

**** SOLUTION ****

Title **Vehicles With An Automated Manual Transmission Model F (AMT-F) With Crawler Gearbox - Diagnostic Trouble Code (DTC) P10C7-97 Crawler Gear Engagement System Blocked Shift To Neutral Position; Vehicle Stuck In Limp Mode Or Will Not Shift Into Gear**

Mack Models

Mack Model MRU - TerraPro , TE - TerraPro , AN - Anthem , CHU - Pinnacle, Axle back , CXU - Pinnacle, Axle front , GR - Granite , GU - Granite , PI - Pinnacle

Volvo Models

Volvo Model VN , VNL , VNR , VNX , VAH , VHD

Emission Standard

Emission Standard US17+OBD16 , US17+OBD18 , US17+OBD19

Engine family

Engine family 11L Engine , 13L Engine , MP7 , MP8

Transmission

Transmission AMT-F With Crawler Gears , AMT-F With Crawler Gears

**** SOLUTION ****

Cause Chassis equipped with an AMT-F may log DTC P10C7-97, accompanied by the vehicle going into limp mode or possibly not being able to engage a gear. **These symptoms may be intermittent.**

The crawler gear is engaged by moving the shifter to a forward position in the gearbox. The shifter has an angled ramp cut on it that presses a plunger on the EVU (Extension Valve Unit) to indicate that the unit has been engaged. If this plunger sticks and does not move to the extended position indicating the crawler shifter actually moved to the Neutral position the unit will think the shifter is still engaged and it was unable to shift to neutral.

Solution

Guided Diagnostics are under review for this fault. Until improvements are made to GD, please use this CBR to diagnose this fault.

Crawler function:

The crawler shifter cannot be engaged if the splitter shifter is in a gear. The splitter shifter **MUST** be in neutral for the crawler shifter to move. Likewise, the splitter cannot move from the neutral position if the crawler is in gear. The lockout function is mechanical and internal to the gearbox.

- **Before claiming a stuck crawler shift assembly ensure the splitter is in Neutral.**

If the fault is inactive with high counts.

1. In Premium Tech Tool (PTT), run [Test 4320-08-03-40 Gears](#) or [4320-08-03-49 Ultra-low Crawler Cylinder](#) several times, or shift the transmission into and out of crawler gear with the shift lever several times.

- See if the unit will log P10C7 and stop shifting.
- Listen for air leaks during the tests/shifting.

1.1 If the unit stops shifting and logs a fault: Go to the Active Fault section below.

1.2 If the vehicle will not log the fault:

1.1.1. Remove the EVU from the upper right side of the extension section.

1.1.2. Manually manipulate the plunger.

The return spring is very stiff but the plunger should feel smooth and not hang up in its travel or feel like it is dragging in the bore.

1.1.3. If the plunger feels like it is dragging, replace the EVU.

If the fault is Active or becomes active during the above listed steps:

1. Carefully remove the EVU from the upper right side of the extension section.

2. Check that the position sensor plunger is not stuck.

2.1. If the plunger is found to be sticking: Replace the EVU.

2.2. If the plunger is not stuck and moves smoothly: Check the crawler shifter for freedom of movement.

2.2.1. If the crawler is engaged, the shifter will be in the forward position (closer to the engine).

2.2.1.1. Insert a pry bar in front of the shifter and pry the shifter rearward. It should move freely except for the detent plunger pressure that is internal to the gearbox.

2.2.1.2. If the crawler shifter moves easily manually: Use a rubber tipped air blower to put air to the two ports inside the gearbox to shift the unit with air pressure.



Normal position
when not
actuated.



Solution visibility [Dealer distribution](#)

Function(s)/component(s) affected

Function affected engagement , Transmission Components

Function Group

Function Group 43 gearbox

Customer effect

Main customer effect diagnostics/methodology , efficiency/abnormal behavior

Noise hissing noise , blowing noise

Fault Codes And Error Codes

OBDII Diagnostic Trouble Codes (P, U, B Format) P10C7-97

Conditions

Vehicle operating mode Shifting , during disengagement , during engagement

Frequency of occurrence of problem random

Location of problem underneath cab

Administration

Author	UT9268H
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Variantes Kola

5XX - PTO TRANSMISSION MOUNTED ADM.	PTOTRA-S - SINGLE PTO TRANSMISSION , PTOTRA-D - DOUBLE PTO TRANSMISSION
RWX - TRANSMISSION	F SERIES - AT2612F - VPT AUTOMATED TRANSMISSION 2600NM 12SPEED , F SERIES - ATO2612F - VPT AUTOMATED TRANSMISSION 2600NM OVERDRIVE
RTX - AUTOMATIC GEARBOX	TRA-AMT

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