CATERPILLAR® Service Information System Shutdown SIS

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Technical Information Bulletin
High Pressure Turbocharger Troubleshooting Guide for CT660 On Highway Truck {7000}
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High Pressure Turbocharger Troubleshooting Guide for CT660 On Highway Truck{7000}

SMCS - 7000

On Highway Truck:
CT660 (S/N: TGA1-UP; TGD1-UP; TEJ105-UP; TRK1-UP; TKL1-UP; TEP1-UP; TJS1-UP; TGT107-UP; TSW1-UP; TSY1-UP; TGZ1-UP)

Introduction

The problem below has been identified. Use the solution that is identified below.

Problem

High-pressure turbo failures on the CT660 On-Highway Trucks.

Solution

Follow high-pressure turbocharger troubleshooting guide. The troubleshooting guide is effective with the following machines:

Table 1

Effectivity

Model	Affected Machines
CT660	**S/N:**TEJ105-UP
	S/N:TEP1-177,181-205,207,209-220,223-UP
	S/N:TGA1-88,90-194,196-198,200-219,221-233,249-UP
	S/N:TGD1-3,5-9,117-UP
	S/N:TGT107-UP
	S/N:TGZ1-UP
	S/N:TJS1-UP
	S/N:TKL1-161,164-171,174-176,178-587,599-UP
	S/N:TRK1-39,41-48,100-284,286-288,290-600,602-1237,1240-1520,1565-UP
	S/N:TSW1-UP
	S/N:TSY1-UP

High Pressure Turbocharger Service Plan

Follow the procedure below to troubleshoot high-pressure Turbocharger performance issues.

Obtain the following information before starting this procedure:

- VIN number
- Mileage
- Date
- Customer
- Tech Name
- Obtain documentation of pervious service performed
- Detailed description of the problem

1. Review Initial Examinations Table 2

Table 2

Initial Examinations	
Check Or Test Procedure	**Follow up Check Or Test Procedure**

Do fault codes exist? SPN_____, FMI_____. SPN_____, FMI_____	**YES -** Resolve fault codes **NO -** Proceed to Step 2
Any Visible Smoke? White or Black?	**YES -** Proceed to Step 2 **NO -** Proceed to Step 2
Any external fluid leaks? (Oil or Coolant)	**YES -** Proceed to Step 2 **NO -** Proceed to Step 2
External engine damage?	**YES -** Proceed to Step 2 **NO -** Proceed to Step 2
Is engine overheating?	**YES -** Proceed to Step 2 **NO -** Proceed to Step 2
Is the engine knocking?	**YES -** Proceed to Step 2 **NO -** Proceed to Step 2.
Have any parts been replaced to address these issues? Check warranty history.	**YES -** Proceed to Step 2 **NO -** Proceed to Step 2

2. Check the Air Management System
    - Inspect for Boost leaks

Table 3

Were any Boost leaks Detected? Was any wet oil residue detected?	**Yes** Note any boost leaks before repairing. Proceed to Step 3.
	No Inspect the inlet high-pressure charge air cooler (HPCAC) Proceed to Step 4.

3. Remove the CAC pipe between the high-pressure turbocharger and high-pressure charge air cooler.
    - Inspect the high-pressure turbo outlet duct for wet oil residue.

Table 4

Was any wet oil residue detected?	**Yes** Proceed to Step 5
	No Proceed to Step 4

4. Reference DTC'S noted earlier

Table 5

Was SPN 190 FMI 0 noted at the top of Inspection Seat	**Yes** Proceed to Step 6
	No Proceed to Step 8

5. Check the Calibration Scorecard on the service portal to ensure that the latest calibration is installed.

Table 6

Is the ECM Calibration up to date?	**Yes** Proceed to Step 4
	No Proceed to Step 6

6. Inspect by opening the freeze frame data and check the ID 58071 max trip RPM logged for SPN 190 FMI 0.
   - Open DSN. Attach freeze frame data and engine parameters.
   - Refer to Service Magazine, SEPD1677
   - Do not use ID 57531 "Total Engine Maximum Speed"

Table 7

Is the engine RPM between 2600-2999?	**Yes** Proceed to Step 9
	No Proceed to Step 10

7. Update engine ECM with the latest calibration level

   Note: With the new calibration any residual oil will dry up.
   - Go To Step 19.

8. Remove the turbo center section and inspect.
   - Is there excessive radial or axial end-play (Fin to housing contact.)
   - Is there any visual damage evident.

Table 8

Are either of these conditions present?	**Yes** Proceed to Step 11
	No Proceed to Step 12

9. Replace
   - Remove and Drain CAC.

- Turbo center section.
- All six injectors.
- Close case File.
- Go to Step 19

10. For RPM 3000 or higher.
    - Remove oil pan.
    - Check for bent rods and damaged liners.

Table 9

Is There any damage present?	**Yes** Proceed to Step 15
	No Proceed to Step 16

11. Inspect

Table 10

Is there any oil in the intake or in the ATF system?	**Yes** Proceed to Step 14
	No Proceed to Step 13

12. Provide documents or information that supports replacement of the turbo with no damage evident.
    - Pictures
    - Data
    - Go to Step 13
13. Replace Turbo center section.
    - Go to Step 19
14. Inspect
    - If Turbine housing damaged is noted, open DSN, continue if not damaged.
    - If no damage is noted, replace Turbo Center Section (No approval required for center section only.)
    - Remove the CAC and allow it to drain, then reinstall
    - For the AFT system, open a Tech Service case file and provide pictures of the contamination

- Perform any additional directives as instructed by Tech Services.
- Go to Step 19

15. Perform
    - Attach pictures of the damage to the case file
    - Repair as directed in case file
    - Go to Step 19
16. Review

Table 11

What was the ID 58071 Max Trip RPM recorded?	**3000 - 3599** Proceed to Step 17
	3600+ Proceed to Step 18

17. Replace
    - Remove and drain CAC.
    - Turbo Center Section.
    - All six Injectors.
    - Reset trip report and freeze frame.
    - Go to Step 19.
18. Replace
    - Remove and drain CAC.
    - Turbo Center Section.
    - All six Injectors.
    - Water Pump
    - Reset trip report and freeze frame.
    - Go to Step 19.
19. End of Repair
    - Release Vehicle

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