86A-600 Series

3-Piece Full Port Stainless Steel 1500 CWP Schedule 80 Butt-Weld Ball Valve

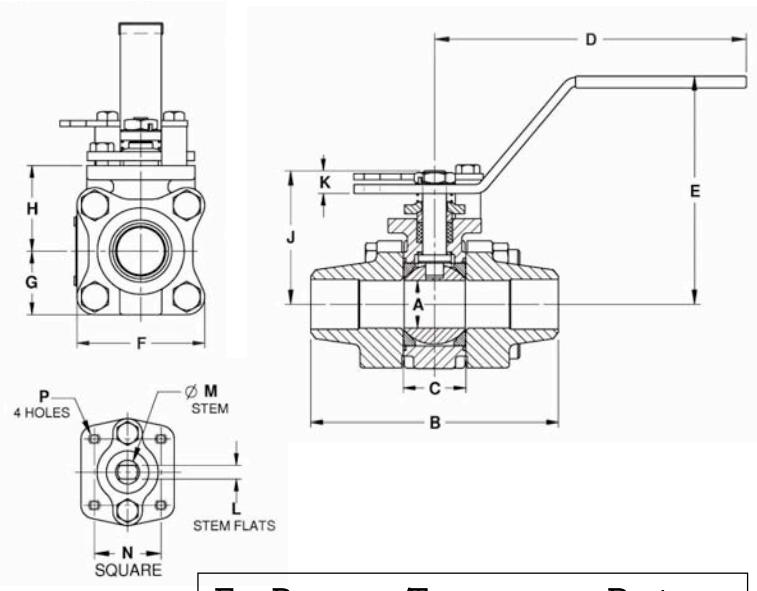
Standard Compliance - Valve design: MSS SP-110, End Connections: Butt-weld per ASME B16.25, Valve Marking: MSS SP-25, Production Testing: MSS SP-110, NACE MR0175, 2000 edition.

FEATURES

- 3-Piece construction w/ enclosed fasteners
- Full port
- Stainless steel trim & hardware
- Swing-out center section
- Pressure balanced solid ball
- Compression controlled RPTFE gaskets
- Anti-blowout one piece bottom entry stem
- Two-position locking
- Adjustable multi-piece PTFE "V" style packing
- Fully machined ISO 5211 mounting
- Cast bosses on the center-section and end caps for bleed & drain ports
- Vacuum service to 29 in of Hg.
- 150 psig saturated steam

STANDARD MATERIAL LIST

1. Body	ASTM A351-CF8M	10. Body Nuts	18-8 Stainless Steel
2. End Caps	ASTM A351-CF3M	11. Stop Bolts	18-8 Stainless Steel
3. Ball	ASTM A276-316SS	12. Gland Bolts	18-8 Stainless Steel
4. Stem	ASTM A276-316SS	13. Handle Nut/Screw	300 Series Stainless Steel
5. Seat	Multi-Seal	14. Packing Gland	ASTM A276-316SS
6. Packing	PTFE	15. Gland Plate	300 Series Stainless Steel
7. Stem Bearing	PEEK/PTFE	16. Lever Handle	300 Series Stainless Steel
8. Body Gasket	RPTFE	17. Lock Plate	300 Series Stainless Steel
9. Body Bolts	18-8 Stainless Steel	18. Stops	300 Series Stainless Steel



For Pressure/Temperature Ratings, Refer to Page M-17, Graph No. 24

VARIATIONS AVAILABLE:

86A-300 - Schedule 5 Butt-weld
86A-400 - Schedule 10 Butt-weld
86A-500 - Schedule 40 Butt-weld

OPTIONS AVAILABLE:

(SUFFIX)	OPTION	SIZES
-04-	2-1/4" Stem Extension	1/2" to 2"
-14-	Vented Ball (see page J-2)	1/2" to 2"
-15-	Round Handle	1/2" to 2"
-49-	Assembled Dry	1/2" to 2"
-57-	Cleaned for Oxygen Service	1/2" to 2"
-60-	Static Grounding	1/2" to 2"
-62-	Center Section Only	1/2" to 2"
-66-	FNPT x Buttweld	1/2" to 2"
-69-	Drilled & Tapped Purge & Drains	1/2" to 2"
-70-	Extended Bonnet	1/2" to 2"
-76-	Live Loaded (Lever Operated)	1/2" to 2"
-77-	Live Loaded (Actuated)	1/2" to 2"
-90-	Extended Bonnet w/Double Packing	1/2" to 2"
-SR-	Spring Return Handle	1/2" to 1"

STAINLESS STEEL 3-PIECE FULL PORT BALL VALVE

NUMBER	SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	WT.
86A-603-01	1/2"	.50	3.80	0.89	5.12	3.02	2.02	1.01	1.39	1.97	0.23	0.245	0.375	1.00	10-24	2.3
86A-604-01	3/4"	0.75	4.66	1.10	5.53	3.40	2.40	1.20	1.65	2.35	0.24	0.312	0.500	1.392	1/4-20	4.0
86A-605-01	1"	1.00	5.19	1.31	6.53	4.80	2.67	1.34	1.80	2.80	0.48	0.287	0.500	1.392	1/4-20	5.7
86A-606-01	1-1/4"	1.50	5.48	1.97	6.65	4.70	3.84	1.92	2.49	3.89	0.72	0.412	0.625	1.949	5/16-18	14.2
86A-607-01	1-1/2"	1.50	5.96	1.97	6.65	4.70	3.84	1.92	2.49	3.89	0.72	0.412	0.625	1.949	5/16-18	14.4
86A-608-01	2"	2.00	6.84	2.56	8.40	5.47	4.92	2.46	3.17	4.74	0.80	0.477	0.750	1.949	5/16-18	27.6

FLOW DATA

For Apollo® Ball Valves

The listed Cv "factors" are derived from actual flow testing, in the Apollo® Ball Valve Division, Conbraco Industries, Inc., Pageland, South Carolina. These tests were completed using standard "off the shelf" valves with no special preparation and utilizing standard schedule 40 pipe. It should be understood that these factors are for the valve only and also include the connection configuration. The flow testing is done utilizing water as a fluid media and is a direct statement of the gallons of water flowed per minute with a 1 psig pressure differential across the valve/connection unit. Line pressure is not a factor. Because the Cv is a factor, the formula can be used to estimate flow of most media for valve sizing.

Flow of Liquid

$$Q = Cv\sqrt{\frac{\Delta P}{SpGr}}$$

or $$\Delta P = \frac{(Q)^2\ (SpGr)}{(Cv)^2}$$

Where:
Q = flow in US gpm
ΔP = pressure drop (psig)
SpGr = specific gravity at flowing temperature
Cv = valve constant

Flow of Gas

$$Q = 1360\ Cv\sqrt{\frac{(\Delta P)\ (P_1)}{(SpGr)\ (T)}}$$

or $$\Delta P = \frac{5.4 \times 10^{-7}\ (SpGr)\ (T)}{(Q)^2}\ (Cv)^2\ (P_2)$$

Where:
Q = flow in SCFH
ΔP = pressure drop (psig)
SpGr = specific gravity (based on air = 1.0)
P_1 = outlet pressure–psia (psig + 14.7)
T = (temp. °F + 460)
Cv = valve constant

Cv FACTORS
SERIES:
70-100, 71-100, 71AR, 73A-100,
74-100, 76-100, 76AR, 80-100
81-100, 89-100

SIZE		1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
OPEN	90°	8.4	7.2	15	30	43	48	84	108	503	370	670

Cv FACTORS
76F, 77, 77AR, 77C, 77D SERIES

SIZE		1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"
OPEN	90°	8.1	15	15	51	68	125	177	389	503

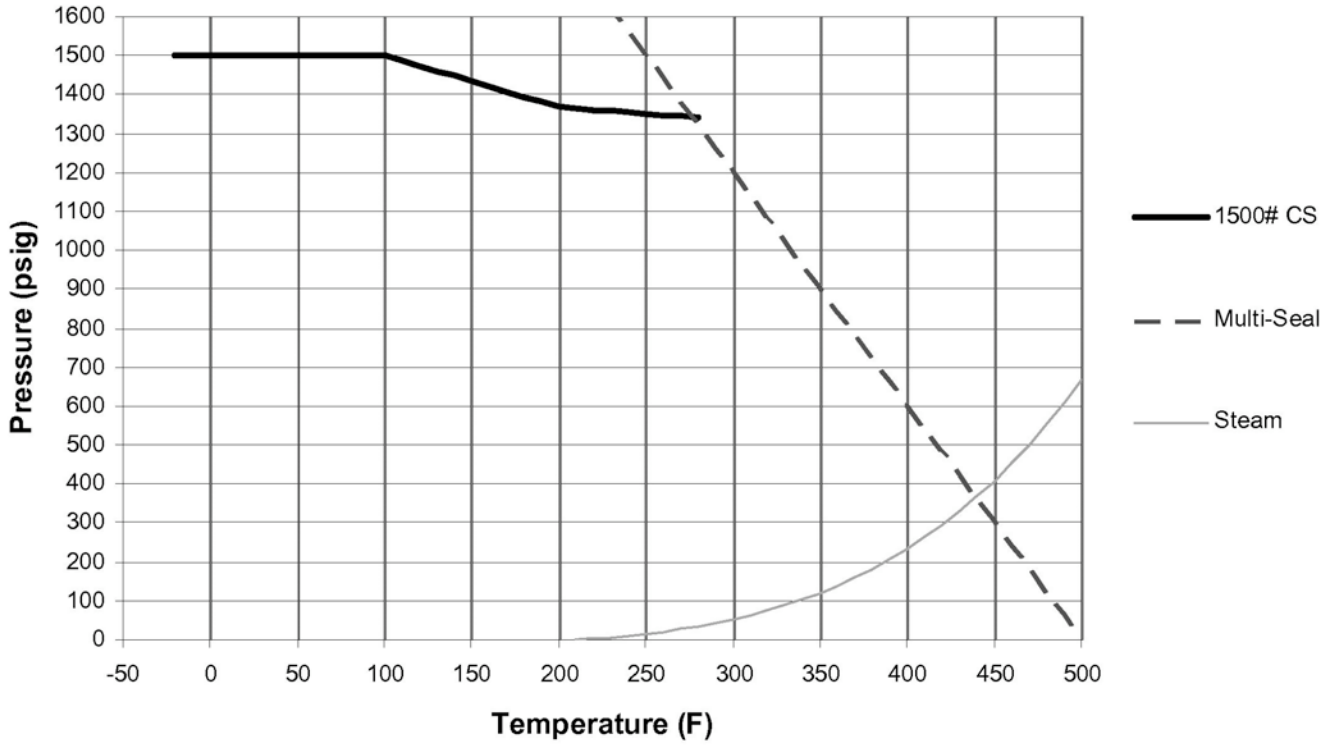
Cv FACTORS
82-100/200, 83R-100/200/700,85R-100/200,86R-100/200/700,83-500/600,86-500/600/900 SERIES

SIZE		1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
OPEN	90°	8.1	14	26	51	68	120	170	376	510	996	1893

Cv FACTORS
83A/83B, 86A/86B, 86C SERIES

SIZE		1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
OPEN	90°	8.1	14	26	51	68	120	170	376

1500 CWP CS P-T Rating
(Graph 23)



1500 CWP SS P-T Rating
(Graph 24)