



AUTOFLOW Figure 1050 & 1051



MAINTENANCE

The valve should be at zero pressure and ambient temperature prior to any maintenance.

Maintenance Engineers & Operators are reminded to use correct fitting tools and equipment. A full risk assessment and methodology statement must be compiled prior to any maintenance.

The risk assessment must take into account the possibility of the limits of use being exceeded whereby a potential hazard could result.

A maintenance programme should therefore include checks on the development of unforeseen conditions, which could lead to failure.

CARTRIDGE REPLACEMENT

Automatic balancing valve cartridges may be changed on site in accordance with the following procedure.

Removal

Isolate pipework either side of Automatic balancing valve. This will normally be achieved using a gate valve or ball valve. In the case of the figure 1051 Universal pattern, the downstream isolation is performed by the integral ball valve.

Place a suitable container underneath the Automatic balancing valve body to collect any water from the pipe section.

Remove the cap on the 'Y' using a suitable spanner.

Remove the spring (or wire-retaining clip) from inside the body.

Pull out cartridge/adaptor sleeve assembly. (Using suitable thin nosed pliers).

Note: Depending on the flow rate there may be no adaptor sleeve fitted.

Refitting Sequence

Fit new cartridge/adaptor sleeve assembly ensuring that cartridge assembly is fitted in the correct orientation, i.e. piston movement nearest the cap.

Fit the spring (wire-retaining clip).

Replace end cap, making sure that it is not over tightened (sealing is effected by an 'O' ring.)

Open the two isolating valves, checking the end cap to confirm there is no leakage.

Remove flow rate tag and replace with new one supplied with cartridge.

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CE MARKING AND THE PRESSURE EQUIPMENT DIRECTIVE 97/23/EC

This has been implemented in United Kingdom law by the Pressure Equipment Regulations 1999 (SI 1999/2001). The regulations apply to all valves with a maximum allowable pressure greater than 0.5 bar. Valves with a maximum allowable pressure not exceeding 0.5 bar are outside the scope of the directive. Valves are categorised in accordance with the maximum working pressure, size and ascending level of hazard, which is dependent on the fluid being transported. Fluids are classified as Group 1, dangerous fluids or Group 2, all other fluids including steam. Categories are SEP (sound engineering practice) and for ascending levels of hazard, I, II, III or IV. All valves designated as SEP do not bear the CE mark nor require a Declaration of Conformity. Categories I, II, III or IV carry the CE mark and require a Declaration of Conformity (Note- all valves up to and including 25mm (1") having a maximum allowable pressure greater than 0.5 bar are designated SEP regardless of fluid group.)

PRODUCT LIFE CYCLE

The life of the valve is dependent on its application, frequency of use and freedom from misuse. Compatibility with the system into which it is installed must be considered. The properties of the fluid being transported such as pressure, temperature and the nature of the fluid must be taken into account to minimise or avoid premature failure or non-operability. A well-designed system will take into consideration all the factors considered in the valve design, but additionally electrolytic interaction between dissimilar metals in the valve and the system must be examined. Before commissioning a system, it should be flushed to eliminate debris and chemically cleaned as appropriate to eliminate contamination, all of which will prolong the life of the valve.

LIMITS OF USE

The valves to which these installation, operation and maintenance instructions apply have been categorised in accordance with the Pressure Equipment Directive.

The fluid to be transported is limited to Group 2 liquids i.e. non-hazardous and on no account must these valves be used on any Group 2 gases, Group 1 liquids or Group 1 Gases.

Fig 1050/1051 threaded end automatic balancing valves in PN20 and PN25 pressure ratings and in sizes up to and including 2 inch are categorised as SEP and do not require the CE mark.

OPERATING PRESSURES & TEMPERATURES

Size	PN	Non-shock pressure at temperature range	Non-shock pressure at max. temperature
1050 ½" to 2"	25	25 bar from 0°C to 100°C	21 bar at 120 °C
1051 ½", ¾"	25	25 bar from 0°C to 80°C	14 bar at 120 °C
1"	25	25 bar from 0°C to 55°C	11 bar at 120 °C
1 ¼", 1 ½"	25	25 bar from 0°C to 20°C	8 bar at 120 °C
2"	20	20 bar from 0°C to 20°C	6 bar at 120 °C

Not suitable for fatigue loading, creep conditions, fire testing, fire hazard environment, corrosive or erosive service, transporting fluids with abrasive solids.

PRESSURE/TEMPERATURE RATING

They must be installed into a piping system whose normal pressure and temperature do not exceed the above pressure ratings. If system testing will subject the valve to pressures in excess of the working pressure rating, this should be within the test pressure for the body and with the valve open (Fig 1051 only).

The maximum allowable pressure in valves as specified in the standards is for non-shock conditions. Water hammer and impact for example, should be avoided.

If the limits of use specified in these instructions are exceeded or if the valve is used on applications for which it was not designed, a potential hazard could result.

LAYOUT AND SITING

The Fig 1050 & 1051 Automatic balancing valves may be installed in horizontal and vertical pipework and in any orientation. Care should be taken to ensure that adequate clearance is provided for access for pressure/temperature probe connection when required and cartridge removal should this be necessary.

It should be considered at the design stage where valves will be located to give access for operation, adjustment, maintenance and repair. Valves must be provided with adequate support. Adjoining pipework must be supported to avoid the imposition of pipeline strains on the valve body.

(Fig 1051 only) In the interests of safety, valves installed on end-of-line service in the closed position with infrequent opening should be fitted with a locking device on the operating mechanism. Alternatively, it should be fitted with a blanking plug on the downstream end connection of the valve.

INSTALLATION

Prior to installation, a check of the identification plate and body marking must be made to ensure that the correct valve is being installed.

The valve must be installed with the direction arrow on the body coincident with the direction of the flow in the pipeline. Ensure the threads are properly engaged and proceed to tighten the valve onto the pipe. The wrench must only be located on the valve end into which the pipe is being threaded to avoid distortion of the valve.

Valves are precision manufactured items and as such, should not be subjected to misuse such as careless handling, allowing dirt to enter the valve through the end ports, lack of cleaning both valve and system before operation and excessive force during pipe connection. All special packaging material must be removed.

Valves must be provided with adequate support. Adjoining pipework must be supported to avoid the imposition of pipeline strains on the valve body.

Immediately prior to valve installation, the pipework to which the valve is to be fastened should be checked for cleanliness and freedom from debris.

Confirm that the pipe threading length is correct to avoid excessive penetration of the pipe into the valve, which may otherwise cause damage.

Thread sealing compounds appropriate to the application must be used but excessive use should be avoided, since this increases thread interference and may cause overstressing of the body ends.

Care should be taken to ensure that adequate clearance is provided for access for pressure/temperature probe connection when required and cartridge removal and replacement should this be necessary.

Fig 1050 Installation

Ensure the threads are properly engaged and proceed to tighten the valve onto the pipe. The wrench must only be located on the valve end into which the pipe is being threaded to avoid distortion of the valve.

Fig 1051 Installation

The Universal Pattern Automatic balancing valve has a union nut arrangement at one end (outlet). Remove this nut from the assembly and place over the pipe, past the threads. Install the threaded end piece to the pipe and tighten.

Attach the opposite end of the Automatic balancing valve to the piping and tighten until the lever handle and test points are in the desired position. The wrench must only be located on the valve end into which the pipe is being threaded to avoid distortion of the valve.

After both ends of the valve are assembled to the piping, tighten the union nut, hand tight and then a further quarter of a turn. Care should be taken to prevent damage to the 'O' ring on the union joint during assembly. A wrench must be used on the valve body end to prevent it from while tightening the union nut.

If the union nut must be disassembled after tightening, use a wrench on the valve body end to prevent it from turning.

OPERATING

The Automatic balancing valve is self acting for flow control. However the Fig 1051 valves are supplied with integral isolation ball valve. This is a quarter turn operation valve, clockwise to close and anti-clockwise to open.

Note: Rapid closure of a quarter turn valve on liquid services may cause system water hammer.

Each Automatic balancing valve product is provided with two Figure 631 Test points. The Red strap for upstream and the Blue strap for downstream connections.

Differential pressure measurements can be taken directly across the Automatic balancing valve body by inserting proprietary P/T probes into the test points. Probes should be lubricated with silicone oil/grease prior to insertion.

Differential pressure measurements should be between 17 to 200 kPa (2 to 32 psig) in general or 34 to 414 kPa (5 to 60 psig) if this range was specially requested.

Differential pressure measurements in these ranges confirm that design flow is being achieved. Flow measurement devices must be installed if flow verification is required.