

The following instructions are recommended for proper installation of MGM's standard model 275 magnetic gauging devices that incorporate a standard tongue and groove or raised face flanged body style. For additional installation instructions on non-standard MGM gauges built to other customer specifications, consult MGM.

This MGM model 275 magnetic gauging device includes the following assembly components:

<u>ITEM #</u>	<u>DESCRIPTION</u>	<u>PART #</u>
1	Float Assembly	275-2
3	Guide Tube	275-5
4	Top Spring	275-5-7
4A	Bottom Spring	275-5-4
5	Body	275-3-1
5A	Specific Gravity Adjustment Bushing	275-3-6
9	Flange	275-3-17 (Other Options available)
10	Gauge Rod	275-4
12	Top Housing	275-1
-	Instruction Placard	275-1-6

When unpacking gauge from shipping containers, leave float (#1) and gauge rod (#10) in their containers until actual installation on the cover plate. The magnets on the gauge rod and inside the float (#1) are very powerful and will readily attract metal fillings. Care should be taken to avoid nicking, gouging or bending of stainless steel guide tube (#3).

SUGGESTED PROCEDURE FOR INSTALLATION OF GUIDE TUBE: The hole through the manway cover plate must be 1 3/16" minimum (1 1/4" diameter is preferred) to permit gauge rod magnet to clear & enter the guide tube (#3). If the hole through the pressure/cover plate is undersized, it must be reamed out. Refer to current issue of A.A.R. Tank Car Manual M-1002, Appendix E, Figure E 19.10 for approved typical mounting.

Position top end of 1 1/2" O.D. guide tube (#3) at a 90° angle to the socket hole of cover plate. Tack weld the tube in place with approximately 1/16" gap between top of guide tube and cover plate. Check alignment with a square. If the manway cover plate socket hole for the gauge is more than 1.53" diameter, be sure the guide tube is centered in the socket. This is to insure the gauge rod (#10) & magnet assembly will enter the guide

tube without interference. After alignment, check weld guide tube with bevel and fillet weld using stainless steel welding rod such as AWS E-309 or equal. (See M-1002 Appendices A 4.17 & W 15.0). **NOTE: THE WELD MUST NOT BE UNDERCUT.**

MGM DOES NOT RECOMMEND a threaded connection between guide tube and pressure plate.

Remove float (#1) from shipping carton and slide float onto guide tube (#3) with the end of the float that is marked "TOP" facing up toward pressure/cover plate. The float must travel freely along the entire length of the guide tube and must be prevented from touching any part of the tank or other structural members of the pressure plate assembly. A minimum 1/2" clearance around the float is required.

For most applications, MGM will position and weld the top spring (#4) at the top of the guide tube (#3) based on dimensions supplied by purchaser prior to shipment from the factory. For certain retrofit applications, the company installing the gauging device in the car will have to position and weld the top spring (#4) to the guide tube. For these applications, keep in mind that the spring has a solid or

compressed height of 1". The placement of the spring (in its fully compressed position) should be such that the float will not impact against any solid metal tank member. An additional 1/2" clearance in the positioning of this top spring (#4) is recommended.

NOTE: Proper bracing of the guide tube (#3) to the piping of the cover plate assembly should be done according to tank car builder/owner requirements.

MGM does NOT recommend welding of guide tube to the bottom tank car bracket. It is recommended that a collar or bushing be welded to bottom of bracket that will hold guide tube in place and will also allow flex of tube to help overcome surge effect problems. MGM can provide such collars if required.

With top spring (#4) & float (#1) in place on the guide tube (#3), slide bottom spring (#4A) onto the guide tube towards the float. The bottom spring (#4A) sets on a bracket provided by the car builder.

NOTE: During the welding process, move float as far away as possible on the guide tube to avoid heat damage to float.

As a final check, move float up and down along the entire length of guide tube travel area to make sure float travels freely.

Carefully position gauging device body (#5) and flange (#9) to pressure/cover plate.

CAUTION: DO NOT INSTALL HOUSING SEAL O-RING (#14) ON BODY (#5) UNTIL FLANGE (#9) HAS BEEN INSTALLED. ATTEMPTING TO INSTALL FLANGE WITH O-RING IN PLACE ON BODY WILL CAUSE DAMAGE TO O-RING.

Remove gauge rod (#10) from protective shipping sleeve and remove plastic protective packing from gauge rod magnet at end of rod.

NOTE: DO NOT REMOVE HEAT SHRINK TUBE FROM ROD MAGNET WITHOUT CONSULTING MGM.

Examine gauge rod magnet to insure that there are no metal filings, etc. clinging to it. Gently remove the SGAB (#5a) and insert gauge rod (#10) into guide tube (#3). Gently replace the SGAB (#5a) over the gauge rod and secure in place.

When body and flange are bolted into place, the gauge rod (#10) should extend approximately ONE inch (1") above specific gravity bushing (5a) at top of body. If gauge rod extends more than ONE inch, contact engineering or MGM for further instructions.

The MGM gauging device has been designed, built & calibrated at the factory in accordance with dimensions supplied by purchaser. A final check of dimension "A" on installation drawing should now be done. Measure from inside top of tank to the top of manway cover plate. If this does not equal the "A" dimensions on installation drawing, notify engineering for further instructions.

CAUTION: MGM GAUGES ARE FACTORY SET FOR LEVEL GAUGING BASED UPON DIMENSIONS SUPPLIED BY AND APPROVED BY PURCHASER PRIOR TO PRODUCTION AND SHIPMENT TO CUSTOMER. ANY CHANGES MADE TO THIS SETTING BY ADJUSTMENT IN THE "INSTALLATION CORRECTION NUT" SUBSEQUENT TO RECEIPT ARE THE RESPONSIBILITY OF THE PURCHASER. TACK WELDING OF THE "INSTALLATION NUT" (ITEM #6) AND SET SCREW IS THE OPTION OF THE BUYER. IT IS RECOMMENDED THAT THE SET SCREW "ONLY" BE TACK WELDED. WELDING OF INSTALLATION NUT TO BODY WILL CAUSE DAMAGE TO THREADS ON BODY.

After the gauging device is fully assembled and in place, it should be checked for leaks. The gauging device body (#5) has 2" straight thread on it. Attach an approved coupling to the body, (coupling can be provided by MGM if desired) and introduce dry air into unit. Follow standard leak detection procedures as required by your company. Check body mounting, guide tube weld, and all other joints for leaks. Report any leaks to the proper company personnel.

Check top housing (#12) by placing it on the gauge body (#5). Make sure that when hand tight, housing does not contact gauge rod (#10).

If gauge assembly is to be painted, place masking tape over stainless steel tag on flange (#9). Preservation of the serial number on tag is very important for future reference. Included in the shipping crate is an envelope containing an operating instruction placard. At least one placard should be applied for each gauging device installation on the inside of the manway cover plate housing or dome lid where it can easily be read. To install the placard, clean off the selected mounting surface in

accordance with your company procedure, then peel back the protective paper that protects the adhesive backing of the placard. Apply the placard and smooth it down and ensure that all edges are fully bonded to the metal. If this area is to be repainted, mask the instruction placard to preserve the instructions.

If the cover plate assembly with all the education piping, gauging device, valves and other fittings, is placed on the ground at any time, make sure that the gauging device assembly is not positioned on the underside acting as a support for the entire cover plate assembly.

NOTE: The gauging device must be protected at all times during this process and the float must not be nicked, dented or contact the ground in any way. The float and magnets can easily attract metal filings that will affect the operation of the gauging device.

When the manway cover plate assembly is lowered into the tank, take great care to ensure the float does not hit the side of the manway nozzle as it goes into the tank since the outermost edge of the float extends more than 9" from the center of the cover plate and a straight vertical drop installation will result in the float hitting the manway nozzle.

Always contact MGM Tank Car with any questions regarding the above.