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40WR Pilot Operated Pressure Reducing Valve





Ross Technology Park 75 102st Street, Troy, NY 12181 TEL 518.274.0961 - www.ROSSVALVE.com



SUBMITTAL NOTES

PROJECT: _____

Ross Model 40WR – 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)	:	[] Hori	zontal **	or	[] Vertical
Valve piston axis :	[] Vertical **	or	[] Horizontal		[] Horizontal

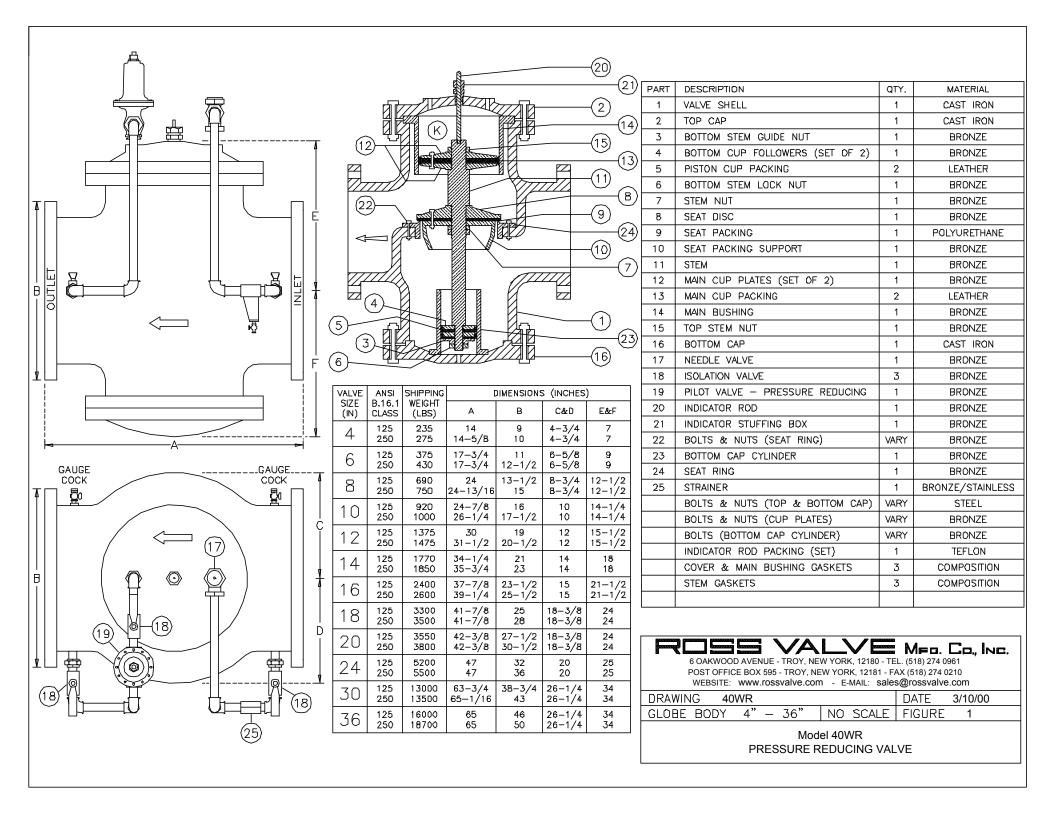
The valve shall be furnished with:

- ANSI B16.1 Class 250 cast iron body & cap, with: [] Class 125 flanges [] Class 250 flanges
- Internal metal parts Bronze construction
- Ross Model 40WR Hydraulic Pressure Reducing Pilot Valve (part #19). Initial Setting: _____ 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 (Tnemec Series N140F)
 Meets the performance requirements of AWWA D1 02 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.

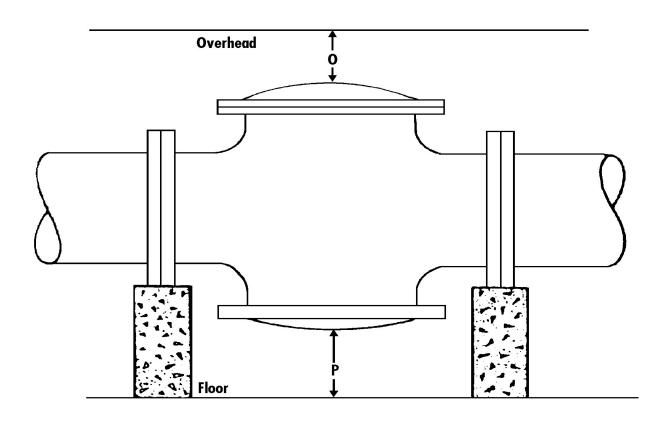
ROSS VALVE MFG. CO., INC., TROY, NY 12180 · PHONE 518.274.0961 · FAX 518.274.0210



DIMENSIONS

Globe Body Minimum Clearances

Piston Valve Sizes: 4" - 48"



Size (Inches)	4″	6″	8″	10″	12″	14″	16″	18″	20″	24″	30″	36″	42"	48"
0	14	16	18	21	23	28	28	33	33	36	43	46	54	60
Р	4 ¹ / ₂	5 ¹ / ₂	6 ¹ / ₂	1	1	1	1	1	1	1	1	1	1	1

<u>Note</u>

- 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.
- 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.

<u>Note</u>

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.

DESCRIPTION REGULATING SCREW LOCK NUT SPRING CHAMBER TOP SPRING WASHER	QTY. 1 1	MATERIAL BRONZE BRONZE BRONZE	
LOCK NUT SPRING CHAMBER TOP SPRING WASHER	1	BRONZE	
SPRING CHAMBER TOP SPRING WASHER	1		
TOP SPRING WASHER	•	BRONZE	
	1	BRONZE	
SPRING(S)	VARY	STEEL	
BOTTOM SPRING WASH (OPT.)	1	BRONZE	
DIAPHRAGM BUTTON	1	BRONZE	
DIAPHRAGM(S)	VARY	BRONZE	*
BOLTS & NUTS - CHAMBER	VARY	BRONZE	
DIAPHRAGM NUT	1	BRONZE	
STEM NUT	1	BRONZE	
O-RING - THIMBLE	1	B ∪NA−N	*
THIMBLE	1	BRONZE	
SEAT PACKING	1	POLYURETHANE	*
VALVE SHELL	1	BRONZE	
VALVE STEM	1	BRONZE	
LINK NUT	1	BRONZE	
LOCK NUT	1	BRONZE	
BOTTOM CAP	1	BRONZE	
STEM – DIAPHRAGM	1	STAINLESS STEEL	
GASKET – BOTTOM CAP	1	COMPOSITION	*
GASKET – DIAPHRAGM	1	COMPOSITION	*
0-RING - LOCKNUT	1	BUNA-N	
	DIAPHRAGM BUTTON DIAPHRAGM (S) BOLTS & NUTS - CHAMBER DIAPHRAGM NUT STEM NUT D-RING - THIMBLE THIMBLE SEAT PACKING (ALVE SHELL (ALVE STEM JINK NUT JOCK NUT BOTTOM CAP STEM - DIAPHRAGM GASKET - BOTTOM CAP GASKET - DIAPHRAGM D-RING - LOCKNUT	DIAPHRAGM BUTTON 1 DIAPHRAGM(S) VARY BOLTS & NUTS - CHAMBER VARY DIAPHRAGM NUT 1 STEM NUT 1 D-RING - THIMBLE 1 THIMBLE 1 C-RING - THIMBLE 1 D-RING - THIMBLE 1 THIMBLE 1 SEAT PACKING 1 VALVE SHELL 1 VALVE STEM 1 JINK NUT 1 SOCK NUT 1	DIAPHRAGM BUTTON1BRONZEDIAPHRAGM(S)VARYBRONZEBOLTS & NUTS - CHAMBERVARYBRONZEDIAPHRAGM NUT1BRONZEDIAPHRAGM NUT1BRONZEDIAPHRAGM NUT1BRONZEDAPHRAGM NUT1BRONZEDAPHRAGM NUT1BRONZEDAPHRAGM NUT1BRONZEDAPHRAGM NUT1BRONZEDAPHRAGM1POLYURETHANEDALVE SHELL1BRONZEJINK NUT1BRONZEJOCK NUT1BRONZEBOTTOM CAP1BRONZESTEM - DIAPHRAGM1STAINLESS STEELGASKET - BOTTOM CAP1COMPOSITIONDASKET - DIAPHRACM1BUNA-N

* - THESE PARTS ARE SUPPLIED IN A STANDARD REPAIR KIT

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 40WR Pressure Reducing Pilot Valve** uses this logic in order to maintain a constant pressure downstream of the main valve.

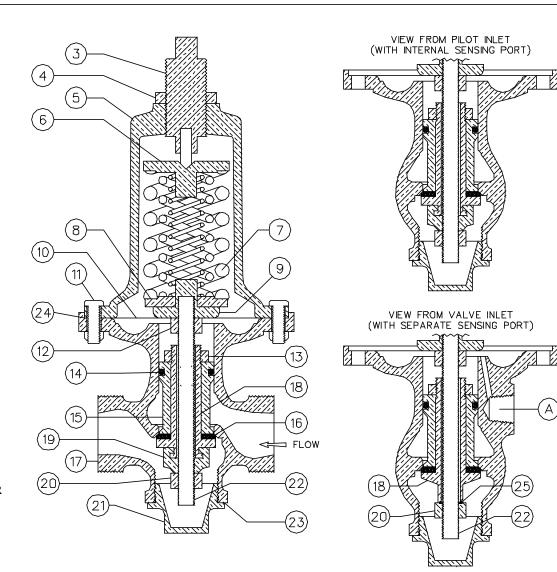
The pilot valve operates by creating a pressure balance across the diaphragms (#10). Pressure above the diaphragms is set by the regulating screw (#3) acting on the adjusting springs (#7). Pressure beneath the diaphragms is exerted hydraulically in one of two manners:

1 - A sensing port through the stem (#18) to the outlet throat of the pilot valve, or

2 - A separate sensing port directly under the diaphragms, from a remote outlet pressure source. When the pilot valve senses a low outlet pressure, the force of the springs (#7) causes the entire stem assembly to move down. This pushes the seat packing (#16) 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 of the springs (#7), 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.

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



A - STATIC SENSING CONNECTION UNDER DIAPHRAGM TO REMOTE OUTLET PRESSURE SOURCE

6 DAKWOOD AVENUE - P.O. BOX 595 - TRO	DRAWING 40WR PILOT	OWR A				
DATE 4-2-63 2851/2	REVISED 9-24-99 S.M.	P4				
MODEL 40WR PILOT VALVE PRESSURE REDUCING						

STRAINER

Sizes: 1/2" - 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.
- Any particle too large to pass through .012 inch openings 2. gets trapped in the cylinder, where, unless there is unusual turbulence, they settle at the bottom.

Recommendation

- Strainer should be "blown down" frequently to remove collected foreign material from the sediment chamber.
- Strainer screen should be removed occasionally for 2. 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.
- To remove the screen (#2), which requires shutting down the line, unscrew the bottom cap assembly (#5). 2

Option

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

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).
- With a screw driver; 2.
 - 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.

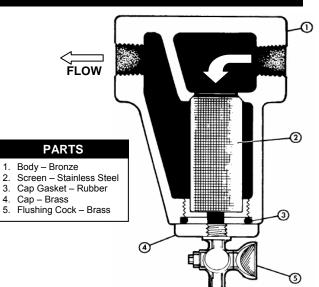
Note

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.

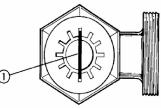
<u>Option</u>

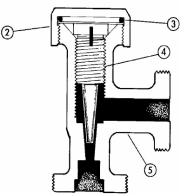
Two separate needle valves on one main valve – Provides independent control of opening and closing speeds.

Model Number: 5F-2









(Factory Accelerated) **Pota-Pox[™] Plus** SERIES N140F

	PRODUCT PROFILE								
® T N E M E C	GENERIC DESCRIPTION COMMON USAGE COLORS SPECIAL QUALIFICATIONS PERFORMANCE CRITERIA	wide range of temper concrete tanks, reser F1211 Fast Cure Ret 39BL Fast Cure Delt Note: Epoxies chall miscatalyzation or the application and initi Certified by NSF In N140F is qualified f pipes ten (10) inches or greater. Conform representative for system	vater coating which eratures (down to 39 voirs, pipes, valves, d, F1255 Fast Cure it Blue, 35GR Fast of with extended ex ne use of heaters th al stages of curing ternational in acc or use on tanks an es (25 cm) in diamons to AWWA D 102 I stems and additional	5°F or 2°C). For use of pumps and equipme Beige, 11WH Fast C Cure Black. posure to sunlight. L at emit carbon dioxi may cause yellowing ordance with ANSI / d reservoirs of 1,000 eter or greater and v Inside Systems No.	on the interior and e ent in potable water Cure White, 15BL F. ack of ventilation, de and carbon mor g to occur. NSF Std. 61. Ambie gallons (3,785L) ca valves two (2) inche 1 and No. 2. Conta	service. ast Cure Tank White, incomplete mixing, noxide during ent air cured Series apacity or greater, es (5 cm) in diameter act your Tnemec			
	COATING SYSTEM								
Certified to ANSI/NSF 61	PRIMERS Topcoats	applicable topcoat c an intermediate coa applies when using time limit is exceed	40F , 66, N69, 73, N14 lata sheets for addi t of Series 73 or 10 Endura-Shield top ed, Series N140F m	0, 161, 175, 180, 70 tional information. N 175 is required. Note coats: Series 73, 175 nust be uniformly sc ng with Series 180, th	lote: When topcoat e: The following ma b, 1074 or 1075, sixt arified or recoated	ing with Series 700, aximum recoat time ty (60) days. If this			
	SURFACE PREPAR	ATION							
	STEEL			E 2 Near-White Blast IACE 3 Commercial E					
	PRIMED STEEL	Immersion Servic with fine abrasive b N140F is the specifi	efore topcoating if	s N140F, 20 or FC20 it has been exterior	prime coat surface exposed for 60 da	by abrasive-blasting ys or longer and			
	CAST/DUCTILE IRON CONCRETE	Contact Tnemec Technical Services. Allow new concrete to cure 28 days. For optimum results and/or immersion service, abrasive blast referencing SSPC-SP13/NACE 6 Surface Preparation of Concrete and Tnemec's Surface Preparation and Application Guide. Fill all holes, pits, voids and cracks with 63-1500 Filler and Surfacer.							
	ALL SURFACES	Must be clean, dry a	and free of oil, grea	ise and other contam	ninants.				
	TECHNICAL DATA								
	VOLUME SOLIDS* RECOMMENDED DFT		205 microns) per d	coat. Note: Number o Id and exposure. Co		ess requirements will representative.			
	CURING TIME AT 5 MILS DFT	Temperature	To Handle	To Recoat	Immersion				
		Note: For valve app	lications allow 14	5 hours 9-11 hours 16-20 hours 28-32 hours 46-50 hours ature, air movement days cure at 75°F (2 (24°C) prior to imm	4°C) prior to imme				
	VOLATILE ORGANIC COMPOUNDS*	Unth 2.29	h inned bs/gallon	Thir 2.71	nned 10% Ibs/gallon				
	THEORETICAL COVERAGE* NUMBER OF COMPONENTS PACKAGING NET WEIGHT PER GALLON* STORAGE TEMPERATURE TEMPERATURE RESISTANCE	1,094 mil sq ft/gal (Two: Part A and Par 5 gallon (18.9L) pai 13.45 ± 0.25 lbs (6. Minimum 20°F (-7°C	t B ls and 1 gallon (3.7 10 ± .11 kg) (mixe C) ation properties, m	crons). See APPLICA (9L) cans — Order in ed) Maximum 110°F (aterial temperature s	n multiples of 2. (43°C) should be above 60				
	ILIVIFLINATURE RESISTANUE	Published technical data and inst	ructions are subject to change	Intermittent 275°I without notice. The online catalog Tnemec representative for currer	g at www.tnemec.com should be				

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TECHNICAL DATA continued

SHELF LIFE	24 months at recommend	ed storage temperature.
FLASH POINT - SETA	Part A: 82°F (28°C)	Part B: 80°F (27°C)
HEALTH & SAFETY	•	emical ingredients which are considered hazardous. Read container label ety Data Sheet for important health and safety information prior to the use f the reach of children.

APPLICATION

COVERAGE RATES*	Primer Intermediate / Topcoat								
		Dry N		et Mils	Sq Ft/		Dry Mils	Wet Mils	Sq Ft/Gal
		(Micro	ons) (M	icrons)	(m²/G		(Microns)	(Microns)	(m²/Gal)
	Suggested (1)	4.0 (1	00) 6.0) (150)	273 (2	5.4)	5.0 (125)	7.5 (190)	218 (20.3)
	Minimum		75) 4.	· /	364 (3		4.0 (100)	6.0 (150)	273 (25.4)
	Maximum	5.0 (1	25) 7.!	5 (190)	218 (20	0.3)	6.0 (150)	9.0 (230)	182 (17.0)
MIXING	 (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. I. Start with equal amounts of both Parts A & B. Using a power mixer, separately stir Parts A & B. Add Part A to Part B under agitation, stir until thoroughly mixed. 								3.0 dry mils (150 and surface ating below erformance.
POTLIFE	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).								sing. For
	4 hours at 35°F	()		2 hours at 7				ur at 100°F (38'	
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.								spray, roller or is based on
SURFACE TEMPERATURE	Minimum 35°F (2°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.							ire below	
APPLICATION EQUIPMENT	Air Spray								
	Gun	Fluid Tip	Air Cap	Air Ho ID	ose	Ma	it'l Hose ID	Atomizing Pressure	Pot Pressure
	DeVilbiss MBC or JGA	E	765 or 78	5/16″ or (7.9 or 9.			5" or 1/2" 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.

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

WARRANTY & LIMITATION OF SELLER'S LIABILITY: Tnemec Company, Inc. warrants only that its coatings represented herein meet the formulation standards of Tnemec Company, Inc.

THE WARRANTY DESCRIBED IN THE ABOVE PARAGRAPH SHALL BE IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. The buyer's sole and exclusive remedy against Themec Company, Inc. shall be for replacement of the product in the event a defective condition of the product should be found to exist and the exclusive remedy shall not have failed its essential purpose as long as Themec is willing to provide comparable replacement product to the buyer. NO OTHER REMEDY (INCLUDING, BUT NOT LIMITED TO, INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR LOST PROFITS, LOST SALES, INJURY TO PERSON OR PROPERTY, ENVIRONMENTAL INJURIES OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS) SHALL BE AVAILABLE TO THE BUYER. Technical and application information herein is provided for the purpose of establishing a general profile of the coating and proper coating application procedures. Test performance results were obtained in a controlled environment and Tnemec Company makes no claim that these tests or any other tests, accurately represent all environments. As application, environmental and design factors can vary significantly, due care should be exercised in the selection and use of the coating. FOR INDUSTRIAL USE ONLY.

prior to the use of

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 AVAILIBLE

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. Inhouse 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.





P.O. Box 595, Troy, New York 12181, USA Phone: (518) 274-0961 Fax: (518) 274-0210 E-Mail: sales@rossvalve.com

Automatic Control Valves & Pre-Packaged Vaults for Water & Wastewater www.rossvalve.com



