

## Selecting the Correct MX-Series Flow Meter

There are 6 basic steps involved in selecting the correct MX-Series flow meter. Before you start you need to know the following regarding the application;

1. The fluid to be metered (if a trade name you will need to know the chemical composition)
2. The viscosity of the process fluid
3. The process temperature
4. The process pressure
5. The required flow range or pipe size
6. The required process connections
7. The type of output or display required
8. To be used in a safe or hazardous (ATEX) environment
9. The accuracy required
10. Any other requirements

Armed with this information you can now select the correct MX-Series flow meter for the application based on the steps below.

### 1. Choose the materials of construction

MX-Series meters are divided into “families” based on their generic application with differing materials of construction, pressure ratings and temperature ratings;

F (Fuel & Oil Family); these models have anodised aluminium bodies, PPS or aluminium rotors and FKM (Viton) seals and are ideally suited to fuel, oil and other refined petroleum applications. They can also be used with fluids with a high water content. Maximum temperature is 80c.

P (Industrial Family); these models have stainless steel bodies, PPS or stainless steel rotors and FEP (Teflon) seals and are ideally suited to chemical and other aggressive applications. They are also used for high temperature applications to 150c and corrosive environments such as marine and off-shore. Maximum temperature is 150c.

S (Solvent Family); these models have anodised aluminium bodies, stainless steel rotors and FEP (Teflon) seals and are ideally suited to solvent applications. They can also be used with fluids with a high water content. Maximum temperature is 120c.

P and S (Ex) (Intrinsically Safe Family); these are P and S family meters with intrinsically safe pickups that are ideally suited to standard P and S meter applications but in hazardous environments that require ATEX rated meters. Maximum temperature is 80c.

### 2. Choose the Correct Rotor Type based on Fluid Viscosity

Standard rotors are suitable for fluids at up to 1000cps. For fluids greater than 1000cps use high viscosity rotors to minimise the pressure drop across the meter.



### 3. Choose the correct meter size

The meter should be sized based on the required flow rate. Each meter has a flow range (for fluids greater than 5cps such as diesel and a slightly different range for fluids less than 5cps such as water). Best practice suggests that the required flow rate should be between 30% and 70% of the flow range of the meter so as not to over or under work the rotors. For example, if the required flow rate is 80LPM a DN25 meter should be used as this is at 70% of its flow range where on a DN19 meter it would be 100%. However, where necessary all meters are designed to be used continuously at their maximum flow rate and provided the fluid is clean no significant wear will be noticed.

Meters can also be sized based on the pipe size so a DN25 meter for a DN25 pipe. However, in many cases a smaller meter can be specified based on the required flow so offering a cost saving.

Pressure drop across the meter should be considered (refer to the pressure drop charts). Where pressure drop is a factor a larger meter will give a lower pressure drop than a smaller meter at the same flow rate.



### 4. Choose the Output Type

A range of compact mounting outputs are available for MX-Series meters (these mount directly on to the body of the meter using the M-Lock bayonet mounting system). The basic Type A output is a pulse module containing 1 x reed switch and 1 x Hall Effect Sensor (this can be converted to an analogue 4~20mA or 0~10VDC signal using a separate convertor). A range of battery powered LCD displays showing flow rates and totals are available, some having additional pulse and analogue outputs, as well as a batch controller. High temperature and Intrinsically Safe outputs and remote mount (cable link) and ATEX versions of LCD displays are also available.



### 5. Choose the Process Connections

For all meters both BSP(F) and NPT(F) connections are available. For meters from DN25 flange connections are also available (DN PN16, ANSI 150# and JIS 10K).



### 6. Choose the Accuracy Required

Standard MX-Series meters provide an accuracy of better than  $\pm 0.5\%$  of the measured range (the flow rate of the meter) based on a single point calibration test at the midpoint of the flow range. A  $\pm 0.25\%$  accuracy is available on a reduced flow range with a 3 point calibration (low, mid and high points on the flow range).



### 7. Any Other Requirements

These may include a pressure test or material certificate, a 3D drawing or a Declaration of Conformity. Most requirements can be met so let us know what your customer wants.

Questions? If you have any questions please call or email one of our MX-Series experts on 01280 817304 or [sales@bellflowsystems.co.uk](mailto:sales@bellflowsystems.co.uk)