

Installation Operation and Maintenance Manual

B102 & B102H2 MANUAL BALANCED STOP VALVE



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SCOPE

The B102 & B102H2 is a manually operated, non-rising stem, balanced stop valve assembly which may be used for the primary isolation of transportable pressure vessels. The valve is TPED 2010/35/EU and CDGUTPER 2009 approved and is pi and rho marked accordingly.

The B102H2 valve is intended for use with Hydrogen, whilst the B102 is suitable for other non-oxidizing and non-corrosive gases compatible with the materials of construction. Note that the B102 & B102H2 are not suitable for use with oxygen and must not be used in medical or breathing apparatus applications.

This manual covers all B102 and B102H2 series models. Should there be 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.

MAXIMUM WORKING PRESSURE

The valve is rated for use up to 500 bar in TPE applications during transportation. When the product is not being used for transportation, for example when filling cylinders through the valve, the valve may be used up to 700 bar. However, the pressure must be reduced to 500 bar before transportation commences. It is the user's responsibility to ensure that the valve is only operated within the ratings marked on the product.

INSTALLATION

The valve is supplied with a bespoke bolted connection interface for the inlet and outlet ports to which mating flanges must be fitted to enable correct connection of the user's system pipework. Connection flange kits containing various different porting options (e.g., BSP, NPT, SAE, MP, SW, etc) are sold separately by BiS Wells.

When installing mating flanges to the B102 & B102H2 series valve it is critical the following instructions are adhered to:

1. To ensure the correct fit, quality and strength of the connection, it is recommended that only flange kits supplied by BiS Wells are used.
2. The B102 & B102H2 and the flange kits are supplied clean, free from contamination and fluid residue. It is the responsibility of the user to ensure the cleanliness is maintained during the installation.
3. The flanges must be inserted squarely and fully into to the mating bores of the Valve Body.
4. Each flange is secured to the valve via four M8 caphead screws which must be tightened to a torque of 22Nm using the appropriate hex tool and calibrated torque wrench.
5. Vibration in transport applications can cause failures. Always ensure that the anti-vibration washers supplied with the connection kits are used.
6. Ensure pipework is supported such that the flanges do not take the weight of unsupported pipework.
7. It is strongly recommended that all M8 cap screw heads are marked with a suitable paint to visually show the screw position in relation to the adjacent flange face upon installation such that future visual examination can easily be undertaken to verify that no screws have loosened.
8. Note - when removing flanges great care must be taken as a small trapped volume of gas may be present between the dual seals which will release as the flange is removed from the Valve Body. Unscrew each of the M8 cap screws gradually one turn at a time in sequence whilst gradually pulling the flange from the valve body until it is fully released. Be aware that during this process the trapped pressure between the dual seals will release which may cause the outer o-ring in the assembly to eject. Inspect flange o-rings after flange removal and replace if damage is present. Spare seals are available from the factory.

The B102 & B102H2 must be positioned in a location such that it can be accessed, adjusted, and removed for maintenance (note that pipework runs to the valve must be considered to ensure the valve can be removed). The mounting attitude/orientation is not critical. Avoid siting the valve in locations where it is likely to be damaged by impact or where it can form a handy step during system maintenance. The B102 & B102H2 valve is a bi-directional design, but the Inlet port is designed to be pressurised during transportation for TPE applications.

Threaded holes are provided in various positions to allow the valve to be mounted securely to the surrounding framework.

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 is passed through the system to ensure that contaminant is not introduced to the valve.

Following installation, check all connections for external leakage.

During storage prior to installation, ensure the inlet and outlet faces are protected and preserved as supplied. Ensure the product is kept in a clean and dry location within the specified working temperature of the valve.

OPERATION

Operation of the B102 & B102H2 valve is facilitated by manual rotation of the hand-wheel, clockwise to close and anti-clockwise to open. The valve has a balanced design meaning that little force is needed to close the valve leak tight. The handwheel is intended to be operated only by hand and is designed to discourage over-torquing of the valve as this will reduce the life of the valve. Any system instructions provided to the user should discourage the use of excessive force when tightening the valve.

With the valve in the fully closed position (handwheel fully rotated clockwise to stop and hand tight force applied) the flow of gas from the inlet to the outlet will be prevented. As soon as the hand wheel is rotated anti-clockwise from the fully closed position a flow path from the inlet to the outlet will be created, the flow rate through the valve will increase as the handwheel is further rotated anti-clockwise. The valve has an internal stop therefore the handwheel can be rotated anti-clockwise fully until the internal stop point is reached/felt (it is not possible for valve parts to eject via normal operation of the handwheel).

A visual indicator pin in the centre of the handwheel is included in the valve design to provide a visual status of the valve position (i.e., open/closed).

The B102 & B102H2 valve is rated to a minimum temperature of -40°C. However, in line with BS EN 10297:2014+A1:2017 the valve is designed to allow adjustment of the valve position only at temperatures of -20°C or above.

When adjusting the valve at extreme temperatures, beware that the Handwheel may also be at a similar temperature which could present a handling hazard.

MAINTENANCE

The user must adopt a preventative maintenance program to inspect the valve for damage and to ensure all connecting pipework/flanges are secure and retaining bolts are in place and remain at the correct installation torque. This can be assisted via screw marking as described in the installation details. BiS recommends a preventative maintenance visual inspection is carried out as part of the daily walkaround checks required for transportable pressure vessels.

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 at least every 5 years.

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

SERVICE INSTRUCTIONS

The B102 / B102H2 valve is not user serviceable. Service or repair may only be carried out by returning the product to BiS Wells or an authorised repairer that has been specifically trained to carry out repair of this product.