

Installation Operation and Maintenance Manual

H15 & H15SS BACK PRESSURE MAINTAINING VALVES



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SCOPE

This manual covers back pressure maintaining valves with model code H15 or H15SS.

If in any doubt as to the applicability of these instructions, please contact BiS Wells for further advice quoting the exact model code and serial number of the valve before proceeding.

PRESSURE RANGES

Ensure that the valve is only operated within the ratings marked on the product.

INSTALLATION

The valve may be installed in any attitude, but preferably so that access is available to the Spring Adjuster under the Cap, for pressure setting purposes. The valve should be mounted in such a way that the weight of the product does not unduly stress the connecting pipework or fittings.

On installation or removal of the H15 Valve from the line, the hexagon flats of the Inlet Connector must be used when making or breaking the inlet joint, as use of the Body for this purpose may disturb the clamping of the Valve Seat.

This valve is not a safety accessory as defined by the Pressure Equipment Directive and must not be used as the overriding safety device for limiting pressure in a system; a pressure relief valve should be used in this application. Contact BiS Wells for details of our range of dedicated pressure relief valves.

The valve is supplied in a clean condition ready for installation. Contamination passing through the valve can cause malfunction. It is important to ensure that all connecting pipework and upstream components are clean before any gas or liquid is passed through the system to ensure that contaminant is not introduced to the valve. The installer is recommended to fit local filtration of 25 microns or less to protect the valve seat from contamination ingress.

OPERATION

The H15 is a spring-loaded back pressure maintaining valve; the line pressure applied at the inlet port acts upon a Valve to oppose an adjustable spring load. When the pressure load on the Valve rises to overcome the spring load, the Valve will lift off the Valve Seat and the line gas or fluid will be allowed to flow through to the outlet port.

The sealing diameter of the Valve Seat and the sealing diameter around the Valve are virtually equal, so the downstream side of the valve is effectively pressure balanced. Therefore, variations in the downstream pressure do not substantially affect the upstream pressure setting.

Setting Instructions

Where the valve is marked with a set pressure, the valve will have been set to its required operating pressure prior to delivery. Should any adjustment after installation be necessary, remove the Cap using the tool **H15-TOOL-001**. Using the same tool, turn the Spring Adjuster clockwise to increase the pressure setting and counterclockwise to decrease the pressure setting.

MAINTENANCE

When service is required, BiS Wells recommend return of the product for factory repair and refurbishment. However, if preferred, spares kits are available, which may be installed using these fitting instructions. Only personnel experienced in the service of high-pressure fluid power equipment should attempt service of these products. Incorrectly maintained pressure products can cause damage and fatal injury.

When ordering spares kits please state model and serial numbers of the valve and fluid in system.

Valve products contain elastomeric sealing materials such as o-rings which may degrade over time and other components such as valve seats that may degrade with wear. If the avoidance of leakage in the event of degradation is critical, a regular service routine should be adopted. Since every system is different, the actual service interval should be determined by the criticality of failure and monitoring of performance in the system. Regardless, we recommend that the valve is serviced by fitting a new service kit at least every 5 years.

Cleanliness during assembly is most important, particularly on all sealing surfaces.

It is recommended to lightly lubricate seals on installation. Threads should be lubricated to minimise the risk of seizure. This is particularly important when working with stainless steel valves. Ensure that any lubricant used in wetted areas of the valve are compatible with the system fluid. If in doubt, contact the factory for advice on suitable lubricants.

It is advisable to hold a Spares Kit for emergency situations.

If a filter has been fitted upstream of the valve it should be regularly cleaned or replaced.

Spares Kit

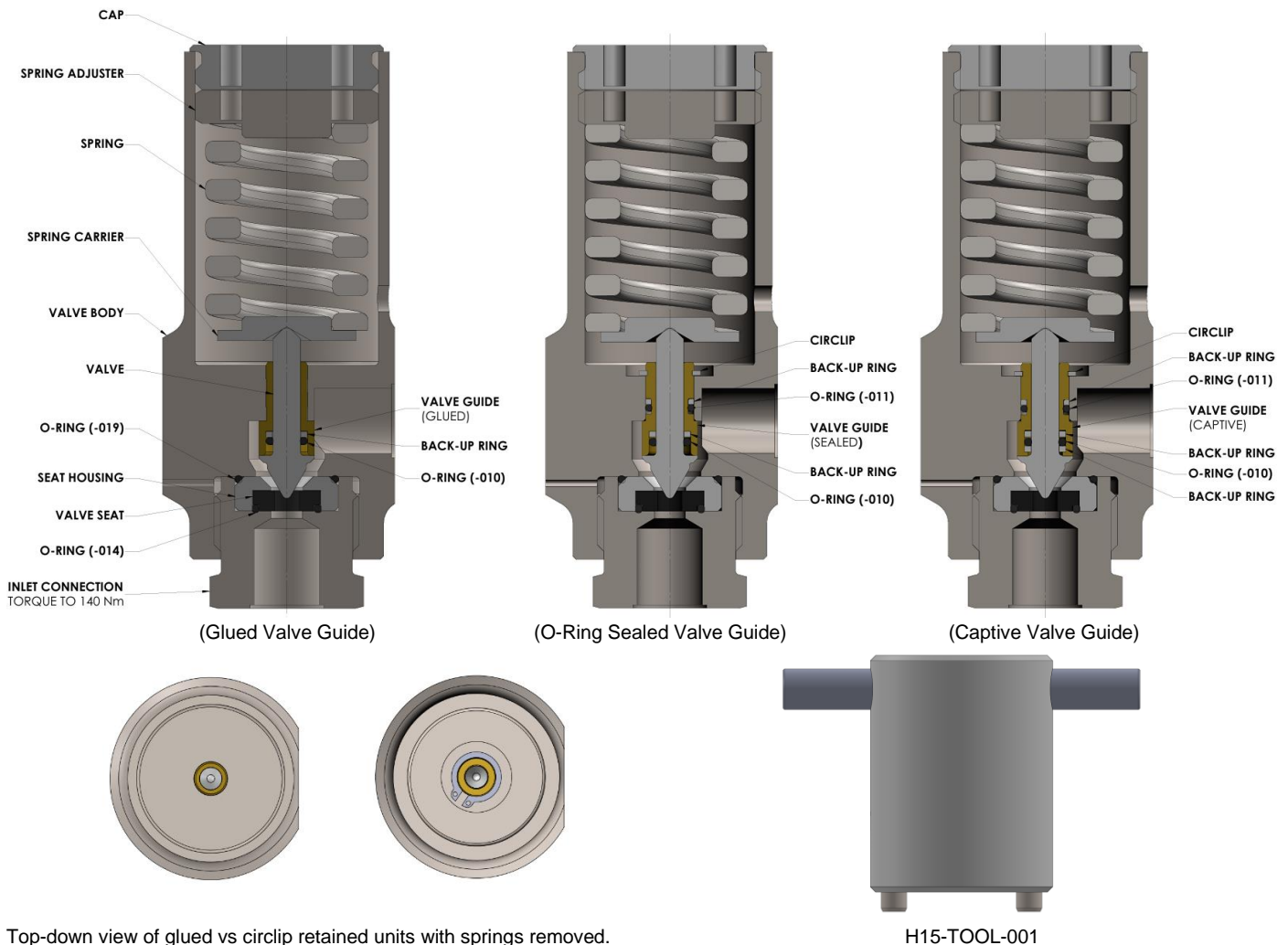
The correct spares kit part number will depend on the exact model code of the valve being serviced. When ordering a Spares Kit, it is important to state the valve type, serial number and or the gas or fluid in the system.

Replacement parts should only be sourced through BiS Wells. The use of any parts from any other source will invalidate any remaining warranty on the product.

WARNING!

BEFORE MAINTENANCE WORK IS UNDERTAKEN, whether valve is installed in a line or not, IT IS ESSENTIAL to ensure that all pressure is vented from the valve.

H15 BUILD VARIATIONS



Top-down view of glued vs circlip retained units with springs removed.

SERVICE INSTRUCTIONS

These instructions are confined to the replacement of the Valve, Valve Seat, O-Rings, and Back-Up Rings. Any damage caused to other components would require return of the units to the manufacturer.

Before undertaking any servicing of the valve, ensure the valve is completely isolated from the supply and outlet pressures and that any pressure in the valve has been removed. The valve should be removed from the line and worked on in a clean environment.

Cleanliness during assembly is most important, particularly on all sealing surfaces.

Ensure the Spares Kit is suitable for the gas or fluid in the system.

When ordering a Spares Kit, it is important to state the valve type, serial number and the gas or fluid in the system.

It is advisable to hold a Spares Kit for emergency situations.

Refer to the specific service instructions for each of the three build variants.

H15 & H15SS (GLUED VALVE GUIDE) VERSIONS

DISMANTLING

1. Remove the Cap using H15-TOOL-001.
2. Measure the distance from the top of the Valve Body down to the top of the Spring Adjuster. Note down this value for re-setting the valve later.
3. Unscrew the Spring Adjuster using H15-TOOL-001.
4. Remove the Spring and Spring Carrier from the top of the Valve Body.
5. Remove the Inlet Connection with the Valve Seat, Seat Housing, O-Ring (-019) and O-Ring (-014). Separate these items and discard the Valve Seat and both O-Rings.
6. Remove and discard the Valve, O-Ring (-010), and Back Up Ring from the Valve Guide. Note: The Valve Guide cannot be removed from the Valve Body.

Inspect all components for damage and wear before re-assembly. Contact BiS Wells if any parts not included in the spares kit are damaged and require replacement. Ensure all parts are clean before re-assembly.

REASSEMBLY

1. Fit a new Back Up Ring and O-Ring (-010) into the Valve Guide, followed by the new Valve. A light application of a suitable lubricant will aid assembly.
2. Assemble the new Valve Seat and O-Ring (-014) into the Seat Housing, then fit these into the Inlet Connection, followed by the O-Ring (-019).
3. Re-assemble the Inlet Connection assembly into the Valve Body and torque to 140 Nm.
4. Re-fit the Spring Carrier and Spring into the top of the Valve Body, ensuring the Spring Carrier is sitting centrally on the back of the Valve.
5. Screw the Spring Adjuster into the Valve Body, using H15-TOOL-001, until it is at the same depth measured previously. Note: The set pressure should be checked and adjusted as described in the 'Setting Instructions'.
6. Re-fit the Cap using H15-TOOL-001 and tighten in place.

NOTE: Ensure lubricants are compatible with the system medium.

Spares Kit

A typical spares kit for this valve type contains a Valve, Valve Seat, all Back Up Ring(s) and O-Rings.

H15 & H15SS (O-RING SEALED VALVE GUIDE) VERSIONS

DISMANTLING

1. Remove the Cap using H15-TOOL-001.
2. Measure the distance from the top of the Valve Body down to the top of the Spring Adjuster. Note down this value for re-setting the valve later.
3. Unscrew the Spring Adjuster using H15-TOOL-001.
4. Remove the Spring and Spring Carrier from the top of the Valve Body.
5. Remove the Inlet Connection with the Valve Seat, Seat Housing, O-Ring (-019) and O-Ring (-014). Separate these items and discard the Valve Seat and both O-Rings.
6. Using circlip pliers, remove the Circlip from around the top of the Valve Guide.
7. Remove the Valve Guide subassembly from the Valve Body.
8. Remove and discard the Valve, O-Ring (-010), O-Ring (-011), and both Back Up Rings from the Valve Guide.

Inspect all components for damage and wear before re-assembly. Contact BiS Wells if any parts not included in the spares kit are damaged and require replacement. Ensure all parts are clean before re-assembly.

REASSEMBLY

1. Fit new Back Up Rings, O-Ring (-011), and O-Ring (-010) to the Valve Guide, followed by the new Valve. A light application of a suitable lubricant will aid assembly.
2. Re-fit the Valve Guide subassembly into the Valve Body and secure in place with the Circlip.
3. Assemble the new Valve Seat and O-Ring (-014) into the Seat Housing, then fit these into the Inlet Connection, followed by the O-Ring (-019).
4. Re-assemble the Inlet Connection assembly into the Valve Body and torque to 140 Nm.
5. Re-fit the Spring Carrier and Spring into the top of the Valve Body, ensuring the Spring Carrier is sitting centrally on the back of the Valve.
6. Screw the Spring Adjuster into the Valve Body, using H15-TOOL-001, until it is at the same depth measured previously. Note: The set pressure should be checked and adjusted as described in the 'Setting Instructions'.
7. Re-fit the Cap using H15-TOOL-001 and tighten in place.

NOTE: Ensure lubricants are compatible with the system medium.

Spares Kit

A typical spares kit for this valve type contains a Valve, Valve Seat, all Back Up Ring(s) and O-Rings.

Reduced spares kits that do not include the static Valve Guide seals are available. When fitting these reduced kits, follow the dismantling and reassembly instructions for the 'Glued Valve Guide' version.

H15 & H15SS (CAPTIVE VALVE GUIDE) VERSIONS

DISMANTLING

1. Remove the Cap using H15-TOOL-001.
2. Measure the distance from the top of the Valve Body down to the top of the Spring Adjuster. Note down this value for re-setting the valve later.
3. Unscrew the Spring Adjuster using H15-TOOL-001.
4. Remove the Spring and Spring Carrier from the top of the Valve Body.
5. Remove the Inlet Connection with the Valve Seat, Seat Housing, O-Ring (-019) and O-Ring (-014). Separate these items and discard the Valve Seat and both O-Rings.
6. Using circlip pliers, remove the Circlip from around the top of the Valve Guide.
7. Remove the Valve Guide subassembly from the Valve Body.
8. Remove and discard the Valve, O-Ring (-010), O-Ring (-011), and all three Back Up Rings from the Valve Guide. Note: The Valve Guide bore has a small lip to retain the O-Ring (-010) and adjacent Back-Up Rings. Be careful not to scratch the Valve Guide bores when removing these components.

Inspect all components for damage and wear before re-assembly. Contact BiS Wells if any parts not included in the spares kit are damaged and require replacement. Ensure all parts are clean before re-assembly.

REASSEMBLY

1. Fit new Back Up Rings, O-Ring (-011), and O-Ring (-010) to the Valve Guide, followed by the new Valve. A light application of a suitable lubricant will aid assembly. Note: The inner Back-Up Rings and O-Ring (-010) will need to be inserted past the lip in the Valve Guide.
2. Re-fit the Valve Guide subassembly into the Valve Body and secure in place with the Circlip.
3. Assemble the new Valve Seat and O-Ring (-014) into the Seat Housing, then fit these into the Inlet Connection, followed by the O-Ring (-019).
4. Re-assemble the Inlet Connection assembly into the Valve Body and torque to 140 Nm.
5. Re-fit the Spring Carrier and Spring into the top of the Valve Body, ensuring the Spring Carrier is sitting centrally on the back of the Valve.
6. Screw the Spring Adjuster into the Valve Body, using H15-TOOL-001, until it is at the same depth measured previously. Note: The set pressure should be checked and adjusted as described in the 'Setting Instructions'.
7. Re-fit the Cap using H15-TOOL-001 and tighten in place.

NOTE: Ensure lubricants are compatible with the system medium.

Spares Kit

A typical spares kit for this valve type contains a Valve, Valve Seat, all Back Up Ring(s) and O-Rings.

FAULT DIAGNOSIS

SYMPTOM	POSSIBLE CAUSE	ACTION
1. The valve opens below the set pressure.	a. Setting too low.	a. Increase the spring compression until the desired set point is reached.
	b. Damaged or broken spring.	b. Inspect and replace the spring as required.
2. The valve leaks from inlet to outlet when the valve is closed.	a. A damaged valve or valve seat.	a. Fit new valve or valve seat as necessary.
	b. Failure of an O-ring seal.	b. Replace O-rings.
3. The valve fails to open above the set pressure	a. Setting too high.	a. Decrease the spring compression until the desired set point is reached.
	b. O-ring extrusion resulting in increased friction.	b. Inspect and replace the O-rings as required.