

## Tartarini™ Trunnion Mounted Ball Valve



Figure 1. Tartarini™ Trunnion Mounted Ball Valve

### Introduction

The Tartarini Trunnion Mounted Ball Valve is a general-purpose block valve used for long-range natural gas, oil, petrochemical, and other chemical industry pipeline system. The ball valve is trunnion-mounted and is intended to function as a fully open or fully closed device.

### Features and Benefits

- **Two-Way Valve**— Tartarini™ Trunnion Mounted Valve has two seats that can be sealed on two directions providing bi-directional flow. See Figure 2.
- **Double Block and Bleed Operation**— Tartarini Trunnion Mounted Valve includes pressure actuated seats and bleed fittings which allow double block and bleed operation. See Figure 3.
- **Automatic Body Pressure Relief**— Seats will internally relieve excess body pressure. See Figure 4.
- **Full Bore or Reduced Bore Construction**— Either full bore or reduced bore can be available according to customers' requirements. For full bore type, the diameter of the valve ball bore is the same as the pipe size, which facilitates pigging operation.
- **Fire-proof Design**— Tartarini Trunnion Mounted Valves are fire tested for safety and qualified under API 6FA and API 607. Should the soft seats be destroyed by fire, the seat retainer and the ball act as a secondary metal-to-metal seal until maintenance can be performed. See Figure 5.
- **Stem Sealing System**— Two O-rings are adopted in/out the stem position with reliable performance.
- **Stem Extension**— This design is suitable for underground application. The stem extension length can be customized to meet customer requirements.
- **Flexible Operation**— The seat and stem bearing adopt Teflon® PTFE with small friction and self-lubrication to reduce the valve's operation torque. The valve can be easily operated for long period even with no sealing lubrication grease.
- **Multi-Operation Type**— The valve may be operated by hand, pneumatic operator, motor, hydro-pneumatic operator, and hydraulic operator, etc.

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# Trunnion Mounted Ball Valve

## Specifications

### Body Sizes

DN 80, 100, 150, 200, 250, 300, 350, 400, 450, 500, and 600 / 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, and 24-inches

### End Connection Styles

CL150, CL300, and CL600

### General Design Standard

Meets API 608 / API 6D standards

### Pressure and Temperature Rating

Meet ASME B16.34 standards

### Face-to-Face Dimensions

Meet ASME B16.10 standards

### Flange Type and Dimensions

Meet ASME B16.25 standards

### Inspection and Test

Meet API 598 / API 6D standards

### Construction Materials

Refer to Tables 1 and 2

### Approximate Weights

Refer to Table 4

### $C_v$ Flow Coefficients

Refer to Table 3

### Working Temperature

-20° to 60°C / -4° to 140°F

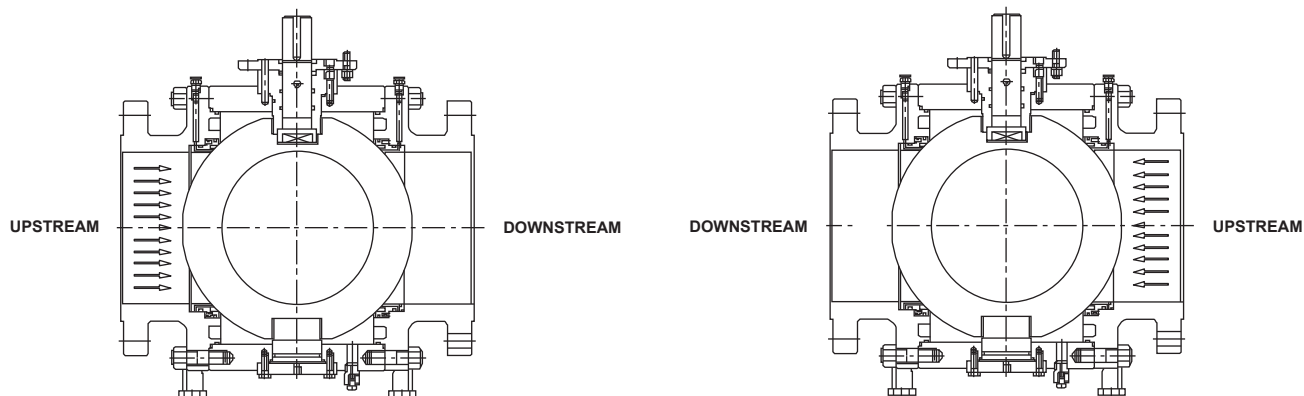


Figure 2. Two-way Valve Schematic

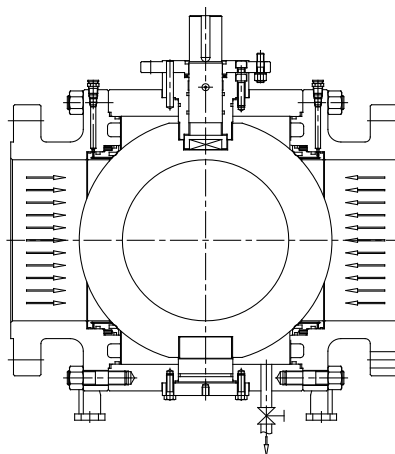


Figure 3. Double Block and Bleed Operation Schematic

# Trunnion Mounted Ball Valve

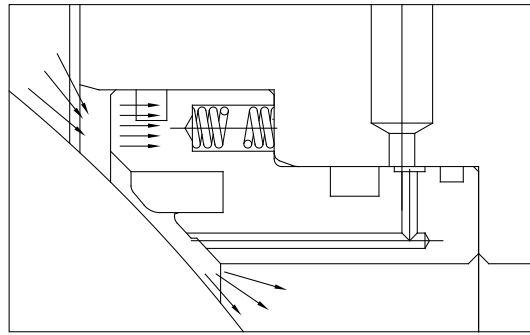


Figure 4. Automatic Body Pressure Relief Schematic

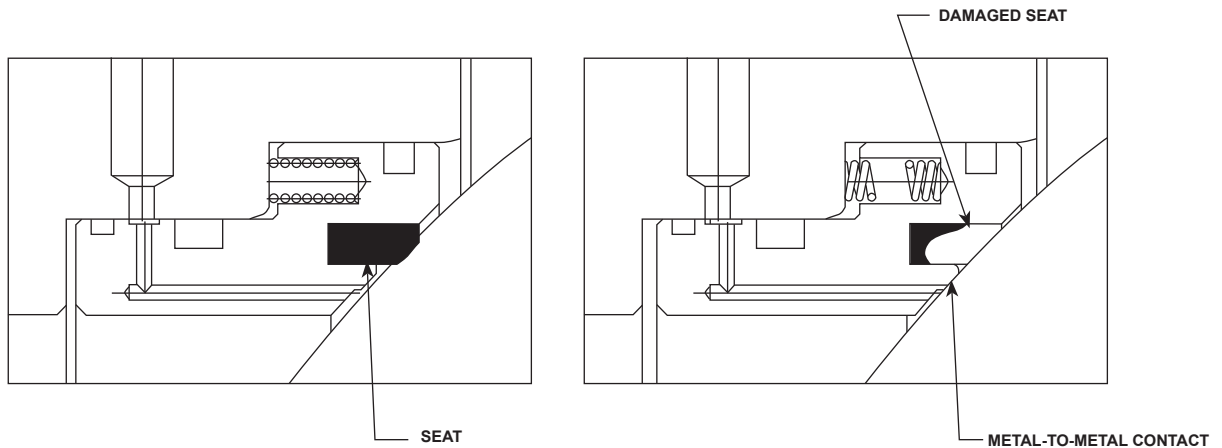


Figure 5. Fire-proof Design Schematic

Table 1. Construction Materials for Trunnion Mounted Ball Valve Cast Steel Body

PARTS	CAST STEEL SERIES	NACE SERIES	STAINLESS STEEL SERIES		LCC, LCB SERIES
	WCB	WCB	CF8, CF3	CF8M, CF3M	LCB, LCC
Body	A216-WCB	A216-WCB	A351-CF8, CF3	A351-CF8M, CF3M	A352-LCB, LCC
Ball	A105+HCr	A105N+ENP	A182-F304, F304L / +HCr (Nitriding)	A182-F316, F316L / +HCr (Nitriding)	A182-F304 / CF8
	A216-WCB+HCr	A216-WCB+ENP	A351-CF8, CF3 / +HCr (Nitriding)	A351-CF8M, CF3M / +HCr (Nitriding)	A352-LCB, LCC+HCr
Stem	F6A/F304	F304/316	A182-F304, F304L	A182-F316 / F316L	A182-F304
Seat	RPTFE ( <i>standard</i> ) / NYLON (High-pressure) / PPL (High-temperature)				
Seat Retainer	A105+Zn	A105+ENP	A182-F304 / F304L	A182-F316 / F316L	A182-F304
Packing	PTFE / PPL				
Gasket	SS304+Graphite Spiral Wound Gasket				
Bearing	PTFE / 304				
Spring	17-7PH / Inconel® X750				
Stud	A193-B7	A193-B7M	A193-B8	A193-B8 / B8M	A320-L7
Nut	A194-2H	A194-2HM	A194-8	A194-8 / 8M	A194-4

**NOTES:**

1. All materials conform to ASTM specifications.
2. Materials above are general valve design standards. Other materials not listed above may be provided. Please contact your local business partner for availability. Inconel® is a mark owned by Special Metals Corporation.

# Trunnion Mounted Ball Valve

**Table 2. Construction Materials for Trunnion Mounted Ball Valve Forged Steel Body**

PARTS	CAST STEEL SERIES	NACE SERIES	STAINLESS STEEL SERIES		LF2 SERIES
Body	A105	A105N	A182-F304 / F304L	A182-F316 / F316L	A350-LF2
Ball	A105+HCr	A105N+ENP	A182-F304 / F304L / +HCr (Nitriding)	A182-F316 / F316L / +HCr (Nitriding)	A350-LF2+HCr
Stem	F6A/F304	F304 / 316	A182-F304, F304L	A182-F316 / F31L	A182-F304
Seat	Polytetrafluoroethylene (PTFE) ( <i>standard</i> ) / NYLON (High-pressure) / PPL (High-temperature)				
Seat Retainer	A105+Zn	A105N+ENP	A182-F304 / F304L	A182-F316 / F316L	A182-F304
Packing	Flexible Graphite				
Gasket	SS304+Graphite Spiral Wound Gasket				
Bearing	PTFE / 304				
Spring	17-7PH / Inconel® X750				
Stud	A193-B7	A193-B7M	A193-B8	A193-B8/B8M	A320-L7
Nut	A194-2H	A194-2HM	A194-8	A194-8/8M	A194-4

**NOTES:**  
 1. All materials conform to ASTM specifications.  
 2. Materials above are general valve design standards. Other materials not listed above may be provided. Please contact your local business partner for availability. Inconel® is a mark owned by Special Metals Corporation.

**Table 3. C<sub>v</sub> Flow Coefficients**

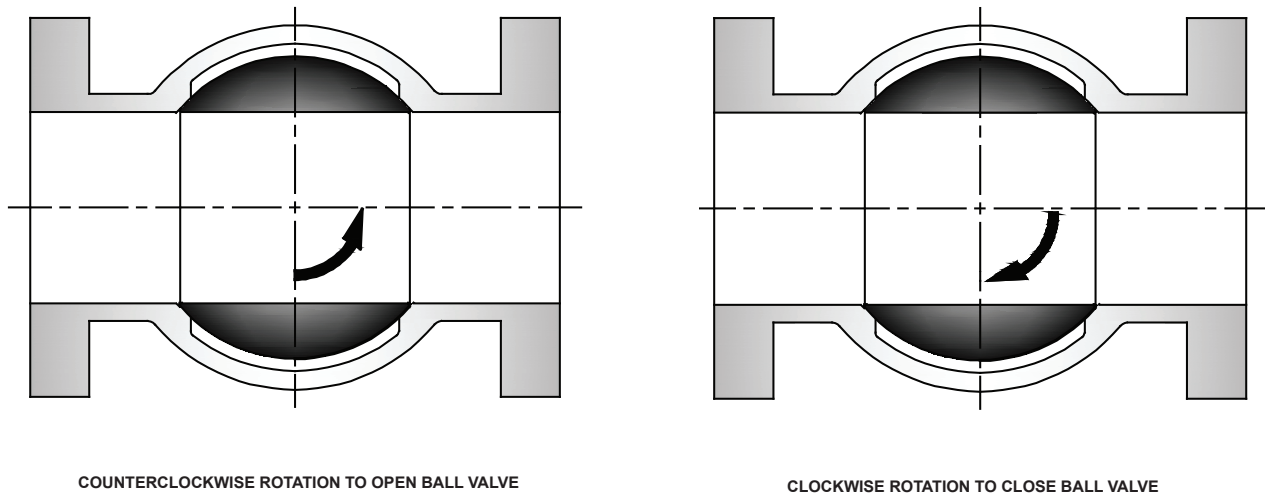
BODY SIZE		CL150	CL300	CL600	CL900	CL1500
DN	NPS					
80	3	1300	1100	1000	1000	900
100	4	2300	2200	1800	1800	1600
150	6	5400	5400	4500	4300	4000
200	8	10 000	10 000	8900	8400	7900
250	10	17 800	17 100	14 500	14 000	13 000
300	12	26 000	25 000	22 000	21 000	19 000
350	14	32 000	31 000	28 000	26 000	24 000
400	16	44 000	42 000	39 000	36 000	33 000
450	18	58 000	56 000	51 000	47 500	42 000
500	20	75 000	72 000	66 000	60 000	52 000
600	24	111 200	102 000	92 000	86 000	81 000

**NOTE:** C<sub>v</sub> indicates the gallons of water at 16°C / 60°F flowing through the valve bore in 0.0069 MPa / 1 psig differential pressure.

**Table 4. Approximate Weights, kg / lbs**

BODY SIZE		CL150		CL300		CL600	
DN	Inch	Forged Steel	Cast Steel	Forged Steel	Cast Steel	Forged Steel	Cast Steel
		80	3	25 / 55	22 / 49	33 / 73	30 / 66
100	4	38 / 84	35 / 77	59 / 130	55 / 121	110 / 243	102 / 225
150	6	78 / 172	74 / 163	125 / 276	118 / 260	245 / 540	232 / 511
200	8	210 / 463	205 / 452	270 / 595	255 / 562	430 / 948	390 / 860
250	10	340 / 750	322 / 710	390 / 860	370 / 816	760 / 1675	710 / 1565
300	12	480 / 1058	460 / 1014	560 / 1235	533 / 1175	1010 / 2227	960 / 2116
350	14	595 / 1312	576 / 1270	670 / 1477	640 / 1411	1850 / 4078	1700 / 3748
400	16	890 / 1962	864 / 1905	1080 / 2381	1030 / 2271	2100 / 4630	1970 / 4343
450	18	1350 / 2976	1280 / 2822	1610 / 3549	1542 / 3399	2980 / 6570	2150 / 4740
500	20	1680 / 3704	1600 / 3527	2210 / 4872	2100 / 4629	3360 / 7407	3250 / 7165
600	24	3650 / 8047	3540 / 7804	4435 / 9777	4200 / 9259	6000 / 13 228	5800 / 12 787

# Trunnion Mounted Ball Valve



*Figure 6. Ball Valve Opening and Closing Directions*

## Principle of Operation

The main function of the Tartarini Trunnion Mounted Ball Valve is to cut off or connect the flow of fluid in a pipeline system. Via the handwheel handle or other driving device, application of torque force allows the ball to rotate 90 degrees, enough to align the ball bore to the centerline passage of the ball valve body, thus allowing fluid to pass through it. Turning the driving device clockwise closes the valve while turning it counterclockwise opens the valve. The same principle applies to any driving device used. Refer to Figure 6.

## Installation

Before installing the ball valve, thoroughly check the specifications stamped in the nameplate of the ball valve body and other documents that come with it. Make sure that it matches the specifications being ordered and is consistent with the installation requirements of your company.

Inspect the ball valve chamber, its sealing surface, and other parts of the valve for any shipment damage. Make sure that it is free of any dirt or foreign materials that may have collected during shipment. Use clean, soft cloth to remove any the dirt before installation.

Check if the operation of the valve's driving device moves freely from the fully open to fully closed position. Make sure that it is not jammed and its bolts and nuts are tight.

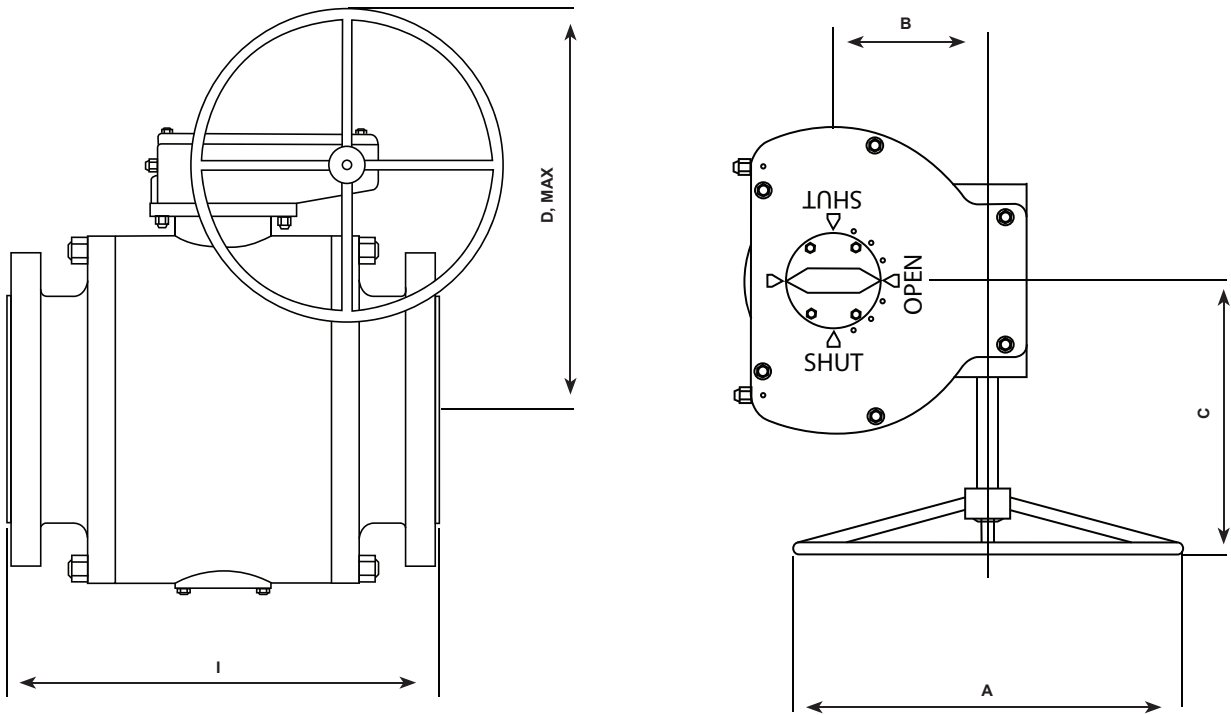
The ball valve is in the fully open position at the time of delivery. Before installing the ball valve in the pipeline, make sure it is in the fully open position.

When installing large-diameter ball valves, place the valve on a separate platform to function as its support in order to allow horizontal movement for the valve during installation. Do not let the pipeline bear the entire weight of the valve to avoid deformation of the pipeline system.

The ball valve may be installed either horizontally or vertically and in any location. However, make sure that the valve can be accessed easily during maintenance, repair, and operation.

The ball valve can be flanged or welded to the pipeline. The customer can choose whether to connect the ends with either bolt (flanged) or with weld.

# Trunnion Mounted Ball Valve



GEAR OPERATED

Figure 7. Dimensions

Table 5. Dimensions

DN	INCH	OPERATION	CL150									
			I		A		B		C		D, Max	
			mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
80	3	Gear	203	8.0	320	12.6	72	2.8	180	7.1	393	15.5
100	4	Gear	229	9.0	320	12.6	72	2.8	180	7.1	438	17.2
150	6	Gear	394	15.5	400	15.7	91	3.6	218	8.6	476	18.7
200	8	Gear	457	18.0	400	15.7	109	4.3	260	10.2	620	24.4
250	10	Gear	533	21.0	400	15.7	109	4.3	260	10.2	693	27.3
300	12	Gear	610	24.0	400	15.7	138	5.4	357	14.1	660	26.0
350	14	Gear	686	27.0	400	15.7	138	5.4	357	14.1	684	26.9
400	16	Gear	762	30.0	400	15.7	138	5.4	357	14.1	744	29.3
450	18	Gear	864	34.0	650	25.6	258	10.2	405	15.9	902	35.5
500	20	Gear	914	36.0	650	25.6	258	10.2	405	15.9	960	37.8
600	24	Gear	1067	42.0	800	31.5	150	5.9	505	19.9	1270	50.0

# Trunnion Mounted Ball Valve

**Table 5. Dimensions (continued)**

DN	INCH	OPERATION	CL300									
			I		A		B		C		D, Max	
			mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
80	3	Gear	283	11.1	320	12.6	72	2.8	180	7.1	393	15.5
100	4	Gear	305	12.0	320	12.6	72	2.8	180	7.1	438	17.2
150	6	Gear	403	15.9	400	15.7	91	3.6	218	8.6	476	18.7
200	8	Gear	502	19.8	400	15.7	109	4.3	260	10.2	620	24.4
250	10	Gear	568	22.4	400	15.7	109	4.3	260	10.2	693	27.3
300	12	Gear	648	25.5	400	15.7	138	5.4	357	14.1	660	26.0
350	14	Gear	762	30.0	400	15.7	138	5.4	357	14.1	684	26.9
400	16	Gear	838	33.0	400	15.7	138	5.4	357	14.1	744	29.3
450	18	Gear	914	36.0	650	25.6	258	10.2	405	15.9	902	35.5
500	20	Gear	991	39.0	650	25.6	258	10.2	405	15.9	960	37.8
600	24	Gear	1143	45.0	800	31.5	150	5.9	505	19.9	1270	50.0

DN	INCH	OPERATION	CL600									
			I		A		B		C		D, Max	
			mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
80	3	Gear	356	14.0	320	12.6	72	2.8	180	7.1	395	15.6
100	4	Gear	432	17.0	320	12.6	72	2.8	180	7.1	453	17.8
150	6	Gear	559	22.0	400	15.7	109	4.3	260	10.2	577	22.7
200	8	Gear	660	26.0	400	15.7	109	4.3	260	10.2	651	25.6
250	10	Gear	787	31.0	400	15.7	138	5.4	357	14.1	627	24.7
300	12	Gear	838	33.0	400	15.7	138	5.4	357	14.1	697	27.4
350	14	Gear	889	35.0	650	25.6	258	10.2	405	15.9	852	33.5
400	16	Gear	991	39.0	650	25.6	258	10.2	405	15.9	920	36.2
450	18	Gear	1092	43.0	800	31.5	150	5.9	505	19.9	1065	41.9
500	20	Gear	1194	47.0	800	31.5	150	5.9	505	19.9	1142	45.0
600	24	Gear	1397	55.0	800	31.5	180	7.1	555	21.9	1320	52.0

## Ordering Information

Refer to the Specifications section on page 2. Carefully review each specification and construction feature, then complete the Ordering Guide. Also, please complete the Specification Worksheet. For special requirements in the construction, please contact the factory.

## Ordering Guide

### Body Size (Select One)

- DN 80 / 3-inch\*\*\*
- DN 100 / 4-inch\*\*\*
- DN 150 / 6-inch\*\*\*

### Body Size (Select One) (continued)

- DN 200 / 8-inch\*\*\*
- DN 250 / 10-inch\*\*\*
- DN 300 / 12-inch\*\*\*
- DN 350 / 14-inch\*\*\*
- DN 400 / 16-inch\*\*\*
- DN 450 / 18-inch\*\*\*
- DN 500 / 20-inch\*\*\*
- DN 600 / 24-inch\*\*\*

# Trunnion Mounted Ball Valve

## Ordering Guide (continued)

### End Connection Style (Select One)

- CL150\*\*\*
- CL300\*\*\*
- CL600\*\*\*

Quick Order Guide	
***	Readily Available for Shipment
**	Allow Additional Time for Shipment
*	Special Order, Constructed from Non-Stocked Parts. Consult your local Sales Office for Availability.
Availability of the product being ordered is determined by the component with the longest shipping time for the requested construction.	

Specification Worksheet	
<b>Application:</b>	
Specific Use	_____
Line Size	_____
Gas Type and Specific Gravity	_____
Gas Temperature	_____
<b>Pressure:</b>	
Maximum Inlet Pressure ( $P_{1max}$ )	_____
Minimum Inlet Pressure ( $P_{1min}$ )	_____
Downstream Pressure Setting(s) ( $P_2$ )	_____
Maximum Flow ( $Q_{max}$ )	_____
<b>Performance Required:</b>	
Accuracy Requirements?	_____
Need for Extremely Fast Response?	_____
<b>Other Requirements:</b>	
_____	
_____	

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