



Installation and Operation Manual

Automatic Control Valve

Mechanical Services & HVAC Products

*F63-PPR | F63-PSR | F63-PSA | F63-PPD | F63-FCV |
F63-FMC | F63-FSC | F63-FBF*

This manual is also available online.



SAFETY PRECAUTIONS



Caution



Read and understand carefully this document prior attempting to install Fivalco® products. Failure to follow these instructions could cause severe injury, product and/or property damage.



Installation, maintenance and replacement of Fivalco® products must be implemented by an experienced, well trained installer. Wear safety glasses, helmet, hand and foot protection during installation.



The owner is responsible for maintaining the system in proper operation condition.



Fivalco shall not be held responsible for any incidents arising from improper installation, operation and maintenance work. The responsibility for this must rest with the installer and user.



Disclaimer

This manual serves as a general guideline and reference to the installers and users. Every effort has been made to ensure the information contained in this manual is accurate at the time of publication. Fivalco Limited assumes no responsibility or liability for any errors and/or misinterpretation of the information. Contact your local vendor, distributor or Fivalco Limited for detail technical data and specification of each model, and if any additional information is required. We reserve the right to alter this manual without notice.

“The quality goes in before our name goes on”



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AUTOMATIC CONTROL VALVE (ACV)

1 GENERAL

Automatic control valves (ACV) are used in industrial and commercial applications where water flow or pressure controls are required. It is used to regulate the flow or pressure that is passing through the systems to maintain that flow or pressure at desired levels as determined by the system operator. Fluid systems are typically designed for operation at a set range of pressures.

Various type of automatic control valves under our range of products are pressure reducing valves, pressure relief valves, surge anticipating valves, modulating float control valves, etc. Different valves may have different functions. Installers need to choose the correct product for its intended applications.

2 UNLOADING & TRANSPORTATION

A vital consideration in handling valves should be avoid damaging or scratching the coating protection. Ensure that there are no heavy and sharp objects are applied to the valves.

All valves should be unloaded carefully. Each valve should be carefully lowered from the truck to the ground; it should not be dropped. In the case of larger valves, forklifts or slings around the body of the valve or under the skids should be used for unloading. Only hoists and slings with adequate load capacity to handle the weight of the valve or valves should be used. Hoists should not be hooked into or chains fastened around yokes, stem, or handwheels. Failure to carefully follow these recommendations is likely to result in damage to the valve.

Extra care should be taken to ensure all the copper tubes are to be protected and not to be damaged.

3 STORAGE

Valves should be stored in proper packaging and to prevent the entry of foreign material that could cause damage to the diaphragm and sealing surface. Do not remove the protective caps until installation. Whenever practical, valves should be stored indoor under dry, cool conditions, away from direct sunlight and corrosive or otherwise chemically active atmosphere. If outside storage is required, means should be provided to protect the operating mechanism from weather elements. During outside storage, valves should be protected from the weather, sunlight, ozone, and foreign materials. In colder climates where valves may be subject to freezing temperatures, it is absolutely essential to remove the water from the valve interior and close the valve before storage. Failure to do so many results in a cracked valve casting and / or deterioration of the valve's internal material.

4 INSPECTION PRIOR TO INSTALLATION

Automatic control valves should be inspected at the time of receipt for damage in shipment. The initial inspection should be to verify compliance with specifications (type, size, material, pressure and temperature ratings) and type of end connections. A visual inspection of the valve should be performed to detect any damage during shipment. Inspection personnel should look for bent, broken or cracked parts, loose bolt, missing parts and accessories, and any other evidence of mishandling during shipment.

Contact your vendor or local representative immediately if any disorder is found.

5 INSTALLATION

At the jobsite prior to installation, each valve should be visually inspected and any foreign material in the interior of the valve should be removed.

Before being installed, the valves need to be cleaned so as to eliminate the dust caused during the transportation and storage. Confirm the type of connection and standard before starting the installation work.

Valves to be installed at horizontal pipe line. When being installed, the medium flow direction should be the same as the flowing direction on the valves. All valves shall install in upright position. Upside down installation is not permitted. Provide sufficient space for valves for easy installation, operation, maintenance, inspection and replacement.

During installation, it is essential to ensure an accurate centering between flanges and in a well aligned position so that the stress would not be acting on the valve body. Suitable gaskets between valve flanges and the mating flanges to be used. Valves shall be mounted on the flanges only after the mating or counter flanges have been welded to the pipe and cooled down to atmospheric temperature. Welding heat may damage the diaphragm or the seal of the valve. Never weld the flanges with valve installed.

All bolts should be checked for proper tightness and protected by the installer to prevent corrosion, either with a suitable paint or by polyethylene wrapping.

Valves installed in a plant piping system should be supported and aligned to avoid damage to the valves. Valves should not be used to correct the misalignment of piping.

After installation and before pressurization of the valve, all pressure-containing bolting (bonnet, seal plate, packing gland, and end connections) should be inspected for adequate tightness to prevent leakage. In addition, an inspection should be made for adequate tightness of all tapped and plugged connections to the valve interior. Proper inspection at this time will minimize the possibility of leaks after pressurization of the piping system.

In order to prevent time lost searching for leaks, it is recommended that the valve excavations are not backfilled until after pressure tests have been made. After installation, it is desirable to test newly installed piping sections, including valves, at some pressure above the system design pressure. The valve should not be operated in either the opening or closing direction at different pressures above the rated working pressure. It is also recognized that wear or foreign material may damage valve seating surfaces and may cause leakage.

On completion of the installation, valve location, size, make, type, date of installation, number of turns to open, direction of opening, and other information deemed pertinent should be entered on permanent records.

Bolts must be tightening in a crosswise pattern (see figure 1). Installer should ensure that the valve flanges are well aligned and an even pressure on the gasket surface is applied.

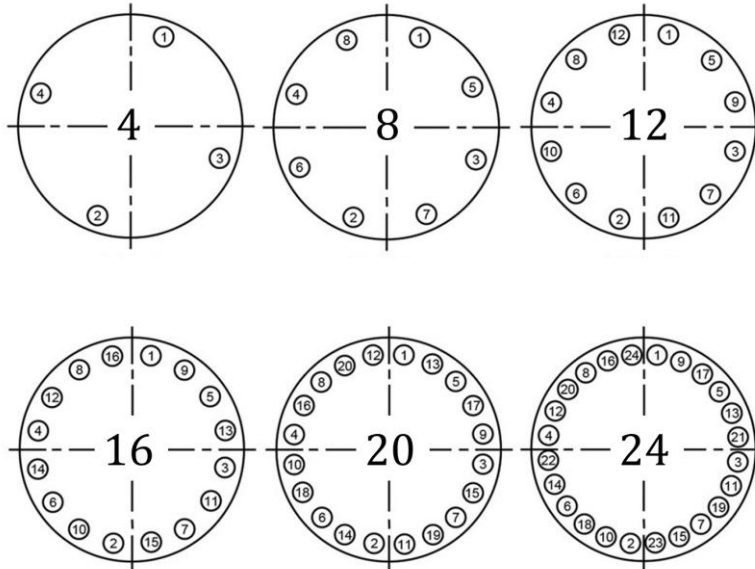


Figure 1: Crosswise pattern for tightening or loosening bolts.

6 OPERATION

Pressure reducing valves (PRV) is hydraulically operated and diaphragm actuated that reduces higher upstream pressure to match the set-point to a lower constant downstream pressure. These valves employ a spring against a diaphragm and piston as the control element which makes them simple and reliable in operation.

Pressure relief valve (RV) is to control or limit the pressure within the piping system, to protect the piping system, instrument and equipment. A specific set-point (pressure) is to be determined, pressure relief valves response and release the excess pressure and flow from the system when the set-point is reached. Operation is completely automatic and pressure settings may be easily changed by adjusting screw on top of the pilot.

Surge anticipating valve (SAV) is used to protect the pumps, pipes, valves, fittings and equipment of a system from pressure surges or hammering caused by rapid changes of flow velocity in a piping system. Surge anticipating valve reacts and diverting the back pressure surge from the system and dissipate the pressure waves, thus eliminating the surge.

Modulating float control valve (FCV) maintains a relatively constant level in storage tanks and reservoirs by allowing inflow of water into the tank in direct proportion to the outflow out of the tank. A ball float operated pilot control is installed at the high level in the tank and is connected via a shaft to the main valve. As the water tank level drops, the main valve is opened proportionally to increase the water flow into the tank.

7 MAINTENANCE

We recommend that you carry out a routine check of the valve on monthly basis. User shall ensure that the pilot and all other accessories are intact, and to ascertain the pressure and flow are in proper operational condition. An inspection for leaks around the bonnet and the flanges is essential.

8 WARNINGS

The working pressure, temperature, suitable media of valves must be accord with the regulation of the illumination, or that maybe dangerous.

Prior to any maintenance work that requires disassembly make sure that the pressurized line involved is isolated, depressurized and drained before starting any dissembled. Failure to do so may result in sudden pressure release and subsequent severe injury or death. If the pressure exceed regulation, the valve maybe leak and the body maybe explode of craze.

If the temperature is too high, the material maybe invalidation and the valve may be broken. If the media does not accord with the regulation of the illumination, it may rot the body, seat or break the sealing, the body may corrode and craze, the media may be leaked.

TROUBLE SHOOTING

Problem	No.	Possible Cause	Solution
Main valve fails to open	1	No pressure at valve inlet	Check inlet pressure
	2	Main valve diaphragm assembly not operative	Disassemble, clean the stem, replace the defective parts
	3	Pilot is not open: Spring is not compressing	Tighten the adjustment screw
	4	Ball valve in pilot system closed	Open the ball valve
	5	Spring guide is not in place	Assemble in a proper position
	6	Pilot yoke is dragged	Assemble in a proper position
Main valve fails to close	1	Foreign objects between disc and seat, worn disc. Scale on stem or worn diaphragm	Disassemble the main valve, remove the objects, clean and replacing defective parts
	2	Needle valve closed	Open the valve
	3	Pilot is open: Spring is compressed, mechanical obstruction	Disassemble and remove obstruction
	4	Torn disc	Disassemble and replace the disc
	5	Yoke is dragged	Assemble in a proper position
	6	Torn Diaphragm	Disassemble and replace the diaphragm
Fails to regulate	1	Air in main valve	Loosen top cover plug or fittings and release the air
	2	Pilot yoke dragged on inlet nozzle	Assemble in a proper position
	3	Pilot spring not in correct range to control	Change the spring



WARRANTY STATEMENT

Fivalco's products are designed, engineered and manufactured within its specification of intended use, under the highest quality control possible. Commitment on quality and performance is always at the top of our agenda.

Fivalco warrants that for a period of thirty-six (36) months following delivery, the Fivalco products will perform in accordance with published specifications, and will be free from defects in material or workmanship provided that the products are stored and installed in accordance with recommendations in our catalogues.

Fivalco's obligation shall be to replace any product found to be defective in design, material or workmanship during the warranty period. Fivalco shall not be obligated to refund the purchase price and other liabilities on monetary compensation, nor shall it be obligated to pay for any labor or costs associated with the removal of the defective products or the reinstallation of those products. No warranty coverage will be provided for products that have been altered and / or used for a purpose other than that for which they were designed or installed contrary to Fivalco's guidelines.

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