IM-HPBFV-BD-SS-GRA-STD-06-EN

INSTALLATION AND MAINTENANCE INSTRUCTIONS

BUTTERFLY VALVE WR / LD TYPE STANDARD SERVICE



Rev.	Comentarios	Realizado	Revisado	Aprobado	Fecha
01	New instruction	A. García	J. Marchante	T.Paradinas	10-09-2015
02	Added point 3.3	J. Marchante	J. Font	T. Paradinas	24-11-2015
03	Added point 9.10 and 3.12 and 10. FINAL INSPECTION	C. Viadas	J.Font	T.Paradinas	05-06-2017
04	New instruction 6.4	Q.Cruañas	J.Font	T.Paradinas	01-09-2017
05	Added point 2.5	T. Paradinas	J.Font	T.Paradinas	10-05-2022
06	Section 6.6 to 6.10 created	M.Bel	C.Curval	T.Paradinas	23-11-2022
6.1	New logo, brand review	A.Suresh	E. Guillaumes	T.Paradinas	29-04-2025



IM-HPBFV-BD-SS-GRA-STD-06-EN

TABLE OF CONTENTS

1	DECLARATION
2	APPLICATIONS
3	STORAGE
4	INSTALLATION, SLINGING, LIFTING AND TRANSPORT
5	ACTUATOR OR GEAR BOX ASSEMBLY
6	MAINTENANCE
7	PRECAUTIONS PRIOR TO DISASSEMBLY
8	DISASSEMBLING
9	ASSEMBLING
10	FINAL INSPECTION9
11	ACTUATORS ASSEMBLY
12	ANNEX (seat change) 10
1.	MAINTENANCE
2.	PRECAUTIONS PRIOR TO DISASSEMBLY
3.	DISASSEMBLING



IM-HPBFV-BD-SS-GRA-STD-06-EN

1 DECLARATION

The BAC high performance butterfly valve "BAC" **LD**, **WR**, have been designed and manufactured for fluid control handling in suitable industrial process to their performance, according applicable standards.

Due to that it is very important to follow the instructions as stated hereafter. Not following these instructions could cause the loss of the manufacturer warranty.



IM-HPBFV-BD-SS-GRA-STD-06-EN

2 APPLICATIONS

- 2.1 The aptitude of valve design or materials related to the service conditions are end user responsibility.
- 2.2 Pay special attention for corrosive media, in these cases first check if material is adequate for the use. Even in the case of being compatible inspections should be scheduled depending of the possible corrosion.
- 2.3 For valves to be used in processes or places where erosion will affect, it shall be made and establish an inspection plan to guarantee at any time the suitability of the valve for the process conditions.
- 2.4 Valves are identified with a nameplate where are indicated the Maximum operating pressure at the maximum temperature, related to the valve materials and design Class. Do not install in any case valves in processes, which exceed any of the indicated limitations.
- 2.5 Butterfly Valves should not be used at end of pipeline open to atmosphere.

3 STORAGE

- 3.1 All valves are dispatched wrapped in special plastic or with flange covers to protect the sealing surface, bore and inside parts. These protections should be maintained on the valves as long as possible.
- 3.2 The valves must be stored in a dry environment, protected against temperature extremes and any possibility of damage. Special care should be taken on sealing surface in order to avoid leakage after assembling.
- 3.3 The valves should always be stored with the ball fully open and the flange covers placed on the ends for as long as possible prior to being assembled.

4 INSTALLATION, SLINGING, LIFTING AND TRANSPORT

- 4.1 The transport and handling of valves should be carried out with caution, using the necessary equipment depending on its size and weight to avoid any risk on the persons. Never use the handle or wrench as subjection for transportation or handling.
- 4.2 Prior to installation the valve should be checked for possible shipping and handling damages. Inspect the interior of both, the valve and the adjoining pipe for cleanliness. It is very important to verify that the valve is free of any foreign particles that might damage the seats.
- 4.3 When the valve is installed in a place where residues particles, like but weld beads, rod ends, metal scale, etc. are collected, it is advisable to incorporate strainers or screens. The BAC (HPBFV) is fully bidirectional. Nevertheless it is advisable to install the valve with the key against the pressure.
- 4.4 The installed valve should be readily accessible for periodical inspection and maintenance.
- 4.5 Flow through the valve can be in either direction. They are bi-directional valves. Nevertheless valve should be checked for any mark like arrow in body or plate or flange marking any preferential sense or as a unidirectional valve for special application.
- 4.6 The valve must always be installed or removed with the disc in closed position. When assembling the valve make sure that it is centered between the flanges. For a good operation of the valve the disc must be able to move freely.
- 4.7 It is important that the value is assembled tight between the flanges. Take care that the seat ring carrier (41) does not extend outside the body (10, 11). This is especially valid for the wafer type butterfly value.



IM-HPBFV-BD-SS-GRA-STD-06-EN

- 4.8 Due to the double eccentric design and the great surface of the disc at the seat ring carrier side (41), the differential pressure over the disc could cause sufficient torque to open the valve spontaneously. For that reason it is very important in case of a wrench operated valve make sure that the wrench is locked when the disc is in the closed position.
- 4.9 Never remove the wrench from the valve with the disc in closed position in order to avoid unexpected valve operations.
- 4.10 The carbon steel valves installed in a corrosive environment or subjected to weather conditions should always be protected with a finish paint coat after installation
- 4.11 Final verification of the valve must be done after its installation. Open and close the valve, to be sure that it functions properly, if necessary, adjust the gland-packing by tightening the bolts (92).
- 4.12 Make sure that the cleaning operations and the fluid are compatible with the valve. After these operations, the strainers might be incorporated if rust and scale are normally contained in the installation process, permanent filters should be considered.

5 ACTUATOR OR GEAR BOX ASSEMBLY

- 5.1 Make sure that the assembly of an actuator or gearbox occurs in a proper way, otherwise the valve could be irreparably damaged.
- 5.2 Avoid any kind of force transmissions on the shaft (30). The torque has to be passed on freely during the operation of the valve.
- 5.3 The internal mechanical stop has been designed to withstand the torque generated by the disc as a consequence of the differential pressure. Another function of the stop is to indicate the closed position which should be known for assembling the actuator. The stop has not been designed as a mechanical stop-device for any actuator. When it works in that way unnecessary stress could be produced in the shaft (30) and the stop.
- 5.4 It is preferable to assembly the wrench, gearbox or actuator before installing the valve. This gives the opportunity to check visually the position of the disc.

6 MAINTENANCE

- 6.1 The maintenance operations consist of checking the correct working of the valve and periodical readjustments of the stuffing box.
- 6.2 Before disassembling the valve and/or replacing the seats and gaskets it is necessary to check if the suitable spares are available. All seal gaskets must be replaced when the valve is fully disassembled.
- 6.3 The valves are identified with a serial number which will be found located on the identification plate around the body yoke. This number should be used as a reference for after-sale queries and spare orders.
- 6.4 The valves are produced and assembled to be operative throughout its useful lifetime, at the end of it, the different materials that compose it, most of them metallic, must be environmentally managed correctly, completing its life cycle.
- 6.5 The spare parts are supplied in kits, which depending on the type contain the following pieces:

Fire-Safe Valve:

- 1 PTFE + spring + ring (61)
- 2 seat gaskets (71)
- 1 seat gasket (72)
- 1 set of gland packing (81)
- 1 plug gasket (80)



IM-HPBFV-BD-SS-GRA-STD-06-EN

Metal Seated Valve:

- 1 metal seat (60)

- 2 seat gaskets (71)
- 1 set of gland packing (81)
- 1 plug gasket (80)
- 6.6 Use only genuine BAC Valves spare parts for maintenance and replacements to ensure proper functioning of the valve. Bac Valves cannot accept responsibility for any damages that occur from using spare parts from other manufacturers.
- 6.7 The recommended spare parts (gaskets, O-rings, friction rings, etc) are clearly marked with ✓ in the assembly drawing of the valve (General Arrangement Drawing).
- 6.8 Spare parts can be ordered to BAC Valves providing the serial number of the valve or specific purchasing order for the original valve.
- 6.9 If BAC Valves products have been stored for long periods check for deterioration before using these products. Do not re-use parts or components which appear to be in good condition after they have been checked or replaced by qualified personnel and declared unsuitable for use.
- 6.10 At the end of design life, the spare parts can be scrapped and can be recycled if sorted according to material. Separate the parts of the valve according to their nature (ex. metallic, plastic materials, etc.) and send them to differentiated waste collection sites, see Table 1. Check local authority regulation before disposal.

SUBJECT	HAZARDOUS	RECYCLABLE	DISPOSAL
Metals	No	Yes	Use licensed recyclers
Plastics	No	Yes	Use specialist recyclers
Seals	Yes	No	May require special treatment before disposal, use specialist waste disposal companies

Table 1. Recycling and disposal.

7 PRECAUTIONS PRIOR TO DISASSEMBLY

- 7.1 Be sure that the line is blocked and pressure relieved.
- 7.2 Wear protective clothes if applicable.
- 7.3 Remove the valve from the line, in closed position, and clean off all possible fluid residues.



8 **DISASSEMBLING**

Follow the instructions number 8.1 and 8.2 when only the seats have to be disassembled.

- 8.1 Clean the valve from fluid rests and use an adequate place to disassemble the valve.
- 8.2 Unscrew and remove the seat ring fasteners (92). Remove the seat ring (41) from the body (10, 11). Remove the seat assembly (60, 61).
- 8.3 Close the valve and remove the stool and gland flange nuts (99) and washers (96). Lift stool (19) and gland flange (55) assembly from the top of the body of the valve. Remove the gland follower (56), gland packing (81) and the top bearing ring (58).
- 8.4 Remove the bottom plug assembly (37, 85, 80, 57) and the actuator key (58).
- 8.5 Gentle tap the top of the shaft (30) with a soft hammer, until the key (35) is fully exposed in the shaft slot. Locate lifting slot at the back of the key, and with a screw driver or similar tool push the key out of the disc (20) and shaft assembly.
- 8.6 Hold the disc (20) and make sure that no damage happens to the spherical sealing, and pull the shaft (30) upwards off the plug and off the body. Remove disc (20) and protect the spherical seal.
- 8.7 Remove the top bearing (38) by pushing from the bottom of the valve and remove the bottom bearing (39) by pushing from the top of the valve.

9 ASSEMBLING

In case of replacing the seats after a partial disassembly follow instruction 9.7.

- 9.1 Clean and inspect all the valve components which do not need to be replaced. Pay special attention to the sealing surface, the spherical sealing of the disc (20), and the shaft (30) specially the stuffing box part.
- 9.2 Assembly the top and the bottom shaft bearings (38, 39), the bottom bearing (57) and the plug gasket (80) into the body (10, 11).
- 9.3 Position the disc (20) into the body bore between top and bottom trunnion. Insert the shaft (30) gently from the top of the body into the disc (20). Position both the shaft slot and the disc slot. Insert the key (35) into the disc with the small part facing the top of the valve. Gently tap the shaft (30) with a soft hammer until the key (35) has travelled to the top of the disc slot.
- 9.4 Put the plug thrust washer (57, 80) into the plug (37). Slightly grease the thread of the plug (37). Screw firmly the plug into the body.
- 9.5 Introduce the top bearing ring (58), the gland packing (81) and the gland follower (56) from the top of the valve. Do not forget to insert the gland follower sleeve (89) into the gland follower (56 Screw the stud bolts (97) until the end of each bolt flushes with the platform. The two longer stud bolts however should be used to fix the gland flange (55).
- 9.6 Introduce the stool (19) with the gland flange (55) in its tr center, to the top of the shaft (30). Assembly the washers (96) and the nuts (99). Fix the stool (19) on the body (10, 11) and the four nuts (99). Tighten the gland flange (55) with the two nuts (99).
- 9.7 With the valve in closed position put the PTFE seat (61) with the notch facing the body. Assembly the seat gasket (71) and the metal seat (60) this is not applicable to the metal-to-metal type butterfly valves.

VERY IMPORTANT SEE THE DRAWING BELOW FOR CORRECT SEAT POSITION.



IM-HPBFV-BD-SS-GRA-STD-06-EN





- 9.8 Put the seat gasket (71 and 72) in the seat ring carrier (41). Assembly the seat ring carrier (41) in the body (10, 11) and bolt it down in a cross-pattern hatch.
- 9.9 Open and close the valve several times in order to check its correct working.
- 9.10 Before assembling the valve in the installation, in case of the valve have been done any test or have been placed between flanges, tight the body –cover screws (41) again.

10 FINAL INSPECTION

- 10.1 After assembly, a test should be carried out to check the tightness of the valve. Once this has been completed, it should be drained and cleaned.
- 10.2 If the valve has to be stored following repair, the carbon steel parts must be protected with an anti-corrosion agent.
- 10.3 If the valve has to be operated by an actuator, the correct shaft alignment and parallelism must be considered when installing it, in order to ensure that no stress bending occurs.
- 10.4 See the corresponding Installation and Maintenance instructions for maintenance and final inspections of the actuator.

11 ACTUATORS ASSEMBLY

During actuators assembly on "BAC" High Performance Butterfly valves, some steps have to be considered:

- 11.1 Valves up to 6" be used with handle in which case the slots in pos. 19, will give us the disc position, for this reason always leave, the handle blocked in any of these position to avoid disc free movement. In case of assembly actuators including gear operators same instruction like the rest should be followed.
- 11.2 Place the valve closed position, insure the correct position (one way to check is checking the disc parallelism with body).
- 11.3 Actuators on gear operators have to include adjustable end stops at least in the closing position.
- 11.4 Put the actuator in closed position and assemble with valve stem observing the following:
 - To have a direct connection.
 - To have a tight connection.
 - Valve stem will no support actuator weight.
 - Do not displace the valve disc when place the actuator.
 - Once it is placed, fix it with the bolts to pos. 19, and adjust the end stop, in order to ensure that actuator stop will be at the same once or just before, valve intern stop it is not designed as actuator stop, it is a valve stop.
- 11.5 Operate the valve one or two times and check again the disc position closed, if it is not correct, regulate through the end stops of actuator repeating the above points.



IM-HPBFV-BD-SS-GRA-CRY-06-EN

12 ANNEX (seat change)

1. MAINTENANCE

- 1.1 The maintenance operations consist of checking the correct working of the valve and periodical readjustments of the stuffing box.
- 1.2 Before disassembling the valve and/or replacing the seats and gaskets it is necessary to check if the suitable spares are available. All seal gaskets must be replaced when the valve is fully disassembled.
- 1.3 The valves are identified with a serial number which will be found located on the identification plate around the body yoke. This number should be used as a reference for after-sale queries and spare orders.
- 1.4 The spare parts are supplied in kits, which depending on the type contain the following pieces.

Fire-Safe Valve:	 1 PTFE + spring + ring (61) 2 seat gaskets (71) 1 seat gasket (72)
Metal Seated Valve:	- 1 metal seat (60) - 2 seat gaskets (71)

2. PRECAUTIONS PRIOR TO DISASSEMBLY

- 2.1 Be sure that the line is blocked and pressure relieved.
- 2.2 Wear protective clothes if applicable .
- 2.3 Remove the valve from the line, in closed position, and clean off all possible fluid residues.

3. DISASSEMBLING

- 3.1 Clean the valve from fluid rests and use an adequate place to disassemble the valve.
- 3.2 Unscrew and remove the seat ring fasteners (92). Remove the seat ring (41) from the body (10, 11). Remove the seat assembly (60, 61).
- 3.3 Remove the graphite and PTFE gaskets (71 and 72) from the body and from the cover. Be carefully not to damage the sealing surfaces. Clean the fluid rests from the sealing surfaces of body cover and disc.
- 3.4 With the valve in closed position put the PTFE seat (61) with the notch facing the body. Assembly the seat gasket (71) and the metal seat (60) This is not applicable to the metalto-metal type butterfly valves.

VERY IMPORTANT SEE THE DRAWING BELOW FOR CORRECT SEAT POSITION.



INSTALLATION AND MAINTENANCE INSTRUCTIONS BUTTERFLY VALVE WR / LD – CRY -110°C

IM-HPBFV-BD-SS-GRA-CRY-06-EN





INSTALLATION AND MAINTENANCE INSTRUCTIONS BUTTERFLY VALVE WR / LD - CRY -110°C

IM-HPBFV-BD-SS-GRA-CRY-06-EN

- 3.5 Assembly the graphite gasket(71) in the body (10,11).
- 3.6 Assembly the metal seat ring (60) in the body.
- 3.7 Put the seat gasket (71 and 72) in the seat ring carrier (41).
- 3.8 Assembly the seat ring carrier (41) in the body (10, 11). Be sure the graphite gaskets are well positioned before put the ring in the body. A small quantity of suitable grease can be used to hold the gasket.
- 3.9 Bolt down slightly 4 screws and check the position of the metallic seat ring is centered to the disc sealing surface.
- 3.10 Bolt down the remaining bolts following a cross pattern hatch. Do not use a pneumatic tool that can damage the screws.
- 3.11 Open and close the valve several times in order to check its correct working.
- 3.12 Before assembling the valve in the installation, in case of the valve have been done any test or have been placed between flanges, tight the body –cover screws (41) again.



INSTALLATION AND MAINTENANCE INSTRUCTIONS BUTTERFLY VALVE WR / LD - CRY -110°C

IM-HPBFV-BD-SS-GRA-CRY-06-EN



Page 13 out of 14



INSTALLATION AND MAINTENANCE INSTRUCTIONS BUTTERFLY VALVE WR / LD - CRY -110°C

IM-HPBFV-BD-SS-GRA-CRY-06-EN



Calle Tapis, 126 17600 Figueres Girona (Spain) Tel. +34 972 67 70 52 http://www.bacvalves.com

Page 14 out of 14