



SUBMITTAL NOTES

PROJECT: _____

Ross Model 23WR – Pilot Operated Pressure Reducing Valve

Size: _____ inch / mm

Every Ross Valve shall be hydrostatically tested for body integrity and tight seating at the factory prior to shipment. Field operating conditions are simulated, and the controls are adjusted for proper operation. In order to design and test each valve under operating conditions similar to those in the field, please complete / confirm the following:

- Inlet (supply) pressure _____ psi
• Outlet (downstream) pressure _____ psi

The Ross Globe Body Style Valve can be installed in any position. In order to properly design the valve and orient the controls, please confirm the physical layout of the installation. (** Designates standard valve orientation.)

Valve inlet & outlet (flow) : [] Horizontal ** or [] Vertical
Valve piston axis : [] Vertical ** or [] Horizontal [] Horizontal

The valve shall be furnished with:

- ANSI B16.1 Class 250 cast iron body, with:
[] FNPT threaded ends [] Class 125 flanges [] Class 250 flanges
• Cover and internal metal parts - Bronze construction with Stainless Steel Seat Ring (part #15)
• Ross Model 23WR Hydraulic Pressure Reducing Pilot Valve (part #19). Initial Setting: _____ psi.
• Conbraco Model 59-001-02 Strainer (part #25) with Stainless Steel Filter Element and Blow-Off
• Whitey Model B-1RM4 Needle Valve (part #17)
• Isolation valves: 1/4" Pet Cocks (part #18)
• Red brass pipe fittings and rigid control piping
• Tapped ports with gauge cocks on inlet & outlet (gauges by others)
• Optional: Position Indicator, Bronze (part #20)
• PAINTING: Ferrous surfaces of valve shall be coated with ANSI/NSF Standard 61 Certified Epoxy (Tnemec Series FC20)
- Meets the performance requirements of AWWA D102 Inside System No. 1.
• Operation & Maintenance Manual (shipped with the valve).
• [] Other (Code / Description) _____ / _____

(Please list any additional features that are required. A representative may need to contact you for any relevant operating data.)

The valve will be constructed with materials and options stated on this notes page & cut view drawing & quote only, any changes or adders will be reviewed by Ross Valve Mfg. Co., Inc. with possible additional charges to quoted valve pricing. All information following the cut view drawing is for general information. Any special submittal requirements will be an additional charge to purchaser. The Ross Valve Mfg. Co., Inc. reserves the right to modify valve construction which will result in equal or superior performance to existing designs. These modifications may be made at any time and at the sole discretion of the manufacturer.

PRESSURE REDUCING VALVE

Purpose: Control outlet pressure

Model Number: 23WR

Sizes: 1 1/2" - 3"

Type: Throttling

Primarily Controlled By:

Hydraulic pressure

Located: In line

Purpose: To prevent pressure out of the main valve from exceeding a preset maximum level.

Ends: Female NPT or flanged

Inlet Pressure: Maximum: 300 psi

Inlet Pressure: Minimum: 20 psi

Class: 125 ANSI for inlet pressures to 180 psi
250 ANSI for inlet pressures to 300 psi

Discharge pressure: 5 psi - 250 psi

Fluid: Cold water service

Construction: Cast iron body/bronze cover, pilot, piston and internal trim

Control Valves:

Orifice

Pilot: Pressure Reducing: Model 23WR

See overall parts lists and specific parts information for complete details.

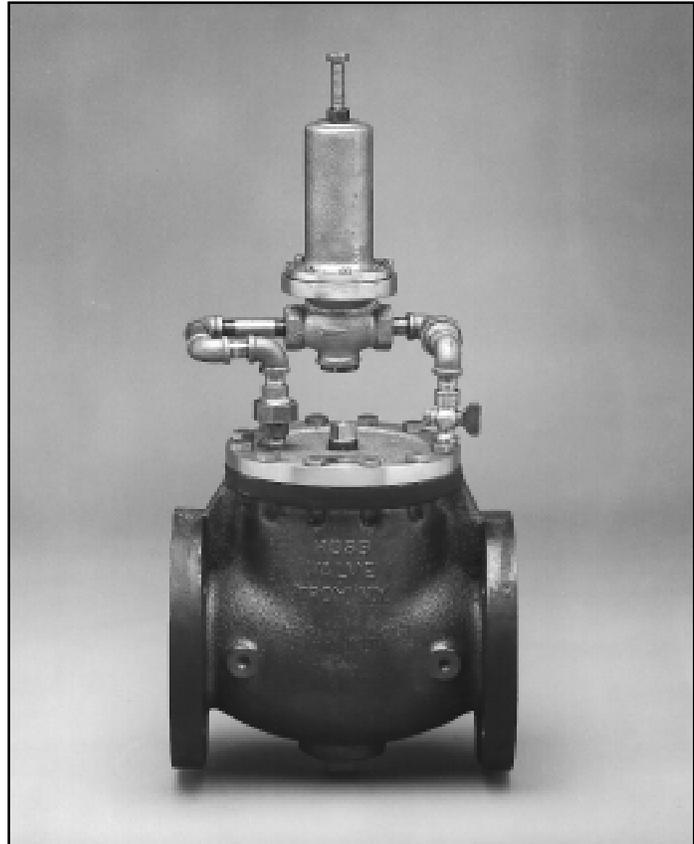
Options

1. All bronze body
2. Stainless steel trim
3. Indicator Rod

Customized Features

Any one or a selection of features can be added to the basic pressure reducing valve.

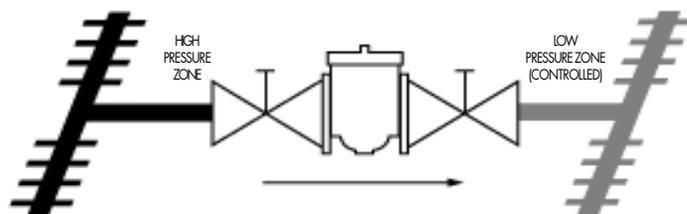
Code



Ross engineers customize the basic 23WR to accommodate individual needs.

Basic Applications

1. Utilize water reserves in adjacent systems under emergency conditions.
2. Control large quantities of water while holding close limits on downstream pressure.



If: Supply pressure is higher than user capacity
Ross Main Valve will: Throttle to pass only enough water to the user to maintain a preset lower pressure.

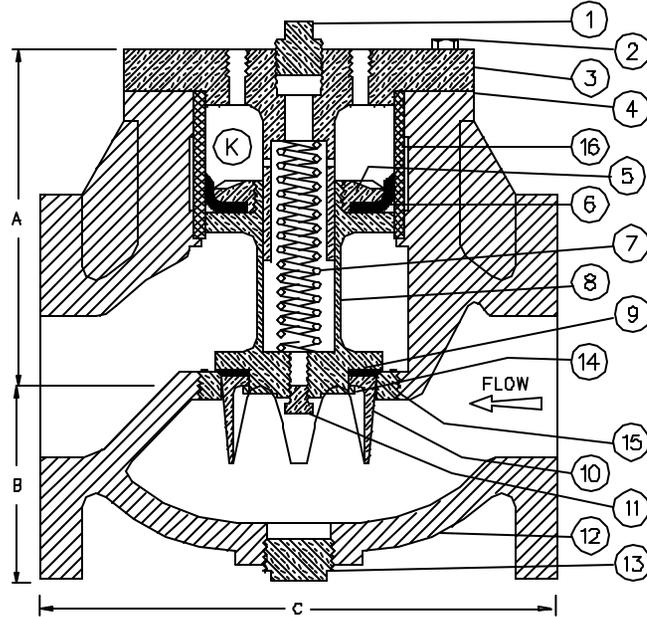
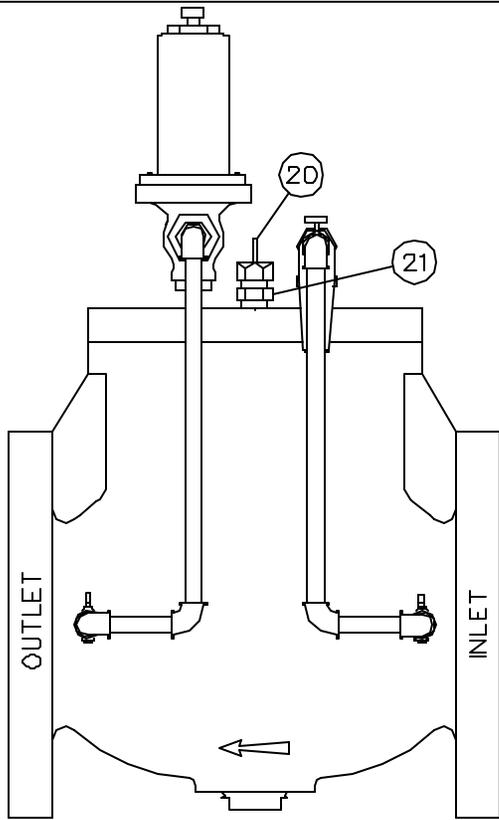
ROSS MODEL 23WR – PILOT OPERATED PRESSURE REDUCING VALVE

DESIGN:

This valve is designed to maintain a constant downstream pressure, regardless of changes in flow rate or upstream pressure. It is a pilot operated valve, capable of handling a wide range of flows without causing water hammer. The pilot valve is externally located for convenience and ease of adjustment. There is a shut-off cock located in the pilot line to override the pilot and close the main valve. Adjustment of the downstream pressure is made by turning the adjusting screw on top of the pilot valve (turn down, or *clockwise* to increase the downstream pressure).

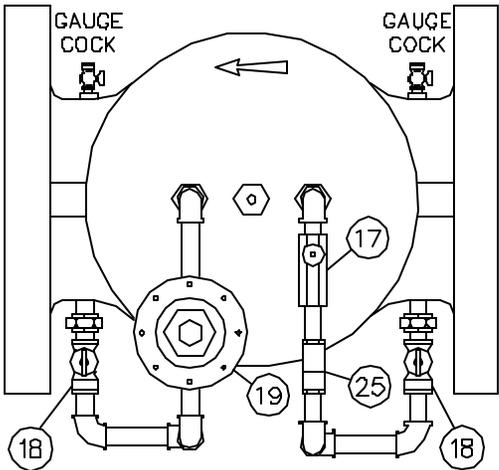
OPERATION:

High pressure water from upstream is introduced into the operating chamber above the main piston through some external piping, a strainer, and a needle valve. If the shut-off cock is closed, or if the pilot seat is closed, this pressure will be trapped and the valve will close. When the downstream pressure falls below the pilot setting, the drop in pressure is sensed under the pilot diaphragm, and the adjusting spring opens the pilot seat. This releases the pressure above the main piston and allows the valve to open and satisfy the demand. In actual operation, a balance between inflow to the power chamber, and outflow through the pilot is created. This changing balance closely follows small demand variations and repositions the piston to deliver a constant reduced pressure.



PART	DESCRIPTION	QTY.	MATERIAL
1	PLUG	1	BRONZE
2	BOLTS - COVER	VARY	BRONZE
3	COVER	1	BRONZE
4	GASKET - COVER	1	COMPOSITION
5	CUP FOLLOWER	1	BRONZE
6	CUP PACKING	1	LEATHER
7	GUIDE SPRING	1	STAINLESS STEEL
8	STEM	1	BRONZE
9	SEAT PACKING	1	POLYURETHANE
10	SEAT DISC	1	BRONZE
11	STEM PLUG	1	BRONZE
12	SHELL	1	CAST IRON
13	DRAIN PLUG	1	BRONZE
14	DISC NUT	1	BRONZE
15	SEAT RING	1	BRONZE
16	CYLINDER LINER	1	COMPOSITE
17	NEEDLE VALVE / ORIFICE	1	BRONZE
18	ISOLATION VALVE	2	BRONZE
19	PILOT VALVE - PRESSURE REDUCING	1	BRONZE
20	INDICATOR ROD	1	BRONZE
21	INDICATOR STUFFING BOX	1	BRONZE
25	STRAINER	1	BRONZE/STAINLESS

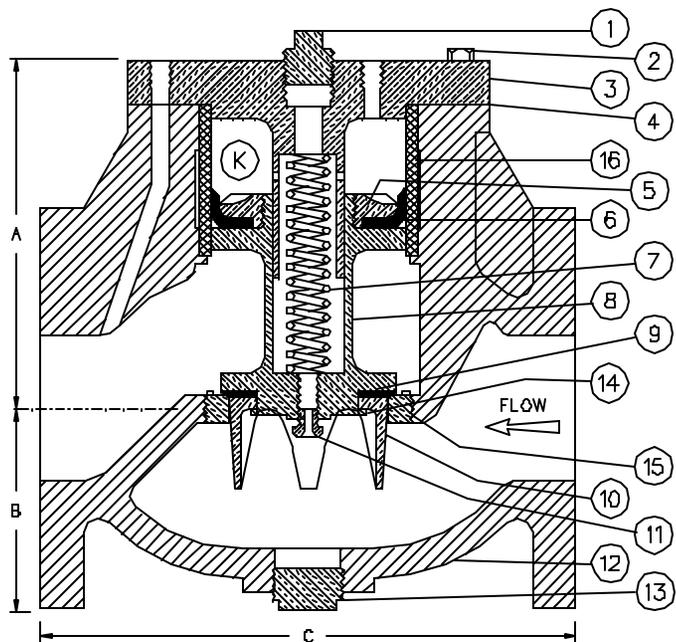
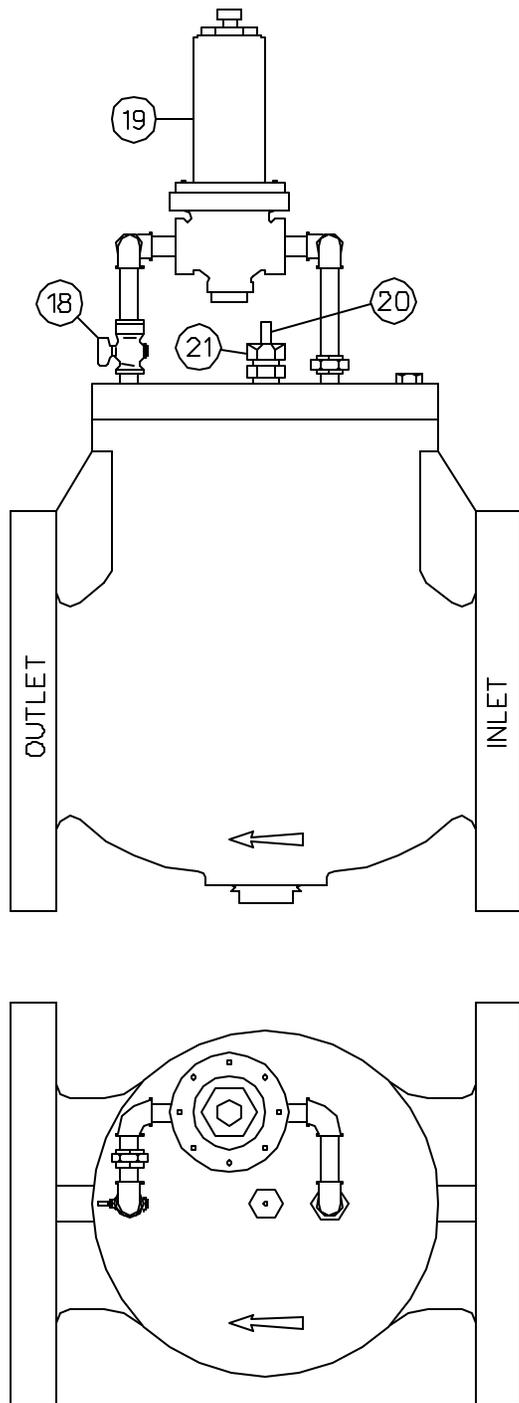
SIZE (INCHES)	ANSI CLASS	SHIPPING WEIGHT (LBS)	DIMENSIONS (INCHES)		
			A	B	C
1-1/2	125	35	4	3-1/4	7-5/8
	250	42	4	3-1/4	8-1/8
	NPT	30	4	3-1/4	8-3/8
2	125	55	5-1/2	3-1/2	8
	250	65	5-1/2	3-1/2	8-3/8
	NPT	50	5-1/2	3-1/2	8
2-1/2	125	75	6-1/2	4-1/2	9-1/4
	250	85	6-1/2	4-1/2	9-7/8
	NPT	70	6-1/2	4-1/2	9-1/4
3	125	80	6-1/2	4-1/2	9-1/4
	250	90	6-1/2	4-1/2	9-7/8
	NPT	75	6-1/2	4-1/2	9-1/4



ROSS VALVE Mfg. Co., Inc.
 6 OAKWOOD AVENUE - TROY, NEW YORK, 12180 - TEL. (518) 274 0961
 POST OFFICE BOX 595 - TROY, NEW YORK, 12181 - FAX (518) 274 0210
 WEBSITE: www.rossvalve.com - E-MAIL: sales@rossvalve.com

DRAWING 23WR	DATE 6-15-01 RJC
GLOBE BODY 1 1/2" - 3" NO SCALE	FIGURE 1E

Model 23WR
 PRESSURE REDUCING VALVE



SIZE	ANSI CLASS	SHIPPING WEIGHT (LBS)	DIMENSIONS (INCHES)		
			A	B	C
1-1/2	125	35	4	3-1/4	7-5/8
	250	42	4	3-1/4	8-1/8
	NPT	30	4	3-1/4	8-3/8
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	250	65	5-1/2	3-1/2	8-3/8
	NPT	50	5-1/2	3-1/2	8
2-1/2	125	75	6-1/2	4-1/2	9-1/4
	250	85	6-1/2	4-1/2	9-7/8
	NPT	70	6-1/2	4-1/2	9-1/4
3	125	80	6-1/2	4-1/2	9-1/4
	250	90	6-1/2	4-1/2	9-7/8
	NPT	75	6-1/2	4-1/2	9-1/4

PART	DESCRIPTION	QTY	MATERIAL
1	PLUG	1	BRONZE
2	BOLTS - COVER	VARY	BRONZE
3	COVER	1	BRONZE
4	GASKET - COVER	1	COMPOSITION
5	CUP FOLLOWER	1	BRONZE
6	CUP PACKING	1	LEATHER
7	GUIDE SPRING	1	STAINLESS STEEL
8	STEM	1	BRONZE
9	SEAT PACKING	1	POLY
10	SEAT DISC	1	BRONZE
11	STRAINER/ORIFICE	1	STAINLESS STEEL
12	SHELL	1	CAST IRON
13	DRAIN PLUG	1	BRONZE
14	DISC NUT	1	BRONZE
15	SEAT RING	1	BRONZE
16	CYLINDER LINER	1	COMPOSITE
18	ISOLATION VALVE	1	BRONZE
19	PILOT VALVE	1	BRONZE
20	INDICATOR ROD	OPTION	BRONZE
21	INDICATOR STUFFING BOX	OPTION	BRONZE

ROSS VALVE Mfg. Co., Inc.

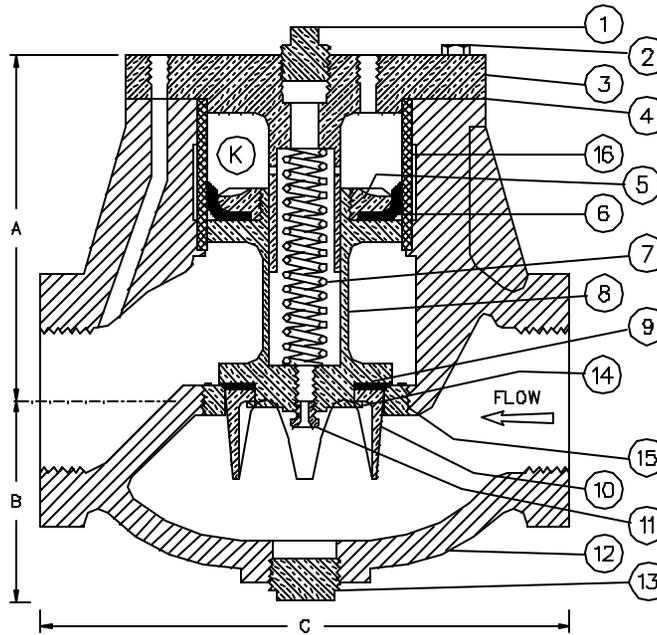
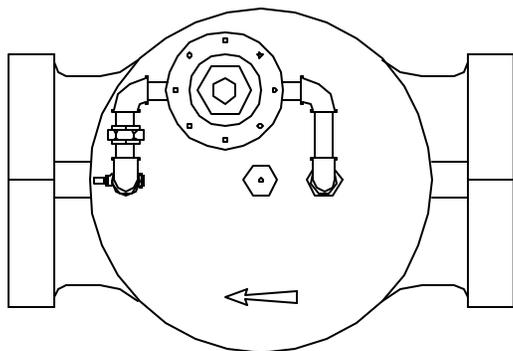
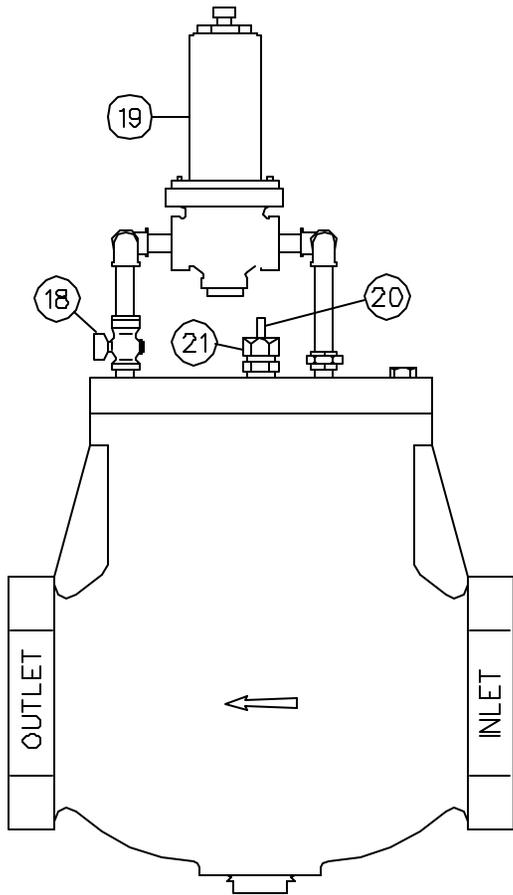
8 OAKWOOD AVENUE - P.O. BOX 595 - TROY, NEW YORK, 12181 - TEL. (518) 274 0981

NO SCALE DRAWING 23WR-1

DATE 2-10-52 1037 REVISED 12-2-96

MODEL 23WR FIGURE 1
PRESSURE REDUCING VALVE

FILE: 23WR1



SIZE	ANSI CLASS	SHIPPING WEIGHT (LBS)	DIMENSIONS (INCHES)		
			A	B	C
1-1/2	125	35	4	3-1/4	7-5/8
	250	42	4	3-1/4	8-1/8
	NPT	30	4	3-1/4	8-3/8
2	125	55	5-1/2	3-1/2	8
	250	65	5-1/2	3-1/2	8-3/8
	NPT	50	5-1/2	3-1/2	8
2-1/2	125	75	6-1/2	4-1/2	9-1/4
	250	85	6-1/2	4-1/2	9-7/8
	NPT	70	6-1/2	4-1/2	9-1/4
3	125	80	6-1/2	4-1/2	9-1/4
	250	90	6-1/2	4-1/2	9-7/8
	NPT	75	6-1/2	4-1/2	9-1/4

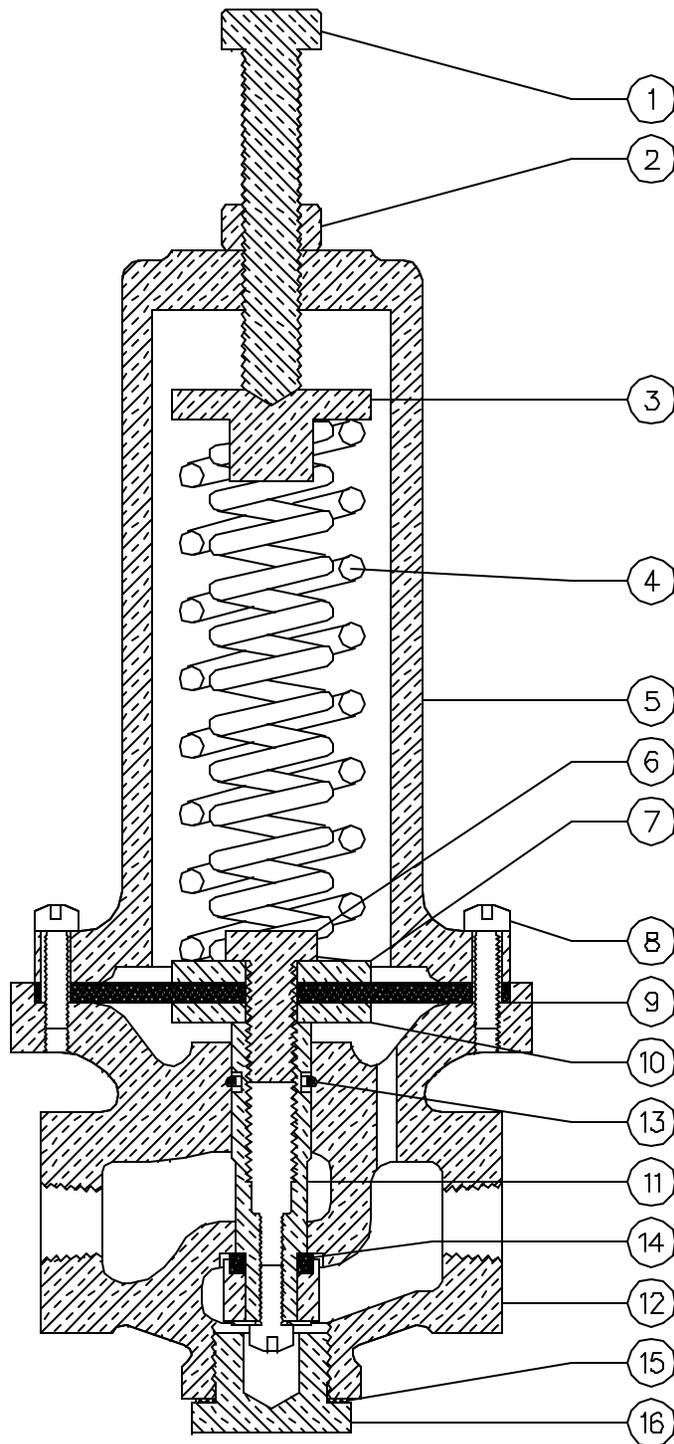
PART	DESCRIPTION	QTY	MATERIAL
1	PLUG	1	BRONZE
2	BOLTS - COVER	VARY	BRONZE
3	COVER	1	BRONZE
4	GASKET - COVER	1	COMPOSITION
5	CUP FOLLOWER	1	BRONZE
6	CUP PACKING	1	LEATHER
7	GUIDE SPRING	1	STAINLESS STEEL
8	STEM	1	BRONZE
9	SEAT PACKING	1	POLY
10	SEAT DISC	1	BRONZE
11	STRAINER/ORIFICE	1	STAINLESS STEEL
12	SHELL	1	CAST IRON
13	DRAIN PLUG	1	BRONZE
14	DISC NUT	1	BRONZE
15	SEAT RING	1	BRONZE
16	CYLINDER LINER	1	COMPOSITE
18	ISOLATION VALVE	1	BRONZE
19	PILOT VALVE	1	BRONZE
20	INDICATOR ROD	OPTION	BRONZE
21	INDICATOR STUFFING BOX	OPTION	BRONZE

ROSS VALVE Mfg. Co., Inc.
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NO SCALE	DRAWING 23WR-1
DATE 2-10-52 1037	REVISED 12-2-96

MODEL 23WR FIGURE 1
 PRESSURE REDUCING VALVE

FILE: 23WRIS



The purpose of a pilot valve is to control the opening and closing of the main valve by trapping or releasing water from the main valve's "operating chamber" ("K" - the chamber above the main valve piston). The **Model 23WR Pressure Reducing Pilot Valve** uses this logic in order to maintain a constant pressure downstream of the main valve.

The pilot valve operates by creating a pressure balance across the diaphragm (9). Pressure above the diaphragm is set by the adjusting screw (1) acting on the adjusting springs (4). Pressure beneath the diaphragm is exerted hydraulically from the outlet throat of the pilot valve through a sensing port in the valve shell (12).

When the pilot valve senses a low outlet pressure, the spring force causes the diaphragm (9) and the entire stem assembly (11) to move down. This pushes the seat packing (14) away from the seat, allowing water to escape from the main valve operating chamber. This causes the piston of the main valve to open, resulting in an increase in the downstream pressure.

Once the downstream pressure rises above the setting on the adjusting springs (4), the hydraulic force overcomes the spring force and the diaphragm (9) and stem assembly (11) are pushed upwards. This closes the pilot and traps water in the main valve operating chamber, causing the piston of the main valve to close.

This opening and closing sequence (commonly referred to as "throttling") is continuously taking place in order to maintain a constant outlet pressure.

PART	DESCRIPTION	QTY	MATERIAL
1	ADJUSTING SCREW	1	BRONZE
2	LOCK NUT	1	BRONZE
3	SPRING WASHER	1	BRONZE
4	ADJUSTING SPRING	VARY	STEEL
5	SPRING CHAMBER	1	BRONZE
6	DIAPHRAGM BOLT	1	BRONZE
7	DIAPHRAGM BUTTON	1	BRONZE
8	BOLTS - CHAMBER	9	BRONZE
9	DIAPHRAGM	1	NEOPRENE
10	DIAPHRAGM WASHER	1	BRONZE
11	STEM ASSEMBLY	1	BRONZE
12	SHELL	1	BRONZE
13	O-RING	1	BUNA-N
14	SEAT PACKING	1	POLY
15	BOTTOM CAP GASKET	1	COMPOSITION
16	BOTTOM CAP	1	BRONZE

ROSS VALVE Mfg. Co., Inc.

6 OAKWOOD AVENUE - P.O. BOX 595 - TROY, NEW YORK, 12181 - TEL. (518) 274 0961

NO SCALE DRAWING 23WR PILOT

DATE 5-17-57 REVISED 8-30-00 TJS

MODEL 23WR PILOT VALVE
PRESSURE REDUCING

FILE: P23WR

BRONZE NPT "Y" STRAINERS

59 SERIES (85-5-5-5 BRONZE)

Conbraco's 59 Series "Y" strainers are lightweight and compact. All sizes offer maximum protection against foreign particles in piping systems and process equipment. Cast bronze body and stainless steel screens are completely corrosion resistant. Self-aligning screen is easily accessed for cleaning or service. Operating pressures up to 400 psi make the 59 Series an excellent choice as a versatile, multi-purpose strainer. Sizes 1/8" to 1/2" are perfect for OEM applications and are available as U.L. recognized components for use as a secondary strainer on oil burning equipment.



No.	Part	Material	ASTM Spec	Remarks
1	Body	Bronze	B62	
2	Cover	Bronze	B62	
3	*Screen	Stainless Steel		Type 304
4	*Gasket	TFE (3/4"-4")		
5	* O-Ring	Silicone (1/8"-1/2")		

* Recommended spare parts

WORKING PRESSURE (non-shock):

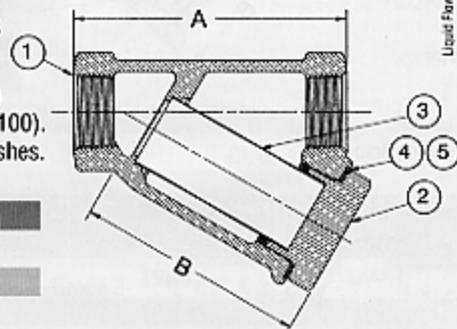
300 psi @ 350°F Steam
400 psi @ 150°F Water, Oil, Gas

SELF ALIGNING SCREENS

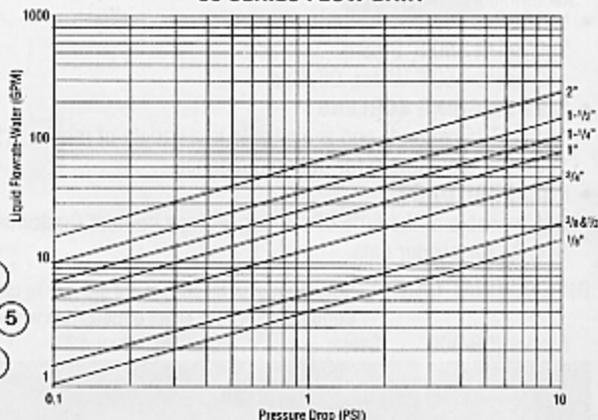
304 SST (Standard) available in a large variety of meshes (thru 100). Contact factory for optional meshes.

STANDARD SCREENS:

Size	Screen Opening
1/8" - 1/2"	50 Mesh
3/4" - 3"	20 Mesh
4"	.125 Perf.



59 SERIES FLOW DATA



DIMENSIONAL DATA Note: Dimensions shown are subject to change. Contact factory for exact dimensions when required.

Model "59-000" NPT Sizes 1/8" thru 4"

Model	Size	A	B	Tapped Cap (Suffix-02)	Wt./100	Screen Area (IN ²)
59-000-01	1/8"	2	1-1/4	1/8 NPT	44.5	1.38
59-001-01	1/4"	2	1-3/4	1/8 NPT	42.5	1.38
59-002-01	3/8"	2-11/16	2	1/4 NPT	78.6	3.19
59-003-01	1/2"	2-11/16	2	1/4 NPT	75.1	3.19
59-004-01	3/4"	3-7/8	3-1/4	1/2 NPT	174	8.18
59-005-01	1"	4-3/4	4	3/4 NPT	276	12.9
59-006-01	1-1/4"	5-1/8	4-1/4	3/4 NPT	358	16.2
59-007-01	1-1/2"	5-3/4	5	1 NPT	541	22.8
59-008-01	2"	6-3/4	6	1-1/4 NPT	747	32.7
59-009-01	2-1/2"	7-15/16	5-7/8	1-1/4 NPT	1130	47.3
59-010-01	3"	9-1/8	6-7/8	1-1/2 NPT	1580	64.8
59-011-01	4"	11-15/16	10-1/8	1-1/2 NPT	3070	115

Model "59-UL" NPT Sizes 1/8" thru 1/2"

59-UL0-01	1/8"	2	1-1/4	1/8 NPT	44.5	1.38
59-UL1-01	1/4"	2	1-3/4	1/8 NPT	42.5	1.38
59-UL2-01	3/8"	2-11/16	2	1/4 NPT	78.6	3.19
59-UL3-01	1/2"	2-11/16	2	1/4 NPT	75.1	3.19

INTEGRAL-BONNET NEEDLE VALVE

Part Number: B-1RM4

Description: Brass Integral Bonnet Needle Valve, 0.37 Cv, 1/4 in. MNPT, Regulating Stem

Features

Stem Designs

- Vee—all series
- Soft-seat—all series
- Regulating—O, 1, and 18 series

Orifice Sizes

- From 0.080 to 0.375 in.
(2.0 to 9.5 mm)

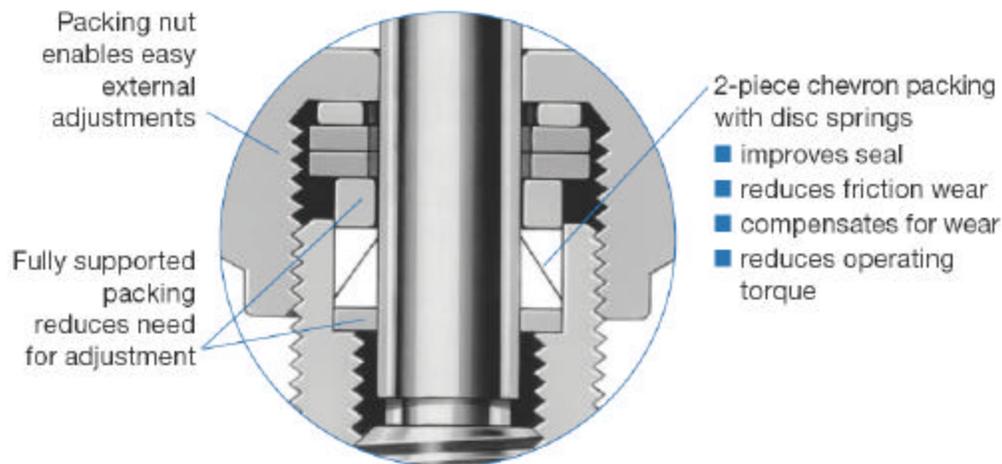
Flow Coefficients (C_v)

- From 0.09 to 1.80

Flow Patterns

- Straight, angle, and cross patterns

Live-Loaded Packing System



SPECIFICATIONS

Flow Pattern	Straight (2-way)
Valve Material	Brass
End Connections	1/4 in, Male NPT
Handle	Black, Phenolic Knob
Cleaning	Swagelok® Standard cleaning SC-10
Lubricant	Perf. Polyether/Tung. Disulfide (WL7)
Packing	PFA
Stem Material	316 Stainless Steel
Stem Type	Regulating
Stem Tip Material	316 Stainless Steel
Orifice	.172 in
Room Temperature Pressure Rating	3000 PSIG @ 100°F
Max Temperature with Pressure Rating	400°F @ 390 PSIG