

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Figure 525-RD Globe Style Weight Loaded Sewage Surge Relief Valve 2” to 12” Drawing K-1015

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234 Clay Avenue • Mars, PA 16046 USA
Telephone (724) 776-1020 • Fax (724) 776-1254
E-mail: info-ga@vag-group.com

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WARNING: Cancer and Reproductive Harm – www.Prop65Warnings.ca.gov

INSTALLATION, OPERATION and MAINTENANCE

2" to 12" Figure 525-RD Weight Loaded Sewage Surge Relief Valve

INTRODUCTION

This manual will provide the information to properly install, operate and maintain the valve to ensure a long service life. The Figure 525-RD Sewage Surge Relief Valve is ruggedly constructed to provide years of trouble-free operation with minimal maintenance.

CAUTION

The valve is NOT recommended for use with toxic or highly corrosive fluids, fuels or fluids containing hazardous gases.

The Shop Order (SO) Number, Figure Number, size and pressure rating are stamped on a nameplate attached to the valve. Please refer to the SO number when ordering parts.

FUNCTION

The Figure 525-RD Sewage Surge Relief Valve is used to protect systems against damaging surges resulting from a sudden stoppage of flow. The valve is normally closed and opens when the inlet pressure increases to a pre-set pressure to discharge excess pressure out of the system. The valve opens as far and stays open for as long as needed to limit the pressure rise. It slowly closes as the pressure subsides below the opening pressure. The valve is designed to accommodate solids and other matter that may be present in sewage systems without clogging.

RECEIVING AND STORAGE

Inspect the valve upon receipt for damage during shipment. Carefully unload all valves to the ground without dropping.

The valves should remain in a clean, dry, and weather protected area until installed.

INSTALLATION

The Figure 525-RD is a globe body valve with in-line ANSI Class 125 flanged connections. The standard valve is intended to be installed in a horizontal pipe.

Consult the drawings of record to verify the configuration supplied and installed.

These valves are heavy, and awkward to handle, ensure proper handling techniques are employed.

Handle heavy valves using slings around the valve body and/or by the lifting eyes.

Prior to installation ensure all debris, packing material or other foreign material has been removed from both ports.

Install the valve in the proper flow direction. The discharge piping connected to the outlet of the valve must be unobstructed and open to atmosphere.

If installed outdoors, below ground in a vault or in an unheated area, adequate freeze protection must be provided.

An adequate isolating valve should be installed between the valve and the pipeline or system to facilitate maintenance.

The valve is not designed to support adjacent equipment, piping loads should not be imposed on the valve and large valves should be properly supported. Ensure mating flanges are square and parallel to the valve flanges before tightening flange bolts.

Flat-faced flanged valves should be mated with flat-faced flanges and full-face gaskets. If ring gaskets are used the bolt material shall be ASTM A307 Grade B (or equivalent). Higher strength bolting should only be used with full-face gaskets.

Lubricate the bolts or studs and insert around flange. Lightly tighten bolts until gaps are eliminated. Torque bolts in an alternating pattern in graduated steps. If leakage occurs wait 24 hours and re-torque the bolts but do not compress the gasket more than 50% or exceed bolt maximum torque rating.

OPERATION

The Figure 525-RD surge relief valve's disc is held against the seat by the force created by counterweights on the lever arms. When the force of the system pressure acting on the face of the valve disc exceeds the force holding the valve closed, the valve disc will swing away from the seat permitting a discharge of fluid from the system. The valve will open as far as needed to discharge fluid at the rate necessary to prevent a further rise in pressure.

As the valve opens it freely draws oil from the reservoir into the piston chamber.

When the system pressure subsides the force of the counterweights will close the valve, forcing oil back into the reservoir through a flow control valve to control the speed at which the valve closes.

VALVE CONSTRUCTION

The standard Figure 525-RD surge relief valve has an epoxy coated cast iron body and steel cover, stainless steel body seat, stainless steel shaft and resilient disc seat.

The valve incorporates a self-contained hydraulic system to control the speed at which the valve closes after opening to relieve excess pressure.

Refer to the List of Materials submitted for the order if non-standard materials were provided.

Refer to Page 4 for details of construction and parts location.

START-UP

The valve generally does not require any calibration or adjustment prior to start-up. The pressure at which the valve opens is set at the factory per the Engineer's specification and indicated on a tag wired to the valve. This pressure is typically 10% higher than the highest pressure that would be present at the valve's inlet.

The valve is shipped from the factory with the oil reservoir full of oil and a pipe plug in the fill port to prevent spillage during transit and installation.

IMPORTANT: Prior to start-up remove the pipe plug, check to make sure reservoir is $\frac{3}{4}$ " full and replace with the blue plastic vented plug that is wired to the reservoir.

If additional oil is needed, use AW32 Hydraulic Fluid.

The closing speed flow control valve (28) should be initially opened $\frac{1}{4}$ turn from closed.

Since the relief valve's opening pressure is always higher than the "normal" pressure, an abnormally high pressure is needed to test the valve's operation.

This may be accomplished by throttling valve but most of the time the pumping system is started then shut down and the reaction of the relief valve is noted.

If necessary, the pressure at which the valve starts to open can be field adjusted by loosening the counterweight set screws (12) and incrementally moving all the counterweights on each side an equal distance farther from the shaft to increase the opening pressure and closer to the shaft to decrease the opening pressure. Tighten the set screws once the counterweights are re-positioned. Due to the

variables involved there is no "calibration," so field adjustment is by "trial and error."

Because of the structural limitations of the valve, the opening pressure cannot be set higher than that noted in the below table:

Size	Maximum Set Pressure
2"	175 PSI
2½"	100 PSI
3"	100 PSI
4"	70 PSI
6"	30 PSI
8"	15 PSI
10"	10 PSI
12"	7 PSI

Small adjustments to the closing speed may be made if needed. Loosen lock nut on closing speed flow control valve (28) and turn screw clockwise to slow closing speed, counterclockwise to increase closing speed.

CAUTION: Do not completely close the needle valve as this will prevent the relief valve from closing once it has opened.

PREVENTIVE MAINTENANCE

Figure 525-RD sewage surge relief valves require no routine lubrication, adjustment, or preventive maintenance.

A monthly inspection should be performed for the first 6 months of operation to ensure there is no external fluid leakage or audible evidence of water leaking through the closed valve.

Thereafter, a quarterly visual inspection should be performed.

TROUBLESHOOTING

- Valve Fails to Open at Desired Pressure
 - Set pressure too high – adjust weights
 - Inlet isolating valve closed – open valve
- Valve Fails to Close
 - Set pressure too low – adjust weights
 - Closing speed valve closed – adjust $\frac{1}{4}$ turn open
 - Closing speed hydraulic tubing kinked or clogged – repair/replace/clean tubing
- Leakage Through Valve When Closed
 - Debris lodged under seat – inspect/clear
 - Damaged disc seat – inspect/replace
- Valve Closes Erratically
 - Low or no oil in reservoir – fill $\frac{3}{4}$ full when valve is closed
 - Trapped air – bleed (see page 3)
 - Damaged piston seal (21) – replace
- Oil Leakage
 - Worn piston seal - replace
 - Leaking fitting – seal and/or tighten

WARNING

Removing the valve from the line or disassembling the valve while there is pressure in the valve body may result in injury or damage to the valve.

WARNING

Follow all applicable safety regulations and codes and read and understand all instructions before undertaking disassembly.

DISASSEMBLY

Figure 525-RD surge relief valves can be serviced while the body remains connected to the pipeline. A skilled technician should perform all work. No special tools are required but due to the weight of large size valve's components overhead lifting capability is beneficial.

First ensure there is no pressure within the valve and operating equipment is tagged and locked out. Refer to Page 4 for parts identification and location.

Ensure all necessary replacement parts are on hand before commencing service. Disassemble only as far as needed to inspect/replace worn parts.

To replace worn/damaged disc seat ring (32):

1. Mark the position of the counterweights (11) so they can be reset to their original position upon reassembly.
2. Loosen counterweight set screws (12) and slide counterweights (11) off both arms.
3. Loosen counterweight arm set screws (10) and slide counterweight arms (9) off shaft (6). Be careful not to lose key.
4. Remove the lever cotter pin (39) and lever pin (25). Loosen lever set screw (16) and slide lever (15) off shaft (6). Be careful not to lose lever key (22).
5. Remove both packing gland nuts or bolts (14) and slide glands (7) off shaft (6).
6. Remove cover bolts (5) and lift off cover (3). It may be necessary to carefully pry the cover off the body (1).
7. Loosen disc arm set screw (13) and supporting the disc arm assembly, push shaft (6) out of body. Lift out disc arm assembly. Be careful not to lose shaft key (38).
8. One shaft bushing (27) and gland packing (8) should be pushed out with the shaft. Remove other bushing and gland packing after shaft has been removed.
9. Remove seat ring screws (34), seat ring follower (33) and seat ring (32).
10. Inspect all parts for wear and damage. Replace all seals, gaskets and any worn and/or damaged parts.

ASSEMBLY

- 1a. Clean and polish all machined bearing and sealing surfaces. Remove burrs and sharp

edges. Apply a light coat of lubricant on sealing surfaces to assist in the assembly.

- 2a. Install new seat ring (32) on disc (2), replace follower (33) and install seat ring follower screws (34). Tighten but do not distort follower ring.
- 3a. Insert shaft key (38) into shaft keyway. Support disc arm assembly in body and insert shaft so key fits into keyway in disc arm (31).
- 4a. Install both shaft bushings (27) to support shaft (6). Center disc arm and tighten disc arm set screw (13).
- 5a. Install gland packing (8), glands (7) and gland nuts or bolts (14). Evenly snug the gland nuts or bolts (14).
- 6a. Install new cover gasket (4) and place cover (3) on body. Install cover bolts (5) and tighten in an alternating pattern.
- 7a. Place lever key (22) in key slot in shaft (6) and slide lever (15) onto shaft.
- 8a. Install lever pin (25) and lever pin cotter pin (39). Tighten lever set screw (16).
- 9a. Install keys in shaft (6) and slide counterweight arms onto shaft. Tighten counterweight arm set screws (1).
- 10a. Slide counterweights (11) onto both arms to the position previously marked. Tighten counterweight set screws (12).
- 11a. Slowly open inlet valve to introduce pressure and check for leaks.

To replace worn piston seal (21):

1. Remove counterweight arm and disconnect lever per steps 1 to 4 above.
2. Note how many turns to close the closing speed control valve and then open fully.
3. *SLOWLY* pull up on the link (17) to extract the piston (20) from the cushion chamber (18).
4. Remove piston seal (21) and inspect piston and inside of cushion chamber for wear and score marks. Replace if needed.
5. Lubricate and install new piston seal (21) on piston (20).
6. Remove the cap from the reservoir (24).
7. Insert piston (20) into cushion chamber (18) and *SLOWLY* push down to the bottom. Air bubbles should be noted leaving the oil.
8. Pull up on the link and push down until no air bubbles are seen.
9. Follow steps 7a to 10a above.
10. Check reservoir oil level is $\frac{3}{4}$ full, add AW32 hydraulic oil if needed.
11. Replace reservoir cap and adjust closing speed control valve to $\frac{1}{4}$ turn open.
12. Slowly open inlet valve to introduce pressure and check for leaks.

REPLACEMENT PARTS

Genuine replacement parts are available from your local VAG/GA Industries representative or from the factory:

VAG USA, LLC
 234 Clay Avenue
 Mars, PA 16046 USA
 Telephone: 724-776-1020
 Fax: 724-776-1254
 E-mail: quotes-ga@vag-usa.com

Please have the nameplate data available when ordering parts. Identify needed part(s) by Shop Order (SO) Number, Figure Number, valve size and individual part number.

All parts ordered individually.

WARRANTY:

The Warranty for GA Industries valves is included in our Terms and Conditions which can be found here: <https://gaindustries.com/terms>

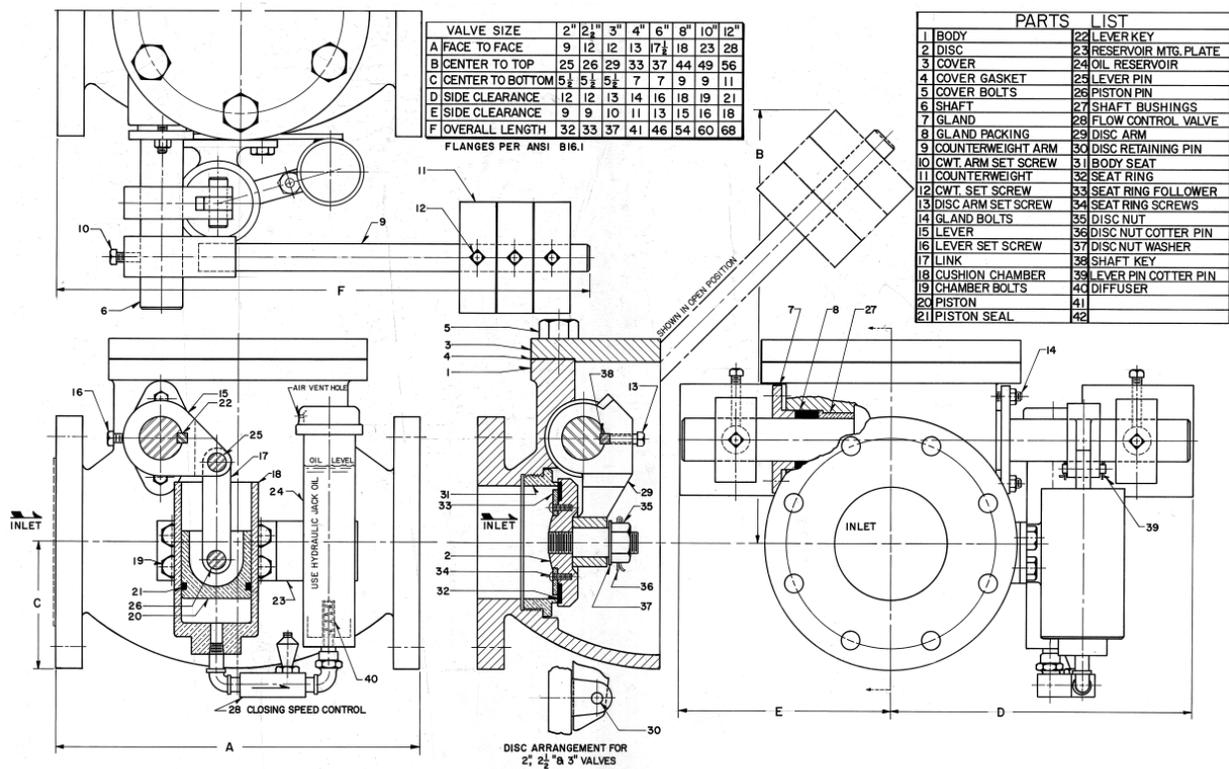


Figure 525-RD Sewage Surge Relief Valve