

TripMate™ Notes



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A NEW GENERATION SENSOR

The TripMate is the next generation OMNI MSO sensor with enhancements in both packaging and electronics. Introduced in 1986, the OMNI MSO remained unchanged in packaging and design with over 10,000 units sold and many still providing reliable service.

Changes implemented in the TripMate were the result of listening to customer suggestions during the past 10 years and include:

- Smaller packaging to fit into tight spots.
- Two-wire hook-up works with all controllers.
- Intrinsically safe approval for Class I, Groups C&D locations.
- Simple mounting and hook up.

The TripMate incorporates all these user suggestions and more ...

WELL HEAD INSTALLATION

When installing the TripMate on the well head, care should be taken to ensure the pole pieces do not sit on bumps that allow the TripMate to rock or move relative to the mounting pipe. Paint chips, rust spots, welding residue and pipe wrench claw marks provide pivot points for the TripMate to rock or wobble. Using a flat file to remove bumps or move the Tripmate to a smoother pipe area is recommended. Another remedy is to place a glob of generic RTV silicone rubber on the pipe where the pole pieces seat. The RTV silicone rubber fills in around bumps on the pipe and holds the TripMate in place.

Use the O-ring provided with the TripMate to hold the sensor in place on the pipe. A nylon cable tie or screw type strapping clamp may also be used. Using electrical tape or no tie-down is not recommended.

PACKAGING

The TripMate's 1-1/4"H x 3/4"W enclosure can fit into tight spots between couplings. The spacing and height of the pole pieces can accommodate tubing sizes down to 1" diameter. The custom machined enclosure provides side hold-down mounts to allow use of an O-ring type rubber band attachment for quick, easy installation.

There are several good reasons for the use of the O-ring type of hold-down. Combined with the high strength magnet, the O-ring tension is sufficient to provide good mounting stability even on a vibrating well head. The O-ring is made of a special rubber that is resistant to drying and cracking under direct exposure to sunlight. Prior experience indicated users tended to over tighten metal straps and damage the magnetic pole pieces. The TripMate's O-ring mounting concept solves this problem.

TWO-WIRE HOOK-UP

The two-wire hook-up includes the feature of #6-32 screw terminals which eliminates repairs due to animals chewing on the hook-up wire. If a pigtail associated with other sensors gets damaged or chewed, the whole unit must be replaced. With the TripMate, the user simply replaces the damaged hook-up wire.

The #6-32 screw terminal feature also allows users to hook up the TripMate without having to splice wires together. Since wire splicing can lead to bad wire connections, the TripMate reduces problems due to sloppy installation practices. OKC provides a 4 foot hook-up wire segment with #6 spade lugs.

Lastly, the two-wire hook up works with any controller in much the same way as a Murphy gage. The TripMate is simple: there is just a high side and a low side connection.

HIGHER SENSITIVITY

Many users actually misapply strap-on plunger sensors by placing them high on the well head where vibration and noise from the catcher and bumper spring assemblies trigger the sensor when the plunger hits. In most cases, this will work, but there are many cases in which a loose bumper spring or slugging fluid will trigger the sensor before the plunger arrives.

The TripMate design reduces noise related triggering and improves the magnetic sensing of a metal object passing inside the tubing. The magnetic pole pieces are spread apart to give deeper penetration into the tubing. Since more brush plungers are being used these days, which means the metal mandrill is further away from the inside wall of the tubing, greater tubing penetration improves plunger sensing.

MOUNTING METHODS

Methods of mounting any arrival sensor need to accommodate both the user's requirement for simple, easy installation as well as meeting requirements for accurate sensing of the plunger. For best sensing results, the TripMate should be installed at a well head location where the plunger passes the sensor and not where the plunger stops after the arrival occurs.

The thickness of the metal the TripMate has to penetrate also makes a difference. The thinner the better – plunger arrival sensing is more reliable on the tubing below the lubricator rather than sensing through thicker wall material. This also assures that the TripMate sees a clean, complete plunger sensor trigger as the plunger passes the TripMate sensor. Mounting the sensor high on the well head reduces the TripMate's ability to reliably sense the plunger arrival.

TRIPMATE TESTING

The TripMate can be tested both in-circuit and out-of-circuit using a simple Volt-Ohm meter on the ohm or resistance measurement scale. The VOM's red (+) and black (--) leads are connected to the TripMate's + and – screw terminals.

TripMate's no trigger state will show an open circuit or infinite ohms on the VOM. Triggering the TripMate by moving it on the well head pipe or passing a metal object close to the pole pieces will show a short circuit or zero ohms on the VOM.

The TripMate trigger duration will vary according to the strength of the trigger signal: a short trigger for a weak signal and a long trigger for a strong signal. If the VOM does not show a change in the open or a short circuit condition with triggering, a problem exists with the TripMate.