

87B 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. 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 Hiter Controls 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 **87B Series** is a bi-eccentric butterfly type valve, which is considered a high performance valve, designed for use in modulating control or in blockage, embracing a large variety of industrial applications.

Due to the component responsibility for an adequate valve performance, for maintenance purposes, 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 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 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. Be sure the adjacent flanges are perfectly aligned to each other. 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.

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- 4.5. During installation the actuator must be positioned on valve and in vertical position. 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.
- 4.6. Install the valve obeying the flow direction indicated by arrow in body.
- 4.7. Use a proper gasket between valve body and piping flanges.
- 4.8. Always install the valve with disk in closed position. Place the valve between piping flanges and centralize the body, avoiding disk pipe or disk gasket contacts during operation.
- 4.9. Insert the stud bolt 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 4).
- 4.10. The straight piping length upstream the valve shall be in accordance with the valve installation standards or recommendations.
- 4.11. In continuous operation units, the installation shall include blockage and by pass systems, constituted of three manual valves.
- 4.12. 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.
- 4.13. Check valves must be installed in an easy maintenance place, with enough space for actuator removal and internal parts disassembly.
- 4.14. Consult the Actuator Installation and Maintenance Manual for installation and respective adjustments.

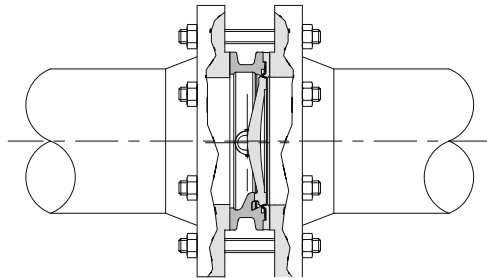


Fig. 1 – Valve installation

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

- 5.1.1. Separate actuator from the valve according to disassembly procedure described in Actuator Installation and Maintenance Manual.
- 5.1.2. Remove the packing nuts (15) from and the packing follower (14).
- 5.1.3. Remove bolt (4) from flange and seat flange (2).
- 5.1.4. For 31/32/33 type valves, remove the seat (18) and gasket (19) for 30 and 32 types.
- 5.1.5. Remove the taper pins (10) from disk (3).
- 5.1.6. Remove bolts (20) from cover. Remove the back cover (5) and gasket (6).
- 5.1.7. Remove the auxiliary shaft (9) and command shaft (11) to remove the disk (3).
- 5.1.8. Remove the packing (13) and retainer ring (12) from packings chamber.
- 5.1.9. Remove the bearing bushing (8) from valve body (1) if necessary.

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). 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 reach total sealing in metal-to-metal sealing valves. However, the leakage caused by small grooves or surfaces disarrangement can be reduced by rectifying. When mentioned damages are bigger, machining is required 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.

In assembly procedure description our reference shall be figure 2, except when adversely indicated.

5.3. ASSEMBLY

- 5.3.1. When reassembling the valve, use only new packings and clean all surfaces contacting them.
- 5.3.2. If bearing bushings (8) have been removed, press them into the housing in body (1).
- 5.3.3. Position disk (3) inside body (1) and insert the shaft (9 and 11).
- 5.3.4. Place taper pins (10) through disk (3) and shaft (9 and 11)
- 5.3.5. Install gasket (6), back cover (5) and bolt (20).
- 5.3.6. Assemble the retainer ring (12) and packing (13) in the chamber.
- 5.3.7. Assemble the gland stud bolts (16), packing follower (14) and packing nuts (15).
- 5.3.8. If required, assemble the actuator support (17) on body (1) fixing it with bolt (2).
- 5.3.9. With disk (3) in failure position due to feeding air lack in actuator, assemble the actuator on valve, following the instruction described in the Actuator Installation and Maintenance Manual.
- 5.3.10. For a fail closed (open) valve, pressurize the actuator until the disk (3) reaches the closed position.

5.3.11. For 30 and 32 type valves, with disk (3) in closed position, assemble the gasket (19). Assemble the seat on disk (18).

Note: Be sure the seat (18) is perfectly centralized with the disk (3) and also centralized inside body (1) channel.

5.3.12. 12. Assemble the seat flange (2) and tighten the bolts (4) in a crossed sequence.

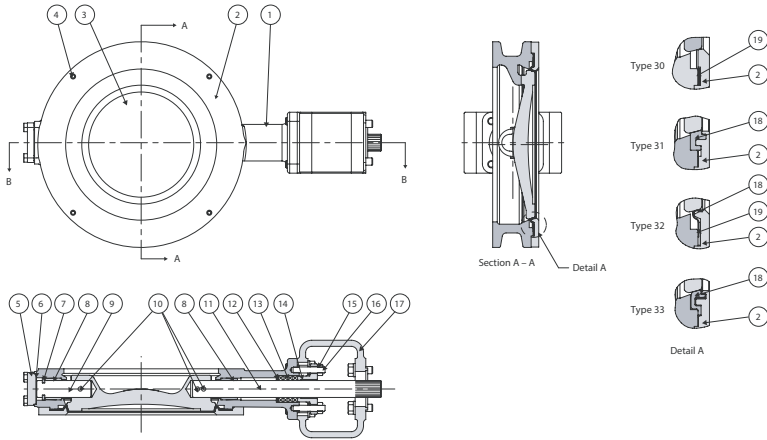


Fig. 2 – 87B series valve

TABLE 1 – GUIDE TORQUE FOR ASSEMBLY

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

6. Action Of The Valve and Position by Failure

Normally closed: the lack of air from feeding closes the valve by the actuator spring action.

Normally opened: The lack of air from feeding opens the valve by the actuator spring action.

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

7. Part List

TABLE 2 – PART LIST (fig. 2)

Item	Description	Item	Description
1	BODY	• 12	RETAINER RING
2	SEAT FLANGE	• 13	PACKING
3	DISK	14	PACKING FOLLOWER
4	BOLT (FLANGE)	15	NUT (GLAND)
5	BACK COVER	16	STUD BOLT (PACKING FOLLOWER)
• 6	GASKET	17	ACTUATOR SUPPORT
• 7	TWO-PIECES RING	• 18	SEAT
• 8	BEARING BUSHING	• 19	GASKET (SEAT) (1)
9	AUXILIARY SHAFT	20	BOLT
• 10	TAPER PIN	21	BOLT (SUPPORT)
11	COMMAND SHAFT		

(1) Used only for 30 and 32 type.

• Recommended spare parts.

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

