



# 86R-100 Series

## Stainless Steel 3-Piece Full Port Ball Valve With Actuator Ready ISO Mounting Pad 2"

Full Port Threaded, 800 psig CWP, Cold Non-Shock. 150 psig Saturated Steam.

Vacuum Service to 29 inches Hg.

Federal Specification: WW-V-35C, Type: II, Composition: SS, Style: 1.

MSS SP-110; Ball Valve Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

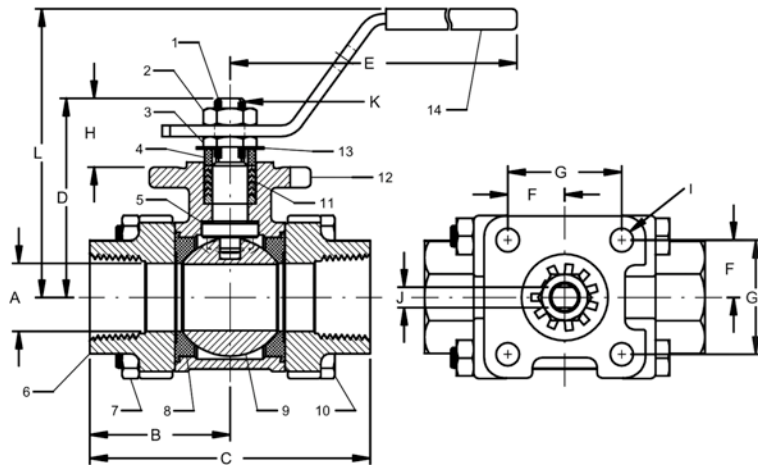
Meets NACE MR01-75

### FEATURES

- Multi-piece packing set
- ISO 5211 mounting pad
- Blow-out-proof stem design
- In-line repairable
- Adjustable packing gland
- Investment cast components
- Reinforced seats and seals
- Full port configuration

### STANDARD MATERIAL LIST

1. Stem	A276-316	8. Seat (2)	RPTFE
2. Jam nut	SS	9. Ball	316 SS
3. Low profile nut	316 SS	10. Body bolt (4)	18-8 SS
4. Gland	A276-316	11. Stem packing	MPTFE
5. Stem bearing	RPTFE	12. Body	ASTM A351-CF8M
6. End cap (2)	ASTM A351-CF3M	13. Lock tab washer	304 SS
7. Hex nut (4)	18-8 SS	14. Lever and grip	304 SS w/vinyl



### OPTIONS AVAILABLE:

(SUFFIX)	OPTION SIZES
-02-	Static Grounded
-03-	1-1/4" Stem Extension
-04-	2-1/4" Stem Extension
-08-	90° Reversed Stem
-14-	Vented Ball
-18-	Plain Yellow Grip
-21-	UHMWPE Seats (Non-PTFE)
-24-	Graphite Stem Packing
-27-	Latch Lock Lever
-35-	VTFE Trim
-36-	SS Round Handle
-39-	SS Hi-Rise Locking Wheel Handle, SS Nut
-49-	Assembled Dry
-57-	Oxygen Cleaned
-60-	Grounded Ball & Stem
-63-	Threaded x Socket Weld
-P01-	BSPP (Parallel) Thread Connection
-T01-	BSPT (Tapered) Thread Connection
-AR-	Less Handle & Stop-Add Belleville Washers
-WB-	With Lever & Belleville Washers

For Pressure/Temperature Ratings,  
Refer to Page M-10, Graph No. 8

### STAINLESS STEEL 3-PIECE FULL PORT BALL VALVE WITH ISO MOUNTING PAD

NUMBER	SIZE	A	B	C	D	E	F	G	H	I	J (FLATS)	K (THRDS.) UNF	L
86R-108-01	2"	2.00	3.01	6.03	3.95	8.06	.98	1.95	1.16	.34	.370/.372	5/8-18	4.85



# 86R-100 Series

## Stainless Steel 3-Piece Full Port Ball Valve With Actuator Ready ISO Mounting Pad

### 3"

Full Port Threaded, 800 psig CWP, Cold Non-Shock. 150 psig Saturated Steam.  
 Vacuum Service to 29 inches Hg.  
 Federal Specification: WW-V-35C, Type: II, Composition: SS, Style: 1.  
 MSS SP-110; Ball Valve Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.  
 Meets NACE MR01-75

### FEATURES

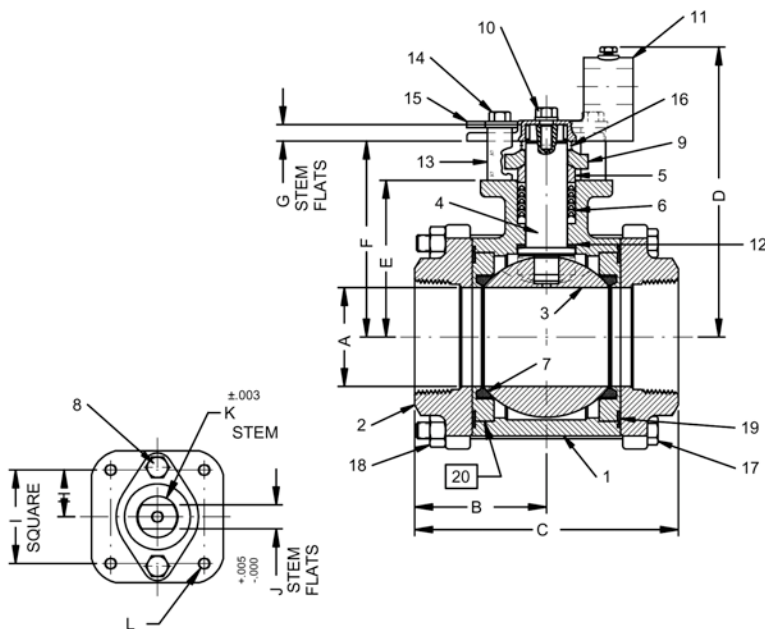
- Multi-piece packing set
- ISO 5211 mounting pad
- Blow-out-proof stem design
- In-line repairable
- Adjustable packing gland
- Investment cast components
- Reinforced seats and seals
- Full port configuration

### STANDARD MATERIAL LIST

1. Body	ASTM A351-CF8M	12. Stem Bearing	RPTFE
2. End Caps (2)	ASTM A351-CF8M	13. Stops (2)	SS
3. Ball	316 SS	14. Stop Screws (2)	SS
4. Stem	A276-316	15. Lock Plate	SS
5. Packing Gland	316 SS	16. Grounding Spring	SS
6. Stem Seal	MPTFE	17. Body Bolts (6)	SS
7. Seats (2)	RPTFE	18. Heavy Hex Nuts (6)	SS
8. Gland Screws (2)	SS	19. Body Seals (2)	RPTFE
9. Gland Plate	SS	20. Seat Holders (2)	SS
10. Adapter Screw	SS	21. Pipe Handle	(not shown)
11. Handle Adapter	SS		

### OPTIONS AVAILABLE:

(SUFFIX)	OPTION
-02-	Static Grounded
-14-	Vented Ball
-24-	Graphite Stem Packing
-35-	VTFE Trim
-49-	Assembled Dry
-57-	Oxygen Cleaned
-60-	Grounded Ball & Stem
-63-	Threaded x Socket Weld



For Pressure/Temperature Ratings,  
Refer to Page M-10, Graph No. 8

STAINLESS STEEL 3-PIECE FULL PORT  
BALL VALVE WITH ISO MOUNTING PAD

NUMBER	SIZE	A	B	C	D	E	F	G	H	I	J (FLATS)	K	L (THRDS.) UNF
86R-100-01	3"	3.00	4.00	8.00	8.80	4.75	5.94	.50	1.420	2.480	.725	1.250	3/8-16

# 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

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

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

Where:

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

### Flow of Gas

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

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

Where:

Q = flow in SCFH  
 ΔP = pressure drop (psig)  
 SpGr = specific gravity (based on air = 1.0)  
 P<sub>1</sub> = 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

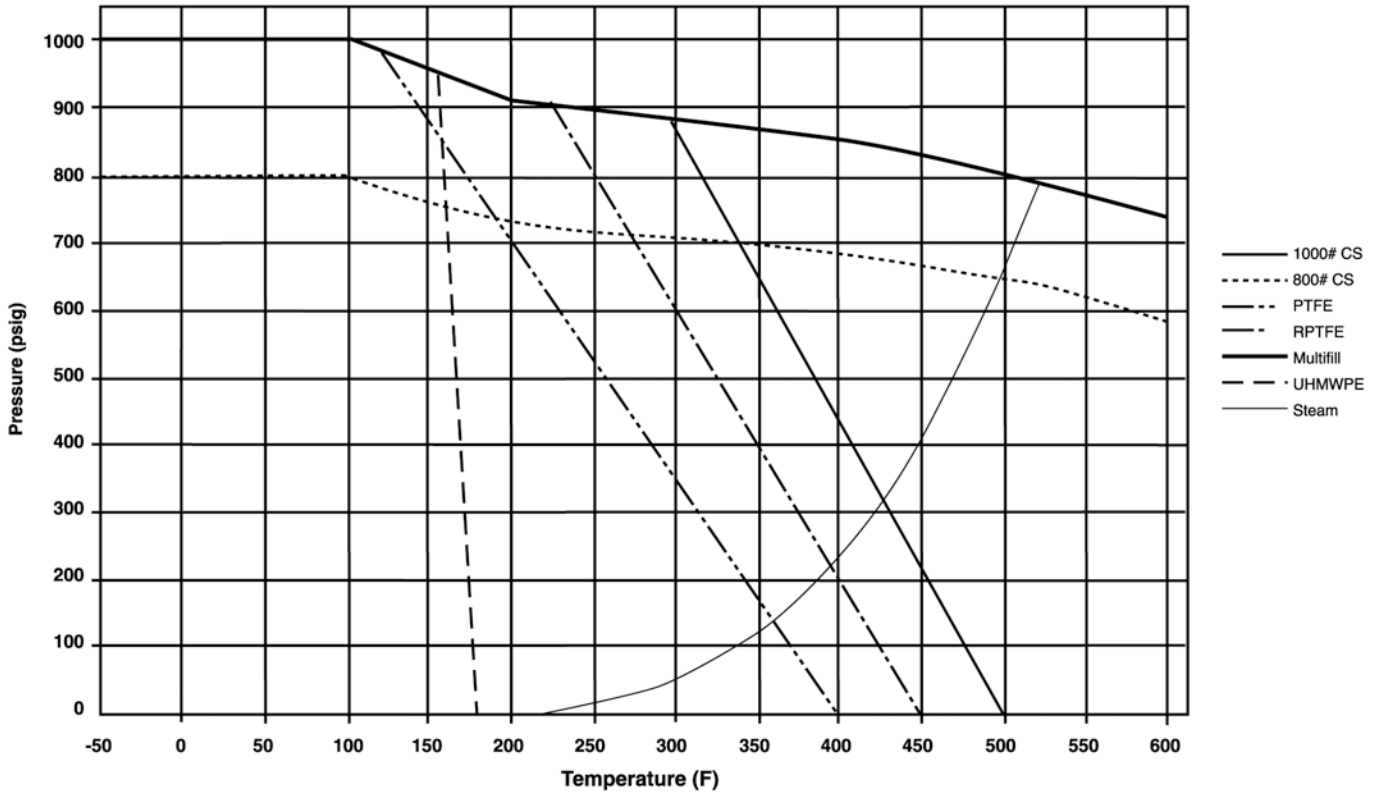
SIZE	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
OPEN   90°	8.1	14	26	51	68	120	170	376	510	996	1893

### 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

## 1000# CS P-T Rating (Graph 7)



## 1000# SS P-T Rating (Graph 8)

