Magnetic Level Gauges (JMG)
External Chambers (JXC)

Installation, Operation, and Maintenance Manual

MAGNETIC LEVEL GAUGES (JMG) EXTERNAL CHAMBERS (JXC)

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MAGNETIC LEVEL GAUGES (JMG) EXTERNAL CHAMBERS (JXC)

1.0 INTRODUCTION

1.1 Components

1.1.1 JMG Magnetic Level Gauge

Model JMG Magnetic Level Gauges consist of at least 3 components: float chamber, indicator, and float.

Float Chamber: ASME compliant pressure vessel constructed of a non-magnetic material that houses the internal float.

Float: Floats on the liquid level. Includes magnets to actuate the external level indication. *Figure 1.1A*

Indicator: Magnetic bargraph or shuttle that indicates the magnet location and liquid level. *Figure 1.1B*

1.1.2 JXC External Chamber

Model JXC External Chambers are bridles used to house instruments including but not limited to guided wave radars, direct-insertion magnetostrictive level transmitters, capacitance probes, tuning forks, etc. This allows the instrument to be isolated from the process vessel for maintenance or recalibration. *Figure 1.1C*

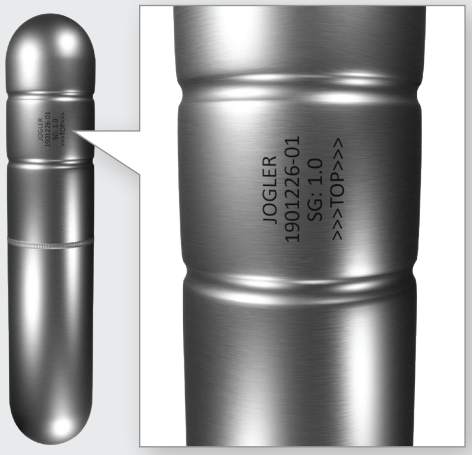

Figure 1.1A:
Above: Float with serial number location.

Left: Internal magnet assembly.

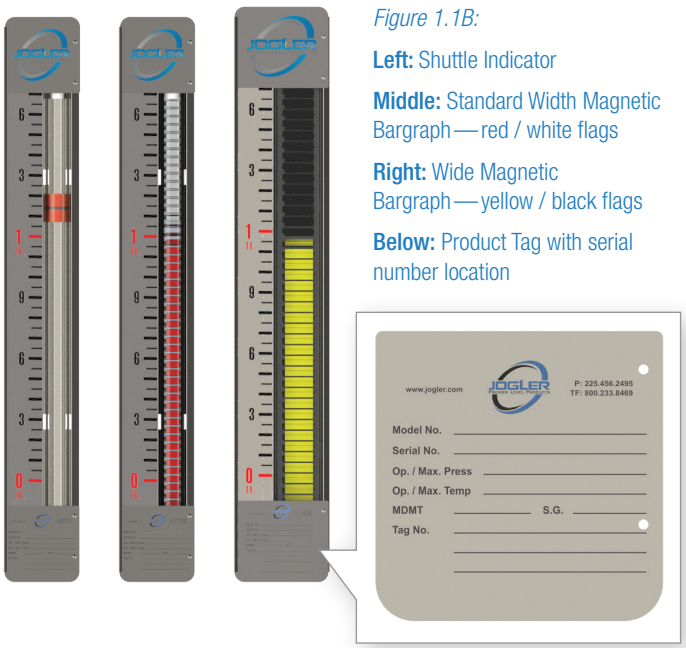

Figure 1.1B:

Left: Shuttle Indicator

Middle: Standard Width Magnetic Bargraph—red / white flags

Right: Wide Magnetic Bargraph—yellow / black flags

Below: Product Tag with serial number location

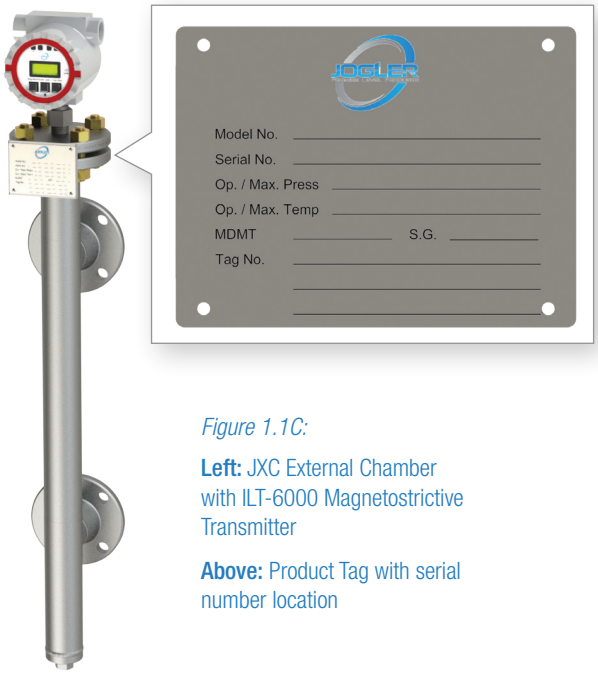

Figure 1.1C:

Left: JXC External Chamber with ILT-6000 Magnetostrictive Transmitter

Above: Product Tag with serial number location

1.2 Principle of Operation

The float chamber is directly connected to the process vessel and is full of process liquid at the same elevation as in the vessel. Within the float chamber is the internal float. The float is designed to float on the process liquid between 70 and 80% submerged. The magnet assembly is located at the liquid interface and moves up and down when the liquid level rises and falls. The indicator assembly consists of a glass or polycarbonate tube, magnetic bargraph or shuttle indicator, and stainless steel ruler. The components are housed in a stainless steel scale channel and are mounted to the float chamber.

The magnets in the float either flip the magnetic bargraph flags from one color to another or attract the shuttle to indicate liquid level in the gauge and the process vessel. The float magnets can also actuate an MGT Magnetostrictive level transmitter (for a continuous 4-20 mA output) and JS10/30 or JP-450 point level switches (for switch outputs).

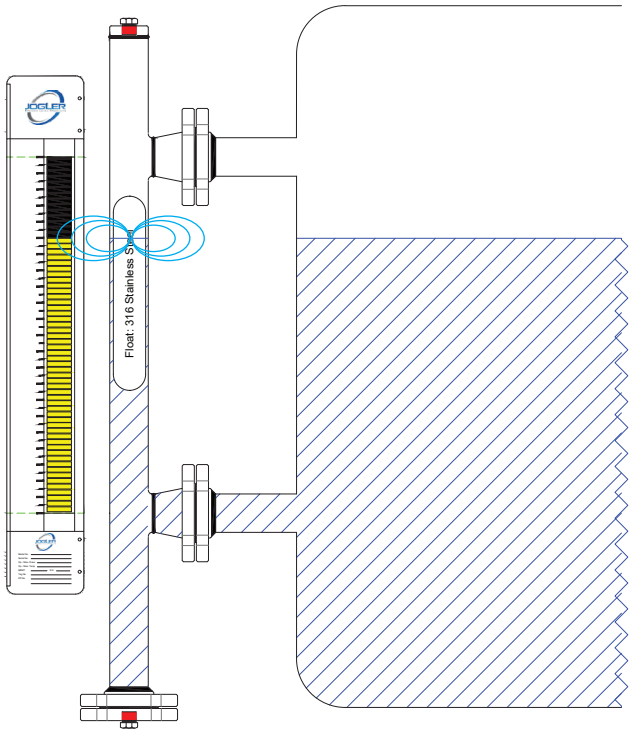

Figure 1.2: JMG (Side Mount)

2.0 INSTALLATION

2.1 Incoming Inspection / Unpacking

Inspect the packaging for any obvious damage. If the packaging is damaged, do a thorough inspection of the packaged items for damage. If necessary, reject the shipment and file a claim with the shipping carrier.

Carefully unpack the gauge/chamber from the crate. Inspect all units for damage including but not limited to the indicator, flange faces, and accessory components. Report any damage to the shipping carrier within 24 hours. Verify center to center and other critical dimensions with the vessel's dimensions. Check serial numbers for future reference when ordering spare parts. (See section 1.1 Components for nametag locations)

****Do not discard the crate until all items are checked and verified**

2.2 Standard Installation

JMGs and most JXCs come fully assembled from the factory with flanges fully torqued. Once unpacked, the gauge only needs to be made up to vessel connections before start-up. If the gauge is going to be hydrotested, remove the float prior to testing.

****Float damage can occur if chamber is pressure tested with float installed**

Mount the chamber to the vessel's process connections with appropriate hardware/gasket for flanged connections and anti-seize thread dope for threaded connections. Isolation valves are recommended (but not required) for installation between the chamber and vessel.

2.3 Tank Mount Installation

A top mount JMG can be installed as one complete unit into the top of the vessel. Take care to ensure that the float is inserted vertically in the vessel so that the magnet pack extension tube does not get bent.

If the float / magnet pack needs to be removed, the magnet pack retaining snap ring and Teflon disc can be removed from the bottom side of the mounting flange.

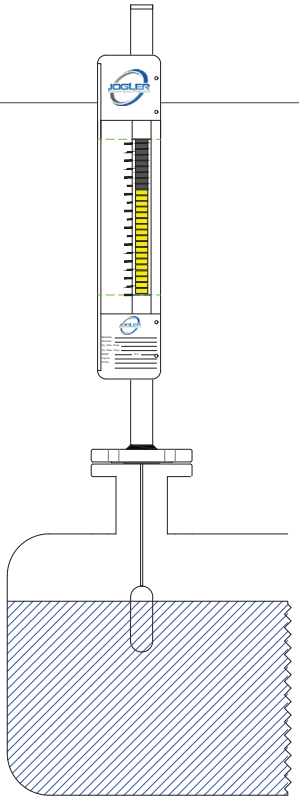

Figure 2.3: JMG (Top Mount / Tank Mount)

2.4 Start Up

Slowly increase system pressure either by vessel pressure control or slowly throttling isolation valves. If the vessel is already at pressure, the top isolation valve must be slowly opened to allow pressure to equalize between the vessel and the gauge chamber. Once pressure has equalized, the bottom isolation valve can be slowly opened. Inspect the chamber for leaks, especially through threaded or flanged connections. Verify that the indicator accurately reflects the level in the vessel.

****If the indicator is consistently giving low readings it is possible the float was reinstalled upside down. Verify that the markings on the float point in the correct direction**

2.5 Accessory Installation

2.5.1 High Temperature Insulation Blanket Installation

Factory-installed high temperature insulation blankets are fastened to the chamber with Velcro straps and are removable. Optional flange covers are also available as well.

If the gauge is to be field insulated, switches and transmitters must be mounted outside of the insulation to protect sensitive components from excessive temperatures. Jogler recommends the purchase of factory-installed insulation blankets.

2.5.2 Cryogenic Insulation Installation

Cryogenic insulation is permanently fixed to the chamber and cannot be removed without permanent damage to the insulation. The indicator used with cryogenic insulation is a wide bargraph with a frost extension to eliminate frost buildup on the indicator tube while allowing maximum visibility. Care must be taken when installing a cryogenic gauge to protect the insulation and aluminum jacket.

Cryogenic insulating in the field should not be done.

Figure 2.5.2:
JMG with MGT-6000 and Cryogenic Insulation

2.5.3 Steam Trace Tubing Installation

Steam trace tubing is available as a factory installed option typically used in conjunction with a high temperature insulation blanket. Standard tubing is 3/8" x 0.035" 316/L. Typical installation is 2 steam trace tubes installed as per *Figure 2.5.3.*

Compressed air should be used to ensure that no foreign material is present in the tubes. Standard compression fittings may be used to mate with the steam trace tubing.

****Do not exceed applicable pressure rating for the tubing size/thickness.**

Apply steam to the tubing and check for leaks.

2.5.4 Electric Heat Tracing Installation

Electric heat tracing is available as a factory installed option typically used in conjunction with a high temperature insulation blanket. Electric heat trace cable is supplied as per customer electrical and heating requirements.

Self regulating heating cable comes with bare wire leads to be terminated in the field. Electric heat tracing with a thermostat can be wired in the field to the terminal block on the particular thermostat installed. See thermostat manufacturer's installation documentation.

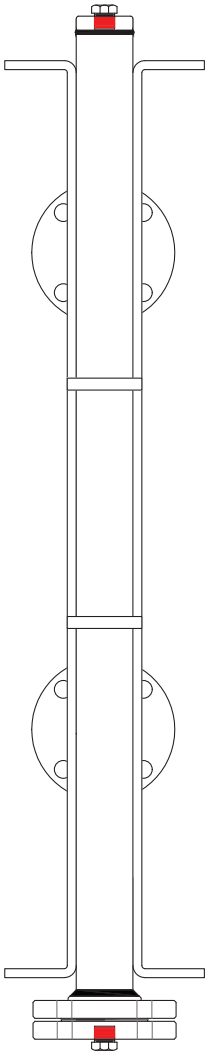

Figure 2.5.3:
Steam Trace Tubing Installation

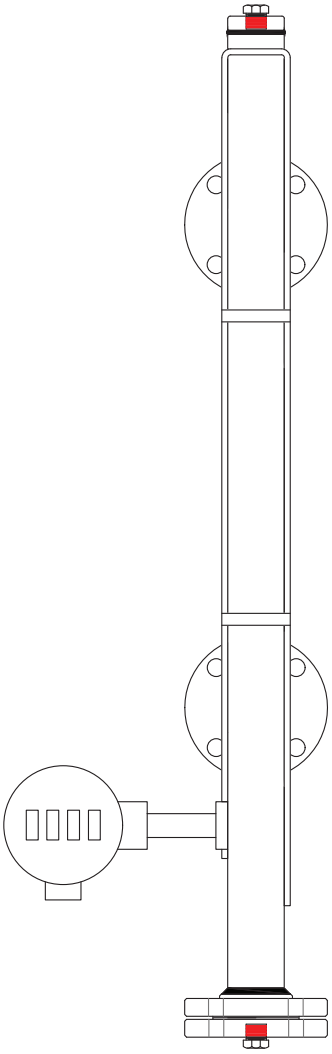

Figure 2.5.4:
Electric Heat Trace Installation

3.0 REFERENCE INFORMATION

3.1 Troubleshooting

3.1.1 Indicator Decoupling

– Float was installed upside down (only applicable for shuttle indicator)

– Indicator assembly is not secured tightly to the chamber. Tighten indicator clamps.

– Chamber has guide rods and the indicator has been moved from its factory installed location. Consult approval drawing for proper indicator location.

3.1.2 Float sinks, sticks, or is damaged

– Process specific gravity is lower than was specified at the time of order. Identify the true specific gravity and consult the factory.

– Magnetic particles or fouling has built up on the float, increasing its weight. Identify the source of buildup and consult the factory. A magnetic particle trap can be installed in the process connections to eliminate magnetic particles. Teflon coating can be applied to the float to eliminate process fouling buildup.

– Corrosion-induced pinholes caused the float to fill up with liquid and sink. Check compatibility between float material of construction and process liquid / impurities and consult the factory.

– Magnetic materials are in close proximity to the chamber attracting the float to a certain location. Verify that no carbon steel or other magnetic materials are close to the chamber. Confirm that no clamps have been added to the chamber that are constructed from carbon steel.

– If the float is crushed, confirm that the MAWP on the gauge tag has not been exceeded. Do not hydrotest the float chamber to 1.5X flange rating with the float installed.

3.2 Spare Parts

– To order spare parts consult the factory on which replacement parts and for which serial number unit.

4.0 WARRANTY / RETURN MATERIAL AUTHORIZATION (RMA)

4.1 Warranty Policy

5 YEAR WARRANTY FOR:

JMG Series Magnetic Liquid Level Gauges and JXC External Chambers

1 YEAR WARRANTY FOR:

MGT-6000 and ILT-6000 Magnetostrictive Liquid Level Transmitters, JS Series Point Level Switches, LLT-1000 Laser Level Transmitters, and Traditional Glass Flow and Level Indicators.

SPECIAL WARRANTY CONSIDERATIONS:

Jogler will repair or replace, at Jogler's election, defective items which are returned to Jogler by the original purchaser within the period specified above from the shipment date of the item and which is found, upon examination by Jogler, to its satisfaction, to contain defects in materials or workmanship which arose only under normal use and service and which were not the result of either alterations, misuse, abuse, improper or inadequate adjustments, applications or servicing of the product. Jogler's warranty does not cover or repair units that fail from the effects of excessive vibration. In addition, Jogler's warranty does not include on-site repair or services. Field service rates can be supplied upon request.

If a product is believed to be defective, the original purchaser shall notify Jogler and request a Returned Material Authorization before returning the material to Jogler, with transportation prepaid by the purchaser. (To expedite all returns/repairs from outside of the United States, consult Jogler customer service team to determine an optimal solution for shipping method and turnaround time.) The product, with repaired or replaced parts, shall be returned to the purchaser at any point in the world with transportation prepaid by Jogler for best-way transportation only. Jogler is not responsible for expediting shipping charges.

If inspection by Jogler does not disclose any defects in material or workmanship, Jogler's normal charges for repair and shipment shall apply (minimum $250.00 USD).

The materials of construction for all Jogler products are clearly specified, and it is the responsibility of the purchaser to determine the compatibility of the materials for the application.

THE FOREGOING WARRANTY IS JOGLER'S SOLE WARRANTY AND ALL OTHER WARRANTIES EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICLAR PURPOSE, ARE EXCLUDED AND NEGATED TO THE MAXIMUM EXTENT PERMITTED BY LAW. NO PERSON OR REPRESENTATIVE IS AUTHORIZED TO EXTEND ANY OTHER WARRANTY OR CREATE FOR JOGLER ANY OTHER LIABILIITY IN CONNECTION WITH THE SALE OF JOGLER PRODUCTS. THE REMEDIES SET FORTH IN THIS WARRANTY ARE EXCLUSIVE OF ALL OTHER REMEDIES AGAINST JOGLER. JOGLER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR SPECIAL DAMAGES OF ANY KIND. JOGLER'S SOLE OBLIGATION SHALL BE TO REPAIR OR REPLACE PARTS (FOUND TO BE DEFECTIVE IN MATERIALS OR WORKMANSHIP) WHICH ARE RETURNED BY THE PURCHASER TO JOGLER.

4.2 RMA Policy

RETURNED MATERIAL POLICY

When material is returned from a customer for repair, an RMA (Returned Material Authorization) number must be obtained from customer service. The RMA number should be clearly identified on the outside of the return packaging and the name and phone number of a contact person should be included with the returned material.

If a gauge or level instrument has been used in a process, then it must be thoroughly cleaned and a MSDS (Material Safety Data Sheet) for the process fluid must accompany the shipment. Jogler reserves the right NOT to accept returned materials that do not conform to these requirements.

RMA# _____

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SALES@ADAPTIVEIND.COM | WWW.ADAPTIVEIND.COM

**** READ BEFORE COMPLETING BELOW FIELDS ****

Return Material Authorization (RMA) Number must be on either the shipping label or the package itself to the attention of: Jogler Customer Service. A copy of this form must be printed and included with the shipping documents. If the returned product has been in contact with potentially hazardous chemicals, due to federal regulations, evidence of decontamination and documentation of chemical composition and properties must be provided. Recommended items to be enclosed with shipment include Material Safety Data Sheets and decontamination tags. Failure to adhere to the above may delay repair/replacement regardless of any lead times stated by Jogler, LLC.

RETURN AUTHORIZATION FORM

Customer:_____ Date:_____

Contact Name:_____ Product:_____

Contact Phone:_____ Serial No:_____

Contact Email:_____ Tag No:_____

Contact Fax:_____ Service Rep:_____

COMPLETED BY CUSTOMER

Reason for Return:_____

_____

Carrier:_____ Account No.:_____

Is expedited return shipping required? ☐ Yes ☐ No

If 'yes' was selected, provide a purchase order or your preferred shipper's account number (ex: UPS/SAIA). Jogler, LLC pays return shipping on Jogler's account using standard ground shipments only. If purchase order is issued, please include a copy with the return shipment documents.

If repair/replacement is determined to be non-warranty, does Jogler, LLC have authorization to proceed with repairs? ☐ Yes ☐ No

If 'yes' was selected, a purchase order must be included with return documentation.

PO Number:_____ Date:_____

Has product been in contact with any potentially hazardous chemical? ☐ Yes ☐ No

RETURN PRODUCT TO:

Shipping Address:

_____

_____

_____

Billing Address:

_____

_____

_____

CONTACT US

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