THE MAGNETEL™ ROBOGAUGE™ LEVEL GAUGE 1" NPT INSTALLATION GUIDE

CAUTION*.

Read completely before attempting installation. These instructions are prepared to assist tradesmen and others familiar with liquid storage tank equipment. If you have any questions about installation or operation of Magnetel™ gauge, contact an authorized distributor for assistance.
To install this Magnetel™ it is necessary to have a tank opening to get into the tank to finish installation.
Before installing the gauge be sure the tank has been completely empty (drained), ventilated and vaporized. Clean and, if necessary, re-tap the female threads. Check coupling thread with a plug gage for correct dimensions. If coupling is damaged, or does not fit thread plug gauge, do not install the Robogauge™, but contact your authorized distributor, or Rochester Gauges for assistance.

**Materials and specification are subject to change without notice.*
Pressure rating subject to change due to temperature and other environmental considerations.

CONSTRUCTION & OPERATION.

Magnetel™ liquid level gauge is designed for centerline mounting on mobile or storage tanks. The materials used in the construction are carefully selected for compatibility with the liquid to be gauged so you can expect the unit to provide many years of trouble-free service.
Magnetel™ gauges are operated by liquid displacement of a float bulb attached to a counter-balance float arm. The counterbalance has been adjusted so the float will be half-submerged in tank´s liquid.
The main gear at the pivot point drives a pinion gear attached to a center shaft. The 2.2:1 gear ratio converts the 140° float arc to 308° of dial arc. A drive magnet attached to the end of the center shaft under the gauge head, couples with a dial pointer magnet through the solid, non-magnetic head to move a pointer around a dial, usually graduated in percent of tank volume. The limits of measurement are 5% to 95% or 3% to 97% of tank volume.

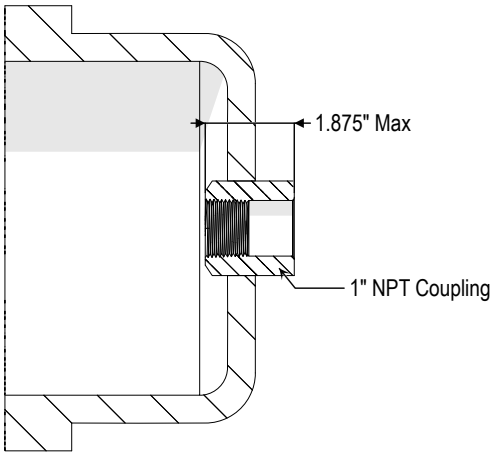
ACCURACY PRECAUTION.

Before installing your Magnetel™ gauge, be sure it fits your tank properly. Check the length of the float arm by measuring from the pivot point to the center of the float bulb. For dial measurement from 3% to 97%, this dimension should be .465 times the inside diameter of the tank, and for dial measurement from 5% to 95%. This dimension should be .428 times the inside diameter of the tank.
Before filling the tank, be sure the gauge moves freely inside. Many storage tanks contain dip pipes, baffles, or other obstructions which may interfere with free movement of the gauge float arm, preventing proper performance.
Accurate measurement of Liquefied-Petroleum Gas, LP Gas, or anhydrous ammonia, NH_3, requires converting a volume measured at an observed temperature to the volume at a standard base temperature of 60° F, LP Gas is usually a mixture of propane, butane and possibly other gases, so the conversion factor is usually determined from a chart when the specific gravity of the LP Gas is at 60° F is known.

ATTACHMENT TO TANK.

These gauges are installed in the tank using a 1" NPT coupling which has previously been welded to the tank. Any coupling used must conform to Rochester Machining Standard MS 508. Apply appropriate pipe thread compound to gauge mounting threads. The Magnetel™ must be installed with its axis aligned with the tank's axis. This enables the installed gauge to be exactly horizontal and provide accurate gauge readings.

Coupling maximum length will be 1.875".



CAUTION.

NEVER EXCEED THE MAXIMUM PERMITTED FILLING DENSITIES as given in NFPA pamphlet 58, Standard for the Storage and Handling of Liquefied Petroleum Gasses.
FIRE HAZARD WARNING. A hazard of fire or explosion may exist if proper methods are not used with installing or removing gauges from vessels containing pressurized liquid or gas, flammable gas or liquids, oxidizers, NH_3 or LP Gas.

WARNING.

The gauge is not a substitute for a fixed or adjustable liquid level gauge which may be required for filling. Do not use gauge for filling.
Improper installation or use of this product may cause serious injury or property damage.
Verify that the tank is safety evacuated, ventilated and safe for entry. See OSHA's standard (29 CFR 1910.146) concerning confined spaces or refer to other recognized procedures for confined spaces.

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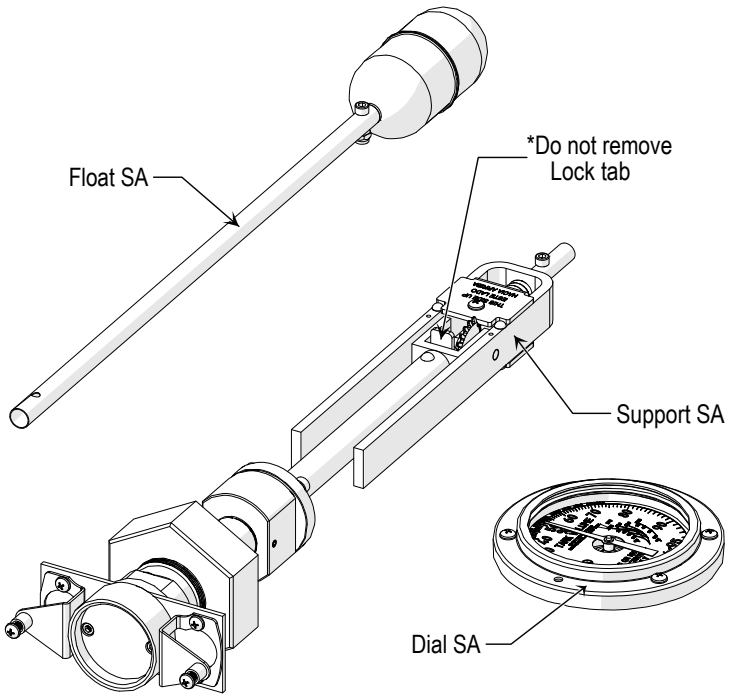
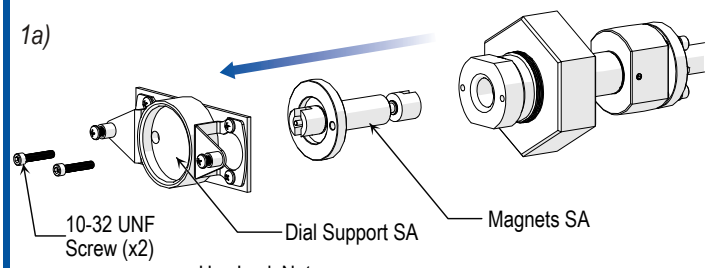
MAGNETEL™ COMPONENTS.



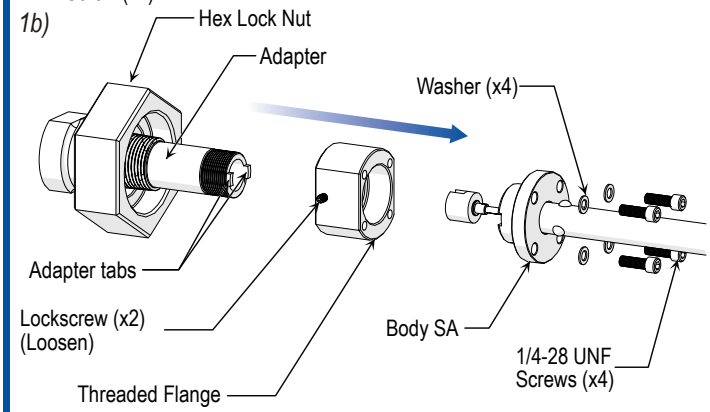
INSTALLING THE GAUGE.

1. Unscrew and disassemble components as shown.

1a)

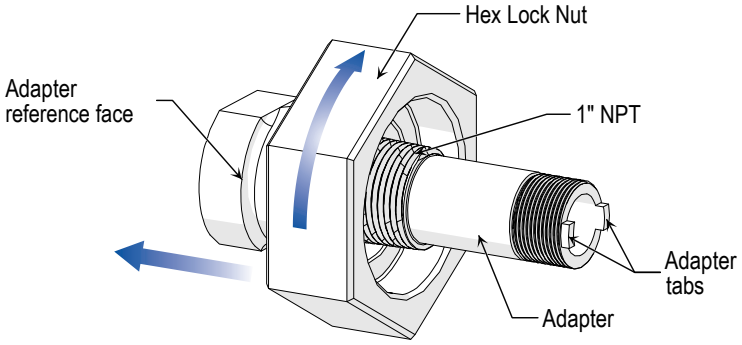


1b)

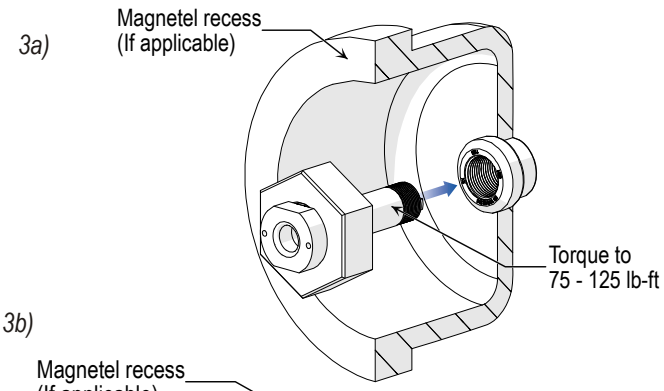


Disassemble Sequence

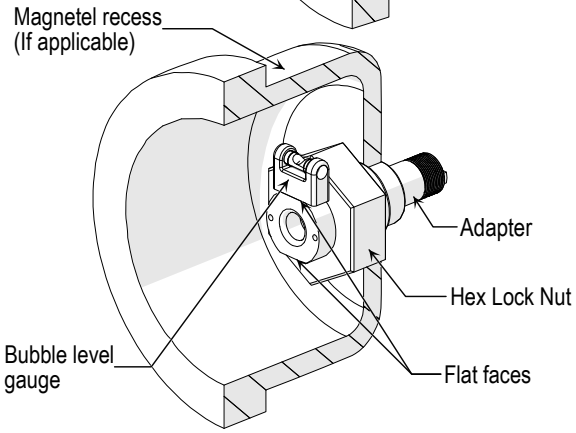
2. Screw hex lock nut as near as possible to adapter face. Apply three wraps of Teflon tape or other suitable thread sealant to 1" NPT thread.



3a)



3b)



3. Screw the adapter to tank coupling and torque to 75 - 125 lb-ft. **Do not over torque.** Over torque may cause damage to adapter thread.
Once torqued, align adapter using a bubble level to align any of the flat faces of the adapter in horizontal position as shown.

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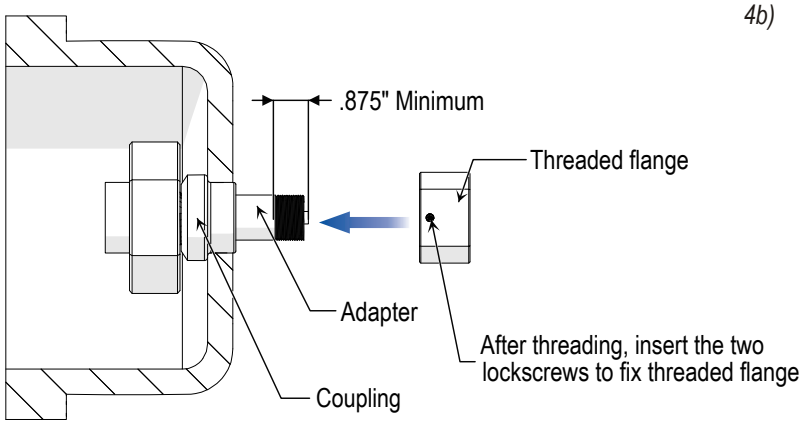
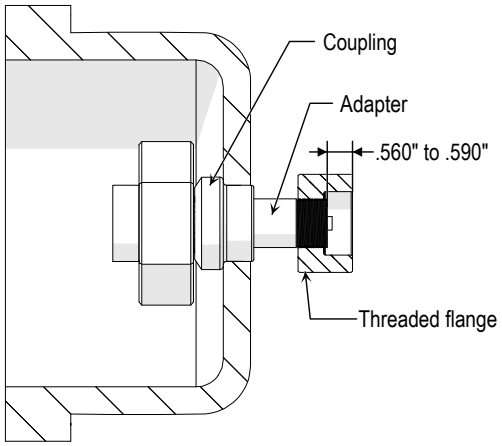
4. Get into the tank and make sure you have .875" minimum free length starting from adapter tabs to ensure assembly of threaded flang. Then, assemble threaded flange to adapter so that the distance between adapter and threaded flange is .560" to .590".

4a)

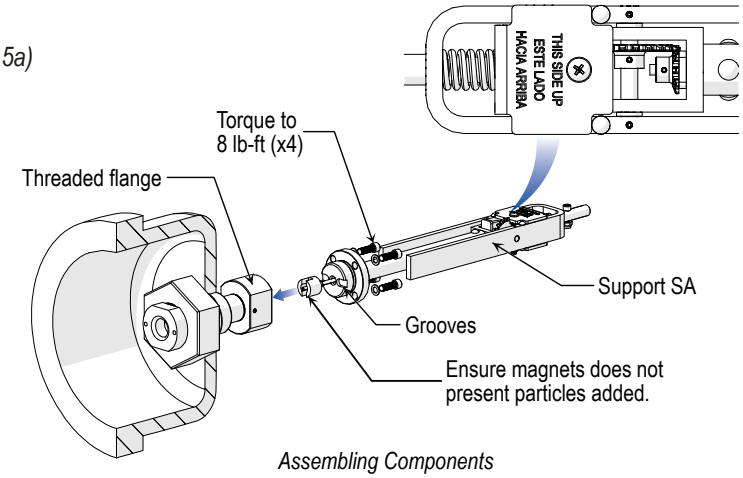


4b)



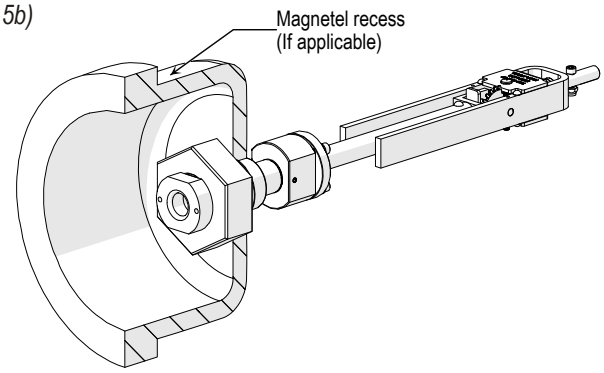
5. Assemble Support SA by aligning support grooves with adapter tabs and be sure Support SA is in the position shown. Use the four 1/4-28 screws to secure Support SA to the threaded flange. Insert screws using a cross pattern and torque to 8 - 10 lb-ft each screw.

5a)



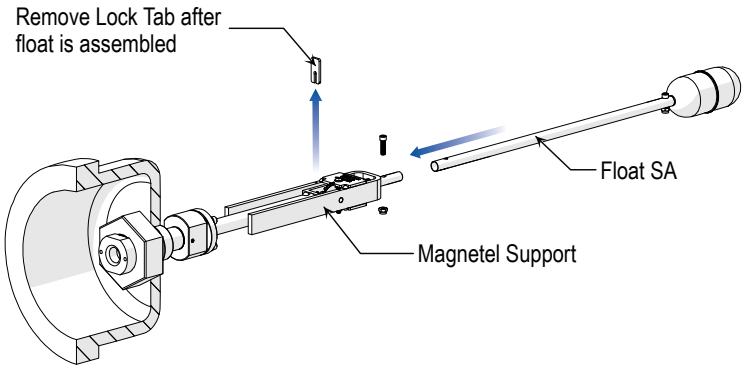
Assembling Components

5b)



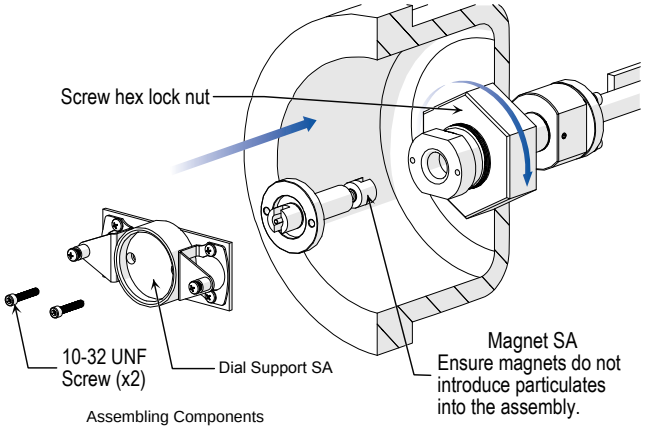
Magnetel Support assembled

6. Assemble Float SA and just then remove lock tab as shown.



Assembling Float SA

7. Assemble components as shown.



Assembling Components

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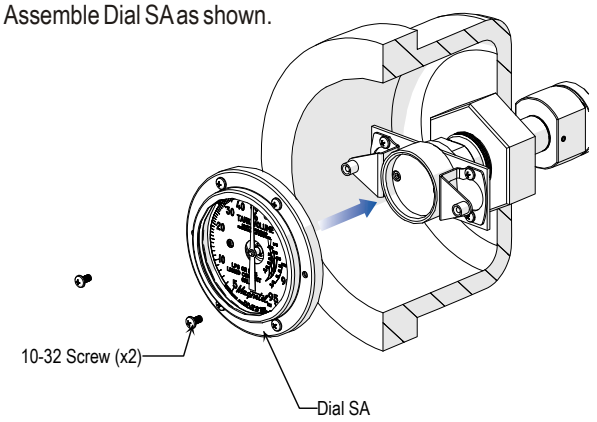
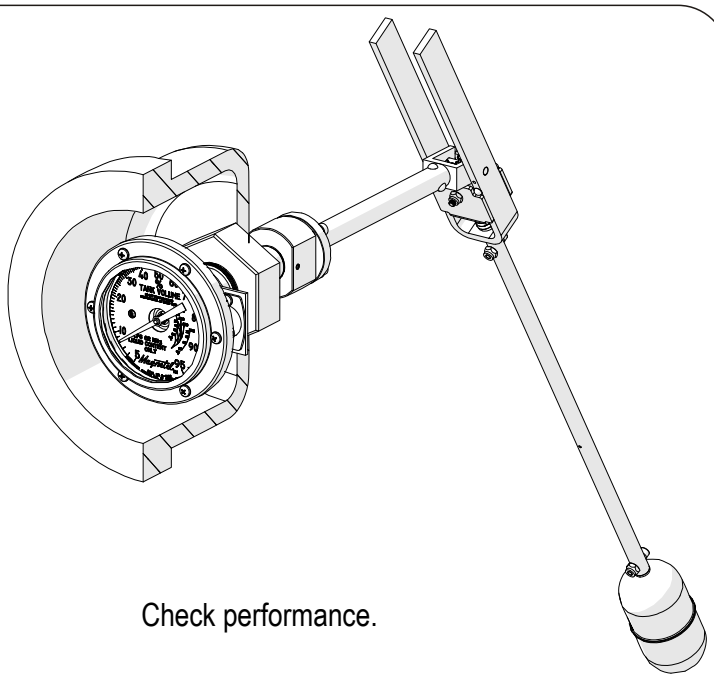
8. Assemble Dial SA as shown.



9. Make sure the float will fall under its own weight by moving the float arm slowly through its range to detect any binding or restriction. The dial pointer should move slightly past the extreme ends of the dial scale when the float arm reaches the limits of its travel. Make sure it is calibrated properly by aligning the float arm with the support arm. The gauge should then read 50% and be at the 12 o´clock position.



Check performance.

TROUBLE SHOOTING

SYMPTOM	LOOK FOR:
Gauge not reading at low extreme when installed in empty tank.	• Float striking obstructions such as dip pipes or baffles. • Float or counterbalance striking tank wall. - Incorrect gauge. • Float not dropping under its own weight. - Defective gauge. • Float arm too short for counterbalance. • Magnets SA obstructed.
Gauge continues reading at low extreme when tank is full.	• Obstruction on tank bottom. • Float improperly counterbalanced for liquid being gauged. Order correct gauge. • Float leaks and is filled with liquid - Replace float. • Magnets SA obstructed.
Gauge indicator staying at some midpoint regardless of liquid level.	• Float hung not allowing float to follow liquid level - Defective gauge. • Float partially sunk due to leakage or improper counterbalancing - Replace float or gauge. • Dial pointer is stuck due to damage or corrosion - Replace dial. • Incorrect or modified float arm installed on gauge - Replace float arm or gauge. • Magnets SA obstructed.
Gauge indicating liquid inaccurately.	• Gauge not fitting tank. Order right gauge. • Mounting coupling not aligned with tank axis. • Tank is not level. • Liquid - temperature volume changes not accounted for. • Magnets SA obstructed.
Gauge face not straight on tank.	• Adapter aligned improperly.

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