

Installation and Operation Manual

Double Regulating Valve

Mechanical Services & HVAC Products

F63F16 | F63F25 | F6G25

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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DOUBLE REGULATING VALVE

1 GENERAL

Double regulating valve is a Y-pattern plug design valve that has regulating ability but which can be locked in its set position. It is equipped with a valve setting knob and indicator to enable the setting or flow rate to be read and recorded. Fixed orifice double regulating valve is a fixed orifice fitting either integral to or close coupled to a double regulating valve. Variable orifice double regulating valve is a double regulating valve that uses the pressure drop across its plug as the means of determining flow rate.

The double regulating feature allows the valve to be used for isolation and to be reopened to its pre-set position to maintain required flow rate with a pair of measuring plugs.

Double regulating valves differ from ordinary regulating valves in that the flow setting is not lost when the valve is closed. They can be regulated from fully open to the required flow setting position, and then locked at that position. The valve may then be closed and reopened to the same setting.

2 UNLOADING & TRANSPORTATION

A vital consideration in handling valves should be avoid damaging or scratching the coating protection.

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.

3 STORAGE

Valves should be stored in the fully closed position to prevent the entry of foreign material that could cause damage to the seating surface. Do not remove the protective caps until installation. Whenever practical, valves should be stored indoors 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 resilient seat material.

4 INSPECTION PRIOR TO INSTALLATION

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), direction of opening, and type of end connections. A visual inspection of the seating surfaces should be performed to detect any damage in shipment or scoring of the seating surfaces. Inspection personnel should look for bent stems, broken handwheels, cracked parts, loose bolt, missing parts and accessories, and any other evidence of mishandling during shipment.

Each valve should be operated through one complete opening-and-closing cycle in the position in which it is to be installed. Contact your vendor or local representative immediately if any disorder is found.

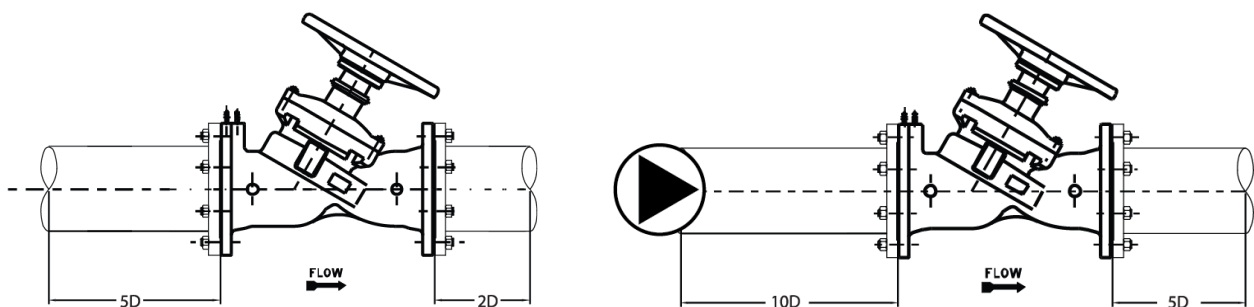
5 INSTALLATION

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.

Install the double regulating valve in the pipe line by ensuring the arrow marking on the valve is same direction as piping flow.

To achieve flow measurement accuracy, it is essential that the piping on the inlet and outlet of the valve is straight and has a minimum length equivalent to 5 Diameters (5D) inlet and 2 Diameters (2D) outlet as shown. If the valve is installed at the discharge side of a pump set, it is essential that the straight pipe length between pump outlet and valve has a minimum length of 10 Diameters (10D).



Gaskets must be used and assembled between valve and flanges. This will ensure the installation is concentric with pipe line and better accuracy is obtained.

Design flow to be attained by setting valve's opening position, which can be read from a pre-loaded programmable electronic commissioning meter. Contact your local distributor for information on electronic commissioning meter.

To lock the pre-setting of the valve, push the limitation ring at the scales at the bottom of the handwheel, tighten the screw using the hexagon wrench.

Valve Setting Indicator

The micrometer style handwheel has a collar snapped into a groove on the outside of the handwheel boss which is numbered 0 to 9 around the circumference.

As the valve is opened from the fully closed position, each turn of the handwheel reveals one extra ring on the plastic sleeve. When closed, the zero on the collar lines up with a groove in the sleeve and each number represents 1/10 of a turn.

Valves can be installed at horizontal or vertical pipe line depending on its application. When being installed, the medium flow direction should be the same as the flowing direction on the valves. Valves shall install in upright position. They are preferably to be installed with the stem in vertical upright position. Upside down installation is not recommended. 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 resilient seat or rubber seat of the regulating valves. Never weld the flanges with valve installed.

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

During installation there is the possibility of foreign materials inadvertently entering the valve. Foreign material can damage internal working parts during operation of the regulating valve. For this reason, regulating valves should be installed in the closed position. Each valve should be placed on firm footing in the trench to prevent setting and excessive strain on the connection to the pipe. Pipe systems should be supported and aligned to avoid damage to the valve.

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.

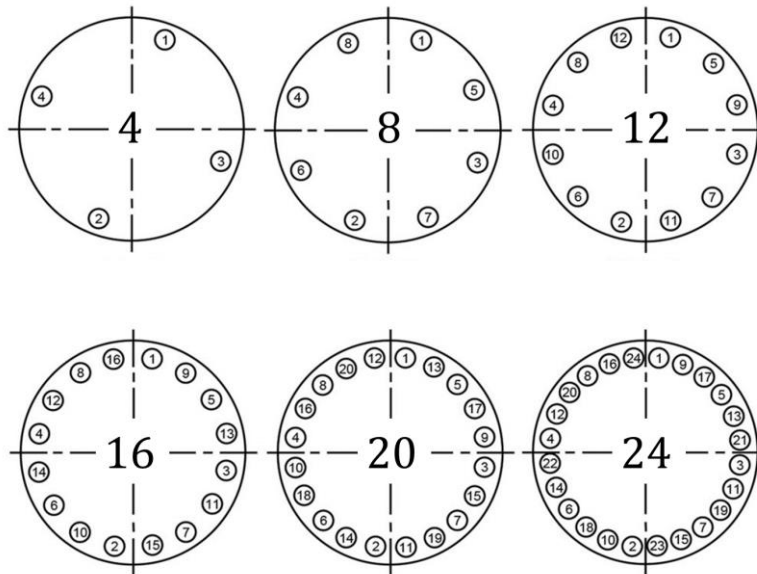


Figure 1: Crosswise pattern for tightening or loosening bolts.

6 OPERATION OF VALVES

Regulating valve is used as a throttling function or to control the flow. Only hand can be used to open and close the valves, all of the other tools should not be used.

Please ensure to turn the valves according to the direction of opening and closing which usually indicated on the hand wheel. To prevent damage or deform of the balancing valves, it must be operated within the allowable and maximum operating torque.

Measuring Flow Rate

In order to establish the flow rate through a double regulating valve it will be necessary to measure the pressure differential across the valve or orifice. Having measured the pressure differential, and knowing the kvs value, the flow rate can then be calculated using the following equation:

$$Q = kvs \cdot \sqrt{\frac{\Delta P}{36}}$$

where Q = flow rate in l/s, and ΔP = pressure loss in kPa

7 MAINTENANCE

If the valve is installed according to our standard procedures, it is maintenance free. However, for every 4-5 years, we recommend that you carry out a routine check of the valve for leaks around the stem and the flange gaskets. All seals will in the course of time be influenced by air and sunshine, frequent and careful checks can reveal leaks. Moreover, we recommend you to adjust the bolts in the flange connections, as the compression of the flange gaskets may be reduced in the course of time and thus leaks may arise.

When the valves being used for some time, the leaking may be happened in the filling area because of the friction caused by the stem moving, you can tighten the connection nut of the filling flange and adjust; it is dangerous to change filling with the pipes full of pressure, so we do not suggest you change the filling when the valves are working. If it is dangerous because of the temperature, high pressure and chemical elements, the filling must not be changed under the pressure situation.

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.



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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