

SUBMITTAL



P.O. BOX 595, TROY, NEW YORK 12181
TEL 518 274 0961 - FAX 518 274 0210
WWW.ROSSVALVE.COM

SUBMITTAL

**40AWR Pilot Operated Level
Control**

ROSS TECHNOLOGY PARK
75 102ST STREET, TROY, NY 12181
TEL 518.274.0961 - WWW.ROSSVALVE.COM



SUBMITTAL NOTES

PROJECT:

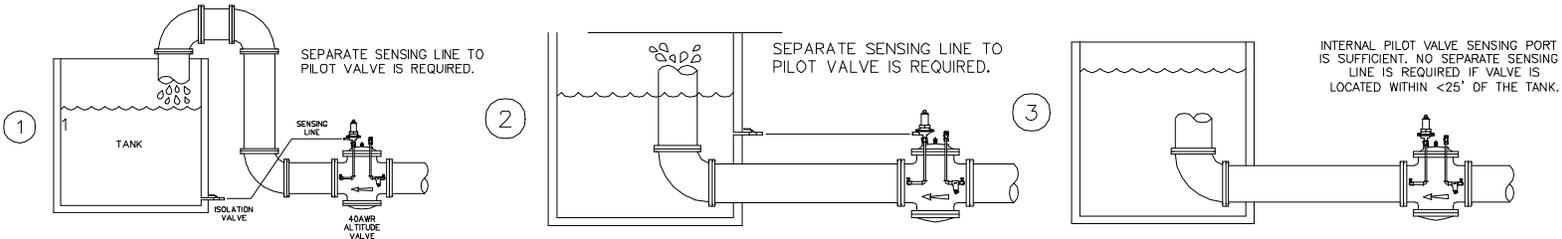
Ross Model 40AWR – Pilot Operated Level Control Valve for Ground Storage Tank

Size: ” inch

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

To properly evaluate the operating data, please designate the piping layout of the installation from the options shown on Drawing 40AWR INSTALL: [] No. 1 [] No. 2 [] No. 3



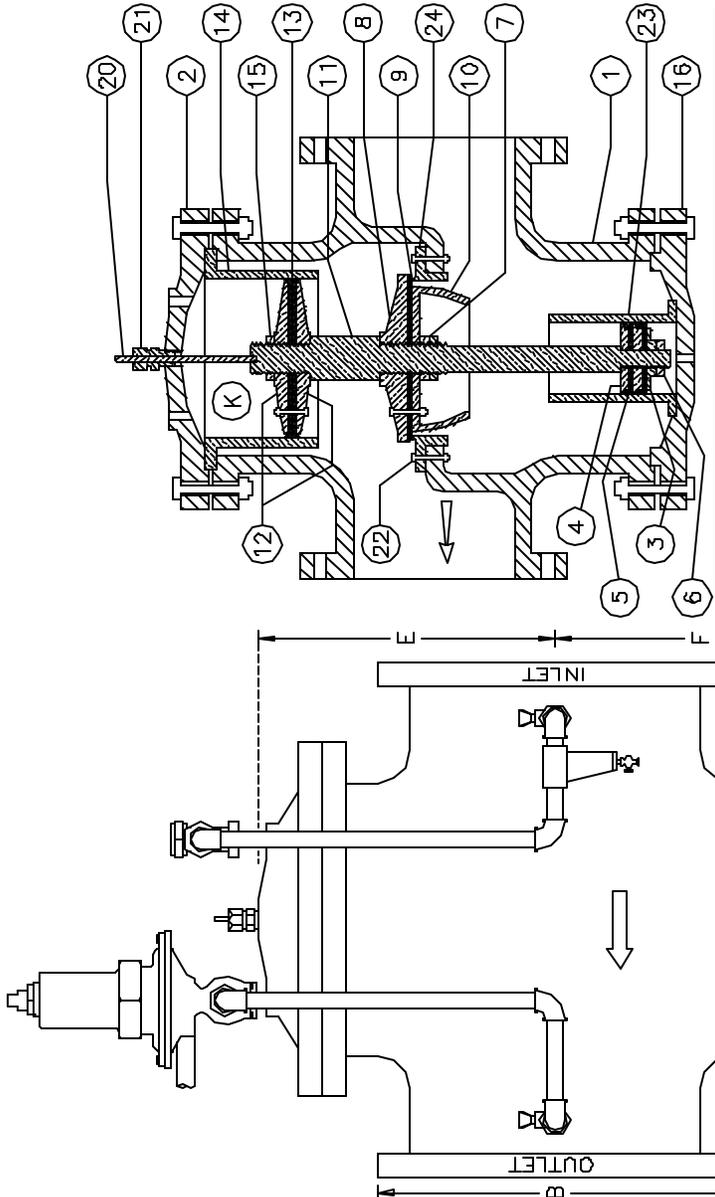
The Ross Globe Body Style Valve can be installed in any position. In order to properly design the valve and orient the controls, please confirm the physical layout of the installation. (** Designates standard valve orientation.)

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

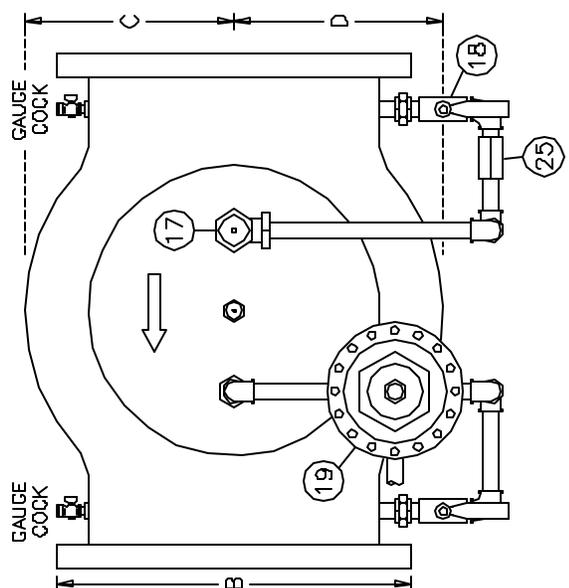
The valve shall be furnished with:

- ANSI B16.1 Class 250 cast iron body & cap, with: [] Class 125 flanges [] Class 250 flanges
- Internal metal parts - Bronze construction
- Ross Model 40AWR Hydraulic Altitude Pilot Valve – (part #19). Initial Factory Setting (valve close set point): _____ psi
- Ross Model 5F2 Strainer (part #25) with Stainless Steel Filter Element and Blow-Off
- Ross Standard Coarse-Thread Needle Valve (part #17)
- Isolation valves: 0.5" Ball Valves, Bronze/Stainless Steel (part #18)
- Position Indicator, Bronze (part #20)
- Red brass pipe fittings and rigid control piping
- Tapped ports with gauge cocks on inlet & outlet (gauges by others)
- PAINTING: Ferrous surfaces of valve shall be coated with ANSI/NSF Standard 61 Certified Epoxy (Themec Series N140F) - Meets the performance requirements of AWWA D102 Inside System No. 1.
- Operation & Maintenance Manual (shipped with the valve).

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.



VALVE SIZE (IN)	ANSI B16.1 CLASS	SHIPPING WEIGHT (LBS)	DIMENSIONS (INCHES)			E&F
			A	B	C&D	
4	125	235	14	9	4-3/4	7
	250	275	14-5/8	10	4-3/4	7
6	125	375	17-3/4	11	6-5/8	9
	250	430	17-3/4	12-1/2	6-5/8	9
8	125	690	24	13-1/2	8-3/4	12-1/2
	250	750	24-13/16	15	8-3/4	12-1/2
10	125	920	24-7/8	16	10	14-1/4
	250	1000	26-1/4	17-1/2	10	14-1/4
12	125	1375	30	19	12	15-1/2
	250	1475	31-1/2	20-1/2	12	15-1/2
14	125	1770	34-1/4	21	14	18
	250	1850	35-3/4	23	14	18
16	125	2400	37-7/8	23-1/2	15	21-1/2
	250	2600	39-1/4	25-1/2	15	21-1/2
18	125	3300	41-7/8	25	18-3/8	24
	250	3500	41-7/8	28	18-3/8	24
20	125	3550	42-3/8	27-1/2	18-3/8	24
	250	3800	42-3/8	30-1/2	18-3/8	24
24	125	5200	47	32	20	25
	250	5500	47	36	20	25
30	125	9800	63-3/4	38-3/4	26-1/4	34
	250	10800	63-1/16	43	26-1/4	34
36	125	11800	65	46	26-1/4	34
	250	12800	65	50	26-1/4	34



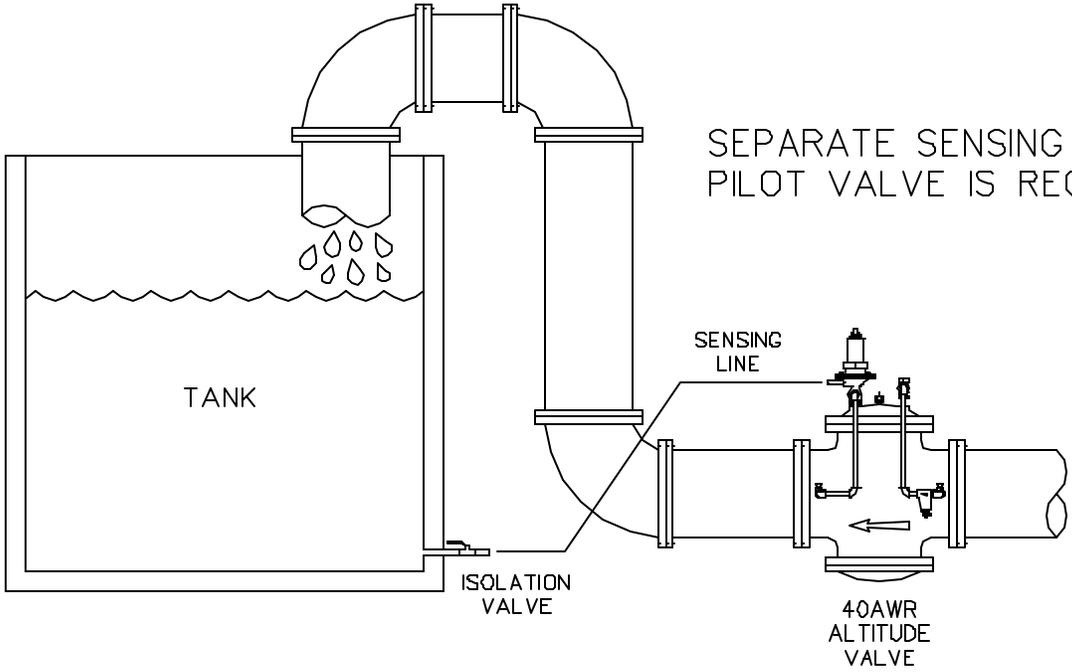
PART	DESCRIPTION	QTY.	MATERIAL
1	VALVE SHELL	1	CAST IRON
2	TOP CAP	1	CAST IRON
3	BOTTOM STEM GUIDE NUT	1	BRONZE
4	BOTTOM CUP FOLLOWERS (SET OF 2)	1	BRONZE
5	PISTON CUP PACKING	2	LEATHER
6	BOTTOM STEM LOCK NUT	1	BRONZE
7	STEM NUT	1	BRONZE
8	SEAT DISC	1	BRONZE
9	SEAT PACKING	1	POLYURETHANE
10	SEAT PACKING SUPPORT	1	BRONZE
11	STEM	1	BRONZE
12	MAIN CUP PLATES (SET OF 2)	1	BRONZE
13	MAIN CUP PACKING	2	LEATHER
14	MAIN BUSHING	1	BRONZE
15	TOP STEM NUT	1	BRONZE
16	BOTTOM CAP	1	CAST IRON
17	NEEDLE VALVE	1	BRONZE
18	ISOLATION VALVE	2	BRONZE
19	PILOT VALVE	1	BRONZE
20	INDICATOR ROD	1	BRONZE
21	INDICATOR STUFFING BOX	1	BRONZE
22	BOLTS & NUTS (SEAT RING)	VARY	BRONZE
23	BOTTOM CAP CYLINDER	1	BRONZE
24	SEAT RING	1	BRONZE
25	STRAINER	1	BRONZE/STAINLESS
	BOLTS & NUTS (TOP & BOTTOM CAP)	VARY	STEEL
	BOLTS & NUTS (CUP PLATES)	VARY	BRONZE
	BOLTS & NUTS (SEAT DISC)	VARY	BRONZE
	BOLTS (BOTTOM CAP CYLINDER)	VARY	BRONZE
	INDICATOR ROD PACKING (SET)	1	TEFLON
	COVER & MAIN BUSHING GASKETS	3	COMPOSITION
	STEM GASKETS	3	COMPOSITION

ROSS VALVE Mfg. Co., Inc.
 6 OAKWOOD AVENUE - TROY, NEW YORK, 12180 - TEL. (518) 274 0981
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 WEBSITE: www.rossvalve.com - E-MAIL: sales@rossvalve.com

DRAWING 40AWR GLOBE BODY 4" - 36" NO. SCALE FIGURE 22 DATE 8-27-01 RJC

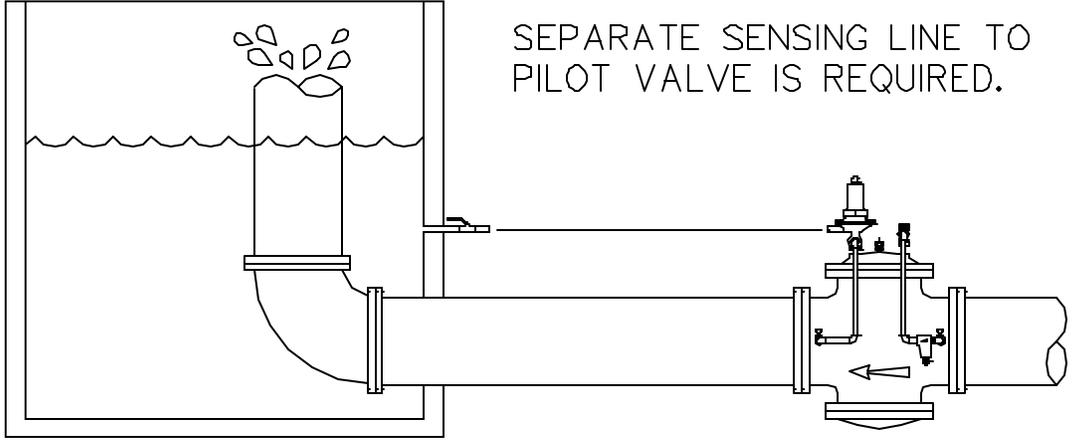
Model 40AWR
 THROTTLING SINGLE ACTING ALTITUDE VALVE

1



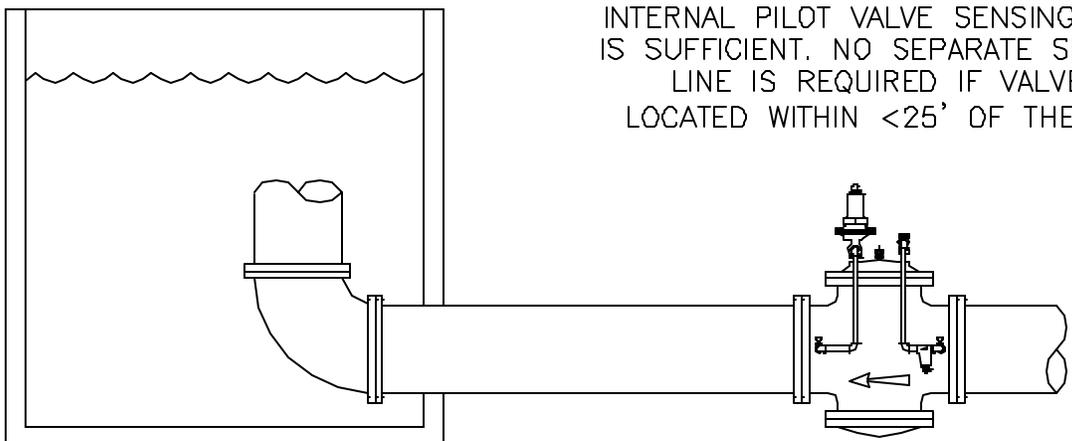
SEPARATE SENSING LINE TO PILOT VALVE IS REQUIRED.

2



SEPARATE SENSING LINE TO PILOT VALVE IS REQUIRED.

3



INTERNAL PILOT VALVE SENSING PORT IS SUFFICIENT. NO SEPARATE SENSING LINE IS REQUIRED IF VALVE IS LOCATED WITHIN <25' OF THE TANK.

ROSS VALVE Mfg. Co., Inc.
 5 OAKWOOD AVENUE - P.O. BOX 595 - TROY, NEW YORK, 12181 - TEL. (518) 274 0951

NO SCALE	DRAWING 40AWR INSTALL
DATE 12-5-97	REVISED

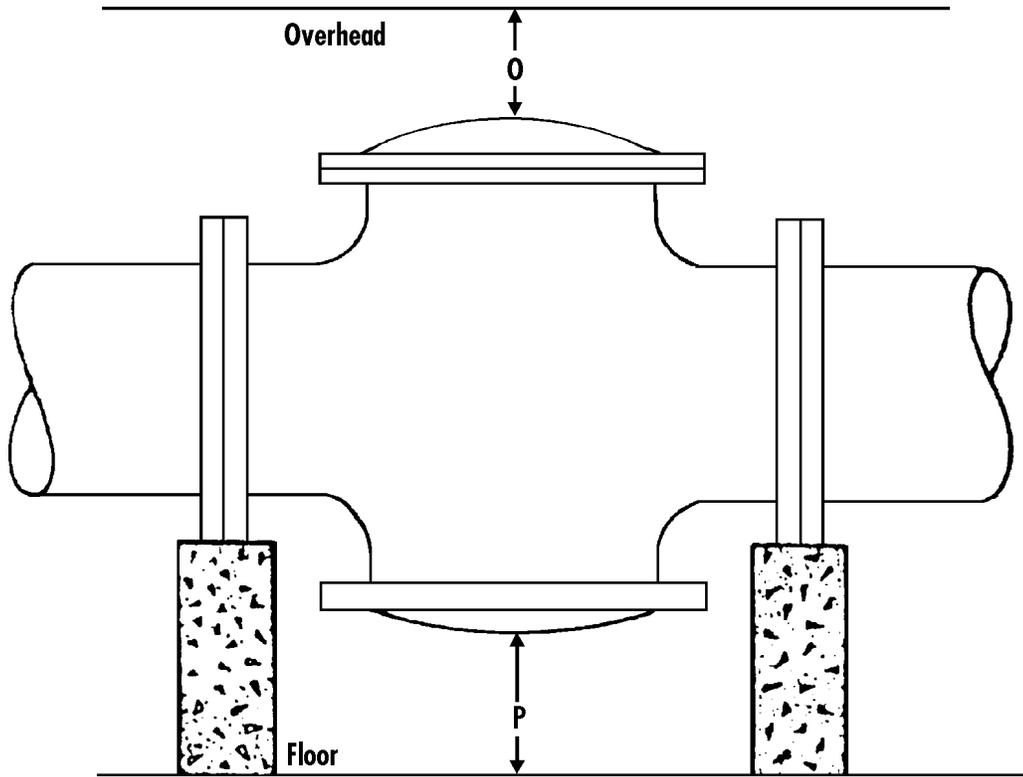
MODEL 40AWR ALTITUDE VALVE
INSTALLATION OPTIONS

FILE: SCH40AVR

DIMENSIONS

Globe Body Minimum Clearances

Piston Valve Sizes: 4" - 36"



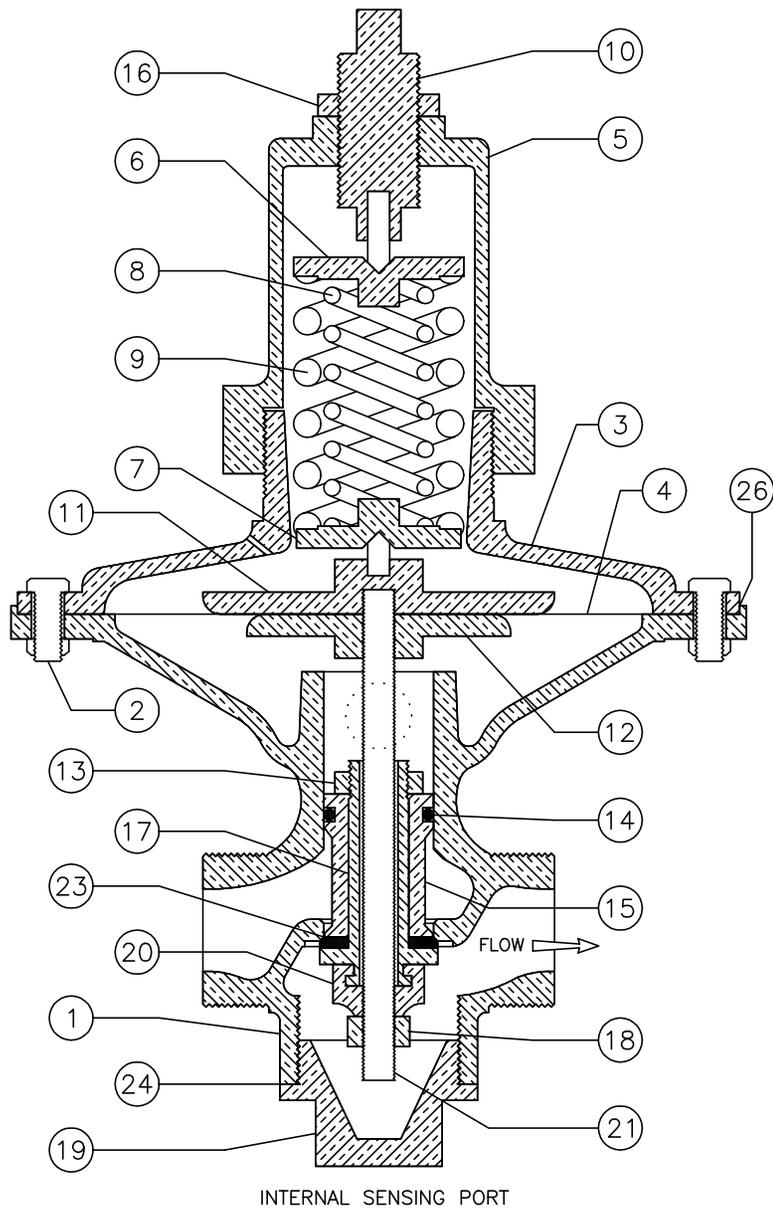
Size (Inches)	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"
O	14	16	18	21	23	28	28	33	33	36	43	46
P	4 1/2	5 1/2	6 1/2	1	1	1	1	1	1	1	1	1

Note

1. Dimension "O" is clearance for removal of the top cap and piston for repacking the main valve. Additional working space for the convenience of the service man should be considered above as well as around the valve.
2. Dimension "P" as listed is the desirable clearance under the valve for removal of the STANDARD bottom cap. This dimension may be reduced to 1 inch for all valves on special applications.

Note

- A. **Do not obstruct vent hole located at the center of the bottom cap.**
- B. Consideration should be given for installation of valves 14" or larger under manhole in the roof of the valve vault or for additional clearance above the valve since a mechanical hoist will probably be required for removal of the piston. An eye bolt or hook cast in the cover slab over the center of the valve is useful.
- C. If clearance under the valve is limited, dimensions "O" and "P" can be modified. Consult the factory concerning special applications.



INTERNAL SENSING PORT

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 40AWR Altitude Pilot Valve** uses this logic in order to maintain a constant pressure (water elevation) downstream of the main valve.

The pilot valve operates by creating a pressure balance across the diaphragms (4). Pressure above the diaphragms is set by the adjusting screw (10) acting on the adjusting springs (8 & 9). Pressure beneath the diaphragms is exerted hydraulically in one of two manners:

- 1 - A sensing port through the valve stem (17) to the outlet throat of the pilot valve, or
- 2 - A separate sensing port directly under the diaphragms, to a remote outlet pressure source.

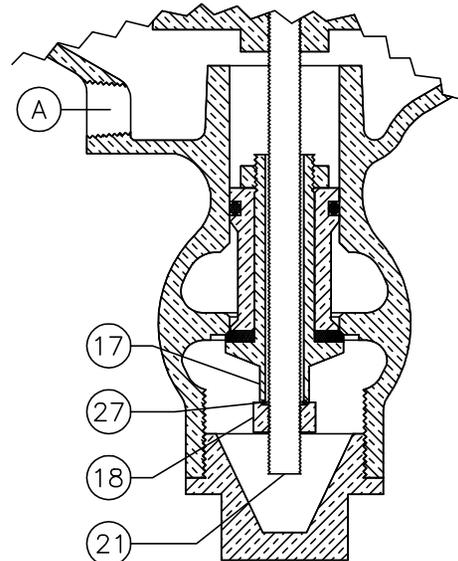
When the pilot valve senses a low outlet pressure, the force of the springs (8 & 9) causes the entire stem assembly to move down. This pushes the seat packing (23) away from the seat, allowing water to escape from the main valve operating chamber. This causes the piston of the main valve to open, resulting in an increase in the downstream pressure (or water elevation in the tank/reservoir).

Once the downstream pressure rises above the setting of the springs (8 & 9), the hydraulic force overcomes the spring force and the stem assembly is pushed upwards. This causes the pilot seat to seal off, trapping water in the main valve operating chamber (with water still entering through the inlet line). This causes the piston of the main valve to close, resulting in a decrease in the outlet pressure (water elevation).

This opening and closing sequence (commonly referred to as "throttling") is continuously taking place in order to maintain the pressure (altitude) setting of the pilot valve.

NOTE (A)

STATIC SENSING CONNECTION UNDER DIAPHRAGM(S) TO BE PIPED TO A REMOTE OUTLET PRESSURE SOURCE, WHEN REQUIRED.



SEPARATE SENSING PORT
(VIEWED FROM VALVE OUTLET)

PART	DESCRIPTION	QTY	MATERIAL
1	SHELL	1	BRONZE
2	BOLTS & NUTS	VARY	BRONZE
3	DIAPHRAGM COVER	1	BRONZE
*4	DIAPHRAGM(S)	VARY	BRONZE
5	SPRING CHAMBER	1	BRONZE
6	TOP SPRING WASHER	1	BRONZE
7	BOTTOM SPRING WASHER	1	BRONZE
8	INNER SPRING	1	STEEL
9	OUTER SPRING	1	STEEL
10	ADJUSTING SCREW	1	BRONZE
11	DIAPHRAGM BUTTON	1	BRONZE
12	DIAPHRAGM NUT/SUPPORT	1	BRONZE
13	LOCK NUT - VALVE STEM	1	BRONZE
*14	O-RING - THIMBLE	1	BUNA-N
15	THIMBLE	1	BRONZE
16	LOCK NUT - ADJUSTING SCREW	1	BRONZE
17	VALVE STEM	1	BRONZE
18	LOCK NUT - DIAPHRAGM STEM	1	BRONZE
19	BOTTOM CAP	1	BRONZE
20	LINK NUT	1	BRONZE
21	DIAPHRAGM STEM	1	STAINLESS
*23	SEAT PACKING	1	POLYURETHANE
*24	GASKET - BOTTOM CAP	1	COMPOSITION
*26	GASKET - DIAPHRAGM	1	COMPOSITION
27	O-RING - LOCK NUT	1	BUNA-N

*INCLUDED IN STANDARD REPAIR KIT

ROSS VALVE Mfg. Co., Inc.

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

NO SCALE DRAWING 40AWR PILOT
DATE 6-1-64 1030-AA REVISED 9-22-99 S.M

MODEL 40AWR PILOT VALVE
ALTITUDE

FILE: P40AWR

STRAINER

Model Number: 5F-2

Sizes: ½" – 1"

Located: On any external piping

Purpose: To protect external piping and control devices from fouling or damage from foreign particles

Screen: Cylindrical Dutch weave stainless steel wire mesh

Piping Connection: Standard pipe thread

Operation

1. Water enters the cylindrical screen (#2) from the top and passes out through the sides of the cylinder.
2. Any particle too large to pass through .012 inch openings gets trapped in the cylinder, where, unless there is unusual turbulence, they settle at the bottom.

Recommendation

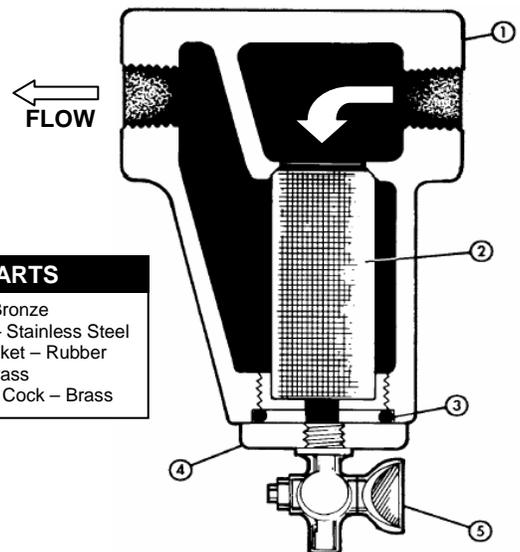
1. Strainer should be "blown down" frequently to remove collected foreign material from the sediment chamber.
2. Strainer screen should be removed occasionally for inspection and thorough cleaning.

Note

1. To clean without shutting down the line, open the flush cock (#5) in the bottom cap (#4) for several seconds.
2. To remove the screen (#2), which requires shutting down the line, unscrew the bottom cap assembly (#5).

Option

Two strainers installed in parallel (with the appropriate isolation valves) to permit uninterrupted service while cleaning.



PARTS

1. Body – Bronze
2. Screen – Stainless Steel
3. Cap Gasket – Rubber
4. Cap – Brass
5. Flushing Cock – Brass

NEEDLE VALVE

Sizes: One size fits all piston valves

Primarily Controlled By: Manually Adjusted

Located: On external control circuit of the main valve

Purpose: To limit flow in and out of the operating chamber

Standard Shipped Adjustment:

Course Needle: 5/6 to 2 turns off the seat

Fine Needle: Based on individual specifications

Operation

The simple construction reliably limits maximum flow through the external piping, depending on the position of the adjustable stem/needle (#4) relative to the seat.

1. When the needle (#4) is adjusted counter-clockwise to a raised position,
 - a. More water can pass through the needle valve.
 - b. Water enters (leaves) the operating chamber more quickly.
 - c. The main valve piston moves up and down more quickly.
2. When the needle (#4) is adjusted clockwise to a lowered position,
 - a. Less water can pass through the needle valve.
 - b. Water enters (leaves) the operating chamber more slowly.
 - c. The main valve piston moves up and down more slowly.

Adjustment

To adjust needle valve, which can be done without shutting down the main valve:

1. Remove the hex cap (#2) and lock (#1).
2. With a screw driver;
 - a. Turn the needle (#4) counter-clockwise to raise it
 - b. Turn the needle (#4) clockwise to lower it
3. Once the optimum position is determined, no further adjustment of the needle should be required.

Note

It is advisable to occasionally remove the cap (#2) and lock (#1) and change the position of the needle (#4) momentarily to insure against gradual plugging.

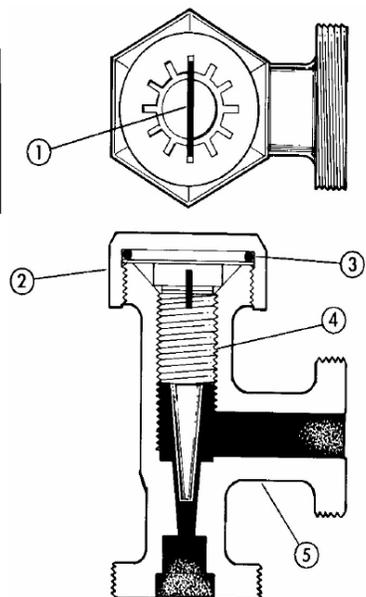
Option

Two separate needle valves on one main valve – Provides independent control of opening and closing speeds.



PARTS

1. Lock – Brass
2. Cap – Bronze
3. Cap Gasket – Rubber
4. Needle – Brass
5. Body – Bronze



TECHNICAL DATA continued

SHELF LIFE 24 months at recommended storage temperature.
FLASH POINT - SETA Part A: 82°F (28°C) Part B: 80°F (27°C)
HEALTH & SAFETY Paint products contain chemical ingredients which are considered hazardous. Read container label warning and Material Safety Data Sheet for important health and safety information prior to the use of this product. **Keep out of the reach of children.**

APPLICATION

COVERAGE RATES*

	Primer			Intermediate / Topcoat		
	Dry Mills (Microns)	Wet Mills (Microns)	Sq Ft/Gal (m ² /Gal)	Dry Mills (Microns)	Wet Mills (Microns)	Sq Ft/Gal (m ² /Gal)
Suggested (1)	4.0 (100)	6.0 (150)	273 (25.4)	5.0 (125)	7.5 (190)	218 (20.3)
Minimum	3.0 (75)	4.5 (115)	364 (33.9)	4.0 (100)	6.0 (150)	273 (25.4)
Maximum	5.0 (125)	7.5 (190)	218 (20.3)	6.0 (150)	9.0 (230)	182 (17.0)

(1) Note: Roller or brush application requires two or more coats to obtain recommended film thickness. Series N140F can be spray applied to an optional high-build film thickness range of 6.0 to 8.0 dry mils (150 to 205 dry microns) or 8.5 to 11.5 wet mils (215 to 290 wet microns). Allow for overspray and surface irregularities. Film thickness is rounded to the nearest 0.5 mil or 5 microns. Application of coating below minimum or above maximum recommended dry film thicknesses may adversely affect coating performance.

MIXING

1. Start with equal amounts of both Parts A & B.
2. Using a power mixer, separately stir Parts A & B.
3. Add Part A to Part B under agitation, stir until thoroughly mixed.
4. Both components should be above 50°F (10°C) prior to mixing. For application to surfaces between 35°F to 50°F (2°C to 10°C), allow mixed material to stand thirty (30) minutes and restir before using. For optimum application properties, blended components should be above 40°F (4°C).

POT LIFE

4 hours at 35°F (2°C) 2 hours at 77°F (25°C) 1 hour at 100°F (38°C)

THINNING

Use No. 4 Thinner. For air spray, thin up to 10% or ¾ pint (380 mL) per gallon. For airless spray, roller or brush, thin up to 5% or ¼ pint (190 mL) per gallon. **Caution:** Series N140F NSF certification is based on thinning with No. 4 Thinner. Use of any other thinner voids ANSI/NSF Std. 61 certification.

SURFACE TEMPERATURE

Minimum 35°F (2°C) Maximum 135°F (57°C)
 The surface should be dry and at least 5°F (3°C) above the dew point. Coating won't cure below minimum surface temperature.

APPLICATION EQUIPMENT

Air Spray

Gun	Fluid Tip	Air Cap	Air Hose ID	Mat'l Hose ID	Atomizing Pressure	Pot Pressure
DeVilbiss MBC or JGA	E	765 or 78	5/16" or 3/8" (7.9 or 9.5 mm)	3/8" or 1/2" (9.5 or 12.7 mm)	75-100 psi (5.2-6.9 bar)	10-20 psi (0.7-1.4 bar)

Low temperatures or longer hoses require higher pot pressure.

Airless Spray

Tip Orifice	Atomizing Pressure	Mat'l Hose ID	Manifold Filter
0.015"-0.019" (380-485 microns)	1800-3000 psi (124-207 bar)	1/4" or 3/8" (6.4 or 9.5 mm)	60 mesh (250 microns)

Use appropriate tip/atomizing pressure for equipment, applicator technique and weather conditions.
Note: Application over inorganic zinc-rich primers: Apply a wet mist coat and allow tiny bubbles to form. When bubbles disappear in 1 to 2 minutes, apply a full wet coat at specified mil thickness.
Roller: Roller application optional when environmental restrictions do not allow spraying. Use 3/8" or 1/2" (9.5 mm or 12.7 mm) synthetic nap covers.
Brush: Recommended for small areas only. Use high quality natural or synthetic bristle brushes.

CLEANUP

Flush and clean all equipment immediately after use with the recommended thinner or MEK.

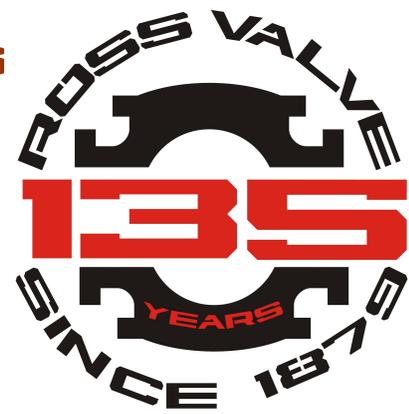
*Values may vary with color.

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ROSS VALVE SUPPORT SERVICES

PROVIDES PERSONAL SERVICE IN EVERY PHASE OF DEVELOPMENT, INSTALLATION AND MAINTENANCE.

We are always available to provide answers to any questions. No sale is ever "final"



DEDICATED SUPPORT LINES

Sales engineers available Monday through Friday 7am to 5:00pm EST

Phone to help with any questions — (518) 274-0961

Fax machine – (518) 274-0210

After Hours Support – (518) 279-4373

E-Mail – sales@rossvalve.com



TRAINING

Factory Training — Ross Valve believes that our customers should know as much as possible about our products. That is why we periodically host Customer Training seminars at our Ross Technology Park in Troy, NY. Here, our customers learn the workings of the valves, how to correctly maintain them, and how they are manufactured.

In addition, Ross representatives are often in the field giving product seminars for your convenience.

FIELD SERVICE

When a repair, upgrade, or modification is required for an existing Ross Valve, Factory Authorized Ross Service Technicians offer the best service available, including:

Technical assistance for start-up or continuing training.

Fully inventoried service vehicles to allow replacement of necessary parts.

Confined Space/OSHA trained with latest equipment

On-site / hands-on training for your staff.

Ability to return older valves to "like-new" condition.

YEARLY CONTRACTS AVAILABLE

WARRANTY

All valves and materials are guaranteed free from defects for 1 year from the date shipped.

Ross Valves are economically rebuilt. Every internal part is replaceable through the top of the valve, without removing it from the line. All seals and internal packings are replaceable, which contributes to the valve's longevity.

Ross Valve stocks a wide variety of repair parts which can be received by the customer as early as the next day. In-house computer links track packages to ensure timely delivery.

Detailed historical record keeping gives us a full report of all maintenance or upgrades that have been made on each valve. This allows us to evaluate performance in the past and maximize performance in the future.



ROSS VALVE

Automatic Control Valves & Pre-Packaged
Vaults for Water & Wastewater

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