Automated Manual Transmission (AMT) Concentric Clutch Actuator (CCA), Diagnostic guidance for P107538

Internal Content

Fault Tracing Requirements and Criteria

• If the vehicle does not have P107538 logged in the TECU, the CCA and clutch system is not leaking air and should not be investigated.

• If there is not a logged fault P107538 in the TECU then the history of the truck should be checked in the Product History Viewer to see if there is a past history of the faults. If the truck has never logged these faults or the faults that have been logged are very old (>12 months) then any diagnostic and subsequent replacement of the CCA or other components may be denied by Warranty.

- **Note:** Dealer service managers and warranty administrators should have access to the PHV. If there are more persons that need access to the PHV to evaluate the histories for this fault please contact your Dealer Service Administrator (DSA) for access.

• If the P107538 fault is Active or has very high occurrences of inactive faults—a minimum of 5 times in the last 6 months AND a minimum of 1 time in the last month—in the recent or current history of the truck, the steps in the Pre-Removal Inspection section below should be followed.

- If the P107538 faults have been logged in the TECU at a lower frequency than described above, and this is the reason for the workshop visit, inform the customer that a few singular cases of this DTC may be triggered as described in the DTC Descriptions section below.

Pre-Removal Inspection

IMPORTANT
If P107538 is found to meet the requirements for CCA Replacement whil e working on another customer complaint with the gearbox that would re quire a short REMAN gearbox replacement then a CCA replacement is n ot required since the short REMAN includes the CCA.

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1. Use Premium Tech Tool (PTT) Operation 4111-08-03-02 Clutch Wear Check, Test to establish a baseline for the current wear limits and life of the clutch prior to disassembly and fault tracing of the unit.

- In cases where the clutch assembly is out of warranty this information is useful for informing the customer if the clutch is close to its wear limits.

2. Does the vehicle meet any of the items from the Requirements and Criteria section above?

- **No:** Then the CCA is not leaking and should not be fault traced for an air leak. Use the Mechanical Evaluation section to determine if the CCA needs to be replaced.
- **Yes:** Replace the CCA, air line and CVU.
  - **While the gearbox is out of the chassis evaluate the unit for:**
    - Loss of input shaft preload
      - Use CBR-565 for input shaft repairs.
      - Input shaft play on crawler gearboxes is normal.
    - Oil, coolant or other air leaks and repair as needed.

3. Check for proper assembly and calibration prior to reinstalling the gearbox in the vehicle. Road test and verify the repair.

DTC Descriptions

• **P107538 (MID 130 PSID 27 FMI 8) -** This fault code indicates that the clutch control is compromised, and the TECU SW is taking mitigating actions to manage the issue which could reduce comfort during take-off. The TECU is commanding the clutch to move using the CVU and the clutch is moving slower than expected to the demanded position. The control command to the CVU exceeds a set PWM and the fault will log. This is normally found during 'Idle Drive 'events when the vehicle is being pulled along on the idle governor in gear 1-6 or reverse. This can also happen during shifting events when the clutch is commanded to disengage for an up or down shift and the clutch position does not meet the demand within a set amount of time. Singular events of this DTC may be triggered due to low air pressure, low ambient temperature or intermittent dynamic conditions in the pneumatic system. In these situations, the DTC will become inactive when the driver selects N during standstill and the TECU SW will then revert back to normal operation.

• **P107575 (MID 130 PSID 27 FMI 14) -** Clutch cannot disengage. This fault can be logged when stationary or moving. If the TECU determines that the clutch is not responding to the disengage command. This fault code will be logged. The red stop engine lamp will be lit when this happens. If the unit logs this fault when unit is stopped and in neutral because the clutch does

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not respond to the disengage command the engine will not automatically shut down.

- **P107594 (MID 130 PSID 27 FMI 0) -** This fault indicates an unintentional disengagement of the clutch. The wear in the CCA allows movement of the CCA body and the clutch position sensor picks up this movement and can believe the clutch is disengaging without being commanded to do so. If this fault is the only one logged, then the CVU could be leaking air into the CCA after the clutch is engaged and all valves are turned off.

- **P106074 -** This fault indicates that the driver is using the accelerator to hold the vehicle on a hill rather than applying the service brakes. Not a valid fault to cause a replacement of the CCA.

- **P106063 -** This fault indicates improper gear selection and starting conditions based on load. Not a valid fault to cause a replacement of the CCA.

Mechanical Evaluation

IMPORTANT
The test procedure of pushing the CCA back and plugging the CVU and walking away from the unit for 30 minutes or more to check for a leak is NOT a valid test and should NOT be used for checking for leaks of the system. The design of the CVU will allow the internal spring force of the CCA to suck air through the CVU if there is no air pressure being supplied to the CVU.

1. **Check the face of the CCA bearing for wear.**

   - The example below shows a bearing face with normal wear, caused by the movement between the clutch fingers and the bearing face.

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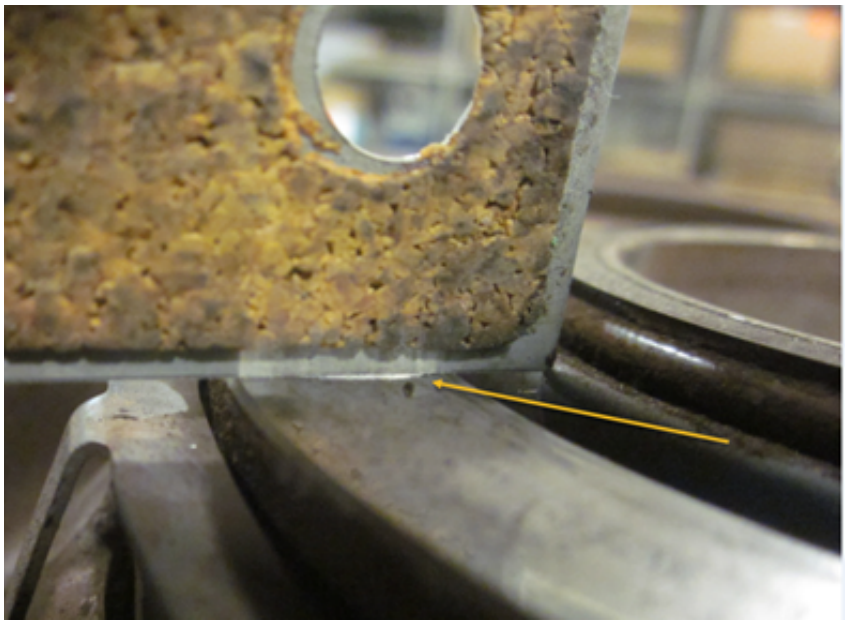

- CCAs with wear greater than shown above do not cause a functional issue. The bearing should be reused if nothing else is found wrong.

2. **Check for Heat Damage**

- A CCA that has had a clutch failure with extreme heat should be inspected. A melted, extremely worn or missing dust boot should be replaced.

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- A CCA that passes all of the evaluations but has a melted position sensor can be reused and the sensor replaced separately. An example is shown below:

3. **Check for physical damage to the CCA**

- Check the outer dust skirt as shown in the picture below. If the outer dust skirt is out of place, replace the CCA.

Tags

p107538 107538 p107594 107594 amt-f

amt-c amt-d i-shift mdrive mdrive hd

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k58556584 p1075-38 p1075-94

mid 130 psid 27 fmi 7 ins mid 130 psid 27 fmi 8 nag cca e sensor only, it can be repaired with a sensor without replacing the CCA if the harsh start in good condition.

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