

What is the torque specification for Maretron's M-series fluid flow sensors?

***The Maretron M-series sensors do not have a specific torque specification. Refer to each sensors installation instructions for details regarding the integration of each flow sensor. ***

Please note the following excerpts below (6 & 7) found within each M-Sensors installation instructions. All Maretron Manuals can be obtained through this link: <https://www.maretron.com/support/manuals.php>

6. Use a liquid thread sealant on all pipe threads. Maretron has found a product: RectorSeal No.5 as a valid thread sealant for use with all M-Sensors. For more information use the following link: <http://www.rectorseal.com/index.php/rectorseal-no-5/> ****IMPORTANT**** Do **NOT** use Teflon tape.

The fittings should be tightened hand tight, then a further 1/2 to 1 turn. Do not over tighten. Systems should always be installed to applicable marine standards.

7. Extreme care must be taken when installing the sensor. Pipe strain or over tightening pipe connections can cause sensor damage.

8. To prevent damage to the sensor from entrapped air during initial commissioning or after maintenance, slowly fill the system with fuel (this will prevent damage caused by air purge). Failure to do this could damage the sensor. **NEVER** blow or send compressed air through the sensor as this may

over rev and damage the sensor.

An explanation and process can be found online such as the following overview:

*** Parker Hannifin Catalog 4300 Port End Assembly, page T7 :** "As a general rule, fittings with tapered pipe threads (NPT) should not be assembled to a specific torque because the torque required for a reliable joint varies with thread quality, port and fitting materials, sealant used, and other factors"



Leakage path through NPT threads shown at red points, shown in Example 1a. No matter how tight you make NPT threads, a leakage path still exists. It is the function of the sealant to block the path between the male and female thread.



Example 1a

There is no standardized method of tightening an NPT thread (tapered pipe thread). Your best bet is to follow the standards for your industry. What follows is a rather lengthy discussion of problems you might encounter using all of the commonly used methods. This will help keep you out of trouble when your "industry standard method" fails.

TORQUE:

In the aircraft maintenance industry the FAA often desires a torque value. This works fine until you use a NPT fitting that is out of spec and bottoms out in the boss before reaching torque; Or the fitting that still leaks even though you have applied the proper torque; Or you reach the specified torque and the fitting is pointing in the wrong direction. Torque is not always practical with NPT or ANPT fittings because of the wide differences in friction (material, pipe dope, Teflon tape). Torque will sometimes get you in trouble; understand its weakness and use other quality assurance methods along with torque.

FEEL:

Most screwed piping is tightened until it feels "right" and the fitting is pointing in the desired direction. What the experienced mechanic is often "feeling" is how the fitting is getting tight. Screw it into until it starts to seat. Then up the force a little by yanking. If each yank gives less movement, you probably have a sound joint. If the movement stops suddenly, you have probably bottomed out. The experienced plumber knows when to stop before he damages the fitting or boss. Caution is advised, tapered pipe fittings into an aluminum boss as excessive torque can crack the boss. This is especially true when using Teflon tape because the low friction of Teflon makes it easy to over-tighten.

NUMBER OF ROTATIONS:

Included in the standards for NPT threads and ANPT threads are engagement length, both straight and wrenched. For example, a 1/4 inch tapered pipe fitting should screw in 4.1 threads until finger tight (hand tight engagement), and 3 threads for wrench makeup. One problem is the wide variance in quality of the fittings and threads. Few 1/4 inch fittings screw in 4.1 threads before they reach finger tight. As a general guideline, after hand-tight engagement, tighten 2-3 full turns for sizes up to 1 inches for NPT thread fittings. You should have between 3.5 and 6 engaged threads. Any number outside of this range may indicate either under or over tightening of the joint or out of tolerance threads.

ASSEMBLY PROBLEMS:

Perhaps the most common fault a beginner makes is cross-threading the members and not realizing it. The male thread fitting needs to be aligned with the axis of the tapped hole. Rotation force should gradually increase with tightening.

Detected Leaks:

If you have observed any fluid leaking from the M-sensor fittings Maretron recommends to disassemble the 1/4 NPT fittings clean out any pipe sealant remaining within the female fitting of the M-sensor (use the sealant manufacturers recommended solvent) . Clean the 1/4 NPT threads you want to use with the M-sensor and reapply the proper amount of pipe doping, remember to not apply any pipe dope to the first 3 turns of the threaded NPT adapter, this will help ensure that sealant does not cause any issues with the

initial threading and alignment process.

Online URL:

<https://www.maretron.com/wp-content/phpkbv96/article.php?id=574>