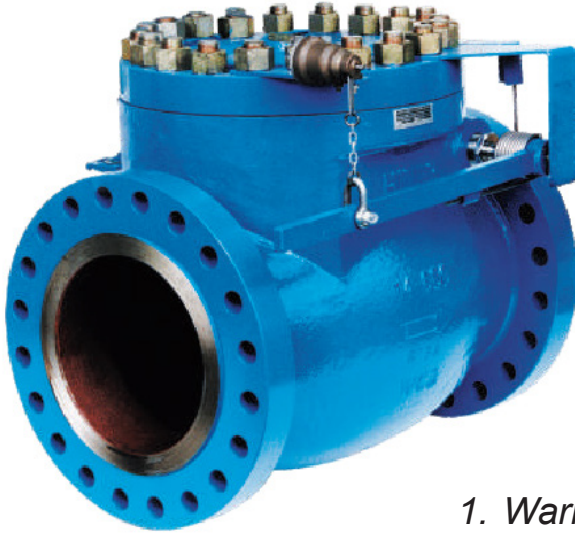


FE Series Installation and Maintenance Manual



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1. Warranty term

Hiter Controls guarantees, subject to the conditions described below, to repair and replace as free of charge, including labor, any components that fail within 1 year of delivery of the product to the end customer. Such failure must have occurred due to a defect in material or workmanship, and not as a result of the product not having been used in accordance with the instructions in this instruction.

This warranty does not apply to products that require repair or replacement due to normal wear and tear on the product or products that are subject to accidents, misuse or improper maintenance. Hiter Controls only obligation with the Warranty Term is to repair or replace any product that we deem defective. Spirax Sarco reserves the right to inspect the product at the end customer's facility or request the return of the product with prepaid freight by the buyer.

Hiter Controls can replace with new equipment or improve any parts that are found to be defective without further liability. All repairs or services carry out ed by Hiter Controls , which are not covered by this warranty term, will be charged according to the current Hiter Controls price list.

THIS IS HITER CONTROLS ONLY WARRANTY TERM AND ONLY THROUGH HITER CONTROLS IS EXPRESSED AND THE BUYER DISCLAIMS ALL OTHER WARRANTIES, IMPLIED BY LAW, INCLUDING ANY MARKET WARRANTY FOR A PARTICULAR PURPOSE.

2. General safety information

Access.

Ensure safe access and if necessary a safe working platform (suitably guarded) before attempting to work on the product. Arrange suitable lifting gear if required.

Lighting.

Ensure adequate lighting, particularly where detailed or intricate work is required

Hazardous liquids or gases in the pipeline.

Consider what is in the pipeline or what may have been in the pipeline at some previous time. Consider; flammable materials, substances hazardous to health, extremes of temperature.

Hazardous environment around the product.

Consider; explosion risk areas, lack of oxygen (e.g. tanks, pits), dangerous gases, extremes of temperature, hot surfaces, fire hazard (e.g. during welding), excessive noise, moving machinery.

The system.

Consider the effect on the complete system of the work proposed. Will any proposed action (e.g. closing isolation valves, electrical isolation) put any other part of the system or any personnel at risk? Dangers might include isolation of vents or protective devices or the rendering ineffective of controls or alarms. Ensure isolation valves are turned on and off in a gradual way to avoid system shocks.

Pressure systems.

Isolation (double block and bleed) and the locking or labelling of closed valves. Do not assume that the system has depressurised even when the pressure gauge indicates zero.

Temperature.

Allow time for temperature to normalise after isolation to avoid danger of burns.

Tools and consumables

Before starting work ensure that you have suitable tools and/or consumables available. Use only genuine Spirax Sarco replacement parts.

Protective clothing

Consider whether any protective clothing is required by yourself and/or others in the vicinity to protect against the hazards of, for example, chemicals, high/low temperature, noise, falling objects, and dangers to eyes and face.

Permits to work

All work must be carried out or be supervised by a suitably competent person.

Commissioning

After installation or maintenance, make sure that the system is working properly. Carry out tests on all alarms and protective devices.

Handling and Storage

The equipment and materials must be stored in their own premises and in a safe manner. See item 5.

Disposal

Unless otherwise stated in the Installation and Maintenance Instructions, this product is recyclable and no ecological hazard is anticipated with its disposal providing due care is taken. However, if the valve is fitted with a Viton seal, special care must be taken to avoid potential health hazards associated with decomposition/burning of this item.

Additional Information

Additional information and help is available worldwide at any Spirax Sarco service center. produto, se realizado de maneira apropriada.

3. Introduction

The **FE Series** is an emergency-closing valve designed to avoid quick fluid passage in tanks and piping.

Due to the component responsibility for an adequate valve performance, for maintenance use only original parts supplied by **HITER**.

4. Installation

- 4.1.** The valve is inspected and shipped in a special packing with protection covers in the body openings. However, a carefully inspection should be performed in order to ensure there is no damage and that no material has penetrated in the valve during transportation or storage.
- 4.2.** Several valves are damaged when they are firstly in service due to the lack of a proper and complete internal cleaning of piping before the installation. Make a complete internal cleaning in the system lines and the valve trims to remove rust, dust, welding debris and other debris.
- 4.3.** Be sure the adjacent flanges are perfectly aligned among them. The misalignment may cause installation problems and seriously compromise the equipment performance due to abnormal stresses appearing.
- 4.4.** Be sure the flange face is free of imperfections, live corners and burrs.

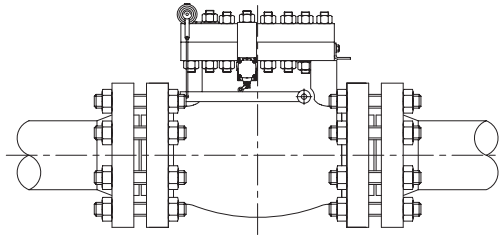


Fig. 1 – Valve installation

- 4.5.** Installation position should be horizontal or vertical.
- 4.6.** Install the valve obeying the flow direction indicated by the arrow in the body.
- 4.7.** Introduce the studs and tight the nuts alternately in a diametrically crossed sequence. The torques must not be applied only at a time. The crossed sequence should be repeated several times, increasing the stud-bolt torque in a gradual and uniform manner, until the recommended value is reached (table 1 – page 3).
- 4.8.** The straight piping length upstream the valve must be in accordance with the valve installation standards or recommendations.
- 4.9.** In continuous operation units, the installation must include a blockage and by-pass systems, constituted of three manual valves.
- 4.10.** Do not install the valve in a system whose pressure and temperature values are not satisfying the valve classes. When a valve is manufactured the internal component materials are selected for a specific service condition. So, do not apply the valve in a more critical service without firstly consulting Hiter.
- 4.11.** The valves must be installed in an easy maintenance place, with space for the actuator removal and trim disassembly.

5. Maintenance

WARNING

For personnel safety and to avoid damage to the system, before starting the piping check valve removal, isolate it through block valves and relief all pressure therein contained.

In the disassembly procedure description, our reference shall be figures 2 and 3, except when adversely indicated.

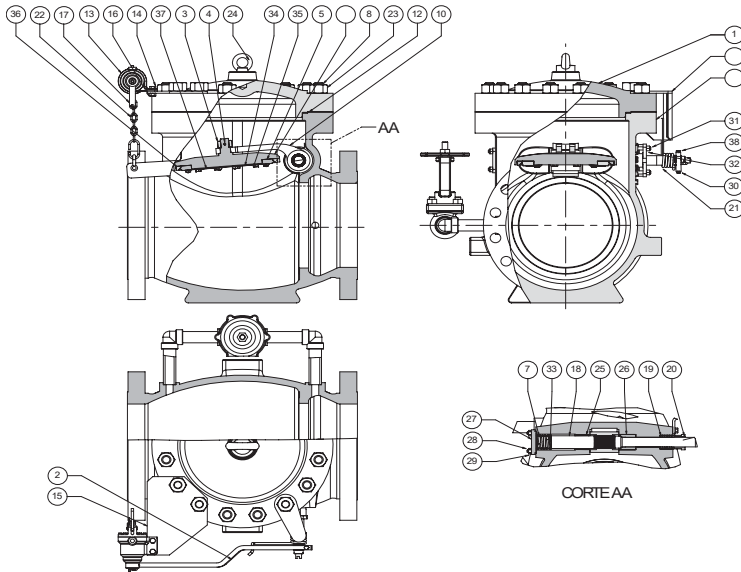


Fig. 2 – FE Series with pneumatic actuator

5.1. DISASSEMBLY

- 5.1.1. Loose the nuts (23) and remove them together with actuator (13) or (13A)
- 5.1.2. Remove the cover (11) and gasket (12). Move the body (1) so that disk is in horizontal position and also the disk (6) is closed.
- 5.1.3. Loose the bolt (38) and nut (30) of lever and remove the lever (2) together with the spring (21).
- 5.1.4. Loose the nut (29) and remove the cover (27) together with the spring (7).
- 5.1.5. Remove the packing follower (20) and then the shaft (18) and packings (19).
- 5.1.6. Remove the body (1) and disk (6) through arm (10).
- 5.1.7. Disassembly the disk subassembly (6) removing the pin (4) and the nut (3).

5.2. CLEANING, INSPECTION AND REPAIR

All valve metallic parts must be cleaned using solvent and dried with compressed air after inspection. Those approved should be kept clean and very well protected up to the assembly. The oil protector application to the steel carbon non-painted parts is recommended. If there is a damage that can not be resolved by parts replacement and/or corrective actions, the valve should be returned properly assembled to **Hiter** for general revision.

- 5.2.1. Inspect the seal surfaces (seat areas). Deep scratches or other imperfections on this area may compromise the valve sealing, damaging the seat. They only can be eliminated through the surface rectifying.

5.2.2. Normally it is not possible to get total sealing in metal-to-metal sealing valves. However, the leakage caused by small grooves or disarrangement of the surfaces can be reduced by obturator rectifying against the seal. When the mentioned damages are larger ones, it is necessary to look for a milling before rectifying.

5.2.3. In the market place there is a great variety of pastes used for rectifying, thus a good quality paste can be used. Also, the paste can be prepared by mixing 600-granulation Carborundum, with solidified vegetal oil.

5.2.4. Application of an Alvyade layer on the seating surfaces should help the operation, avoiding excessive cutting and the grooves reduction. The Alvyade must be applied apart and not together with the Carborundum.

5.2.5. To ensure a correct alignment of the hatch to rectification, assemble it on the body and position the arm (5).

5.2.6. After operation, remove the hatch, clean seating surfaces and perform the sealing test. If need, repeat the operation.

In the assembly procedure description our reference shall be the figures 2 and 3, except when adversely recommended.

5.3. ASSEMBLY

5.3.1. When reassembling the valve, use only new gaskets, packings and o-rings. Clean all surfaces which shall contact them. Inspect carefully all parts and replace damaged ones.

5.3.2. Assemble the hatch (44) on the arm (18) using the nut (3) and lock it with a pin (4).

5.3.3. With body (1) in vertical position so that the flange next to the seat (5) is in horizontal position. Position the subassembly properly mounted, according to item 3 on the seat (5).

5.3.4. Insert the axis (29) on body (1) passing through the arm (10). Assemble the spring (7) and the cover (27). Insert the packings (19) and packing follower (20).

5.3.5. Place the spring (21) in shaft (18), next insert the lever 2, fitting it in axis and spring.

5.3.6. Move the valve for horizontal position. Place gaske (12) and next, the cover (11).

5.3.7. Complete the assembly threading the nuts (23), observing the support positioning (9) and the support (15) itself.

THERMAL FUSE

This element used to shutoff the hatch of FE series valve is broken due to a basic condition, e.g., presence of temperature over 100°C.

When the valve is equipped with pneumatic actuator (Figure 3), the thermal fuse (17A) should be connected to the actuator (13) slot.

When the valve is equipped with solenoid actuator, the thermal fuse (17A) should be connected to the actuator trigger (13A).

PACKING

The FE Series valves are manufactured with a sealing system ensuring tightness through shaft (18) with the body (1). Therefore, packings replacement can be performed with a pressurized system, accomplishing the following procedure:

1. Loose the packing follower (20) completely.
2. Remove the rings of the packings (19).
3. Insert new rings of the packings (19).
4. Re-tighten the packing follower (20) slightly

TABLE 1 – GUIDE TORQUE FOR BONNET ASSEMBLY

Thread (inches)	Torque (pound x feet)
1/2"	43
5/8"	86
3/4"	151
7/8"	245
1"	375
1.1/4"	476

6. Accessories

The valve can be supplied with limit switch in the lever. The pneumatic and/or electric commands can be assembled in a switch board.

6.1. PNEUMATIC COMMAND

When line pressure transmitted by the pipe until the pilot reaches set pressure, this one shall discharge the valve actuator pressure, causing hatch closing. System shall keep valve closing, regardless the sign come back to the old condition. A new setup shall be manually performed.

6.2. ELECRIC COMMAND

With pneumatic actuator: when line pressure reaches the adjusted pressure, a device shall transmit an electric signal to the solenoid, which shall provoke the valve actuator depressurization, causing hatch closing. System shall keep valve closing, regardless the sign come back to the normal position. A new setup shall be manually performed.

With solenoid operator: when line pressure reaches the adjusted pressure, a device shall cut the electric signal, causing hatch closing.

System shall keep valve closing, regardless the sign come back to the normal condition. A new setup shall be manually performed.

7. Star up system

To start-up purposes, the valve command system should be already normalized in order to operate under normal condition.

7.1. Close the line block valves and open by-pass valve.

7.2. After line equalization, open the hatch through external lever and connect the pneumatic actuator current moving the lever in the actuator rear part. In case of solenoid operator, the current shall be connected in a trigger located in operator side, as indicated in Figure 5.

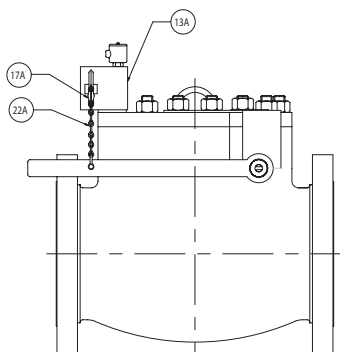


Fig. 3 – FE Series with solenoid actuator and thermal fuse

8. PART LIST

TABLE 1 – PART LIST (figures 2 and 3)

Item	Description	Item	Description
1	BODY	19	PACKING (SEMI-OPEN SECTION)
2	LEVER	20	PACKING FOLLOWER
3	NUT (DISK)	21	SPRING (LEVER SUB-ASSEMBLY)
4	PIN	22	RING
5	SEAT	22A	CHAIN
6	DISK	• 23	NUT (BODY)
• 7	SPRING (AXIS)	24	LIFT EYE DIN 580 - 1"
8	STUD BOLT (BODY)	25	BEARING BUSHING
• 9	SUPPORT (SPRING)	26	BEARING BUSHING
• 10	ARM	27	COVER (AXIS)
11	COVER	28	STUD BOLT (SHAFT COVER)
• 12	GASKET (BODY)	• 29	NUT (SHAFT COVER)
13	PNEUMATIC ACTUATOR	30	NUT (LEVER)2
13A	SOLENOID ACTUATOR	• 31	STUD BOLT (PACKING)
14	BOLT (ACTUATOR)	• 32	NUT (PACKING)
15	SUPPORT (ACTUATOR)	• 33	SPRING DISK
16	NUT (ACTUATOR)	35A	CHAIN
17	CONNECTOR	34	FLANGE
18	SHAFT	35	BOLT (DISK)

• Recommended spare parts.

More information on
our website in English:



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