



## Mack Models

**Mack Model** AN-Anthem , CHU , CXU , GU

## Engine family

Engine family MP7 , MP8

## Emission Standard

Emission Standard 2018 , OBD2017 , US17 GHG

## \*\* SOLUTION \*\*

**Title** Mack Chassis - Automated Manual Transmission Model F (AMT-F, mDrive) Power Take-off (PTO) Does Not Engage Or Grinds Intermittently During Engagement Or During Operation; Symptoms Present For PTO That Was Previously Working Properly - **US17+OBD16 And Newer Emissions, Common Model Years 2018 And Newer**

**Cause** A gearbox-mounted PTO on an AMT-F may initially engage properly, but almost immediately begin to grind. The issue covered in this Solution will appear in a vehicle that has a PTO that has been installed and in use for a significant period of time.

Gearbox-mounted PTOs for the AMT-F are controlled by the Vehicle Electronic Control Unit (VECU) and/or the Body Builder Module (BBM). The VECU and BBM are not able to diagnose electrical shorts or open circuits of these components. If a PTO-related circuit is broken after the PTO is initially engaged, the solenoid will disengage the air from the PTO and then re-engage when the circuit is reconnected. The disengagement and re-engagement of the PTO mid-operation will cause it to grind.

## Solution

**IMPORTANT:** Vehicles potentially affected by the issue described in this Solution will have a gearbox-mounted PTO that has been installed and **in use for a significant amount of time**. Older AMT-F equipped chassis that are **upgraded to have a PTO** mounted on the gearbox in the aftermarket may encounter grinding from the PTO when it is engaged. In this case, grinding will likely be observed **from the time of installation**.

**For applicable vehicles that exhibit the conditions described in the note above ONLY:**

1. Run Accessory Kit 85151972.
2. Program the VECU.
3. Verify that the issue is corrected.

## I. Symptoms commonly encountered during PTO operation with this issue:

- Intermittently will not engage

- Grinds on engagement intermittently
- Drops out during operation
- Grinds during operation intermittently

**II. If any of the above symptoms are encountered, the items below should be checked:**

**A. The wiring harness and connector at the PTO Solenoid.**

1. Broken, rubbed, or frayed wires.
  - Special attention should be paid where the wires enter the connector seal.
2. Pins backed out of the connector/ Poor pin tension.
3. Corrosion of the pins or wiring at the connector.

**B. The complete circuit from the PTO solenoid to the VECU.**

1. A thorough shake test should be performed.
2. Wire should be verified as able to carry a load if continuity is confirmed, resistance is verified to be within spec and a wiggle test of the harness does not reveal a break.

**III. Select the appropriate repair based on findings:**

**A. If a broken wire is found at the connector:**

1. Verify that the PTO bracket currently installed is Part Number 23220187.
  - a. If the bracket is not the updated part:
    - Update the bracket and replace the wiring harness
  - b. If the bracket is current:
    - Repair or replace the connector or harness as necessary.

**B. If an issue is found in the wiring harness that is affecting the rest of the circuit:**

1. Repair or replace components as required.

**IV. Inspect the PTO following repairs**

**A. The PTO should be removed and checked after the root cause is found and repaired to confirm that there is no excessive damage that requires component replacement.**

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NA\_Sister solutions

[K4459791](#)

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Solution visibility

Dealer distribution

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**Function(s)/component(s) affected**

Function affected

automatic transmission , engagement , PTO , MID 144 – VECU

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**Function Group**

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Function Group                      301 software documents, complete vehicle , 3711 Cable Harness, Complete , 481 power-take off (gearbox) , 483 control power take-off

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**Customer effect**

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Main customer effect                noise , efficiency/abnormal behavior , stop/start

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Noise                                    grinding

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**Conditions**

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Vehicle operating mode              when activating , when stationary , engagement , with a PTO

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Frequency of occurrence of  
problem                                random

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Location of problem                  underneath cab

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**Administration**

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Author                                 RU4469V

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Dealer ID                             RU4469V

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