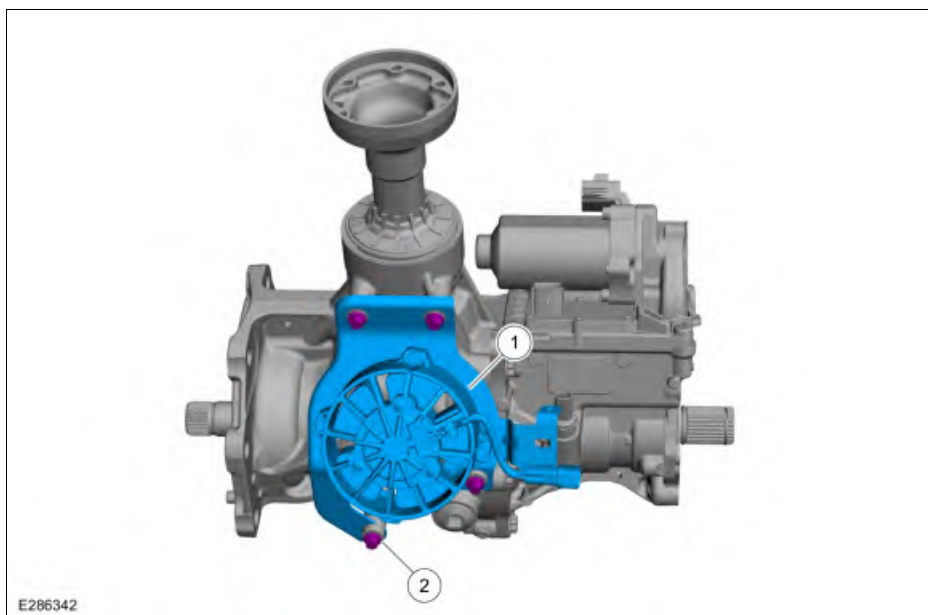
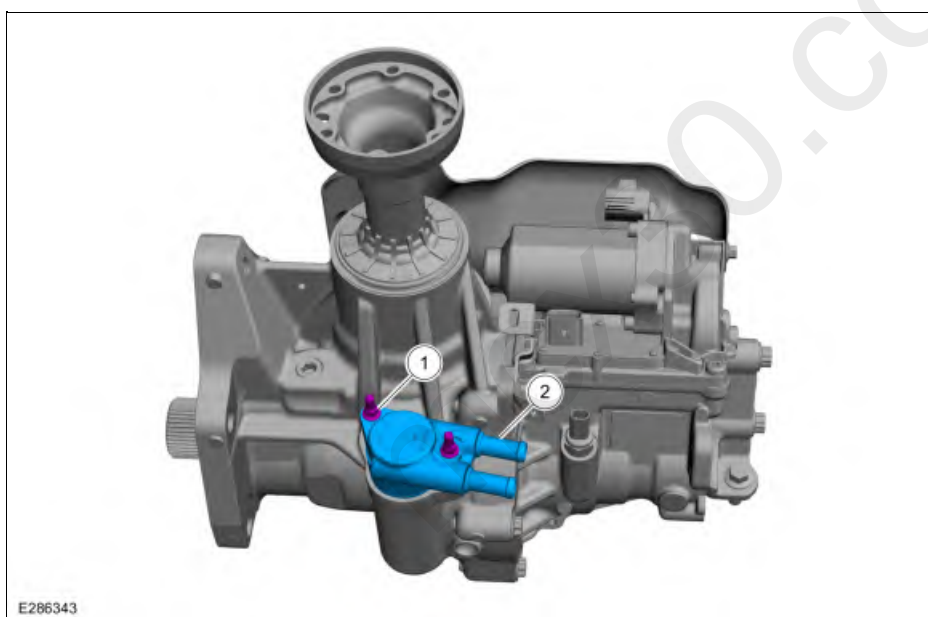


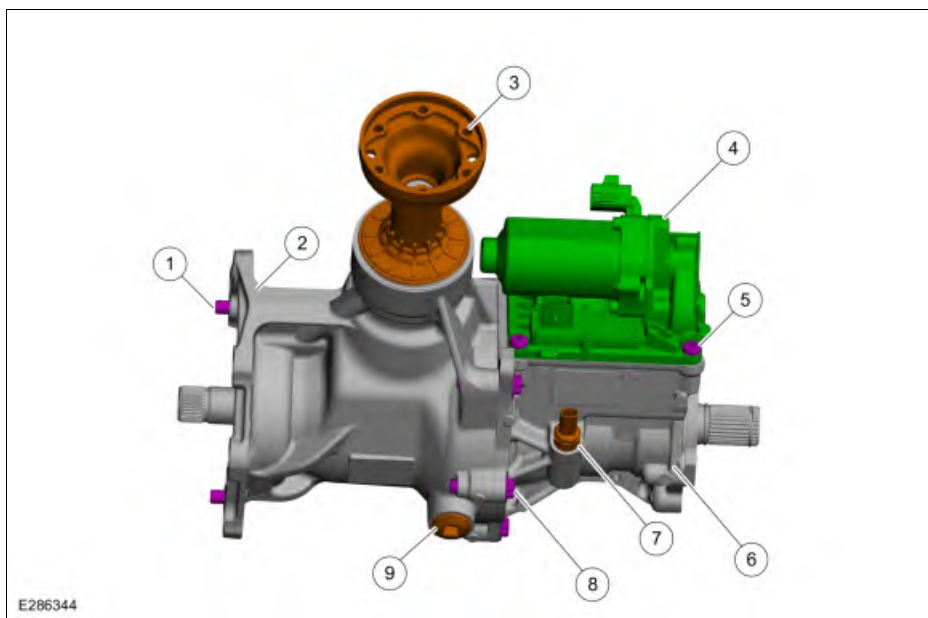


Item	Part Number	Description
1	8W600	Fan and bracket assembly
2	W500213	Fan and bracket assembly bolt



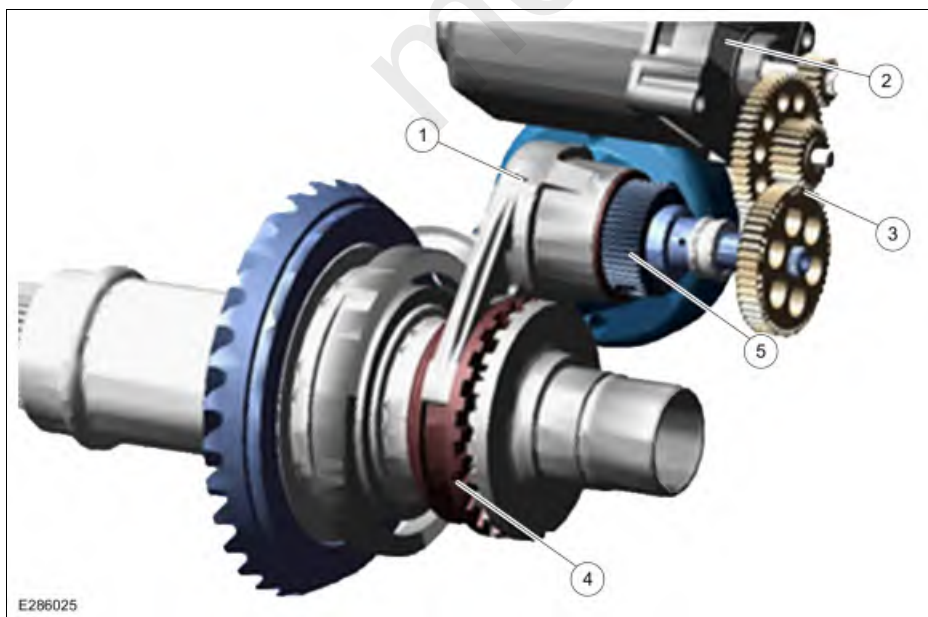
Item	Part Number	Description
1	W790462	Oil-to-Coolant cooler stud. One-time use, part of 7P159 kit.
2	7P146	Oil-to-Coolant cooler. Part of 7P159 kit.

Power Transfer Unit (PTU) Components



Item	Part Number	Description
1	6397	Hollow Dowels. 8F35/40 and MMT6 only. Part of 7H469 kit.
2	7L486	PTU Housing. LH carrier.
3	7A021	Output flange and deflector. Part of 7275 kit.
4	7G360	Motor actuator. Part of 7G360 kit.
5	W790474	Actuator Bolts. Part of 7P462 (O-ring Kit) & 7G360 (Actuator replacement kit) Kits.
6	7L486	PTU Cover. RH carrier.
7	12A648	Oil temperature sensor (If equipped).
8	W790475	PTU Housing to Cover bolts. Part of 7R284 kit.
9	4N282	Drain plug

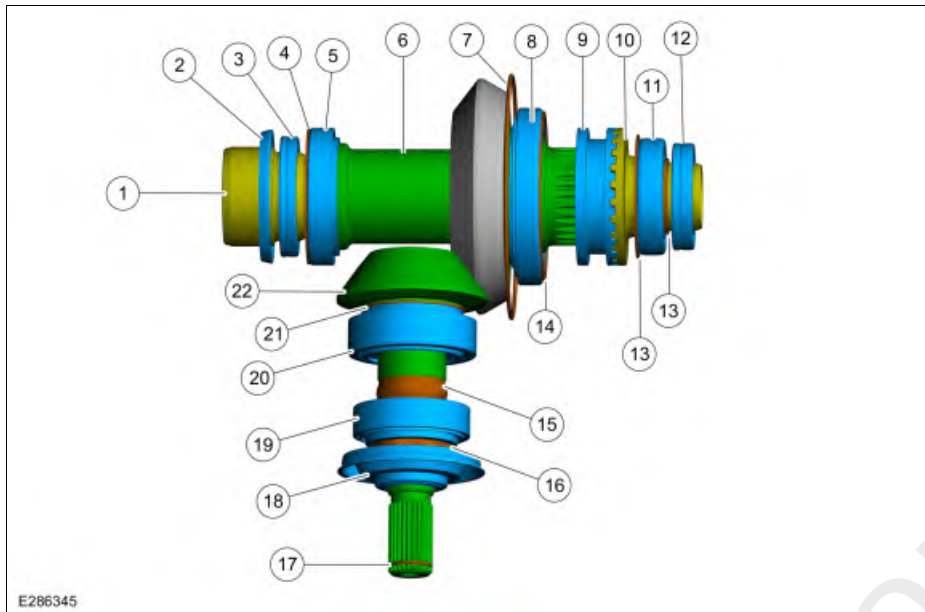
Power Transfer Unit (PTU) Actuator Motor



Item	Part Number	Description
1	â€”	Actuator fork.
2	â€”	Motor Actuator.

3	â€”	Gear reduction
4	â€”	Dog clutch collar
5	â€”	Actuator cam

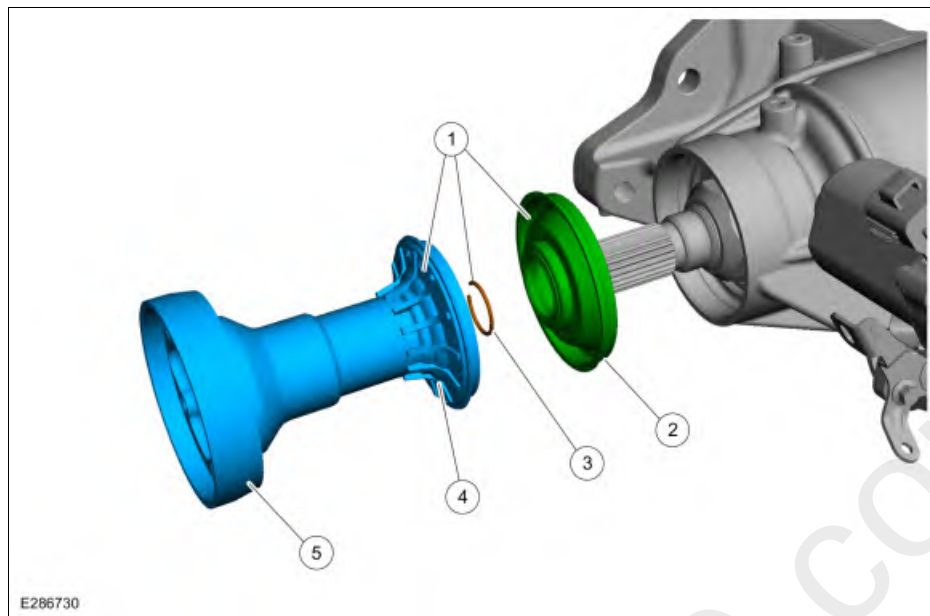
Power Transfer Unit (PTU) Internal Components



Item	Part Number	Description
1	4886	Connecting Sleeve. 8F35/40 and MMT6 only. Unique for Auto and Manual applications. Part of 7H469 kit.
2	7B652	PTU to transmission compression seal. One-time use. Dust seal for cavity between transmission and PTU. Part of 7H469 kit.
3	7A283	Input shaft seal â€” LH-Low Torque PTUâ€™s. One-time use. 8F35/40 and MMT6 only. Seals brown PTU fluid from leaking into cavity between transmission and PTU. Part of 7H469 kit.
3	7Z064	Input shaft seal â€” LH-High Torque PTUâ€™s. One-time use. 8F57 Only. Seals brown PTU fluid from leaking into cavity between transmission and PTU. Part of 7H469 kit.
4	â€”	Selective shim for bearing preload. Not serviced.
5	â€”	Ring gear shaft bearing - LH. Not serviced.
6	â€”	Ring gear shaft. Not serviced.
7	7P250	Cover O-ring. One-time use. Seals brown PTU fluid from leaking at the joint between the housing and cover. Part of 7R284 Kit.
8	â€”	Ring gear shaft bearing - RH. Not serviced.
9	â€”	Dog clutch collar . Not serviced.
10	â€”	Input shaft. Not serviced.
11	â€”	Input shaft bearing. Not serviced.
12	7H426	Input shaft seal â€” RH. One-time use. Seals brown PTU fluid from leaking between the PTU and RH halfshaft. Part of 7H469 kit.
13	â€”	Input shaft bearing snap rings. Not serviced.
14	â€”	Selective shim for bearing. Not serviced.
15	â€”	Collapsible spacer. Not serviced.
16	â€”	Output shaft nut. Not serviced.
17	4B422	Output flange circlip. One-time use. Part of 7275 kit.

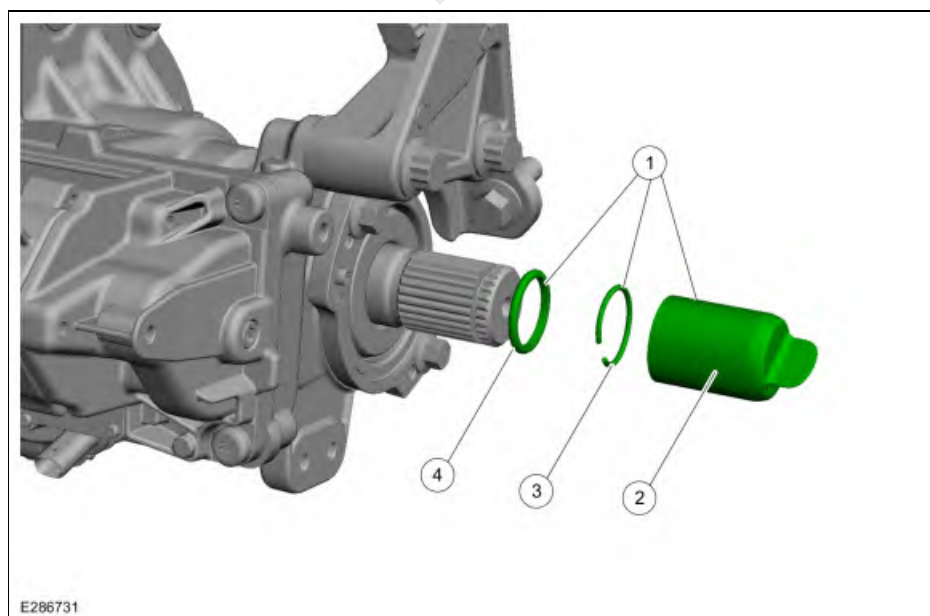
18	7H426	PTU Rear seal. One-time use. Seals brown PTU fluid from leaking between the housing and output flange deflector. Part of 7H469 kit.
19	â€”	Output shaft bearing. Not serviced.
20	â€”	Output shaft bearing. Not serviced.
21	â€”	Selective shim for bearing. Not serviced.
22	â€”	Output shaft. Not serviced.

Rear Seal Kit



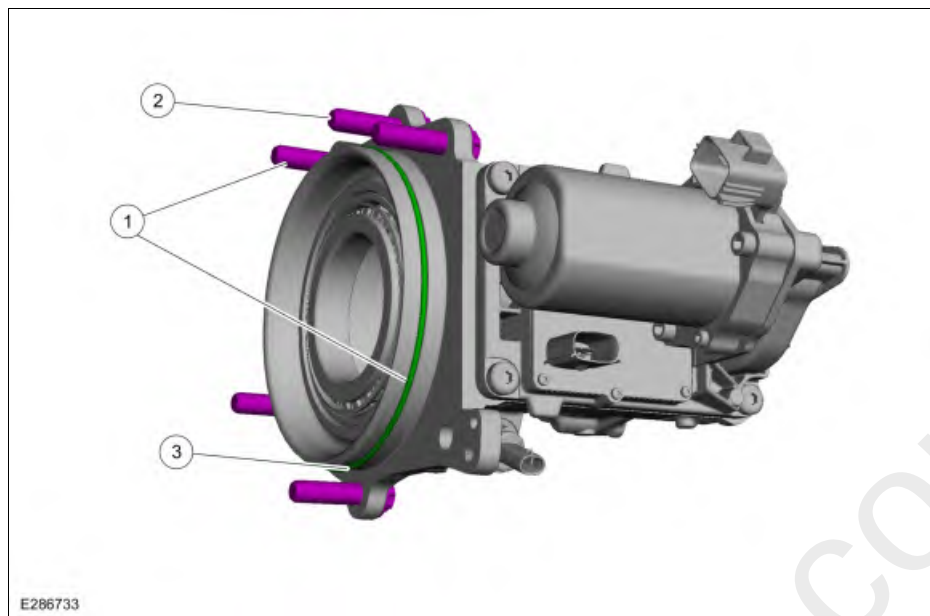
Item	Part Number	Description
1	7275	Companion flange kit
2	7H426	Seal. One-time use.
3	4B422	Circlip. One-time use.
4	â€”	Deflector. Part of 7A021.
5	7A021	Flange and deflector

RH Halfshaft Kit



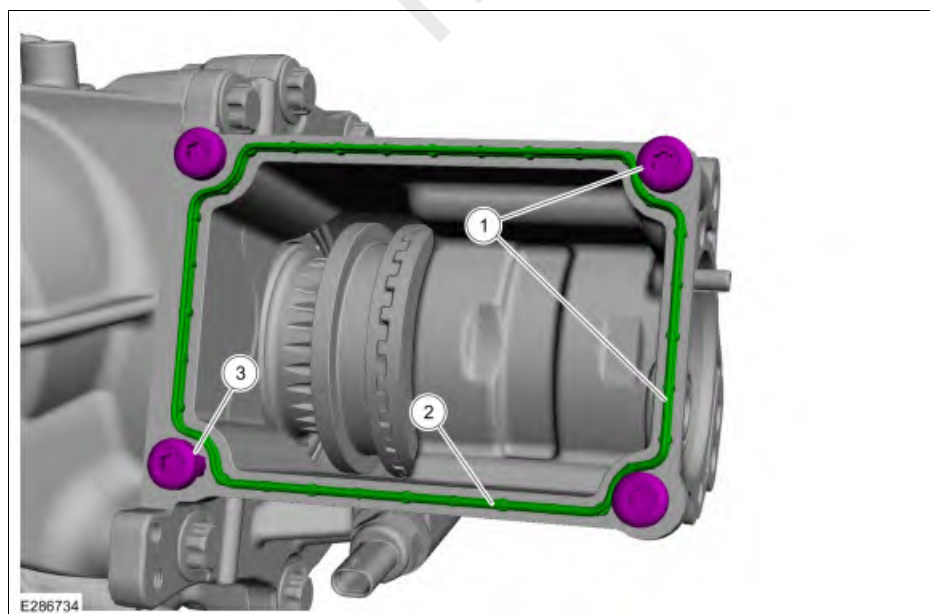
Item	Part Number	Description
	4C198	RH Halfshaft kit
2	4C197	Spline protector. Use to install Halfshaft to intermediate shaft D-Ring.
3	4B422	Circlip. One-time use.
4	4C199	Halfshaft to intermediate shaft D-Ring. One-time use.

Case Seal Kit



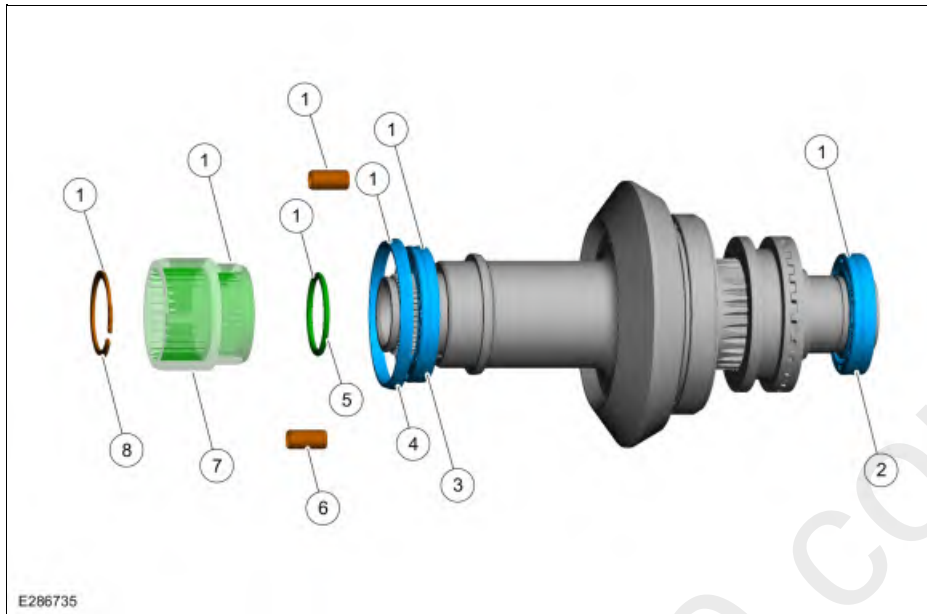
Item	Part Number	Description
1	7R284	Cover seal kit
2	W790475	PTU Housing to Cover bolts. One-time use.
3	7P250	Cover O-ring. One-time use. Seals brown PTU fluid from leaking at the joint between the housing and cover.

Actuator Seal Kit



Item	Part Number	Description
1	7P462	Actuator seal kit
2	7P461	Actuator to cover press in place gasket. One-time use. Seals brown PTU fluid from leaking at the joint between the actuator and cover.
3	W790474	Actuator bolts. One-time use. 4 required.

Input Shaft Seal Kit



Item	Part Number	Description
1	7H469	Input Shaft Seal Kit
2	7H426	RH Input shaft seal
3	7A283	LH Input shaft seal
4	7B652	PTU to transmission compression seal
5	7086	Connecting sleeve to input shaft O-ring seal
6	6397	Hollow dowels
7	4886	Connecting sleeve. 8F35/40 and MMT6 only. Unique for Auto and Manual applications
8	4B422	Connecting sleeve snap ring

Power Transfer Unit (PTU) Operation

The PTU has four (4) distinct modes of operation: Connected, Connecting, Disconnected, and Disconnecting. Each mode is commanded by the AWD module. The PTU contains a reversible DC motor and two hall effect position sensors. The motor moves the shift fork which connects or disconnects the dog clutch collar. PTU Position sensor A monitors the position of the actuator cam. PTU Position sensor B monitors the position of the shift fork. Some PTU models are equipped with an oil temperature sensor

Connected Mode

Connected Mode is the default mode for the PTU. The AWD module will command Connected mode at the beginning of each key cycle. In connected mode, the fork and dog clutch collar are positioned towards the RH side of the PTU. The dog clutch is engaged. The driveshaft is rotating at an overdrive ratio compared to the front axle shafts. Torque is available at the RDU.

Connecting Mode

To connect the PTU, the two halves of the Dog clutch must be within 40 RPM of each other. The AWD module calculates the speed differential based on transmission OSS, RDU Driveshaft Speed, and PTU gear ratio. The actuator motor will energize and rotate the gear reduction drive and

the actuator cam against the actuator fork. When the dog clutch teeth line up, the cam pushes the actuator fork into position and the clutch engages. It can take approximately 100 - 150ms for the dog clutch to engage after the command is sent.

Disconnected Mode

The AWD module will command disconnected mode based on vehicle conditions. The purpose of the disconnected mode is to reduce drag losses from spinning the driveshaft when conditions indicate AWD will probably not be needed in the near future. In disconnected mode, the fork and dog clutch collar are positioned towards the LH or transmission side of the PTU. The dog clutch is disengaged.

Disconnecting Mode

To disengage the PTU, no torque can be routed through the dog clutch. That is, the RDU must be completely disengaged. Depending on vehicle conditions, the AWD module may keep the PTU engaged for the remainder of the key cycle. The actuator motor will energize and rotate the gear reduction drive and pull the actuator cam away from the actuator fork. When the dog clutch collar has moved far enough to the LH or transmission side, the dog clutch teeth disengage.

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Diagnosis and Testing

Power Transfer Unit

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical damage.

Visual Inspection Chart

Mechanical
• Power transfer unit • Halfshafts and CV joints • Driveshaft and U-joints • Wheel/tire size and brand • Matching tire size and brand • Tire pressure

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step
4. If the cause is not visually evident, verify the symptom and refer to the Symptom Chart.

Symptom Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: Diagnostic Methods (100-00 General Information, Description and Operation).

In most circumstances the PCM sets a DTC to help guide with diagnostics. Refer to the DTC Chart before using the Symptom Chart. The Condition column lists the vehicle condition. The Possible Sources column lists a detailed vehicle condition. The Action column lists the action to be performed to determine the cause of the condition. Each action lists the components that can cause the system and the individual components in that system. The components are listed in order of disassembly. Use the list of components and the required action to focus on disassembly inspections for the root cause of the concern.

Symptom	Possible Sources	Action
• PTU Bearing noise during Disconnected mode	• Fluid level • PTU Input shaft support bearings	• FILL with the correct type and amount of lubricant. REFER to: Power Transfer Unit Fluid Level Check (308-07B Power Transfer Unit - 2.0L EcoBoost (184kW/250PS) â€“ MI4, General Procedures). • REMOVE PTU, DISASSEMBLE and INSPECT input shaft bearings. REFER to: Power Transfer Unit Input Shaft Seal LH - 8-Speed Automatic Transmission â€“ 8F35 (308-07B Power Transfer Unit - 2.0L EcoBoost (184kW/250PS) â€“ MI4, Removal and Installation).