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## Application Note 51586 (Revision -, 10/2017) Original Instructions



# 3103 Gas Valve Maximum Stop Screw Angle Setting Issue

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## 3013 Gas Valve Maximum Stop Screw Angle Setting Issue

## Introduction

In July 2017, Woodward became aware that some 3103 valves were not properly set during flow testing and calibration. 283 valves total are suspected for having the maximum stop screw set at 62 degrees, instead of the customer specified setting (51.1 degrees, as an example). 62 degrees valve angle maximum stop setting is the normal setting for most of the 3103 family of valves; however, some customers have requested a limited maximum stroke of 51.1, 53.8, or 60 degrees as shown in Table 1 below. The following part numbers may have been affected by this issue during the time period from February 2011 through June 2017.

Item Number	Correct Max Stop Screw Angle	Incorrect Max Stop Screw Angle
8915-894	53.8	62.0
8915-955	51.1	62.0
8915-1029	51.1	62.0
8915-1185	53.8	62.0
8915-1313	51.1	62.0
8915-1315	53.8	62.0
8915-1319	51.1	62.0
8915-1321	53.8	62.0
8915-1323	51.1	62.0
8915-1329	51.1	62.0
8915-1332	60.0	62.0

Table 1 - Correct vs. Incorrect Maximum Stop Screw Angles

#### Issue

Customers may have their own specific reason for limiting the maximum stop on the gas control valve. Historically, many customers have done this for the purpose of mechanically limiting the maximum fuel flow at the gas control valve. However, many customers have backed away from this approach over the years, instead achieving the fuel limiting through software, favoring the ability to use the full stroke of the valve. For this reason, the risk of over-fueling the gas turbine is low.

## **Customer Action**

Check to see if any 3103 valves in your possession are in the affected serial number list in Table 2 below. If so, determine if the maximum stop screw is incorrectly set according to Table 1 above. If the maximum stop screw is set to the incorrect angle, determine if it is necessary to be limited to the correct (smaller) angle. If this is the case, the below instructions may be followed to set the maximum stop to the correct value.

14739653	19026645	19589151	20080598	20230401	20634835
18050492	19030872	19835626	20080666	20232442	20651789
18056452	19033141	19849424	20109503	20286660	20655886
18152744	19054700	19867049	20111038	20288286	20674887
18175162	19068680	19889113	20121831	20332329	20716131
18175224	19111127	19927994	20150513	20338058	20717398
18178799	19148104	19955874	20150640	20347668	20717623
18272336	19200018	19963001	20151926	20501161	20726428
18370563	19213803	19979929	20154090	20549265	20743242
18444765	19213821	19982710	20156636	20552736	20755645
18514192	19213885	19985349	20158597	20553349	20757405
18555472	19244791	19994824	20161356	20557913	20760517
18555640	19262074	20004612	20166074	20560071	20763474
18591252	19275462	20047459	20167128	20576424	20782484
18607782	19294431	20051762	20168651	20576461	20798612
18617623	19304097	20056936	20177005	20588401	20820165
18828715	19305481	20058281	20190118	20590084	20834857
18830133	19354503	20062181	20199892	20590188	20847732
18831567	19506839	20074327	20207863	20596612	20901381
18946635	19572873	20074766	20221804	20623700	20909725
18979627	19583500	20077943	20228158	20623723	20910341

#### Table 2 – Suspect Affected Serial Number List

## Procedure – Resetting the Maximum Stop Screw

Follow the steps below to reset the maximum stop screw correctly:

- 1. Record the MAX stop screw protrusion height \_
- 2. Determine what valve position demand will drive the valve to the new desired maximum screw setting (i.e. mA signal, % demand, angle demand, feedback voltage, etc.)
- 3. Drive the valve to that position (i.e. 51.1 degrees) and confirm that the desired angle is reading on the valve angle indicator scale / pointer.

**Note:** There may be a slight difference between the demanded angle and the angle on the scale.

4. Slowly turn the MAX screw IN until it just touches the stop bracket. Resistance to turning should be felt when encountering the stop bracket.

**Note:** The driver may shutdown if turning the stop bracket beyond the difference error tolerance.

- 5. Back the stop screw out 1/8 turn to prevent a shutdown when the valve is commanded to the new maximum angle during operation.
- 6. Check that the MAX stop screw is out of the way of the maximum position by commanding the valve to that position. The valve driver should not experience a shutdown. If it does, back the MAX screw out an additional 1/8 turn. Repeat until a shutdown does not occur.
- 7. Record the height of the stop screw (protrusion length from surface of adapter) for later use if needed

## Digital Driver Warning (EM-35, EM 24V, DVP)

The EM-35 Digital Driver, the EM 24V Digital Driver, and the DVP Driver all have a factory configuration for a maximum stop setting of 62 degrees valve angle. Therefore, when mechanically limiting the valve below 62 degrees, the control system software must not drive the valve beyond the limited maximum valve angle or the driver will fault and shutdown as the result of position error detection. This could result in an unexpected shutdown of the gas turbine.



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