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Série 86
Installation and Maintenance Manual

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

Acess.
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.

3. Introduction

The **86 Series** is a valve with quick opening trim used for boiler periodic discharge.
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 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 and storage.

4.2. Several valves are damaged when they are firstly placed 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 also inside the valve, aiming to remove rust, dust, welding debris and other debris.

4.3. In case of small bores valves, such as low-noise or anti-cavitation cages, it is recommended the upstream installation of a filter, avoiding the bores clogging if the fluid is dirty or the line is not cleaned.

4.4. 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.

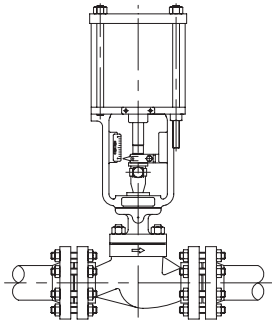

Fig. 1 – Installation of valve

4.5. Be sure the flange face is free of imperfections, live corners and burrs.

4.6. During the installation the actuator must be positioned on the valve and in vertical position (Figure 1). If possible, look for a position closer the vertical one. The horizontal position should be avoided and, in some cases, there should be a support to the actuator.

4.7. Install the valve obeying the flow direction indicated by the arrow in the body.

4.8. For flanged valves, use a proper gasket between the valve and piping flanges.

4.9. For loose-flange valves, check if the split rings are installed in the body, before mounting on piping.

4.10. Introduce the studs and tighten the nuts alternately in a diametrically crossed sequence. The torques must no be applied only at a time. The crossed sequence should be repeated several times, increasing the stud-screw torque in a gradual and uniform manner, until the recommended value is reached (Table 1 – page 3).

4.11. For valves welded on piping, with internal elastomers, the removal of all inner components is recommended before welding. If the valve body material requires post-welding thermal treatment, the internal parts also must be removed to avoid damage.

4.12. The straight piping length upstream the valve must be in accordance with the valve installation standards or recommendations.

4.13. For long-bonnet valves, in case of installation with thermal isolation, do not isolate the valve bonnet. Only the body must be isolated.

4.14. Do not install the valve in a system whose pressure and temperature values are not satisfying the valveos 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**.

4.15. The valves must be installed in an easy-maintenance place, with space for the actuator removal and the internal components disassembly.

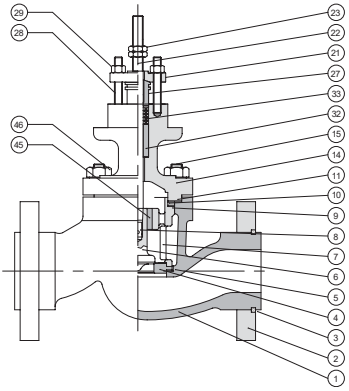

Fig. 2 - 86 Series with loose flange

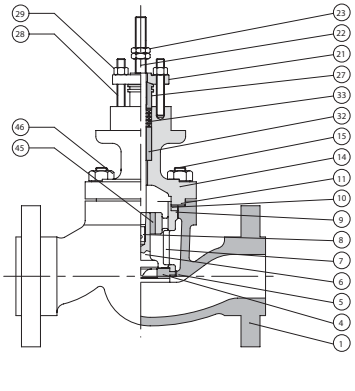

Fig. 3 - 86 Series with integral flange

4.16. Consult the Actuator Installation and Maintenance Manual for installation and the respective adjustments

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 the figures 2 and 3, except when adversely recommended.

5.1. DISASSEMBLY

1. Separate the actuator from the valve, according to the disassembly procedure described in the Actuator Installation and Maintenance Manual.
2. Remove the stem nuts (23), packing flange nuts (29), packing flange (21) and the packing follower (27).
3. Remove the nuts (46) and the bonnet (14). Be careful not to damage the packings (33) when the stem thread (22) passes by them.
4. Pull the plug (6) out from body (1) with the stem (22)., seat retainer (7) (Fig. 7), body gasket (11), spiral wound (10) and seat retainer gasket (9).

Note: In some plug configurations, the seat retainer and gaskets shall leave the body together with the plug. However, in some other configurations, the plug shall pass by the seat retainer bushing, leaving the retainer and gaskets in the valve body.

5. If necessary, remove the stem (22) from plug (6) and also the pin (8). The stem (22) only can be removed from plug (6) in case of replacement. In case of plug (6) replacement, a new stem (22) should be installed.

WARNING

Never install a new plug (6) on a used stem. The plug installation requires a new bore for pin and, if the stem already has a bore, the threads shall be weakened.

6. Do not remove the guide bushing (45) from seat retainer (7) if you do not intend to replace it, once the guide bushing is pressed in seat retainer.

7. In case of soft seal and bore over than 0.5", remove the seat (4) and seat gasket..

8. Remove the packings (33) and other bonnet internal components by using a wire hook, pull the packings and other components out.

9. If the body with loose flanges removal is need, grind the punched point in the body (1) at flange back (2) and slide the flange (2) towards the body (1) to release the split rings (3).

TABLE 1 – GUIDE TORQUE FOR ASSEMBLY

Thread (in.)	Torque (lb x pés)
1/2"	43
5/8"	86
3/4"	151

5.2. CLEANING, INSPECTION AND REPAIR

ll 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 by rectifying the surface.

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 plug rectifying against the seal. In case of larger damages, 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 Alvayade layer on the seating surfaces should help the operation, avoiding excessive cutting and the grooves reduction. The Alvayade must be applied apart and not together with the Carborundum.

5.2.5. To help the plug alignment (6) to the seat (4) and also to position the cage (7), assembly the bonnet on body and the respective gaskets. For plug with seal ring (13), it should not be installed.

5.3.6. A simple tool may be provided to help the rectifying. This tool can be provided with a steel disk connected to the plug stem by nuts.

5.3.7. After operation, remove the bonnet, clean the seating surfaces and make a seal testing. If need, repeat the operation.

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

5.3 ASSEMBLY

5.3.1. When reassembling the valve, use only new packings and clean all surfaces which shall contact them.

5.3.2. In case of soft seal valve and bore over 0.5", install the seat gasket (5) and seat (4).

5.3.3. In case of guide bushing (45) replacement, press it in the seat retainer (7).

5.3.4. In case of stem replacement, thread the new stem 22) in the plug (6) up to the end of thread, so that it is very well tightened. Make a passing hole for the pin (8) through the plug (6) and stem (22) using the hole already existing in the plug (6) as a guide. Install a new pin (8) and lock it.

WARNING

Never install a new plug (6) on a used stem. The plug installation requires a new bore for pin and, if the stem already has a bore, the threads shall be weakened. However a used obturator may be assembled with a new stem.

5.3.5. In some configurations, the plug (6) does not pass by seat retainer (45). In this case, pass the seat retainer (7) by the stem (22).

5.3.6. Assemble the seat retainer (7), or the assembly, including the seat retainer (7) and plug (6) with the stem (22) in body (1). Be sure the seat retainer is properly assembled on seat. Any rotary position of the seat retainer regarding the body is acceptable.

5.3.7. Insert the seat retainer gasket (9), spiral wound (10) and body gasket (11) on the seat retainer.

5.3.8. Assembly the bonnet (14) on the body (1). Tighten the nuts (46) using torques for cleaned threads as showed in table 1 – page 3. Tighten the nuts alternately in a crossed diametrically sequence.

ATTENTION

The spiral wound (10) must be compressed so that it is possible to load and seal the seat gasket (5). The tightening feature of the spiral wound should be performed so that the tightening of one nut does not jeopardize the adjacent nuts. Thus, several tightening are need in the sequence previously mentioned until there are no moving nuts with the recommended torque. The tightening procedure also compresses the body gasket external part (11) to seal the junction between body (1) and bonnet (14). The torque procedure must be repeated in the field when the valve reaches the operational temperature.

5.3.9. Clean carefully the packing box and the internal metallic components. Replace the packings and the other components.

5.3.10. Assemble the packing follower (27), the packing flange (21) and tighten the packing flange nuts (21) only the enough to eliminate the leakage.

5.3.11. When the assembly is over, replace the stem back nuts (23); assemble the actuator in the valve and remake the connection between the valve stem and the actuator stem. The instructions related to this step can be found in the Actuator Installation and Maintenance Manual.

6. Action Of The Valve and Position by Failure

6.1 Due to the construction, the action of the valve and the safety position by failure in the 85-Series valves depends exclusively on the actuator. A straight action actuator shall supply a normally opened valve (air to close). An inverse action actuator shall supply a normally closed valve (air to open). For the valve action inversion, when the actuator has no wheel, an inverse assembly should be done, once the non-wheel actuators used at 85 Series are totally reversible.

6.2 The instructions for connection between the valve and the actuator are described in the Actuator Installation and Maintenance Manual.

TABLE 2 – PART LIST (Figures 2 and 3)

Item	Description	Item	Description
1	BODY	**15**	BODY STUD-BOLT
2	FLANGE	**21**	PACKING FLANGE
3	SPLIT RING	**22**	STEM
4	SEAT	**23**	STEM NUT
5	SEAT GASKET	**27**	PACKING FOLLOWER
6	PLUG	**28**	STUD-BOLT (PACKING)
7	SEAT RETAINER	**29**	NUT (PACKING)
8	PIN	**32**	PACKING SPACER
9	RETAINER GASKET	**33**	PACKING SET (closed square sequence)
10	SPIRAL WOUND GASKET	**45**	GUIDE BUSHING
11	BODY GASKET	**46**	BODY NUT
14	BONNET		

• Recommended spare parts

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