51.32	730	10,383	116.71	1,660	23,610
0.28	4	56.89	4.50	64	910	15.47	220	3,129	52.03	740	10,525	118.12	1,680	23,895
0.35	5	71.12	4.57	65	925	15.82	225	3,200	52.73	750	10,667	119.52	1,700	24,179
0.42	6	85.34	4.64	66	939	16.17	230	3,271	53.43	760	10,809	120.93	1,720	24,464
0.49	7	99.56	4.71	67	953	16.52	235	3,342	54.14	770	10,952	122.33	1,740	24,748
0.56	8	113.78	4.78	68	967	16.87	240	3,414	54.84	780	11,094	123.74	1,760	25,032
0.63	9	128.01	4.85	69	981	17.23	245	3,485	55.54	790	11,236	125.15	1,780	25,317
0.70	10	142.23	4.92	70	996	17.58	250	3,556	56.25	800	11,378	126.56	1,800	25,601
0.77	11	156.45	4.99	71	1,010	17.93	255	3,627	56.95	810	11,521	127.96	1,820	25,886
0.84	12	170.68	5.06	72	1,024	18.28	260	3,698	57.65	820	11,663	129.36	1,840	26,170
0.91	13	184.90	5.13	73	1,038	18.63	265	3,769	58.35	830	11,805	130.76	1,860	26,455
0.98	14	199.12	5.20	74	1,053	18.98	270	3,840	59.06	840	11,947	132.18	1,880	26,739
1.05	15	213.35	5.27	75	1,067	19.33	275	3,911	59.76	850	12,090	133.58	1,900	27,024
1.12	16	227.57	5.34	76	1,081	19.69	280	3,982	60.46	860	12,232	134.99	1,920	27,308
1.20	17	241.79	5.41	77	1,095	20.04	285	4,054	61.17	870	12,374	136.39	1,940	27,593
1.27	18	256.01	5.48	78	1,109	20.39	290	4,125	61.87	880	12,516	137.80	1,950	27,877
1.34	19	270.24	5.55	79	1,124	20.74	295	4,196	62.57	890	12,658	139.21	1,980	28,162
1.41	20	284.46	5.62	80	1,138	21.09	300	4,267	63.28	900	12,801	140.61	2,000	28,446
1.48	21	298.68	5.69	81	1,152	21.80	310	4,409	63.98	910	12,943	142.02	2,020	28,730
1.55	22	312.91	5.77	82	1,166	22.50	320	4,551	64.68	920	13,085	143.43	2,040	29,015
1.62	23	327.13	5.84	83	1,181	23.20	330	4,694	65.39	930	13,227	144.83	2,060	29,299
1.69	24	341.35	5.91	84	1,195	23.90	340	4,836	66.09	940	13,370	146.24	2,080	29,584
1.76	25	355.58	5.98	85	1,209	24.61	350	4,978	66.79	950	13,512	147.64	2,100	29,868
1.83	26	369.80	6.05	86	1,223	25.31	360	5,120	67.49	960	13,654	149.05	2,120	30,153
1.90	27	384.02	6.12	87	1,237	26.01	370	5,263	68.20	970	13,796	150.46	2,140	30,437
1.97	28	398.24	6.19	88	1,252	26.72	380	5,405	68.90	980	13,939	151.86	2,160	30,722
2.04	29	412.47	6.26	89	1,266	27.42	390	5,547	69.60	990	14,081	153.27	2,180	31,006
2.11	30	426.69	6.33	90	1,280	28.12	400	5,689	70.31	1,000	14,223	154.67	2,200	31,291
2.18	31	440.91	6.40	91	1,294	28.83	410	5,831	71.71	1,020	14,507	156.08	2,220	31,575
2.25	32	455.14	6.47	92	1,309	29.53	420	5,974	73.12	1,040	14,792	157.49	2,240	31,860
2.32	33	469.36	6.54	93	1,323	30.23	430	6,116	74.52	1,060	15,076	158.89	2,260	32,144
2.39	34	483.58	6.61	94	1,337	30.93	440	6,258	75.93	1,080	15,361	160.30	2,280	32,428
2.46	35	497.81	6.68	95	1,351	31.64	450	6,400	77.34	1,100	15,645	161.71	2,300	32,713
2.53	36	512.03	6.75	96	1,365	32.34	460	6,543	78.74	1,120	15,930	163.11	2,320	32,997
2.60	37	526.25	6.82	97	1,380	33.04	470	6,685	80.15	1,140	16,214	164.52	2,340	33,282
2.67	38	540.47	6.89	98	1,394	33.75	480	6,827	81.56	1,160	16,499	165.92	2,360	33,566
2.74	39	554.70	6.96	99	1,408	34.45	490	6,969	82.96	1,180	16,783	167.33	2,380	33,851
2.81	40	568.92	7.03	100	1,422	35.15	500	7,112	84.37	1,200	17,068	168.74	2,400	34,135
2.88	41	583.14	7.38	105	1,493	35.86	510	7,254	85.77	1,220	17,352	170.14	2,420	34,420
2.95	42	597.40	7.73	110	1,565	36.56	520	7,396	87.18	1,240	17,637	171.55	2,440	34,704
3.02	43	611.59	8.09	115	1,636	37.26	530	7,538	88.59	1,260	17,921	172.95	2,460	34,989
3.09	44	625.81	8.44	120	1,707	37.97	540	7,680	89.99	1,280	18,205	174.36	2,480	35,273
3.16	45	640.04	8.79	125	1,778	38.67	550	7,823	91.40	1,300	18,490	175.77	2,500	35,558
3.23	46	654.26	9.14	130	1,849	39.37	560	7,965	92.80	1,320	18,774	177.16	2,520	35,842
3.30	47	668.48	9.49	135	1,920	40.07	570	8,107	94.21	1,340	19,059	178.56	2,540	36,126
3.37	48	682.70	9.84	140	1,991	40.78	580	8,249	95.62	1,360	19,343	180.00	2,560	36,411
3.45	49	696.93	10.19	145	2,062	41.48	590	8,392	97.02	1,380	19,628	181.37	2,580	36,695
3.52	50	711.15	10.55	150	2,133	42.18	600	8,534	98.43	1,400	19,912	182.78	2,600	36,980
3.59	51	725.37	10.90	155	2,205	42.89	610	8,676	99.84	1,420	20,197	184.19	2,620	37,264
3.66	52	739.60	11.25	160	2,276	43.59	620	8,818	101.24	1,440	20,481	185.59	2,640	37,549
3.73	53	753.82	11.60	165	2,347	44.29	630	8,960	102.65	1,460	20,766	187.00	2,660	37,833
3.80	54	768.04	11.95	170	2,418	45.00	640	9,103	104.05	1,480	21,050	188.40	2,680	37,118
3.87	55	782.27	12.30	175	2,489	45.70	650	9,245	105.46	1,500	21,335	189.81	2,700	38,402
3.94	56	796.49	12.66	180	2,560	46.40	660	9,387	106.87	1,520	21,619	191.22	2,720	38,687
4.01	57	810.71	13.01	185	2,631	47.11	670	9,529	108.27	1,540	21,903	192.62	2,740	38,971
4.08	58	824.93	13.36	190	2,702	47.81	680	9,672	109.68	1,560	22,188	194.03	2,760	39,255
4.15	59	839.16	13.71	195	2,773	48.51	690	9,814	111.08	1,580	22,472	195.43	2,780	39,540
4.22	60	853.38	14.06	200	2,845	49.21	700	9,956	112.49	1,600	22,757	196.84	2,800	39,824

WEIGHT CONVERSION

POUNDS TO KILOGRAMS

(1 pound = 0.4536 kilogram)

Pounds	0	1	2	3	4	5	6	7	8	9
0	0.00	0.45	0.91	1.36	1.81	2.27	2.72	3.18	3.63	4.08
10	4.54	4.99	5.44	5.90	6.35	6.80	7.26	7.71	8.16	8.62
20	9.07	9.53	9.98	10.43	10.89	11.34	11.79	12.25	12.70	13.15
30	13.61	14.06	14.52	14.97	15.42	15.88	16.33	16.78	17.24	17.69
40	18.14	18.60	19.05	19.50	19.96	20.41	20.87	21.32	21.77	22.23
50	22.68	23.13	23.59	24.04	24.49	24.95	25.40	25.86	26.31	26.76
60	27.22	27.67	28.12	28.58	29.03	29.48	29.94	30.39	30.84	31.30
70	31.75	32.21	32.66	33.11	33.57	34.02	34.47	34.93	35.38	35.83
80	36.29	36.74	37.20	37.65	38.10	38.56	39.01	39.46	39.92	40.37
90	40.82	41.28	41.73	42.18	42.64	43.09	43.55	44.00	44.45	44.91

KILOGRAMS TO POUNDS

(1 kilogram = 2.2046 pounds)

Kilograms	0	1	2	3	4	5	6	7	8	9
0	0.00	2.20	4.41	6.61	8.82	11.02	13.23	15.43	17.64	19.84
10	22.05	24.25	26.46	28.66	30.86	33.07	35.27	37.48	39.68	41.89
20	44.09	46.30	48.50	50.71	52.91	55.12	57.32	59.52	61.73	63.93
30	66.14	68.34	70.55	72.75	74.96	77.16	79.37	81.57	83.77	85.98
40	88.18	90.39	92.59	94.80	97.00	99.21	101.41	103.62	105.82	108.03
50	110.23	112.43	114.64	116.84	119.05	121.25	123.46	125.66	127.87	130.07
60	132 28	134.48	136.69	138.89	141.09	143.30	145.50	147.71	149.91	152.12
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.75	171.96	174.16
80	176.37	178.57	180.78	182.98	185.19	187.39	189.60	191.80	194.00	196.21
90	198.41	200.62	202.82	205.03	207.23	209.44	211.64	213.85	216.05	218.26

CROSS REFERENCE CHART

BRONZE & BRASS

KITZ	APOLLO	MILWAUKEE	NIBCO	RED-WHITE	WATTS
51	9A-100/91-100	-	T-560-BR-Y	-	B-6100
54(P)	70-600	-	T585-70-W3	-	B-6780
55(P)	70-900	-	S585-70-W3	5047	B-6781
58	70-100	BA-100	T-580 TFP600	-	FBV-4
58W	70-100-07	-	-	-	-
59	70-200	BA-150	S-580 SFP600	-	FBVS-4
59W	70-200-07	-	-	-	-
62	82-100	BA-300	T-590-Y/T-595-Y	5050	B-6800
62M	82-140	30BSOF	T595-Y-66	-	B-6800-SS
63	82-140	BA-350	S-590-Y/S-595-Y	5051	B-6801
63M	82-240	30BS1F	S595-Y-66	-	B-6801-SS
68	77-100 80-100	BA-400 BA-425	T-580-70/T-585-70UL	5592	B-6000-UL
68AB	-	-	-	-	B-6004
68AD	95-100	-	-	5060	B-6300
68AM	-	-	-	-	-
68C	78-100	BA-100H	T585-70-HC	-	-
68LL	70-100-27	-	-	-	B-6400-LL
68M	70-140 80-140	BA-400S	T585-70-66	504SS	B-6080-SS
68O	70-800	-	MTT585-70	-	B-6002
68P	77-100	20BBOR	TM585-70	-	B-6400
68PM	77-140 71-140(-64)	20BSOR	TM585-70-66	-	B-6400-SS-04
68S	75-100-41(-27)	BA-100ELD	T585-70-SV	5042	B-6400-SE-LL
68U	70-300	-	T585-70-SU	-	B6010
69	70-200	BA-455/BA-485	S-585-70	5049F/5549	B-6001/B-6081
69AD	95-200	-	-	5063	B-6301
69C	78-200	-	S585-70-HC	-	-
69M	70-240	-	S585-70-66	-	B-6081-SS
69O	-	BA-150H	-	-	-
69U	70-400	-	S585-70-SU	-	B-6011

IRON

KITZ	AMERICAN	MILWAUKEE	NIBCO	RED-WHITE	WATTS
90	3700	-	-	-	G4000
91	-	-	-	-	-

*This comparison chart is provided for the convenience of our customers. Valves listed may not be identical in design, materials of construction or basic pressure rating. KITZ catalogs and those of other valve manufacturers should be consulted for complete details.

CROSS REFERENCE CHART

CARBON & STAINLESS STEEL

THREADED, SOCKET WELD, BUTT WELD

KITZ	APOLLO	MILWAUKEE	NIBCO	WATTS	WORCESTER
39	76-100	20SSOR	T580-S6-66-LL	S-8000	-
49M	89-100	20CSOR	T580-CS-66-LL	C-7000	-
50	93-100	-	-	-	5846R
52	-	-	-	-	5866R
53F	-	-	-	-	-
119	92-100-24	-	T560-CS-66-FS-LL	C-7100	-
129	96-100-24	-	T560-S6-66-FS-LL	S-8100	-
217	89-100	20CSOR	T580-CS-66-LL	C-7000	-
219	89-100-24	-	T580-CS-66-FS-LL	C-7000-FS	-
227	76-100	20SSOR	T580-S6-66-LL	S-8000	-
229	76-100-24	-	T580-S6-66-FS-LL	S-8000-FS	-
237	-	22CSOR	-	C-7200	-
239	-	-	-	-	-
247	-	22SSOR	-	S-8200	-
249	-	-	-	-	-
317	83-340	-	TM590-CS-R-66-LL	C-7450	-
317B	-	-	BM590-CS-R-66-LL	-	-
317S	83-440	-	KM590-CS-R-66-LL	-	-
317F	83-540	-	-	C-7480	5946TT
317FB	-	-	-	-	-
317FS	83-640	-	-	-	-
319	83-340-29	35CSOR	TM590-CS-R-66-FS-LL	C-7450-607	-
319B	-	35CS2R	BM590-CS-R-66-FS-LL	-	-
319S	83-440-29	35CS1R	KM590-CS-R-66-FS-LL	-	-
319F	83-540-29	-	-	C-7480-607	AF5946TT
319FB	-	-	-	-	-
319FS	83-640-29	-	-	-	-
327	85-100	-	TM590-S6-R-66-LL	S-8450	-
327B	-	-	BM590-S6-R-66-LL	-	-
327S	85-200	-	KM590-S6-R-66-LL	-	-
327F	86-100	-	-	S-7480	5966TT
327FB	86-700	-	-	-	-
327FS	86-200	-	-	-	-
329	-	35SSOR	TM590-S6-R-66-FS-LL	S-8450-607	-
329B	-	35SS2R	BM590-S6-R-66-FS-LL	-	-
329S	-	35221R	KM590-S6-R-66-FS-LL	-	-
329F	86-500-29	-	-	S-7480-607	AF5966TG
329FB	-	-	-	-	-
329FS	86-600-29	-	-	-	-

*This comparison chart is provided for the convenience of our customers. Valves listed may not be identical in design, materials of construction or basic pressure rating. KITZ catalogs and those of other valve manufacturers should be consulted for complete details.

GENERAL TERMS AND CONDITIONS

ACCEPTANCE
All quotations are for acceptance within 30 days from date of quotation unless extended in writing. In the event a purchase order is placed after this time, the Seller's company reserves the right to requote prices of all valves offered. All orders and contracts are subject to credit approval and acceptance by KITZ.

FREIGHT
All materials will be shipped F.O.B. point of shipment – no freight allowance unless otherwise stated and agreed upon with the Buyer.

PRICES
There will be added to all prices quoted any sales, excise, or similar tax which Seller may be required to collect on or in connection with the sale. Seller reserves the right to cancel any order in the event that selling prices shall be established by Federal, State or other governmental regulation with respect to the products covered by the order which shall be lower than the prices specified in the order.

ESCALATION TERMS
Prices shown in this price schedule reflect the costs in effect at the time of publication. These prices will remain firm on all products with a quoted delivery of twenty six (26) weeks or less. On products with a quoted delivery of more than 26 weeks, the Seller has a right to price and invoice at the applicable price sheet in effect at the time of shipment. In no event will the invoiced price be less than price originally quoted.

DEFERRED SHIPMENTS
If for any reason the Buyer desires to delay shipments more than 30 days after manufacturing or to place a hold or to stop the order during the manufacturing cycle, the Seller's company reserves the right to consider the order cancelled and to invoke cancellation charges.

CREDIT TERMS
As quoted. Overdue balances will be subject to 1.5% service charge per month on such indebtedness.

DELIVERIES
Shipments made to the Buyer shall at all times be subject to the approval of Seller's Credit Department. All schedules of shipments are estimated as closely as possible and Seller will use its best effort to ship within the time schedule but does not guarantee to do so. Seller shall not be liable for any direct, indirect, or consequential damage or loss caused by delay in delivery, regardless of the cause of delay. Items offered from stock are subject to prior sale.

RETURNS
No returns are allowed without prior arrangements made with the Seller. Product considered for return must be in new, resalable condition and of current design.

WARRANTY
Seller will replace without charge or refund the purchase price of products manufactured by Seller which prove to be defective in material or workmanship, provided in each case that the product is properly installed and is used in the service for which Seller recommends it and that written claim, specifying the alleged defect, is presented to the Seller within one year from the date of shipment. Seller shall in no event be responsible for claims of A) labor, expenses, or other damages occasioned by defective parts or products or for B) consequential or secondary damages.

The Warranty stated in this paragraph is in lieu of all other warranties, either expressed or implied. With respect to warranties, this paragraph states Buyer's exclusive remedy and Seller's exclusive liability.

DESIGN
Because of a policy of continuous product improvement, Seller reserves the right to change design, materials or specifications without notice. There will be a charge for modifying an order after it has been entered when such change or modification results in additional engineering or clerical work for either KITZ or its suppliers.

NOTE
KITZ reserves the right to correct any obvious clerical errors in quotations, invoices and other contracts.

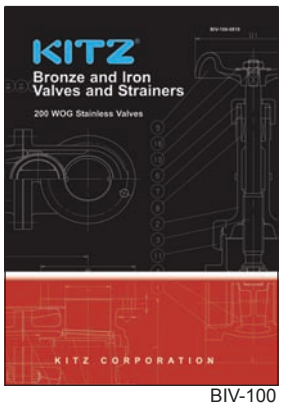
NOTES

NOTES

PRODUCT CATALOGS

KITZ has a wide selection of products available.

Please call Customer Service at 800-772-0073 for additional catalog requests.



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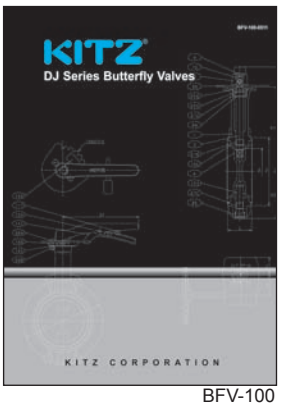

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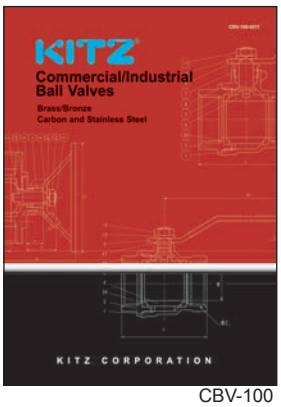

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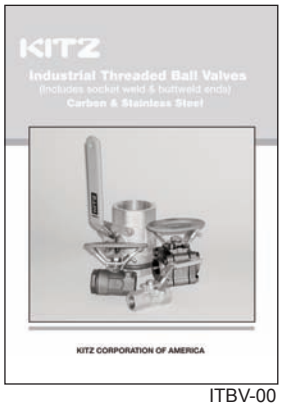

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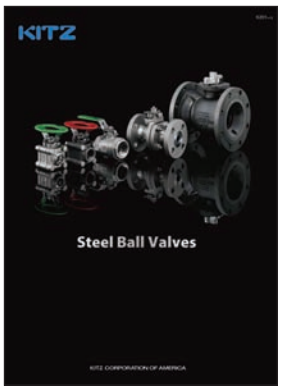

K-201

K-203

K-204

⚠ CAUTION

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For any specific application, users are kindly requested to contact KITZ Corporation for technical advice, or to carry out their own study and evaluation for proving suitability of these products to such an application. Failure to follow this request could result in property damage and/or personal injury, for which we shall not be liable.

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