



SUBMITTAL NOTES

PROJECT: \_\_\_\_\_

Ross Model 45WR – Deep Well Pump Control 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:

- Normal pumping pressure \_\_\_\_\_ psi
• Pump shut-off head \_\_\_\_\_ psi
• System static \_\_\_\_\_ psi
• Voltage available to operate electrical controls: \_\_\_\_\_ VAC, \_\_\_\_\_ Hz or \_\_\_\_\_ VDC

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
• ASCO Series 8300 3-Way Solenoid valve with Manual Operator (part #27).
• Micro-Switch Series OP-AR Limit Switch Assembly (part #29)
• Ross Model 5F2 Strainer (part #25) with Stainless Steel Filter Element and Blow-Off
• Ross Standard Fine-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 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.)

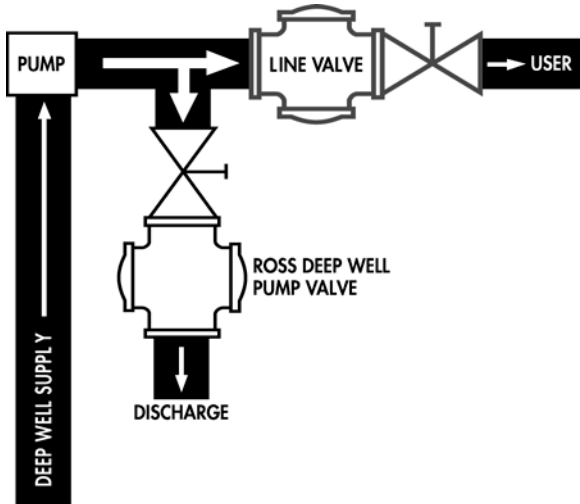
The valve will be constructed with materials and options stated on this notes page & cut view drawing & quote only, any changes or adders will be reviewed by Ross Valve Mfg. Co., Inc. with possible additional charges to quoted valve pricing. All information following the cut view drawing is for general 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.

# DEEP WELL PUMP VALVE

## Basic Application

### Basic Application

Insure that only water, not debris or air, flows through the system.



**If:** Pump is not running

**Ross Main Valve will:** Remain open.

**When:** Pump starts

**Ross Main Valve will:** Close slowly after discharging initial air and water with possible debris.

When the valve closes water can flow smoothly through the main line.

**When:** Pump stops

**Ross Main Valve will:** All ready be 95% open to minimize possible surges.

# DEEP WELL PUMP VALVE

## Operation

Model Number: 45WR

## Control Unit

A carefully balanced system along an external piping circuit monitors the water flow in and out of the operating chamber and, consequently, the piston open/closed position relative to the pump stopping and starting. It includes:

- A. External Piping with several basic segments which run from the:
  1. Inlet side of the main valve to a pipe leading into the operating chamber.
  2. Outlet side of the main valve to a pipe leading out of the operating chamber.
  3. Inlet/outlet external pipes into the operating chamber.
- B. Normal Solenoid pilot valve - Three openings and two ports control pressure in the operating chamber:
  - 1 Opening - to the operating chamber.
  - 1 Opening - to the line (controlled by 1 port).
  - 1 Opening - to waste (controlled by 1 port).
- C. Needle Valves - Two valves control maximum flow:
  - 1 Needle - into the operating chamber.
  - 1 Needle - out of the operating chamber.
- D. Limit Switch - Switches on and off by movement of a valve indicator.

## Operation

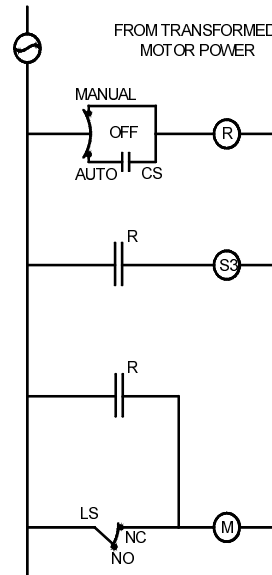
Because the valve is full open when the pump starts and then slowly closes, it effectively discharges unwanted air and sand particles from the system before water flows through the main line.

In addition the valve insures a smooth stopping and starting flow in the system by closing slowly after the pump starts and being 95% open before the pump stops.

- A. A deep well pump valve is normally open. In order to close it, the
  1. Control switch contacts close, energizing the relay coil R.
  2. Two R contacts close together energizing the:
    - a. Normal solenoid coil  $S_3$ .
    - b. Pump motor starter coil M.
  3. Pump starts
  4. Initial air, water which might contain sand particles gets discharged from the system through the open valve located in a tee.
  5. When the pump develops enough line pressure, the valve slowly closes.
  6. As the valve closes, limit switch, LS, closes and parallels the R contact to be in series with the pump motor starter M.

- B. In order to open the deep well valve, the
  1. Control switch contacts open, de-energizing the relay coil R.
  2. Two R contacts open and de-energize only the normal solenoid coil  $S_3$ .
  3. Deep well pump valve begins to open.
  4. Limit switch, whose contacts are still closed, continues to energize the pump motor starter coil M.
  5. Pump continues running.
  6. Main line valve reaches 95% open causing the limit switch contacts to open and de-energizing the pump motor starter M.
  7. Pump stops.

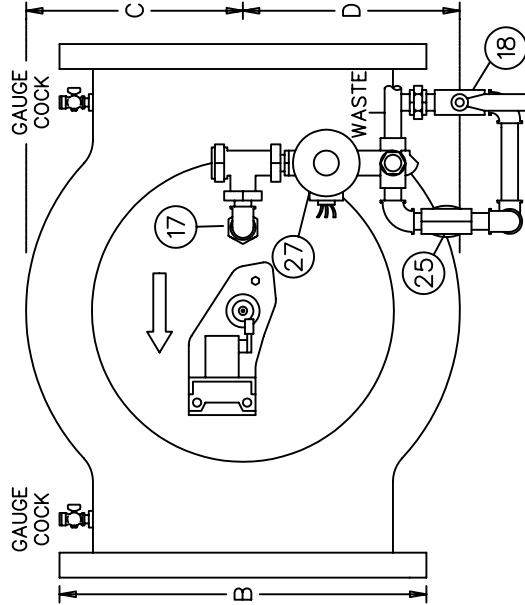
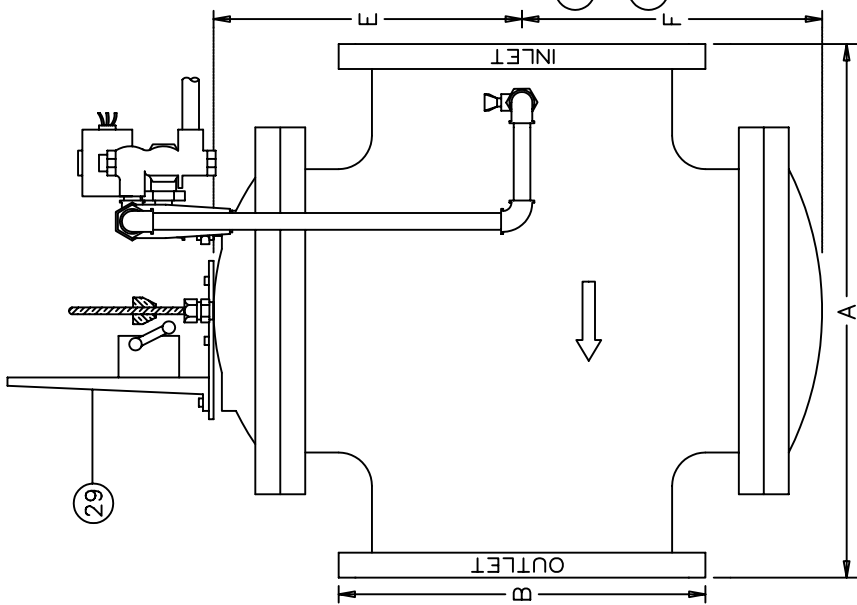
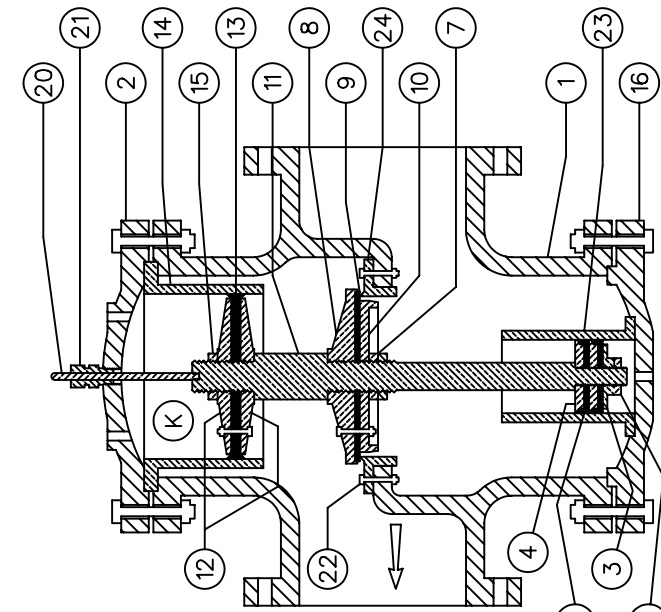
## Simple example incorporating Second 2 Way Solenoid (customized) feature.



- CS = Control Switch  
M = Motor Starter Relay  
R = Double Pole Normally Open Relay  
LS = Limit Switch (Shown in Valve Closed Position)  
 $S_3$  = Normal Solenoid Coil

## Note

Make sure the main pump breaker is open before any work is done on the valve.



| VALVE SIZE (IN) | ASME B16.1 CLASS | SHIPPING WEIGHT (LBS) | DIMENSIONS (INCHES) |        |        |        |        |  |
|-----------------|------------------|-----------------------|---------------------|--------|--------|--------|--------|--|
|                 |                  |                       | A                   | B      | C&D    | E      | F      |  |
| 2               | 125              | 235                   | 14                  | 6      | 4-3/4  | 7      | 7      |  |
|                 | 250              | 275                   | 14-5/8              | 6-1/2  | 4-3/4  | 7      | 7      |  |
| 2.5             | 125              | 235                   | 14                  | 7      | 4-3/4  | 7      | 7      |  |
|                 | 250              | 275                   | 14-5/8              | 7-1/2  | 4-3/4  | 7      | 7      |  |
| 3               | 125              | 235                   | 14                  | 7-1/2  | 4-3/4  | 7      | 7      |  |
|                 | 250              | 275                   | 14-5/8              | 8-1/4  | 4-3/4  | 7      | 7      |  |
| 4               | 125              | 235                   | 14                  | 9      | 4-3/4  | 7      | 7      |  |
|                 | 250              | 275                   | 14-5/8              | 10     | 4-3/4  | 7      | 7      |  |
| 6               | 125              | 375                   | 17-3/4              | 11     | 6-5/8  | 9      | 9      |  |
|                 | 250              | 430                   | 17-3/4              | 12-1/2 | 6-5/8  | 9      | 9      |  |
| 8               | 125              | 690                   | 24                  | 13-1/2 | 8-3/4  | 12-1/2 | 12-1/2 |  |
|                 | 250              | 750                   | 24-15/16            | 15     | 8-3/4  | 12-1/2 | 12-1/2 |  |
| 10              | 125              | 920                   | 24-7/8              | 16     | 10     | 14-1/4 | 14-1/4 |  |
|                 | 250              | 1000                  | 26-1/4              | 17-1/2 | 10     | 14-1/4 | 14-1/4 |  |
| 12              | 125              | 1375                  | 30                  | 19     | 12     | 15-1/2 | 15-1/2 |  |
|                 | 250              | 1475                  | 31-1/2              | 20-1/2 | 12     | 15-1/2 | 15-1/2 |  |
| 14              | 125              | 1770                  | 34-1/4              | 21     | 14     | 18     | 18     |  |
|                 | 250              | 1850                  | 35-3/4              | 23     | 14     | 18     | 18     |  |
| 16              | 125              | 2400                  | 37-7/8              | 23-1/2 | 15     | 21-1/2 | 21-1/2 |  |
|                 | 250              | 2600                  | 39-1/4              | 25-1/2 | 15     | 21-1/2 | 21-1/2 |  |
| 18              | 125              | 3300                  | 41-7/8              | 25     | 18-3/8 | 24     | 24     |  |
|                 | 250              | 3500                  | 41-7/8              | 28     | 18-3/8 | 24     | 24     |  |
| 20              | 125              | 3850                  | 42-3/8              | 27-1/2 | 18-3/8 | 24     | 24     |  |
|                 | 250              | 3800                  | 42-3/8              | 30-1/2 | 18-3/8 | 24     | 24     |  |
| 24              | 125              | 5200                  | 47                  | 32     | 20     | 25     | 25     |  |
|                 | 250              | 5500                  | 47                  | 36     | 20     | 25     | 25     |  |
| 30              | 125              | 9800                  | 63-3/4              | 38-3/4 | 26-1/4 | 34     | 34     |  |
|                 | 250              | 10800                 | 65-1/16             | 43     | 26-1/4 | 34     | 34     |  |
| 36              | 125              | 11800                 | 65                  | 46     | 26-1/4 | 34     | 34     |  |
|                 | 250              | 12800                 | 65                  | 50     | 26-1/4 | 34     | 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                 | 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 |
| 27   | 3 WAY SOLENOID                  | 1    | BRONZE/STAINLESS |
| 29   | LIMIT SWITCH ASSEMBLY           | 1    | BRONZE/STAINLESS |
|      | BOLTS & NUTS (TOP & BOTTOM CAP) | VARY | STAINLESS        |
|      | BOLTS & NUTS (CUP PLATES)       | VARY | BRONZE           |
|      | BOLTS (BOTTOM CAP CYLINDER)     | 1    | TEFLON           |
|      | INDICATOR ROD PACKING (SET)     | 3    | COMPOSITION      |
|      | COVER & MAIN BUSHING GASKETS    | 3    | COMPOSITION      |
|      | STEM GASKETS                    | 3    | COMPOSITION      |

# ROSS VALVE MFG. CO., INC.

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 WEBSITE: www.rossvalve.com - E-MAIL: sales@rossvalve.com

|         |               |          |             |
|---------|---------------|----------|-------------|
| DRAWING | 45WR-LS       | DATE     | 4-05-06 CAP |
| GLOBE   | BODY 2" - 36" | NO SCALE | FIGURE 14   |

MODEL 45WR-LS

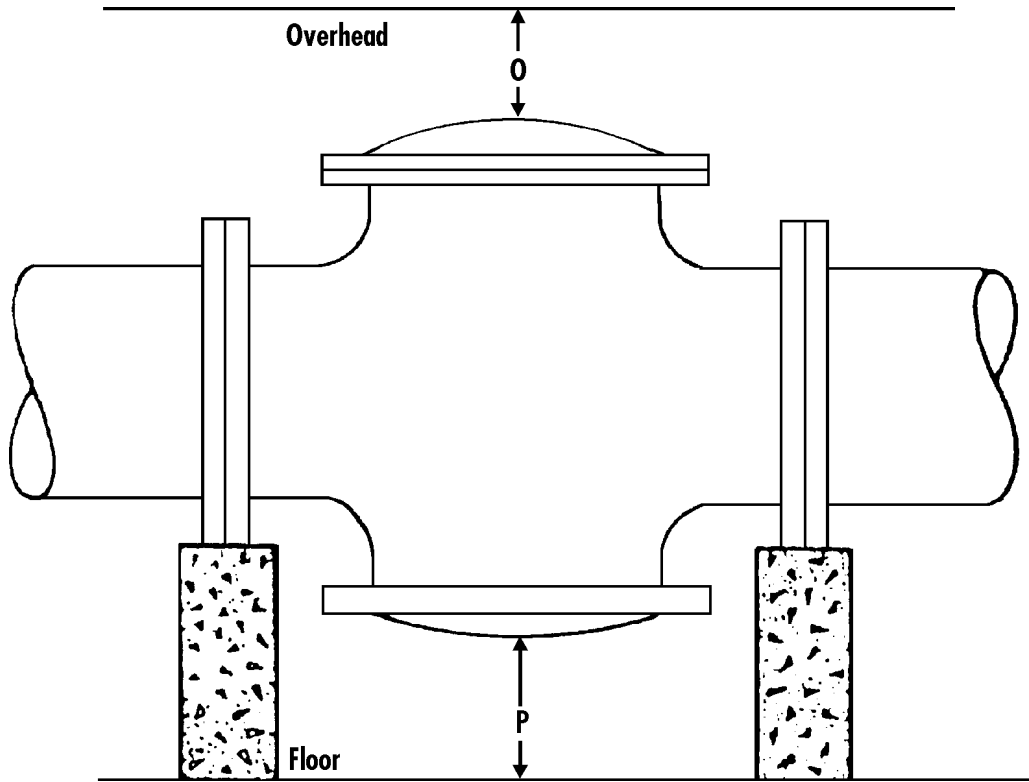
DEEP WELL CONTROL VALVE WITH LIMIT SWITCH ASSEMBLY

THIS PRINT CONTAINS CONFIDENTIAL INFORMATION WHICH IS THE PROPERTY OF ROSS VALVE BY ACCEPTING THIS INFORMATION THE BORROWER AGREES THAT IT WILL NOT BE USED FOR ANY PURPOSE OTHER THAN THAT WHICH IT IS LOANED.  
 NOTE: 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.

# 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.

## Features

- Designed for high flow and high pressure service.
- Direct acting, requires no minimum operating pressure.
- Choice of metal seating materials to handle aggressive fluids, or resilient seating for airtight shutoff.
- Ideal for power plants and similar applications.

## Construction

| Valve Parts in Contact with Fluids |   |                     |
|------------------------------------|---|---------------------|
| Body                               | Brass   | 304 Stainless Steel |
| Disc                               | 303 Stainless Steel (Metal),<br>PA or Brass (Resilient) |                     |
| Seats                              | NBR,<br>Phosphor Bronze                                 | 303 Stainless Steel |
| Core Tube                          | 305 Stainless Steel                                     |                     |
| Core and Plugnut                   | 430 F Stainless Steel                                   |                     |
| Springs                            | 302 Stainless Steel, 17-7PH or Inconel                  |                     |
| Shading Coil                       | Copper  | Silver              |
| Gaskets                            | NBR   | PTFE                |

## Electrical

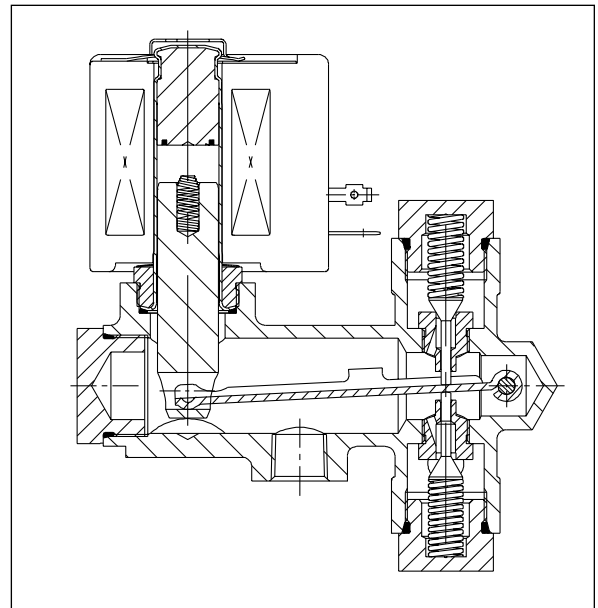
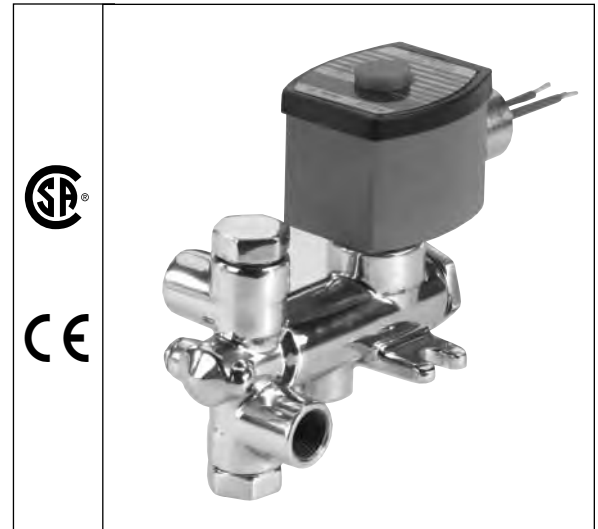
| Standard Coil and Class of Insulation | Watt Rating and Power Consumption |       |            |           | Spare Coil Part Number |        |                |        |
|---------------------------------------|-----------------------------------|-------|------------|-----------|------------------------|--------|----------------|--------|
|                                       | DC Watts                          | AC    |            |           | General Purpose        |        | Explosionproof |        |
|                                       |                                   | Watts | VA Holding | VA Inrush | AC                     | DC     | AC             | DC     |
| F                                     | -                                 | 20.1  | 43         | 240       | 272610                 | -      | 272614         | -      |
| H                                     | 36.2                              | 28    | 60         | 330       | 222345                 | 222184 | 222345         | 222184 |
| H                                     | -                                 | 16.1  | 35         | 180       | 272810                 | -      | 272814         | -      |
| H                                     | -                                 | 28.2  | 50         | 385       | 224195                 | -      | 224195         | -      |

**Standard Voltages:** 24, 120, 240, 480 volts AC, 60 Hz (or 110, 220 volts AC, 50 Hz). 6, 12, 24, 120, 240 volts DC. Must be specified when ordering.

**Note:** 125 and 250 volts DC are battery voltages applied in power plants. Special AC and DC constructions are available to pilot power plant control valves. Consult your local ASCO sales office for details.

## Solenoid Enclosures

**Standard:** Red-Hat II - Watertight, Types 1, 2, 3, 3S, 4, and 4X; Red-Hat - Type 1.  
**Optional:** Red-Hat II - Explosionproof and Watertight, Types 3, 3S, 4, 4X, 6, 6P, 7, and 9; Red-Hat - Explosionproof and Watertight, Types 3, 4, 4X, 7, and 9. See footnote on next page.  
(To order, add prefix "EF" to catalog number.)  
See *Optional Features Section* for other available options.



## Nominal Ambient Temperature Ranges:

Class F Coils AC: 32°F to 125°F (0°C to 52°C)

Class H Coils AC: 32°F to 140°F (0°C to 59°C)

Class H Coils DC: 32°F to 77°F (0°C to 25°C)  
(104°F/40°C occasionally)

Refer to *Engineering Section* for details.

## Approvals:

CSA certified. Meets applicable CE directives.

Refer to *Engineering Section* for details.

# 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

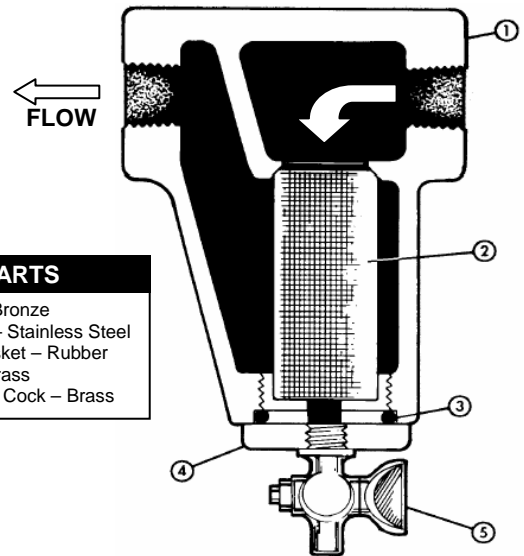
1. Strainer should be "blown down" frequently to remove collected foreign material from the sediment chamber.
2. Strainer screen should be removed occasionally for inspection and thorough cleaning.

## 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:

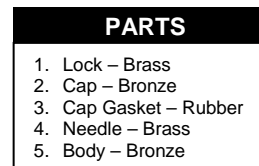
1. Remove the hex cap (#2) and lock (#1).
2. With a screw driver;
  - a. Turn the needle (#4) counter-clockwise to raise it
  - b. Turn the needle (#4) clockwise to lower it
3. Once the optimum position is determined, no further adjustment of the needle should be required.

## 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.

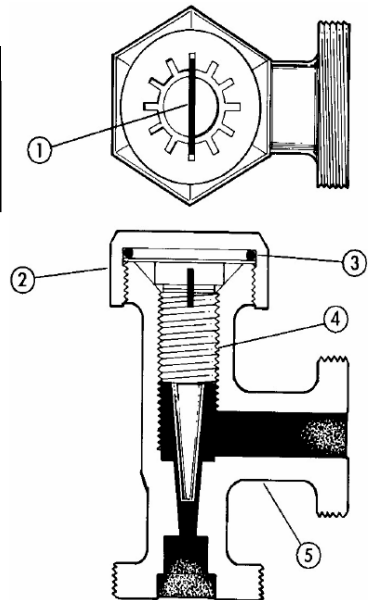
## Option

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



# LIMIT SWITCH

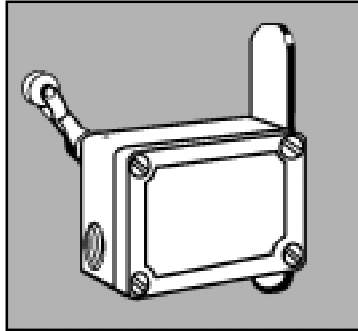
Located:

Wherever an electric switch control is needed.

Contact: 10 AMP

Purpose:

1. To signal if the valve is opened or closed.
2. To start or stop allied equipment.

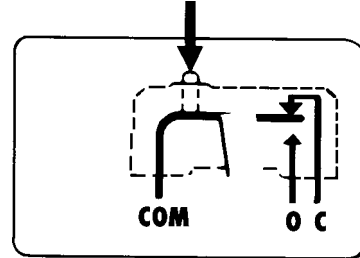


## Operation

Performs as an on/off switch.

## ROSS ADVANTAGE

Because it is waterproof, the switch can be used anywhere.



- O - Normally open contact
- C - Normally closed contact
- COM - Common

Note: A double pole switch (2 N.O. and 2 N.C.) contacts can be supplied as an extra.

Factory: Telephone (518) 274-0961; Fax (518) 274-0210

## Limit and Enclosed Switches

## OP Series

### Enclosed Switches



#### FEATURES

- Cast aluminum housing
  - Mounts from 4 sides
  - Cover seal, captive cover screws
  - Momentary contact
  - UL Recognized, file #E12252
  - CSA Certified, file #LR57325
  - Grounding screw
  - NEMA 1, 3\*, 4\* and 13\*
- (\* Except Q-plunger and high temperature types)

#### ELECTRICAL RATING

| Circuitry                    | Electrical Rating  |
|------------------------------|--|
| <br>Single-pole Double-throw | A<br>UL/CSA Rating:<br>15 amps, 125, 250 or 480 VAC;<br>1/8 Hp, 125 VAC; 1/4 Hp, 250 VAC;<br>1/2 amp, 125 VDC; 1/4 amp, 250 VDC. |

OP enclosed switches are precision snap-action switches sealed in rugged cast aluminum housings. Cover and shaft seals keep out moisture and other contaminants on rotary operated switches. The plungers in the Q-plunger version are not sealed.

Refer to page A123 for explosion-proof Type EX switches, which are dimensionally interchangeable with OP switches.

N = Newtons

\* Actuation is designated as CW (clockwise) or CCW rotation, when looking at the switch nameplate.

† Choice of levers available for use with OP-AR20: **6PA5-EX** (non-sparkling roller), **6PA6-OP** (steel roller), **6PA127-EX** (nylon roller), **6PA130-EX** (CW), **6PA142-EX** (CCW), and **6PA136-EX** (Aluminum rod).

Characteristics: O.F. — Operating Force; P.T. — Pretravel; O.T. — Overtravel; D.T. — Differential Travel

For rapid response – off the shelf service, all **bold face** listings are normally stocked items.

| Description                             | Elec. Rating | Catalog Listing | O.F.                        | P.T.                 | O.T. | D.T.                   |
|---|--------------|-----------------|-----------------------------|----------------------|------|------------------------|
|   |              |                 |                             | max. mm in.          | max. | max. mm in.            |
| Roller Lever is adjustable through 360° | A            | <b>OP-AR</b>    | 2,22-5,56 N<br>.5-1.25 lbs. | 5,56<br>.219<br>(8°) | 90°  | 0,18<br>.007<br>(.25°) |



Series V140 conforms with air pollution regulations limiting Volatile Organic Compounds (VOC) to a maximum of 250 grams/litre (2.08 lbs/gal) In areas requiring less than 100 grams/litre VOC, please refer to the Series L140 data sheet.

## PRODUCT PROFILE

|                        |   |
|------------------------|---|
| GENERIC DESCRIPTION    | Polyamidoamine Epoxy  |
| COMMON USAGE           | Innovative potable water coating which offers high-build edge protection and allows for application at a wide range of temperatures (down to 35°F or 2°C with 44-700 Accelerator). For use on the interior and exterior of steel or concrete tanks, reservoirs, pipes, valves, pumps and equipment in potable water service.  |
| COLORS                 | 1211 Red Oxide, 1255 Beige, 11WH White, 15BL Tank White, 35GR Black and 39BL Delft Blue. <b>Note:</b> Epoxies chalk with extended exposure to sunlight. Lack of ventilation, incomplete mixing, miscatalyzation or the use of heaters that emit carbon dioxide and carbon monoxide during application and initial stages of curing may cause yellowing to occur.  |
| SPECIAL QUALIFICATIONS | Certified by <b>NSF International</b> in accordance with <b>ANSI/NSF Std. 61</b> . Ambient air cured <b>Series N140</b> (with or without 44-700 Epoxy Accelerator) is qualified for use on tanks and reservoirs of 1,000 gallons (3,785L) capacity or greater, pipes four (4) inches (10 cm) in diameter or greater and valves two (2) inches (5 cm) in diameter or greater. <b>Series V140</b> is qualified for use on tanks of 20,000 gallons (75,708L) capacity or greater and valves 1/2 inch in diameter or greater. <b>Note: NSF certification for Series V140 applies to colors 1255 Beige, 1211 Red and 15BL Tank White only.</b> Conforms to <b>AWWA D 102 Inside Systems No. 1 and No. 2</b> (with or without 44-700). Conforms to <b>AWWA C 210</b> (without 44-700). Contact your Tnemec representative for systems and additional information. |
| PERFORMANCE CRITERIA   | Extensive test data available. Contact your Tnemec representative for specific test results.  |



Certified to  
ANSI/NSF 61

## COATING SYSTEM

|          |   |
|----------|---|
| PRIMERS  | Self-priming, 20, FC20, 91-H <sub>2</sub> O, 94-H <sub>2</sub> O, L140, L140F, N140F  |
| TOPCOATS | <b>Interior:</b> Series L140, L140F, N140, N140F.<br><b>Exterior:</b> Series 27, 66, L69, L69F, N69, N69F, 73, L140, L140F, N140, N140F, 161, 180, 700, 701, 1074, 1075. Refer to COLORS on applicable topcoat data sheets for additional information. <b>Note:</b> When topcoating with Series 700, an intermediate coat of Series 73 or 1075 is required. <b>Note:</b> The following recoat times apply for Series N140: Immersion Service—Surface must be scarified after 60 days. Atmospheric Service—After 60 days, scarification or an epoxy tie-coat is required. Contact your Tnemec representative for specific recommendations. |

## SURFACE PREPARATION

|                   |  |
|-------------------|--|
| STEEL             | <b>Immersion Service:</b> SSPC-SP10/NACE 2 Near-White Blast Cleaning<br><b>Non-Immersion Service:</b> SSPC-SP6/NACE 3 Commercial Blast Cleaning  |
| PRIMED STEEL      | <b>Immersion Service:</b> Scarify the Series N140, 20 or FC20 prime coat surface by blasting with fine abrasive before topcoating if it has been exterior exposed for 60 days or longer and N140 is the specified topcoat.   |
| CAST/DUCTILE IRON | Contact your Tnemec representative or Tnemec Technical Services.   |
| CONCRETE          | 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 Surfer. |
| ALL SURFACES      | Must be clean, dry and free of oil, grease and other contaminants.   |

## TECHNICAL DATA

|                 |   |
|-----------------|---|
| VOLUME SOLIDS*  | 67.0 ± 2.0% (mixed—A, B & 44-700 Epoxy Accelerator)   |
| RECOMMENDED DFT | 2.0 to 10.0 mils (50 to 225 microns) per coat. <b>Note: Number of coats and thickness requirements will vary with substrate, application method and exposure. Contact your Tnemec representative.</b> |

CURING TIME AT 5 MILS DFT  
Without 44-700 Accelerator  
With 44-700 Accelerator

| Temperature | To Handle   | To Recoat   | Immersion  |
|-------------|-------------|-------------|------------|
| 75°F (24°C) | 6 hours     | 9 hours*    | 7 days     |
| 75°F (24°C) | 4 hours     | 5 hours     | 7 days     |
| 65°F (18°C) | 7-8 hours   | 9-11 hours  | 8 days     |
| 55°F (13°C) | 12-14 hours | 16-20 hours | 9-10 days  |
| 45°F (7°C)  | 18-22 hours | 28-32 hours | 12-13 days |
| 35°F (2°C)  | 28-32 hours | 46-50 hours | 16-18 days |

Curing time varies with surface temperature, air movement, humidity and film thickness.

\* When using **V140**, recoat time is 5 hours. **Note:** For valve applications allow 14 days cure at 75°F (24°C) prior to immersion. For pipe applications allow 30 days cure at 75°F (24°C) prior to immersion.

**Ventilation:** When used in enclosed areas, provide adequate ventilation during application and cure.

|                             |   |                                      |  |                                      |
|-----------------------------|---|--------------------------------------|--|--------------------------------------|
| VOLATILE ORGANIC COMPOUNDS* | <b>N140: Unthinned</b>  | <b>Thinned 10%</b>                   | <b>V140: Unthinned</b>                         | <b>Thinned 2.5%</b>                  |
|                             | 2.37 lbs/gallon<br>(284 grams/litre)  | 2.78 lbs/gallon<br>(333 grams/litre) | 1.95 lbs/gallon<br>(234 grams/litre)           | 2.08 lbs/gallon<br>(250 grams/litre) |
| HAPS                        | 3.0 lbs/gal solids  | 3.8 lbs/gal solids                   | 2.1 lbs/gal solids                             | 2.3 lbs/gal solids                   |
| THEORETICAL COVERAGE*       | 1,070 mil sq ft/gal (27.2 m <sup>2</sup> /L at 25 microns). See APPLICATION for coverage rates.   |                                      |  |                                      |
| NUMBER OF COMPONENTS        | Two: Part A and Part B or Three: Part A, Part B and 44-700 Epoxy Accelerator  |                                      |  |                                      |
| PACKAGING                   | 5 gallon (18.9L) pails and 1 gallon (3.79L) cans — Order in multiples of 2.<br>Reference 44-700 Epoxy Accelerator product data sheet for its packaging information. |                                      |  |                                      |
| NET WEIGHT PER GALLON*      | N140: 12.63 ± 0.25 lbs (5.82 ± .11 kg) (mixed)  |                                      | V140: 13.00 ± 0.25 lbs (5.90 ± .11 kg) (mixed) |                                      |

Published technical data and instructions are subject to change without notice. The online catalog at [www.tnemec.com](http://www.tnemec.com) should be referenced for the most current technical data and instructions or you may contact your Tnemec representative for current technical data and instructions.

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## TECHNICAL DATA continued

|                        |  |  |
|------------------------|--|--|
| STORAGE TEMPERATURE    | Minimum 20°F (-7°C)  | Maximum 110°F (43°C)   |
| TEMPERATURE RESISTANCE | (Dry) Continuous 250°F (121°C)   | Intermittent 275°F (135°C)   |
| SHELF LIFE             | 24 months at recommended storage temperature.  |  |
| FLASH POINT - SETA     | N140 & V140 Part A: 82°F (28°C)  | N140 Part B: 80°F (27°C)    V140 Part B: 86°F (30°C)    44-700: None |
| 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.<br><b>Keep out of the reach of children.</b> |  |

## APPLICATION

### COVERAGE RATES\*

|           | Dry Mils<br>(Microns) | Wet Mils<br>(Microns) | Sq Ft/Gal<br>(m <sup>2</sup> /Gal) |
|-----------|-----------------------|-----------------------|------------------------------------|
| Suggested | 6.0 (150)             | 9.0 (230)             | 179 (16.6)                         |
| Minimum   | 2.0 (50)              | 3.0 (75)              | 537 (49.9)                         |
| Maximum   | 10.0 (225)            | 15.0 (375)            | 107 (10.0)                         |

**Note:** Roller or brush application requires two or more coats to obtain recommended film thickness. Allow for overspray and surface irregularities. Wet 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. Reference the "Search Listings" section of the NSF website at [www.nsf.org](http://www.nsf.org) for details on the maximum allowable DFT.

### MIXING

1. Start with equal amounts of both Parts A & B.
2. Using a power mixer, separately stir Parts A & B.
3. (For accelerated version. If not using 44-700, skip to No. 4.)  
Add four (4) fluid ounces of 44-700 per gallon of Part A while Part A is under agitation.
4. Add Part A to Part B under agitation, stir until thoroughly mixed.
5. Both components must be above 50°F (10°C) prior to mixing. For application of the unaccelerated version to surfaces between 50°F to 60°F (10°C to 16°C) or the accelerated version to surfaces between 35°F to 50°F (2°C to 10°C), allow mixed material to stand 30 minutes and restir before using.
6. For optimum application properties, the material temperature should be above 60°F (16°C).

**Note:** The use of more than the recommended amount of 44-700 will adversely affect performance.

### POT LIFE

|                |                         |                        |                         |
|----------------|-------------------------|------------------------|-------------------------|
| Without 44-700 | 15 hours at 50°F (10°C) | 5 hours at 77°F (25°C) | 3 hours at 100°F (38°C) |
| With 44-700    | 8 hours at 35°F (2°C)   | 4 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 ¼ pint (380 mL) per gallon. For airless spray, roller or brush, thin up to 5% or ¼ pint (190 mL) per gallon. **Caution:** Series N140 & V140 NSF certification is based on thinning with No. 4 Thinner. Use of any other thinner voids ANSI/NSF Std. 61 certification. **Note:** When using Series V140, a maximum of 2.5% of No. 4 Thinner may be used to comply with VOC regulations.

### SURFACE TEMPERATURE

|                |                     |                      |
|----------------|---------------------|----------------------|
| Without 44-700 | Minimum 50°F (10°C) | Maximum 135°F (57°C) |
| With 44-700    | 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<br>JGA | E         | 765<br>or 704 | 5/16" or 3/8"<br>(7.9 or 9.5 mm) | 3/8" or 1/2"<br>(9.5 or 12.7 mm) | 75-100 psi<br>(5.2-6.9 bar) | 10-20 psi<br>(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"<br>(380-485 microns) | 1800-3000 psi<br>(124-207 bar) | 1/4" or 3/8"<br>(6.4 or 9.5 mm) | 60 mesh<br>(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 to 12.7 mm) synthetic woven nap roller 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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