



Technical Service Bulletin

Technical Service Bulletin: TSB210181

Released Date: 19-Aug-2021

Fault Code 2988 or 2989 and/or Low Power After ReCon® Wastegate Turbocharger Installation: Caused by Improper Pneumatic Turbocharger Actuator Calibration

Fault Code 2988 or 2989 and/or Low Power After ReCon® Wastegate Turbocharger Installation: Caused by Improper Pneumatic Turbocharger Actuator Calibration

Warranty Statement

The information in this document has no effect on present warranty coverage or repair practices, nor does it authorize TRP or Campaign actions.

Contents

Product Affected

- ISL G CM2180
- ISX12 G CM2180 EJ
- ISX12N CM2380 X120B
- L9N CM2380 L124B
- L9N CM2380 L130B
- L9N CM2380 L142B

Issue Summary

Some out of the box and early life ReCon® wastegate turbocharger pneumatic actuators built in ReCon® Memphis Plant (RMP) were **not** calibrated properly and need to be adjusted in the field for proper operation.

Symptoms:

- Engine has low power after turbocharger installation
- Fault Code 2988 or 2989

Root Cause:

- Pneumatic turbocharger actuators **not** calibrated properly for out of the box or early life ReCon® wastegate turbochargers

- Turbocharger wastegate valve and pneumatic actuator rod **not** meeting full extension when tested

Verification

- While checking the turbocharger wastegate valve and actuator rod movement they are found to **not** meet the proper displacement in some out of the box ReCon® wastegate turbochargers.
- The range of build dates of the ReCon® turbochargers that are suspected to be at risk of **not** being calibrated properly are in Table 1.
- Figure 1 has an example of how to determine the build date from the RMP turbocharger serial starting from the left:
 - 4th and 5th digits are the build year
 - 6th and 7th digits are the build day
 - 8th and 9th digits are the build month

Table 1, RMP Suspected Population of Wastegate Turbocharger Pneumatic Actuator Not Calibrated Properly			
Turbo Serial Number First (TSNF)	TSNF Build Date (M04YYDDMM...)	Turbo Serial Number Last (TSNL)	TSNL Build Date (M04YYDDMM...)
M04210101001	1 January 2021	M04213103001	31 March 2021

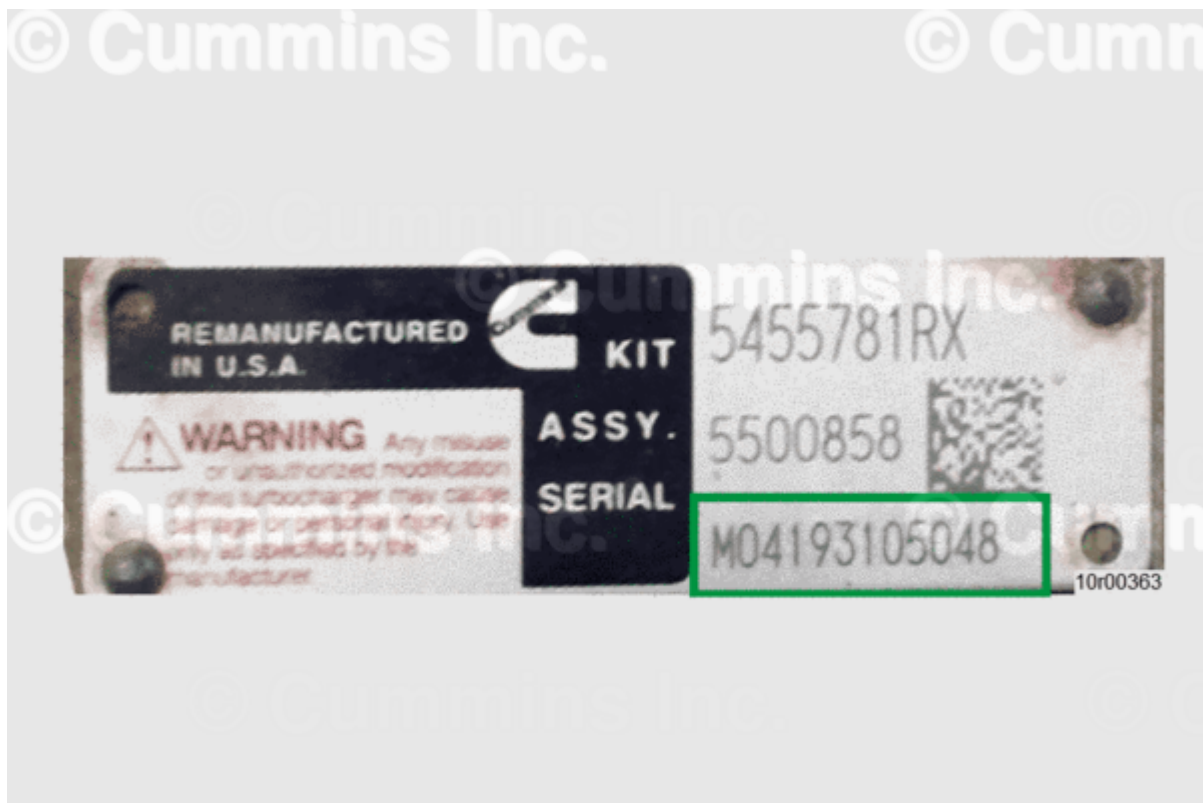


Figure 1, Wastegate Turbocharger Made In RMP on 31 May 2019 (M04YYDDMM...).

Resolution

Follow the instructions to calibrate the pneumatic turbocharger actuator properly in the ReCon® wastegate turbocharger:

Preparatory Step

⚠ WARNING ⚠

To reduce the possibility of personal injury, wear goggles and protective clothing.

Tools needed for pneumatic actuator calibration are shown in Figure 2 below:

- Dial gauge indicator Part Number 3165168 or equivalent
- Air pressure regulator Part Number 3823799 or equivalent



Figure 2, Left: Dial Gauge Indicator. Right: Air Pressure Regulator.

Install

1. Disconnect turbocharger actuator rod from wastegate valve pin by removing the retaining clip from the control lever.
2. Verify turbocharger wastegate valve can move freely.
3. Loosen control rod jam nut.
4. Pressurize actuator until rod reaches the wastegate valve pin.
5. Adjust the length of the end link screw to meet wastegate valve pin.
6. Connect and secure actuator rod to wastegate valve pin with retaining clip.
7. Set actuator pressure to 0 kPa [0 psi].

8. Set up dial gauge indicator parallel to actuator rod and zero it at the rod end while verifying the wastegate valve is fully closed by adjusting the end link screw (Shown in Figure 3, Item 1 below) with the actuator pressure kept at 0 kPa [0 psi] like in Figure 3 below.
9. Pressurize actuator to the corresponding Set Pressure values in Table 2 below.
10. Adjust end link screw until the dial gauge indicator measurement is between the Set Displacement values in Table 2 below while the actuator is kept at the Set Pressure.
11. Tighten the control rod jam nut to 8.5 N•m [75 in-lb].
12. Set actuator pressure to 0 kPa [0 psi]
13. Pneumatic turbocharger actuator calibration complete and now the mechanism will move properly.

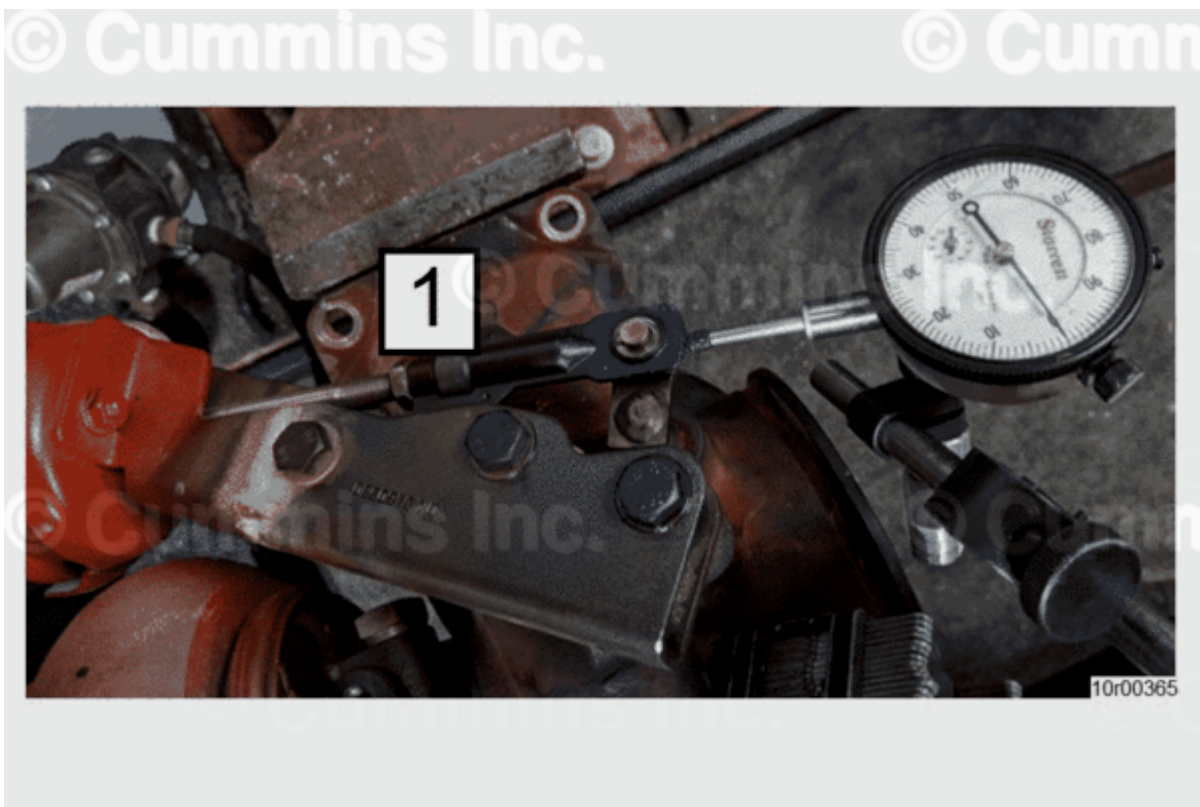


Figure 3, Dial Gauge Indicator Set Up at Turbocharger Actuator Rod End.

Table 2, Pressure and Displacement Values for Proper Pneumatic Turbocharger Actuator Calibration

Engine Model	Actuator Set Pressure	Actuator Rod End MIN Set Displacement	Actuator Rod End MAX Set Displacement
ISL G	55 kPa [8 psi]	0.50 mm [0.020 in]	1.04 mm [0.041 in]
ISX12 G	100 kPa [15 psi]	0.50 mm [0.020 in]	1.04 mm [0.041 in]
ISX12N	100 kPa [15 psi]	0.50 mm [0.020 in]	1.04 mm [0.041 in]
L9N	55 kPa [8 psi]	0.50 mm [0.020 in]	1.04 mm [0.041 in]

Document History

Date	Details
2021-8-19	Module Created

Last Modified: 19-Aug-2021
