

# 26-001 DDC DT12 Range Detent Diagnostic

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## Models:

### General Information

Some DT12 shifting complaints may be corrected by installing the updated Range Detents.

Complaint may be described as:

- The transmission shifts into neutral when attempting a range up or down shift (complaint may be a 5 to 7 shift, 6 to 8 shift or any other shift combination where a low-to-high range is required).
- A grinding noise.

### Parts Table

Part Number	Part Description	Quantity
A9602670874	Split Detent	2

Table 1, Parts Table

### Repair Procedure

1. Obtain a driving log file of the vehicle going through all the gears.

NOTE: The CPC5 SPN 521063/14 fault code (active or inactive) may also be present in the log.

2. Navigate to the 'Identification' screen, under 'Stored Data'. Look in 'TCM 22-22-21' for reversing events (events counter is usually greater than 30 and as high as 700). See 1, [Range Reversing Events](#), and chart the log file to identify range 'hang-up/intermediate' position. See 2, [Monitored Instruments](#). Does the events counter read 0 or does the chart show the range in an intermediate position?

2024 Freightliner New Cascadia 116 Day Cab 6 x 4 Truck-Tractor

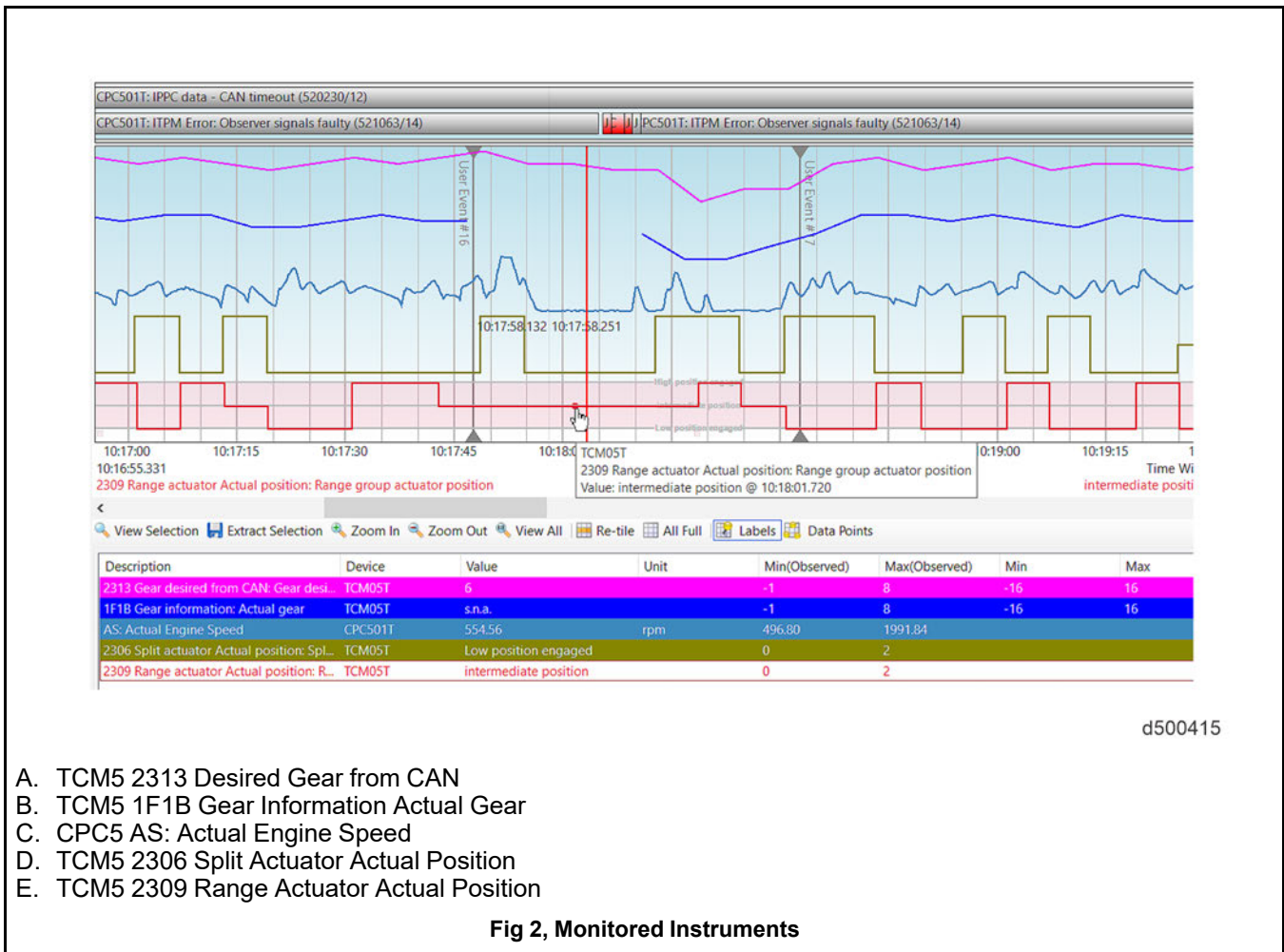
VIN:                      Engine: DDEC20-DD13  
 ESN:                      Transmission: DT12-DT12 OC

Identification    Common   Standard   Audit Trail   Compare Configuration   Engine Totals   NOx Binning   Rating   Stored Data

		Number of unintended displacement in split position Lo, sensor-based	0
		Number of unintended displacement in split position Hi, speed-based	0
		Number of unintended displacement in split position Lo, speed-based	0
		Number of rattling events on range group shifts to Hi position	0
		Number of rattling events on range group shifts to Lo position	2
		Number of reversing events on range group shifts to Hi position	171
		Number of reversing events on range group shifts to Lo position	146
		Number of leakages in range Hi position	0
		Number of leakages in range Lo position	0
		Number of colliding dogs events range Hi at vehicle standstill	0
		Number of colliding dogs events range Lo at vehicle standstill	6
		Number of sticking events in range Hi at vehicle movement	0
		Number of sticking events in range Lo at vehicle movement	0
22-22-21	2221 Shift counters Range group	Sum of average force on range group shifts to Hi position	350100 N
		Sum of average force on range group shifts to Lo position	334584 N
		Sum of maximum force on range group shifts to Hi position	920423 N
		Sum of maximum force on range group shifts to Lo position	1129058 N
		Number of solenoid valve activations range Hi	6574
		Number of solenoid valve activations range Lo	7279
		Number of range group shifts to Hi w/o sufficient air supply	918
		Number of range group shifts to Lo w/o sufficient air supply	609
		Overall number of range group shifts to Hi position	1042
		Overall number of range group shifts to Lo position	1034

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Fig 1, Range Reversing Events

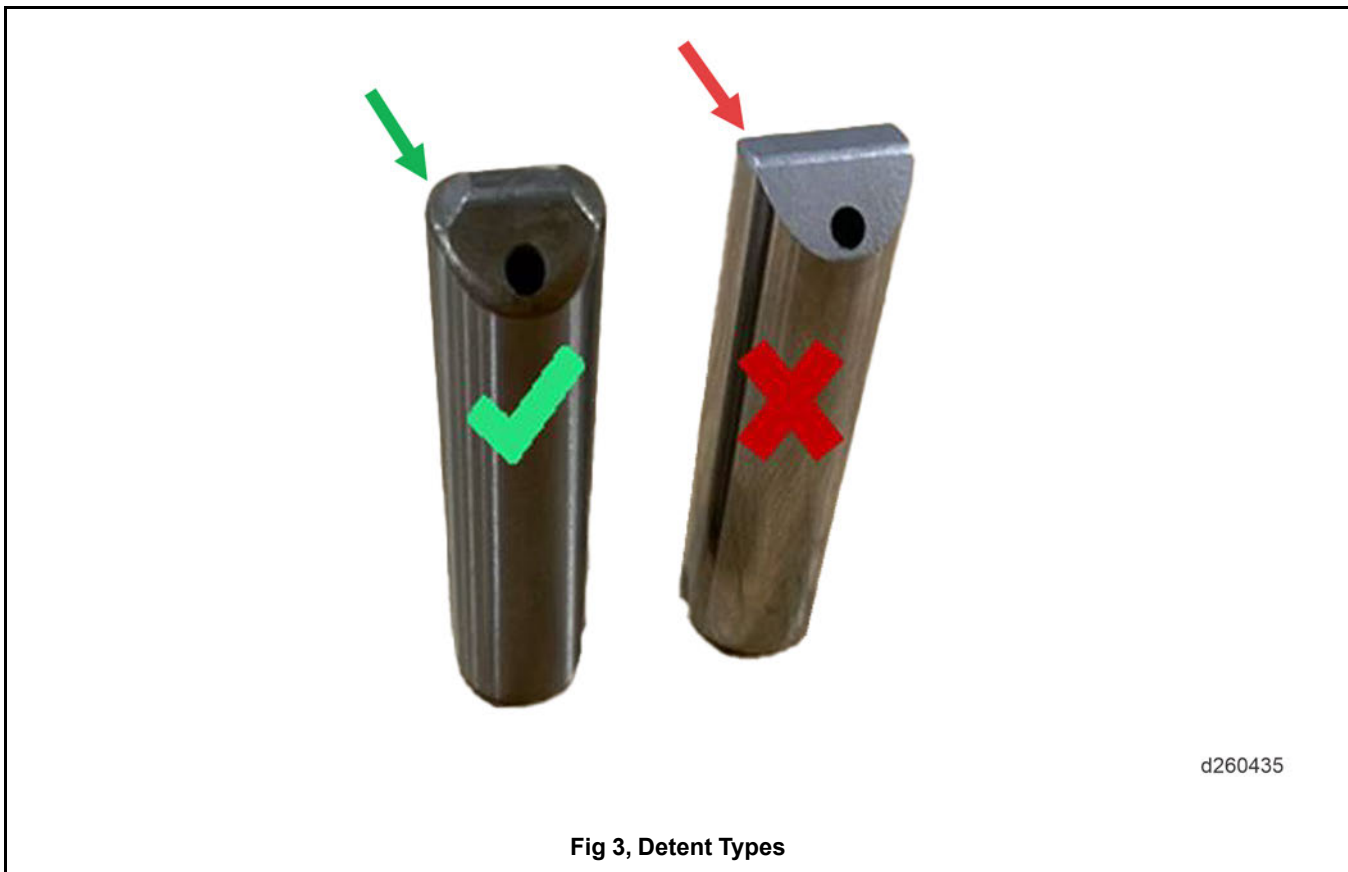


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- A. TCM5 2313 Desired Gear from CAN
- B. TCM5 1F1B Gear Information Actual Gear
- C. CPC5 AS: Actual Engine Speed
- D. TCM5 2306 Split Actuator Actual Position
- E. TCM5 2309 Range Actuator Actual Position

**Fig 2, Monitored Instruments**

- 2.a Yes; see [Range Up or Down Shift Issue](#) and continue trouble shooting.
- 2.b No; go to step 3..
- 3. Remove and inspect the detents. See [Removal of the Range Detent](#). Is the detent type with the red X installed (see below image)?



- 3.a Yes; replace both detents and go to step 4..
- 3.b No; reinstall the equipped detents and go to step 4.. See [Installation of the Range Detent](#).
- 4. Remove the range piston cylinder. see [Removal of the Range Cylinder](#).
- 5. After removing the range piston cylinder, actuate the range piston by repeatedly pulling and pushing on the piston (by hand) to confirm that the detents are seated on the rod. The rod should not move freely or easily when pulling and pushing the range piston by hand. Does the range piston rod move freely?
  - 5.a Yes; replace the transmission. See [Removal of the Transmission](#).
  - 5.b No; see [Range Up or Down Shift Issue](#) to continue trouble shooting.

### **Warranty**

Normal in-warranty procedures apply.

**Note :**

Component Code / VMRS = 026-010-093 - CATCH BOLT - DETENT, SHIFT

Component Code / VMRS = 026-015-002 - ASSEMBLY - COMPLETE, AUTOMATED TRANSMISSION

**CONTACT INFORMATION**

For questions, please create a Service Technical Request using the DTTS Application on the DTNA Portal.