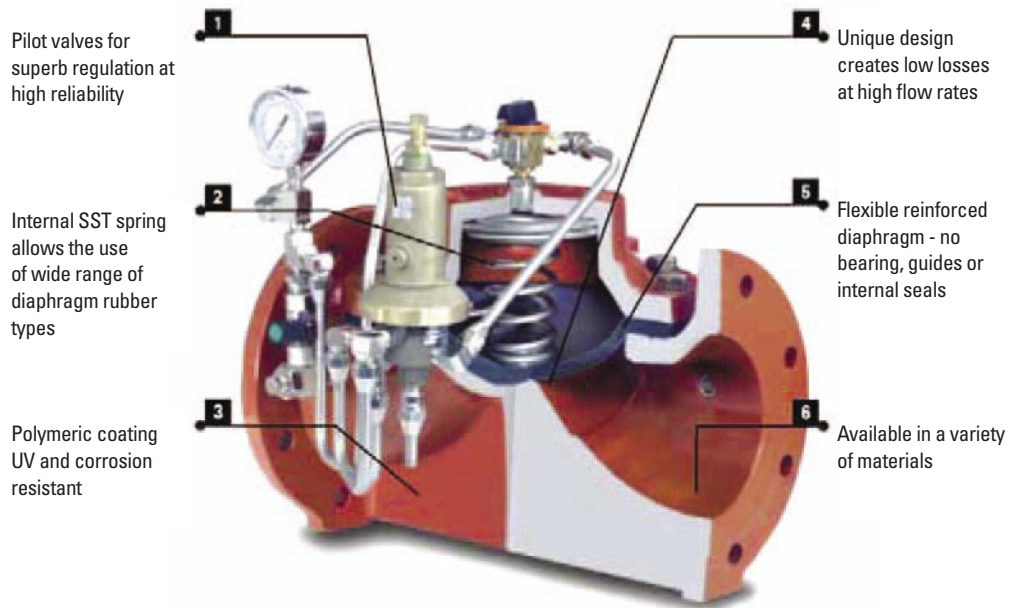


# 100 SERIES CONTROL VALVES

**SUPERB DESIGN FEATURING  
EXCEPTIONALLY LOW PRESSURE  
LOSSES AT HIGH FLOW RATES**



## FEATURES & BENEFITS

- Structural simplicity.
- Superb design featuring exceptionally low pressure losses at high flow rates.
- Can be used for regulating from no-flow to maximal flow with no need for additional throttling devices or by-pass valves.
- For natural liquids, sea water and industrial effluents.
- A wide selection of materials, coating and diaphragm types.
- All valve models fit a wide variety of control applications using pilot valves.



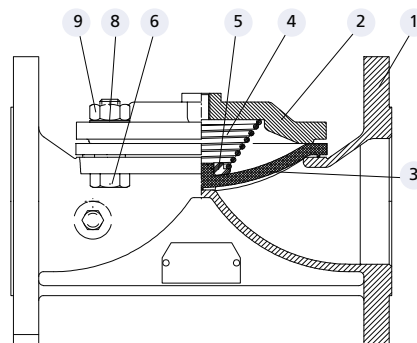
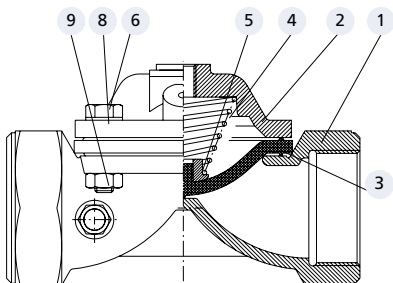
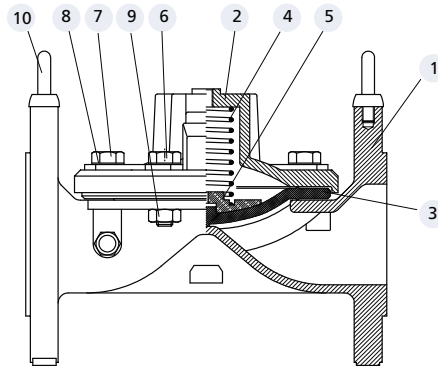
# MODELS & COMPONENTS

## AVAILABLE MODELS

Pattern												
Connection	Threaded	Threaded	Victaulic®	Flanged	Flanged	Flanged	Flanged	Threaded	Victaulic®	Threaded	Flanged	Threaded
Material	Cast Iron	Bronze	Cast Iron	Cast Iron	Bronze	Ductile Iron	Cast Iron	Cast Iron	Cast Iron	Bronze	Ductile Iron	Ductile Iron
Max. Pressure	16bar / 230psi										25bar / 360psi	
Available Sizes	mm	inch										
	20	3/4"	•	•								
	25	1"	•	•								
	40	1 1/2"	•	•	•				•		•	
	50	2"	•	•	•	•	•		•		•	•
	65	2 1/2"	•	•			•					
	80	3 1/4"	•	•	•		•		•		•	
	80	3"	•	•	•	•	•		•		•	
	100	4"			•	•	•		•		•	
	150	6"			•	•	•	•			•	
	200	8 1/8"				•	•					
	200	8"				•	•				•	
	250	10"				•	•				•	
	300	12"				•	•					
350	14"				•	•						
400	16"									•		
450	18"									•		
500	20"									•		
600	24"									•		

## COMPONENTS

COMPONENT NO.	DESCRIPTION
1	Body
2	Bonnet
3	Diaphragm
4	Spring
5	Spring Disc
6	Bolt
7	Short Bolt
8	Washer
9	Nut
10	Suspension Ring (Hook)



# SERIES 100 EL SOLENOID CONTROLLED VALVE



## DESCRIPTION

This valve is activated by the line pressure or by an external hydraulic or pneumatic pressure. Valve position is controlled by a 3-way solenoid valve which activates an electric current or electric pulse to open and close the main valve. The standard valve is supplied in the “normally closed” position with a “normally open” position as optional. This hydraulic valve has direct-sealing diaphragm for inline maintenance. No stem, shaft or guide bearings are located within the water passage. Electric activation can be added to other control applications on request.

## FEATURES

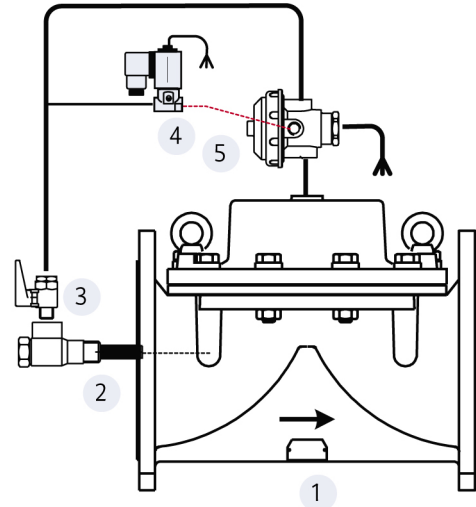
- Low power electric activation
- Fast response
- Simple and reliable design
- Can be added as electric over-ride to any other control function

## QUICK SIZING

- Valve size same as line or one size smaller
- Maximum flow speed for continuous operation 5.5 m/sec (18 ft/sec)

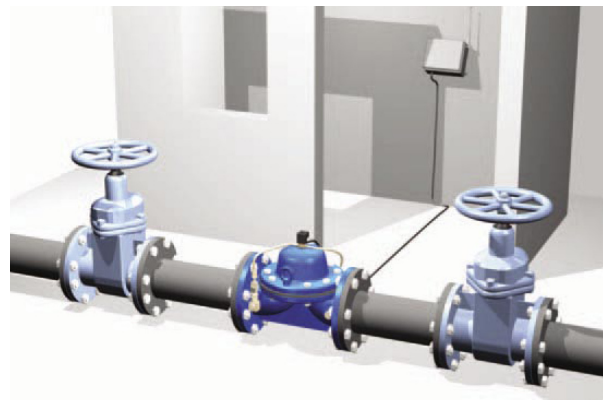
## DESIGN CONSIDERATIONS

- The valve should be suited for the maximal flow and allowed headloss.
- Select low pressure diaphragms when the valve is expected to stay in the open position for long periods.
- The valve can be opened by the electric command (NC) or closed by it (NO). This definition refers to the main valve operation and not the solenoid's characteristics.



## CONTROL SYSTEM COMPONENTS

- 1 Main valve
- 2 Self-flushing filter
- 3 Cock valve (optional)
- 4 3/2 Solenoid valve
- 5 Accelerator relay (optional for valves larger than 150mm/6")



## TYPICAL APPLICATION

Solenoid Controlled valve are controlled by a local controller.

# SERIES 100 PR PRESSURE REDUCING VALVE



## DESCRIPTION

This valve is activated by the line pressure or by an external hydraulic or pneumatic pressure. Valve position is controlled by a pressure reducing pilot valve to achieve constant outlet (downstream) pressure, regardless of upstream pressure or flow variations. A 3-way pilot valve allows full opening when upstream pressure drops below the pressure set point and a 2-way pilot valve creates a minimal differential in the open position. This hydraulic valve has direct-sealing diaphragm for inline maintenance. No stem, shaft or guide bearings are located within the water passage.

## FEATURES

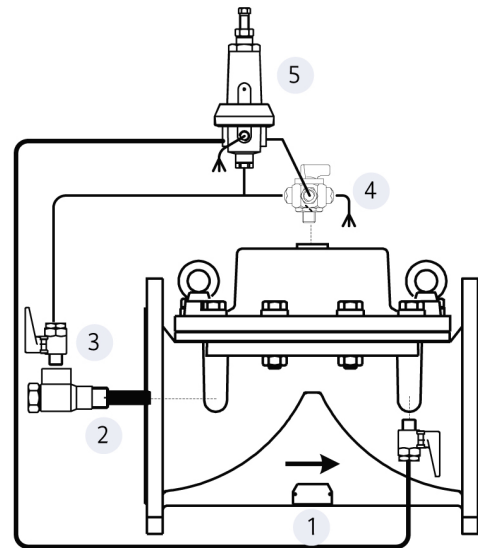
- Accurate, stable control from no-flow to full flow
- Simple and reliable design
- Exceptionally low losses at high flow
- WRAS Approval no. 04251

## QUICK SIZING

- Valve size same as line or one size smaller
- Maximum flow speed for continuous operation 5.5 m/sec (18 ft/sec)

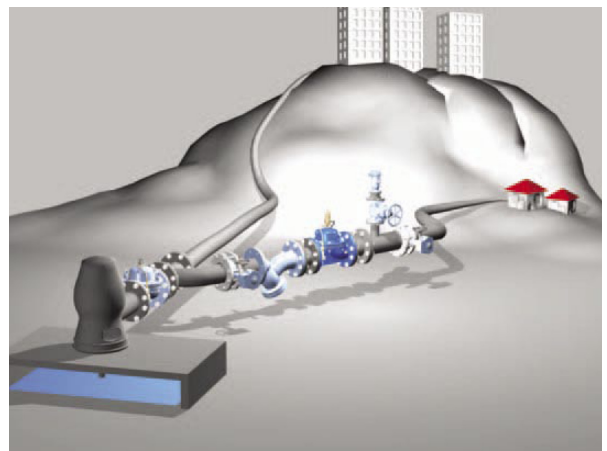
## DESIGN CONSIDERATIONS

- The valve should be suited for the maximal flow and allowed headloss.
- Select 3-way control pilot when the upstream pressure may drop to the required set pressure.
- Large pressure differentials may cause cavitation damage - consult Netafim for solutions if such conditions are expected. This definition refers to the main valve operation and not the solenoid's characteristics.



## CONTROL SYSTEM COMPONENTS

- 1 Main valve
- 2 Self-flushing filter
- 3 Cock valve (optional)
- 4 Manual over-ride selector valve (optional)
- 5 3-way pilot valve (other types are optional)



## TYPICAL APPLICATION

Pressure Reducing Valve reduce varying supply pressure to a stabilized downstream pressure.

# SERIES 100 RE SURGE ANTICIPATING VALVE



## DESCRIPTION

This valve protects the pumping system from water hammer caused by sudden pump shut-off (for example: power failure). Assembled on a T-junction of the main pipeline, this valve instantly opens when the pump stops relieving the returning high pressure wave. The valve slowly closes once the pressure returns to the static level. It can also function as a pressure relief valve. This hydraulic valve has direct-sealing diaphragm for inline maintenance. No stem, shaft or guide bearings are located within the water passage. Line pressure or external hydraulic or pneumatic pressure activates the valve. Two pressure relief pilots – one for opening at a low pressure set point and one for opening at a high pressure set point.

## FEATURES

- No slam operation
- Simple and reliable design
- Easy installation and maintenance
- Low resistance and high flow capacity
- Protection for sewage as well as clean water pumping systems

## QUICK SIZING

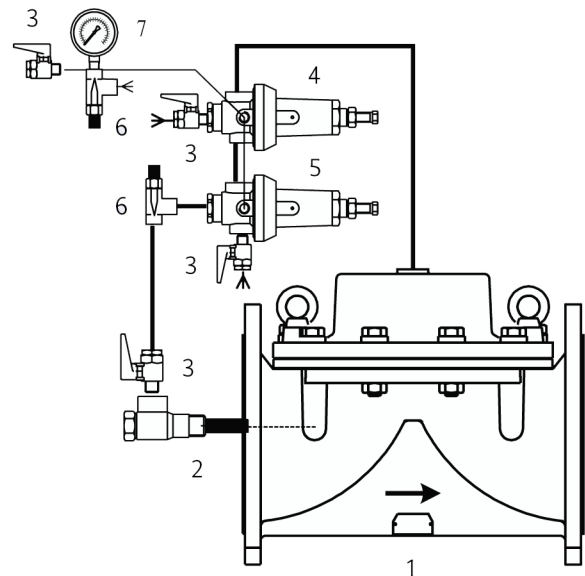
- The valve should be sized to match the 80% of the normal flow at static head in the valve site:

$$D[\text{mm}] \leq \sqrt{(250 \times \text{Flow}[\text{m}^3/\text{hr}] / \sqrt{\text{Pressure}[\text{mwc}]})}$$

$$D[\text{inch}] \leq \sqrt{(0.109 \times \text{Flow}[\text{gpm}] / \sqrt{\text{Pressure}[\text{psi}]})}$$

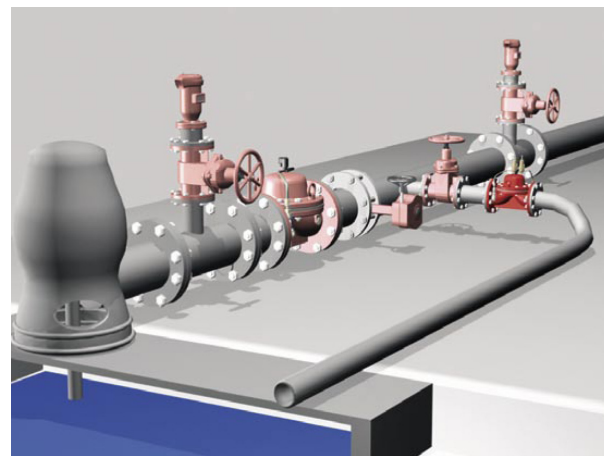
## DESIGN CONSIDERATIONS

- Install a manual separation/throttling valve, upstream of the valve position.
- Closure time is related to the pipe length and should be extended for longer pipe.
- The valve sensor tube must be connected to the main line.



## CONTROL SYSTEM COMPONENTS

- 1 Main valve
- 2 Self-flushing filter
- 3 Cock valve (optional)
- 4 Low-pressure relief pilot valve
- 5 High-pressure relief pilot valve
- 6 Needle valve
- 7 Pressure gauge



## TYPICAL APPLICATION

Surge Anticipating Valve prevents water-hammer/surges caused by an unexpected pump shut-off.



# SERIES 100 QR QUICK PRESSURE-RELIEF VALVE



## DESCRIPTION

This valve opens instantly when the pressure in the pipeline exceeds the safe level, thus relieving excessive pressure from the network. When the pressure returns to normal, the valve closes slowly at an adjustable pace. The valve is hydraulic with a direct-sealing diaphragm for inline maintenance. No stem, shaft or guide bearings are located within the water passage. Line pressure or external hydraulic or pneumatic pressure activates the valve.

## FEATURES

- No slam operation
- Simple and reliable design
- Easy installation and maintenance
- Low resistance and high flow capacity
- Protection for sewage as well as clean water pumping systems

## QUICK SIZING

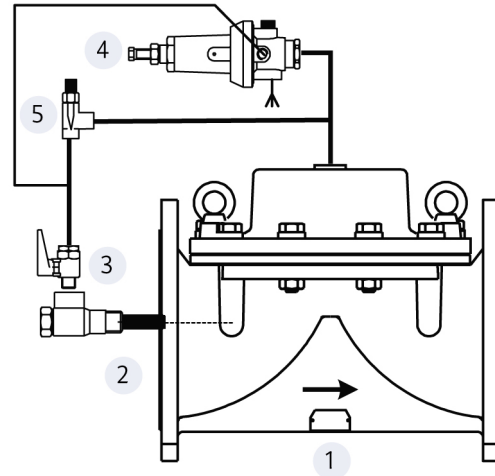
- The valve should be sized to match the expected relief flow at the set opening pressure:

$$D[\text{mm}] \leq \sqrt{(250 \times \text{Flow}[\text{m}^3/\text{hr}] / \sqrt{\text{Pressure}[\text{mwc}]})}$$

$$D[\text{inch}] \leq \sqrt{(0.109 \times \text{Flow}[\text{gpm}] / \sqrt{\text{Pressure}[\text{psi}]})}$$

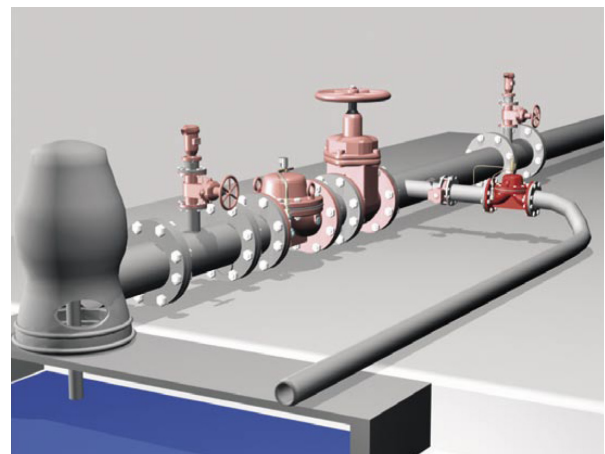
## DESIGN CONSIDERATIONS

- Install a manual separation valve upstream of the valve.
- Closure time is related to the pipe length and should be extended for longer pipe.
- The valve opens instantly at the set pressure. For regulating the system pressure use a Pressure Sustaining Relief Valve and not a Quick Relief Valve.



## CONTROL SYSTEM COMPONENTS

- 1 Main valve
- 2 Self-flushing filter
- 3 Cock valve (optional)
- 4 Pressure relief pilot valve
- 5 Needle valve



## TYPICAL APPLICATION

Quick Pressure-Relief Valve protects a system against pressure surges caused by pump start-up or valve closure.

# ADDITIONAL CONTROL FUNCTIONS

## **PUMP CONTROL VALVE (BC)**

This valve eliminates damaging surges caused by pump “start-up” and “shut-off.” The electrically activated valve opens gradually on pump “start-up” and closes slowly before the pump is switched off. It operates as a non-slam check valve preventing reverse flow. Available with cast iron models.



## **TWO-STAGE OPENING VALVE (TO)**

This valve prevents surges caused by the fast filling of drained pipeline. It restricts the flow rate until the network is full. The valve fully opens when downstream pressure reaches the set point. Available with all models.



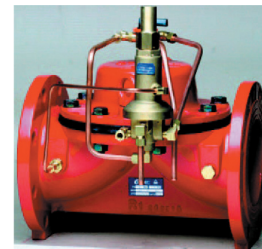
## **HYDRAULIC REMOTE CONTROL VALVE (RC)**

An hydraulic relay opens or closes the valve in response to a pressure command carried by a control tube from a remote control center. The relay permits quick response to the “open” and “close” command, the conversion of a valve from “normally open” to “normally closed” and overcoming elevation differences.



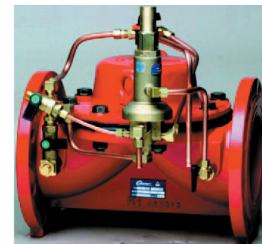
## **FLOW RATE CONTROL VALVE (FR)**

This valve limits the flow rate in the network to a preset level, regardless of inlet pressure variations. The valve fully opens when the flow rate drops below the set-point. Available on all models 2” to 24”.



## **EXCESSIVE FLOW SHUT-OFF VALVE (FE) - A VARIATION OF THE FLOW RATE CONTROL**

This valve closes drip-tight when the flow rate exceeds the preset maximum (for example: pipe rupture). Available on all models 2” to 24”.



## **MODULATING FLOAT CONTROL VALVE (FL)**

The main valve is controlled by a 1/2” float valve, located in the tank or reservoir at the required maximum water level. The valve maintains a constant maximum level. Available on all models.



# TECHNICAL INFORMATION

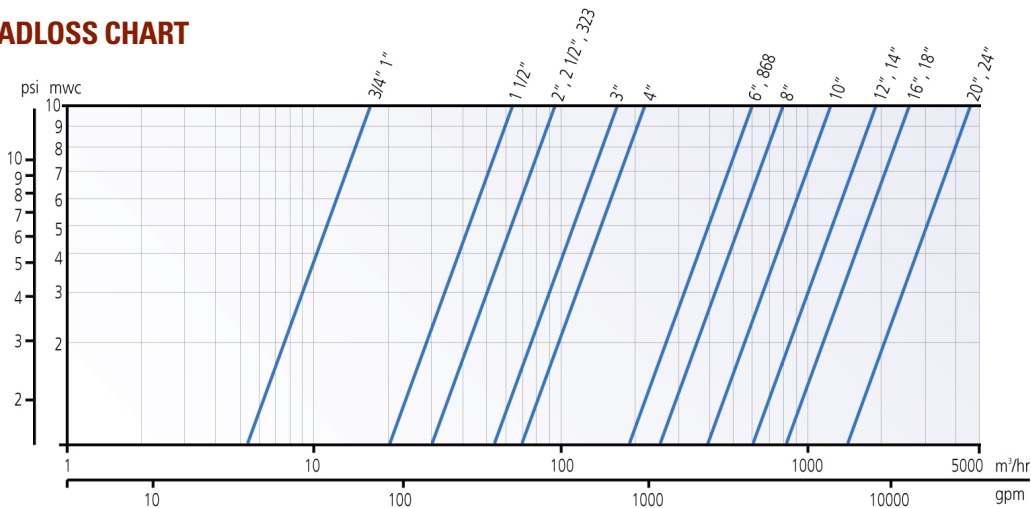
## HYDRAULIC PERFORMANCE

Valve Size	mm	20	25	40	50	65	80 <sub>LF</sub>	80	100	150	200 <sub>LF</sub>	200	250	300	350	400	450	500	600
	inch	3/4	1	1 1/2	2	2 1/2	323	3	4	6	868	8	10	12	14	16	18	20	24
Max. Flow Continuance	m <sup>3</sup> /hr	6	10	25	40	40	40	90	100	350	350	480	970	1400	1400	2500	2500	3890	5500
	gpm	26.4	44	110	176	176	176	396	440	1540	1540	2112	4268	6160	6160	11000	11000	17116	24200
Max. Flow Intermittent	m <sup>3</sup> /hr	16	27	68	109	109	109	245	273	955	955	1309	2645	3818	3818	6818	6818	10609	10609
	gpm	72	120	300	480	480	480	1080	1200	4200	4200	5760	11640	16800	16800	30000	30000	46680	46680
Minimal Flow	m <sup>3</sup> /hr	< 1																	
	gpm	< 5																	
Kv	m <sup>3</sup> /hr @ 1 bar	15	22	64	95	95	95	170	220	600	670	800	1250	1900	1900	2600	2600	5370	5370
Cv	gpm @ 1 psi	17	26	75	110	110	110	200	260	700	780	930	1460	2220	2220	3030	3030	6275	6275
Kv *	m <sup>3</sup> /hr @ 1 bar	-	-	-	78	-	-	120	200	550	-	800	1300	-	-	2600	2600	5370	5370
Cv *	gpm @ 1 psi	-	-	-	91	-	-	140	230	640	-	930	1520	-	-	3030	3030	6275	6275

\* High pressure models

$$\Delta P(\text{Bar}) = \left( \frac{Q \left[ \frac{\text{m}^3}{\text{hr}} \right]}{Kv} \right)^2 \quad \Delta P(\text{Psi}) = \left( \frac{Q[\text{gpm}]}{Cv} \right)^2$$

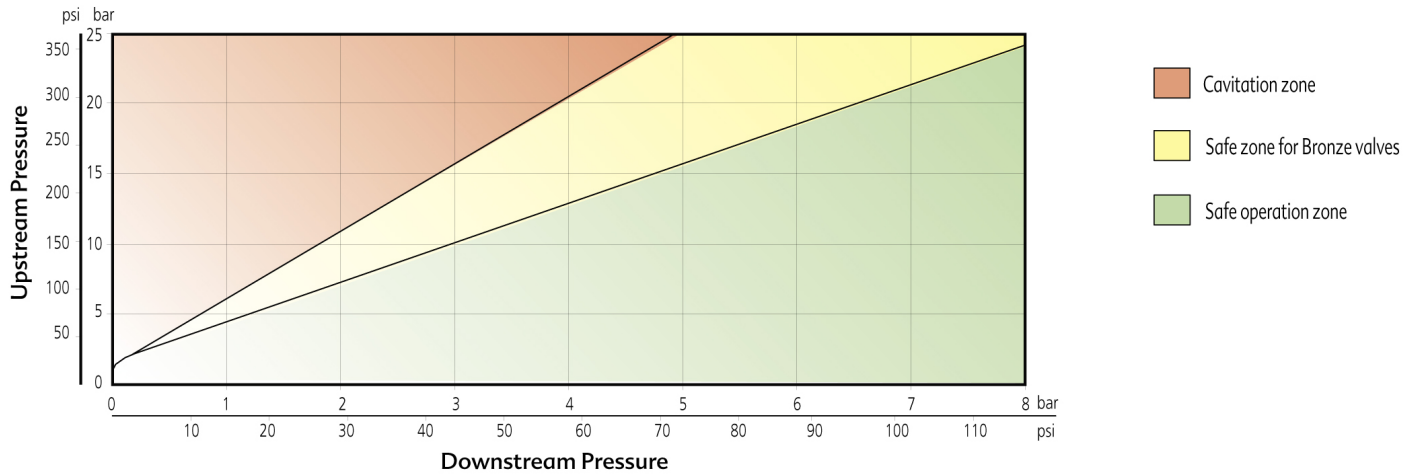
## HEADLOSS CHART





# TECHNICAL INFORMATION

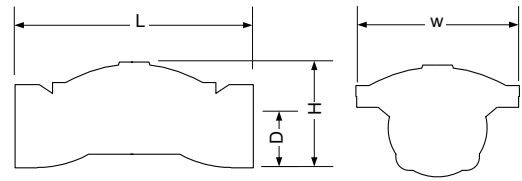
## CAVITATION DATA



## DESIGN SPECIFICATIONS

Materials	Standard Configuration	Acid Resistant Configuration
Body and Bonnet	Cast Iron	Stainless Steel
Diaphragm	Natural Rubber	EPDM, Neoprene, NBR
Spring	SST 302	SST 316
Nuts And Bolts	Coated Steel	SST 316
Coating	Polyester	Epoxy

# DIMENSIONS & WEIGHTS



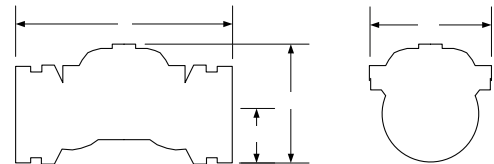
## STRAIGHT FLOW, THREADED CONNECTION

Valve Size		L				H				D		W		Weight			
		Cast Iron		Bronze		Cast Iron		Bronze						Cast Iron		Bronze	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	Kg	Lbs	Kg	Lbs
20	3/4	115	4.53	112	4.41	43	1.69	43	1.69	20	0.79	68	2.68	1	2.2	1	2.2
25	1	120	4.72	119	4.69	52	2.05	52	2.05	24	0.94	68	2.68	1	2.2	1	2.2
40	1 1/2	170	6.69	149	5.87	93	3.66	86	3.39	33	1.3	93	3.66	2.2	4.9	1.8	4
50	2	188	7.4	184	7.24	115	4.53	101	3.98	42	1.65	112	4.41	3.2	7	2.6	5.7
65	2 1/2	219	8.62	212	8.35	118	4.65	109	4.29	46	1.81	112	4.41	3.6	7.9	3.4	7.5
80 <sub>LF</sub>	323	225	8.86	221	8.7	126	4.96	116	4.57	54	2.13	112	4.41	4.5	9.9	3.9	8.5
80	3	316	12.44	316	12.44	135	5.31	135	5.31	53	2.09	200	7.87	11	24		

\* LF = Low Flow

## STRAIGHT FLOW, GROOVED CONNECTION (Vic.)

Valve Size		L		H		D		W		Weight	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	Kg	Lbs
40	1 1/2	177	6.97	81	3.19	26	1.02	93	3.66	1.8	4
50	2	190	7.48	100	3.94	33	1.3	112	4.41	2.6	5.7
80 <sub>LF</sub>	323	201	7.91	120	4.72	47	1.85	112	4.41	3	6.6
80	3	286	11.26	124	4.88	47	1.85	200	7.87	11	24.3
100	4	317	12.48	133	5.24	60	2.36	194	7.64	12	26.4
150	6	392	15.43	250	9.84	82	3.23	300	11.81	31	68.3

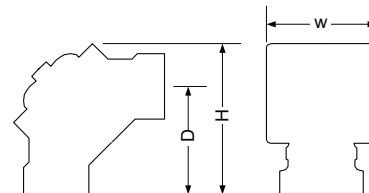


## ANGLE FLOW, GROOVED CONNECTION (Vic.)

Valve Size		H		D		W		Weight	
mm	inch	mm	inch	mm	inch	mm	inch	Kg	Lbs
80	3	240	9.45	170	6.69	200	7.87	10.5	23.1
100	4	250	9.84	185	7.28	200	7.87	11.5	25.4

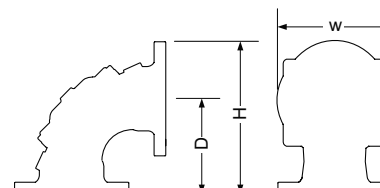
## ANGLE FLOW, THREADED CONNECTION

Valve Size		H		D		W		Weight	
mm	inch	mm	inch	mm	inch	mm	inch	Kg	Lbs
40	1 1/2	110	4.33	75	2.95	93	3.66	1.7	3.7
50	2	136	5.35	90	3.54	112	4.41	2.4	5.3
80 <sub>LF</sub>	323	165	6.5	114	4.49	112	4.41	3.6	7.9
80	3	239	9.41	145	5.71	200	7.87	10.8	23.8



## ANGLE FLOW, FLANGED CONNECTION

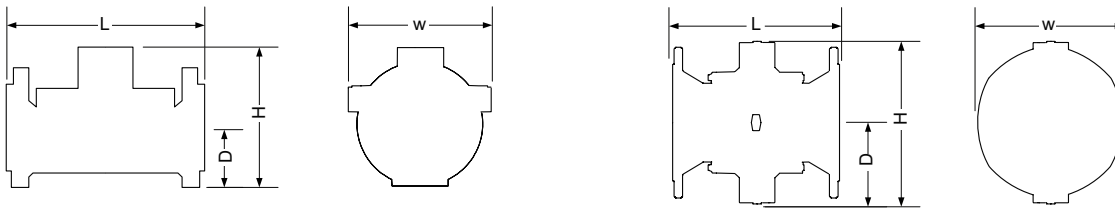
Valve Size		H		D		W		Weight	
mm	inch	mm	inch	mm	inch	mm	inch	Kg	Lbs
80	3	278	10.9	174	6.85	200	7.87	18	39.7
100	4	300	11.8	185	7.28	230	9.06	21	46.3
150	6	380	15	230	9.06	300	11.8	45	99.2



# DIMENSIONS & WEIGHTS

## STRAIGHT FLOW, FLANGED CONNECTION - STANDARD MODELS 16 Bar/230 psi

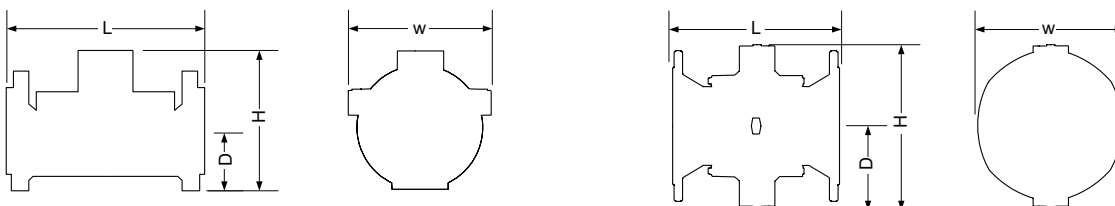
Valve Size		L		H		D		W		Weight					
										Cast Iron		Duct. Iron		Bronze	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	Kg	Lbs	Kg	Lbs	Kg	Lbs
50	2	200	7.87	166	6.54	85	3.35	166	6.54	7.2	15.8	7.7	17	8	17.6
80 <sub>LF</sub>	323	200	7.87	202	7.95	105	4.13	200	7.87	11	24.3	11.8	26		
80	3	285	11.22	200	7.87	105	4.13	200	7.87	17	37.5	18.2	40.1	19	42
100	4	305	12.01	230	9.06	110	4.33	230	9.06	22	48.5	24	53	24	53
150	6	390	15.35	314	12.36	145	5.71	300	11.8	46	101	49	108	51	112
200 <sub>LF</sub>	868	385	15.16	350	13.78	170	6.69	365	14.4	50	110	54	119		
200	8	460	18.11	400	15.75	170	6.69	365	14.4	80	176	86	190	89	196
250	10	535	21.06	445	17.52	205	8.07	440	17.3	117	258	125	276	131	289
300	12	580	22.83	495	19.49	240	9.45	490	19.3	156	344	167	368	147	324
350	14	580	22.83	495	19.49	270	10.6	540	21.3	182	401	172	379	180	397



## STRAIGHT FLOW, FLANGED CONNECTION - HIGH PRESSURE MODELS 25 Bar/360 psi

Valve Size		L		H		D		W		Weight	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	Kg	Lbs
50	2	228	8.98	169	6.65	85	3.35	175	6.9	10	22
50 <sub>TH</sub>	2 <sub>TH</sub>	250	8.98	120	6.65	42	1.65	175	6.9	6	13
80	3	310	12.2	237	9.33	105	4.13	200	7.87	30	66.1
100	4	356	14.02	263	10.35	120	4.72	260	10.24	38	83.8
150	6	436	17.17	378	14.88	150	5.91	320	12.6	75	165.3
200	8	530	20.87	481	18.94	180	7.09	400	15.75	123	271
250	10	636	25.04	546	21.5	215	8.46	495	19.49	190	419
400	16	715	28.15	830	32.68	310	12.2	830	32.68	433	955
450	18	715	28.15	830	32.68	340	13.39	830	32.68	460	1014
500	20	900	35.43	970	38.19	490	19.29	980	38.58	674	1486
600	24	900	35.43	970	38.19	490	19.29	980	38.58	696	1534

\* TH = Threaded





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