

Flow Meter Selection

Q. What essential information do I require to determine the correct M Series model I need for my application

- A.
- Fluid compatibility with wetted component parts.
 - Desired fluid flow rate per minute (or per hour)
 - Fluid viscosity
 - Maximum operating pressure
 - Fluid temperature
 - Connection type (BSP or NPT threads, ANSI or DIN flange).
 - With or without a LC or mechanical display

Q. My pipe size is 2" so presumably I need a 2" size meter?

- A. Not necessarily. You should size your Series meter requirement by knowing the fluid flow rate through your system. If not known, your pump manufacturer should be able to help you determine this.

By matching your meter selection to the flow rate requirement you could make a more economical selection; e.g. a 1½" meter for a 2" pipe and during installation fit 2" to 1½" reducing connectors.

Whilst there will be some pressure loss in doing this it will not be significant enough to affect your system total pressure loss.

However please remember if the fluid is a high viscous type, you may need to select a meter larger than 2" or reduce your flow rate expectations.

Q. Are heating jackets available for the Series?

- A. Heating jackets for the M5, M10, M40 and M50 series are currently being designed and market release details will be advised in the near future.

Q. If I wish to use solvents with your meters is there anything that needs to be known?

- A. With pulser versions, there is no extra options required and all materials will be compatible with solvents. However, with our Aluminium body mechanical versions you will need to order the optional solvent kit.

Q. If I choose the option of having high viscosity or high temperature rotors fitted to a standard meter model, will the stated meter accuracy (of reading) change significantly?

- A. For either High Viscosity or High Temperature applications, the rotors are specially cut so that meter accuracy is maintained.

But remember if you use a meter fitted with high temperature rotors at normal operating temperatures (up to 80°C / 176°F) then the meter accuracy will be affected whereas a meter with high viscosity rotors will maintain its accuracy with fluids below 1000cps viscosity.

Q. Are any Series meters approved for custody transfer or for 'resale' use?

If yes, which models and for what fluids are they approved?

- A. Not at present but we expect to have the initial approval from the National Standards Commission of Australia by the end 1997.

Initial approval will cover M10, M40 and M50 meter models fitted with the deluxe LC display and fluids with a viscosity range of between 0.4 and 12cps.

Q. Can you explain your calibration process?

- A. Each meter has a nominal K factor (e.g. M10 has 36 pulses per litre or 136.3 pulses per US gallon). We perform a single point (mid-flow range) calibration test on each meter after assembly to verify the stated meter's accuracy claim at the stated K factor. This is recorded on a calibration report which accompanies the meter.

Any meter that fails this test is rejected by production.

Q. With your calibration process, is the testing equipment you use traceable?

- A. Yes our master meters are tested and verified by the National Standards Commission (NSC) which is the Australian Government testing laboratory. Copies of NSC certificates for the master meters can be supplied on request.

We are also currently applying to become a NATA (National Australian Testing Association) member which will enable us to be an approved testing laboratory for the flow meter industry.

Q. Can you provide a multi-point calibration report for a specific meter?

- A. Yes, but there will be an extra charge per meter for this service.

Q. You quote a maximum temperature of 120°C but not a minimum temperature, are your meters suitable for cryogenic applications?

- A. The PPS version of our rotor materials can operate down to as low as -425°F / -254°C but as there are other materials involved we would recommend a minimum operating temperature of -60°C / -76°F.

Q. Is the maximum operating pressure of a ANSI 150lb flange 150psi?

- A. No, the flange operating pressure capability depends on the operating service temperature. For example, for temperatures up to 38°C / 100°F the maximum pressure capability of the ANSI 150lb flange is 1900 kPa / 275 psi / 19 BAR.

The ANSI flange rule dictates that this pressure capability reduces as the operating temperature increases and at 120°C / 248°F the maximum pressure rating is 225 psi.

Q. You quote 5500 kpa / 800psi / 55BAR as your working pressure in non-mechanical meters. What is the safety factor for this operating pressure?

- A. All our working pressures are based on a 4:1 ratio safety factor.

Q. Why do the mechanical display versions quote a lower maximum operating pressure to that of the pulser versions?

- A. The operating pressure of the mechanical versions is controlled by the top cap as the gear box area is in the flow path. The top cap has smaller diameter and less retaining bolts.

Flow Meter Specifications

Q. Why are the M1 and M2 series meters supplied with Hall Effect Sensors and not reed switches?

A. These meters have high resolution pulse outputs e.g. 1000 pulses per litre - (M1) and 400 pulses per litre - (M2) and our tests have shown that using digital solid state HE Sensors will prolong the meter operating life and will also eliminate the possibility of pulse bounce sometimes occurring with mechanical reed switches.

Q. If Hall Effect Sensors eliminate pulse bounce why don't you supply all your meters with H.E.S as standard in lieu of a reed switch?

A. The mechanical reed switch is more versatile in its application than a Hall Effect Sensor. The reed switch can be operated by a DC or AC power source whereas the more specialised digital H.E.S needs a 4.5 - 24 Volt DC supply.

Also today, many pulse receiving instruments have the ability to eliminate occasional pulse oscillation i.e de-bounce the signal.

Q. Can I specify a meter with a reed switch and a Hall Effect Sensor?

A. Yes, on M5, M10, M40 and M50 pulse models you can have one H.E output and one reed switch output. Whereas with the LCD versions the auxiliary output can be a H.E type if required.

Q. What is the difference between the deluxe and standard LC displays?

A. They have the same features except that the deluxe display has pre-settable batching facility and is an intrinsically safe display.

Q. If I select the long life battery for the Deluxe Display, can I retain the intrinsically safe option of the display?

A. No, once you alter the display or its attachments from 'As Tested' you lose this protection.

Q. Why are the M10 and M40 mechanical display meters that are fitted with stainless steel rotors only rated for 80°C / 176°F because the other stainless steel rotor models are rated at 120°C / 248°F?

A. This is because the display itself is impact resistant PVC and is not suitable for use above 80°C / 176°F. However, we are shortly planning to change the material to a glass filled polypropylene which will be capable of withstanding up to 120°C / 248°F operating temperature.

Q. The deluxe LC display meters are 'intrinsically safe'. What precisely does this mean and isn't it the same as 'flameproof'?

A. 'Intrinsically safe' means that the meter (supplied with deluxe LC display) can be used in a hazardous environment (e.g. with flammable fuels).

Intrinsically safe also means that the actual instrument (i.e. the L.C display) is not capable of creating an ignition source whereas 'flameproof' means that the product is designed to contain any fire or explosion.

Q. The meters have or are in the process of obtaining a number of safety standards - UL, EX, Standards Australia and CE?

What is the origin of each standard, what do they actually test and / or substantiate and which meter models are covered?

- A. UL (Underwriters Laboratories USA) Ex (Cenelec, Europe) and Standards Australia are all standards which confirm that a meter has 'flameproof' certification.

The meter models applicable are the aluminium and stainless steel pulse versions (without displays) of M5, M10, M40 and M50.

CE refers to the European EEC declaration of safety conformity (covered by Directive 89/336/EEC) and the electronic displays on the LCD models of M5, M10, M40 and M50 meet this requirements.

Q. The meters have IP54 and NEMA13 protection. What does this refer to exactly and what is the significance?

- A. The Series meters have been designed and constructed so that harmful dust or water in the external operating environment cannot damage the meter or its operation.

IP54 is the international standard (ISO) describing this environment protection for enclosures etc. NEMA13 is the equivalent standard in USA.

Flow Meter Installation and Operation

Q. Doesn't the fluid that passes through the meters have to be 100% clean or not contain any solid particles?

A. Yes and No. The cleaner the liquid the better but the Series meters will tolerate very small particle sizes within the fluid (see catalogue for maximum particle size details). We also recommend that you have an appropriate sized mesh strainer fitted in your system on the fluid inlet side.

However, remember that the strainer has to be periodically checked and cleaned to avoid a blockage which can reduce the flow rate.

Q. When you refer to a mesh strainer, is this a filter and why don't you give the size in microns ?

A. No, a wire mesh strainer is required not a 'layered' filter element which can more easily block up.

We quote a 'mesh size' rather than a 'micron size' as filters are commonly referred to in microns. For information only, the nominal width of the apertures within a mesh strainer are:

60 mesh - 250 microns 200 mesh - 75 microns

Q. What installation positioning options do I have with M series meters and what positions shouldn't I choose?

A. There is no restriction on installation. You can install in any position as long as the meter shafts are always in a horizontal plane.

Q. I am concerned about 'pressure drop' created by installing one of your meters and my flow rate may reduce significantly?

A. All Series meters are designed for a maximum pressure drop of 150 kpa / 14.5 psi / 1 BAR when operated at the maximum flow rate.

Q. What are some of the most likely causes of a meter failing to operate or stopping shortly after installation?

A. · Foreign objects are preventing the rotors from turning freely. Examples are thread tape or thread seal compounds used in sealing pipe threads or welding slag.

· Opening a valve fully with an empty line will cause rotors to overspin generating excessive heat that can result in fusion of the rotors. (Correct way is to allow pumping system and meter to fill slowly with liquid).

Q. My meter is registering that I have dispensed more fluid than I actually have. What could be the reason for this?

A. The M Series meters are so accurate they measure air as well as fluid. We suggest you install an air eliminator in your supply line.