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Technical Assistance

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Installation and Operating Instructions

Stainless Steel Metering Station

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This metering station is a precision manufactured product and should be handled, installed and used with care as detailed in these instructions.

This product is rated PN16 and is dimensionally suitable for fitting between flanges to BS EN 1092 PN16

European Pressure Equipment Directive 97/23/EC

The metering stations to which this instruction document applies have been categorised in accordance with the Pressure Equipment Directive when sold or used within the European Economic Community (EEC). The fluid to be transported is limited to non-hazardous Group 2 liquids and on no account must the metering station be used on Group 1 gases, Group 1 liquids and Group 2 gases.

DN50 to DN300 - Sound Engineering Practice (SEP)

DN350 to DN900 – Category 1

Operating Pressure and Temperature

Non-shock pressure at temperature range	Non-shock pressure at maximum temperature
16 bar from -10°C to 120°C	16 bar at 120°C

Limits of Use

The metering station must be installed in a piping system where the normal pressure and temperature does not exceed the above ratings.

The upper temperature is restricted to 120°C due to the elastomeric seals in the test points.

Installation

Metering stations are precision manufactured products and should not be subjected to misuse.

Careless handling should be avoided and the metering station should be as clean as possible prior to installation and free from foreign particles.

The metering stations may be installed close coupled to an isolating gate valve or regulating globe valve. On no account must the metering station be close coupled to a butterfly valve.

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Metering stations should be installed with a minimum of 5 diameters equivalent of straight pipe upstream having the same nominal diameter as the metering station and should not include any reducers or any other intrusions into the bore within this specified length. When metering stations are used as individual items, a minimum of 3 diameters of straight pipe must be fitted downstream.

When used in conjunction with butterfly valves, a minimum of 2 diameters equivalent of straight pipe must be provided between the metering station and the butterfly valve.

All special packaging material must be removed.

Immediately prior to installation, the adjacent pipework and flanges should be checked for cleanliness and freedom from debris. It is important that the flange/pipe bore is free from internal burrs, weld spatter or other defects which will disrupt the velocity profile of the liquid and induce inaccuracies outside the specified flow rate tolerance.

It is important to ensure that the flow arrow on the metering station is coincident with the direction of flow in the pipeline. If close coupled to a valve, the metering station must be upstream with the flow passing through the metering station before the valve.

When installed in **horizontal pipework at low level**, the upstream (HP-red) test point should be vertical. This will prevent the other (LP-blue) test point acting as a dirt pocket since it will be horizontal and half way from the bottom of the pipe. Also the HP test point can be used to bleed air from the system.

Where pipework runs close to a wall or adjacent equipment, it is essential that there is at least 100mm clearance to allow a manometer probe to be connected to the test point. This may mean that the test points may have to point up at 45º.

For **horizontal piping at high level** the general principles for installing at low level should be applied. However, where pipework is enclosed in ceilings or voids, it may be difficult to access the test points in order to connect the manometer probes. In this situation, it may be advantageous to have both test points pointing down at 45º to ensure that neither becomes an obvious dirt pocket.

In **vertical pipework** there are no inherent dirt entrapment areas therefore the orientation of the test points is dependant upon the ease of manometer probe connection

Gaskets should be suitable for the operating conditions and should be free from defects. It is essential that the internal bore of the gasket does not intrude into the bore of the metering station at any point.

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In assembly, a suitable lubricant should be used on the bolt threads and should be tightened sequentially ensuring that the initial contact between the metering station, gaskets and flanges is flat and parallel. The bolts should then be tightened gradually and uniformly in an opposite tightening sequence to avoid bending one flange relative to another.

Fitting extensions and test points

Test points and extensions are supplied loose and should be fitted during installation as follows:-

- Fit the extensions to the metering station.
- Fit the test points to the extensions ensuring that the test point with the red strap is on the upstream side.
- When tightening the test points and extensions, excessive force is not necessary. A suitable sealing material may be used on the threads of the test points and extensions but excessive use should be avoided.

Operation

The commissioning stage is the only time that the metering station will normally have any attention. During this stage, all entrained air must be removed from the system before accurate measurements of differential pressure signals can be taken from the test points.

There are two test points, each fitted with a coloured strap and captive cap.

Upstream	(HP) - Red
Downstream	(LP) - Blue

For safety reasons, all manometer probe insertions must be carried out with the system cold.

The measurements are taken by directly inserting the test probe into the test point. A silicone oil or grease should be lightly applied to the shaft of the probe prior to insertion. No other type of lubricant should be used.

Maintenance

Metering stations are maintenance free and after commissioning should require no further attention.