

## Liquid Mixing Manifold (LXM) Visual Position Indicator Issue

### Issue

The Visual Position Indicator (VPI) on some LXM actuators may remain in the “Open” position when the actuator returns to the “Closed” position.

### Description

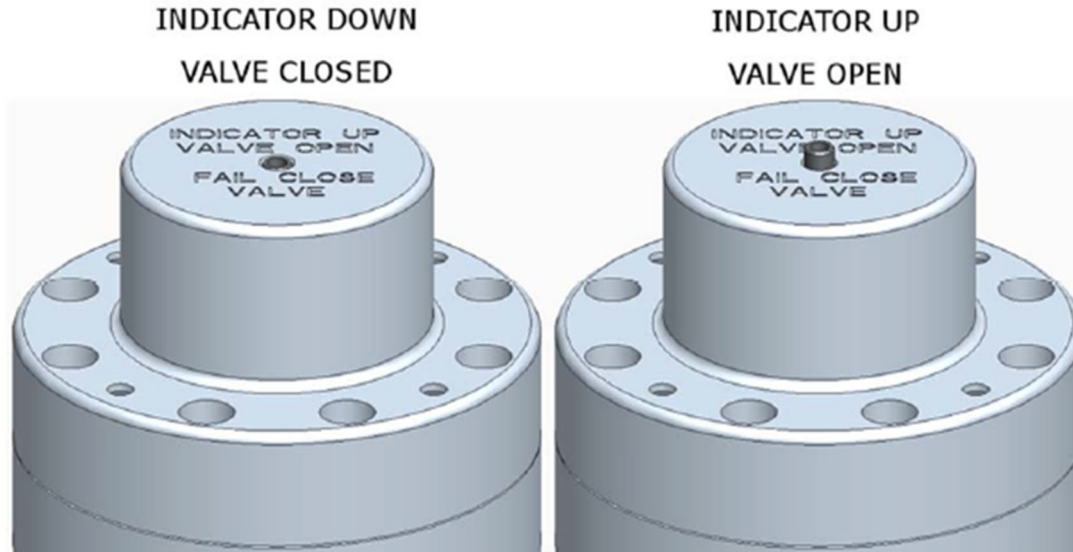
The VPI may remain in the Open position if the VPI rod disengages from the actuator piston due to low retention force of the rod and high friction between the rod and the environmental seal located in the actuator cover.

This potential VPI issue does not affect the primary function or performance of the LXM actuator or manifold. The VPI serves only as a convenient means to visibly verify actuator position. The VPI issue does not prevent normal operation of the LXM.

The proper operation of the VPI is described below:

#### Visual Indicators

The position of the actuator can be verified by inspection of the visual indicator at the top of each actuator. When an actuator is open, the indicator rod protrudes from the actuator cover by approximately 6 mm / ¼ inch; when the actuator is closed, the indicator rod is flush with the actuator cover.



### Affected Units

Affected Units are limited to Woodward part numbers: 8915-1302 (GE part number 124T5054P0001, Pilot LXM for 9HA.02) and 8915-1303 (GE part number 124T5055P0001, Main LXM for 9HA.02) shipped from Woodward prior to 17-Jul-2020, serial number 22233170 and lower. Because each LXM includes 4 unique actuators, the issue potentially affects LXM actuator item number 6300-1532, serial number 22226298 and lower.

## Corrective Action

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**Field Corrective Action:** A preventive action can be easily applied to the Affected Units to reduce the potential occurrence of the VPI issue. See Customer Action and Preventive Action recommendation below.

**Permanent Corrective Action:** A design change was implemented to prevent the issue by increasing the retention force between the VPI rod and the actuator piston. Lubrication will also be added to minimize the friction between the VPI rod and the environmental seal.

## Customer Action

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Woodward recommends that the preventive action described below be performed by a Customer Qualified Technician on Affected Units prior to turbine operation. See Recommended Preventive Action below.

Affected Units that experience the VPI issue after the Preventive Action has been performed (See Recommended Preventive Action below) may be returned to Woodward for warranty repair within the product warranty period. Contact your Woodward customer service representative for a return authorization number (RAN) and return the unit(s) to Woodward.

### Recommended Preventative Action:

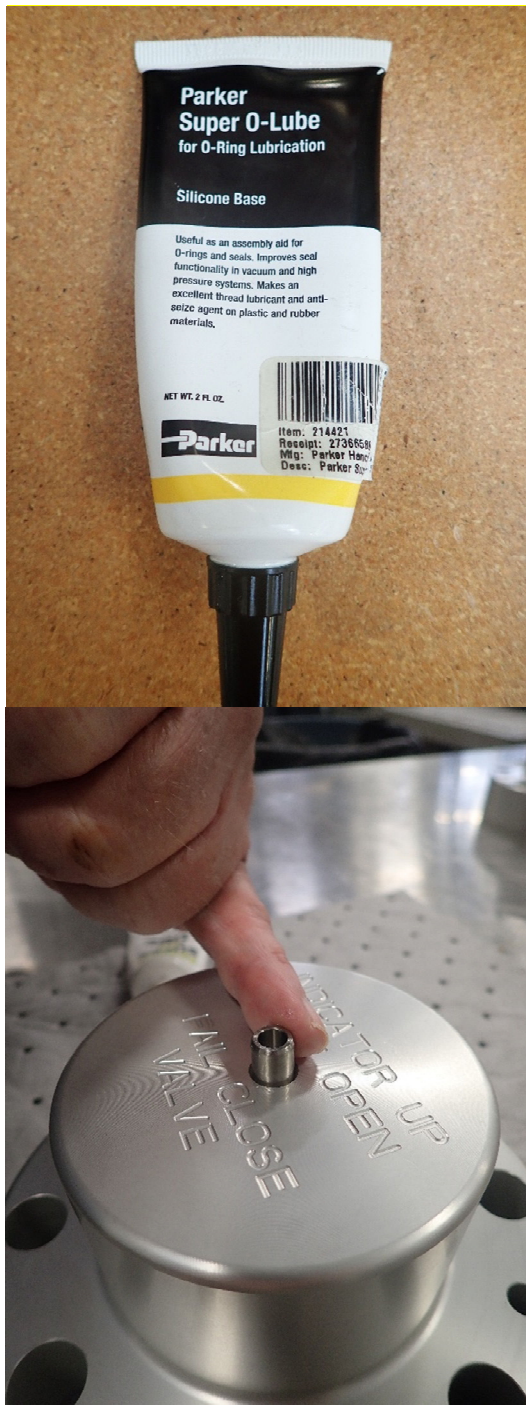
The recommended Preventive Action is to lubricate the VPI. The lubrication process may be completed with the LXM either mounted on the engine or on a work bench.

- 1 Obtain a silicone-based lubricant such as Parker Super O-lube (PN 2001-3014, 3016) or equivalent. Only these types of lubricant should be used to meet the high temperature requirements of the LXM. Woodward can provide the required lubricant if necessary.
- 2 Pneumatically actuate each LXM actuator to the Open position.
- 3 While in the Open position lubricate the exposed surface of the VPI rod and at the base of the rod, where it enters the cover. See photos below for lubrication locations  
Verify the VPI functions properly by closing and then cycling each actuator 3 times. Reference Woodward product manual B35113, page 7, figure 1-3, and page 22 "Routine Inspections"

### In the Event of a VPI Issue

The following options are available:

1. Record the LXM assembly part number and serial number and inform your Woodward Customer Service Representative. Note: since the VPI issue does not affect the primary function or performance of the LXM, this issue should not require that the turbine be taken out of service. At the next available service interval or overhaul the LXM may be returned to Woodward for repair.
2. An affected LXM actuator can be replaced individually on the LXM by a customer qualified technician. This can be done while installed on the turbine or the entire LXM can be removed from the turbine and the affected actuator replaced while on a work bench (preferred method). Contact Woodward Customer Service Representative for a replacement actuator and instructions.
3. The affected LXM can be removed and returned to Woodward as a complete unit.



Apply Parker Super O-lube or equivalent silicone-based lubricant to the exposed surface of the VPI rod and to where the rod enters the cover. Spread the lubricant across the rod surface with a finger leaving a thin film. Wipe off excess lubricant from the cover surface.



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