845RE Introduction

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2017 Webinar Dates		Transmission
February	21	RE0F10A/B (CVT) Internal
March	7	RE0F10D/E (CVT) Internal
March	21	845RE Intro
April	4	Hydraulics T & C
April	18	Fundamentals of Electricity
May	2	6R80 Intro
May	16	LCT 1000 Update
May	30	6R80 Diagnostics
June	13	A761/960E/AB60E Internal
June	27	845RE Internal
July	11	RE0F11A (CVT) Intro
July	25	6L80/90 Diagnostics

More Dates to Follow!


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845RE Introduction

Application

845RE - Chrysler manufactures the 845RE transmission in our Kokomo IN plant under license from ZF for 3.6L V6 applications

- All Chrysler / Dodge / Jeep & Ram

- **8HP45** - Chrysler sources from ZF

- **8HP70** - Chrysler sources from ZF – 3.0L Diesel / 5.7L / 6.4L
- All Chrysler / Dodge / Jeep & Ram

- **8HP90** - Chrysler sources from ZF – 6.2L Hellcat
- 2015 Challenger / Charger)

Dodge
15-17 Challenger
13-17 Charger
14-17 Durango
14-17 Ram 15000
Chrysler
13-17 300
Jeep
14-17 Grand Cherokee

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Power Plant

All of the models listed use the 3.6L Pentastar Engine

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The 845RE is an electronic eight speed rwd transmission

- The Transmission Control Module Assembly (TCMA), which is integrated into the valve body, provides fully synchronized clutch-to-clutch shifting through four planetary gear sets.
- The TCMA includes a mounting plate that holds the Transmission Control Module (TCM) and a molded wiring harness for connection to various transmission sensors and solenoids.
- The valve body assembly contains all the sensors and solenoids required for operation, completely inside the transmission. Eight speeds allow the engine to maintain its optimal RPM range, increasing fuel economy and performance.
- Transmission control is performed by the TCM based on hard-wired and CAN bus signals from sensors and modules.
- The TCM receives driveability data from the Powertrain Control Module (PCM) and other modules over the CAN-C bus.
- It also receives shift lever position information from the electronic shifter over a dedicated transmission CAN bus.
- The TCM processes this input data and controls operation of the torque converter clutch, park lock system, solenoid valves, and pressure regulating valve.
- The input and output speed sensors are Hall-effect sensors that measure shaft rotational speed.
- The input speed sensor is located at the top, near the center, of the of the TCMA and reads input shaft speed from the magnetic ring on the P2 carrier.
- The output speed sensor is located at the back of the TCMA and reads output shaft speed from the P4 carrier

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E-Shift

•E-shift (or “Shift by Wire”) is a vehicle level system that electronically performs the function of current mechanical shifter/linkage/transmission hardware

•The E-Shifter is an electronic switch/module, using CAN messaging to communicate driver requests for transmission gear changes to the TCM

•Eliminates system linkage & mechanical connection to transmission park pawl & sprag for ***normal*** operation. The mechanical release for *service* situations is maintained via **MPR (manual park release).**

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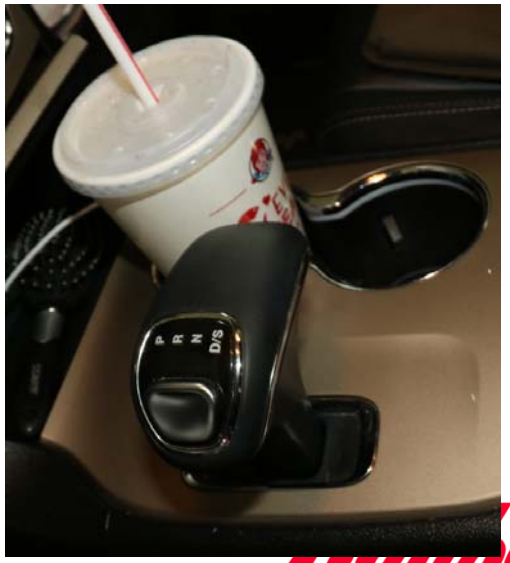
Ram 1500 Shifter

Challenger/Charger Shifter and MPR
Has paddles on the steering wheel

Grand Cherokee Shifter
Has paddles on the steering wheel



Jeep Manual Park Release (MPR)

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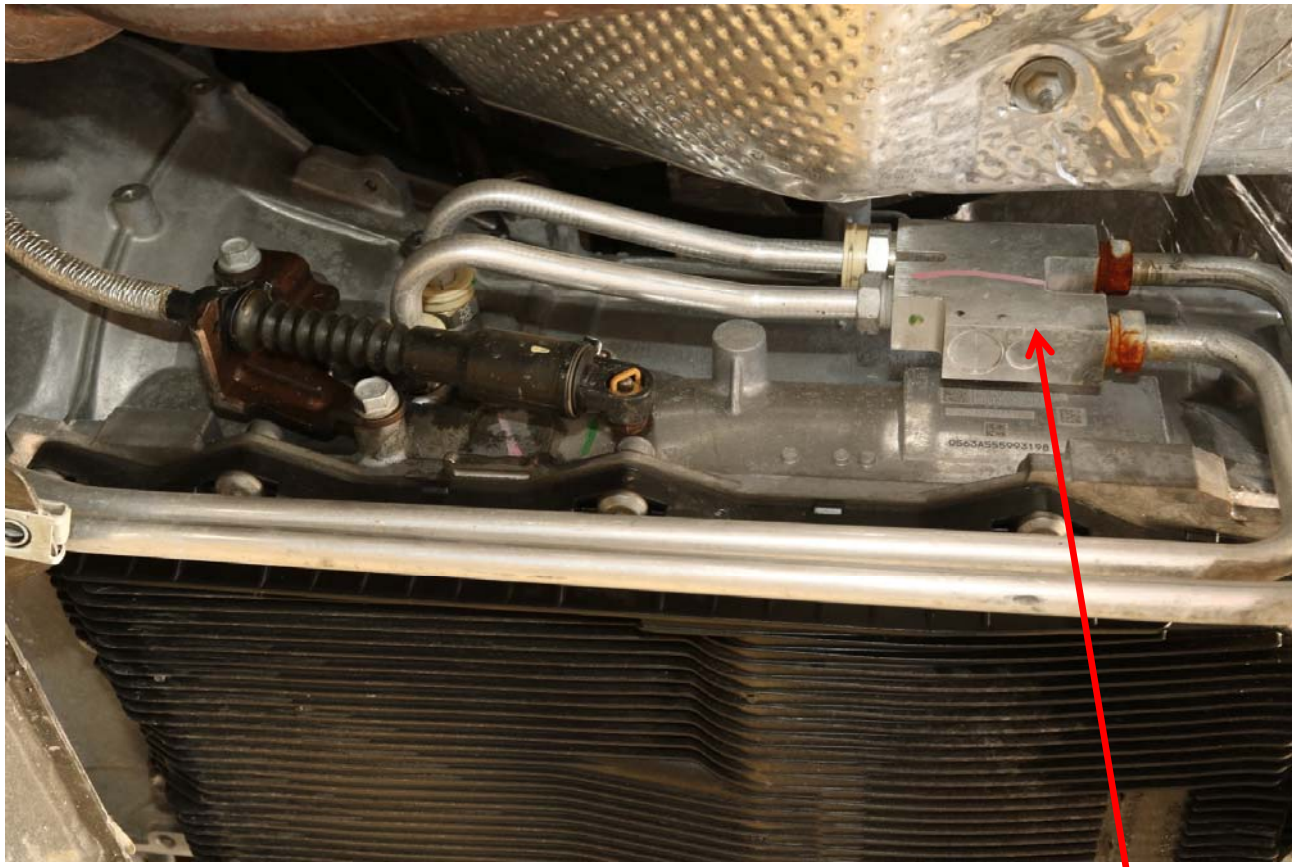
Drivers side view of the Manual Park Release (MPR) lever mechanism



Thermostatic Valve Body

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Remember When ?

845RE Introduction

845RE Clutch Apply Chart					
Gear	Brake		Clutch		
	A	B	C	D	E
1	X	X	X		
2	X	X			X
3		X	X		X
4		X		X	X
5		X	X	X	
6			X	X	X
7	X		X	X	
8	X			X	X
R	X	X		X	

Notice only two open clutches at any time = less parasitic drag.

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Solenoid Firing Order

Gear	Solenoid							
	Park (NC)	A (NC)	B (NC)	C (NO)	D (NO)	E (NO)	TCC (NO)	LPS (NO)
P		X	X*	X	X	X		
N	X	X	X*	X	X	X		
R	X	X	X	X		X		VP
1st	X	X	X		X	X	VP	VP
2nd	X	X	X	X	X		VP	VP
3rd	X		X		X		VP	VP
4th	X		X				VP	VP
5th	X		X			X	VP	VP
6th	X						VP	VP
7th	X	X				X	VP	VP
8th	X	X		X			VP	VP

X = Electrically Energized
X* = Contact Point Pressure
VP = Variable Pressure

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Fail Safe Operation

In the event of a complete transmission electrical failure (loss of power to the TCM), the transmission enters default limp-in mode. When the TCM loses power, all solenoids are de-energized. Maximum pressure locks the transmission in 6th gear, and a diagnostic trouble code (DTC} is stored in memory. If the vehicle is in a forward gear range when the fault occurs, the transmission defaults to 6th gear.

If the vehicle is in park, reverse, or neutral, or if the engine is turned off when the fault occurs, the transmission will remain in park because the park lock release system cannot release the parking pawl. No hydraulic pressure is supplied to the driving clutches. In this situation, the manual park release lever must be used to disengage the park pawl.

The limp-in function remains active until the OTC is rectified or the stored OTC is erased with the appropriate scan tool.

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845RE/8HP70 Gear Ratio Chart	
1	4.69: 1
2	3.13: 1
3	2.10: 1
4	1.67: 1
5	1.29: 1
6	1.0:1
7	.84: 1
8	.67: 1
R	3.30: 1

8HP90 Gear Ratio Chart	
1	4.71: 1
2	3.14: 1
3	2.10: 1
4	1.67: 1
5	1.29:1
6	1.00: 1
7	.84: 1
8	.67: 1
R	3.30: 1

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First things first. Check that fluid level!

To properly check and fill the transmission, perform the following procedure:

Warning:

There is a risk of accident from vehicle moving when the engine is running. Secure vehicle to prevent it from moving. There is a risk of injury from contusions and burns if you insert your hands into the engine when it is running. Do not touch hot or rotating parts. Wear properly fitted work clothes.

Caution:

A unique transmission fluid has been developed for this transmission. This fluid is NOT compatible with ATF+4 or any other current Chrysler transmission fluid. For specifics about this unique fluid see FLUIDS, LUBRICANTS AND GENUINE PARTS .

NOTE: Oil dye is not required to find leaks in the BHP transmission. The oil dye can cause shift quality issues and is not recommended. The BHP fluid has illuminance that is visible under a black light.

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Fluid Level Check (continued)

1. Raise and support the vehicle on a level hoist (Refer to 04 - Vehicle Quick Reference/Hoisting – Standard Procedure)
2. Start the engine. The engine must continue to run for the entire test.
3. AWD vehicles only: If necessary, remove the front propeller shaft (Refer to 03 - Differential and Driveline/Propeller Shaft /Removal
4. AWD vehicles only: Using a scan tool, enable Emissions Rolls Test Mode in the PCM.
5. Using a scan tool or the vehicle information center, verify that the transmission fluid temperature is below 30°C(86° F).
6. Disable traction control (ESC).
7. Remove the fill plug from the right rear of the transmission case.
8. Add transmission fluid until it trickles from the fill opening.
9. Install the fill plug.
10. Lower the vehicle for access to inside of the vehicle, leaving the tires at least 8 inches off the ground.
11. With the brakes applied, place the transmission in Reverse and hold for 5 seconds.
12. Place the transmission in Drive and hold for 5 seconds.
13. Release the brakes, slowly accelerate to 2nd gear and hold for 5 seconds.
14. Apply the brakes and place the transmission in Neutral.
15. Raise the engine speed to 2000 RPM for 5 seconds.
16. Return the engine to idle and place the transmission in Park.

Note:
A full transmission will have fluid at the fill hole with the transmission between 30°C (86°F) and 50°C (122°F). Do not over fill.

17. Remove the fill plug and allow excess fluid to drain from fill hole or add fluid as necessary.
18. Install the fill plug.
19. AWD vehicles only: If removed, install the front propeller shaft (Refer to 03 - Differential and Driveline/Propeller Shaft/Installation) .
20. AWD vehicles only: Using a scan tool, disable Emissions Rolls Test Mode in the PCM.
21. Using a scan tool, clear any DTCs.

Fluid Level Check (continued)

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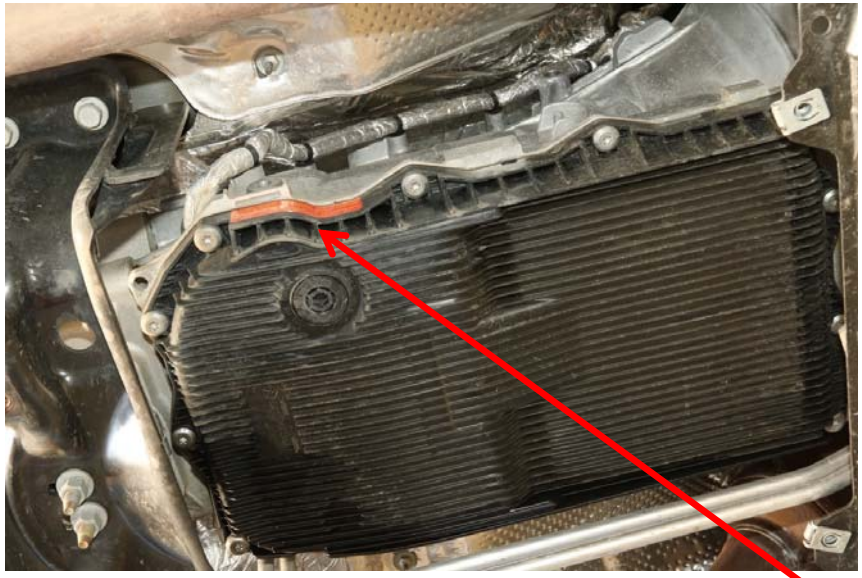

Passenger side view with
plastic rock shield removed.

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Introduction

TRANSMISSION CONTROL MODULE (TCM) ADAPTATION - 8HP45 / 845RE / 8HP70 / 8HP90

The TCM or Transmission Control Module Assembly (TCMA) controls the fluid pressure and fill time of each clutch pack to give optimal shift quality. As the clutches wear, the TCM or TCMA will adapt and make adjustments to keep the shift quality consistent over the life of the vehicle. The initial clutch filling pressure and fill times are set at the factory. When a transmission assembly or transmission component is replaced, or when the adaptation values are reset, the adaptation values must be relearned. This procedure should also be followed when it is suspected that a vehicle has not been driven in a manner that encourages clutch adaptation learning in highway or city driving conditions.

NOTE: The scan tool, for many 8-Speed Transmissions now has a QUICK LEARN or STATIC ADAPTATION (STADA) routine that should be performed if the customer has any shift quality concerns or after any internal repairs are performed on the transmission. If the QUICK LEARN or STATIC ADAPTATION routine is not available on the scan tool for the application you are working on or the shift quality concern is not corrected by performing the QUICK LEARN or STATIC ADAPTATION routine then the TCM ADAPTATION PROCEDURES below need to be performed.

QUICK LEARN PROCEDURE

NOTE: 2015 model year vehicles equipped with the 845RE (Sales Code DFL) already contain software in the TCM to enable the Quick Learn procedure. However, 2014 model year vehicles with the 845RE require the Transmission Control Module to be updated to the latest software level.

NOTE: The scan tool software must be at the newest revision to perform this procedure.

NOTE: The QUICK LEARN PROCEDURE requires that the Transmission fluid temperature be at least 55°C (131°F).

1. Drive the vehicle briefly to ensure all clutches have been engaged at least twice. Keep the engine running throughout the remainder of this procedure.
2. With the scan tool, activate the RESET ADAPTIVE VALUES routine.
3. With the scan tool, activate the QUICK LEARN routine and follow the on-screen instructions. This procedure requires about 2-5 minutes to complete.

TCM ADAPTATION PROCEDURES

The two procedures to relearn these values are called Fast Filling Adaptation and Standard Clutch Filling Adaptation. Depending on the repair or complaint, one or both procedures must be performed as described below.

NOTE: Performing a reset of the Transmission Adaptation values does not automatically trigger the TCM to relearn the Adaptation values. If a reset is performed, both procedures must be performed to restore optimal shift quality. Do not reset these values unless specifically instructed to do so.

NOTE: This procedure does not need to be performed if the existing TCM or TCMA is re-flashed and that was the only repair performed.

One or both TCM Adaptation procedures should be performed depending on the situation. Failure to perform these procedures when required could cause shift quality issues.

Fast Filling Adaptation Procedure

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Perform the following procedure when the TCM or TCMA, or Transmission assembly (with TCMA) has been replaced, or when the adaptation values have been reset. This procedure should be performed before performing the Standard Clutch Filling Adaptation Procedure when these components are replaced.

NOTE: Perform this procedure on a smooth road surface. The TCM or TCMA will abort the adaptation process if it senses rough road conditions. The road should be clear of traffic due to the start, stop, and slow vehicle speeds required during this procedure.

1. With the Scan Tool, erase Diagnostic Trouble Codes (DTCs).
2. Setup the scan tool to display the Transmission Oil Temperature, Torque, Turbine (Input) Speed Sensor rpm, and Clutch 'X' - Filling Counter for each clutch.
3. Drive the vehicle until the Transmission Oil Temperature is above 30° C (86° F).
4. Stop the vehicle.
5. Drive the vehicle to perform upshifts for all gears under the following conditions:
   - Light to medium throttle position
   - Turbine (Input) Speed between 1,250 - 2,000 rpm
   - Torque between 100 N·m and 150 N·m (74 ft. lbs. and 111 ft. lbs.)
6. Release the throttle (0% position) to coast and allow a 6-5 down-shift.
7. Perform steps 4-6 until the Filling Counters for each clutch displays 10 counts.

The tables below may be used as an alternate reference for the optimal conditions required to learn the Fast Filling Adaptations.

Fast Filling Adaptation Conditions Table

Conditions Where Fast Filling Adaptations Occur			
Condition	**Transmission Temperature**	**Torque N·m (ft. lbs.)**	**Input Speed (rpm)**
Upshifts	Between 30° C and 100° C (86° F and 212° F)	Between 100 N·m and 150 N·m (74 ft. lbs. and 111 ft. lbs.)	Between 1250 and 2000 rpm
6-5 Downshifts for B Clutch	Between 30° C and 100° C (86° F and 212° F)	Between negative (-) 60 N·m and negative (-) 40 N·m (negative (-) 44 ft. lbs. and negative (-) 30 ft. lbs.)	Between 750 and 1100 rpm

Clutch vs Shift Table

Shifts Where Each Clutch Will Fast Adapt					
	A Clutch	**B Clutch**	**C Clutch**	**D Clutch**	**E Clutch**
Shift	6 - 7	6 - 5	2 - 3 and 4 - 5	3 - 4	1 - 2 and 5 - 6

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Shifts Where Each Clutch Will Fast Adapt					
	A Clutch	B Clutch	C Clutch	D Clutch	E Clutch
Optimal conditions under which adaptation learning occurs.	Best performed at highway speeds in excess of 80 kph (50 mph).	Coasting with throttle at 0% position.	Best performed at light to medium-throttle - normal vehicle launch.	Best performed at light to medium-throttle - normal vehicle launch.	Best performed at light to medium-throttle - normal vehicle launch.

8. Perform the Standard Clutch Filling Adaptation Procedure.

Standard Clutch Filling Adaptation Procedure

Perform the following procedure when a Transmission internal component, Torque Converter, TCM or TCMA, or Transmission has been replaced, or when the adaptation values have been reset. This procedure should also be performed if it is suspected that the vehicle has not been driven in a manner that encourages clutch adaptation learning in highway or city driving conditions.

NOTE: Perform this procedure on a smooth road surface. The TCM or TCMA will abort the adaptation process if it senses rough road conditions. The road should be clear of traffic due to the start, stop, and slow vehicle speeds required during the procedure.

NOTE: The TCM learns the Standard Clutch Filling Adaptation values when the applicable clutch is not applied.

1. With the Scan Tool, erase DTCs.
2. Setup the scan tool to display the Transmission Oil Temperature, Torque, Turbine (Input) Speed Sensor rpm, and Clutch 'X' - Fast Filling Counter for each clutch.
3. Drive the vehicle until the Transmission Oil Temperature is above 50° C (122° F).

   NOTE: Adaptation learning will be aborted if the Transmission Oil Temperature is above 100° C (212° F).
4. Stop the vehicle.
5. Drive the vehicle using the paddle shifters or Gear +/- buttons on steering wheel in order to hold the transmission in the desired gear.

   NOTE: First and second gears do not require a Standard Clutch Filling Adaptation procedure.

   NOTE: If attempting to resolve a specific shift quality issue, use the **Gear vs Clutch Table** below to see which clutches require further adaptation. For instance, if a rough 2-1 downshift is noted, note that clutch C and clutch E are applying and releasing. Then use the **Clutch vs Shift Table** above to note that clutch C and clutch E require the adaptation procedure performed in 4th and 7th gear.
6. In 3rd gear, drive the vehicle within the following conditions until the Clutch D - Fast Filling Counter increments by one count:
   - Vehicle speed between 32-56 kph (20-35 mph)
   - Turbine (Input) speed between 950 - 1750 rpm
   - Torque between 25 N·m - 180 N·m (18 ft. lbs. - 133 ft. lbs.)
7. In fourth gear, drive the vehicle within the following conditions until the Clutch C - Fast Filling Counter increments by one count:
   - Vehicle speed between 32-56 kph (20-35 mph)
   - Turbine (Input) speed between 950 - 1750 rpm

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- Torque between 25 N·m - 120 N·m (18 ft. lbs. - 89ft. lbs.)

NOTE: Fifth gear does not require a Standard Clutch Filling Adaptation procedure.

8. In sixth gear, drive the vehicle within the following conditions until the Clutch A - Fast Filling Counter increments by one count:
   - Vehicle speed between 73-81 kph (45-50 mph)
   - Turbine (Input) speed between 950 - 1750 rpm
   - Torque between 50 N·m - 120 N·m (37 ft. lbs. - 89ft. lbs.)
9. In seventh gear, drive the vehicle within the following conditions until the Clutch B- Filling Counter and Clutch E Fast Filling Counter each increment by one count:
   - Vehicle speed between 73-81 kph (45-50 mph)
   - Turbine (Input) speed between 950-1750 rpm
   - Torque between 50 N·m-120 N·m (37 ft. lbs.-89ft. lbs.)

The **Standard Clutch Filling Adaptation Conditions Table** below may be used as an alternate reference for the optimal conditions required to learn the Standard Clutch Filling Adaptations.

Standard Clutch Filling Adaptation Conditions Table

Steady State Gears And Conditions Where Each Clutch Will Adapt					
Clutch	**Gear**	**Optimal Vehicle Speed**	**Input Speed (rpm)**	**Torque N·m (ft. lbs.)**	**Transmission Temperature**
A Clutch	6th	73-81 kph (45-50 mph).	Between 950 and 1750 rpm	Between 50 N·m and 120 N·m (37 ft. lbs. and 89 ft. lbs.)	Between 50° C and 100° C (122° F and 212° F)
B Clutch	7th	73-81 kph (45-50 mph).	Between 950 and 1750 rpm	Between 50 N·m and 120 N·m (37 ft. lbs. and 89 ft. lbs.)	Between 50° C and 100° C (122° F and 212° F)
C Clutch	4th	32-56 kph (20-35 mph).	Between 950 and 1750 rpm	Between 25 N·m and 120 N·m (18 ft. lbs. and 89 ft. lbs.)	Between 50° C and 100° C (122° F and 212° F)
D Clutch	3rd	32-56 kph (20-35 mph).	Between 950 and 1750 rpm	Between 25 N·m and 180 N·m (18 ft. lbs. and 133 ft. lbs.)	Between 50° C and 100° C (122° F and 212° F)
E Clutch	7th	73-81 kph (45-50 mph).	Between 950 and 1750 rpm	Between 50 N·m and 120 N·m (37 ft. lbs. and 89 ft. lbs.)	Between 50° C and 100° C (122° F and 212° F)

10. Perform steps 4-9 until the Fast Filling Counters for each clutch has incriminated by at least five counts.

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11. Evaluate shift performance for all gears. If the shift quality for any gear is insufficient, execute the appropriate driving conditions until shift quality improves. Incrementing the Fast Filling Counters by 12 counts for each clutch may be necessary to properly learn the adaptation values.

The following table Controller Area Network (CAN) be used to determine which clutches are involved in a specific up-shift or down-shift quality issue. 'X' indicates when a clutch is applied. The Standard Clutch Filling Adaptation learning occurs when the applicable clutch is not applied and the transmission is in a steady state (not shifting).

Gear vs Clutch Table

Gear	Clutch A	Clutch B	Clutch C	Clutch D	Clutch E
1st	X	X	X		
2nd	X	X			X
3rd		X	X		X
4th		X		X	X
5th		X	X	X	
6th			X	X	X
7th	X		X	X	
8th	X			X	X
Reverse	X	X		X	

Read the information below for details regarding this procedure.

Reading Clutch Adaptation Data

The Clutch Packs will each have 4 scan tool data labels to observe under the TCM section. Using Clutch A as an example, the data labels are:

- **Clutch A- Fast Filling Counter:** This data label displays the number of Clutch Filling Pressure adaptations that have been performed. These adaptations are the first learned values on a new transmission or after clutch adaptation values are reset. You will need to allow 5 to 12 fast filling counts per clutch to properly learn the clutch adaptations. If the shift quality is sufficient after 5 counts, no further adaptation learns for that clutch are necessary.
- **Clutch A- Filling Counter:** This data label displays the number of Clutch Filling Time adaptations that have been performed. You will need to allow 5 to 12 filling counts per clutch to properly learn the clutch adaptations. If the shift quality is sufficient after 5 counts, no further adaptation learns for that clutch are necessary.
- **Clutch A- Filling Pressure:** This data label displays the clutch filling pressure value that is learned during the TCM Adaptation procedure. The TCM adaptation software will increase or decrease the clutch fluid filling pressure to improve shift performance. The clutch Filling Pressure value will change over the life of the transmission based first on initial transmission build variation and then due to normal clutch wear.
- **Clutch A- Filling Time:** This data label displays the clutch filling time value that is learned during the TCM Adaptation procedure. The TCM adaptation software will increase or decrease the Clutch Filling Time to improve shift performance. The clutch Filling Time value will change over the life of the transmission based first on initial transmission build variation and then due to normal clutch wear.

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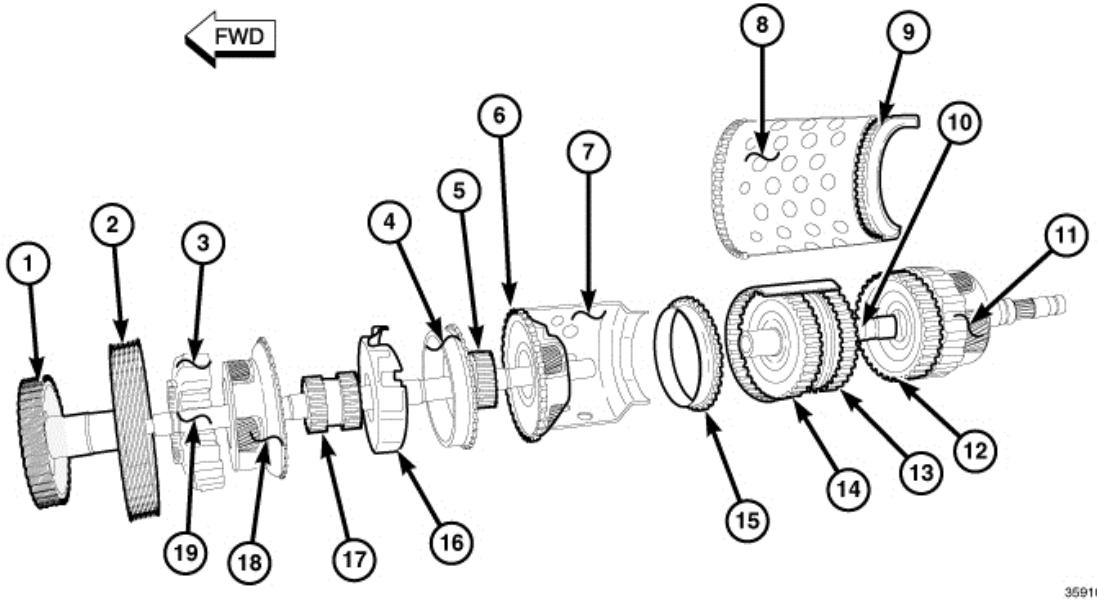
Internal components



1- A CLUTCH
2 - B CLUTCH
3 - P1 ANNULUS (PARTIAL CUTAWAY)
4 - P2 ANNULUS
5 - P3 SUN GEAR
6 - P3 CARRIER
7 - D CLUTCH DRUM (PARTIAL CUTAWAY)
8 - P4 ANNULUS DRUM (PARTIAL CUTAWAY)
9 - P4 ANNULUS (PARTIAL CUTAWAY)
10 - P4 SUN GEAR/D CLUTCH RETAINER (PARTIAL CUTAWAY)
11 - P4 CARRIER
12 - D CLUTCH
13 - C CLUTCH14 - E CLUTCH
15 - P3 ANNULUS
16 - P2 CARRIER
17 - P1/P2 SUN GEAR
18 - P1 CARRIER
19 - INPUT SHAFT

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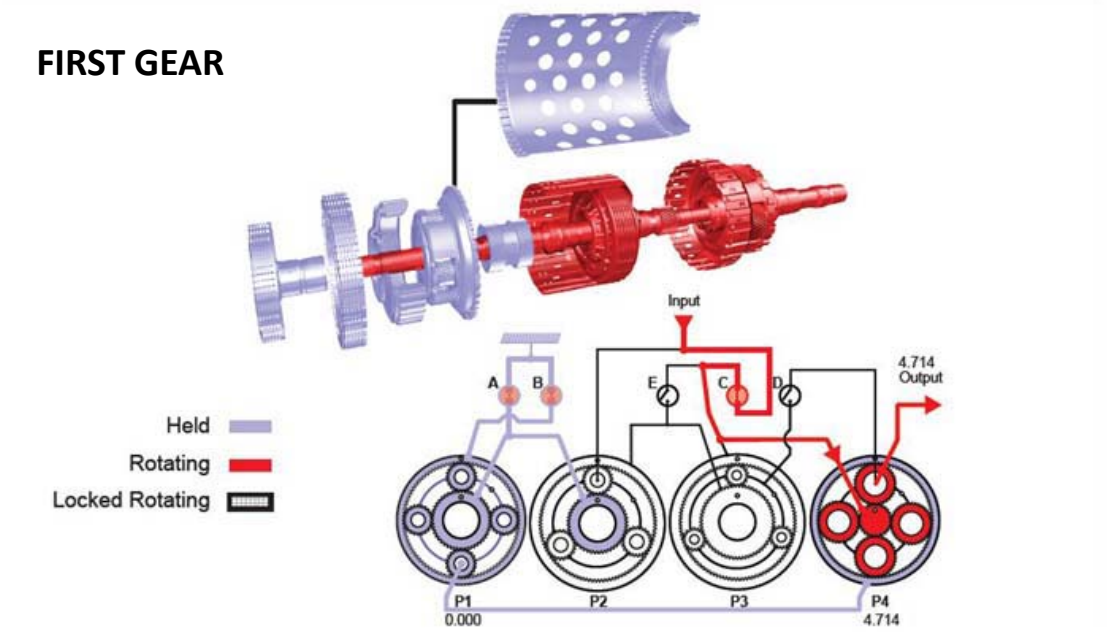
FIRST GEAR



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FIRST GEAR POWERFLOW

Clutch A (1) holds the P1/P2 sun gear (17) and clutch B (2) holds the P1 annulus (3). Because two members of the same gear set are held, the entire P1 gear set is stationary. The stationary P1 carrier (18) is connected to the P4 annulus (9), locking the annulus. The input shaft (19) drives the C clutch (13), and the C clutch (13) drives the P4 sun gear (10). The P4 sun gear (10) drives the P4 carrier (11), whose pinions walk around the held P4 annulus (9).

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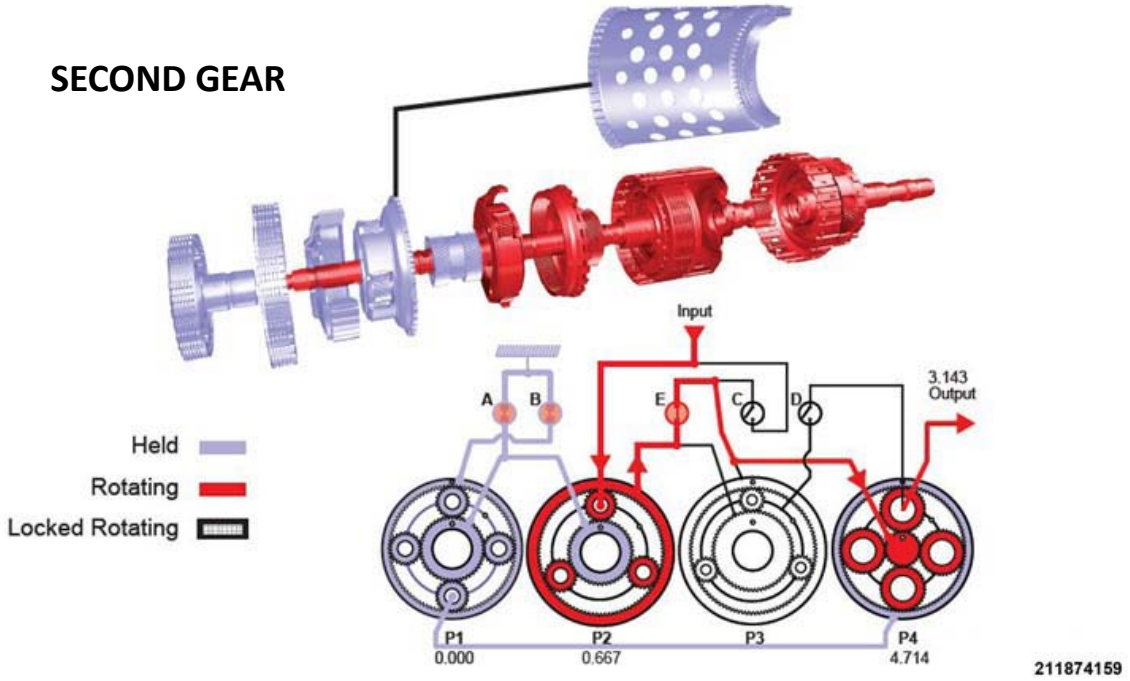
SECOND GEAR



SECOND GEAR POWERFLOW

Clutch A (1) holds the P1/P2 sun gear (17) and clutch B (2) holds the P1 annulus (3). As with 1st gear, the entire P1 gear set is stationary. The stationary P1 carrier (18) is connected to the P4 annulus (9), locking the annulus. The input shaft (19) drives the P2 carrier (16). The P2 carrier (16) drives the P2 annulus (4). The P2 annulus (4) drives the E clutch (14) through the P3 sun gear (5) connection. The E clutch (14) then drives the P4 sun gear (10). The P4 sun gear (10) drives the P4 carrier (11), whose pinions walk around the held P4 annulus (9).

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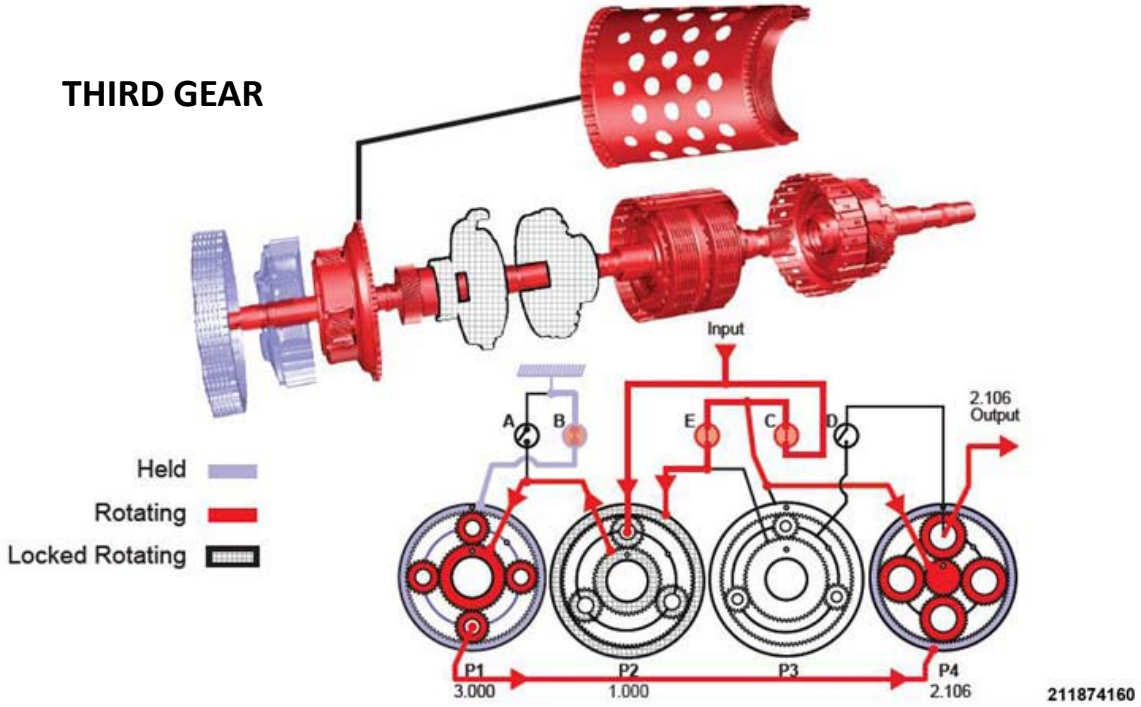
THIRD GEAR



THIRD GEAR POWERFLOW

Clutch B (2) holds the P1 (3) annulus. The input shaft (19) drives the C clutch (12), which drives the P4 annulus (9). The C clutch (12) also drives the E clutch (14), which drives the P2 annulus (4). Because the P2 carrier (16) and the P2 annulus (4) are both driven at input shaft speed, the P2 gear set is locked at input shaft speed. The P1/P2 sun gear (17) drives the P1 carrier (18), and the P1 carrier drives the P4 annulus (9).

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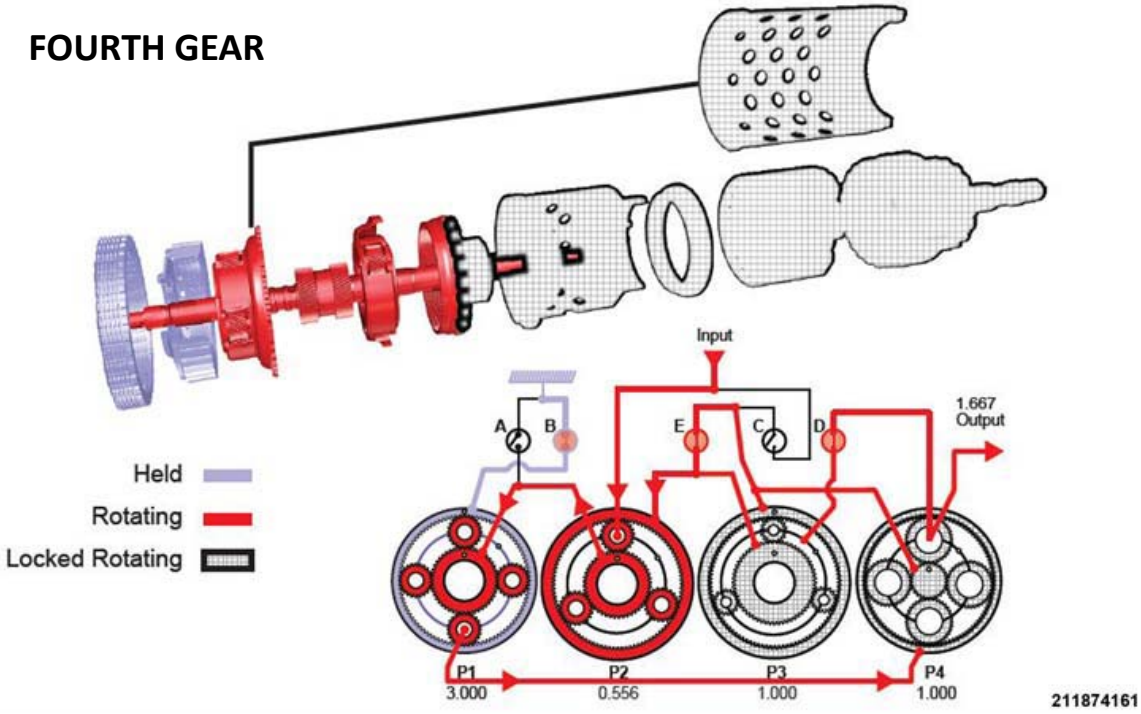
FOURTH GEAR

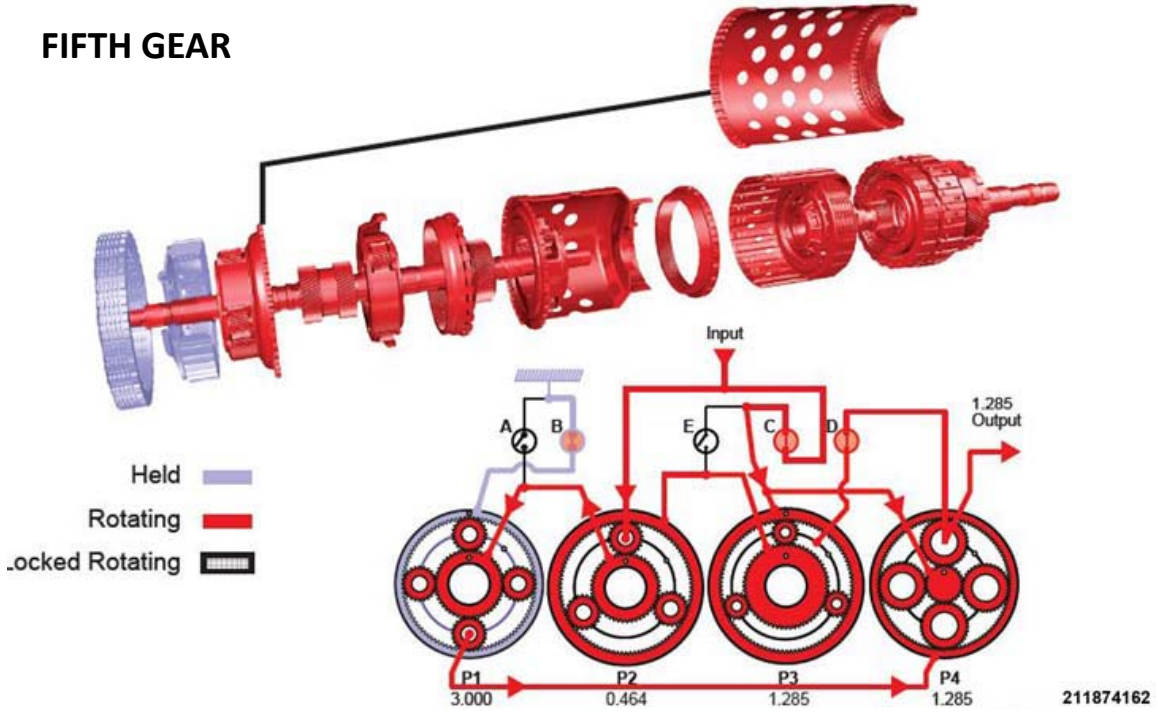


FOURTH GEAR POWERFLOW

Clutch B (2) holds the P1 annulus (3). With the E (14) and D (12) clutches applied, all components of the P3 and P4 gear sets are locked together to rotate at the same speed. The input shaft (19) drives the P2 carrier (16) which drives the P1/P2 sun gear (17). The P1/P2 sun gear drives the P1 carrier (18). The P1 carrier drives the P4 gear set through the P4 annulus (9).

845RE Introduction

FIFTH GEAR

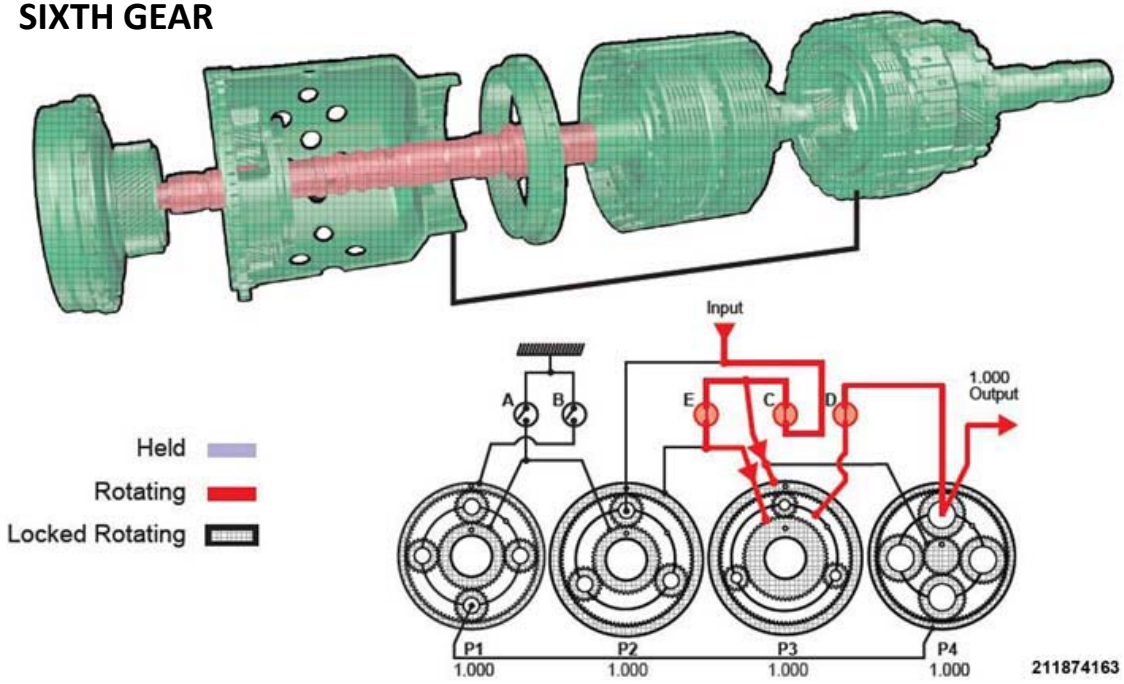


FIFTH GEAR POWERFLOW

Clutch B (2) holds the P1 annulus (3). The input shaft (19) always drives the P2 carrier (16). Because the C clutch (13) is applied, the P3 annulus (15) and P4 sun gear (10) are also driven at input shaft speed. The D clutch (12) is applied to connect the P3 carrier (6) with the P4 carrier (11). The P2 carrier (16) drives the P1/P2 sun gear (17), which drives the P1 carrier (18). The P1 carrier walks around the held P1 annulus (3) and drives the P4 annulus (9). Gear reduction is achieved between the P4 sun gear (10) rotating at input shaft speed and the P4 annulus (9) rotating at a reduced speed.

845RE Introduction

SIXTH GEAR

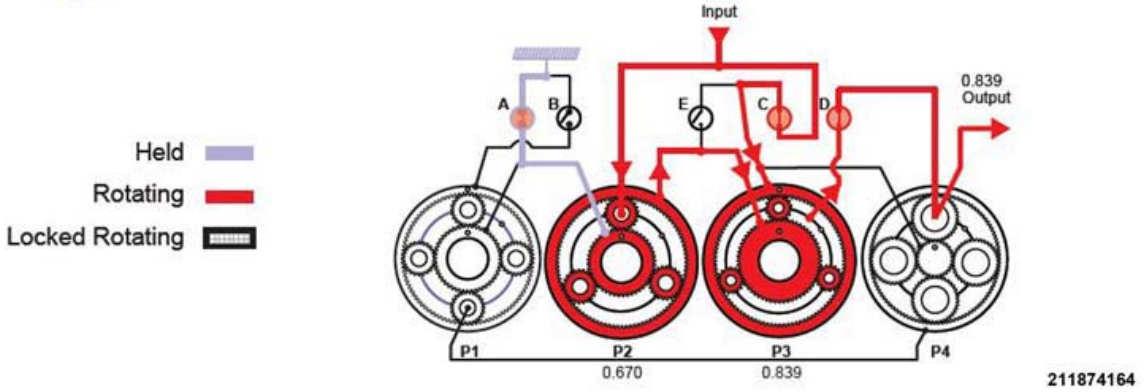


SIXTH GEAR POWERFLOW

Clutch C (13) drives the P3 annulus (15) at input shaft speed and E clutch (14) drives the P3 sun gear (5) at input shaft speed. Because two components of the same gear set are driven at the same speed, the entire gear set is locked in rotation. The D clutch (12) connects the P3 carrier (6) to the P4 carrier (11) and the output shaft.

845RE Introduction

SEVENTH GEAR

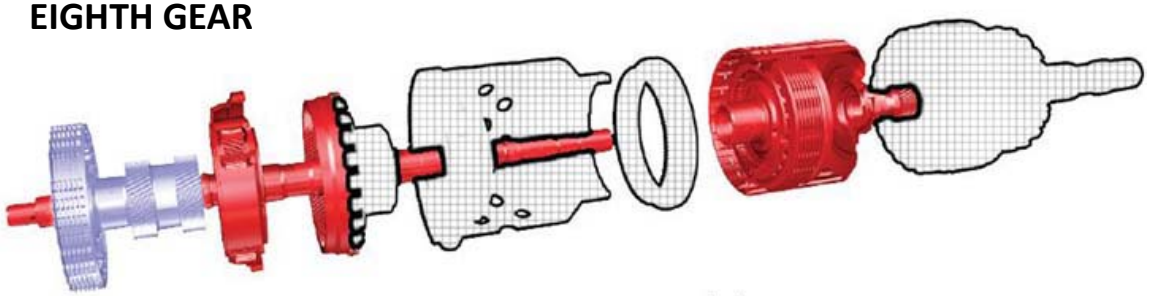


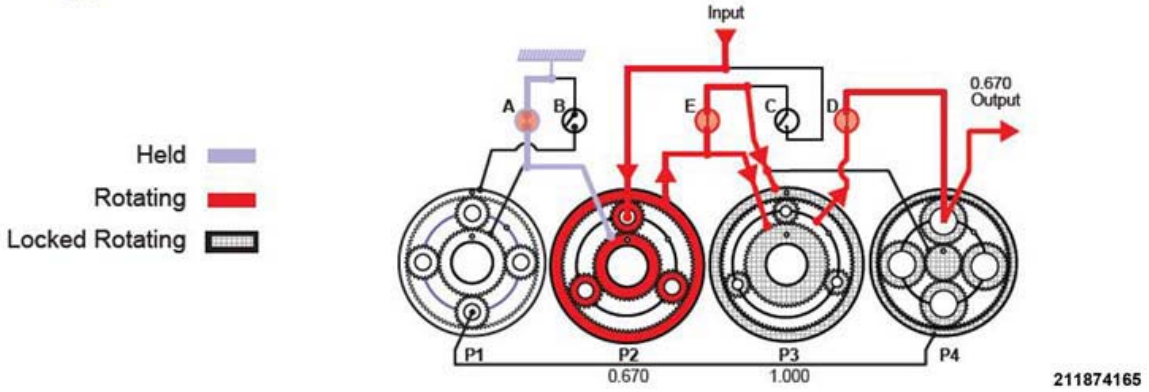
SEVENTH GEAR POWERFLOW

Clutch A (1) holds the P1/P2 sun gear (17) stationary. The input shaft drives the P2 carrier which drives the P2 annulus, increasing the speed of the P3 sun gear (5) and creating overdrive. The C clutch (13) drives the P3 annulus (15) at input shaft speed. The P3 sun gear (5) spins at a faster speed than the P3 annulus (15) and the P3 carrier (6) is the output of the gear set. This results in a reduction that offsets the overdrive of the P2 gear set. The D clutch (12) connects the P3 carrier (6) to the P4 carrier (11) and the output shaft.

845RE Introduction

EIGHTH GEAR





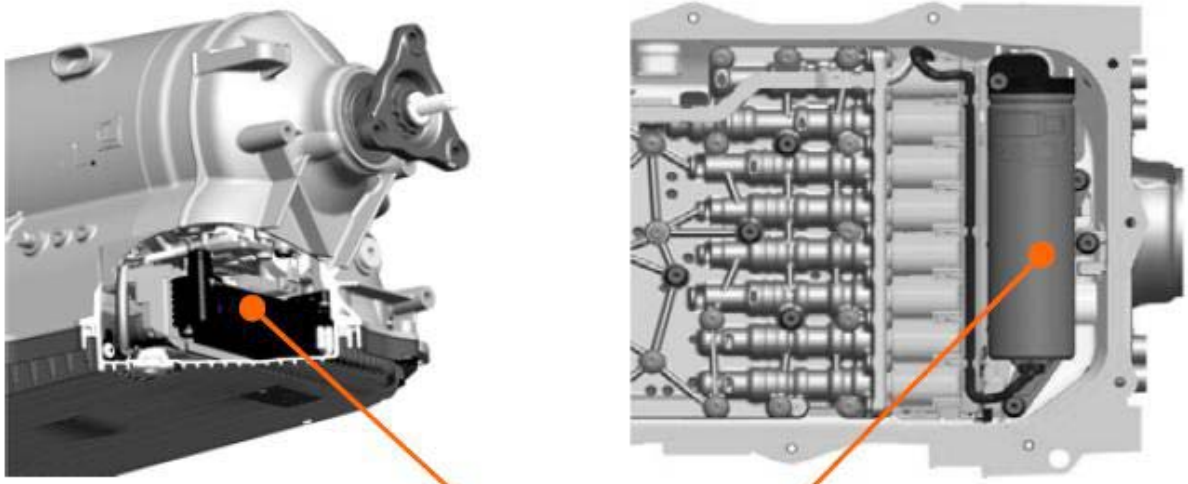
EIGHTH GEAR POWERFLOW

Clutch A (1) holds the P1/P2 sun gear (17) stationary. As with 7th gear, the P2 gear set creates an overdrive ratio. However, the E clutch (14) is now applied, which locks together the P3 gear set and eliminates any torque multiplication from the P3 gear set. The overdrive created by P2 is transferred by the D clutch (7) to the output shaft.

845RE Introduction

Stop/Start System

- Shuts engine down when vehicle comes to complete stop and conditions are ‘right’
- Allows for quick restart of engine and drive away
- Utilizes stored energy in reservoir to ‘prime’ trans clutches
- Enables virtually instantaneous (<350ms) forward movement with removal of foot from brake

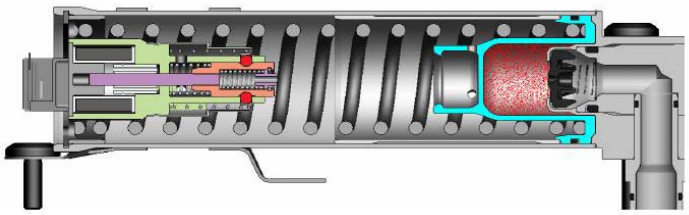


Hydraulic Impulse Storage (HIS)

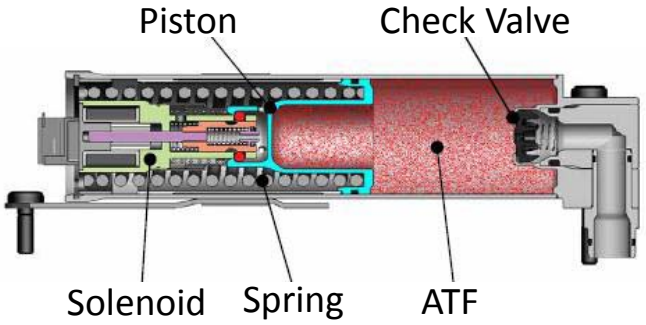
845RE Introduction

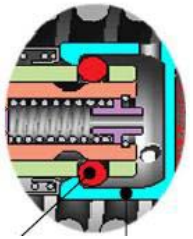
- Fluid is stored during normal operation of vehicle
- Solenoid 'captures' piston and holds until required
- Check valve retains fluid
- Upon request solenoid releases piston, fluid delivered to clutches, and vehicle resumes operation

Actuator in discharged position



Charged position





845RE Introduction

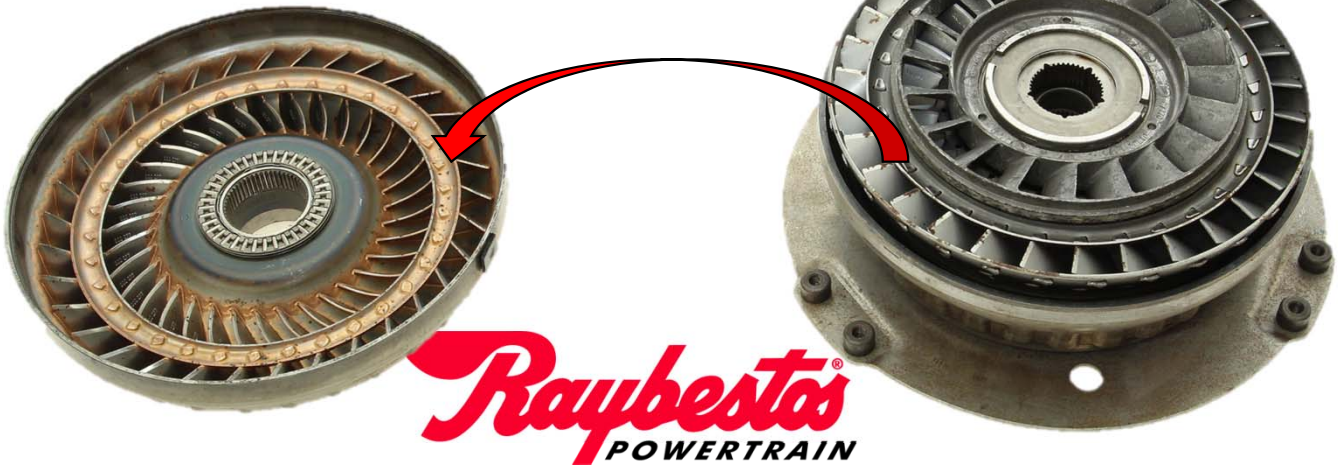
Torque Converter Information

The 845RE torque converter is using a “clutch drum” type of torque converter clutch.

This clutch has one steel plate, a single two sided friction disk and a pressure plate.

Turbine and Stator

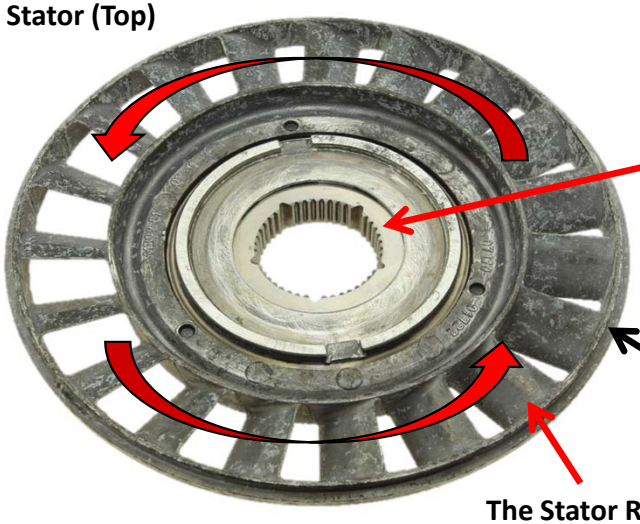
Impeller



845RE Introduction

Torque Converter Information

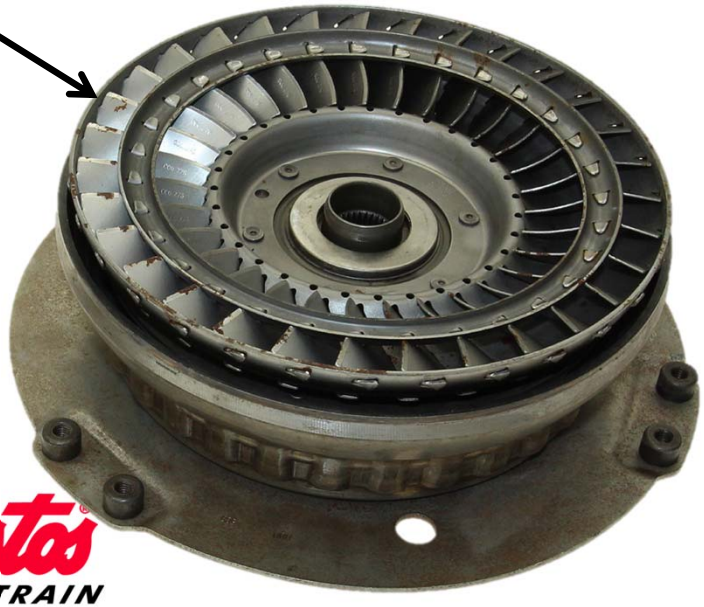
Stator (Top)



Hold The Sprag Race

The Stator Rotates
Counter Clockwise

Turbine



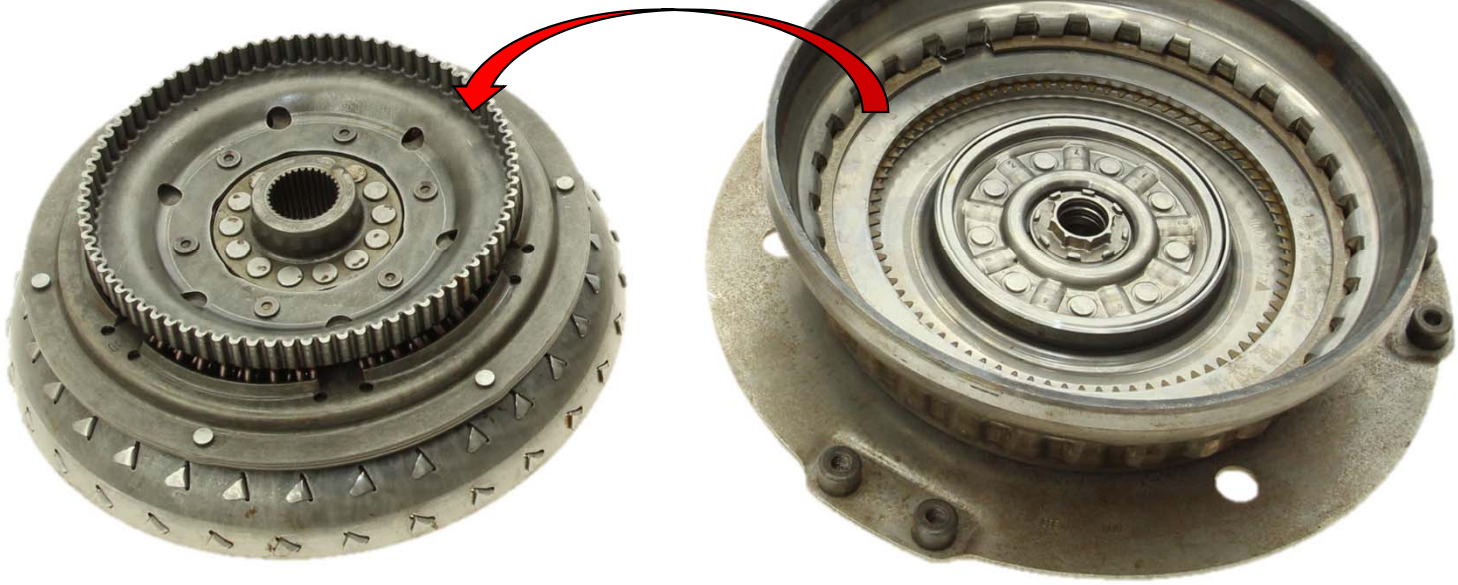
Remove Washer
Inspect Sprag

845RE Introduction

Torque Converter Information

Converter Clutch Splined to the Shell

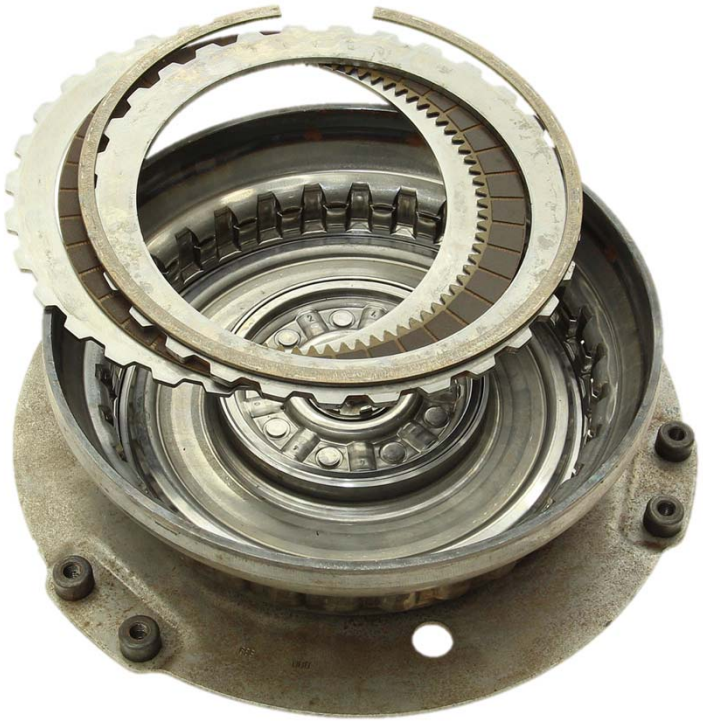
Converter Clutch and Damper
Riveted to the Turbine



845RE Introduction

Torque Converter Information

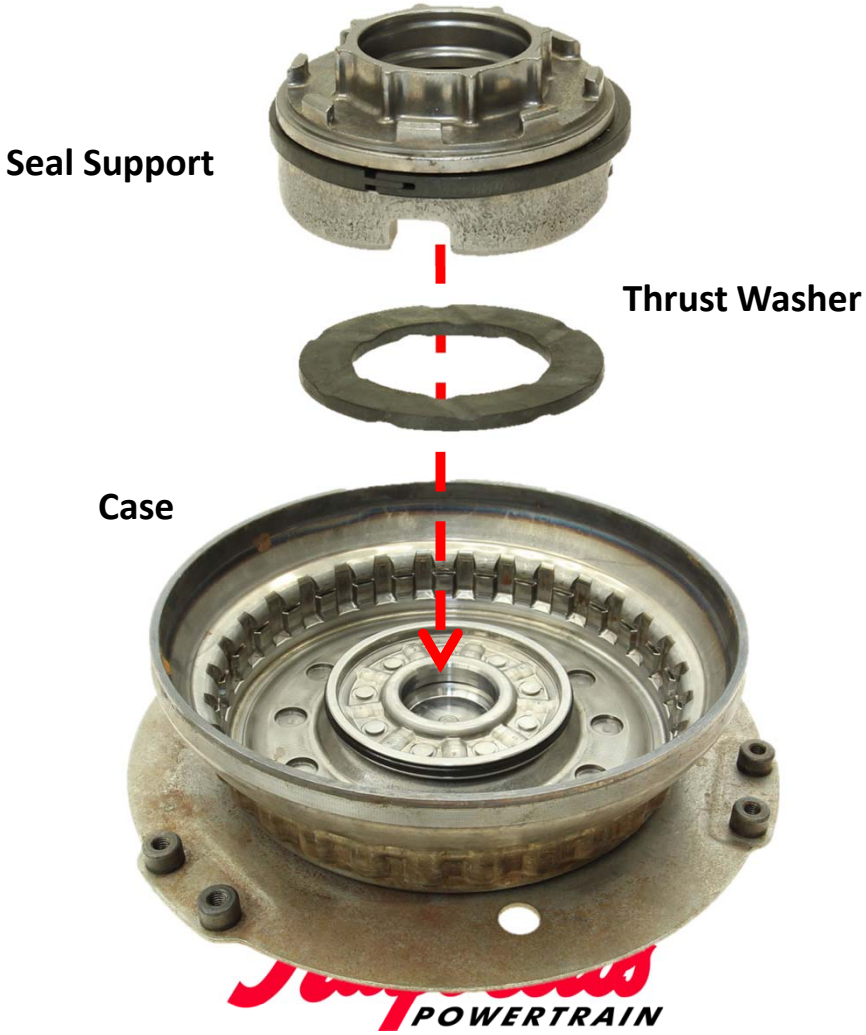
Steel Plate, Friction Disc, Pressure Plate



Piston

845RE Introduction

Torque Converter Information



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Any Questions?

Thank You For Attending