85 Series
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 **85 Series** check valve, which is considered a high-quality valve, 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 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 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.

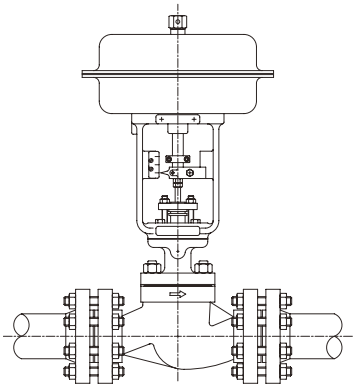

Fig. 1 - Valve installation

4.4. Be sure the adjacent flanges are perfectly aligned among them. 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 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 the 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 two-pieces rings are installed in the body, before mounting on piping.

4.10. IIntroduce 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 stud-bolt torque in a gradual and uniform manner, until the recommended value is reached (table 1 – page 6).

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.

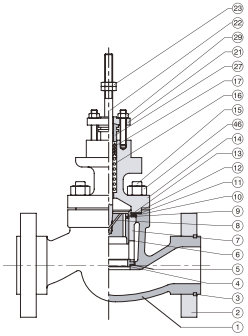

Fig. 2 - 85 Series with loose flanges

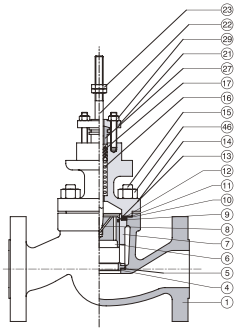

Fig. 3 - 85 Series with integral flanges

4.14. In continuous operation units, the installation must include a blockage and by-pass systems, constituted of three manual valves.

4.15. Be careful to 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.

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

4.17. 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.

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

5.1. DISASSEMBLY

Types: 85-01, 85-11, 85-20, 85-21, 85-51, 85-61, 85-70, 85-71

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), the packing flange nuts (21) e the packing follower (27).
3. Remove the nuts (46) and the bonnet (14). Be careful not to damage the packing (17) when the stem thread (22) passes by them.
4. Remove the plug (6) with the stem (22).

5. The 85-01, 85-11, 85-51 and 85-61 valves have a seal ring (13) in the plug (6). Depending on the construction the seal-ring types are: O-ring PTFE strip or a two-piece graphite ring.
6. If necessary, remove the stem (22) from the plug (6) and also remove the pin (8). The stem (22) only can be removed from the 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.

7. Remove the body gasket (11). For reduced bore (Figure 4), remove the cage adapter (42).
8. Remove the cage (7) with the spiral wound (10) and the cage gasket (9).
9. Remove the seat (4) and the seat gasket (5). In case of soft seal (figure 5) the seat is compounded of superior seat (4.3), seat ring (4.2) and inferior seat (4.1).
10. For reduced bore (figure 4), remove the seat adapter (41) and the seat adapter gasket (40).
11. Remove the packings (17) and other bonnet internal components, by one of the following procedures:
    - Using a wire hook, pull the packings and other components out.
    - In case of V-shaped PTFE packings, use a stem or stick to force the spring (10) in order to enforce the components to leave out by the bonnet superior extremity.
12. 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 two-pieces rings (3).

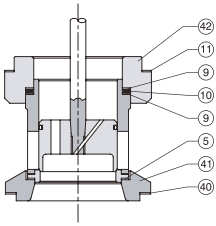

Fig. 4 - Reduced bore.

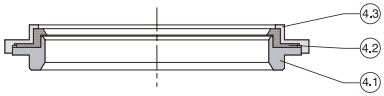

Fig. 5 - Soft seal.

BELLOWS SEAL VALVES

For bellows seal valves (figure 6), replace the 3-6 steps of the above procedure for the following ones:

- Remove the nuts (36) and studs (38). Remove the bonnet (14). Be careful to not damage the packings (17) when the stem threads (22) pass by them.
- Unthread the stem (22) of the sealing set (35).
- Remove the bonnet nuts (46) and the set compounded by the bellows housing (34) with the bellows set (35) and plug (6).
- The 85-01, 85-11, 85-51 and 85-61 valves have a seal ring (13) in the plug (6). Depending on the construction, the other seal ring types are: O-ring, PTFE strip or a two-piece graphite ring.

- If the bellows set removal is need.
- If the bellows set (35) removal from the plug (6) is need, remove the pin (8). In case of plug replacement (6), a new sealing set (35) should be installed.

WARNING

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

In order to continue the disassembly go back to step 7 above page 3.

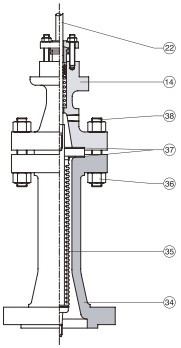

Fig. 6 - Bellows bonnet with seal

Types: 85-02, 85-08, 85-12, 85-18, 85-52, 85-58, 85-62, 85-68

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), the packing flange nuts (21) e the packing follower (27).
3. Remove the nuts (46) and the bonnet (14). Be careful not to damage the packing (17) when the stem thread (22) passes by them.
4. Pull the plug (6) out of the body, together with the stem (22), seat retainer (7) (figure 7), body gasket (11), spiral wound (10) and seat retainer gasket (9).

   Note: In some plug configurations, the seat and gasket retainer come out from the body with the plug and in other configurations the plug shall pass by the seat retainer bush, avoiding the retainer and the gasket stay in the valve body.
5. If necessary, remove the stem (22) from the plug (6) and also remove the pin (8). The stem (22) only can be removed from the 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 bush (45) from the seat retainer (7) (figure 7) if the replacement is not necessary. The guide bush is pressed in the seat retainer.
7. Remove the seat (4) and the seat gasket (5). In case of soft seal (figure 5) the seat is compounded of superior seat (4.3), seat ring (4.2) and inferior seat (4.1) (figure 5).
8. Remove the packings (17) and other bonnet internal components, by one of the following procedures:
   - Using a wire hook, pull the packings and other components out.
   - In case of V-shaped PTFE packings, use a stem or stick to force the spring (10) in order to enforce the components to leave out by the bonnet superior extremity.
9. f 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 ring (3).

BELLOWS SEAL VALVES

For those bellow seal valves (figure 6), replace steps 3-5 from the above procedure by the following steps:

- Remove the nuts (36) and the studs (38). Remove the bonnet (14). Be careful to not damage the packings (17) when the stem threads (22) pass by them.
- Unthread the stem (22) of the sealing set (35) stem.
- Remove the nuts (46) from the housing (34) and remove the set formed by the sealing subset housing (34) with the bellows set (35) and plug (6). In some internal parts construction type this set includes the seat retainer (7) (figure 7).
- If the seat (7) retainer (figure 7) stayed in the valve body, pull it together with the body gasket (11), spiral wound (10) and seat retainer gasket (9).
- If need, separate the bellows set (35) from plug (6), remove the pin (8) and unthread the obturator (6).
- If the seat retainer leaves together with the bellows set, remove the pin (8) and unthread the plug (6), releasing the seat retainer (7) (figure 7), body gasket (11), spiral wound (10) and seat retainer gasket (9).
- In case of the plug replacement (6), a new sealing set (35) must be installed.

WARNING

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

To continue the disassembly, come back to step 6 above.

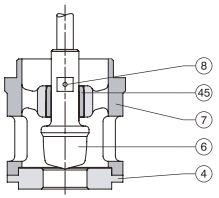

Fig. 7 - Bores - Types : 85-02, 85-08, 85-12, 85-62

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.

5.3.1. 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.

5.3.2. 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.

5.3.3. Is 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 Carburundum, with solidified vegetal oil.

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

5.3.5. 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 obturator 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.

5.3. ASSEMBLY

Types: 85-01, 85-11, 85-20, 85-21, 85-51, 85-61, 85-70; 85-71

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

1. When reassembling the valve, use only new gaskets and clean the bore surfaces which shall contact them.
2. For bore valves (figure 4), install the seat adapter gasket (40) and the seat adapter (41).
3. Install the seat gasket (5) and seat (4) or, for soft seal valve (figure 5), the inferior seat (4.1), seat ring 4.2) and superior seat (4.3).
4. Assemble the cage (7) on the body (1). Be sure the cage is properly assembled on the seat. Any cage rotary position regarding the body is acceptable.
5. Put the cage gasket (9), spiral wound (10) and body gasket (11) on the cage. For bore valve (figure 4), put the cage gasket (9), spiral wound (10) and another cage gasket (9) on the cage. Assembly the cage adapter (42) and put the body gasket (11) on the cage adapter.
6. Replace the seal ring (13), if there is visible damage. Take care not to scratch the seal ring surfaces (13) or the ring housing channel in the plug (6). If this instruction is not followed, it is impossible to attain proper sealing. For seal ring in PTFE, firstly install the metallic lamina (12).The 85-20, 85-21, 85-70 and 85-71 valves do not have seal ring.
7. In case of stem replacement, thread the new stem (16) in the plug (6) until the thread end. It should be really tightened. Make another bore for the pin (8) through the plug (6) and the stem (22) using the obturator bore (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 plug may be assembled with a new stem.

8. Enter the plug set (6) and the stem (22) in the cage (7). Be careful in case of plugs with seal ring (13), once it shall be damaged if it is not in perfect alignment to the bevel at the cage (7) superior entrance.

9. Assembly the bonnet (14) on the body (1). Tight the nuts (46) using the torques showed in Table 1 as reference for cleaned threads. Tight the nuts alternately in a crossed diametrically sequence.

TABLE 1 – GUIDE TORQUE FOR BONNETASSEMBLY

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

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 nomoving 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.

10. Clean carefully the stuffing box and the internal metallic components. Replace the packings and the other components.

11. Assemble the glands (27), the gland flange (21) and tight the gland flange nuts (25) only the enough to eliminate the leakage.

12. 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.

5.5. BELLOWS SEAL VALVES

For those bellow seal valves (figure 6), replace steps 7-9 from the above procedure by the following steps:

- In case of the plug (6) and the sealing set (35) replacement, put a bonnet gasket (37) on the bellow housing (34). Enter the sealing set (35) in the housing (34) and thread the plug (6) in the sealing set (35) up to the thread end. It must be really tightened. Make a bore for the pin (8) through the obturator (6) and the sealing set (35) using the current plug bore (6) as a guide. Install a new pin (8) and lock it.

WARNING

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

- Assemble the plug set (6), sealing set (35) and bellows housing (34) entering the plug (6) in the cage (7). Be careful in case of seal ring (13) plugs, once it shall be damaged if it is not perfectly aligned to the bevel of the cage (7) superior entrance.
- Tight the body nuts (46) using as reference for clean threads, the torques showed in table 1. Tight the nuts alternately in a diametrically crossed 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.

- Thread the stem (22) in the sealing set (35).
- Place the bonnet gasket (37) on the bellow set (35). Assemble the bonnet (14) over the bellow housing (34). Tight the nuts (36) and the studs (38) alternately in the adverse crossed sequence. As reference for clean threads, use the torques presented in table 1.

To continue the assembly go back to step 10 above

Types: 85-02, 85-08, 85-12, 85-18, 85-52, 85-58, 85-62, 85-68

1. When reassembling the valve, use only new gaskets and clean the bore surfaces which shall contact them.
2. For bore valves (figure 4), install the seat adapter gasket (40) and the seat adapter (41).
3. Install the seat gasket (5) and seat (4) or, for soft seal valve (figure 5), the inferior seat (4.1), seat ring (4.2) and superior seat (4.3).
4. In case of bush guide (45) replacement, press it at seat retainer (7) (figure 7).
5. In case of stem replacement, thread the new stem (16) in the plug (6) up to the thread end, so that it is very well tightened. Do a passage bore for the pin (8) through the plug (6) and the stem (22) using the bore existing in the plug (6) as a guide. Install a new pin (8) and lock it.

WARNING

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

6. In some configurations the plug (6) does not pass by the seat retainer (7) (figure 7). In this case pass the seat retainer (7) by the stem (22).
7. Assemble the seat retainer (7) or the set including the seat retainer (7) (figure 7) and the plug (6) with the stem (22) in the body (1). Be sure the seat retainer is properly mounted in the seat. Any rotary positional of the seat retainer regarding the body is acceptable.
8. Place the cage gasket (9), spiral wound (10) and body gasket (11) on the seat retainer. For reduced bore valve (figure 4), put the cage gasket (9), spiral wound (10) and other cage gasket (9) on the seat retainer, assemble the cage adapter (42) and put the body gasket (11) on the cage adapter.
9. Assemble the bonnet (14) in the body (1), tight the nuts (46) using as reference, for clean threads, the torques showed in table 1 – page 6). Tight the nuts alternately in a diametrically crossed 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.

10. Clean carefully the stuffing box and the internal metallic components. Replace the packings and the other components.
11. Assemble the packing (27), the packing flange (21) and tight the packing flange nuts (25) only the enough to eliminate the leakage.
12. 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.

BELLOWS SEAL VALVES

For those bellow seal valves (figure 6), replace steps 5-9 from the above procedure by the following steps:

- In case of the plug (6) and the sealing set (35) replacement, put a bonnet gasket (37) on the bellow housing (34). Enter the sealing set (35) in the housing (34).
- In some configurations the plug (6) does not pass by the seat retainer bush (45) (figure 8). In this case, follow the procedure bellow:
- Put the plug (6) in the seat retainer guide bush (45) by the inferior side of the seat retainer (7) (figure 7).
- Place the cage gasket (9), spiral wound (10) and body gasket (11) on the seat retainer. For reduced bore valve (figure 4), put the cage gasket (9) on the seat retainer, assemble the cage adapter (42) and the body gasket (11) on the cage adapter.
- Thread the plug (6) in the sealing set (35) up to the Thread the plug (6) in the sealing set (35) up to the end of the thread, so that it is very well tightened. Make a passage bore for the pin (8) through the obturator (6) and the sealing set (35) using the bore existing in the plug (6) as a guide. Install a new pin (8) and lock it.

WARNING

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

- Assemble the set including seat retainer (7) (figure 7), plug (6), sealing set (35), bellow housing (34), gaskets and cage adapter (when applicable) on the body (1). Be sure the seat retainer is properly mounted on the seat. Any rotary position of the seat retainer regarding the body is acceptable.

When the plug (6) passes by the seat retainer bush (45) (figure 7), the following procedure must be accomplished:

- Assemble the seat retainer (7) (figure 7) on the body (1). Be sure the seat retainer is properly mounted on the seat. Any rotary position of the seat retainer regarding the body is acceptable.
- Put the cage gasket (9), spiral wound (10) and body gasket (11) on the seat retainer. For bore valve (Figure 4) put the cage gasket (9), spiral wound (10 and other cage gasket (9) on the seat retainer. Assemble the cage adapter (42) and put the body gasket (11) on the cage adapter.
- Thread the plug (6) in the sealing set (35) up to the thread end. Ensure it is very well tightened. Make a bore for the pin (8) through the plug (6) and the sealing set (35) using the current bore of the plug (6) as a guide. Install a new pin (8) and lock it.

WARNING

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

- Assemble the plug (6), sealing set (35) and housing (34) passing the plug (6) by the guide bush (45) (figure 7).
- Tight the body nuts (46) using as reference, for clean threads, the torques presented in table 1 (page 6). Tight the nuts alternately in a crossed diametrically crossed 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 thefield when the valve reaches the operational temperature.

- Thread the stem (22) in the sealing set (35). Place the bonnet gasket (37) on the bellow set (35).
- Assemble the bonnet (14) over the bellow housing (34). Tight the nuts (36) and the studs (38) alternately in the adverse crossed sequence. As reference for clean threads, use the torques presented in table 1 (page 6).

To continue the assembly go back to step 10 above.

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.

7. Part List

TABLE 2 – PART LIST (figures 3, 4, 5, 6, 7 and 8)

Item	Description	Item	Description	Item	Description
1	BODY	13	SEAL RING	35	BELLOWS SET
2	FLANGE	•14	BONNET	36	BONNET NUT
3	SPLIT RING	15	BODY STUD	• 37	BONNET GASKET
• 4	SEAT	16	PACKING SPRING (2)	38	BONNET STUD
• 5	SEAT GASKET	17	PACKING	• 39	PIN
• 6	PLUG	•21	PACKING FLANGE	40	SEAT ADAPTER
• 7	CAGE	22	STEM	41	ADAPTER GASKET
8	PIN	•23	STEM NUT	42	CAGE ADAPTER
• 9	CAGE GASKET	27	PACKING FOLLOWER	• 45	BUSH GUIDE
• 10	SPIRAL WOUNG GASKET	28	PACKING STUD	•46	BODY NUT
•11	BODY GASKET	29	PACKING NUT		
12	BACK-UP RING (1)	34	BELLOWS HOUSING		

(1) Used only for PTFE seal ring.
(2) Used only for V-shaped PTFE packings.
• 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

HITER
by spirax sarco