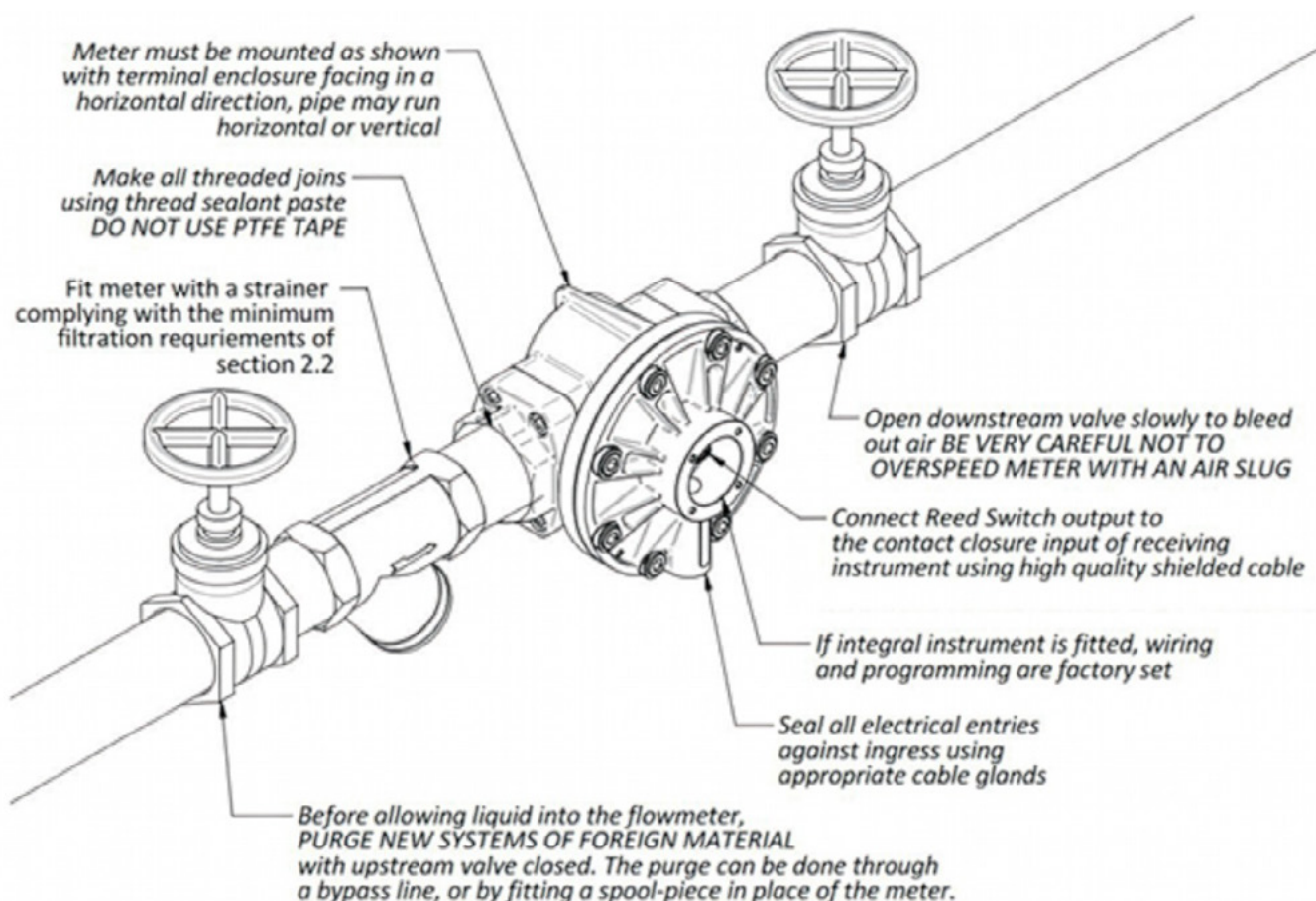


Common Installation Mistakes That Compromise OM Series Pulse Flow Meter Performance

OM Series pulse output oval gear flow meters are precision positive displacement instruments designed to deliver high accuracy, excellent repeatability, and long service life across a wide range of industrial liquid applications. However, achieving this performance depends heavily on correct installation. Even minor deviations from recommended mechanical, piping, or electrical practices can significantly affect measurement reliability and component longevity.

Correct installation ensures the meter remains full of liquid, operates within its mechanical tolerances, and produces a clean, stable pulse signal. When installation requirements are ignored, problems such as reduced accuracy, erratic output, accelerated wear, or catastrophic mechanical failure can occur. In many cases, these issues are incorrectly attributed to the meter itself when the root cause lies in avoidable installation errors.

To help customers achieve correct, first-time installations, we've created practical [commissioning checklists](#) and included them at the end of this article as supporting tools. These checklists cover OM Series installation requirements into clear verification steps that installers can follow before commissioning and during start-up to give customers greater confidence that their flow meter has been installed correctly.



Failure to verify installation parameters such as flow rate and pressure

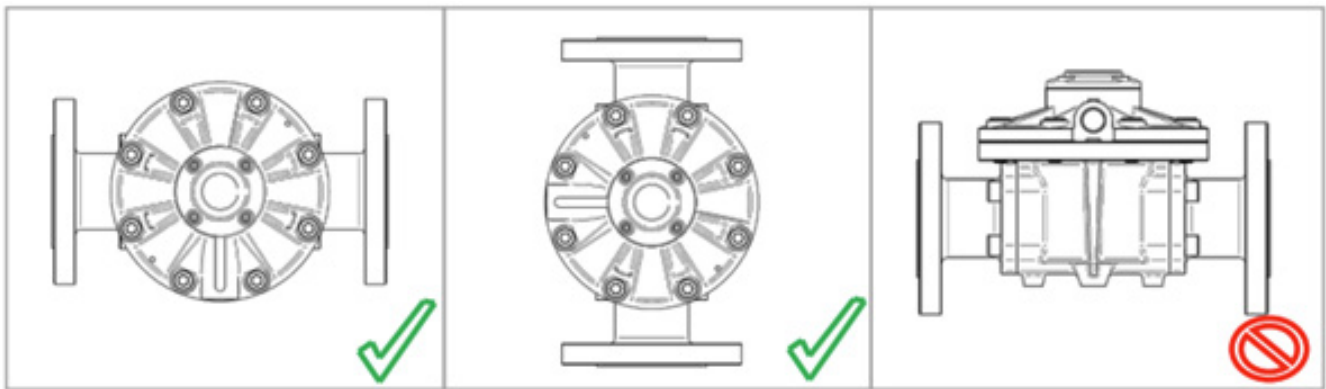
A critical but often overlooked installation error is failing to verify that actual operating conditions fall within the meter's specified flow rate and pressure limits. OM Series oval gear flow meters are calibrated and rated for defined operating ranges, and performance is only guaranteed when the meter is applied within those boundaries. Installing a flow meter without confirming real system conditions can result in operation outside its optimal range from the moment it is commissioned, and potentially meter failure.

When flow rates are too low, the flow meter may not achieve stable rotor rotation, leading to poor repeatability or intermittent pulse output. Conversely, excessive flow rates increase pressure drop across the flow meter and can accelerate mechanical wear or cause internal damage. Similarly, exceeding allowable pressure limits—particularly during transient events such as pump start-up, hydraulic shock, or pressure surges—can damage the measuring chamber or compromise seals. The correct approach is to confirm maximum and minimum flow rates, system pressure, temperature, and fluid properties during the design and installation stage, and to ensure pressure surges are mitigated using appropriate relief valves or surge suppressors where required.

Application reminder: Operating outside rated flow or pressure limits does not indicate a faulty flow meter — it indicates an incorrect installation or application.

Incorrect mounting orientation

One of the most critical installation errors is mounting the meter with the rotor shafts outside a horizontal plane. OM Series flow meters rely on correct rotor alignment to ensure even load distribution across internal bearings. When the flow meter is installed incorrectly, the weight of the rotors bears directly on the thrust bearings rather than being supported during rotation.



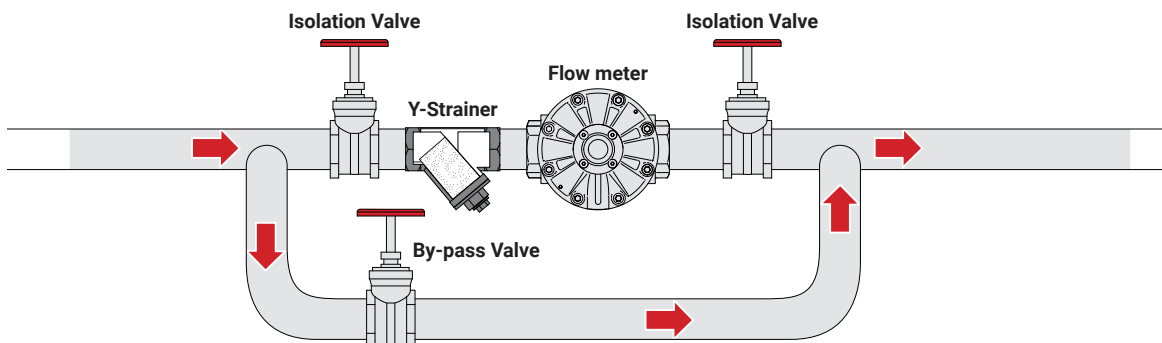
This error typically manifests first as reduced accuracy but progresses into accelerated bearing wear and, in severe cases, rapid mechanical failure. The solution is to mount the flow meter so the terminal cover or integral instrument display faces horizontally, regardless of whether the liquid flows vertically or horizontally. Maintaining the rotor shafts in a horizontal plane is essential for long-term reliability.

Installation note: Flow direction is not critical for pulse output flow meters, but rotor shaft orientation is always critical.

Poor piping design and air entrapment

Improper piping design that allows air to enter or remain trapped in the meter is a common source of measurement error. OM Series flow meters must remain completely full of liquid during operation. Installing the meter at a high point in the system, or routing piping in a way that creates air pockets, may cause intermittent air slugs to pass through the measuring chamber.

The presence of air leads to unstable readings, pulse irregularities, over speeding of the rotors and mechanical damage including possible disengagement of the rotors. A bypass and valve with isolation valves either side of the flow meter is the ideal installation to be able to bleed air from the line during start up.



Over time, this can shorten flow meter life and compromise accuracy. Correct installation places the flow meter below surrounding pipework and, in vertical runs, ensures flow travels upward through the meter. Locating the flow meter upstream of a control valve helps maintain back pressure and prevents air ingestion.

Best practice: Never operate the flow meter discharging directly into the atmosphere.

Inadequate filtration and straining

Failure to install appropriate upstream filtration is one of the most damaging installation mistakes. OM Series flow meters operate with tight internal clearances, making them vulnerable to contamination from solid particles. While small soft particles may pass without damage, hard particles of any size will cause abrasion and rapid wear.

This issue is particularly common during commissioning of new or modified piping systems, where weld slag, rust, or sealing debris may still be present. The resulting problems range from inaccurate readings to rotor seizure and irreversible measuring chamber damage. Installing a strainer directly upstream of the flow meter, sized according to the minimum mesh requirements specified for the meter model, is essential to protect internal components. Higher viscosity fluids will need a basket strainer due to the pressure drop.

Commissioning tip: Always flush the system before introducing flow through the meter.

Insufficient mechanical support

Another frequently overlooked error is inadequate mechanical support of the flow meter and connected piping. Larger OM Series flow meters, particularly 3" and 4" models, are not designed to carry the weight of surrounding pipework. Unsupported piping transfers mechanical stress into the meter body and flanges.

This stress can cause housing distortion, flange misalignment, leakage, and long-term structural damage that affects both accuracy and safety. The correct solution is to provide independent structural support for both the flow meter and the adjacent piping, ideally at the first flange on either side. The flow meter housing must never be used as a structural support point.

Rule of thumb: Support the pipework – not the flow meter.

Incorrect pipe sealing practices

Improper sealing of pipe connections is a common cause of early flow meter failure, particularly the use of PTFE tape on joints upstream of the meter. Loose fragments of tape can detach during installation and become entangled around the internal rotors, leading to jamming or erratic operation.

This problem often appears shortly after commissioning and may be misdiagnosed as a defective flow meter. The correct approach is to use a compatible liquid or paste thread sealant rather than PTFE tape on upstream joints. For plastic-bodied flow meters, excessive tightening of threaded fittings introduces high internal stress, which can crack the housing – damage that is not repairable and not covered by warranty.

Critical warning: Over-tightening plastic threads causes irreversible housing failure.

Poor electrical shielding and cable routing

Electrical installation errors are a major cause of unstable pulse output. OM Series pulse signals are susceptible to electrical noise if wiring is not correctly shielded and routed. Running signal cables alongside power cables, motors, pumps, or inductive loads introduces electromagnetic interference into the pulse signal. Power supplied to an OM flow meter should be through a regulated power supply isolated from other large current draws like pumps or generators.

This interference can cause false pulses, fluctuating readings, or apparent over-registration. Over time, the flow meter may

appear unreliable despite mechanically sound operation. The solution is to use twisted-pair, low-capacitance, shielded instrument cable, route signal wiring in dedicated conduits, and terminate the cable shield at the receiving instrument end only. Instrument cables should never share conduits with power wiring, and any unavoidable crossings should occur at 90 degrees. Where 24 Vdc power is available, we recommend using the hall effect sensor as it is a solid-state device not prone to electrical interference as a reed switch.

Electrical best practice: Shield grounded at one end only — never at the flow meter.

Failure to meet hazardous area installation prerequisites

Installing an OM Series flow meter in a hazardous area without meeting all certification and installation requirements is a serious error with safety implications. Hazardous locations require not only the correct flow meter certification—such as Flameproof (Ex d), Intrinsically Safe (Ex i), or Reed Only simple apparatus—but also strict compliance with wiring, earthing, temperature limits, and approved accessories.

Failure to meet these prerequisites can invalidate certification, breach regulatory requirements, and create ignition risks in explosive atmospheres. The correct solution is to confirm the flow meter’s zone rating, gas group, and temperature class match the installation and to follow applicable IEC, ATEX, ANZEx or FM standards. Certified cable glands, correct earthing, temperature control, and intrinsically safe barriers or isolators must be used where required, and installations must be carried out by competent personnel.

Safety reminder: Never install a plastic OM025P flow meter in a hazardous area due to static discharge risk.

Across all OM Series installations, adherence to manufacturer installation guidance is the single most important factor influencing accuracy, reliability, and service life. Most operational issues traced during fault finding are not due to flow meter defects but to preventable installation errors made during piping, wiring, or commissioning.

Correct installation protects the flow meter, the process, and the people operating it — ensuring the OM Series flow meters deliver the performance it was designed to provide.



[Pre-Commissioning Checklist](#)



[Post-Commissioning Checklist](#)