

85-3 Ways 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.

3. Introduction

The **85-3 ways Series** is a high quality convergent or divergent type globe valve, which provides excellent sensibility, fine control and easy adjustment, with very reduced weight and size. Due to the component responsibility for an adequate valve performance, for maintenance use only original part supplied by **HITER**.

4. Installation

4.1. The valve is inspected and shipped in a special packing with shield covers in body openings. Thus, a carefully inspection should be performed in order to ensure there is no damage and that no material has penetrated in valve during transport or storage.

4.2. Several valves are damaged when they are firstly in service due to the lack of a proper and complete internal pipe cleaning before 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.

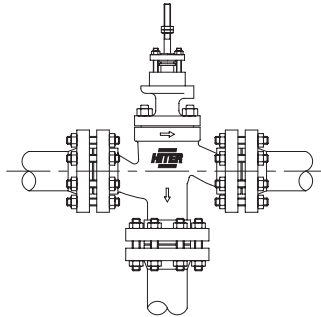


Fig. 1 – Valve installation

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 (figure1). 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 body.

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

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

4.10. Introduce the studs and tight 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 studbolt torque in a gradual and uniform manner, until the recommended value is reached (table 1 – page 4).

4.11. For valves welded on piping, with elastomers on inner parts, the inner components removal is recommended before welding. If 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. In continuous operation units, the installation must include a blockage and by-pass systems, constituted of three manual valves.

4.15. Do not install the valve in a system whose pressure and temperature values do not satisfy 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.

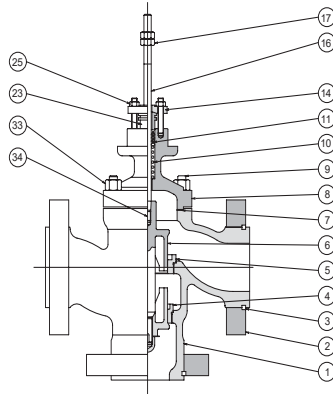


Fig. 2 – 85-3 ways séries

4.16. Valves should be installed in an easymaintenance place, with space for actuator removal and internal parts disassembly.

4.17. Consult the Actuator Installation and Maintenance Manual for installation and 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 figures 2, 3 and 4, except when adversely recommended.

5.1. DISASSEMBLY

1. Separate the actuator from valve, according to the disassembly procedure described in the Actuator Installation and Maintenance Manual.
2. After removing nuts (17) from stem (16), remove the packing nuts (25), packing flange (14) and packing follower (23).
3. Remove the nuts (33), bonnet (8) and gasket (7). Do not damage the packings (11) when the stem thread (16) passes by them.

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4. Remove packings (11) and other bonnet inner components (14) by one of the following procedures:
 - Using a wire hook, pull the packings and other components out;
 - In case of V-shaped PTFE packings, using a stem or stick, force the spring (10) aiming to force the component to come out by bonnet top end.
 5. To remove body inner parts, proceed as follows:

Tipo 85-30 (figura 3).

 - Destrave a arruela (6.4) e remova o assentamento superior (6.1) a porca (6.3), a arruela (6.4) e o assentamento inferior (6.2). Retire o assentamento superior (6.1) do corpo (1).
 - Unlock the washer (6.4) and remove top seating (6.1), nut (6.3), washer (6.4) and bottom seating (6.2). Remove top seating (6.1) from body (1).

85-40 Type (figure 4)

 - Using a proper tool, unthread the top seat (5) from body (1). Remove the plug (6.1) and unthread the bottom seat (4) from body (1).
 6. If necessary, separate the stem (6) from top seating (6.1, fig. 3) or from plug (6.1, fig. 5). Remove the locking pin (34) and unthread the stem (16). This step only should be followed in case of stem (16) replacement. If top seating (6.1, fig. 4) or plug (6.1, fig.4) replacement is required, a new stem should be used.

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.

7. If the flanges removal is required, grind the body punched points on flange (2) rear part and slide the flange (2) to expose the split ring (3) channel.

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 plug 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.

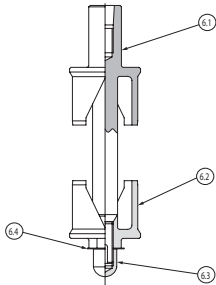


Fig. 3 – 85-30 plug

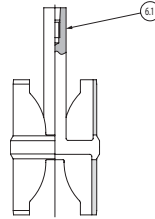


Fig 4 – 85-40 plug

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. 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.

5.3.6. 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, 3 and 4, except when adversely recommended.

5.3. ASSEMBLY

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

5.3.2. In case of stem replacement, thread new stem (16) on top seating (6.1, fig. 3) or plug (6.1, fig. 5) and install a new pin (34).

5.3.3. Assemble the body inner parts performing one of the following procedures:

85-30 Type (fig. 3)

- Thread bottom seat (4) followed by top seat (5).
- Position top seating (6.1) on top seat (5)
- Assemble the bottom seating (6.2), locking washer (6.4) and nut (6.3) and lock the washer (6.4) in the nut (6.3).
- Thread bottom seat (4) to the body (1).

TABLE 1 – GUIDE TORQUE FOR ASSEMBLY

Thread (inches)	Torque (pound/feet)
1/2"	43
5/8"	86
3/4"	151

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 shall depend exclusively on the actuator. A direct action actuator shall supply a valve with third way normally closed (air to open) on 85-30 type valve or a valve with a normally opened third way (air to close) on 85-40 type valve. An inverse action actuator shall supply a valve with a normally opened third way (air to close) on a 85-30 type valve or a valve with a normally closed third way (air to open) on 85-40 type valve.

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

7. Part List

TABLE 2 - PART LIST (Figs. 2, 3 and 4)

Item	Description	Item	Description
1	BODY	8	BONNET
2	FLANGE	9	STUD BOLT
3	SPLIT RING	• 10	PACKING SPRING (1)
• 4	BOTTOM SEAT	• 11	PACKING
• 5	TOP SEAT	14	PACKING FLANGE
• 6.1	PLUG (85-40)	• 16	STEM
	TOP SEATING (85-30)	17	STEM NUT
• 6.2	BOTTOM SEATING (85-30)	25	PACKING NUT
• 6.3	NUT	23	PACKING FOLLOWER
• 6.4	WASHER	33	BODY NUT
• 7	BODY GASKET	34	PIN

• Recommended spare parts

(1) Used only for V-shaped PTFE packings

More information on
our website in English:



Darci Rocha
International Sales Manager

Telephone: +55 15 3225-0355
Cell phone/WhatsApp: +55 15 99171-1448
E-mail: darci.rocha@br.hiter.com

hiter.com.br/en

