
2003 Series Classes 150 to 600 ANSI 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. Hiter Controls 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 **2003 Series**, which is considered a high-quality angle globe valve, provides excellent sensibility, fine control and easy adjustment. 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 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 bore valves, such as low-noise or anti-cavitation cages, it is recommended the upstream installation of a filter, avoiding bore clogging if the fluid is dirty or the line is not cleaned.

4.4. Be sure the adjacent flanges are perfectly aligned to each other. The de-alignment may cause installation problems and seriously compromise the equipment performance due to abnormal stresses appearing.

- 4.5. Be sure the flange face is free of imperfections, live corners and burrs.
- 4.6. During installation the actuator must be positioned on valve in vertical position (Figure 1). If this is not 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 arrow in body.
- 4.8. For flanged valves, use a proper gasket between the valves and piping flanges.
- 4.9. Introduce the studs and tighten the nuts alternately in a diametrically crossed sequence. 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 4).
- 4.10. For valves welded on piping, with internal elastomers, the removal of all inner components before welding is recommended. If the valve body material requires post-welding heat treatment, the internal parts must be removed to avoid damage.
- 4.11. The straight piping length upstream the valve shall be in accordance with the check valve installation standards or recommendations.
- 4.12. In continuous operation units, the installation must include blockage and by-pass systems, constituted of three manual valves.

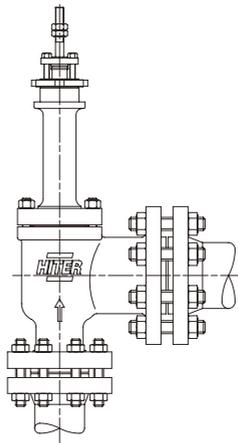


Fig. 1 – 2003 Séries

- 4.13. 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 condition without firstly consulting HITER.
- 4.14. Check valves should be installed in an easymaintenance place, with enough space for actuator removal and internal parts disassembly.
- 4.15. 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 disassembly procedure description, our reference shall be Figure 2, except when adversely indicated.

5.1. DISASSEMBLY

5.1. Separate the actuator from valve, according to disassembly procedure described in the Actuator Installation and Maintenance Manual.

5.2. Remove the stem nuts (21), packing flange nuts (19), packing flange (18) and packing (16).

5.3. Remove the nuts (11), bonnet (13) and plug (3) together with the stem (22)

5.4. Remove the plug (3) with the stem (22) from bonnet (13). Do not damage the packings (15) when the stem thread (22) passes by them.

5.5. The 2003-01 type valve has a sealing ring (6) in the plug (3). Depending on the construction, the seal-ring types are: O-ring, PTFE or a two-piece graphite ring.

5.6. If necessary, remove the stem (22) from the plug (3) and also remove the pin (5). The stem (22) only can be removed from the plug (3) in case of replacement. In case of plug (3) replacement, a new stem (22) should be installed.

WARNING

Never install a new plug (3) 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.

5.7. Remove the cage (4), with the spiral-wound (8), cage gasket (7) and body gasket (9).

5.8. Remove seat gasket (2).

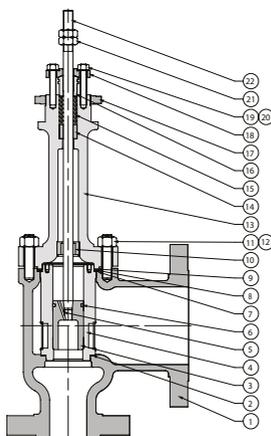


Fig. 2 – 2003 Series

5.9. Remove packings (15) and bonnet (13) spacer (14), using a wire hook.

5.2. CLEANING, INSPECTION AND REPAIR

All valve metallic parts must be cleaned using solvent and dried with compressed air after inspection. The approved parts should be kept clean and very well protected up to the assembly. Oil protector application on 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 when the valve is closed). Deep scratches or other imperfections on this area may compromise valve sealing, causing damage to the seat. They can be eliminated only when these surfaces are rectified.

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 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. The application of an Alvyade layer on seating surfaces shall help the operation, avoiding excessive cutting and groove decrease. The Alvyade must be applied apart and not together with the Carborundum.

5.2.5. In order to help the plug (6) alignment to the seat (4) and also to position the cage (7), assemble the bonnet on body and the respective gaskets. For seal ring (13) plug, it shall not be installed.

5.2.6. 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.

5.2.7. After operation, remove the bonnet, clean the seating surfaces and make a seal testing.

Repeat the operation if necessary. To continue the disassembly, come back to step 7 above.

WARNING

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

In assembly procedure description our reference shall be figura 2 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. Install the seat gasket (2).

5.3.3. Assemble cage (4) on body (1). Be sure the cage is properly assembled on body. Any cage rotational position regarding the body is acceptable.

5.3.4. Place the cage gasket (7), spiral-wound (10) and body gasket (9) on the cage (4).

5.3.5. In case of sealing ring (6), it must be replaced if there is visible damage. Do not scratch the sealing ring (6) surfaces or the channel housing on plug (3).

In this case, the proper sealing shall not be reached anymore. 2003-20-type valve has no sealing ring.

5.3.6. In case of stem replacement, thread the new stem (22) in the plug (3) up to the end of thread, so that it is very well tightened. Make a passage bore for pin (5) through the plug (3) and the stem (22) using the plug bore (3) as a guide. Install a new pin (5) and lock it.

WARNING

Never install a new plug (3) 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 plug can be assembled with a new stem.

5.3.7. Insert the plug set (3) and the stem (22) in the cage (4). Be careful in case of plug with seal ring (6), once it shall be damaged if they are not in perfect alignment to the bevel at the cage (4) superior entrance.

5.3.8. Assemble the bonnet (12) on body (1). Tighten the nuts (10) using torques showed in Table 1 as reference for cleaned threads. Tighten the nuts gradually in the opposed crossed sequence.

TABLE 1 – GUIDE TORQUE FOR ASSEMBLY

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

IMPORTANT

- The spiral-wound (8) should be compressed in order to load and seal the seat gasket (2). The spiral wound tightening feature is such that the tightening of one of nuts may loose the adjacent ones. Thus, several tightening are necessary in the mentioned sequence (Figure 2) until the nuts are not moving with the recommended torque.
- The tightening procedure also compresses outer part of body gasket (9) to seal the junction between body (1) and bonnet (13).
- Torque procedure shall be repeated in field, when valve reaches the operation temperature.

5.3.9. Clean the packing box and the internal metallic components carefully. Insert the spacer (14) and packings (15). When inserting packings, do not damage them when they pass by stem (22) threaded part.

5.3.10. Assemble the gland (16), packing flange (18) and tighten the packing flange nuts (19) in order to eliminate leakages.

5.3.11. Once the assembly is completed, place the stem (22) locknuts; assemble the actuator on valve and redo the connection between valve stem and actuator stem.

Instructions related to this step may be found in the Actuator Installation and Maintenance Manual.

6. Action Of The Valve and Position by Failure

6.1.1. Due to the construction, the action of the valve and the safety position by failure in the Series 2003 valves depends exclusively on the actuator. A direct-drive actuator shall provide a normally opened valve (air for closing). An inverse-drive actuator shall provide a normally closed valve (air for opening). For valve action inversion, in case of non-wheel pneumatic actuator, only perform the inverse assembly of it, once the non-wheels actuator used in 2003 Series are entirely reversible

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

7. Part List

Item	Description	Item	Description	Item	Description
• 1	BODY	• 9	BODY GASKET	17	BONNET LOCKNUT
• 2	SEAT GASKET	10	BONNET GUIDE BUSHING	18	PACKING FLANGE
• 3	PLUG	11	BODY NUT	19	PACKING NUT
• 4	SEAT CAGE	12	BODY STUD	20	PACKING STUD
• 5	PIN	13	BONNET	21	STEM NUT
• 6	SEALING RING	14	SPACER	• 22	STEM
• 7	CAGE GASKET	• 15	PACKING		
• 8	SPIRAL-WOUND GASKET	16	PACKING FOLLOWER		

• Recommended spare parts

More information on
our website in English:



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