

Material

Item	Specification	Fill Capacity
Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC	MERCON® LV	8.5L (9 qt)

Torque Specifications

Description	Nm	lb-ft	lb-in
Clutch support tower bolts	12	-	106
Differential transmission fluid baffle bolts	12	-	106
Drain plug	12	-	106
Drive shaft bolts		26	
Fluid reservoir bolts	12	-	106
Main control cover bolts	12	-	106
Main control-to-transmission case bolts ^a	-	-	-
Main control nut ^a	-	-	-
Manual control lever nut	24	18	-
Oil leveling plug	8	-	71
OSS sensor bolt	10	-	89
PTU bolts	63	47	
PTU bracket-to- PTU bolts	25	18	
PTU bracket-to-engine bolt	63	47	
Pump bolts	10	-	89
Pump-to-torque converter housing bolts	35	26	-
Roll restrictor through bolts	125	92	-
Roll restrictor bracket bolts	80	59	-
Selector lever cable bracket bolts	25	18	-
Separator plate-to-solenoid body bolts	10	-	89
Solenoid body-to-valve body bolts	10	-	89
Torque converter nuts ^a	-	-	-
Torque converter housing bolts	24	18	-
Torque converter housing stud bolts	24	18	-
Transmission fluid baffle bolts	12	-	106
Transmission fluid cooler tube bolts ^a	-	-	-
Transmission-to-engine bolts	48	35	-
Transmission support insulator bolt	148	109	-
Transmission support insulator bracket nuts	48	35	-

TR sensor detent spring bolt	13	-	115	10	-	89
Tube clamps	-	5	44			

^a Refer to the procedure for the specification.

General Specifications

Item	Specification
Transmission Weight	86 kg (189 lb)

Solenoid Operation Chart

Base Selector Lever Position	PCM Commanded Gear	SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (2,6)	SSD NH (L,R/C 4,5,6)	SSE (On/Off) NC	TCC NL
P	P	Off	On	Off	Off	On	Off
R	R	Off	Off	Off	Off	On	Off
N	N	Off	On	Off	Off	On	Off
D	1	On	On	Off	Off ^a	On ^b	Off
	2	On	On	On	On	Off	Off
	3	On	Off	Off	On	Off	Off
	4	On	On	Off	Off	Off	On/Off
	5	Off	Off	Off	Off	Off	On/Off
	6	Off	On	On	Off	Off	On/Off

^a Turns on above 8 km/h (5 mph).

^b Turns off above 8 km/h (5 mph).

NC = Normally closed

NH = Normally high

NL = Normally low

Pressure Chart

Gear	Line Pressure at Idle KPa (psi)		Line Pressure at WOT Stall KPa (psi)	
	Minimum	Maximum	Minimum	Maximum
P	338 kPa (49 psi)	379 kPa (55 psi)	-	-
R	621 kPa (90 psi)	689 kPa (100 psi)	1,868 kPa (271 psi)	2,068 kPa (300 psi)
N	338 kPa (49 psi)	379 kPa (55 psi)	-	-
D	338 kPa (49 psi)	379 kPa (55 psi)	1,868 kPa (271 psi)	2,068 kPa (300 psi)

Clutch Application Chart

Gear	Forward (1, 2, 3, 4)	Direct (3, 5, R)	Intermediate (2, 6)	Low / Reverse (1, R)	Overdrive (4, 5, 6)	Low - OWC
Park				H		
Reverse		D		H		
Neutral				H		
1st Gear D	H			H		H
2nd Gear D	H		H			
3rd Gear D	H	D				
4th Gear D	H				D	
5th Gear D		D			D	
6th Gear D			H		D	
1st Gear Manual	H			H		
Planetary Component	Front Sun	Rear Sun	Rear Sun	Rear Carrier/Center Ring	Rear Carrier/Center Ring	Rear Carrier/Center Ring

H = Holding

D = Driven

Stall Speed Chart

Engine	Stall Speed
1.6L GTDI	2,350-2,650
2.0L GTDI	2,350-2,650
2.5L	2,350-2,650

Gear Ratio Chart

Gear	Ratio
1st/low	4.584:1
2nd	2.964:1
3rd	1.912:1
4th	1.446:1
5th	1:1
6th	0.746:1

Reverse	2.94:1
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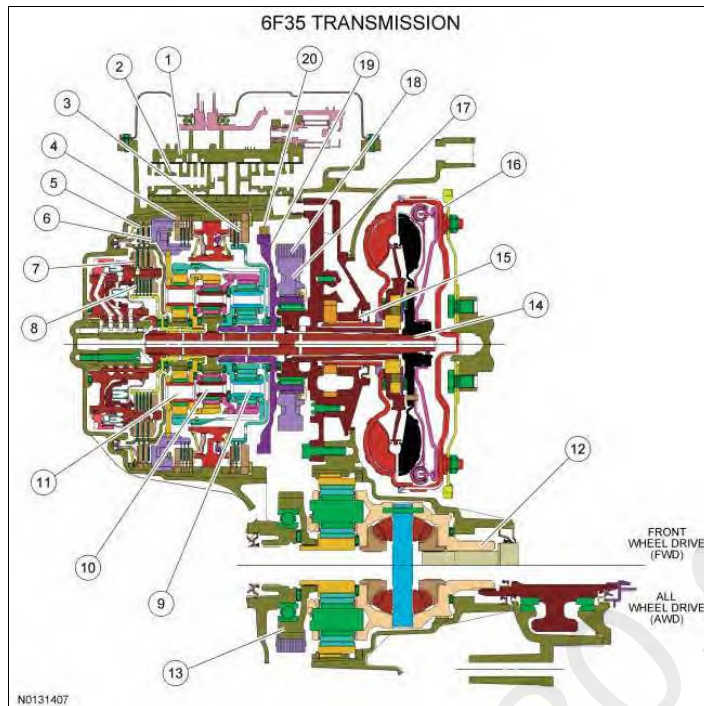
Shift Speeds

Throttle Position	Range	Shift	KM/H	MPH
Light	D	1-2	11-16	7-10
Throttle	D	2-3	21-27	13-17
	D	3-4	29-37	18-23
	D	4-5	45-56	28-35
	D	5-6	72-90	45-56
Medium	D	1-2	27-43	17-23
Throttle	D	2-3	42-55	26-34
	D	3-4	58-77	36-48
	D	4-5	77-106	48-66
	D	5-6	135-177	84-110
Heavy	D	1-2	51-66	32-41
Throttle	D	2-3	79-100	49-62
	D	3-4	113-143	70-89
	D	4-5	150-190	93-118
	D	5-6	201-245	125-152

SECTION 307-01: Automatic Transmission - 6F35
DESCRIPTION AND OPERATION

Automatic Transmission

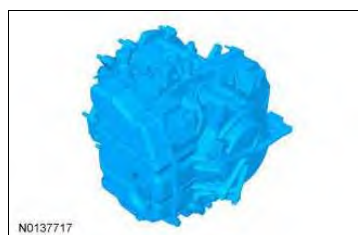
Component Location



Item	Description
1	Solenoid body
2	Valve body
3	Forward clutch (clutch brake 1,2,3,4)
4	Low/reverse clutch (clutch brake L/R)
5	Intermediate clutch (clutch brake 2,6)
6	Low OWC
7	Direct clutch (drive clutch 3,5,R)
8	Overdrive clutch (drive clutch 4,5,6)
9	Rear planetary assembly
10	Center planetary assembly
11	Front planetary assembly
12	Final drive carrier and differential assembly
13	Drive chain driven sprocket
14	Input shaft assembly and direct/overdrive clutch hub
15	Pump assembly
16	Torque converter
17	Drive chain sprocket
18	Drive chain

19	Park gear
20	Park pawl

Overview



This automatic transmission is a 6-speed transmission with electronic shift control. It is designed for operation in a transverse powertrain for FWD and AWD vehicles.

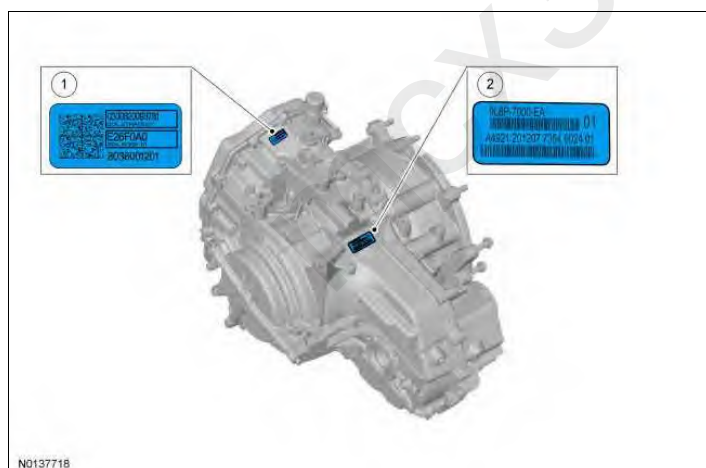
This transmission has a 4-element torque converter design, which includes a TCC and a geartrain with 3 planetary gearsets.

The hydraulic control system of this transmission uses 7 electronically controlled solenoids for:

- Shift feel (through line pressure control and shift pressure control)
- Shift scheduling and timing
- TCC operation

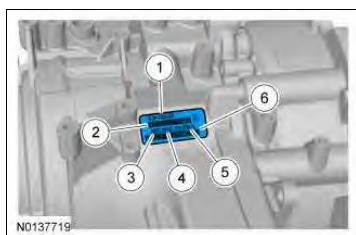
Identification Tags

Identification Tag Location



Item	Description
1	Solenoid body identification tag
2	Transmission identification tag

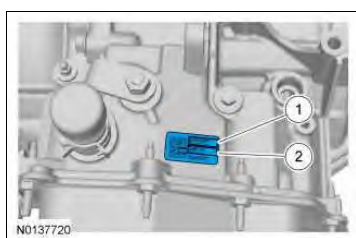
Transmission Identification Tag



Item	Description
1	Transmission part number
2	Bar code 1
3	Assembly plant line shift
4	Transmission build date (DDMMYY)
5	Transmission serial number
6	Bar code 2

When servicing the transmission, use the transmission identification tag located on top of the transmission case.

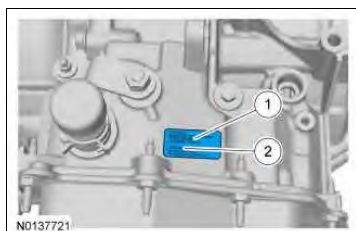
Original Solenoid Body Tag



Item	Description
1	13 - digit solenoid body strategy
2	7 - digit solenoid body identification

The solenoid body strategy is programmed into the PCM to control the shift, LPC and TCC solenoids to prevent harsh shifts. The solenoid body tag on the transmission case contains the 13-digit solenoid body strategy and the 7-digit solenoid body identification.

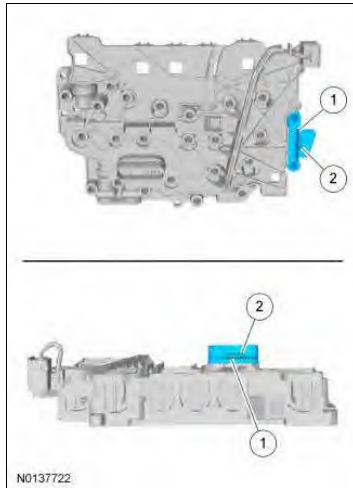
Replacement Solenoid Body Tag



Item	Description
1	13 - digit solenoid body strategy
2	7 - digit solenoid body identification

When a new solenoid body is installed, a new solenoid body strategy file is downloaded into the PCM. A replacement solenoid body tag is supplied with the new solenoid body which contains the 13-digit solenoid body strategy and the 7-digit solenoid body identification. The new tag is placed over the original solenoid body tag.

Solenoid Body Identification and Strategy



Item	Description
1	13 - digit solenoid body strategy
2	7 - digit solenoid body identification

If the solenoid body strategy printed on the solenoid body connector does not match the solenoid body tag, a new solenoid body must be installed and the solenoid body strategy must be downloaded into the PCM or harsh shifts will result.

Solenoid Band Number



The solenoids are calibrated from the factory and are not all the same. The solenoids can be replaced separately, but only with a replacement solenoid with a injector nozzle and band number that matches the solenoid being replaced. When solenoid(s) are replaced, the new solenoid band number must match the old solenoid band number. The band number is the last number in the group on the side of the solenoid and will be a 1, 2, 3, 4 or 5.

System Operation

Park

Park Clutch Application Chart

Gear	Forward (1,2,3,4)	Direct (3,5,R)	Intermediate (2,6)	Low / Reverse (1,R) <	Overdrive (4,5,6)	Low-OWC
Park				H		
Planetary Components	Front sun	Rear sun	Rear sun	Rear carrier/center ring	Rear carrier/center ring	Rear carrier/center ring

H = Holding

Park Position Solenoid Operation Chart

Base Selector Lever Position	PCM Commanded Gear	SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (2,6)	SSD NH (1,R,4,5,6)	SSE (On/Off) NC	TCC NL
P	P	Off	On	Off	Off	On	Off

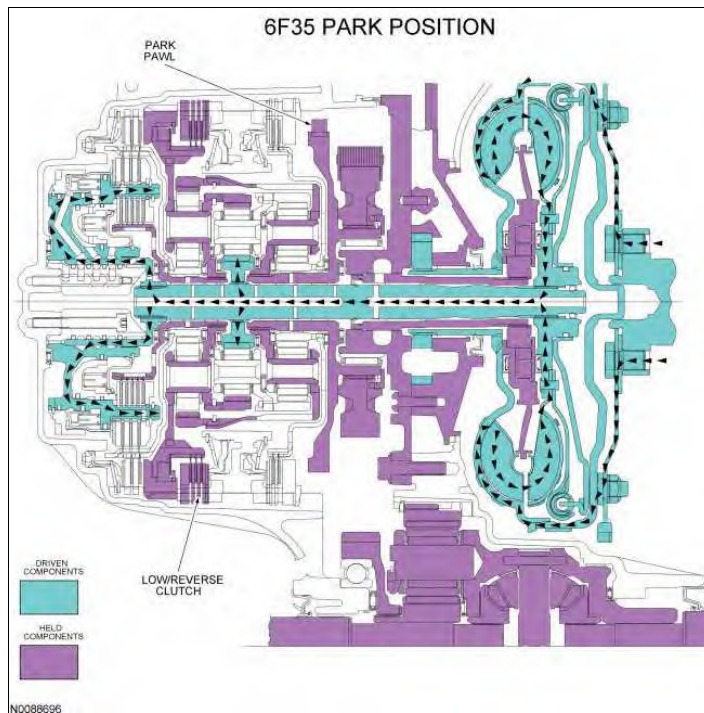
NC = Normally Closed

NH = Normally High

NL = Normally Low

Powerflow

- With the selector lever in PARK, the low/reverse clutch holds the rear planetary carrier/center ring gear stationary.
- The park pawl holds the rear ring/front planetary carrier stationary.
- The turbine shaft drives the center sun gear.



Reverse

Reverse Clutch Application Chart

Gear	Forward (1,2,3,4)	Direct (3,5,R)	Intermediate (2,6)	Low / Reverse (1,R)	Overdrive (4,5,6)	Low-OWC
Reverse		D		H		
Planetary Components	Front sun	Rear sun	Rear sun	Rear carrier/center ring	Rear carrier/center ring	Rear carrier/center ring

H = Holding

D = Driving

Reverse Position Solenoid Operation Chart

Base Selector Lever Position	PCM Commanded Gear	SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (2,6)	SSD NH (1,R,4,5,6)	SSE (On/Off) NC	TCC NL
R	R	Off	Off	Off	Off	On	Off

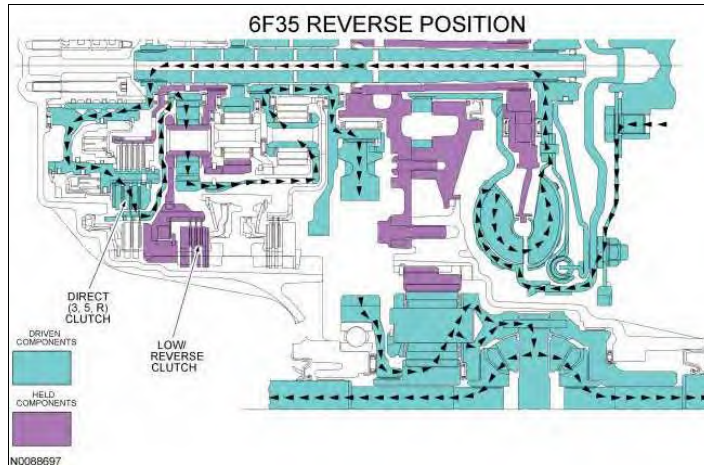
NC = Normally Closed

NH = Normally High

NL = Normally Low

Powerflow

- With the selector lever in REVERSE, the low/reverse clutch holds the rear planetary carrier/center ring gear stationary.
- The direct clutch drives the rear sun gear.
- The rear ring/front planetary carrier transfers torque to the output hub in a reverse direction with a ratio of 2.88.



Neutral

Neutral Clutch Application Chart

Gear	Forward (1,2,3,4)	Direct (3,5,R)	Intermediate (2,6)	Low / Reverse (1,R)	Overdrive (4,5,6)	Low-OWC
Neutral				H		
Planetary Components	Front sun	Rear sun	Rear sun	Rear carrier/center ring	Rear carrier/center ring	Rear carrier/center ring

H = Holding

Neutral Position Solenoid Operation Chart

Base Selector Lever Position	PCM Commanded Gear	SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (2,6)	SSD NH (1,R,4,5,6)	SSE (On/Off) NC	TCC NL
N	N	Off	On	Off	Off	On	Off

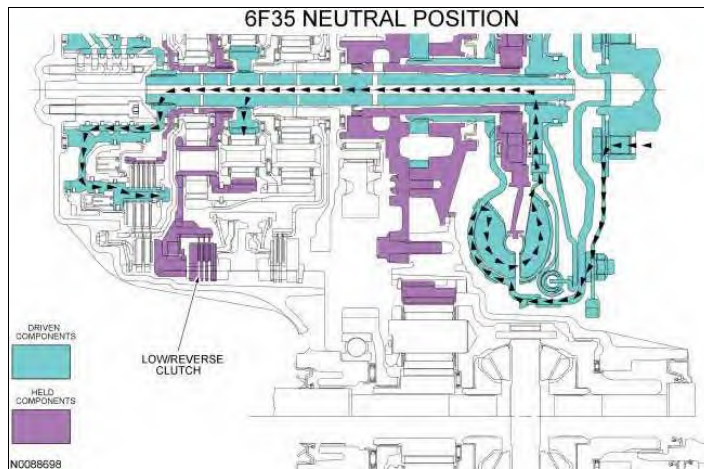
NC = Normally Closed

NH = Normally High

NL = Normally Low

Powerflow

- With the selector lever in NEUTRAL, the low/reverse clutch holds the rear planetary carrier/center ring gear stationary.
- The turbine shaft drives the center sun gear.



1st Gear

NOTE: The transmission operates differently in 1st gear above and below 8 kmh (5 mph). Transmission operation is the same below 8 kmh (5 mph) and in the LOW position.

1st Gear Above 8 kmh (5 mph) Clutch Application Chart

Gear	Forward (1,2,3,4)	Direct (3,5,R)	Intermediate (2,6)	Low / Reverse (1,R)	Overdrive (4,5,6)	Low-OWC
1st Gear D	H					H
Planetary Components	Front sun	Rear sun	Rear sun	Rear carrier/center ring	Rear carrier/center ring	Rear carrier/center ring

H = Holding

1st Gear LOW Position and Below 8 kmh (5 mph) Clutch Application Chart

Gear	Forward (1,2,3,4)	Direct (3,5,R)	Intermediate (2,6)	Low / Reverse (1,R)	Overdrive (4,5,6)	Low-OWC
1st Gear D	H			H		H
Planetary Components	Front sun	Rear sun	Rear sun	Rear carrier/center ring	Rear carrier/center ring	Rear carrier/center ring

H = Holding

1st Gear Above 8 kmh (5 mph) Solenoid Operation Chart

Base Selector Lever Position	PCM Commanded Gear	SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (2,6)	SSD NH (1,R,4,5,6)	SSE (On/Off) NC	TCC NL
D	1	On	On	Off	On	Off	Off

NC = Normally Closed

NH = Normally High

NL = Normally Low

1st Gear LOW Position and Below 8 kmh (5 mph) Solenoid Operation Chart

Base Selector Lever Position	PCM Commanded Gear	SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (2,6)	SSD NH (1,R,4,5,6)	SSE (On/Off) NC	TCC NL
L	1	On	On	Off	Off	On	Off

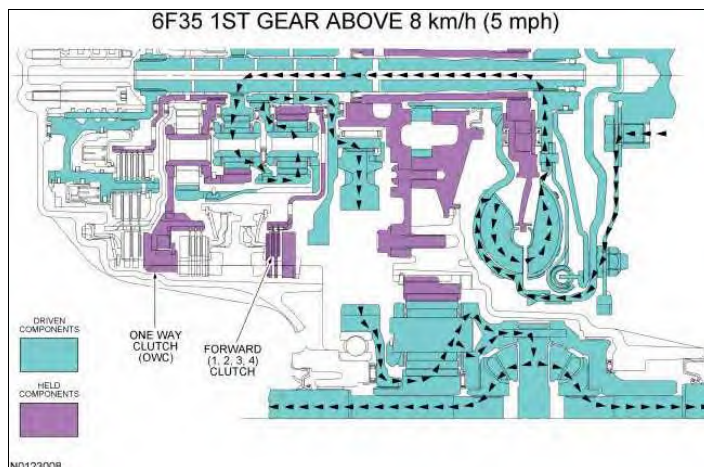
NC = Normally Closed

NH = Normally High

NL = Normally Low

Powerflow

- In first gear, the forward clutch holds the front sun gear stationary.
- The rear planetary carrier/center ring gear is held stationary by the low OWC and/or the low reverse (1, R) clutch.
- The turbine shaft transfers torque to the center sun gear. The center sun gear transfers the torque to the center planetary carrier/front ring gear. The front ring gear transfers torque to the front planetary carrier/rear ring gear and the output hub to produce a ratio of 4.48.



2nd Gear

2nd Gear Clutch Application Chart

Gear	Forward (1,2,3,4)	Direct (3,5,R)	Intermediate (2,6)	Low / Reverse (1,R)	Overdrive (4,5,6)	Low-OWC
2nd Gear D	H		H			
Planetary Components	Front sun	Rear sun	Rear sun	Rear carrier/center ring	Rear carrier/center ring	Rear carrier/center ring

H = Holding

2nd Gear Solenoid Operation Chart

Base Selector Lever Position	PCM Commanded Gear	SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (2,6)	SSD NH (1,R,4,5,6)	SSE (On/Off) NC	TCC NL
D	2	On	On	On	On	Off	Off

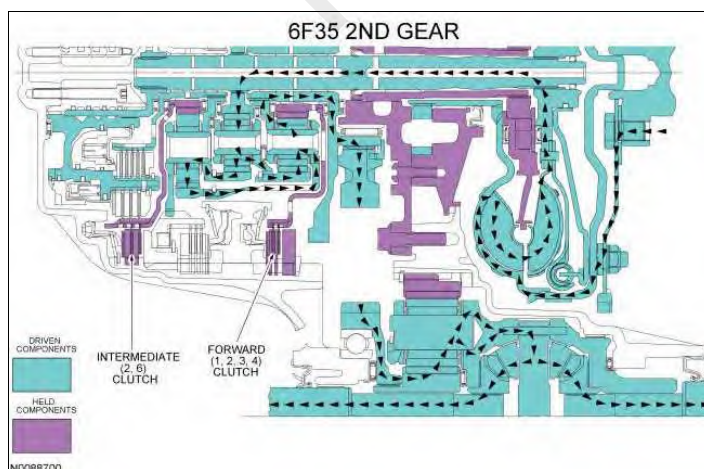
NC = Normally Closed

NH = Normally High

NL = Normally Low

Powerflow

- In second gear the forward clutch holds the front sun gear stationary.
- The intermediate clutch holds the rear sun gear stationary.
- The turbine shaft transfers torque to the center sun gear. The center sun gear transfers torque to the center ring gear/rear planetary carrier.
- The rear planetary carrier transfers the torque to the rear ring gear/front planetary carrier and the output hub to produce a gear ratio of 2.87.



3rd Gear

3rd Gear Clutch Application Chart

Gear	Forward (1,2,3,4)	Direct (3,5,R)	Intermediate (2,6)	Low / Reverse (1,R)	Overdrive (4,5,6)	Low-OWC
3rd Gear D	H	D				
Planetary Components	Front sun	Rear sun	Rear sun	Rear carrier/center ring	Rear carrier/center ring	Rear carrier/center ring

H = Holding

D = Driving

3rd Gear Solenoid Operation Chart

Base Selector Lever Position	PCM Commanded Gear	SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (2,6)	SSD NH (1,R,4,5,6)	SSE (On/Off) NC	TCC NL
D	3	On	Off	Off	On	Off	Off

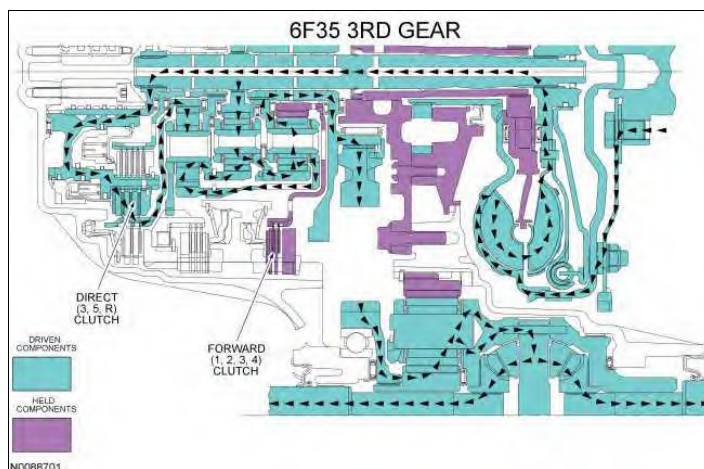
NC = Normally Closed

NH = Normally High

NL = Normally Low

Powerflow

- In third gear the forward clutch holds the front sun gear stationary.
- The direct clutch drives the rear sun gear.
- Power flows from the center sun gear to the center planetary carrier/front ring gear. From there, torque is transferred to the rear ring gear/front planetary carrier.
- Power also flows from the rear sun gear to the rear ring gear/front planetary carrier.
- The two inputs to the front planetary carrier combine and transfer torque to the output hub to produce a gear ratio of 1.84.



4th Gear

4th Gear Clutch Application Chart

Gear	Forward (1,2,3,4)	Direct (3,5,R)	Intermediate (2,6)	Low / Reverse (1,R)	Overdrive (4,5,6)	Low-OWC
4th Gear D	H				D	
Planetary Components	Front sun	Rear sun	Rear sun	Rear carrier/center ring	Rear carrier/center ring	Rear carrier/center ring

H = Holding

D = Driving

4th Gear Solenoid Operation Chart

Base Selector Lever Position	PCM Commanded Gear	SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (2,6)	SSD NH (1,R,4,5,6)	SSE (On/Off) NC	TCC NL
D	4	On	On	Off	Off	Off	On/Off

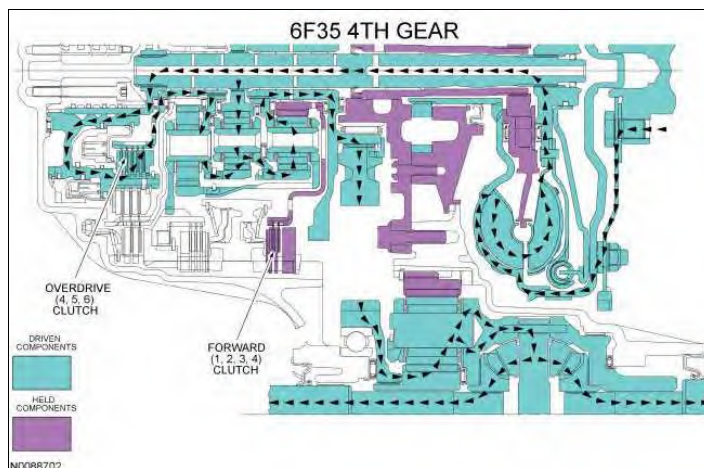
NC = Normally Closed

NH = Normally High

NL = Normally Low

Powerflow

- In fourth gear the forward clutch holds the front sun gear stationary.
- The overdrive clutch drives the rear planetary carrier/center ring gear.
- Power flows from turbine shaft to the center sun gear and center ring gear.
- The two inputs to the center planetary carrier combine and transfer torque to the front ring gear.
- The front ring gear transfers the torque to the front planetary carrier and onto the output hub to produce a gear ratio of 1.41.



5th Gear

5th Gear Clutch Application Chart

Gear	Forward (1,2,3,4)	Direct (3,5,R)	Intermediate (2,6)	Low / Reverse (1,R)	Overdrive (4,5,6)	Low-OWC
5th Gear D		D			D	
Planetary Components	Front sun	Rear sun	Rear sun	Rear carrier/center ring	Rear carrier/center ring	Rear carrier/center ring

D = Driving

5th Gear Solenoid Operation Chart

Base Selector Lever Position	PCM Commanded Gear	SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (2,6)	SSD NH (1,R,4,5,6)	SSE (On/Off) NC	TCC NL
D	5	Off	Off	Off	Off	Off	On/Off

NC = Normally Closed

NH = Normally High

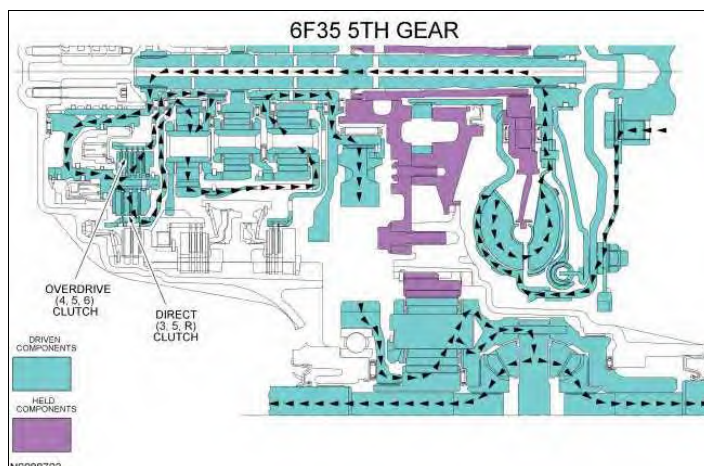
NL = Normally Low

Powerflow

- In fifth gear the overdrive clutch drives the rear planetary carrier/center ring gear.
- The direct clutch drives the rear sun gear.
- The turbine shaft transfers torque to the center sun gear, rear sun gear, and rear planetary carrier/center ring gear.
- The torque from the three inputs locks the three planetary gearsets which produces a gear ratio of 1 to 1

Fail-safe Mode

- Because both SSD and SSB apply the clutches they control when they are turned OFF, 5th gear is the fail-safe.



6th Gear

6th Gear Clutch Application Chart

Gear	Forward (1,2,3,4)	Direct (3,5,R)	Intermediate (2,6)	Low / Reverse (1,R)	Overdrive (4,5,6)	Low-OWC
6th Gear D			H		D	
Planetary Components	Front sun	Rear sun	Rear sun	Rear carrier/center ring	Rear carrier/center ring	Rear carrier/center ring

H = Holding

D = Driving

6th Gear Solenoid Operation Chart

Base Selector Lever Position	PCM Commanded Gear	SSA NL (1,2,3,4)	SSB NH (3,5,R)	SSC NL (2,6)	SSD NH (1,R,4,5,6)	SSE (On/Off) NC	TCC NL
D	6	Off	On	On	Off	Off	On/Off

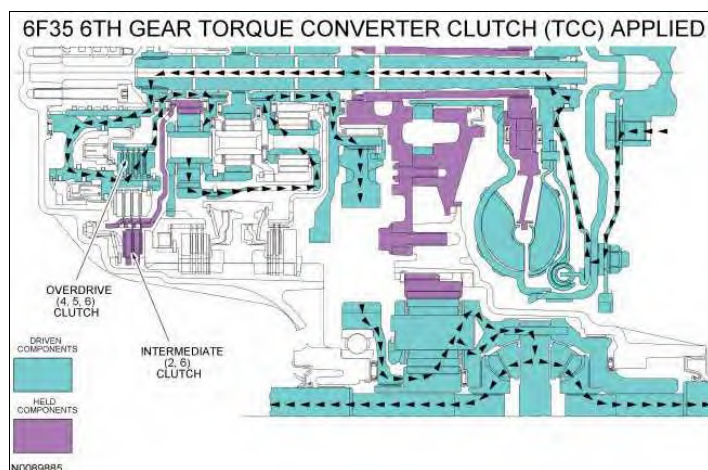
NC = Normally Closed

NH = Normally High

NL = Normally Low

Powerflow

- In sixth gear the overdrive clutch drives the rear planetary carrier/center ring gear.
- The intermediate clutch holds the rear sun gear.
- The torque from the rear planetary carrier is transferred to the rear ring gear/front planetary carrier and the output hub which produces a gear ratio of 0.74.



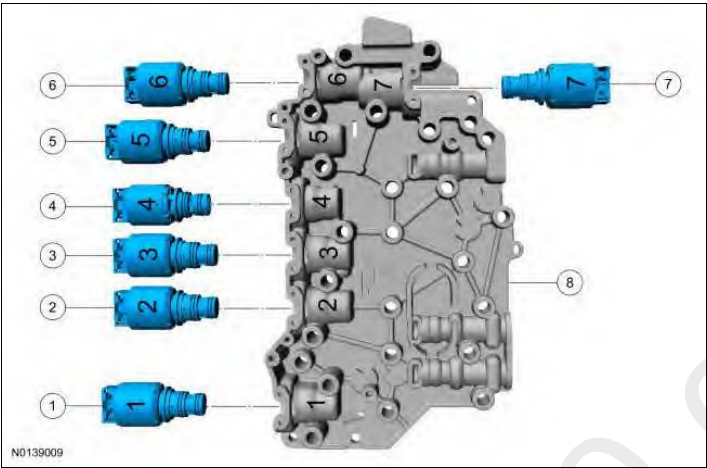
SECTION 307-01: Automatic Transmission - 6F35
DESCRIPTION AND OPERATION

Electrical System

Component Location

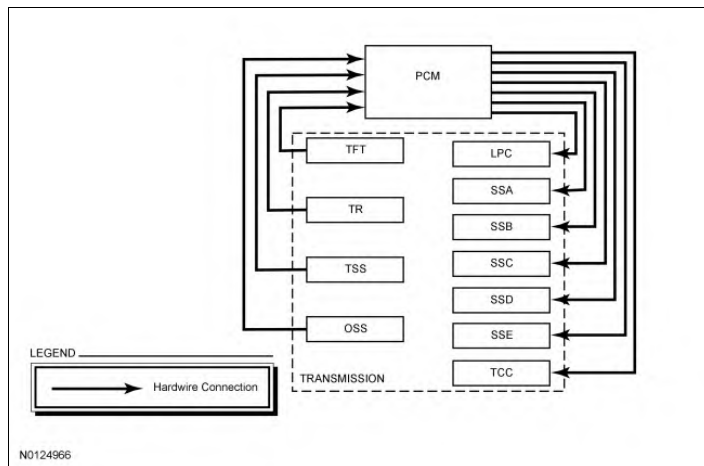
The solenoid body contains 5 shift solenoids, 1 TCC solenoid and 1 LPC solenoid.

Solenoid Body



Item	Description
1	LPC
SSC	
3	TCC
4	SSE ON/OFF solenoid
5	SSA
6	SSB
7	SSD
8	Solenoid body

System Operation



The PCM and its input/output network controls the following operations:

- Shift timing
- Line pressure (shift feel)

The transmission control strategy is separate from the engine control strategy in the PCM, although some of the input signals are shared. When determining the best operating strategy for transmission operation, the PCM uses input information from engine and driver related sensors and switches.

In addition, the PCM receives input signals from transmission related sensors and switches. The PCM uses these signals when determining transmission operating strategy.

Using all of these input signals, the PCM can determine when the time and conditions are right for a shift or when to apply or release the TCC. It also determines the best line pressure to optimize shift engagement feel. To accomplish this, the PCM uses output solenoids to control transmission operation.

Network Message Chart

Communication Message Chart

Message	Originating Module	Details
Engine Speed	PCM	Directly affects shift scheduling, TCC control, line pressure and transmission diagnostics. Indirectly affects shift pressure control.
Engine torque estimate	PCM	Directly affects shift pressure control, TCC control and transmission diagnostics. Indirectly affects shift scheduling and TCC scheduling.
APP	PCM	Directly affects shift scheduling, TCC scheduling and transmission diagnostics. Indirectly affects TCC control and shift control.
Commanded engine torque	PCM	Directly affects shift scheduling, TCC scheduling and transmission diagnostics. Indirectly affects shift control.
BPP	PCM	Directly affects shift scheduling and TCC scheduling

Component Description

Sensors and Switches

The PCM controls the electronic functions of this transmission. The PCM receives input signals from engine and transmission sensors and uses these inputs to control line pressure, shift time, TCC and shift solenoids.

Item	Description
TFT Sensor	This sensor is located in the transmission solenoid body. It is a temperature-sensitive device called a thermistor. The resistance value of the TFT sensor will vary with temperature change. The PCM monitors the voltage across the TFT sensor to determine the temperature of the transmission fluid. The PCM uses this initial signal to determine whether a cold start shift schedule is necessary. The cold start shift schedule allows delayed shifts when the transmission fluid is cold to help warm the transmission fluid. The PCM also inhibits TCC operation at low transmission fluid temperatures and adjusts line pressure for temperature.
TR Sensor	The TR sensor has a 6-pin electrical connector. The TR sensor is located on the inside of the transmission at the manual control lever. The TR sensor sends a signal to the PCM to start the vehicle in PARK and NEUTRAL. The TR sensor opens/closes a set of 4 switches that are monitored by the PCM to determine the position of the manual control lever.
TSS Sensor	This TSS sensor is a Hall-effect pickup that sends a signal to the PCM that indicates transmission turbine shaft input speed. The TSS information is compared to engine rpm to determine TCC performance. TSS is also compared to OSS to determine shift quality and clutch performance.
OSS Sensor	The OSS sensor is a Hall-effect pickup, located on the transfer shaft drive gear, that sends a signal to the PCM to indicate transmission output speed. The OSS is used for shift scheduling. OSS is also compared to TSS to determine shift quality and clutch performance.

Solenoid Body

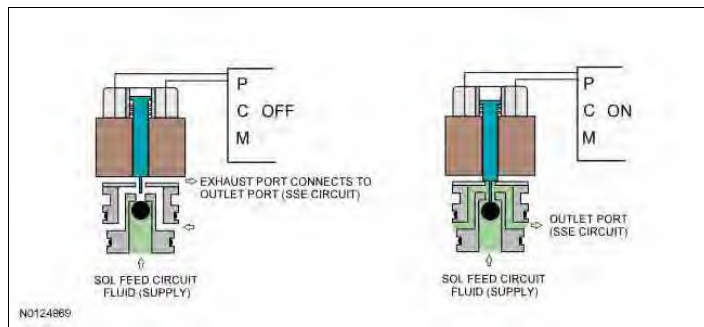
The solenoid body contains 7 solenoids: 5 shift solenoids (SSA , SSB , SSC , SSD and SSE), 1 TCC solenoid and 1 LPC solenoid. The TFT sensor is located in the solenoid body. The solenoid body is serviced as an assembly.

The solenoid body has a unique strategy data file that must be downloaded to the PCM. There is a 7-digit solenoid body identification and a 13-digit solenoid body strategy for each solenoid body. When a new solenoid body or transmission is installed, the scan tool must be used to get the solenoid body strategy data file and download it into the PCM.

If the PCM is replaced and the PCM data cannot be inhaled or exhaled, the solenoid body identification and solenoid body strategy must be downloaded into the PCM.

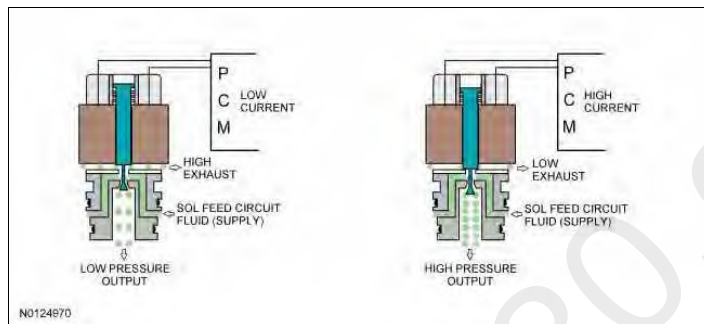
This transmission uses 3 types of solenoids: On/Off, normally low and normally high. On/Off solenoids open or close hydraulic passages based on the voltage signal it receives. Normally low solenoids provide hydraulic pressure proportional to supplied current. A normally low solenoid will not provide pressure without current, while it will supply high pressure with high current. Normally high solenoids provide pressure inversely proportional to supplied current. Normally high solenoids provide full output of pressure with no current and very low pressure with high current.

ON/OFF Solenoids



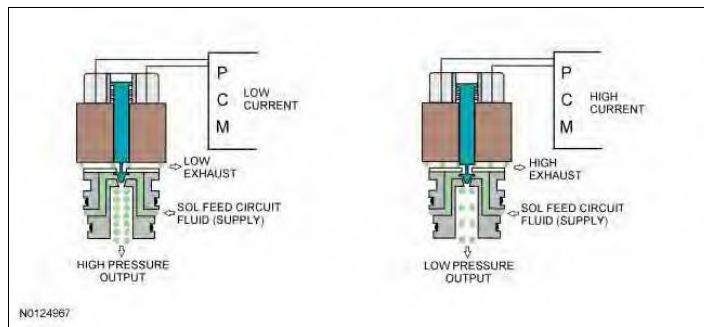
Item	Description
SSE	Normally closed solenoid that blocks SOL FEED pressure from the SSE circuit. When energized, pressure from the SSE circuit positions the multiplex shift valve to direct CBLR/C456 SUPPLY pressure to the low reverse clutch.

Normally Low Solenoids



Item	Description
SSA	SSA blocks SOL FEED pressure from the SSA SIG circuit when low current is supplied. When energized, SSA SIG pressure positions the CB1234 clutch regulator and boost valves to direct CB1234 SUP pressure to apply the forward clutch.
SSC	SSC blocks SOL FEED pressure to the SSC SIG circuit when low current is supplied. When energized, SSC SIG pressure positions the CB26 clutch regulator valve to direct CB26FD/CB1234FD pressure to apply the intermediate clutch.
TCC	The TCC solenoid is used in the transmission control system to control the application, modulation and release of the torque converter clutch. The TCC solenoid blocks SOL FEED pressure to the TCC SOL SIG circuit when low current is supplied. When energized, TCC SOL SIG pressure positions the TCC reg apply and control valves to direct REG APPLY pressure to apply the torque converter.

Normally High Solenoids

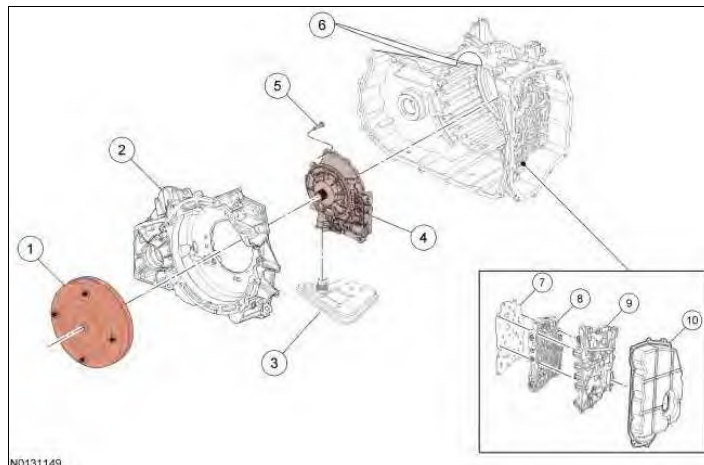


Item	Description
SSB	SSB feeds SOL FEED pressure to the SSB SIG circuit to position the direct (3,5,R) clutch regulator and boost valves to apply the direct (3,5,R) clutch. When energized, SSB blocks SSB SIG to position the direct clutch (3,5,R) regulator and boost valves to release the direct (3,5,R) clutch.
SSD	SSD feeds SOL FEED pressure to the SSD SIG circuit to position the CBLR/C456 regulator and boost valves to apply either the low/reverse clutch or the overdrive (4,5,6) clutch. When energized, SSD blocks SSD SIG to position the CBLR/C456 regulator and boost valves to release either the low/reverse clutch or the overdrive (4,5,6) clutch.
LPC	The LPC solenoid is used to apply resistive force to the main regulator valve to adjust line pressure. Line pressure is inversely proportional to the current supplied to the LPC solenoid. As current decreases, line pressure increases.

SECTION 307-01: Automatic Transmission - 6F35
DESCRIPTION AND OPERATION

Hydraulic System

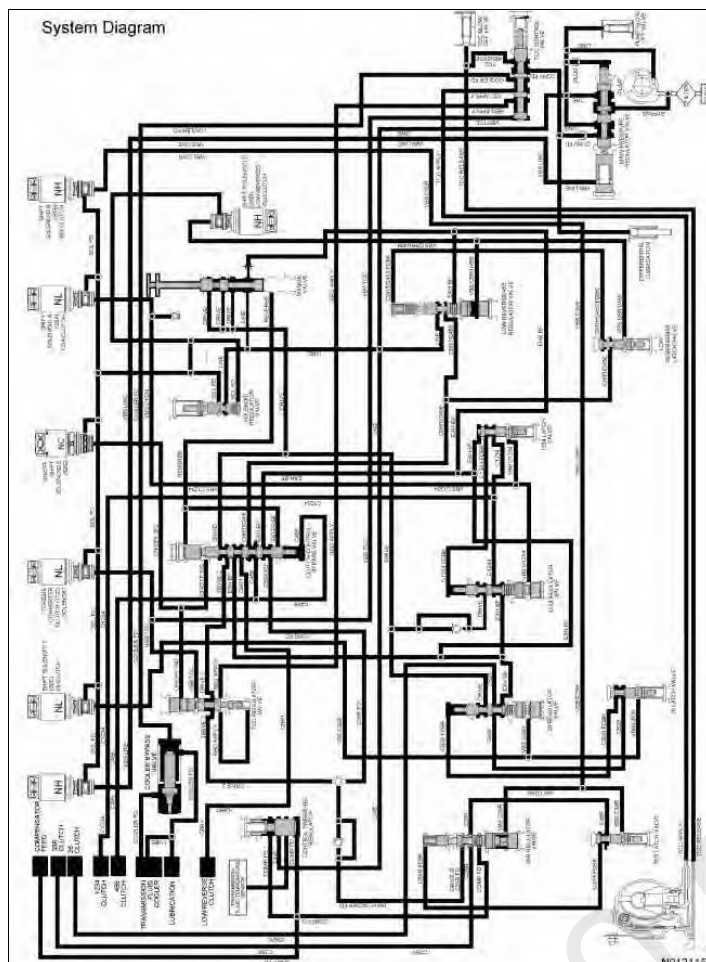
Component Location



Item	Description
1	Torque converter
2	Torque converter housing
3	Transmission fluid filter
4	Pump assembly
5	Pump-to-torque converter housing bolt
6	Transmission case
7	control-to-transmission case seperator plate
8	Valve body
9	Solenoid body assembly
10	Main control cover

System Operation

System Diagram



Hydraulic Circuit Legend

HYDRAULIC CIRCUIT LEGEND	
CIRCUIT/PRESSURE	SYMBOLS/COMPONENTS
PUMP SUCTION	BALL CHECK
LINE PRESSURE 355-1,065 kPa (52-205 psi)	SHUTTLE BALL
REGULATED PRESSURE 0-717 kPa (0-104 psi)	SOLENOID DAMPER
COMPENSATOR PRESSURE 83 kPa (12 psi)	FLUID DIRECTION
TRANSMISSION FLUID COOLER FEED/LUBRICATION 0-755 kPa (0-110 psi)	ORIFICE
TORQUE CONVERTER CLUTCH (TCC) PRESSURE 0-1,138 kPa (0-165 psi)	ORIFICE PLUG
NO PRESSURE (CIRCUIT NOT USED/VALVE EXHAUST)	EXHAUST
EXHAUST CIRCUIT APPROXIMATELY 21 kPa (3 psi)	NORMALLY CLOSED
SOLENOID FEED CIRCUIT/FULL SOLENOID PRESSURE 552 kPa (80 psi)	NORMALLY HIGH PRESSURE
VARIABLE SOLENOID PRESSURE 0-552 kPa (0-80 psi)	NORMALLY LOW PRESSURE
FEEDBACK PRESSURE 0-407 kPa (0-59 psi)	VALVES/PUCKS/PISTONS

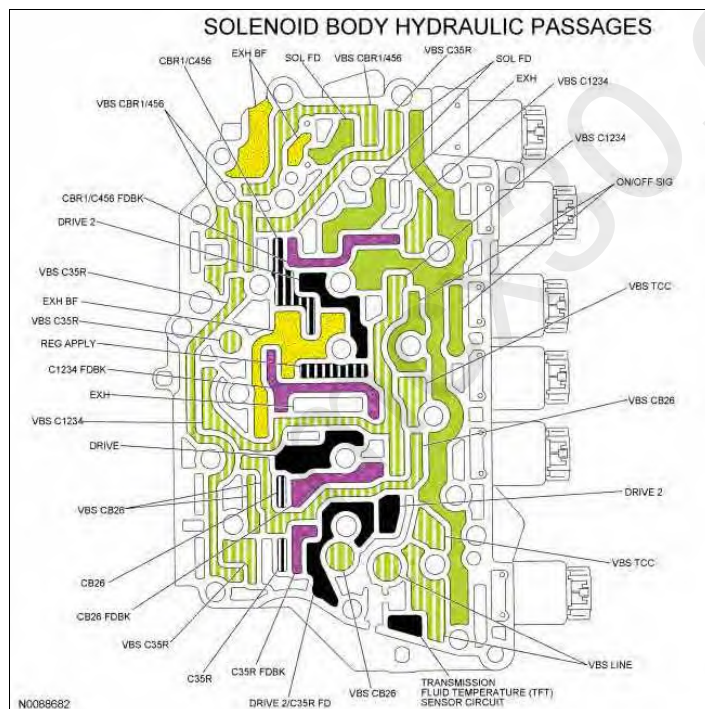
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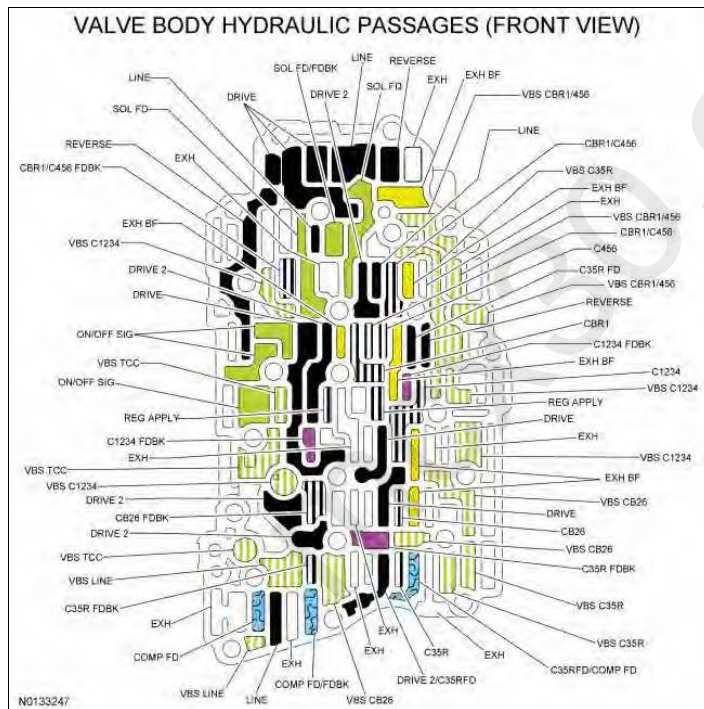
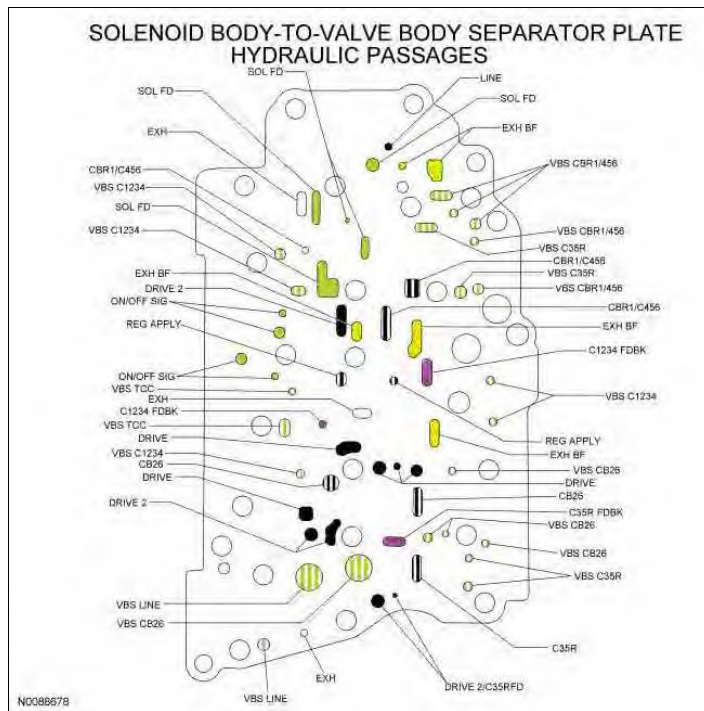
Hydraulic Circuit Identification Chart

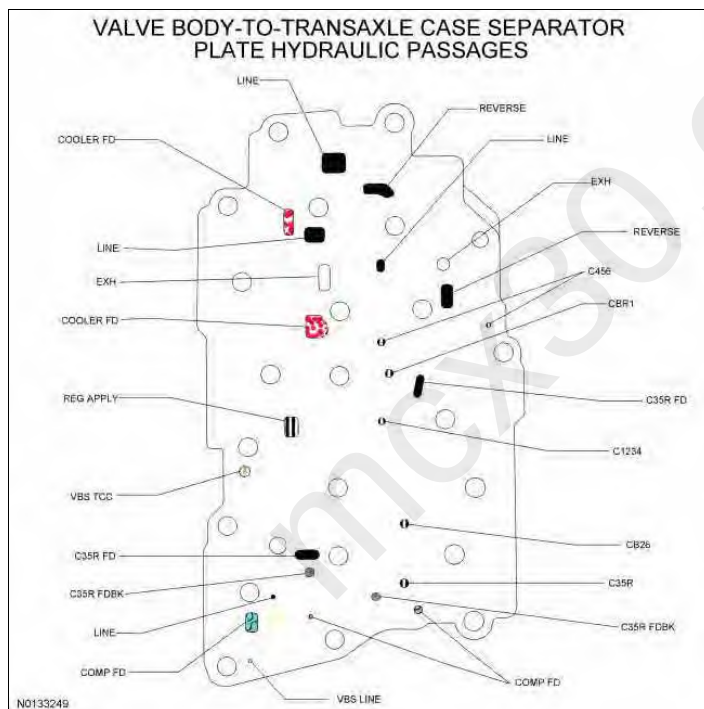
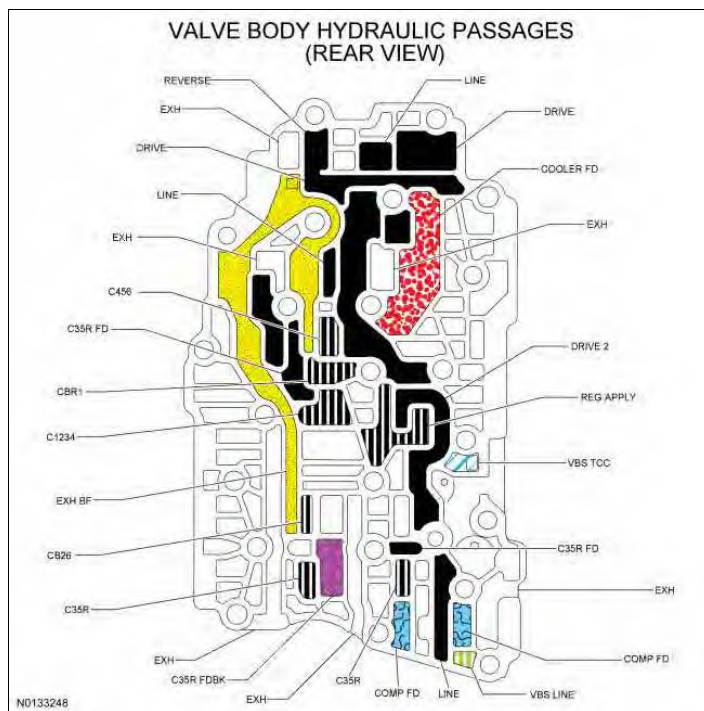
Circuit Name	Description
BYPASS	Pressure from the main pressure regulator valve to the pump assembly suction circuit for line pressure control.
C1234	Regulated line pressure from the 1234 regulator valve supplied to the forward (1, 2, 3, 4) clutch to apply the clutch.

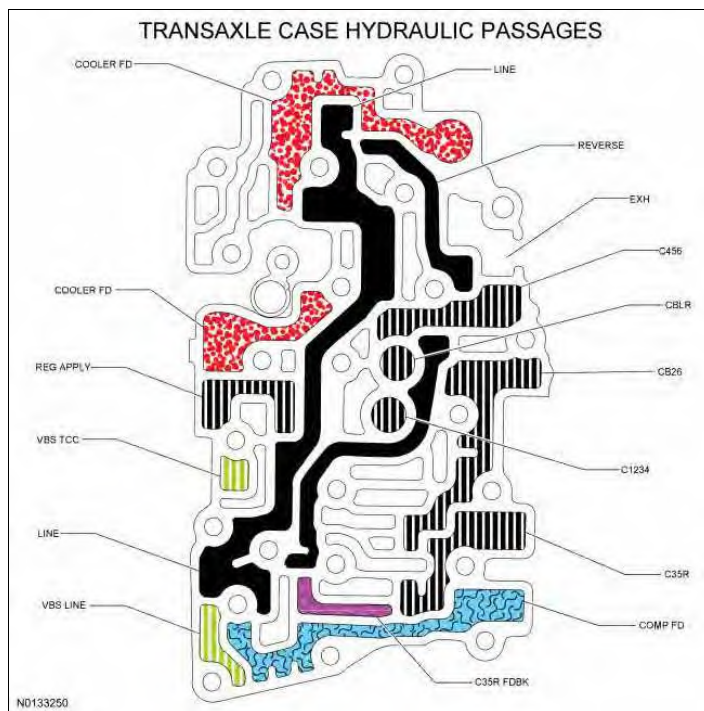
C1234 FDBK	C1234 pressure from the 1234 latch valve supplied to the 1234 regulator valve to oppose movement of the valve from VBS C1234 pressure during forward (1, 2, 3, 4) clutch application.
C35R	Regulated line pressure from the 35R regulator valve supplied to the direct (3, 5, R) clutch to apply the clutch.
C35R FD	Line pressure from the REVERSE circuit supplied to the DRIVE 2/C35R FD shuttle valve by the clutch control bypass valve to supply the 35R regulator valve with line pressure in reverse.
C35R FDBK	C35R pressure from the 35R latch valve supplied to the 35R regulator valve to oppose movement of the valve from VBS C35R pressure during direct (3, 5, R) clutch application.
C456	Regulated line pressure from the low reverse/456 regulator valve directed to the O/D (4, 5, 6) clutch by the clutch control bypass valve. C456 also provides latch pressure for the clutch control bypass valve.
CB26	Regulated line pressure from the 26 regulator valve to the intermediate (2, 6) clutch to apply the clutch in 2nd and 6th gears.
CB26 FDBK	CB26 pressure from the 26 latch valve supplied to the 26 regulator valve to oppose movement of the valve from VBS C26 pressure during intermediate (2, 6) clutch application.
CBR1	Regulated line pressure from the low reverse/456 regulator valve directed to the low/reverse clutch by the clutch control bypass valve.
CBR1/C456	Regulated line pressure from the low reverse/456 regulator valve to the clutch control bypass valve.
CBR1/C456 FDBK	CBR1/C456 pressure from the low reverse/456 latch valve supplied to the low reverse/456 regulator valve to oppose movement of the valve from VBS CBR1/456 pressure during low/reverse or O/D (4, 5, 6) clutch application.
COMP FD	Pressure supplied to the opposite side of the O/D (4, 5, 6) and direct (3, 5, R) clutch apply pistons to oppose centrifugal application of the clutches.
CONV FD	Line pressure from the main pressure regulator valve supplied to the TCC control valve for TCC release.
COOLER FD	Return pressure from the torque converter during TCC release that is directed to the transmission fluid cooler by the TCC control valve.
DRIVE	Line pressure directed to the clutch control bypass valve, 1234 regulator valve and the 26 regulator valve by the manual valve in the DRIVE position.
DRIVE 2	DRIVE pressure directed to the TCC regulator valve and the DRIVE 2/C35R FD shuttle valve by the clutch control bypass valve to supply the 35R regulator valve with line pressure in 3rd and 5th gears.
DRIVE 2/C35R FD	DRIVE 2 or C35R FD pressure supplied to the 35R regulator valve from the DRIVE 2/C35R FD shuttle valve during direct (3, 5, R) clutch application.
EXH	Fluid exhausted from the valves that drains to the sump area.
EXH BF	Unpressurized fluid from the manual valve that fills the unused hydraulic circuits.
LINE	Pressure from the pump to the control pressure regulator, solenoid regulator valve, manual valve and low reverse/456 regulator valve. Line pressure is regulated by the main pressure regulator valve.
LUBE	Transmission lubrication circuit (through the input shaft)
ON/OFF SIG	Full solenoid output pressure from SSE to the clutch control bypass valve and the TCC regulator valve. ON/OFF SIG pressure positions the clutch control bypass valve to apply either the low/reverse clutch or the O/D (4, 5, 6) clutch.
REG APPLY	Regulated DRIVE 2 pressure supplied to the TCC control valve by the control pressure regulator for TCC application.
REVERSE	

	Line pressure directed to the clutch control bypass valve by the manual valve in the REVERSE position.
SOL FD	Regulated line pressure supplied to the shift, TCC and LPC solenoids.
TCC APPLY	Pressure supplied to the torque converter by the TCC control valve to apply the clutch. TCC APPLY is also the return circuit for the TCC RELEASE circuit.
TCC RELEASE	Pressure supplied to the torque converter by the TCC control valve to release the clutch. TCC RELEASE is also the return circuit for the TCC APPLY circuit.
VBS C1234	Variable SOL FD pressure supplied to the 1234 regulator valve and 1234 latch valve by SSA to position the valves to apply the forward (1, 2, 3, 4) clutch.
VBS C35R	Variable SOL FD pressure supplied to the 35R regulator valve and 35R latch valve by SSB to position the valves to apply the direct (3, 5, R) clutch.
VBS CB26	Variable SOL FD pressure supplied to the 26 regulator valve and 26 latch valve by SSC to position the valves to apply the intermediate (2, 6) clutch.
VBS CBR1/456	Variable SOL FD pressure supplied to the low reverse/456 regulator valve and low reverse/456 latch valve by SSD to position the valves to apply the low/reverse clutch or O/D (4, 5, 6) clutch.
VBS LINE	Variable SOL FD pressure supplied to the main pressure regulator valve by the LPC solenoid to control line pressure.
VBS TCC	Variable SOL FD pressure supplied to the TCC regulator valve and TCC control valve to position the valves by the TCC solenoid to apply the TCC .







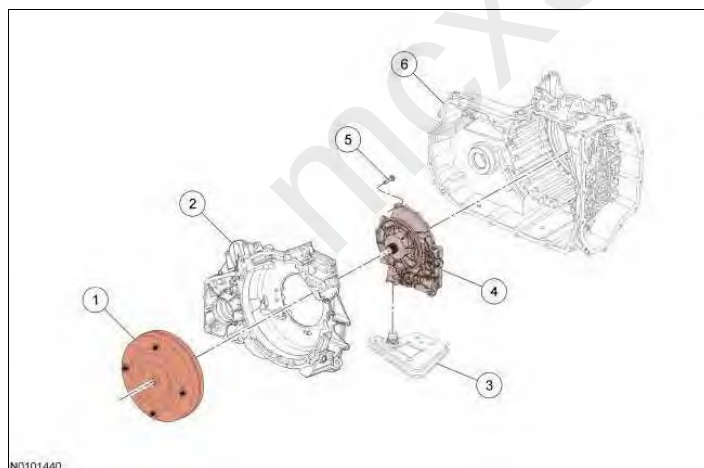


Component Description

Transmission Fluid Filter

The transmission fluid in the sump area at the bottom of the transmission case flows through a transmission fluid filter to the pump assembly. The pump is bolted to the torque converter housing and is driven by the torque converter hub.

Fluid Pump and Transmission Fluid Filter Components



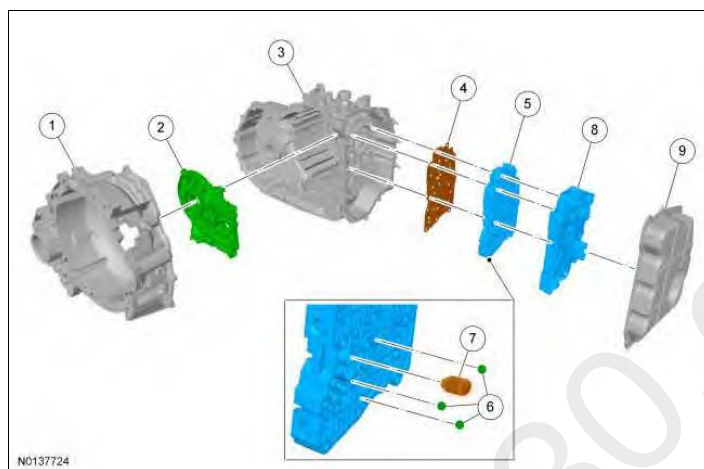
Item	Description
1	Torque converter
2	Torque converter housing
3	Transmission fluid filter
4	Pump assembly
5	Pump-to-torque converter housing bolt
6	Transmission case

Main Control

The hydraulic system has a main control assembly. The main control assembly consists of a valve body and a solenoid body. Both the valve body and the solenoid body contain hydraulic shift valves. The solenoid body contains the shift solenoids that control the hydraulic valves. The solenoid body can be serviced as an assembly with the solenoids or the solenoids can be serviced individually. The solenoid body is controlled by the PCM . The PCM has software stored in it specific to the solenoid body currently in the transmission, called the solenoid body strategy. A new solenoid body strategy must be downloaded into the PCM anytime a new solenoid body is installed.

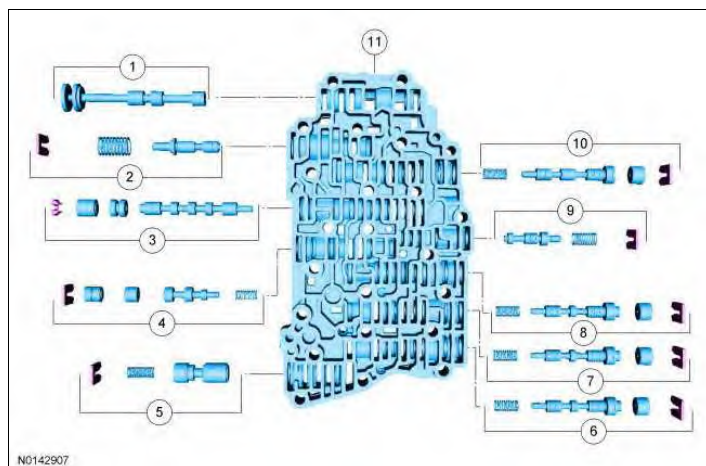
The pump assembly contains the main pressure regulator valve assembly and the TCC control valve assembly.

Main Control Components



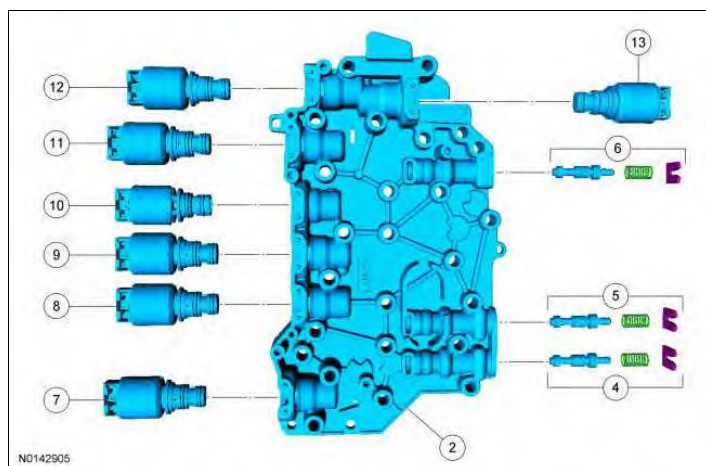
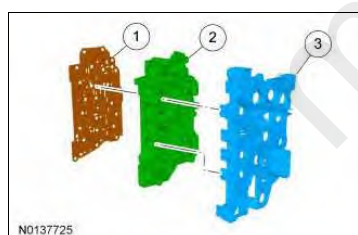
Item	Description
1	Torque converter housing
2	Pump assembly
3	Transmission case
4	Main control-to-transmission case separator plate
5	Valve body
6	Check balls
7	Solenoid damper (SSA)
8	Solenoid body assembly
9	Main control cover

Main Control Valve Body



Item	Description
1	Manual valve
2	Solenoid pressure regulator valve assembly
3	Clutch bypass valve
4	TCC regulator valve
5	Control pressure regulator
6	Direct (3, 5, R) clutch regulator valve
7	Intermediate (2, 6) clutch regulator valve
8	Forward (1, 2, 3, 4) clutch regulator valve
9	Forward (1, 2, 3, 4) clutch latch valve
10	Low reverse/overdrive (4, 5, 6) clutch regulator valve
11	Valve body

Solenoid Body



Item	Description
1	Main control valve body-to-solenoid body separator plate
2	Solenoid body
3	Solenoid body leadframe
4	Direct (3, 5, R) clutch latch valve
5	Intermediate (2, 6) clutch latch valve
6	Low reverse/overdrive (4, 5, 6) clutch latch valve
7	LPC solenoid
8	SSC
9	TCC
10	ON/OFF solenoid
11	SSA
12	SSB
13	SSD

Multi-Plate Clutch

Multi-plate clutches are clutches that consist of multiple friction and steel clutch discs that when pressure is applied, either drive or hold (brake) components of the planetary gearset. This transmission has 5 multi-plate clutches:

- Forward (1,2,3,4)
- Direct (3,5,R)
- Intermediate (2,6)
- Overdrive (4,5,6)
- Low/reverse

Both the direct (3,5,R) and the overdrive (4,5,6) clutches are drive clutches. The direct (3,5,R) clutch drives the rear planetary sun gear and the overdrive (4,5,6) clutch drives the rear planetary carrier. The forward (1,2,3,4), intermediate (2,6) and the low/reverse clutches are brake clutches. The forward (1,2,3,4) clutch holds the front sun gear, the intermediate (2,6) clutch holds the rear sun gear and the low/reverse clutch holds the rear planetary carrier.

Clutches; overdrive (4,5,6) and direct (3,5,R) are balanced in terms of dynamic pressure. That is, their pistons are exposed to the transmission fluid flow on both sides to prevent pressure buildup in the clutch as speed increases. This dynamic pressure equalization process is achieved by a baffle plate and pressure-free transmission fluid supply by a lubricating passage, through which the space between the piston and baffle plate is filled with transmission fluid.

The advantages of this dynamic pressure equalization are:

- reliable clutch engagement and release in all speed ranges.
- improved shift refinement.

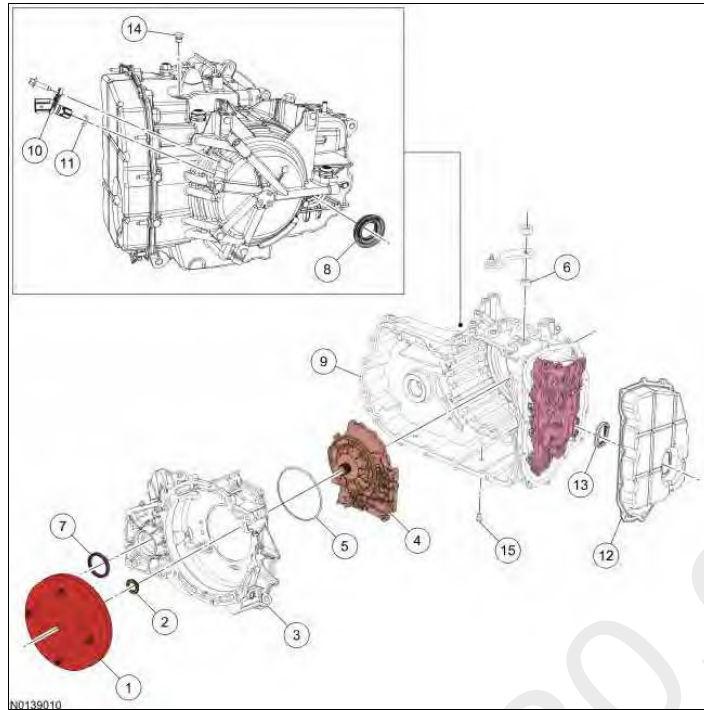
External Sealing

The torque converter housing has a lip-type seal that seals the torque converter hub. The pump assembly seals to the torque converter housing with a rubber seal. The manual shaft and halfshafts also use lip-type seals.

The torque converter housing is sealed to the transmission case with silicone sealant.

The main control cover is sealed to the transmission case with silicone sealant and seals to the solenoid body with a reusable rubber gasket. The TSS sensor is sealed to the transmission case with an O-ring seal.

The line pressure tap plug and transmission fluid drain plug have pipe threads and seal when tightened to specification.



Item	Description
1	Torque converter
2	Torque converter hub seal
3	Torque converter housing
4	Pump assembly
5	Pump assembly-to-torque converter housing O-ring seal
6	Manual control shaft seal
7	RH halfshaft seal
8	LH halfshaft seal
9	Transmission case
10	TSS sensor
11	TSS sensor O-ring seal
12	Main control cover
13	Main control-to-cover seal
14	Line pressure tap plug
15	Drain plug

Hydraulic Circuits Legend

HYDRAULIC CIRCUIT LEGEND	
CIRCUIT/PRESSURE	SYMBOLS/COMPONENTS
 PUMP SUCTION	 BALL CHECK
 LINE PRESSURE 355-1,965 kPa (52-285 psi)	 SHUTTLE BALL
 REGULATED PRESSURE 0-717 kPa (0-104 psi)	 SOLENOID DAMPER
 COMPENSATOR PRESSURE 83 kPa (12 psi)	 FLUID DIRECTION
 TRANSMISSION FLUID COOLER FEED/LUBRICATION 0-755 kPa (0-110 psi)	 ORIFICE
 TORQUE CONVERTER CLUTCH (TCC) PRESSURE 0-1,138 kPa (0-165 psi)	 ORIFICE PLUG
 NO PRESSURE (CIRCUIT NOT USED/VALVE EXHAUST)	 EXHAUST
 EXHAUST CIRCUIT APPROXIMATELY 21 kPa (3 psi)	NC NORMALLY CLOSED
 SOLENOID FEED CIRCUIT/FULL SOLENOID PRESSURE 552 kPa (80 psi)	NH NORMALLY HIGH PRESSURE
 VARIABLE SOLENOID PRESSURE 0-552 kPa (0-80 psi)	NL NORMALLY LOW PRESSURE
 FEEDBACK PRESSURE 0-407 kPa (0-59 psi)	 VALVES/PUCKS/PISTONS

Line Pressure Hydraulic Circuits

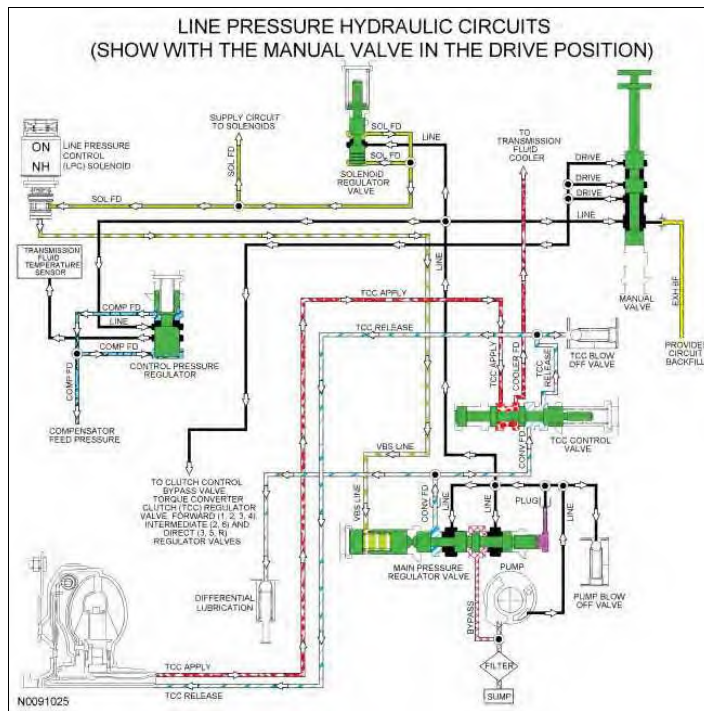
Line pressure is controlled by the LPC solenoid, which is controlled by the PCM. This effects shift feel and apply component operation.

When the engine is running, the pump supplies pressure to the main pressure regulator valve, which is controlled by the LPC solenoid. The main pressure regulator valve controls the line pressure to the LINE circuit which supplies the manual valve solenoid regulator valve and the control pressure regulator valve.

When the manual valve is in the reverse position, it supplies the clutch control bypass valve with line pressure to position it to supply line pressure to the direct (3, 5, R) regulator valve and regulated line pressure to the low/reverse clutch to apply the clutch.

When the manual valve is in the DRIVE or LOW positions, it directs line pressure from the LINE circuit to the DRIVE circuit to supply line pressure to the:

- Clutch control bypass valve
- Forward (1, 2, 3, 4) regulator valve
- Intermediate (2, 6) regulator valve
- TCC regulator valve
- Direct (3, 5, R) clutch regulator valve



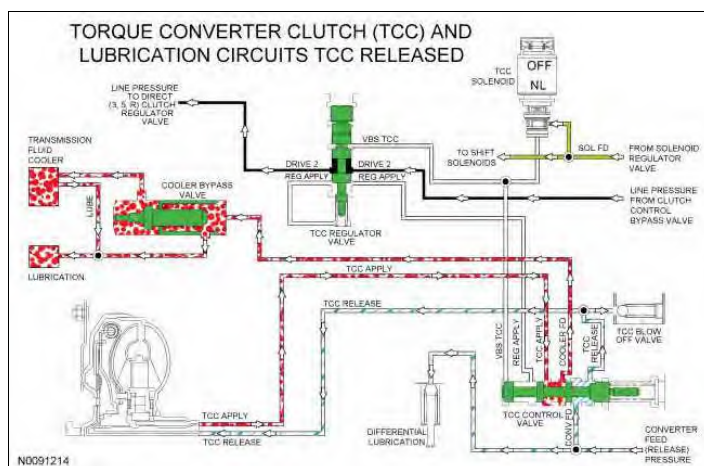
TCC and Lubrication Hydraulic Circuits

Pressure for TCC release is supplied by the main pressure regulator valve to the TCC control valve through the CONV FD circuit. The CONV FD circuit also supplies lubrication for the differential. When the TCC is released, the TCC control valve is positioned by the TCC solenoid to direct CONV FD pressure to the TCC RELEASE circuit to release the TCC. TCC RELEASE pressure returns to the TCC control valve through the TCC APPLY circuit. The position of the TCC control valve opens the TCC APPLY circuit to the COOLER FD circuit which allows the transmission fluid returned from the torque converter to cycle through the thermal bypass valve circuit when the TFT is below 80°C-93°C (176°F-200°F) or the transmission fluid cooler when the temperature is above 80°C-93°C (176°F-200°F).

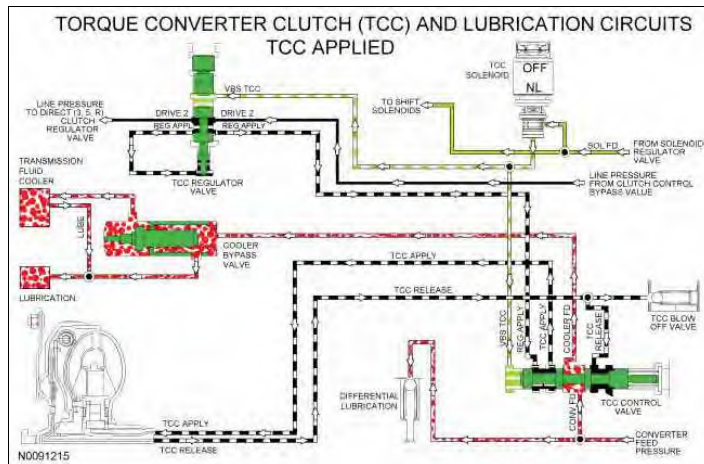
Return transmission fluid from the thermal bypass valve or the transmission fluid cooler supplies transmission lubrication through the LUBE circuit which runs through the input shaft.

For lubrication passage loca description, refer to Hydraulic Circuit Identification Chart in this section.

The position of the TCC control valve is controlled by pressure from the TCC solenoid through the VBS TCC circuit. The TCC solenoid is controlled by the PCM.



When the TCC clutch is applied, the TCC solenoid applies pressure to the TCC control and regulator valves to position the valves to apply the TCC clutch. Regulated line pressure is supplied to the TCC control valve through the REG APPLY circuit by the TCC regulator valve. The TCC control valve directs the regulated line pressure from the REG APPLY circuit to the TCC APPLY circuit to apply the TCC. The TCC control valve blocks the TCC RELEASE circuit to maintain pressure in the TCC APPLY circuit. The TCC control valve directs the CONV FD circuit to the COOLER FD circuit to allow the transmission fluid to flow through the thermal bypass valve or the transmission fluid cooler to the LUBE circuit to lubricate the transmission.

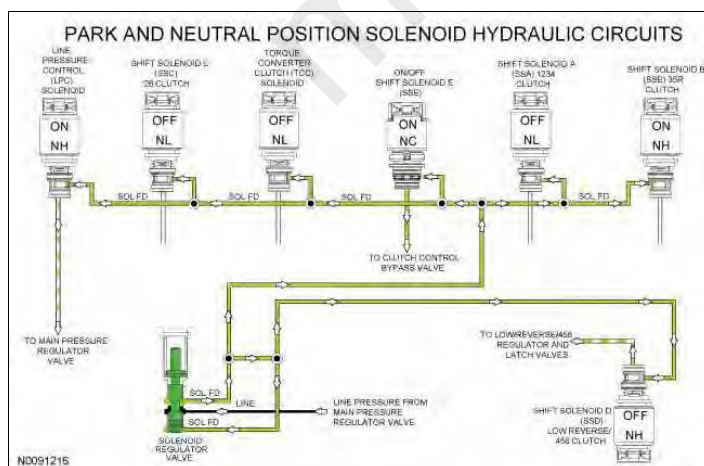


Solenoid Hydraulic Circuits

Line pressure from the main pressure regulator valve is directed to the individual shift, TCC and LPC solenoids by the solenoid regulator valve through the SOL FD circuit. The solenoids, controlled by the PCM, direct the fluid to the valves that they control.

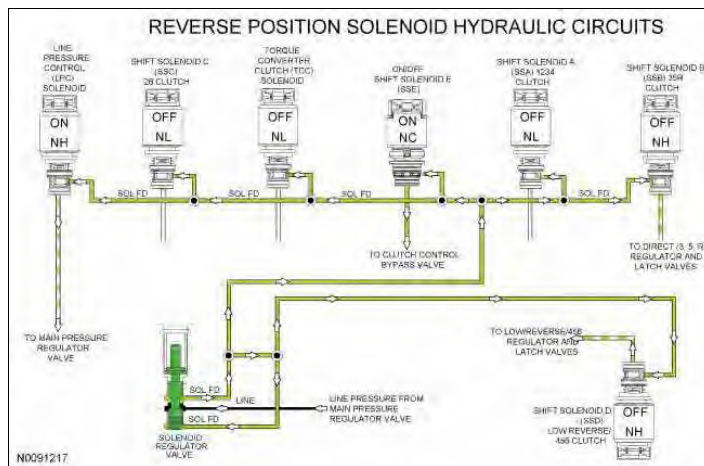
The LPC solenoid applies varying pressure to the main pressure regulator valve to control line pressure.

In the PARK and NEUTRAL positions, SSD applies varying pressure to the low reverse/456 regulator and latch valves through the VBS CBR1/456 hydraulic circuit to position the valves to apply the low/reverse clutch. ON/OFF SSE directs pressure to the clutch control bypass valve to position the valve to direct regulated line pressure from the low reverse/456 regulator valve to the low/reverse clutch.



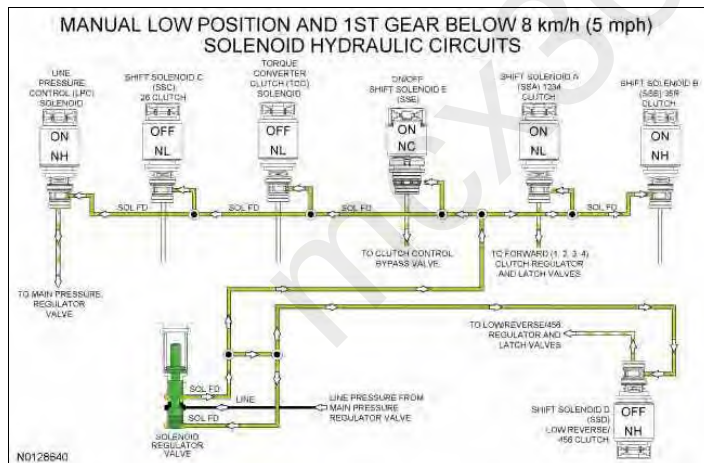
In the REVERSE position, SSD applies varying pressure to the low reverse/456 regulator and latch valves through the VBS CBR1/456 hydraulic circuit to position the valves to apply the low/reverse clutch. ON/OFF SSE directs pressure to the clutch control bypass valve to position the valve to direct regulated line pressure from the low reverse/456 regulator valve to the low/reverse clutch. The clutch control bypass valve also directs line pressure from the REVERSE circuit to the 35R regulator valve through the C35R FD and DRIVE

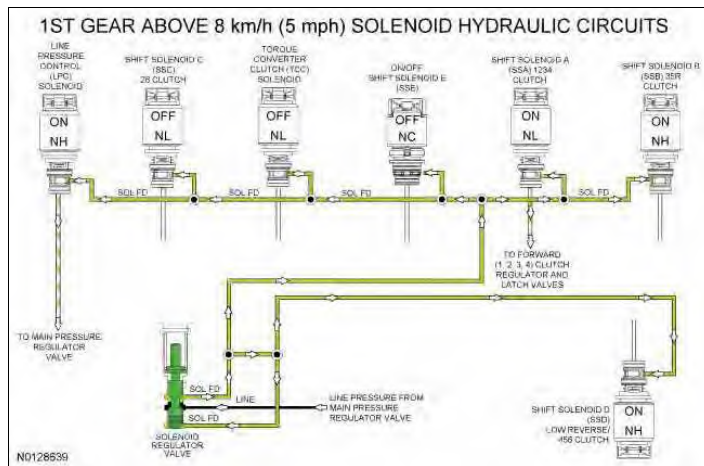
2/C35R FD circuits. SSB directs varying pressure to the 35R regulator and latch valves through the VBS C35R hydraulic circuit to apply the direct (3, 5, R) clutch.



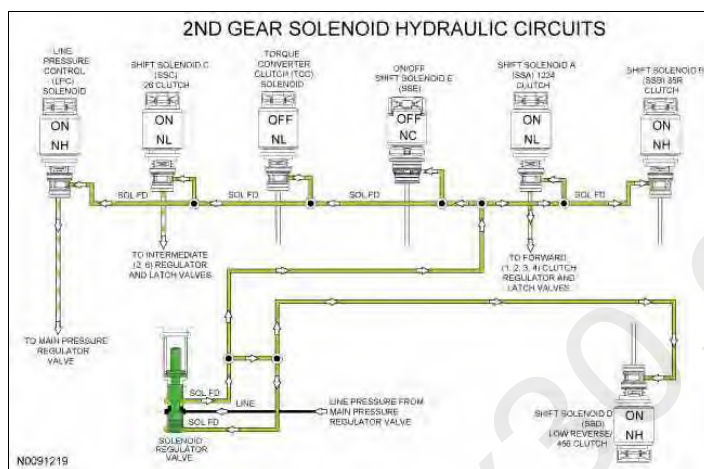
In 1st gear, SSA applies varying pressure to the 1234 clutch regulator and latch valves through the VBS C1234 hydraulic circuit to apply the forward (1, 2, 3, 4) clutch.

When vehicle speed is below 8 km/h (5 mph), or the selector lever is in the manual low position, SSD applies varying pressure to the low reverse/456 regulator and latch valves through the VBS CBR1/456 hydraulic circuit to position the valves to apply the low/reverse clutch. ON/OFF SSE directs pressure to the clutch control bypass valve to position the valve to direct regulated line pressure from the low reverse/456 regulator valve to the low/reverse clutch. As vehicle speed increases above 8 km/h (5 mph) in 1st gear, SSD removes pressure from the low reverse/456 regulator and latch valves and SSE removes pressure from the clutch control bypass valve to release the low/reverse clutch.

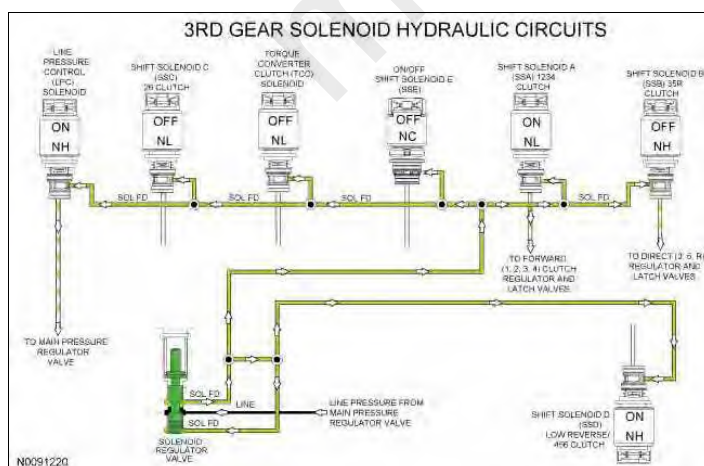




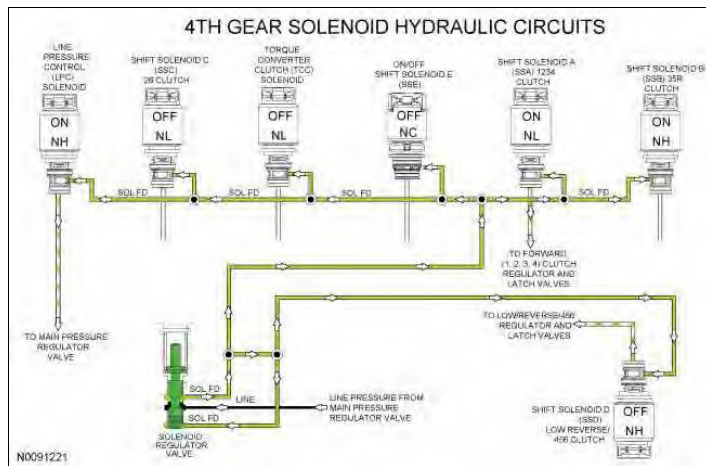
In 2nd gear, the forward (1, 2, 3, 4) clutch remains applied. SSC applies varying pressure to the 26 regulator and latch valves through the VBS CB26 hydraulic circuit to apply the intermediate (2, 6) clutch.



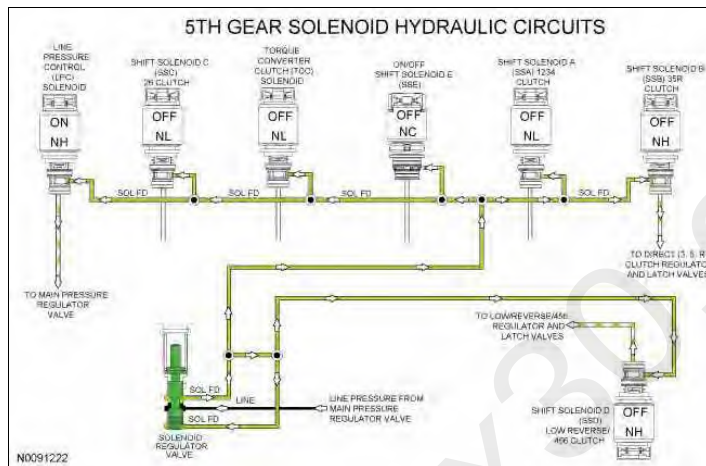
In 3rd gear, the forward (1, 2, 3, 4) clutch remains applied. SSC releases pressure to the 26 regulator and latch valves to release the intermediate (2, 6) clutch. SSB directs pressure to the 35R regulator and latch valves through the VBS CB26 hydraulic circuit to apply the direct (3, 5, R) clutch.



In 4th gear, the forward (1, 2, 3, 4) clutch remains applied. SSB releases pressure to the 35R regulator and latch valves. SSD directs pressure to the low reverse/456 regulator and latch valves through the VBS CBR1/456 hydraulic circuit. With SSE released, the clutch control bypass valve directs the regulated line pressure from the low reverse/456 regulator valve to the O/D (4, 5, 6) clutch to apply the clutch.

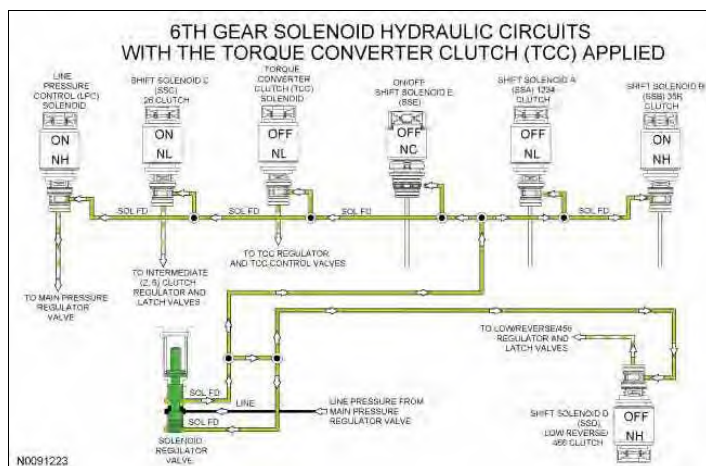


In 5th gear, the O/D (4, 5, 6) clutch remains applied. SSA releases pressure to the 1234 regulator and latch valves to release the forward (1, 2, 3, 4) clutch. SSB directs pressure to the 35R regulator and latch valves through the VBS C35R hydraulic circuit to apply the direct (3, 5, R) clutch.



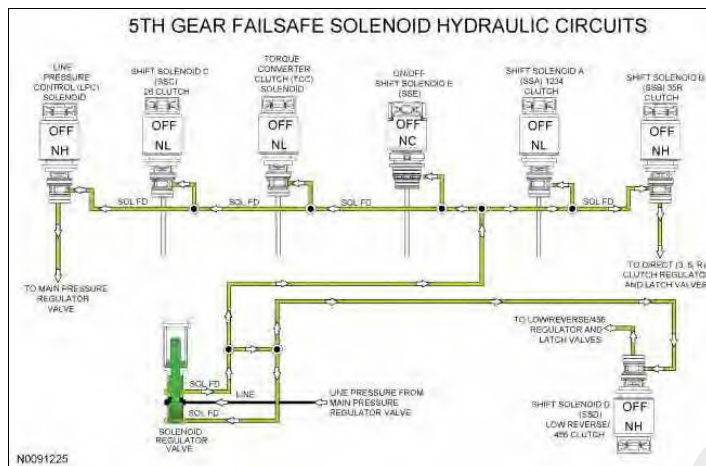
In 6th gear, the O/D (4, 5, 6) clutch remains applied. SSB releases pressure to the 35R regulator and latch valves. SSC applies varying pressure to the 26 clutch regulator and latch valves through the VBS CB26 hydraulic circuit to apply the intermediate (2, 6) clutch.

The TCC can be applied in 4th, 5th or 6th gear. To apply the TCC, the TCC solenoid applies pressure to the TCC regulator valve and the TCC control valve to position the valves to apply the clutch.



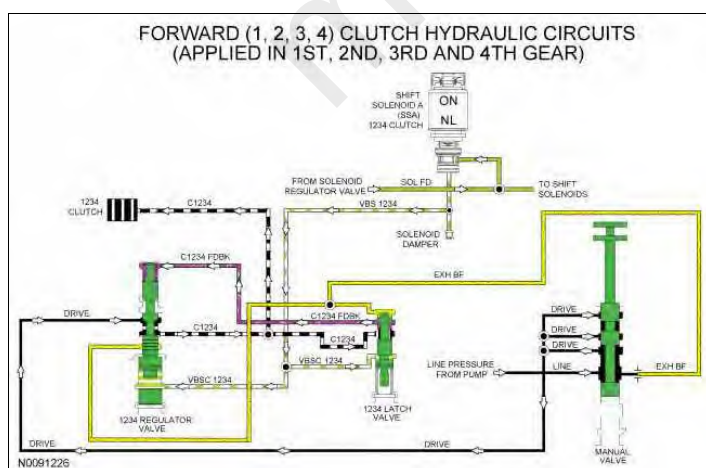
During a mechanical, hydraulic or electrical failure with the manual lever in the DRIVE position, the transmission defaults to 5th gear. When the transmission is in 5th gear failsafe, the PCM does not control the shift solenoids and they default to their normal state (maximum pressure, minimum pressure, on or off). The LPC solenoid defaults to maximum pressure, SSA defaults to minimum pressure, SSB defaults to maximum pressure, SSC defaults to minimum pressure, SSD defaults to maximum pressure and the TCC solenoid defaults to minimum pressure.

With SSB applying maximum pressure to the direct (3, 5, R) regulator and latch valves, the direct (3, 5, R) clutch is applied. With SSD applying maximum pressure to the low reverse/456 regulator and latch valves with SSE in the OFF position, the O/D (4, 5, 6) clutch is applied, providing 5th gear.



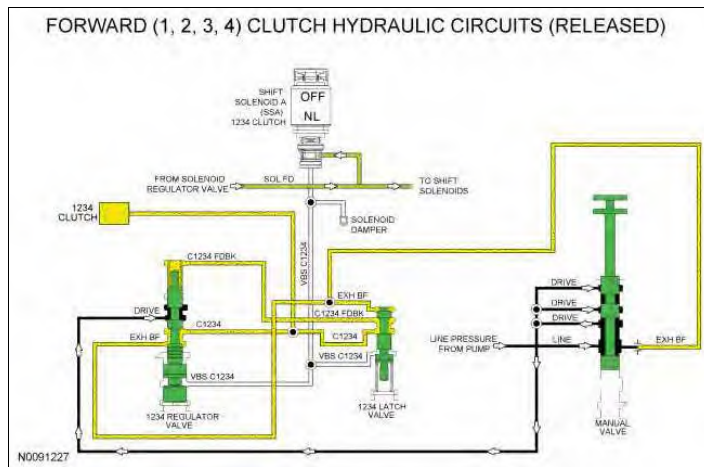
Forward (1, 2, 3, 4) Clutch Hydraulic Circuits

Line pressure is supplied to the 1234 regulator valve by the manual valve in the DRIVE and LOW position. To apply the forward (1, 2, 3, 4) clutch, SSA supplies varying solenoid pressure to the 1234 regulator and latch valves. As the regulator valve moves, it supplies the forward (1, 2, 3, 4) clutch and 1234 latch valve with regulated line pressure through the C1234 circuit. The 1234 latch valve directs the regulated line pressure to the opposite side of the 1234 regulator valve through the C1234 FDBK circuit for gradual forward (1, 2, 3, 4) clutch engagement. The forward (1, 2, 3, 4) clutch is applied in 1st, 2nd, 3rd and 4th gears and manual LOW position.



When the forward (1, 2, 3, 4) clutch is released in 5th and 6th gears, solenoid pressure from SSA is removed from the 1234 regulator and latch valves which positions the valves to block line pressure and release the forward (1, 2, 3, 4) clutch. When the forward (1, 2, 3, 4) clutch is released in the PARK, REVERSE or NEUTRAL position, line pressure is not supplied to the forward (1, 2, 3, 4) regulator valve.

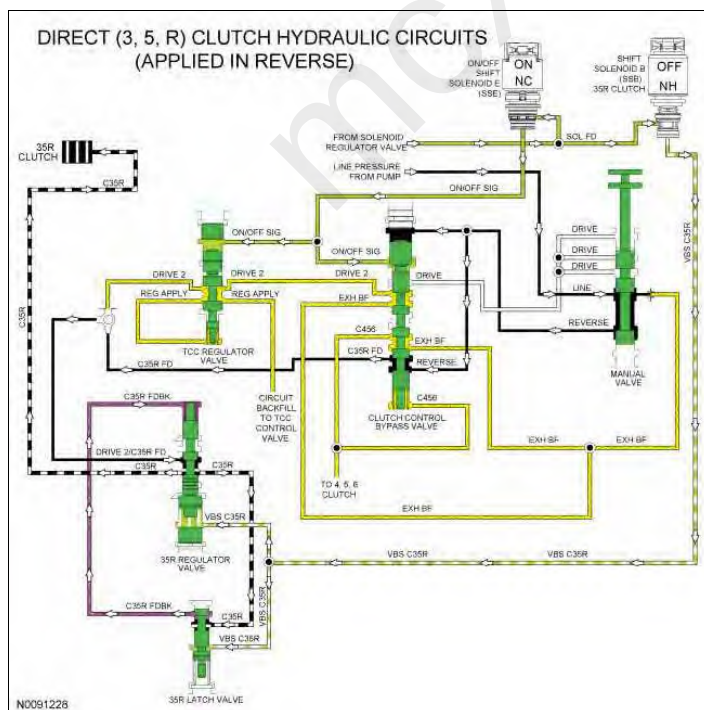
In the released position, exhaust backfill supplied to the 1234 regulator and latch valves by the manual valve through the EXH BF circuit is directed to the forward (1, 2, 3, 4) clutch to fill the unused circuits with unpressurized transmission fluid.



Direct (3, 5, R) Clutch Hydraulic Circuits

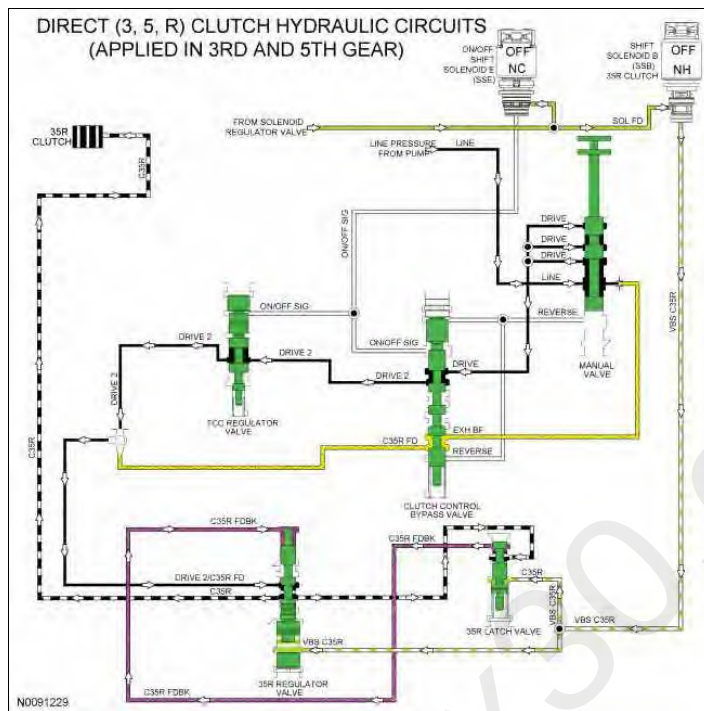
When the direct (3, 5, R) clutch is applied in the REVERSE position, line pressure from the manual valve is directed to the clutch control bypass valve through the REVERSE circuit. Line pressure in the REVERSE circuit positions the clutch control bypass valve and supplies line pressure to apply the direct (3, 5, R) clutch. Line pressure from the clutch control bypass valve is supplied to the 35R regulator valve through the C35R FD circuit, DRIVE 2/C35R FD shuttle ball and DRIVE 2/C35R FD circuit.

To apply the direct (3, 5, R) clutch, SSB applies varying solenoid pressure to the 35R regulator and latch valves. As the regulator valve moves, it supplies the direct (3, 5, R) clutch and 35R latch valve with regulated line pressure through the C35R circuit. The 35R latch valve directs the regulated line pressure to the opposite side of the 35R regulator valve through the C35R FDBK circuit for gradual direct (3, 5, R) clutch engagement.



When the direct (3, 5, R) clutch is applied in 3rd and 5th gear, line pressure from the pump is directed to the clutch control bypass valve by the manual valve through the DRIVE hydraulic circuit. The clutch control bypass valve directs the pressure to the 35R regulator valve through the TCC regulator valve, DRIVE 2 circuit, DRIVE 2/C35R FD shuttle ball and DRIVE 2/C35R FD circuit.

To apply the direct (3, 5, R) clutch, SSB applies varying solenoid pressure to the 35R regulator and latch valves. As the 35R regulator valve moves, it supplies the direct (3, 5, R) clutch and 35R latch valve with regulated line pressure through the C35R circuit. The 35R latch valve directs the regulated line pressure to the opposite side of the regulator valve through the C35R FDBK circuit for gradual direct (3, 5, R) clutch engagement.

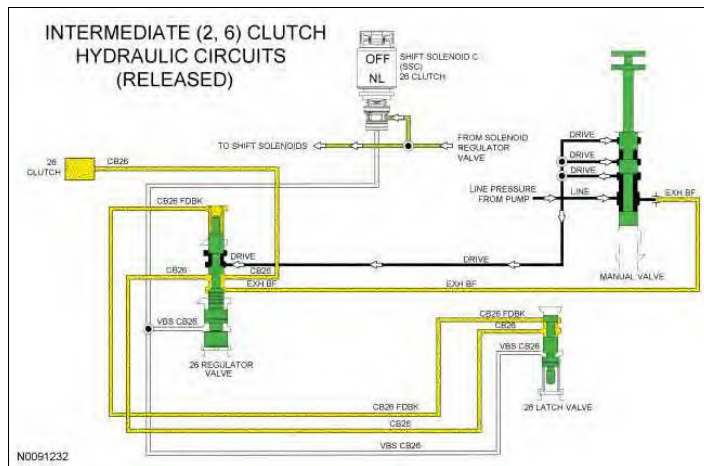


When the direct (3, 5, R) clutch is released, solenoid pressure from SSB is removed from the 35R regulator and latch valves which positions the valves to block line pressure and release the direct (3, 5, R) clutch. When the direct (3, 5, R) clutch is released in the PARK or NEUTRAL position, line pressure is not supplied to the 35R regulator valve.

Compensator feed pressure is supplied to the 35R regulator valve from the control pressure regulator through the COMP FD circuit and is supplied to the opposite side of the direct (3, 5, R) and O/D (4, 5, 6) clutch pistons to keep the clutches from centrifugally applying. COMP FD pressure is only about 83 kPa (12 psi) and is applied through all gears. When the direct (3, 5, R) clutch is released, COMP FD is applied by the 35R regulator valve to the direct (3, 5, R) clutch to fill the unused circuits.

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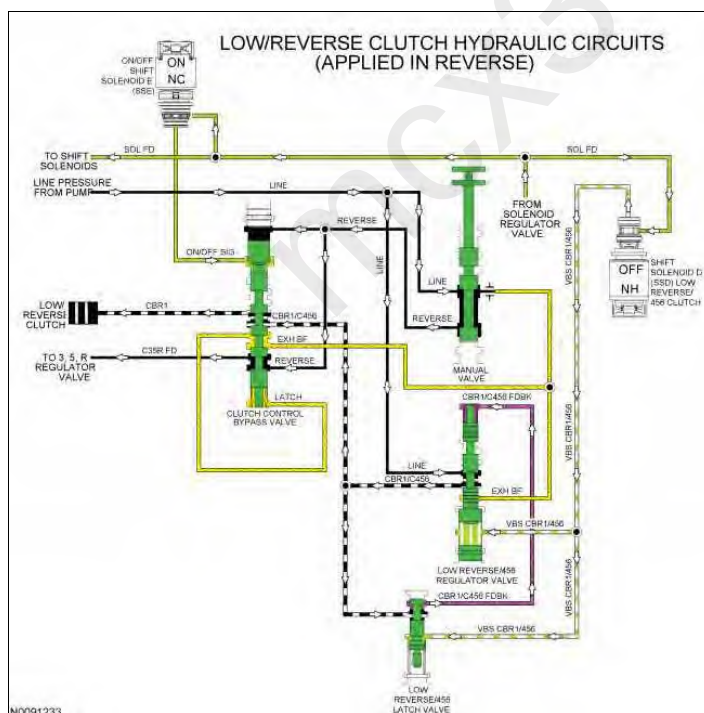
In the released position, exhaust backfill supplied to the 26 clutch regulator valve by the manual valve through the EXH BF circuit is directed to the intermediate (2, 6) clutch and 26 latch valve to fill the unused circuits with unpressurized transmission fluid.



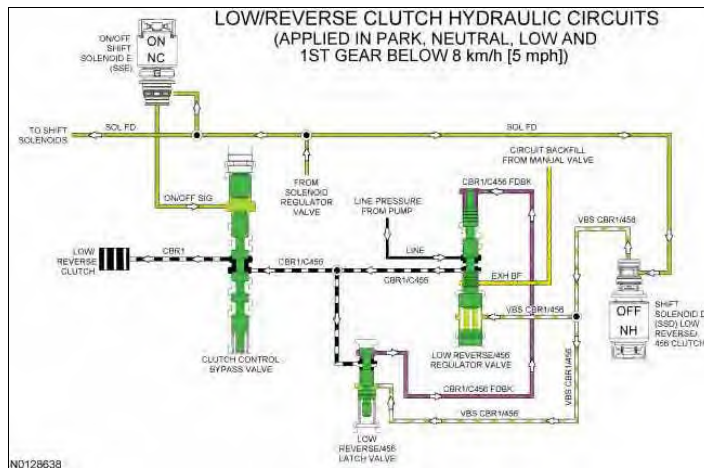
Low/Reverse Clutch Hydraulic Circuits

Line pressure is supplied to the low reverse/456 regulator valve by the pump in every gear and manual lever position. To apply the low/reverse clutch, SSD supplies varying solenoid pressure to the low reverse/456 regulator and latch valves. As the low reverse/456 regulator valve moves, it supplies the clutch control bypass valve and low reverse/456 latch valve with regulated line pressure through the CBR1/C456 circuit. The low reverse/456 latch valve directs the regulated line pressure to the opposite side of the 456 regulator valve through the CBR1/C456 FDBK circuit for gradual low reverse/456 clutch engagement. The low/reverse clutch is applied in PARK, REVERSE, NEUTRAL, 1st gear below 8 km/h (5 mph) and manual LOW position.

In REVERSE, both solenoid pressure from ON/OFF SSE and line pressure from the manual valve in the REVERSE circuit apply pressure to the clutch control bypass valve to position it for low/reverse clutch application. Regulated line pressure from the CBR1/C456 circuit is directed to the low/reverse clutch by the clutch control bypass valve through the CBR1 circuit to apply the low/reverse clutch.



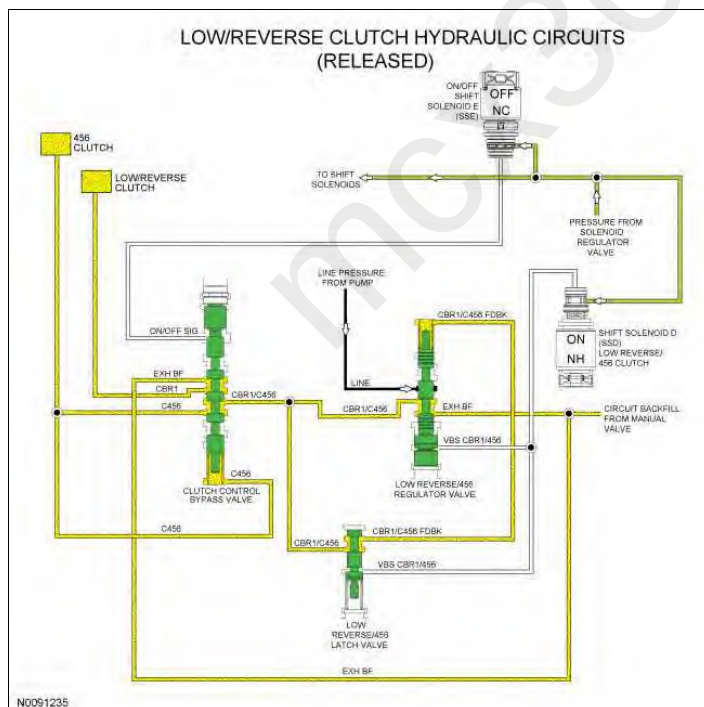
When the low/reverse clutch is applied in PARK, NEUTRAL, LOW or 1st gear below 8 km/h (5 mph), only pressure from ON/OFF SSE , positions the clutch control bypass valve. Line pressure from the REVERSE circuit is not supplied by the manual valve.



When the low/reverse clutch is released in 1st gear above 8 km/h (5 mph), 2nd and 3rd gears, solenoid pressure from SSD is removed from the low reverse/456 regulator and latch valves which positions the valves to block line pressure and release the low/reverse clutch. Solenoid pressure from SSE is removed from the clutch control bypass valve to position it to apply the O/D (4, 5, 6) clutch.

When the low/reverse clutch is released in 1st gear above 8 km/h (5 mph), 2nd and 3rd gears, exhaust backfill supplied to the low reverse/456 clutch regulator valve and the clutch control bypass valve by the manual valve through the EXH BF circuit is directed to the low reverse/456 latch valve, low/reverse clutch and O/D (4, 5, 6) clutch to fill the unused circuits with unpressurized transmission fluid.

When the low/reverse clutch is released in 4th, 5th and 6th gears, the low reverse/456 regulator valve supplies regulated pressure to the clutch control bypass valve through the CBR1/C456 circuit. With ON/OFF SSE in the OFF position, the regulated pressure is directed to the O/D (4, 5, 6) clutch.

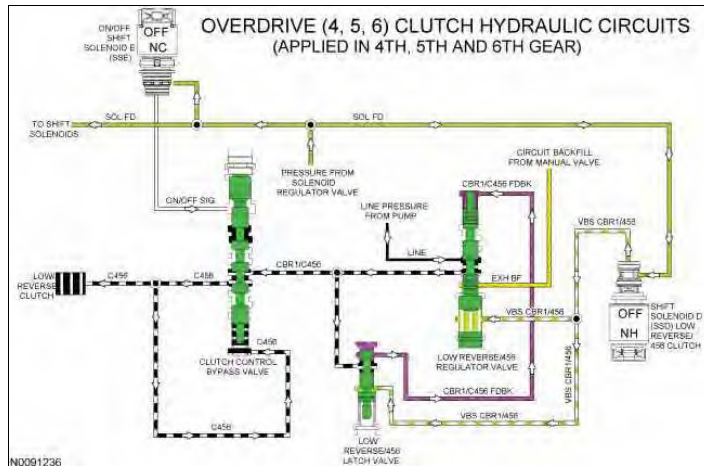


Overdrive (4, 5, 6) Clutch Hydraulic Circuits

Line pressure is supplied to the low reverse/456 regulator valve by the pump in every gear and manual lever position. To apply the low/reverse clutch, SSD supplies varying solenoid pressure to the low reverse/456 regulator and latch valves. As the regulator valve moves, it supplies the clutch control bypass valve and low

reverse/456 latch valve with regulated line pressure through the CBR1/C456 circuit. The low reverse/456 latch valve directs the regulated line pressure to the opposite side of the low reverse/456 regulator valve through the CBR1/C456 FDBK circuit for gradual O/D (4, 5, 6) clutch engagement.

To apply the O/D (4, 5, 6) clutch, the position of the clutch control bypass valve allows the regulated line pressure in the CBR1/C456 circuit to supply the C456 circuit, applying the O/D (4, 5, 6) clutch. Clutch control bypass valve latch pressure is supplied by the C456 circuit. The O/D (4, 5, 6) clutch is applied in 4th, 5th and 6th gears.

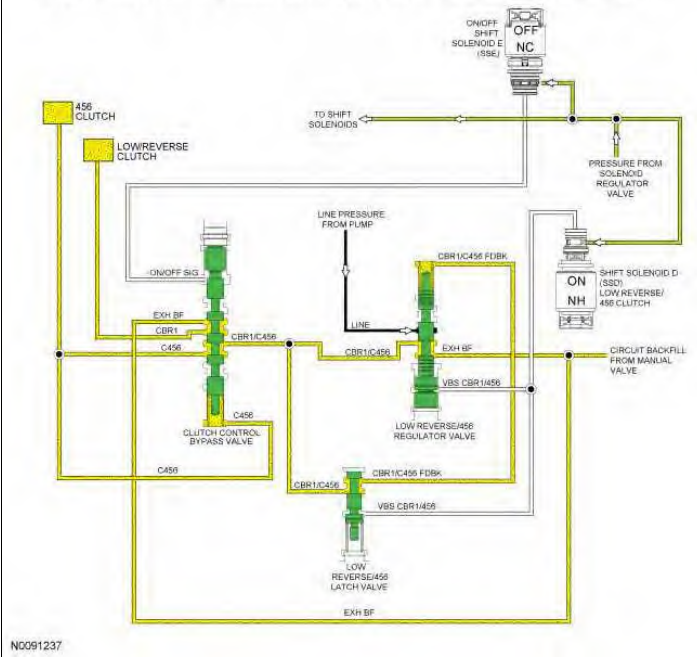


When the O/D (4, 5, 6) clutch is released in 1st gear above 8 km/h (5 mph), 2nd and 3rd gears, solenoid pressure from SSD is removed from the low reverse/456 regulator and latch valves which positions the valves to block line pressure and release the O/D (4, 5, 6) clutch.

When the O/D (4, 5, 6) clutch is released in 1st gear above 8 km/h (5 mph), 2nd and 3rd gears, exhaust backfill supplied to the low reverse/456 clutch regulator valve and the clutch control bypass valve by the manual valve through the EXH BF circuit is directed to the low reverses latch valve, low/reverse clutch and O/D (4, 5, 6) clutch to fill the unused circuits with unpressurized transmission fluid.

When the O/D (4, 5, 6) clutch is released in PARK, REVERSE, NEUTRAL and 1st gear below 8 km/h (5 mph), the low reverse/456 regulator valve supplies regulated pressure to the clutch control bypass valve through the CBR1/C456 circuit. With ON/OFF SSE in the ON position, the regulated pressure is directed to the low/reverse clutch.

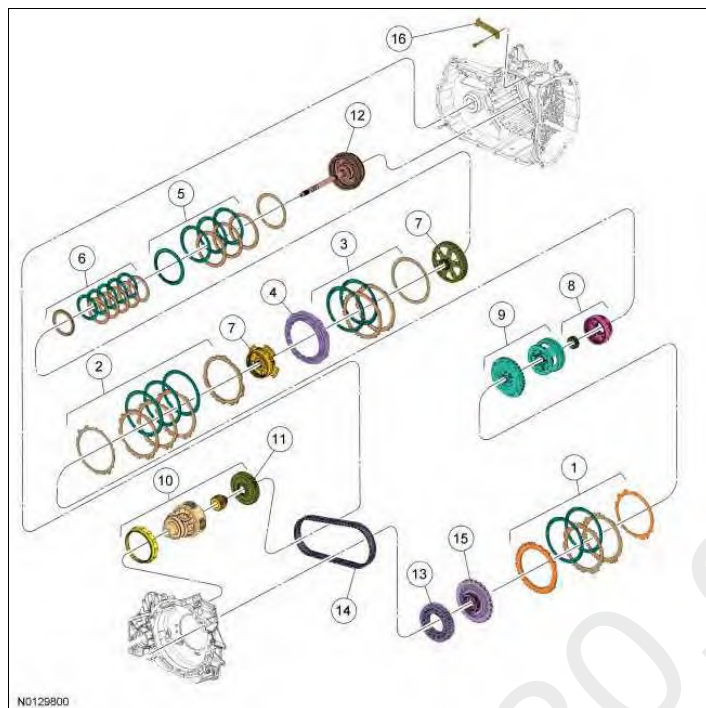
OVERDRIVE (4, 5, 6) CLUTCH HYDRAULIC CIRCUITS (RELEASED)



SECTION 307-01: Automatic Transmission - 6F35
DESCRIPTION AND OPERATION

Mechanical System

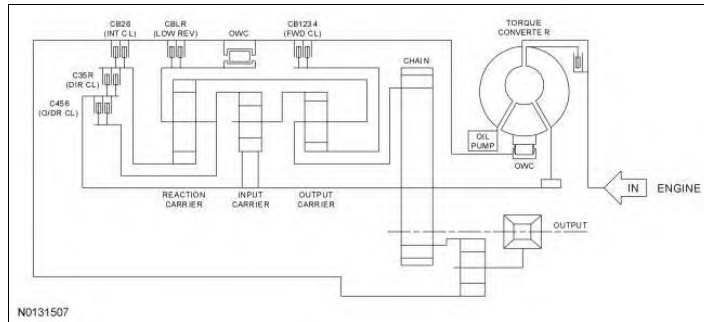
Component Location



Item	Description
1	Forward clutch (clutch brake 1, 2, 3, 4)
2	Low/reverse clutch (clutch brake low/reverse)
3	Intermediate clutch (clutch brake 2, 6)
4	Low OWC
5	Direct clutch (drive clutch 3,)
6	O/D clutch (drive clutch 4, 5, 6)
7	Rear planetary assembly
8	Center planetary assembly
9	Front planetary assembly
10	Final drive carrier and differential assembly
11	Drive chain driven sprocket
12	Input shaft assembly and direct/overdrive clutch hub
13	Drive chain drive sprocket
14	Drive chain
15	Park gear
16	Park pawl

System Operation

System Diagram



Component Description

Planetary Gearset

This transmission has 3 planetary gearsets to provide operation in reverse and 6 forward speeds.

The gearsets are comprised of the following components:

- Front planetary sun gear (part of the front sun gear and shell assembly)
- Front planetary carrier
- Front planetary ring gear
- Center planetary sun gear
- Center planetary carrier
- Center planetary ring gear
- Rear planetary ring gear
- Rear planetary carrier
- Rear planetary sun gear and shell assembly

The front planetary sun gear is splined to the forward (1, 2, 3, 4) clutch and is held stationary in 1st, 2nd, 3rd and 4th gears.

The front planetary carrier is splined to the rear planetary ring gear and transfers power from the rear planetary gearset to the front planetary gearset in 2nd, 3rd, 5th and 6th gears and reverse. The front planetary carrier is splined to the drive chain drive sprocket. The front planetary carrier is the output component for the planetary gearset.

The front planetary ring gear is splined to the center planetary carrier and transfers power from the center planetary gearset to the front planetary gearset in 1st, 2nd, 3rd and 4th gears.

The center planetary sun gear is splined to the input shaft and is used as input to the planetary gearsets in 1st, 2nd, 3rd and 4th gear.

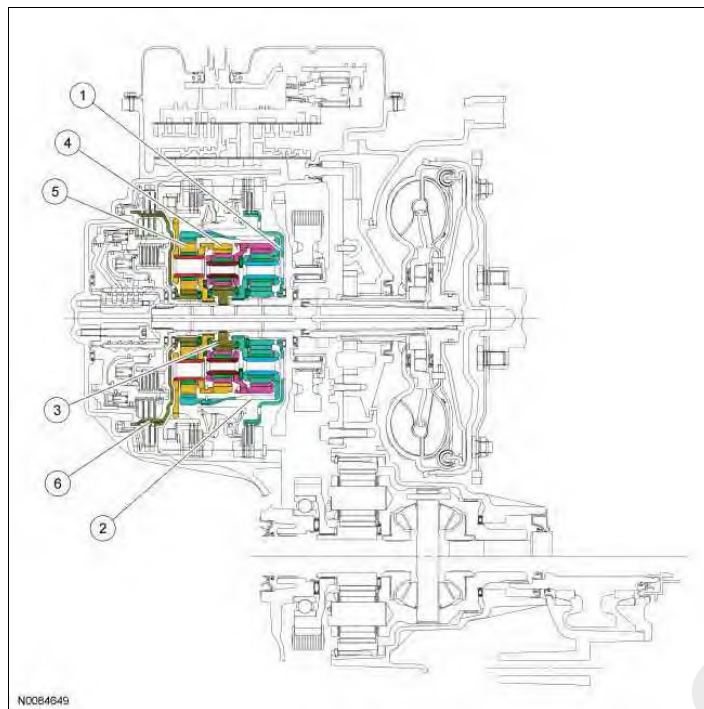
The center planetary ring gear is splined to the rear planetary carrier and transfers power from the center planetary gearset to the rear planetary gearset in 3rd gear, from the rear planetary gearset to the center planetary gearset in 4th gear and is held stationary by the low OWC and low/reverse clutch in 1st gear and reverse.

The rear planetary carrier is splined to the O/D (4, 5, 6) clutch hub and transfers power from the input shaft to the rear planetary carrier in 4th, 5th and 6th gears.

The rear planetary sun gear and shell assembly is splined to both the intermediate (2, 6) clutch and the direct

(3, 5, R) clutch. The rear planetary sun gear and shell assembly is held stationary by the intermediate (2, 6) clutch in 2nd and 6th gear and is driven by the direct (3, 5, R) clutch in 3rd and 5th gears and reverse.

Planetary Gearset Cutaway View



Planetary Gearset Exploded View

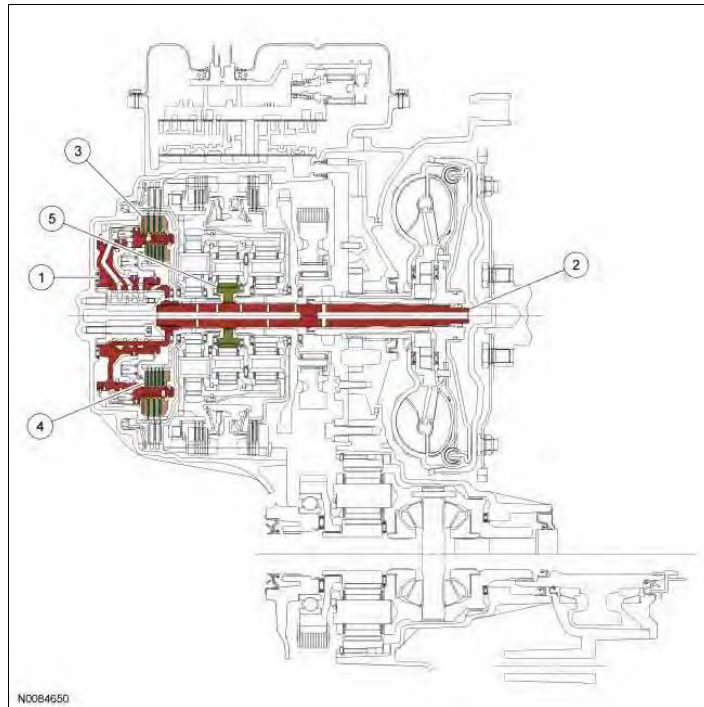


Item	Part Number	Description
1	7A019	Front planetary sun gear and shell assembly
2	7D491	Front planetary carrier/rear planetary ring gear assembly
3	7D063	Gear - center planetary sun
4	7D491	Center planetary carrier/front ring gear assembly
5	7D491	Rear planetary carrier/center ring gear assembly
6	7A019	Rear planetary sun gear and shell assembly

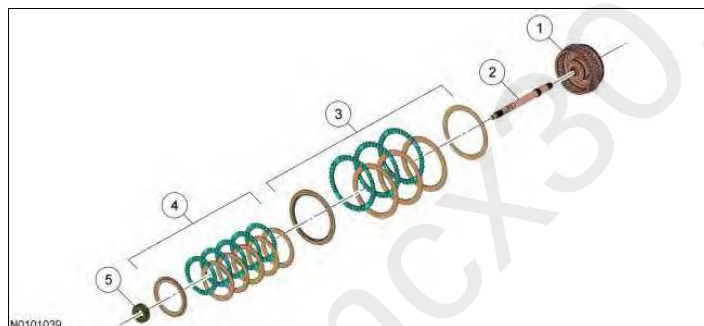
Input Shaft

The input shaft is part of the direct/ O/D clutch assembly and is splined to the torque converter turbine and the center planetary sun gear. The input shaft transfers power from the torque converter to the rear planetary gearset through the center planetary sun gear and the direct (3, 5, R) and O/D (4, 5, 6) clutches.

Input Shaft Cutaway View



Input Shaft Exploded View

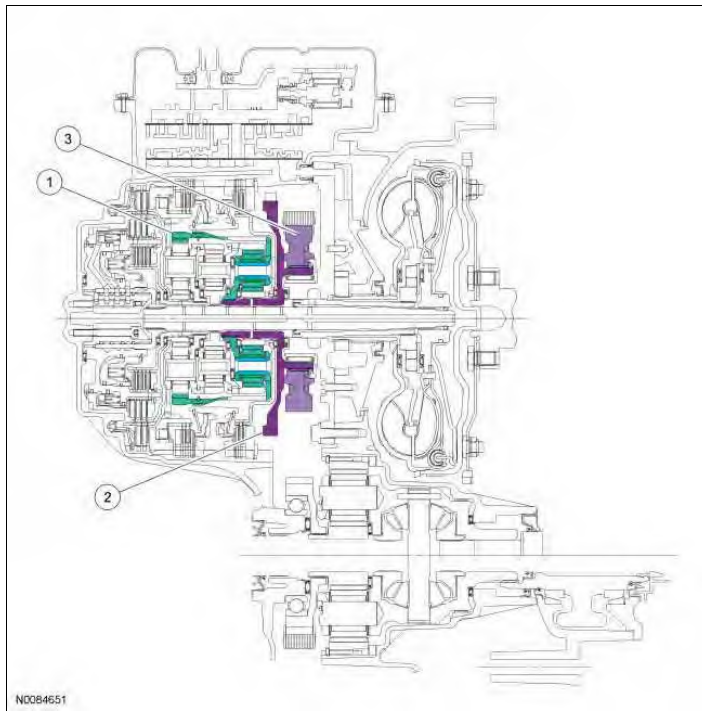


Item	Part Number	Description
1	7G384	Direct (3, 5, R)/ O/D (4, 5, 6) clutch hub
2	7F213	Input shaft
3	7B164	Direct (3, 5, R) clutch
4	7B164	O/D (4, 5, 6) clutch
5	7D491	Center planetary sun gear

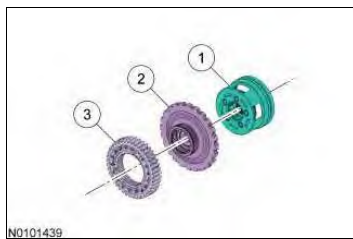
Front Planetary Carrier Hub (Output Hub)

The front planetary carrier hub/park gear is splined to the front planetary carrier and the drive chain drive sprocket. This allows torque to be transferred from the planetary gearset to the final drive gearset.

Front Planetary Carrier Hub Cutaway View



Front Planetary Carrier Hub Exploded View



Item	Part Number	Description
1	7D491	Front planetary carrier
2	7060	Front planetary carrier hub/park gear
3	7G132	Drive chain drive sprocket

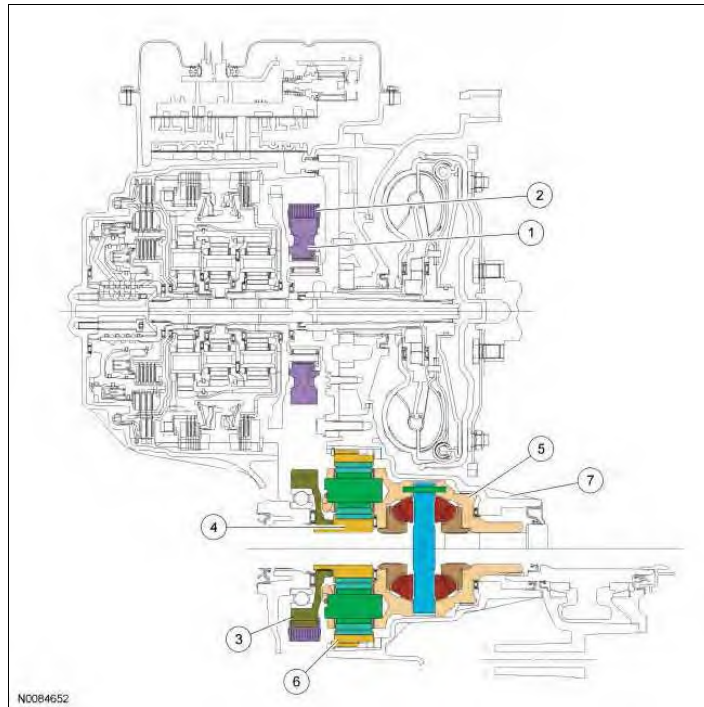
Final Drive Chain, Sprockets and Planetary Gearset

The final drive consists of a drive chain and sprockets and a planetary gearset and differential assembly. The drive chain and sprockets transfer torque from the front planetary carrier hub to the differential assembly that has a planetary gearset integrated into it for final drive torque multiplication.

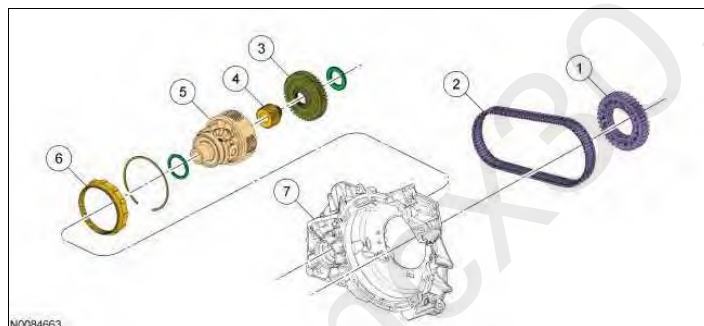
The final drive consists of the following components:

- Drive sprocket
- Drive chain
- Driven sprocket
- Final drive sun gear
- Final drive ring gear
- Final drive planetary carrier and differential assembly

Final Drive Component Cutaway View



Final Drive Component Exploded View



Item	Part Number	Description
1	7G132	Drive chain drive sprocket
2	7G249	Drive chain
3	7G132	Drive chain driven sprocket
4	7F342	Final drive planetary sun gear
5	7F465	Differential assembly
6	7F343	Final drive planetary ring gear
7	7975	Torque converter housing

Differential

The differential allows the halfshafts and wheels to rotate at different speeds during cornering and transfers power to the PTU for AWD vehicles.

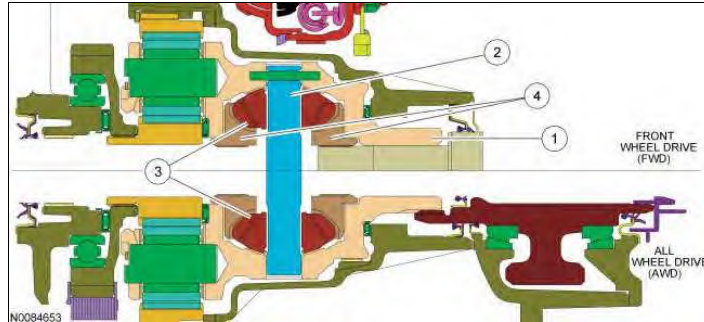
The differential assembly consists of the following components:

- Differential case (part of the final drive carrier)
- Two pinion gears supported by a pinion shaft

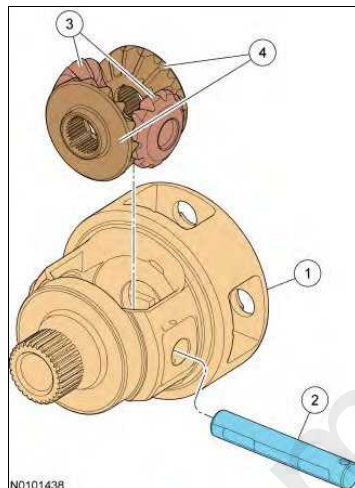
- Two side gears supported by the differential case and halfshafts

When driving in a straight line, both front wheels rotate at relatively the same speed. This means both side gears are rotating at the same speed, as well, while both pinion gears revolve (but do not rotate) with the side gears. During cornering, the wheel on the outside of the turn is forced to rotate faster than the wheel on the inside of the turn. Since the side gears must now rotate at different speeds, the pinion gears rotate on the pinion shaft allowing the drive axles to rotate at different speeds while still transferring output torque.

Differential Cutaway View



Differential Exploded View



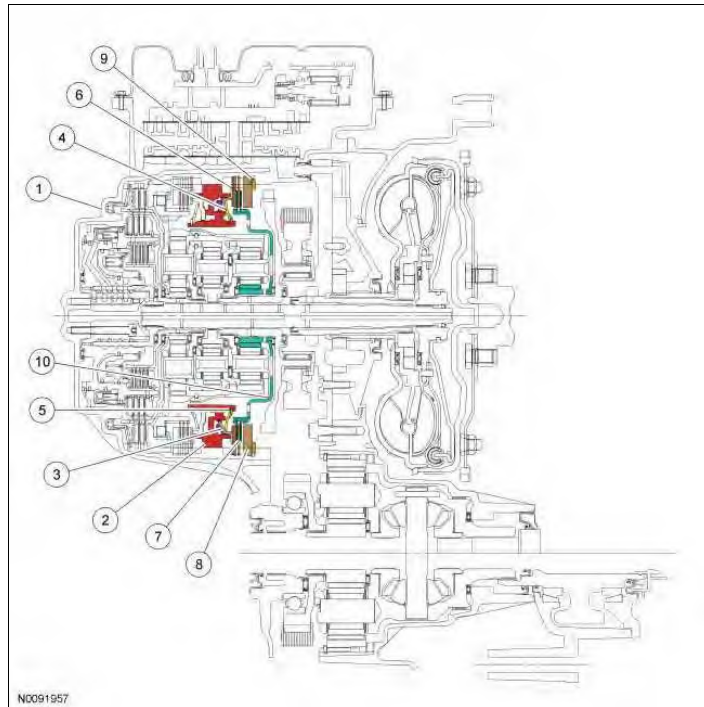
Item	Part Number	Description
1	7F465	Differential housing
2	-	Pinion shaft
3	-	Pinion gears
4	-	Side gears

Forward (1, 2, 3, 4) Clutch

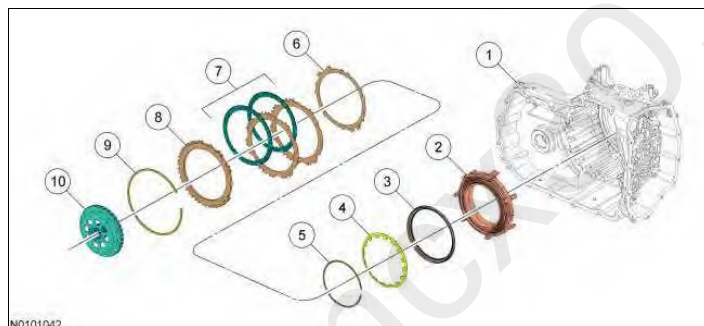
The forward clutch is a brake clutch that holds the front sun gear and shell assembly. The forward clutch is applied in 1st, 2nd, 3rd and 4th gears.

Hydraulic pressure from the regulator valve in the valve body pushes the forward clutch piston against the forward clutch pack to apply the clutch. The front sun gear and shell assembly is held stationary to the transmission case as a result of the clutch being applied.

Forward (1, 2, 3, 4) Clutch Cutaway View



Forward (1, 2, 3, 4) Clutch Exploded View



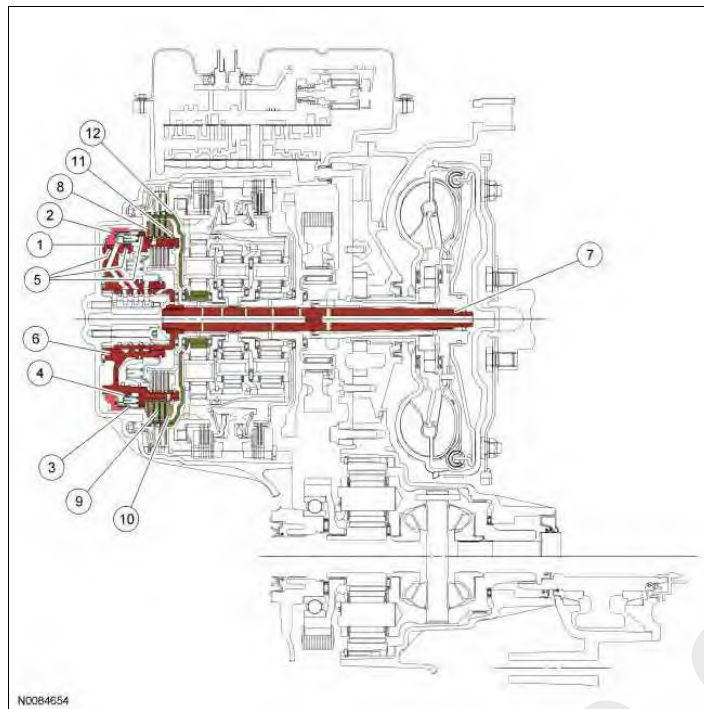
Item	Part Number	Description
1	7005	Transmission case
2	7L328	Center support
3	7A262	Forward clutch piston
4	7B070	Forward clutch piston rspring
5	7H365	Forward clutch piston return spring snap ring
6	7B070	Forward clutch wave spring
7	7B164	Forward (1, 2, 3, 4) clutch
8	7B066	Forward clutch pressure plate
9	7D483	Forward clutch snap ring
10	7A019	Front sun gear and shell assembly

Direct (3, 5, R) Clutch

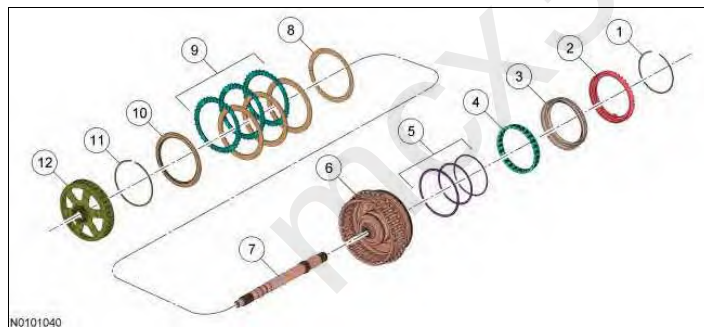
The direct clutch is a drive clutch that transfers power from the direct/ O/D clutch hub assembly to the rear planetary sun gear and shell assembly. The direct clutch is applied in 3rd and 5th gears and reverse.

Hydraulic pressure from the regulator valve in the valve body pushes the direct clutch piston against the direct clutch pack to apply the clutch. The input shaft and direct/ O/D clutch hub assembly transfers torque to the rear planetary sun gear and shell assembly as a result of the clutch being applied.

Direct (3, 5, R) Clutch Cutaway View



Direct (3, 5, R) Clutch Exploded View



Item	Part Number	Description
1	7C122	Direct clutch cylinder snap ring
2	7F283	Direct clutch cylinder
3	7A262	Direct clutch piston
4	7F235	Direct clutch piston return spring
5	7C099	Direct clutch piston seals
6	7G384	Direct/ O/D clutch hub
7	7F213	Input shaft
8	7B070	Direct clutch wave spring
9	7B164	Direct (3, 5, R) clutch assembly
10	7B066	Direct clutch pressure plate
11	7D483	Direct clutch snap ring

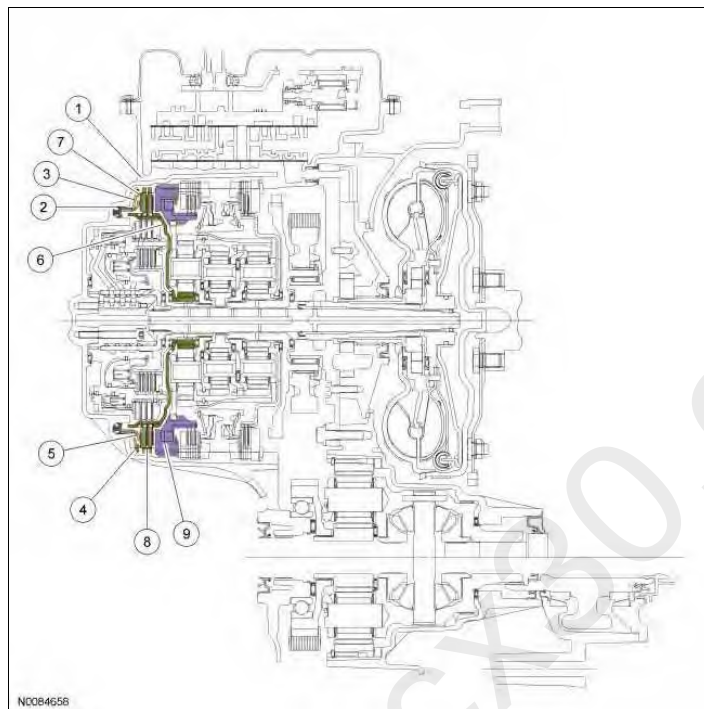
12	7A019	Rear planetary sun gear and shell assembly
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Intermediate (2, 6) Clutch

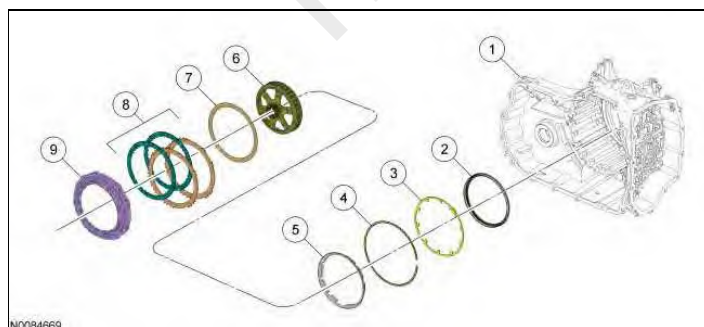
The intermediate clutch is a brake clutch that holds the rear planetary sun gear and shell assembly. The intermediate clutch is applied in 2nd and 6th gears.

Hydraulic pressure from the regulator valve in the valve body pushes the intermediate clutch piston against the intermediate clutch pack to apply the clutch. The low OWC works as a pressure plate for the intermediate (2, 6) clutch. The rear planetary sun gear and shell assembly is held stationary to the transmission case as a result of the clutch being applied.

Intermediate (2, 6) Clutch Cutaway View



Intermediate (2, 6) Clutch Exploded View



Item	Part Number	Description
1	7005	Transmission case
2	7E005	Intermediate clutch piston
3	7B070	Intermediate clutch piston return spring
4	7D483	Intermediate clutch piston return spring snap ring
5	7E005	Intermediate clutch apply ring

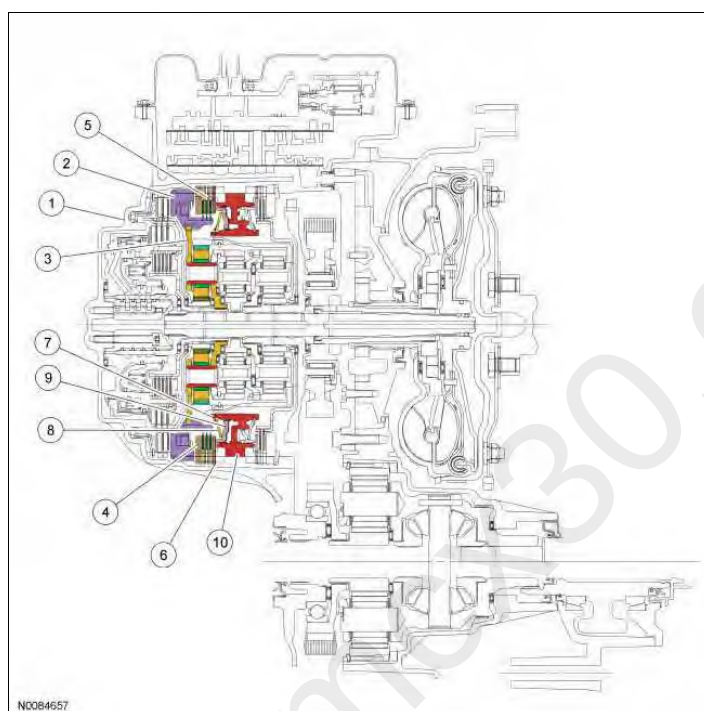
6	7A019	Rear planetary sun gear and shell assembly
7	7E085	Intermediate clutch wave spring
8	7B164	Intermediate clutch assembly
9	7A089	Low/One-Way Clutch (OWC)

Low - Reverse Clutch

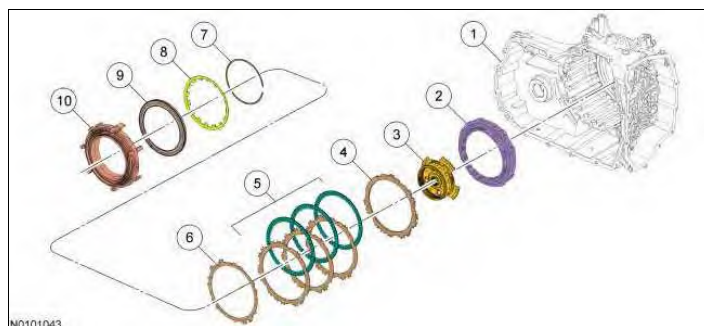
The low/reverse clutch is a brake clutch that holds the low OWC which is splined to the rear planetary carrier. The low/reverse clutch is applied in manual LOW, REVERSE and 1st gear up to 8 km/h (5 mph).

Hydraulic pressure from the regulator valve in the valve body pushes the low/reverse clutch piston against the low/reverse clutch pack to apply the clutch. The rear planetary carrier is held stationary to the transmission case as a result of the clutch being applied.

Low/Reverse Clutch Cutaway View



Low/Reverse Clutch Exploded View



Item	Part Number	Description
1	7005	Transmission case
2	7A089	Low OWC
3	7D491	Rear planetary carrier

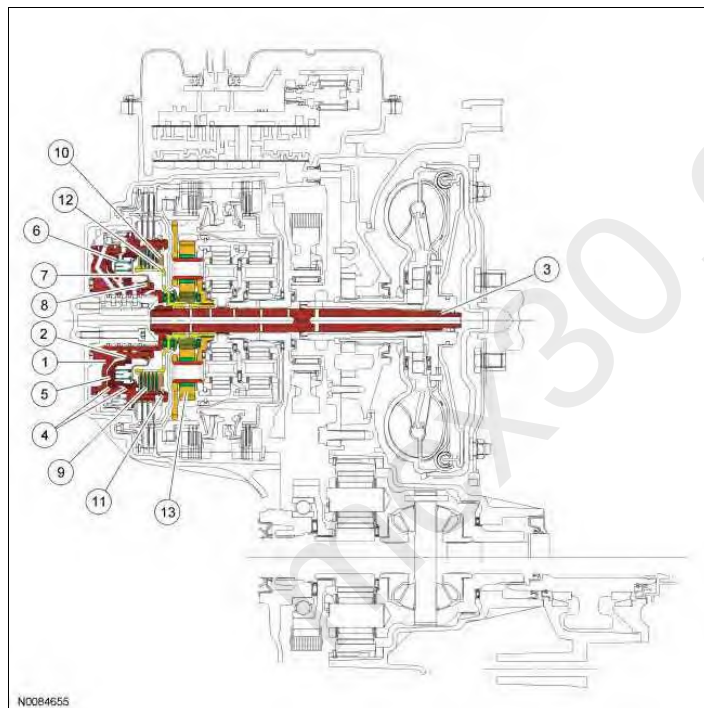
4	7B066	Low/reverse clutch pressure plate
5	7B164	Low/reverse clutch
6	7E085	Low/reverse clutch wave spring
7	7C122	Low/reverse clutch piston return spring snap ring
8	7B070	Low/reverse clutch piston return spring
9	7D402	Low/reverse clutch piston
10	7L328	Center support

Overdrive Clutch

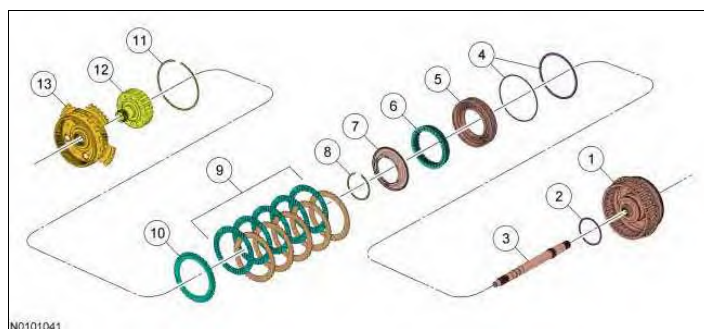
The O/D clutch is a drive clutch that transfers power from the direct/ O/D clutch hub assembly to the rear planetary carrier. The O/D clutch is applied in 4th, 5th and 6th gears.

Hydraulic pressure from the regulator valve in the valve body pushes the O/D clutch piston against the O/D clutch pack to apply the clutch. The input shaft and direct/ O/D clutch hub assembly transfers torque to the rear planetary carrier as a result of the clutch being applied.

Overdrive (O/D) (4, 5, 6) Clutch Cutaway View



Overdrive (O/D) (4, 5, 6) Clutch Exploded View



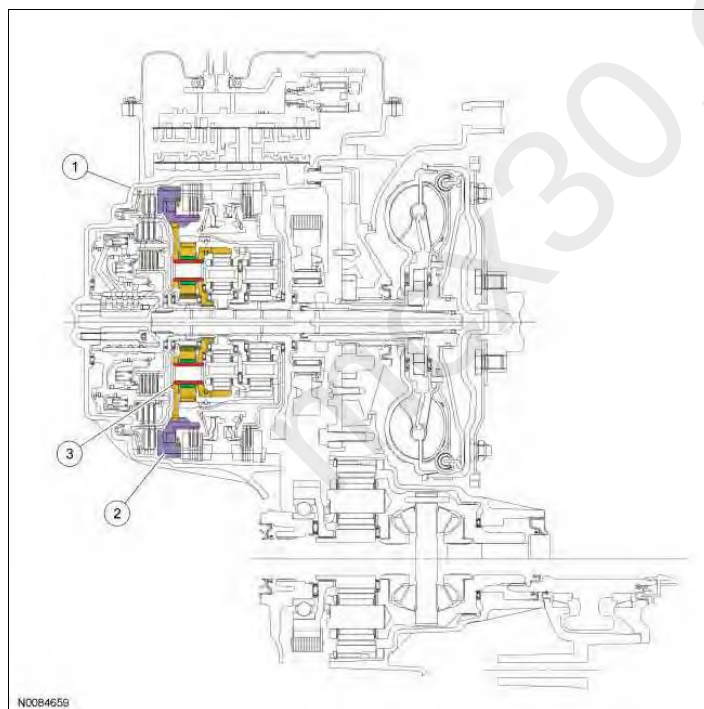
Item	Part Number	Description
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1	7G384	Direct/ O/D clutch hub assembly
2	7A548	O/D clutch piston inner seal
3	7F213	Input shaft
4	7A548	O/D clutch piston outer seals
5	7A262	O/D clutch piston
6	7F222	O/D clutch piston return spring
7	7H360	O/D clutch balance piston
8	7C122	O/D clutch balance piston snap ring
9	7B164	O/D (4, 5, 6) clutch assembly
10	7B066	O/D clutch pressure plate
11	7D483	O/D clutch snap ring
12	7H351	O/D clutch hub
13	7D491	Rear planetary carrier

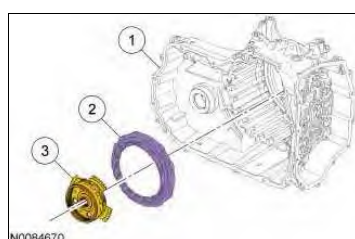
Low One way Clutch

The low OWC is a brake clutch that holds the rear planetary carrier in one direction and allows it to freewheel in the opposite direction which eliminates engine braking in 1st gear when the transmission is in DRIVE. The low OWC is also the pressure plate for the intermediate (2, 6) clutch.

Low OWC Cutaway View



Low OWC Exploded View



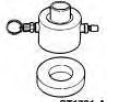
Item	Part Number	Description
1	7005	Transmission case
2	7A089	Low OWC
3	7D491	Rear planetary carrier

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SECTION 307-01: Automatic Transmission & 6F35
DIAGNOSIS AND TESTING

Automatic Transmission

Special Tool(s)

	Transmission Fluid Pressure Gauge 307-004 (T57L-77820-A)
	Leak Tester, Torque Converter 307-421

Material

Item	Specification
Dye-Lite® ATF/Power Steering Fluid Leak Detection Dye 164-R3701 (Rotunda)	&

DTC Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices. Refer to [Section 100-00](#) .

DTC Chart

DTC	Description	Action
P0657	Actuator Supply Voltage A Circuit Open	Power to all solenoids has been interrupted, CLEAR the DTC. If the DTC returns, GO to Pinpoint Test F .
P0701	Transmission Control System Range/Performance	DTCs P2700, P2701, P2702, P2703 and/or P2704 may set. CLEAR the DTCs. If the DTC returns, GO to Symptom Chart .
P0702	Transmission Control System Electrical	INSPECT the PCM power and ground circuits for opens or short to ground. INSPECT the PCM connector for damaged or pushed-out terminals, corrosion or loose wires. CLEAR the DTC. RERUN the KOEO and KOER self-test. If the DTC returns, REFER to Section 414-00 .
P0706	TR Sensor A Circuit Range/Performance	The TR sensor outputs a duty cycle indicating manual lever position. This DTC sets when the duty cycle is greater or less than the expected duty cycle by 50Hz or more. Engine may not crank, CLEAR the DTC. If the DTC returns, GO to Pinpoint Test J .
P0707	TR Sensor A Circuit Low	Engine may not crank, CLEAR the DTC. If the DTC returns, GO to Pinpoint Test J .
P0708	TR Sensor A Circuit High	Engine may not crank, CLEAR the DTC. If the DTC returns, GO to Pinpoint Test J .

P0710	TFT Sensor A Circuit	DTCs P0712 or P0713 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test G</u> . REPAIR the more specific DTC first.
P0711	TFT Sensor A Circuit Range/Performance	CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test G</u> . REPAIR the more specific DTC first.
P0712	TFT Sensor A Circuit Low	DTC P0710 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test G</u> . REPAIR the more specific DTC first.
P0713	TFT Sensor A Circuit High	DTC P0710 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test G</u> . REPAIR the more specific DTC first.
P0715	Turbine/Input Shaft Speed Sensor A Circuit	DTC P0717 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test K</u> . REPAIR the more specific DTC first.
P0717	Turbine/Input Shaft Speed Sensor A Circuit No Signal	DTC P0715 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test K</u> . REPAIR the more specific DTC first.
P0718	Turbine/Input Shaft Speed Sensor A Circuit Intermittent	CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test K</u> .
P0720	OSS Sensor Circuit	DTC P0722 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test L</u> . REPAIR the more specific DTC first.
P0721	OSS Sensor Circuit Range/Performance	CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test L</u> .
P0722	OSS Sensor Circuit No Signal	DTC P0720 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test L</u> . REPAIR the more specific DTC first.
P0729	Gear 6 Incorrect Ratio	CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns/no 5-6 shift/harsh/soft/slipping.
P0731	Gear 1 Incorrect Ratio	CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns/no 1-2 shift/harsh/soft/slipping.
P0732	Gear 2 Incorrect Ratio	CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> in this section.
P0733	Gear 3 Incorrect Ratio	CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns/no 2-3 shift/harsh/soft/slipping.
P0734	Gear 4 Incorrect Ratio	CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> in this section for shift concerns/no 3-4 shift/harsh/soft/slipping.
P0735	Gear 5 Incorrect Ratio	CLEAR the DTC. If the DTC returns,GO to <u>Symptom Chart</u> for shift concerns/no 4-5 shift/harsh/soft/slipping.
P0740	TCC Clutch Solenoid Circuit/Open	DTC P0743 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test H</u> .
P0741	TCC Solenoid Circuit Performance/Stuck Off	CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> .
P0742	TCC Solenoid Circuit Stuck On	DTC P0743 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test H</u> .
P0743	TCC Solenoid Circuit Electrical	DTCs P0740, P0742 and/or P0744 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test H</u> . REPAIR the more specific DTC first.
P0744	TCC Solenoid Circuit Intermittent	DTC P0743 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test H</u> . REPAIR the more specific DTC first.
P0748	LPC A Electrical	DTCs P0960, P0962 and/or P0963 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test I</u> . REPAIR the more specific DTC first.
P0750	SSA	DTC P0751 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test A</u> . REPAIR the more specific DTC first.
P0751		

	SSA Performance/Stuck Off	DTC P2700 may set, CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for engagement concerns/no forward.
P0752	SSA Stuck On	CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns/only gears 1,2,3,4 available.
P0753	SSA Electrical	DTCs P0750, P0973 and/or P0974 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test A</u> . REPAIR the more specific DTC first.
P0754	SSA Intermittent	CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test A</u> .
P0755	SSB	DTC P0756 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test B</u> . REPAIR the more specific DTC first.
P0756	SSB Performance/Stuck Off	DTC P2701 may set, CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns/only gears 3 and 5 available.
P0757	SSB Stuck On	DTC P2701 may set, CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns/no 2-3 shift/harsh/soft/slipping.
P0758	SSB Electrical	DTCs P0755, P0976 and/or P0977 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test B</u> . REPAIR the more specific DTC first.
P0759	SSB Intermittent	CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test B</u> .
P0760	SSC	DTC P0761 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test C</u> . REPAIR the more specific DTC first.
P0761	SSC Performance/Stuck Off	DTC P2702 may set, CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns/no 1-2 shift/harsh/soft/slipping.
P0762	SSC Stuck On	DTC P0763 may set, CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns/only gears 2 and 6 available.
P0763	SSC Electrical	DTCs P0760, P0979 and/or P0980 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test C</u> . REPAIR the more specific DTC first.
P0764	SSC Intermittent	CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test C</u> .
P0765	SSD	DTC P0766 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test D</u> . REPAIR the more specific DTC first.
P0766	SSD Performance/Stuck Off	DTC P2704 may set, CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns, no 1-2 shift/harsh/soft/slipping or only gears 1 and R available.
P0767	SSD Stuck On	DTCs P07A9 and/or P2704 may set, CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for engagement concerns/no reverse and for shift concerns/no 3-4 shift/harsh/soft/slipping.
P0768	SSD Electrical	DTCs P0765, P0982 and/or P0983 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test D</u> . REPAIR the more specific DTC first.
P0769	SSD Intermittent	CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test D</u> .
P0770	SSE	DTC P0773 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test E</u> . REPAIR the more specific DTC first.
P0771	SSE Performance/Stuck Off	DTC P0984 may set, CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for engagement concerns.
P0772	SSE Stuck On	DTC P0984 may set, CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns/no 3-4 shift/harsh/soft/slipping.
P0773	SSE Electrical	DTC P0770 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test E</u> . REPAIR the more specific DTC first.
P0774	SSE Intermittent	CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test E</u> .
P07A5	Transmission Friction Element "B" Stuck On	CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns/no 2-3 shift/harsh/soft/slipping.
P07A8		

	Transmission Friction Element "D" Performance/Stuck Off	CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for shift concerns, no 1-2 shift/harsh/soft/slipping or only gears 1 and R available.
P07A9	Transmission Friction Element "D" Stuck On	DTC P0767 may set, CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for engagement concerns/no reverse and for shift concerns/no 3-4 shift/harsh/soft/slipping.
P07AA	Transmission Friction Element "E" Performance/Stuck Off	CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> for engagement concerns.
P0815	Upshift Switch Circuit	REFER to <u>Section 307-05</u> .
P0816	Downshift Switch Circuit	REFER to <u>Section 307-05</u> .
P0867	Transmission Fluid Pressure	CLEAR the DTC. If the DTC returns, GO to <u>Symptom Chart</u> .
P0882	TCM Power Input Signal Low	INSPECT the PCM power and ground circuits for opens or short to ground. INSPECT the PCM connector for damaged or pushed-out terminals, corrosion or loose wires. CLEAR the DTC. If the DTC returns, REFER to <u>Section 414-00</u> .
P0883	TCM Power Input Signal High	CLEAR the DTC. If the DTC returns, REFER to <u>Section 414-00</u> .
P0960	LPC A Control Circuit/Open	DTC P0748 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test I</u> . REPAIR the more specific DTC first.
P0961	LPC A Control Circuit Range/Performance	CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test I</u> .
P0962	LPC A Control Circuit Low	DTC P0748 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test I</u> . REPAIR the more specific DTC first.
P0963	LPC A Control Circuit High	DTC P0748 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test I</u> . REPAIR the more specific DTC first.
P0973	SSA Control Circuit Low	DTC P0753 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test A</u> . REPAIR the more specific DTC first.
P0974	SSA Control Circuit High	DTC P0753 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test A</u> . REPAIR the more specific DTC first.
P0976	SSB Control Circuit Low	DTC P0758 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test B</u> . REPAIR the more specific DTC first.
P0977	SSB Control Circuit High	DTC P0758 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test B</u> . REPAIR the more specific DTC first.
P0979	SSC Control Circuit Low	DTC P0763 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test C</u> . REPAIR the more specific DTC first.
P0980	SSC Control Circuit High	DTC P0763 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test C</u> . REPAIR the more specific DTC first.
P0982	SSD Control Circuit Low	DTC P0768 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test D</u> . REPAIR the more specific DTC first.
P0983	SSD Control Circuit High	DTC P0768 may set, CLEAR the DTC. If the DTC returns, <u>GO to Pinpoint Test D</u> . REPAIR the more specific DTC first.
P0984	SSE Control Circuit Range/Performance	DTCs P0771 and/or P0772 may set. CLEAR the DTC. If the DTCs returns, GO to <u>Symptom Chart</u> for engagement concerns.
P1001	KOER Not Able to Complete, KOER Aborted	RETRIEVE and RECORD all DTCs. REPAIR any self-test or continuous DTCs first. CLEAR the DTC. RERUN the KOER self-test. If the DTC returns, REPROGRAM the PCM to the latest calibration. RERUN the

		KOER self-test. If the DTC returns, INSTALL a new PCM. REFER to Section 303-14 . After installing the new PCM, PROGRAM it with the latest calibration and PERFORM the Solenoid Body Strategy Download. REFER to Solenoid Body Strategy Download . Road test the vehicle and PERFORM the Solenoid Body Strategy Drive Cycle .
P1397	System Voltage Out Of Self Test Range	INSPECT the PCM power and ground circuits for opens or short to ground. INSPECT the PCM connector for damaged or pushed-out terminals, corrosion or loose wires. CLEAR the DTC. RERUN the KOEO and KOER self-test. If the DTC returns, REFER to Section 414-00 .
P1501	VSS Out Of Self Test Range	CLEAR the DTC. If the DTC returns, PLACE selector lever in park and monitor the VSS PID. VERIFY the VSS input is at 0. RERUN self-test procedure. If the DTC returns, REFER to Section 206-09 .
P1636	Inductive Signature Chip Communication Error	CLEAR the DTC. If the DTC returns, INSTALL a new PCM. REFER to Section 303-14 . After installing the new PCM, PROGRAM with the latest calibration and PERFORM the Solenoid Body Strategy Data Download. REFER to Solenoid Body Strategy Download . ROAD TEST the vehicle and PERFORM the Solenoid Body Strategy Drive Cycle .
P163E	TCM Programming Error	CLEAR the DTC. If the DTC returns, REPROGRAM the PCM to the latest calibration. If the DTC returns, INSTALL a new PCM. REFER to Section 303-14 . After installing a new PCM, PROGRAM with the latest calibration and PERFORM the Solenoid Body Strategy Data Download. REFER to Solenoid Body Strategy Download . ROAD TEST the vehicle and PERFORM the Solenoid Body Strategy Drive Cycle .
P163F	Transmission ID Block Corrupted, Not Programmed	CLEAR the DTC. If the DTC returns, REPROGRAM the PCM to the latest calibration. If the DTC returns, INSTALL a new PCM. REFER to Section 303-14 . After installing a new PCM, PROGRAM with the latest calibration and PERFORM the Solenoid Body Strategy Data Download. REFER to Solenoid Body Strategy Download . ROAD TEST the vehicle and PERFORM the Solenoid Body Strategy Drive Cycle .
P1702	TR Sensor Circuit Intermittent	DTCs P0706, P0707 and/or P0708 may set, CLEAR the DTC. If the DTC returns, GO to Pinpoint Test J . REPAIR the more specific DTC first.
P1705	TR Circuit Not Indicating Park/Neutral During Self Test	CLEAR the DTC. RERUN the KOEO and KOER self-test.
P1711	TFT Sensor Out Of Self Test Range	CLEAR the DTC. RERUN the KOEO and KOER self-test.
P1744	TCC Solenoid Circuit	DTC P1744 is a non-electrical DTC. CLEAR the DTC. If the DTCs returns, GO to Symptom Chart in this section for torque converter operation concerns/no apply.
P1780	TCS (O/D Cancel) Circuit Out Of Self Test Range	REFER to Section 307-05 .
P1783	Transmission Over Temperature Condition	MONITOR the TFT sensor PID and TCC PID. Road test the vehicle and MONITOR the TFT sensor and TCC solenoid electrical operation. If DTC P0741 is set, REPAIR DTC P0741 first. CLEAR the DTC. If the DTC returns, GO to Symptom Chart .
P1910	Reverse Lamp Control Circuit/Open	CLEAR the DTC. If the DTC returns, REFER to Section 417-01 .
P1921	TR Signal	Engine may not crank. DTCs P0706, P0707 and/or P0708 may set. CLEAR the DTC. If the DTC returns, GO to Pinpoint Test J . REPAIR the more specific DTC first.

P2700	Transmission Friction Element "A" Apply Time Range/Performance	DTC P2700 is a non-electrical DTC. DTCs P0751 and/or P0752 may set. CLEAR the DTC. If the DTC returns, GO to Symptom Chart for engagement concerns, no forward or delayed/soft forward and/or shift concerns/only gears 1,2,3,4 available.
P2701	Transmission Friction Element "B" Apply Time Range/Performance	DTC P2701 is a non-electrical DTC. DTCs P0756 and/or P0757 may set. CLEAR the DTC. If the DTC returns, GO to Symptom Chart for shift concerns/only gears 3 and 5 available.
P2702	Transmission Friction Element "C" Apply Time Range/Performance	DTC P2702 is a non-electrical DTC. DTCs P0761 and/or P0762 may set. CLEAR the DTC. If the DTC returns, GO to Symptom Chart for shift concerns, no 1-2 shift/harsh/soft/slipping or no 5-6 shift/harsh/soft/slipping or only gears 2 and 6 available.
P2703	Transmission Friction Element "D" Apply Time Range/Performance	DTC P2703 is a non-electrical DTC. DTCs P0766 and/or P0768 may set. CLEAR the DTC. If the DTC returns, GO to Symptom Chart for engagement concerns/no reverse.
P2704	Transmission Friction Element "E" Apply Time Range/Performance	DTC P2704 is a non-electrical DTC. DTCs P0771 and/or P0772 may set. CLEAR the DTC. If the DTC returns, GO to Symptom Chart for shift concerns/no 3-4 shift/harsh/soft/slipping.
P2705	Transmission Friction Element "F" Apply Time Range/Performance	DTC P2705 is a non-electrical DTC. CLEAR the DTC. If the DTC returns, GO to Symptom Chart engagement concerns/neutral after launch.
P2760	TCC Pressure Control Solenoid Intermittent	CLEAR the DTC. If the DTC returns, GO to Pinpoint Test H .
P2783	Torque Converter Temperature Too High	TCC control valve stuck in the apply position. CLEAR the DTC. If the DTC returns, GO to Symptom Chart for torque converter operation concerns/no apply.

For all other DTCs, refer to [Section 303-14](#) .

Diagnostic PID Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices. Refer to [Section 100-00](#) .

Module PID Chart

Acronym	Name	Description
APP1	Accelerator pedal position sensor 1	Accelerator pedal position
AST	Time since start (s)	Time (in seconds) since the vehicle was started
CLRDIST	Distance since diagnostic trouble codes cleared	Distance driven since PCM DTCs were cleared
DTC PCM	Continuous Codes	Number of PCM DTCs present
ECT PCM	(ECT) (transmission control module)	Engine coolant temperature data provided to the PCM

ENGLOAD	Engine load	Engine load calculated by PCM
GEAR	Gear commanded by module	PCM commanded transmission gear
GEAR_OSC	Gear Commanded by Output State Control	Output state control commanded gear
GEAR_RAT	Gear Ratio Commanded	Theoretical transmission gear ratio commanded
HRSH_SHFT	Firm Shift	Output state control commanded firm shift
LINEDSD	Line Pressure Control Desired	Commanded line pressure
LPC	Line Pressure Control	Commanded pressure for the LPC VFS
LPC_AMP	Line Pressure Control in Amps	Commanded current for the LPC VFS
LPC_F	Line Pressure Control Status	Fault status for the LPC VFS
MIL_DIS	The distance travelled since the (MIL) was activated.	The distance travelled since the MIL was activated.
OSS_F	Output Shaft Speed Reliable	Fault status for the OSS sensor
OSS_SRC	Unfiltered Output Shaft Speed A	Actual speed of the OSS sensor (rpm)
RPM_PCM	Engine Revolutions Per Minute	Engine rpm input to PCM
SHFT_DROP	Shift RPM Drop in Input Shaft Speed Below Expected	Shift rpm drop in input shaft speed below expected
SHFT_FLRE	Shift RPM Rise in Input Shaft Speed Above Expected	Shift rpm rise in input shaft speed above expected
SHFT_ID	Shift Identification of Shift (PID)s Lag, Time, Flare and Drop.	Shift identification of shift PIDs lag, time, flare and drop
SHFT_LAG	Shift Time Elapsed From 10% to 90% of Complete	Actual time during shift between 10% and 90% complete
SHFT_TIME	Shift Time Elapsed From Commanded to 10% Complete	Shift time 0% to 10% complete
SHFT_TYP	Shift Type	Shift Type
SSPCA	Shift Solenoid Pressure Control A	Commanded pressure for the SSPCA /CB1234 VFS
SSA_AMP	Shift Solenoid Pressure Control A	Commanded current for the SSPCA /CB1234 VFS
SSPCA_F	(SSPCA) Status	Fault status for the SSPCA /CB1234 VFS
SSPCB	Shift Solenoid Pressure Control B	Commanded pressure for the SSPCB /C35R VFS
SSB_AMP	Shift Solenoid Pressure Control B	Commanded current for the SSPCB /C35R VFS
SSPCB_F	(SSPCB) Status	Fault status for the SSPCB /C35R VFS
SSPCC	Shift Solenoid Pressure Control C	Commanded pressure for the SSPCC /CB26 VFS
SSC_AMP	Shift Solenoid Pressure Control C	Commanded current for the SSPCC /CB26 VFS
SSPCC_F	(SSPCC) Status	Fault status for the SSPCC /CB26 VFS
SSPCD	Shift Solenoid Pressure Control D	Commanded pressure for the SSPCD /CBLR, C456 VFS
SSD_AMP	Shift Solenoid Pressure Control D	Commanded current for the SSPCD /CBLR, C456 VFS
SSPCD_F	(SSPCD) Status	Fault status for the SSPCD /CBLR, C456 VFS
SSPCE	Shift Solenoid Pressure Control E	Commanded pressure for the SSPCE /CBLR, C456 VFS
SSE_AMP	Shift Solenoid Pressure Control E	Commanded current for the SSPCE /CBLR, C456 VFS
SSPCE_F	(SSPCE) Status	Fault status for the SSPCE /CBLR, C456 VFS

SST_D	Select Shift Transmission - Down Switch Input	SelectShiftâ ¢ transmission-down switch input
SST_U	Select Shift Transmission - Up Switch Input	SelectShiftâ ¢ transmission-up switch input
TCC AMP	Converter Pressure Control	Commanded current for the TCC VFS
TC_SLIPACT	Torque Converter Slip Actual	Actual difference between engine speed and turbine speed, measured in rpm
TC_SLIPDSD	Torque Converter Slip Desired	PCM commanded difference between engine speed and turbine speed, measured in rpm
TCC	Torque Converter Clutch Solenoid	PCM commanded pressure for the TCC VFS
TCC_F	Torque Converter Clutch Pressure Control Fault	Fault status for the TCC VFS
TCC_OSC	Output State Control of Torque Converter	Output state control commanded pressure to the TCC VFS
TCC_RAT	Torque Slip Ratio	Actual speed ratio of torque converter (1.0 = fully engaged)
TCS_DEPRES	Transmission Control Switch Pressed	TCS Status
TCS_STATE	Transmission Control Switch Requested State	TCS Status
TFT	Transmission Fluid Temperature	TFT
TFT_F	Transmission Fluid Temperature Status	Fault status for TFT sensor
TFTV	Transmission Fluid Temperature	TFT voltage
TR	Transmission Range	TR
TR_CRANK	Transmission Range Input Allowing Engine Start	TR
TR_F	Transmission Range Status	Fault status for TR sensor
TRAN_RAT	Gear Ratio Measured	Actual transmission gear ratio
TRANS_VOLT_A	Transmission Supply Voltage Control State	Transmission supply voltage
TRO_N_F	Neutral Output Status	Transmission neutral output status
TRO_P_F	Park Output Status	Transmission park output status
TSS_F	Turbine Shaft Speed Reliable	Fault status of the TSS sensor (rpm)
TSS_SRC	Unfiltered Turbine Shaft Speed	Actual speed of the TSS sensor (rpm)
VPWR_PCM	Module supply voltage	PCM supply voltage
VSS	Vehicle Speed	Vehicle Speed

Symptom Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices. Refer to [Section 100-00](#) .

In most circumstances, the PCM sets DTCs to help guide with diagnostics. Refer to the DTC Chart before using the symptom chart. The Condition column lists the vehicle condition. The Source column list a detailed vehicle condition. The Action to column lists the action 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 Chart

Diagnostic Routines

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices. Refer to Section 100-00 .

NOTE: Without a voltage signal return to the PCM, the Transmission Solenoid Power Control (TSPC) relay is commanded OFF. By using a fused jumper between a transmission solenoid control circuit and the signal return circuit, the TSPC relay circuit will supply power to the transmission solenoids when the ignition is cycled from OFF to ON. Do not use a solenoid control circuit that may be at fault, refer to Diagnostic Trouble Code (DTC) Charts for a fault listing.

- Carry out OBD procedures KOEO and KOER .
- RETRIEVE and record all DTCs.
- Repair all non-transmission codes first.
- Repair all transmission codes second.
- Clear all continuous codes and attempt to repeat them.
- Repair all continuous codes.
- If only pass codes are obtained, refer to Component Tests in this section for further information and diagnosis.

Follow the diagnostic sequence to diagnose and repair the concern the first time.

Pinpoint Test A

Diagnostic Overview

P0750, P0753, P0754, P0973, P0974

Refer to Wiring Diagrams Cell 30 , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

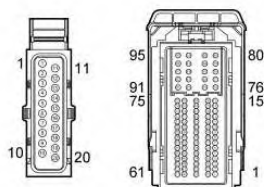
The PCM applies and releases the various clutches in the transmission by actuating the shift solenoids in the solenoid body. SSA is a VFS .

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0750	SSA	Open circuit in the solenoid or wire harness.
P0753	SSA electrical	Open circuit in the solenoid or wire harness.
P0754	SSA intermittent	Intermittent circuit in the solenoid or wire harness open, shorted to ground or shorted to power.
P0973	SSA control circuit low	Short to ground in the solenoid or wire harness.
P0974	SSA control circuit high	Open circuit or short to power in the solenoid or wire harness.

PINPOINT TEST A: SHIFT SOLENOID A

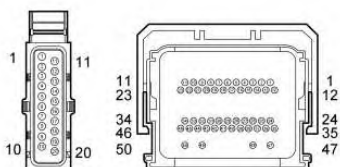
Test Step	Result / Action to Take																
A1 RETRIEVE AND RECORD ALL DTCS																	
- Using the diagnostic scan tool, retrieve all DTCs. Were DTCs P0750, P0753, P0754, P0973 and/or P0974 present?	Yes For DTCs P0750, P0753 and/or P0754, GO to <u>A2</u> . For DTC P0754 and/or P0973, GO to <u>A5</u> . For DTC P0754 and/or P0974, GO to <u>A7</u> . No GO to <u>Symptom Chart</u> .																
A2 CHECK THE SSA CIRCUIT FOR AN OPEN																	
- Ignition OFF. - Disconnect: Transmission Vehicle Harness C1520A. - Disconnect: 1.6L GTDI PCM C1551E. - Disconnect: 2.0L GTDI PCM C1381E. - Disconnect: 2.5L PCM C175T. - Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals. - Measure the resistance between. <table><tr><th colspan="2">Positive Lead</th><th colspan="2">Negative Lead</th></tr><tr><th>Pin</th><th>Circuit</th><th>Pin</th><th>Circuit</th></tr><tr><td>C1520A-8</td><td>CET05 (BU/GN)</td><td>C1551E-60</td><td>CET05 (BU/GN)</td></tr><tr><td>C1520A-8</td><td>CET05 (BU/GN)</td><td>C1381E-60</td><td>CET05 (BU/GN)</td></tr></table>	Positive Lead		Negative Lead		Pin	Circuit	Pin	Circuit	C1520A-8	CET05 (BU/GN)	C1551E-60	CET05 (BU/GN)	C1520A-8	CET05 (BU/GN)	C1381E-60	CET05 (BU/GN)	Yes GO to <u>A3</u> . No REPAIR the circuit.
Positive Lead		Negative Lead															
Pin	Circuit	Pin	Circuit														
C1520A-8	CET05 (BU/GN)	C1551E-60	CET05 (BU/GN)														
C1520A-8	CET05 (BU/GN)	C1381E-60	CET05 (BU/GN)														



N0139950

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-8	CET05 (BU/GN)	C175T-45	CET05 (BU/GN)



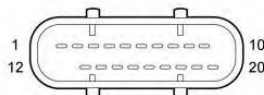
N0143065

- Is the resistance less than 5 ohms?

A3 CHECK THE SSA FOR AN OPEN

- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
8	â	5	â



N0135462

- Is the resistance between 4.0 and 7.2 ohms?

A4 CHECK SOLENOID RESISTANCE

Yes

INSTALL a new PCM. REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy Download](#) . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to [Solenoid Body Strategy Drive Cycle](#) .

No

GO to [A4](#) .

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	B	â



- Is the resistance between 4.0 and 7.2 ohms?

Yes

INSTALL a new solenoid body leadframe, REFER to Solenoid Body Leadframe .

No

INSTALL a new SSA . REFER to Solenoids .

A5 CHECK THE SSA CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Measure the **resistance** between.

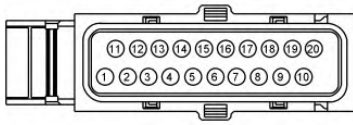
Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-8	CET05 (BU/GN)	â	Ground

Yes

GO to A6 .

No

REPAIR the circuit.



- Is the resistance greater than 10,000 ohms?

A6 CHECK THE SSA FOR A SHORT TO GROUND

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	â	Ground



N0131400

- Is the resistance less than 5 ohms?

A7 CHECK THE SSA CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Ignition ON.
- Measure the **voltage** between.

Yes

INSTALL a new SSA . REFER to Solenoids .

No

INSTALL a new solenoid body leadframe. REFER to Solenoid Body Leadframe .

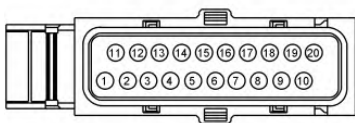
Yes

REPAIR the circuit.

No

INSTALL a new PCM. REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive Cycle .

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-8	CET05 (BU/GN)	â	Ground



- Is any voltage present?

Pinpoint Test B

Diagnostic Overview

P0755, P0758, P0759, P0976, P0977

Refer to Wiring Diagrams Cell 30 , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

The PCM applies and releases the various clutches in the transmission by actuating the shift solenoids in the solenoid body. SSB is a VFS .

DTC Fault Trigger Conditions

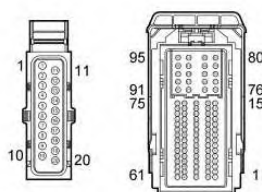
DTC	Description	Fault Trigger Conditions
P0755	SSB	Open circuit in the solenoid or wire harness.
P0758	SSB electrical	Open circuit in the solenoid or wire harness.
P0759	SSB intermittent	Intermittent circuit in the solenoid or wire harness open, shorted to ground or shorted to power.
P0976		Short to ground in the solenoid or wire harness.

	SSB control circuit low	
P0977	SSB control circuit high	Open circuit or short to power in the solenoid or wire harness.

PINPOINT TEST B: SHIFT SOLENOID B

Test Step	Result / Action to Take
B1 RETRIEVE AND RECORD ALL DTCS	
- Using the diagnostic scan tool, retrieve all DTCs. - Were DTCs P0755, P0758, P0759, P0976 and/or P0977 present?	Yes For DTCs P0755, P0758 and/or P0759, GO to <u>B2</u> . For DTC P0759 and/or P0976, GO to <u>B5</u> . For DTC P0759 and/or P0977, GO to <u>B7</u> . No GO to <u>Symptom Chart</u> .
B2 CHECK THE SSB CIRCUIT FOR AN OPEN	
- Ignition OFF. - Disconnect: Transmission Vehicle Harness C1520A. - Disconnect: 1.6L GTDI PCM C1551E. - Disconnect: 2.0L GTDI PCM C1381E. - Disconnect: 2.5L PCM C175T. - Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals. - Measure the resistance between.	Yes GO to <u>B3</u> . No REPAIR the circuit.

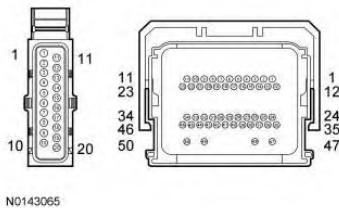
Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-9	CET06 (GN/BN)	C1551E-45	CET06 (GN/BN)
C1520A-9	CET06 (GN/BN)	C1381E-45	CET06 (GN/BN)



N0139950

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-9	CET06 (GN/BN)	C175T-43	CET06 (GN/BN)

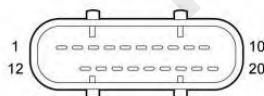


- Is the resistance less than 5 ohms?

B3 CHECK THE SSB FOR AN OPEN

- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
9	â	5	â



- Is the resistance between 4.0 and 7.2 ohms?

B4 CHECK SOLENOID RESISTANCE

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Yes

INSTALL a new PCM. REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive Cycle .

No

GO to B4 .

Yes

INSTALL a new solenoid body leadframe, REFER to Solenoid Body Leadframe .

No

INSTALL a new SSB . REFER to Solenoids .

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	B	â



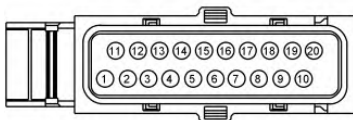
N0131400

- Is the resistance between 4.0 and 7.2 ohms?

B5 CHECK THE SSB CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-9	CET06 (GN/BN)	â	Ground



- Is the resistance greater than 10,000 ohms?

B6 CHECK THE SSB FOR A SHORT TO GROUND

Yes
GO to B6 .

No
REPAIR the circuit.

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	â	Ground



- Is the resistance less than 5 ohms?

Yes

INSTALL a new SSB . REFER to Solenoids .

No

INSTALL a new solenoid body leadframe. REFER to Solenoid Body Leadframe .

B7 CHECK THE SSB CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Ignition ON.
- Measure the **voltage** between.

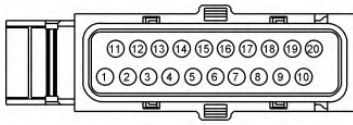
Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-9	CET06 (GN/BN)	â	Ground

Yes

REPAIR the circuit.

No

INSTALL a new PCM. REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive Cycle .



- Is any voltage present?

Pinpoint Test C

Diagnostic Overview

P0760, P0763, P0764, P0979, P0980

Refer to Wiring Diagrams Cell 30 , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

The PCM applies and releases the various clutches in the transmission by actuating the shift solenoids in the solenoid body. SSC is a VFS .

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0760	SSC	Open circuit in the solenoid or wire harness.
P0763	SSC electrical	Open circuit in the solenoid or wire harness.
P0764	SSC intermittent	Intermittent circuit in the solenoid or wire harness open, shorted to ground or shorted to power.
P0979	SSC control circuit low	Short to ground in the solenoid or wire harness.
P0980	SSC control circuit high	Open circuit or short to power in the solenoid or wire harness.

PINPOINT TEST C: SHIFT SOLENOID C

Test Step	Result / Action to Take
C1 RETRIEVE AND RECORD ALL DTCS	

- Using the diagnostic scan tool, retrieve all DTCs.
- Were DTCs **P0760, P0763, P0764, P0979 and/or P0980** present?

Yes

For DTCs P0760, P0763, and/or P0764, GO to C2 .

For DTC P0764 and/or P0979, GO to C5 .

For DTC P0764 and/or P0980, GO to C7 .

No

GO to Symptom Chart .

C2 CHECK THE SSC CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Measure the **resistance** between.

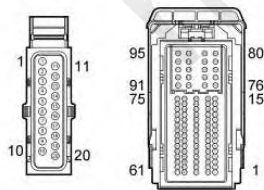
Yes

GO to C3 .

No

REPAIR the circuit.

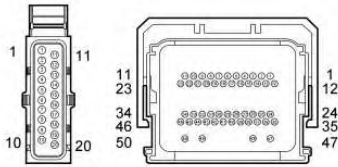
Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-4	CET07 (GY/OG)	C1551E-75	CET07 (GY/OG)
C1520A-4	CET07 (GY/OG)	C1381E-75	CET07 (GY/OG)



N0139950

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-4	CET07 (GY/OG)	C175T-44	CET07 (GY/OG)



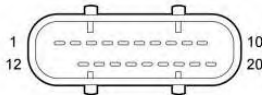
N0143065

- Is the resistance less than 5 ohms?

C3 CHECK THE SSC FOR AN OPEN

- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
4	â	5	â



N0135462

- Is the resistance between 4.0 and 7.2 ohms?

C4 CHECK SOLENOID RESISTANCE

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	B	â

Yes

INSTALL a new PCM. REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive Cycle .

No

GO to C4 .

Yes

INSTALL a new solenoid body leadframe, REFER to Solenoid Body Leadframe .

No

INSTALL a new SSC . REFER to Solenoids .



N0131400

- Is the resistance between 4.0 and 7.2 ohms?

C5 CHECK THE SSC CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-4	CET07 (GY/OG)	â	Ground



- Is the resistance greater than 10,000 ohms?

C6 CHECK THE SSC FOR A SHORT TO GROUND

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Yes
GO to C6 .

No
REPAIR the circuit.

Yes
INSTALL a new SSC . REFER to Solenoids .

No
INSTALL a new solenoid body leadframe. REFER to Solenoid Body Leadframe .

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	â	Ground



N0131400

- Is the resistance less than 5 ohms?

C7 CHECK THE SSC CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Ignition ON.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-4	CET07 (GY/OG)	â	Ground



- Is any voltage present?

Yes
REPAIR the circuit.

No
INSTALL a new PCM. REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy Download](#) . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to [Solenoid Body Strategy Drive Cycle](#) .

Diagnostic Overview

P0765, P0768, P0769, P0982, P0983

Refer to Wiring Diagrams Cell 30 , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

The PCM applies and releases the various clutches in the transmission by actuating the shift solenoids in the solenoid body. SSD is a VFS .

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0765	SSD	Open circuit in the solenoid or wire harness.
P0768	SSD electrical	Open circuit in the solenoid or wire harness.
P0769	SSD intermittent	Intermittent circuit in the solenoid or wire harness open, shorted to ground or shorted to power.
P0982	SSD control circuit low	Short to ground in the solenoid or wire harness.
P0983	SSD control circuit high	Open circuit or short to power in the solenoid or wire harness.

PINPOINT TEST D: SHIFT SOLENOID D

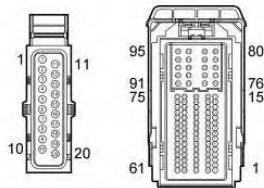
Test Step	Result / Action to Take
D1 RETRIEVE AND RECORD ALL DTCS	
- Using the diagnostic scan tool, retrieve all DTCs. Were DTCs P0765, P0768, P0769, P0982 and/or P0983 present?	Yes For DTCs P0765, P0768, and/or P0769, GO to <u>D2</u> . For DTC P0769 and/or P0982, GO to <u>D5</u> . For DTC P0769 and/or P0983, GO to <u>D7</u> . No GO to <u>Symptom Chart</u> .
D2 CHECK THE SSD CIRCUIT FOR AN OPEN	

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Measure the **resistance** between.

Yes
GO to D3 .

No
REPAIR the circuit.

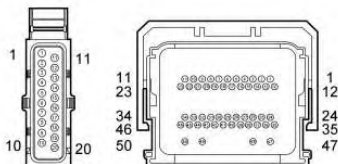
Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-10	CET08 (BN/WH)	C1551E-30	CET08 (BN/WH)
C1520A-10	CET08 (BN/WH)	C1381E-30	CET08 (BN/WH)



NO139950

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-10	CET08 (BN/WH)	C175T-10	CET08 (BN/WH)



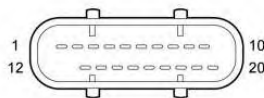
NO143065

- Is the resistance less than 5 ohms?

D3 CHECK THE SSD FOR AN OPEN

- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
10	â	5	â



N0135462

- Is the resistance between 4.0 and 7.2 ohms?

Yes

INSTALL a new PCM. REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive Cycle .

No

GO to D4 .

D4 CHECK SOLENOID RESISTANCE

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	B	â



N0131400

- Is the resistance between 4.0 and 7.2 ohms?

Yes

INSTALL a new solenoid body leadframe, REFER to Solenoid Body Leadframe .

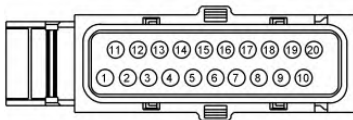
No

INSTALL a new SSD . REFER to Solenoids .

D5 CHECK THE SSD CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-10	CET08 (BN/WH)	â	Ground



- **Is the resistance greater than 10,000 ohms?**

Yes
GO to D6 .

No
REPAIR the circuit.

D6 CHECK THE SSD FOR A SHORT TO GROUND

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	â	Ground

Yes
INSTALL a new SSD . REFER to Solenoids .

No
INSTALL a new solenoid body leadframe. REFER to Solenoid Body Leadframe .



N0131400

- Is the resistance less than 5 ohms?

D7 CHECK THE SSD CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Ignition ON.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-10	CET08 (BN/WH)	â	Ground



- Is any voltage present?

Yes

REPAIR the circuit.

No

INSTALL a new PCM. REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy Download](#) . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to [Solenoid Body Strategy Drive Cycle](#) .

Pinpoint Test E

Diagnostic Overview

P0770, P0773, P0774

Refer to Wiring Diagrams Cell [30](#) , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

SSE controls the multiplexing of the SSD low/reverse and overdrive clutch. If SSE fails off (no pressure) then 1st gear is failed to 4th gear. If clutch select valve 2 sticks in the default position then 1st gear with engine braking is failed to 4th gear and reverse is failed to neutral. SSE is an On/Off solenoid.

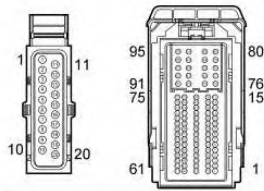
DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0770	SSE	Open, short to power or short to ground in the solenoid or wire harness.
P0773	SSE electrical	Open or short to ground in the solenoid or wire harness.
P0774	SSE intermittent	Intermittent circuit in the solenoid or wire harness open, shorted to ground or shorted to power.

PINPOINT TEST E: SHIFT SOLENOID E

Test Step	Result / Action to Take												
E1 RETRIEVE AND RECORD ALL DTCS													
- Using the diagnostic scan tool, retrieve all DTCs. Were DTCs P0770, P0773 and/or P0774 present?	Yes GO to <u>E2</u> . No GO to <u>Symptom Chart</u> .												
E2 CHECK THE SSE CIRCUIT FOR AN OPEN													
- Ignition OFF. - Disconnect: Transmission Vehicle Harness C1520A. - Disconnect: 1.6L GTDI PCM C1551E. - Disconnect: 2.0L GTDI PCM C1381E. - Disconnect: 2.5L PCM C175T. - Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals. - Measure the resistance between. <table border="1"><thead><tr><th colspan="2">Positive Lead</th><th colspan="2">Negative Lead</th></tr><tr><th>Pin</th><th>Circuit</th><th>Pin</th><th>Circuit</th></tr></thead><tbody><tr><td>C1520A-7</td><td>CET18 (GY/YE)</td><td>C1551E-2</td><td>CET18 (GY/YE)</td></tr></tbody></table>	Positive Lead		Negative Lead		Pin	Circuit	Pin	Circuit	C1520A-7	CET18 (GY/YE)	C1551E-2	CET18 (GY/YE)	Yes GO to <u>E3</u> . No REPAIR the circuit.
Positive Lead		Negative Lead											
Pin	Circuit	Pin	Circuit										
C1520A-7	CET18 (GY/YE)	C1551E-2	CET18 (GY/YE)										

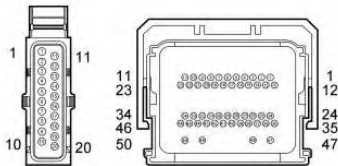
C1520A-7	CET18 (GY/YE)	C1381E-2	CET18 (GY/YE)
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N0139950

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-7	CET18 (GY/YE)	C175T-11	CET08 (BN/WH)



N0143065

- Is the resistance less than 5 ohms?

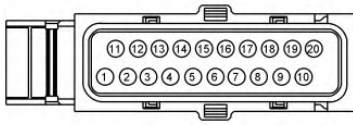
E3 CHECK THE SSE CIRCUIT FOR A SHORT TO GROUND

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-7	CET18 (GY/YE)	â	Ground

Yes
GO to E4 .

No
REPAIR the circuit.

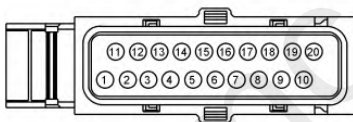


- Is the resistance greater than 10,000 ohms?

E4 CHECK THE SSE CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition ON.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-7	CET18 (GY/YE)	â	Ground



- Is any voltage present?

Yes
REPAIR the circuit.

No
GO to E5 .

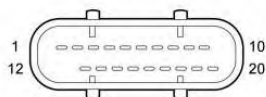
E5 CHECK THE SSE FOR AN OPEN

- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
7	â	5	â

Yes
INSTALL a new PCM. REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive Cycle .

No
GO to E6 .



N0135462

- Is the resistance between 20 and 34 ohms?

E6 CHECK SOLENOID RESISTANCE

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	B	â



N0131400

- Is the resistance between 20 and 34 ohms?

Yes
GO to E7 .

No
INSTALL a new SSE . REFER to Solenoids .

E7 CHECK THE SSE FOR A SHORT TO GROUND

- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	â	Ground

Yes
INSTALL a new SSE . REFER to Solenoids .

No
INSTALL a new solenoid body leadframe. REFER to Solenoid Body Leadframe .

 N0131400 • Is the resistance less than 5 ohms?	
--	--

Pinpoint Test F

Diagnostic Overview

P0657

Refer to Wiring Diagrams Cell 30 , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

Transmission Solenoid Power Control (TSPC) relay controls vehicle power to all solenoids. Power is routed through the TSPC relay (inside the PCM) to all transmission solenoids. If the power circuit to the transmission solenoids or the TSPC relay fails open, all solenoids are failed electrically OFF. CHECK for open, short to ground or the transmission connector disconnected. The TSPC relay will disable power to the transmission solenoids when certain transmission DTCs are set.

NOTE: Without a voltage signal return to the PCM, the Transmission Solenoid Power Control (TSPC) relay is commanded OFF. By using a fused jumper between a transmission solenoid control circuit and the signal return circuit, the TSPC relay circuit will supply power to the transmission solenoids when the ignition is cycled from OFF to ON. Do not use a solenoid control circuit that may be at fault, refer to DTC Charts in this section for a fault listing.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0657	Actuator supply voltage A circuit open	Open circuit on the transmission solenoid power circuit.

PINPOINT TEST F: TRANSMISSION SOLENOID POWER CONTROL

Test Step	Result / Action to Take
F1 RETRIEVE AND RECORD ALL DTCS	

- Using the diagnostic scan tool, retrieve all DTCs.
- **Was DTC P0657 present?**

Yes
GO to F2 .

No
GO to Symptom Chart .

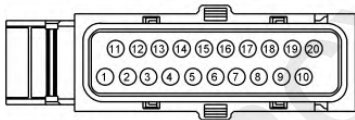
F2 CHECK THE TRANSMISSION SOLENOID POWER CONTROL CIRCUIT

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Inspect the connector for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Ignition ON.
- Measure the **voltage** between.

Yes
GO to F5 .

No
GO to F3 .

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-5	CET25 (BU/GN)	â	Ground



- **Is the voltage greater than 9.8 volts?**

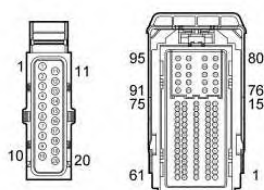
F3 CHECK THE TRANSMISSION SOLENOID POWER CONTROL CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connector for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Measure the **resistance** between.

Yes
GO to F4 .

No
REPAIR the circuit.

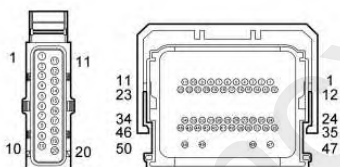
Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-5	CET25 (BU/GN)	C1551E-80	CET25 (BU/GN)
C1520A-5	CET25 (BU/GN)	C1381E-80	CET25 (BU/GN)



N0139950

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-5	CET25 (BU/GN)	C175T-50	CET25 (BU/GN)



N0143065

- Is the resistance less than 5 ohms?

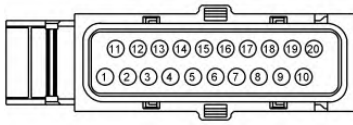
F4 CHECK THE TRANSMISSION SOLENOID POWER CONTROL CIRCUIT FOR A SHORT TO GROUND

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-5	CET25 (BU/GN)	â	Ground

Yes
GO to E5 .

No
REPAIR the circuit.

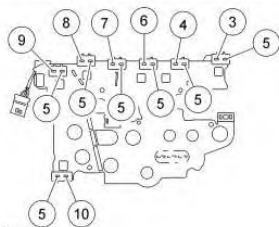
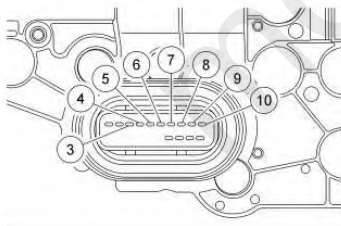


- Is the resistance greater than 10,000 ohms?

F5 CHECK THE SOLENOID BODY LEADFRAME FOR AN OPEN

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoids and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-5	Solenoid Power Supply	5 (all)	Leadframe Solenoid Power Supply (all)



- Is the resistance less than 5 ohms?

Yes

INSTALL a new PCM. REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive Cycle .

No

INSTALL a new solenoid body leadframe. REFER to Solenoid Body Leadframe .

Pinpoint Test G

Diagnostic Overview

P0710, P0711, P0712, P0713, P1711, P1783

Refer to Wiring Diagrams Cell 30 , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

The TFT sensor is located in the solenoid body leadframe. The resistance value of the TFT sensor varies with temperature change. The PCM monitors the voltage drop across the TFT sensor to determine the temperature of the transmission fluid. When the ignition is turned to the RUN position, the PCM uses this initial input signal to determine whether a cold start shift schedule is necessary. The cold start shift schedule allows delayed shifts when the transmission fluid is cold. The PCM inhibits TCC operation at low transmission fluid temperatures and adjusts line pressure to temperature.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0710	TFT sensor circuit fault	TFT sensor circuit shorted to ground or open.
P0711	TFT sensor circuit range/performance	TFT sensor indicates a valid temperature but has not changed since start up.
P0712	TFT sensor circuit low fault	TFT sensor circuit short to ground.
P0713	TFT sensor circuit high fault	TFT sensor circuit open.
P1711	TFT sensor out of self-test range	TFT sensor indicates too hot or too cold and must indicate a normal temperature range during KOER .
P1783	TFT sensor over temperature	The TFT sensor indicates that the transmission is approaching an overheating condition.

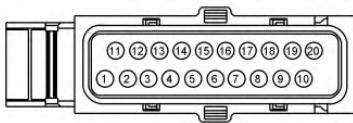
PINPOINT TEST G: TRANSMISSION FLUID TEMPERATURE SENSOR

Test Step	Result / Action to Take
G1 RETRIEVE AND RECORD ALL DTCS	
- Using the diagnostic scan tool, retrieve all DTCs. Were DTCs P0710, P0711, P0712, P0713, P1711 and/or P1783 present?	Yes For DTCs P0710, P0712 and/or P0713, GO to <u>G2</u> . For DTC P0711, P1711 and/or P1783, GO to <u>G7</u> . No GO to <u>Symptom Chart</u> .

G2 CHECK THE TFT SENSOR SIGNAL INPUT														
• Ignition OFF. • Connect the scan tool. • Disconnect: Transmission Vehicle Harness C1520A. • Inspect the connector for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals. • Ignition ON. • Enter the following diagnostic mode on the scan tool: TFT and TFTV PIDs. • Does the TFT PID display a temperature of -40Â° C (-40Â° F) and the TFTV PID display 4.9 volts?		Yes GO to <u>G3</u> . No REPAIR the circuit.												
G3 CHECK THE TFT SENSOR SIGNAL CIRCUIT														
• Connect a fused jumper between and observe scan tool. <table border="1"><thead><tr><th colspan="2">Positive Lead</th><th colspan="2">Negative Lead</th></tr><tr><th>Pin</th><th>Circuit</th><th>Pin</th><th>Circuit</th></tr></thead><tbody><tr><td>C1520A-2</td><td>VET27 (BN/YE)</td><td>C1520A-1</td><td>Signal Return</td></tr></tbody></table>  • Does the TFT PID display a temperature of 191Â°-198Â°C (376Â°-388Â°F) and the TFTV PID display 0.0 to 0.2 volts?		Positive Lead		Negative Lead		Pin	Circuit	Pin	Circuit	C1520A-2	VET27 (BN/YE)	C1520A-1	Signal Return	Yes GO to <u>G5</u> . No GO to <u>G4</u> .
Positive Lead		Negative Lead												
Pin	Circuit	Pin	Circuit											
C1520A-2	VET27 (BN/YE)	C1520A-1	Signal Return											
G4 CHECK THE TFT SENSOR SIGNAL CIRCUIT VOLTAGE														

- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-2	VET27 (BN/YE)	â	Ground

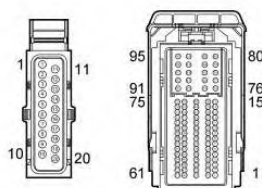


- Is the voltage between 4.8 and 5.1 volts?

G5 CHECK THE TFT SENSOR SIGNAL RETURN CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-1	RET35 (GN/BN)	C1551E-20	RE329 (WH/BN)
C1520A-1	RE454 (YE/GN)	C1381E-20	RE454 (YE/GN)



N0139950

- Measure the **resistance** between.

Yes

GO to G5 .

No

INSPECT and REPAIR the circuit. If an open circuit is not found, INSTALL a new PCM. REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive Cycle .

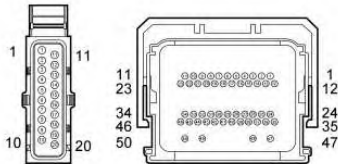
Yes

GO to G6 .

No

REPAIR the circuit.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-1	RE406 (GY/VT)	C175T-41	RE406 (GY/VT)



N0143065

- Is the resistance less than 5 ohms?

G6 CHECK THE TFT SENSOR RESISTANCE

- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
1	â	2	â

Transmission Fluid Temperature

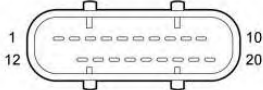
° C	° F	Resistance (Ohms)
-40 to -20	-40 to -4	1,076K-269K
-19 to -1	-3 to 31	309K-91K
0-20	32-68	104K-35K
21-40	69-104	40K-15K
41-70	105-158	17K-4.9K
71-90	159-194	5.6K-2.5K
91-110	195-230	3.0K-1.4K
111-130	231-266	1.7K-0.8K
131-150	267-302	0.97K-0.56K

Yes

GO to Symptom Chart to diagnose an over temperature concern.

No

INSTALL a new solenoid body leadframe.
REFER to Solenoid Body Leadframe .

 N0135462 • Does the temperature to resistance specifications match?	
G7 ON DEMAND SELF TEST	
• Check and make sure the transmission vehicle harness C1520A is fully seated, terminals are engaged in connector and in good condition before proceeding. • Connect the scan tool. • Make sure the TFT is between 1.1Â°C (30Â°F) and 104.4Â°C (220Â°F). • Run the KOER self-test. • Did DTC P0711, P1711 and/or P1783 present?	Yes For DTCs P0711 and P1711, INSTALL a new solenoid body leadframe. REFER to <u>Solenoid Body Leadframe</u> . For DTC P1783, REFER to <u>Section 307-02</u> . No The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or terminal issue.

Pinpoint Test H

Diagnostic Overview

P0740, P0742, P0743, P0744, P2760

Refer to Wiring Diagrams Cell 30 , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

The PCM controls the TCC lock-up by varying the amount of current applied to the TCC solenoid. When no current is applied to the TCC solenoid, the TCC is fully released. When maximum current is applied, the TCC is fully applied.

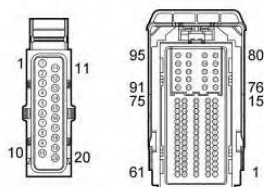
DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0740	TCC solenoid circuit/open	Open circuit in the TCC solenoid or wire harness.
P0742	TCC solenoid circuit stuck on	Short to ground in the TCC solenoid or wire harness.
P0743	TCC solenoid circuit electrical	Open or short to ground in the TCC solenoid or wire harness.
P0744	TCC solenoid circuit	Short to power in the TCC solenoid or wire harness.

	intermittent	
P2760	TCC pressure control solenoid intermittent	Intermittent circuit in the solenoid or wire harness open, shorted to ground or shorted to power.

PINPOINT TEST H: TORQUE CONVERTER CLUTCH SOLENOID

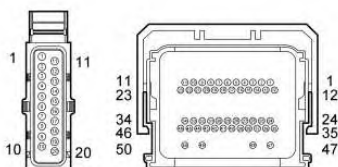
Test Step	Result / Action to Take																
H1 RETRIEVE AND RECORD ALL DTCS																	
- Using the diagnostic scan tool, retrieve all DTCs. Were DTCs P0740, P0742, P0743, P0744 and/or P2760 present?	Yes For DTCs P0740, P0743 and/or P2760 GO to <u>H2</u> . For DTC P0742, P0743 and/or P2760, GO to <u>H5</u> . For DTC P0744 GO to <u>H7</u> . No GO to <u>Symptom Chart</u> .																
H2 CHECK THE TCC SOLENOID CIRCUIT FOR AN OPEN																	
- Ignition OFF. - Disconnect: Transmission Vehicle Harness C1520A. - Disconnect: 1.6L GTDI PCM C1551E. - Disconnect: 2.0L GTDI PCM C1381E. - Disconnect: 2.5L PCM C175T. - Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals. - Measure the resistance between. <table><tr><th colspan="2">Positive Lead</th><th colspan="2">Negative Lead</th></tr><tr><th>Pin</th><th>Circuit</th><th>Pin</th><th>Circuit</th></tr><tr><td>C1520A-6</td><td>CET10 (BU/GY)</td><td>C1551E-44</td><td>CET10 (BU/GY)</td></tr><tr><td>C1520A-6</td><td>CET10 (BU/GY)</td><td>C1381E-44</td><td>CET10 (BU/GY)</td></tr></table>	Positive Lead		Negative Lead		Pin	Circuit	Pin	Circuit	C1520A-6	CET10 (BU/GY)	C1551E-44	CET10 (BU/GY)	C1520A-6	CET10 (BU/GY)	C1381E-44	CET10 (BU/GY)	Yes GO to <u>H3</u> . No REPAIR the circuit.
Positive Lead		Negative Lead															
Pin	Circuit	Pin	Circuit														
C1520A-6	CET10 (BU/GY)	C1551E-44	CET10 (BU/GY)														
C1520A-6	CET10 (BU/GY)	C1381E-44	CET10 (BU/GY)														



N0139950

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-6	CET10 (BU/GY)	C175T-46	CET10 (BU/GY)



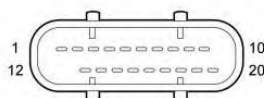
N0143065

- Is the resistance less than 5 ohms?

H3 CHECK THE TCC SOLENOID FOR AN OPEN

- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
5	â	6	â



N0135462

- Is the resistance between 4.0 and 7.2 ohms?

H4 CHECK SOLENOID RESISTANCE

Yes

INSTALL a new PCM. REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy Download](#) . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to [Solenoid Body Strategy Drive Cycle](#) .

No

GO to [H4](#) .

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	B	â



- Is the resistance between 4.0 and 7.2 ohms?

Yes

INSTALL a new solenoid body leadframe. REFER to Solenoid Body Leadframe .

No

INSTALL a new TCC solenoid. REFER to Solenoids .

H5 CHECK THE TCC SOLENOID CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Measure the **resistance** between.

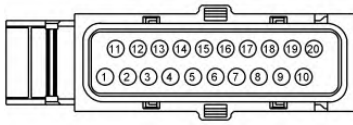
Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-6	CET10 (BU/GY)	â	Ground

Yes

GO to H6 .

No

REPAIR the circuit.



- Is the resistance greater than 10,000 ohms?

H6 CHECK THE TCC SOLENOID FOR A SHORT TO GROUND

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	â	Ground



N0131400

- Is the resistance less than 5 ohms?

Yes

INSTALL a new TCC solenoid. REFER to Solenoids .

No

INSTALL a new solenoid body leadframe. REFER to Solenoid Body Leadframe .

H7 CHECK THE TCC CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Ignition ON.
- Measure the **voltage** between.

Yes

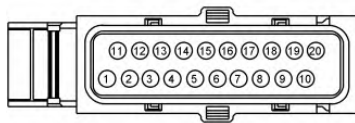
REPAIR the circuit.

No

INSTALL a new PCM. REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive

Cycle .

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-6	CET10 (BU/GY)	â	Ground



- Is any voltage present?

Pinpoint Test I

Diagnostic Overview

P0748, P0960, P0961, P0962, P0963

Refer to Wiring Diagrams Cell 30 , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

The PCM controls the hydraulic line pressure by varying the amount of current applied to the LPC solenoid. When no current is applied to the LPC solenoid, the LPC solenoid is fully opened, resulting in the maximum amount of hydraulic pressure to the Main Pressure Regulator Valve. When maximum current is applied, the LPC solenoid is fully closed, resulting in minimum pressure to the Main Pressure Regulator Valve.

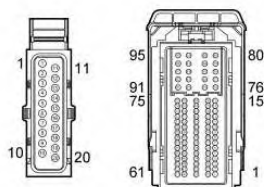
DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0748	LPC A electrical	LPC electrical circuit general fault. May set along with P0960, P0961, P0962 and P0963.
P0960	LPC A control circuit open	Open circuit in solenoid or solenoid circuitry.

P0961	LPC A control circuit range/performance	Intermittent short to ground in solenoid or solenoid circuitry.
P0962	LPC A control circuit low	Short to ground in solenoid or solenoid circuitry.
P0963	LPC A control circuit high	Short to power in solenoid circuitry.

PINPOINT TEST I: LINE PRESSURE CONTROL SOLENOID

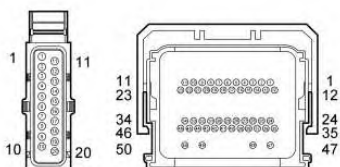
Test Step	Result / Action to Take																
I1 RETRIEVE AND RECORD ALL DTCS																	
• Using the diagnostic scan tool, retrieve all DTCs. • Were DTCs P0748, P0960, P0961, P0962 and/or P0963 present?	Yes For DTCs P0748 and P0960, GO to <u>I2</u> . For DTC P0748, P0961 and P0962, GO to <u>I5</u> . For DTC P0748 and P0963, GO to <u>I7</u> . No GO to <u>Symptom Chart</u> .																
I2 CHECK THE LPC SOLENOID CIRCUIT FOR AN OPEN																	
• Ignition OFF. • Disconnect: Transmission Vehicle Harness C1520A. • Disconnect: 1.6L GTDI PCM C1551E. • Disconnect: 2.0L GTDI PCM C1381E. • Disconnect: 2.5L PCM C175T. • Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals. • Measure the resistance between. <table><tr><th colspan="2">Positive Lead</th><th colspan="2">Negative Lead</th></tr><tr><th>Pin</th><th>Circuit</th><th>Pin</th><th>Circuit</th></tr><tr><td>C1520A-3</td><td>CET09 (YE/VT)</td><td>C1551E-59</td><td>CET09 (YE/VT)</td></tr><tr><td>C1520A-3</td><td>CET09 (YE/VT)</td><td>C1381E-59</td><td>CET09 (YE/VT)</td></tr></table>	Positive Lead		Negative Lead		Pin	Circuit	Pin	Circuit	C1520A-3	CET09 (YE/VT)	C1551E-59	CET09 (YE/VT)	C1520A-3	CET09 (YE/VT)	C1381E-59	CET09 (YE/VT)	Yes GO to <u>I3</u> . No REPAIR the circuit.
Positive Lead		Negative Lead															
Pin	Circuit	Pin	Circuit														
C1520A-3	CET09 (YE/VT)	C1551E-59	CET09 (YE/VT)														
C1520A-3	CET09 (YE/VT)	C1381E-59	CET09 (YE/VT)														



N0139950

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-3	CET09 (YE/VT)	C175T-34	CET09 (YE/VT)



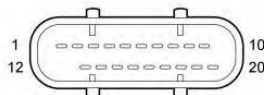
N0143065

- Is the resistance less than 5 ohms?

I3 CHECK THE LPC SOLENOID FOR AN OPEN

- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
5	â	3	â



N0135462

- Is the resistance between 4.0 and 7.2 ohms?

I4 CHECK THE LPC SOLENOID RESISTANCE

Yes

INSTALL a new PCM. REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy Download](#) . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to [Solenoid Body Strategy Drive Cycle](#) .

No

GO to [I4](#) .

- Remove the solenoid body leadframe, refer to Solenoid Body Leadframe . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	B	â



N0131400

- Is the resistance between 4.0 and 7.2 ohms?

Yes

INSTALL a new solenoid body leadframe. REFER to Solenoid Body Leadframe .

No

INSTALL a new LPC solenoid. REFER to Solenoids .

I5 CHECK THE LPC SOLENOID CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Measure the **resistance** between.

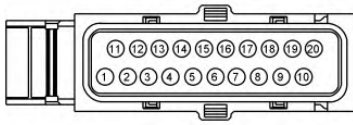
Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-3	CET09 (YE/VT)	â	Ground

Yes

GO to I6 .

No

REPAIR the circuit.



- Is the resistance greater than 10,000 ohms?

I6 CHECK THE LPC SOLENOID FOR A SHORT TO GROUND

- Remove the solenoid body leadframe, refer to [Solenoid Body Leadframe](#) . Inspect for metal shavings on the exposed metal contacts or other components and clean the solenoid and solenoid body leadframe terminals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
A	â	â	Ground



N0131400

- Is the resistance less than 5 ohms?

Yes

INSTALL a new LPC solenoid. REFER to [Solenoids](#) .

No

INSTALL a new solenoid body leadframe. REFER to [Solenoid Body Leadframe](#) .

I7 CHECK THE LPC CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Ignition ON.
- Measure the **voltage** between.

Yes

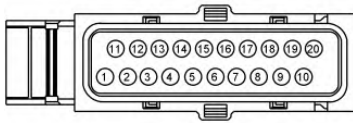
REPAIR the circuit.

No

INSTALL a new PCM. REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy Download](#) . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to [Solenoid Body Strategy Drive](#)

Cycle .

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-3	CET09 (YE/VT)	â	Ground



- Is any voltage present?

Pinpoint Test J

Diagnostic Overview

P0706, P0707, P0708, P1702, P1705, P1921

Refer to Wiring Diagrams Cell 30 , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

The TR sensor provides a fixed frequency duty cycle to the PCM for each manual control lever positions (PARK, REVERSE, NEUTRAL, DRIVE and SPORT). The PCM uses the TR sensor signal for LPC , shift scheduling and TCC operation. The PCM transmits TR data on the HS-CAN to the BCM for engine start and reverse lamp operation.

DTC Fault Trigger Conditions

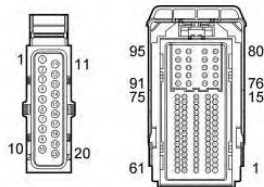
DTC	Description	Fault Trigger Conditions
P0706	TR sensor A circuit range/performance	Mechanical or electrical fault. Input from the TR sensor did not change or is intermittent.
P0707	TR sensor A circuit low	TR sensor circuit open or short to ground.

P0708	TR sensor A circuit high	TR sensor circuit open.
P1702	TR sensor A circuit intermittent	TR sensor circuit open or short to ground.
P1705	TR sensor not indicating park/neutral during self-test	TR sensor misaligned or in wrong position during the self-test.
P1921	TR signal	The PCM has detected a TR signal duty cycle out of range.

PINPOINT TEST J: TRANSMISSION RANGE SENSOR

Test Step	Result / Action to Take																				
J1 RETRIEVE AND RECORD ALL DTCS																					
- Using the diagnostic scan tool, retrieve all DTCs. Were DTCs P0706, P0708, P1702, P1705 and/or P1921 present?	Yes For DTCs P0706, P0708, P1702 and/or P1921, GO to <u>J2</u> . For DTC P1705, GO to <u>J9</u> . No GO to <u>Symptom Chart</u> .																				
J2 VERIFY SELECTOR LEVER CABLE/LINKAGE ADJUSTMENT																					
- Verify the selector lever cable/linkage is correctly adjusted. Refer to <u>Section 307-05</u> . Is the selector lever cable/linkage correctly adjusted?	Yes GO to <u>J3</u> . No VERIFY the selector lever cable/linkage adjustment. Refer to <u>Section 307-05</u> . REPEAT the self-test. If the TR sensor DTCs return, GO to <u>J3</u> .																				
J3 CHECK THE TR SENSOR CIRCUITS FOR AN OPEN																					
- Ignition OFF. - Disconnect: Transmission Vehicle Harness C1520A. - Disconnect: 1.6L GTDI PCM C1551E. - Disconnect: 2.0L GTDI PCM C1381E. - Disconnect: 2.5L PCM C175T. - Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals. - Measure the resistance between.	Yes GO to <u>J4</u> . No REPAIR the circuit.																				
<table><tr><th colspan="2">Positive Lead</th><th colspan="2">Negative Lead</th><th></th></tr><tr><th>Pin</th><th>Circuit</th><th>Pin</th><th>Circuit</th><th></th></tr><tr><td>C1520A-17</td><td>VET32 (VT)</td><td>C1551E-10</td><td>VET32 (VT)</td><td></td></tr><tr><td>C1520A-18</td><td>LE111(VT/GN)</td><td>C1551E-22</td><td>LE111(VT/GN)</td><td></td></tr></table>		Positive Lead		Negative Lead			Pin	Circuit	Pin	Circuit		C1520A-17	VET32 (VT)	C1551E-10	VET32 (VT)		C1520A-18	LE111(VT/GN)	C1551E-22	LE111(VT/GN)	
Positive Lead		Negative Lead																			
Pin	Circuit	Pin	Circuit																		
C1520A-17	VET32 (VT)	C1551E-10	VET32 (VT)																		
C1520A-18	LE111(VT/GN)	C1551E-22	LE111(VT/GN)																		

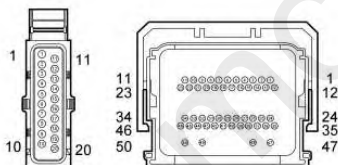
C1520A-20	RET24 (BN/BU)	C1551E-32	RET24 (BN/BU)	
C1520A-17	VET32 (VT)	C1381E-10	VET32 (VT)	
C1520A-18	LE111(VT/GN)	C1381E-22	LE111(VT/GN)	
C1520A-20	RET24 (BN/BU)	C1381E-32	RET24 (BN/BU)	



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- Measure the **resistance** between.

Positive Lead		Negative Lead		
Pin	Circuit	Pin	Circuit	
C1520A-17	VET32 (VT)	C175T-39	VET32 (VT)	
C1520A-18	LE111(VT/GN)	C175T-1	LE111(VT/GN)	
C1520A-3	RET24 (BN/BU)	C175T-36	RET24 (BN/BU)	



N0143065

- Is the resistance less than 5 ohms?

J4 CHECK THE TR SENSOR CIRCUITS FOR A SHORT TO GROUND

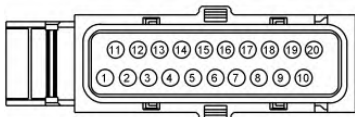
- Disconnect: Transmission Vehicle Harness C1520B.
- Measure the **resistance** between.

Yes
GO to J5 .

No
REPAIR the circuit.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-17	VET32 (VT)	â	Ground
C1520A-18	LE111(VT/GN)	â	Ground

C1520A-20	RET24 (BN/BU)	â	Ground
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- Are all resistances greater than 10,000 ohms?

J5 CHECK THE TR SENSOR CIRCUITS FOR A SHORT TO VOLTAGE

- Ignition ON.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-17	VET32 (VT)	â	Ground
C1520A-18	LE111(VT/GN)	â	Ground
C1520A-20	RET24 (BN/BU)	â	Ground



- Is any voltage present?

Yes
REPAIR the circuit.

No
GO to J6 .

J6 CHECK THE TR SENSOR CIRCUITS SHORTED TOGETHER

- Ignition OFF.
- Measure the **resistance** between.

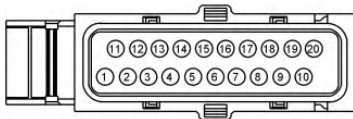
Yes

GO to J7 .

No

REPAIR the circuits having less than 10,000 ohms between other TR sensor circuits.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-20	RET24 (BN/BU)	C1520A-18	LE111(VT/GN)
C1520A-20	RET24 (BN/BU)	C1520A-17	VET32 (VT)
C1520A-18	LE111(VT/GN)	C1520A-17	VET32 (VT)



- Are all the resistances greater than 10,000 ohms?

J7 CHECK THE TR SENSOR CIRCUITS IN THE SOLENOID BODY LEADFRAME FOR AN OPEN

Yes

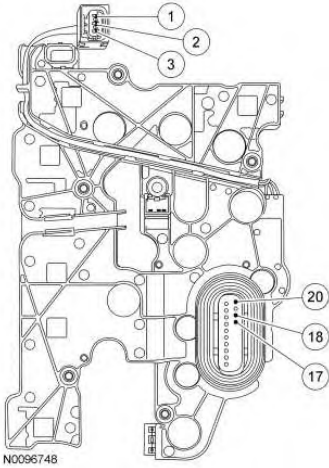
GO to J8 .

No

INSTALL a new solenoid body leadframe. REFER to Solenoid Body Leadframe .

- Remove the main control cover. REFER to Main Control Cover .
- Disconnect: TR Sensor.
- Inspect the connector for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Measure the **component side resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
18	TR sensor voltage supply	1	TR sensor voltage supply
17	TR sensor signal	2	TR sensor signal
20	TR sensor ground	3	TR sensor ground

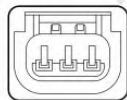


- Is the resistance less than 5 ohms?

J8 CHECK FOR VOLTAGE AND GROUND AT THE TR SENSOR

- Connect: 1.6L GTDI PCM C1551E.
- Connect: 2.0L GTDI PCM C1381E.
- Connect: 2.5L PCM C175T.
- Connect: C1520A.
- Connect: C1520B.
- Ignition ON.
- Measure the **component side voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
1	TR sensor voltage supply	3	TR sensor ground



- Is the voltage greater than 10 volts?

J9 ON DEMAND SELF-TEST

- Check to make sure the transmission harness connector is fully seated, terminals are engaged in connector and in good condition before proceeding.
- Connect the scan tool.
- Make sure the selector lever is in the PARK or NEUTRAL position.
- Carry out the KOEO and KOER self-test.
- **Did DTC P1705 return?**

Yes

INSTALL a new TR sensor. REFER to [Digital Transmission Range \(TR\) Sensor](#) .

No

CHECK OASIS for any applicable TSBs. If a TSB exists for this concern, discontinue this test and follow TSB instructions. If no TSBs address this concern, INSTALL a new PCM. REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy Download](#) . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to [Solenoid Body Strategy Drive Cycle](#) .

Yes

VERIFY selector lever cable adjustment. REFER to [Section 307-05](#) .

No

The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of

any connector or terminal issues.

Pinpoint Test K

Diagnostic Overview

P0715, P0717, P0718

Refer to Wiring Diagrams Cell 30 , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

The TSS sensor is a Hall-effect sensor that sends a signal to the PCM that indicates transmission turbine shaft input speed. The TSS sensor provides converter turbine speed information for TCC strategy.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0715	Turbine/input shaft speed sensor A circuit	No input from TSS sensor.
P0717	Turbine/input shaft speed sensor A circuit no signal	No input from TSS sensor.
P0718	Turbine/input shaft speed sensor A circuit intermittent	Unrealistic change in TSS sensor signal, erratic or intermittently no input.

PINPOINT TEST K: TURBINE SHAFT SPEED SENSOR

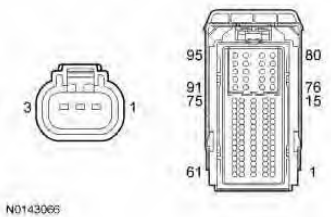
Test Step	Result / Action to Take
K1 RETRIEVE AND RECORD ALL DTCS	
- Using the diagnostic scan tool, retrieve all DTCs. Were DTCs P0715, P0717, P0718 and/or P0720 present?	Yes For DTCs P0715, P0717 and/or P0718, GO to <u>K2</u> . For DTC P0715 and P0720, GO to <u>K6</u> . No GO to <u>Symptom Chart</u> .
K2 CHECK TSS SENSOR SIGNAL CIRCUIT FOR AN OPEN	

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520B.
- Disconnect: 1.6L GTDI PCM C1551E.
- Disconnect: 2.0L GTDI PCM C1381E.
- Disconnect: 2.5L PCM C175T.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Measure the **resistance** between.

Yes
GO to **K3** .

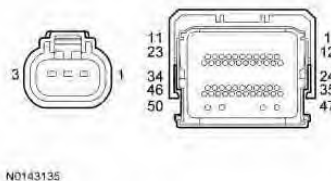
No
REPAIR the circuit.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520B-2	VET33 (WH/OG)	C1551E-27	VET33 (WH/OG)
C1520B-2	VET33 (WH/OG)	C1381E-27	VET33 (WH/OG)



- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-2	VET33 (WH/OG)	C175T-16	VET33 (WH/OG)

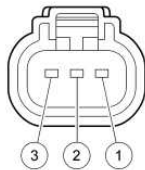


- Is the resistance less than 5 ohms?

K3 CHECK TSS SENSOR SIGNAL CIRCUIT FOR A SHORT TO GROUND

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520B-2	VET33 (WH/OG)	â	Ground



N0091756

- Is the resistance greater than 10,000 ohms?

Yes

GO to **K4** .

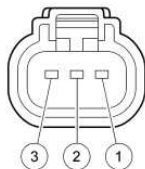
No

REPAIR the circuit.

K4 CHECK TSS SENSOR SIGNAL CIRCUIT FOR A SHORT TO POWER

- Ignition ON.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520B-2	VET33 (WH/OG)	â	Ground



N0091756

- Is any voltage present?

Yes

REPAIR the circuit.

No

GO to **K5** .

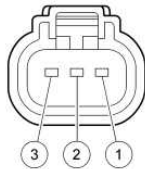
K5 CHECK THE TSS SENSOR GROUND CIRCUIT

- Ignition OFF.
- Connect: 1.6L GTDI PCM C1551E.
- Connect: 2.0L GTDI PCM C1381E.
- Connect: 2.5L PCM C175T.
- Ignition ON.
- Measure the **voltage** between.

Yes

INSPECT and REPAIR the circuit. If an open circuit is not found, INSTALL a new PCM. REFER to **Section 303-14** . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to **Solenoid Body Strategy**

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520B-3	LE111 (VT/GN)	C1520B-1	RET24 (BN/BU)



N0091756

- Is voltage less than 4.8 volts?

Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive Cycle .

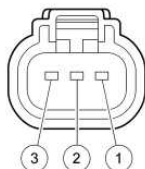
No

INSTALL a new TSS sensor. REFER to Turbine Shaft Speed (TSS) Sensor .

K6 CHECK TSS SENSOR VPWR CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520B.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Ignition ON.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520B-3	LE111 (VT/GN)	â	Ground



N0091756

- Is the voltage less than 9.5 volts?

Yes

INSPECT and REPAIR the circuit. If an open circuit is not found, INSTALL a new PCM. REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive Cycle .

No

CLEAR the DTC. If DTCs P0715 and/or P0720 return, INSTALL a new PCM. REFER to Section 303-14 . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to Solenoid Body Strategy Download . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to Solenoid Body Strategy Drive Cycle .

Pinpoint Test L

Diagnostic Overview

P0720, P0721, P0722

Refer to Wiring Diagrams Cell 30 , Transmission Controls 1.6L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.0L GTDI for schematic and connector information.

Refer to Wiring Diagrams Cell 30 , Transmission Controls 2.5L for schematic and connector information.

Normal Operation and Fault Conditions

The OSS sensor is a Hall-effect sensor that sends a signal to the PCM that indicates transmission output shaft speed. The OSS sensor is used for TCC control and shift scheduling.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Conditions
P0720	OSS sensor circuit	No input from OSS sensor.
P0721	OSS sensor circuit range/performance	Unrealistic change in OSS sensor signal, erratic or intermittently no input.
P0722	OSS sensor circuit no signal	No input from OSS sensor.

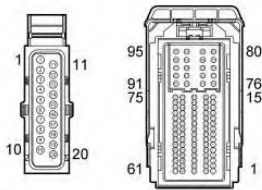
PINPOINT TEST L: OUTPUT SHAFT SPEED SENSOR

Test Step	Result / Action to Take
L1 RETRIEVE AND RECORD ALL DTCS	
- Using the diagnostic scan tool, retrieve all DTCs. Were DTCs P0720, P0721, P0722 and/or P0715 present?	Yes For DTCs P0720, P0721 and/or P0722, GO to <u>L2</u> . For DTC P0715 and P0720, GO to <u>L6</u> . No GO to <u>Symptom Chart</u> .
L2 CHECK OSS SENSOR SIGNAL CIRCUIT FOR AN OPEN	
- Ignition OFF. - Disconnect: Transmission Vehicle Harness C1520A. - Disconnect: 1.6L GTDI PCM C1551E. - Disconnect: 2.0L GTDI PCM C1381E. - Disconnect: 2.5L PCM C175T. - Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires	Yes GO to <u>L3</u> . No REPAIR the circuit.

and missing or damaged seals.

- Measure the **resistance** between.

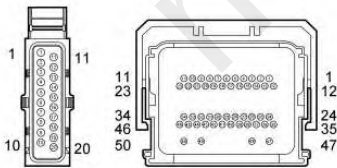
Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-19	RET26 (BN/GN)	C1551E-12	RET26 (BN/GN)
C1520A-19	RET26 (BN/GN)	C1381E-12	RET26 (BN/GN)



N0139950

- Measure the **resistance** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-19	RET26 (BN/GN)	C175T-25	RET26 (BN/GN)



N0143065

- **Is the resistance less than 5 ohms?**

**L3 CHECK OSS SENSOR SIGNAL CIRCUIT
FOR A SHORT TO GROUND**

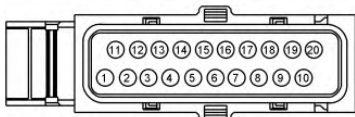
- Measure the **resistance** between.

Yes
GO to L4 .

No
REPAIR the circuit.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit

C1520A-19	RET26 (BN/GN)	â	Ground
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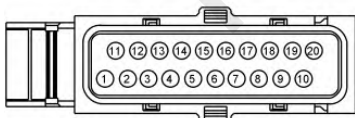


- Is the resistance greater than 10,000 ohms?

L4 CHECK OSS SENSOR SIGNAL CIRCUIT FOR A SHORT TO POWER

- Ignition ON.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-19	RET26 (BN/GN)	â	Ground



- Is any voltage present?

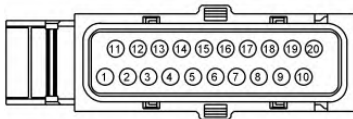
Yes
REPAIR the circuit.

No
GO to L5.

L5 CHECK THE OSS SENSOR GROUND CIRCUIT

- Ignition OFF.
- Connect: 1.6L GTDI PCM C1551E.
- Connect: 2.0L GTDI PCM C1381E.
- Connect: 2.5L PCM C175T.
- Ignition ON.
- Measure the **voltage** between.

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-18	LE111 (VT/GN)	C1520A-20	RET24 (BN/BU)



- Is voltage less than 4.8 volts?

Yes

INSPECT and REPAIR the circuit. If an open circuit is not found, INSTALL a new PCM. REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy Download](#) . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to [Solenoid Body Strategy Drive Cycle](#) .

No

INSTALL a new OSS sensor. REFER to [Output Shaft Speed \(OSS\) Sensor](#) .

L6 CHECK OSS SENSOR VPWR CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect: Transmission Vehicle Harness C1520A.
- Inspect the connectors for damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals.
- Ignition ON.
- Measure the **voltage** between.

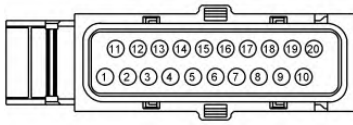
Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C1520A-18	LE111 (VT/GN)	â	Ground

Yes

INSPECT and REPAIR the circuit. If an open circuit is not found, INSTALL a new PCM. REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy Download](#) . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to [Solenoid Body Strategy Drive Cycle](#) .

No

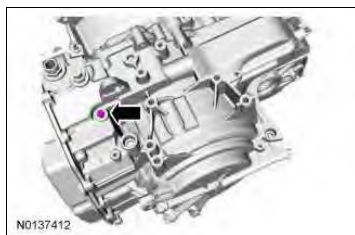
CLEAR the DTCs. If DTCs P0715 and/or P0720 return, INSTALL a new PCM. REFER to [Section 303-14](#) . PROGRAM the PCM with the latest calibration level. PERFORM the Solenoid Body Strategy Data Download procedure. REFER to [Solenoid Body Strategy Download](#) . PERFORM the Solenoid Body Strategy Drive Cycle, REFER to [Solenoid Body Strategy Drive Cycle](#) .



- Is the voltage less than 9.5 volts?

Component Tests

Line Pressure Test



NOTICE: Carry out the Line Pressure Test prior to carrying out the Stall Speed Test. If the line pressure is low at stall, do not carry out the Stall Speed Test or further transmission damage will occur. Do not maintain WOT in any transmission range for more than 5 seconds.

This test verifies the line pressure is within specification.

1. Connect the transmission fluid pressure gauge to the line pressure tap.
2. Start the engine and check the line pressure. Refer to the Pressure Chart to determine if the line pressure is within specification.

Pressure Chart

Gear	Line Pressure at Idle KPa (psi)		Line Pressure at WOT Stall KPa (psi)	
	Minimum	Maximum	Minimum	Maximum
P	338 KPa (49 psi)	379 KPa (55 psi)	â	â
R	621 KPa (90 psi)	689 KPa (100 psi)	1,868 KPa (271 psi)	2,068 KPa (300 psi)
N	338 KPa (49 psi)	379 KPa (55 psi)	â	â
D, L	338 KPa (49 psi)	379 KPa (55 psi)	1,868 KPa (271 psi)	2,068 KPa (300 psi)

3. If the line pressure is not within specification, see the Line Pressure Diagnosis Chart for line pressure concern causes.
4. When the pressure tests are complete, install the line pressure tap plug.
 - Tighten to 12 Nm (106 lb-in).

Line Pressure Diagnosis Chart

Test Results	Possible Source
HIGH at IDLE - ALL RANGES	Wiring Harness LPC Solenoid Main Regulator Valve
LOW at IDLE - ALL RANGES	Low Transmission Fluid Fluid Inlet Filter/Seal Main Control Body Cross Leaks Gaskets Pump Separator Plate
LOW in Park ONLY	Valve Body
LOW in Reverse ONLY	Separator Plate Reverse Clutch Valve Body Forward Clutch
LOW in Neutral ONLY	LOW in Neutral ONLY
LOW in Drive O/D ONLY	Forward Clutch Valve Body
LOW in Manual Low ONLY	Forward Clutch Valve Body

Stall Speed Test

⚠ WARNING: Block all wheels, set the parking brake and firmly apply the service brake to reduce the risk of vehicle movement during this procedure. Failure to follow these instructions may result in serious personal injury.

NOTICE: Carry out the Line Pressure Test prior to carrying out the Stall Speed Test. If the line pressure is low at stall, do not carry out the Stall Speed Test or further transmission damage will occur.

The Stall Speed Test checks:

- torque convertor operation and installation.

- holding ability of the forward clutch.
- reverse clutch.
- planetary OWC .
- engine driveability concerns.

Conduct this test with the engine coolant and transmission fluid at correct levels and at normal operating temperature.

Apply the park brake firmly for each Stall Speed Test.

Stall Speed Chart

Engine	rpm
1.6L GTDI	2,350-2,650
2.0L GTDI	2,350-2,650
2.5L	2,350-2,650

1. Connect the scan tool.
2. **NOTE:** If the recorded rpm exceeds the maximum limits, release the accelerator pedal immediately, clutch slippage is indicated.

In each of the following ranges Drive, Low and Reverse, press the accelerator pedal to WOT . Do not hold the throttle open for more than 5 seconds at a time.
3. Note the results in each range.
4. After each range, move the selector lever to NEUTRAL and run the engine at 1,000 rpm for about 15 seconds to cool the torque converter before conducting the next test.
5. Use the Stall Speed Diagnosis Chart for corrective actions.
6. **NOTE:** The stall speed in REVERSE will be lower.

If stall speeds were too high, see the Stall Speed Diagnosis Chart. If stall speeds were too low, first check engine idle speed and tune up. If engine is OK, remove torque converter and check TCC for slippage.

Stall Speed Diagnosis Chart

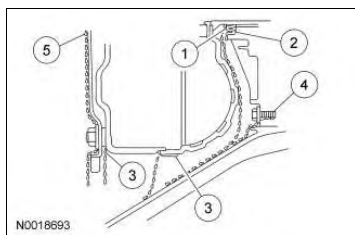
Range	Possible Source
D, L	Forward Clutch
	Low/Reverse Clutch

	Low/ OWC
R	Low/Reverse Clutch
	Direct Clutch

Leak Check Test

NOTE: When diagnosing transmission leaks, the source of the leak must be positively identified prior to repair. If the vehicle is driven extensively between adding the fluorescent additive and performing the leak test, the leaking oil can spread and make identifying the location of the leak difficult.

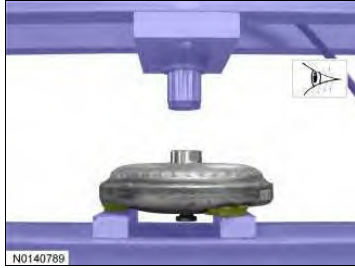
1. Clean off any transmission fluid from the top and bottom of the torque converter housing, the front of the case and rear face of the engine and oil pan. Clean the torque converter area by washing with a nonflammable solvent and blow dry with compressed air.
2. Add Dye-Lite® ATF Power Steering Fluid Leak Detection Dye to the transmission fluid. Use one 30 ml (1 fl. oz) of dye solution for every 3.8 L (4 qt) of transmission fluid.
3. Start and run the engine until the transmission reaches its normal operating temperature. Raise the vehicle on a hoist and run the engine occasionally shifting to the DRIVE and REVERSE ranges to increase pressure within the transmission. Using a black light, observe the back of the cylinder block and top of the torque converter housing for evidence of fluid leakage. Run the engine until transmission fluid leakage is evident and the probable source of leakage can be determined.



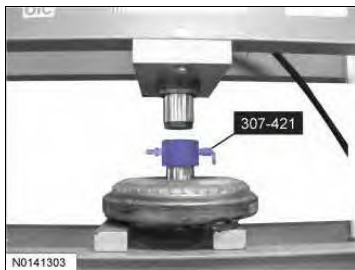
4. If the source of the leak is obvious, repair as required. Leaks from the torque converter housing can originate from several locations. The paths which the fluid takes to reach the bottom of the torque converter housing are shown in the illustration. The 5 steps following correspond with the numbers in the illustration.
 1. Transmission fluid leaking by the converter hub seal lip will tend to move along the drive hub and onto the back of the torque converter. Except in the case of a total seal failure, transmission fluid leakage by the lip of the seal will be deposited on the inside of the torque converter housing only, near the outside diameter of the housing.
 2. Transmission fluid leakage by the outside diameter of the converter impeller hub seal and the case will follow the same path that leaks by the ID of the converter hub seal follow.
 3. Transmission fluid leakage from the converter cover weld or the converter-to-flexplate stud weld will appear at outside diameter of torque converter on the back face of the flexplate and in the converter housing only near the flexplate. If a converter-to-flexplate lug, lug weld or converter cover weld leak is suspected, remove the converter and pressure check.
 4. Transmission fluid leakage from the bolts inside the converter housing will flow down the back of the torque converter housing. Leakage may be from loose or missing bolts.
 5. Engine oil leaks from the rear main oil.

5. Remove the torque converter.

6. Using a black light, observe the torque converter housing. Inspect for evidence of dye from the pump bolts, pump seal, and torque converter hub seal. Repair as required.
7. If the source of the leak is not evident, continue with this procedure to leak test the torque converter.
8. Install the torque converter in the arbor press. Support the torque converter on the mounting pads.



9. Install the Leak Tester, Torque Converter 307-421 into the torque converter hub.



10. Secure the press. Only apply enough force from the press to seal of the Leak Tester, Torque Converter 307-421 into the torque converter hub.



11. Connect a compressed air supply to the Leak Tester, Torque Converter 307-421.



12. With air pressure applied to the valve, inspect for leaks at the converter hub weld and seams. A soap bubble solution can be applied around those areas to aid in the diagnosis. If any leaks are present, install a new torque converter.



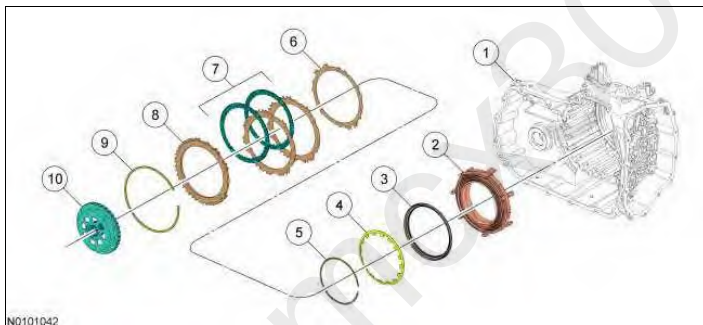
13. With air pressure applied to the valve, inspect for leaks at the stud or mounting pad and balance weight welds. A soap bubble solution can be applied around those areas to aid in the diagnosis. If any leaks are present, install a new torque converter.



14. After leaks are repaired, clean remaining transmission fluid dye from serviced areas.

Forward Clutch System

For forward (1,2,3,4) clutch operation, Automatic Transmission .

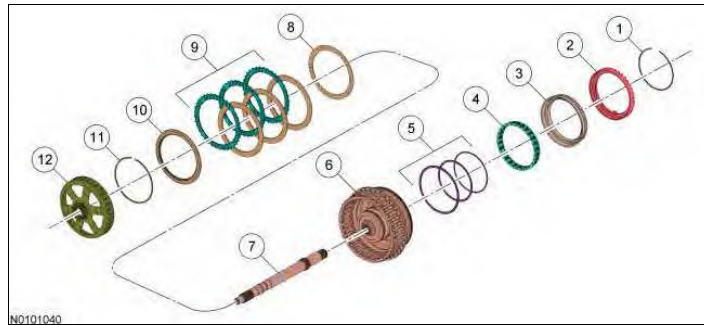


Item	Part Number	Description
1	70005	Transmission case
2	7L328	Center support
3	7A262	Forward clutch piston
4	7B070	Forward clutch piston return spring
5	7H365	Forward clutch piston return spring snap ring
6	7B070	Forward clutch wave spring
7	7B164	Forward (1, 2, 3, 4) clutch
8	7B066	Forward clutch pressure plate
9	7D483	Forward clutch snap ring
10	7A019	Front sun gear and shell assembly

Forward Clutch

Direct Clutch System

For direct clutch (3, 5, R) operation, REFER to [Automatic Transmission](#) .

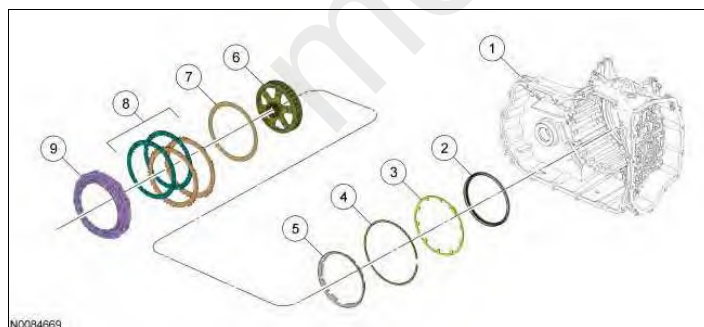


Item	Part Number	Description
1	7C122	Direct clutch cylinder snap ring
2	7F283	Direct clutch cylinder
3	7A262	Direct clutch piston
4	7F235	Direct clutch piston return spring
5	7C099	Direct clutch piston seals
6	7G384	Direct/Overdrive clutch hub
7	7F213	Input shaft
8	7B070	Direct clutch wave spring
9	7B164	Direct (3, 5, R) clutch assembly
10	7B066	Direct clutch pressure plate
11	7D483	Direct clutch snap ring
12	7A019	Rear planetary sun gear and shell assembly

Direct Clutch System

Intermediate Clutch System

For intermediate (2, 6) clutch operation, REFER to [Automatic Transmission](#) .

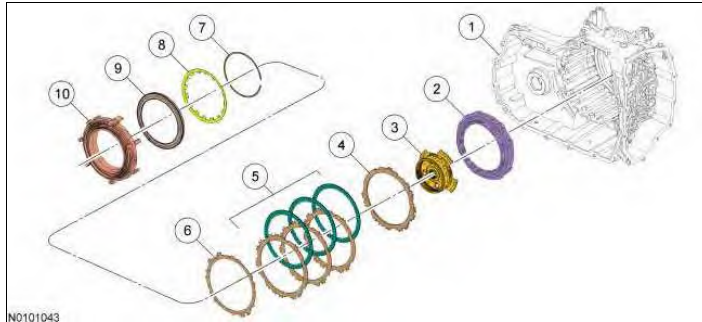


Item	Part Number	Description
1	7005	Transmission case
2	7E005	Intermediate clutch piston
3	7B070	Intermediate clutch piston return spring
4	7D483	Intermediate clutch piston return spring snap ring
5	7E005	Intermediate clutch apply ring
6	7A019	Rear planetary sun gear and shell assembly
7	7E085	Intermediate clutch wave spring

8	7B164	Intermediate clutch assembly
9	7A089	Low/ OWC

Intermediate Clutch System Low/Reverse Clutch System

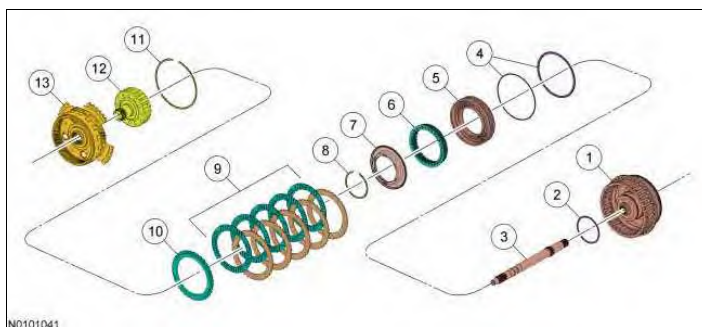
For low/reverse clutch operation, REFER to [Automatic Transmission](#) .



Item	Part Number	Description
1	7005	Transmission case
2	7A089	Low/ OWC
3	7D491	Rear planetary carrier
4	7B066	Low/reverse clutch pressure plate
5	7B164	Low/reverse clutch
6	7E085	Low/reverse clutch wave spring
7	7C122	Low/reverse clutch piston return spring snap ring
8	7B070	Low/reverse clutch piston return spring
9	7D042	Low/reverse clutch piston
10	7L328	Center support

Low/Reverse Clutch System Overdrive Clutch System

For overdrive clutch system operation, REFER to [Automatic Transmission](#) .



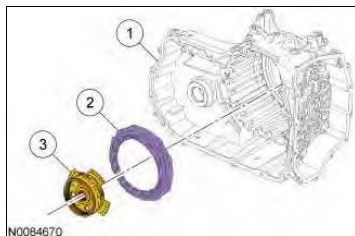
Item	Part Number	Description
1	7G384	Direct/Overdrive clutch hub assembly
2	7A548	Overdrive clutch piston inner seal
3	7F213	Input shaft
4	7A548	Overdrive clutch piston outer seals

5	7A262	Overdrive clutch piston
6	7F222	Overdrive clutch piston return spring
7	7H360	Overdrive clutch balance piston
8	7C122	Overdrive clutch balance piston snap ring
9	7B164	Overdrive (4, 5, 6) clutch assembly
10	7B066	Overdrive clutch pressure plate
11	7D483	Overdrive clutch snap ring
12	7H351	Overdrive clutch hub
13	7D491	Rear planetary carrier

Overdrive Clutch System

Low One Way Clutch

For low OWC system operation, REFER to [Automatic Transmission](#) .



Item	Part Number	Description
1	7005	Transmission case
2	7A089	Low OWC
3	7D491	Rear planetary carrier

Solenoid Body Identification Procedure

Original Solenoid Body Service Tag

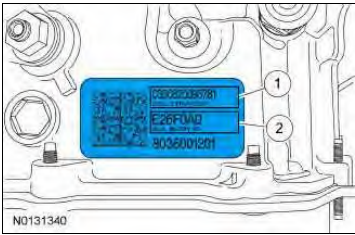
1. Using the scan tool, select Powertrain, Transmission and Transmission Solenoid Body Identification from the toolbox icon and follow the instructions displayed on the scan tool.

The solenoid body identification screen displays solenoid body identification information:

- Solenoid body identification is a 7-digit number
 - Solenoid body strategy is a 13-digit number
- The next screen displays the current solenoid body identification and strategy data file stored in the PCM. If the solenoid body strategy field is blank, the module contains a partial transmission solenoid body strategy. This is due to a corrupt or missing file at the time the programmable parameters were completed.

2. **NOTE:** The 13-digit solenoid body strategy number consists of only numbers. Letters are not used.

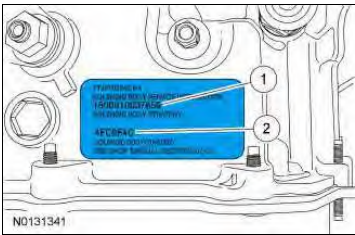
Compare the solenoid body identification and strategy (if available) to the solenoid body original service tag located on top of the transmission case.



Item	Part Number	Description
1	-	13 - digit solenoid body strategy
2	-	7 - digit solenoid body identification

Replacement Solenoid Body Service Tag

3. If the solenoid body identification and strategy on the scan tool match the solenoid body service tag or replacement tag, then the solenoid body identification and strategy are correct for this transmission and a solenoid body strategy download is not required. If the solenoid body service tag or replacement tag is missing or damaged so its not readable or does not match the identification or strategy on the scan tool, remove the solenoid body connector and view the solenoid body identification and strategy printed on the solenoid body connector. If its not readable, remove the main control cover, REFER to Main Control Cover . The 7-digit identification number and the 13-digit strategy number are stamped on the solenoid body.

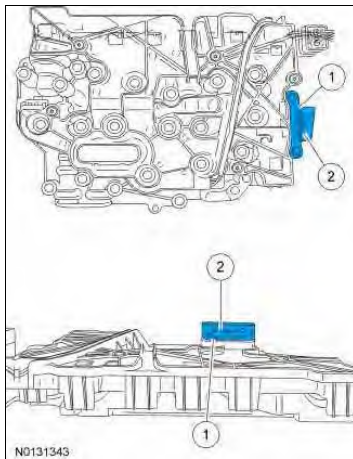


Item	Part Number	Description
1	-	13 - digit solenoid body strategy
2	-	7 - digit solenoid body identification

Solenoid Body Identification Tag

4. **NOTICE:** If the solenoid body information does not match the module information, transmission damage or driveability concerns can occur.

Inspect the solenoid body identification and strategy printed on the solenoid body connector and compare this to the solenoid body service tag on the transmission case. If the solenoid body identification and strategy printed on the solenoid body connector does not match the solenoid body service tag or if the solenoid body identification and strategy printed on the solenoid body connector match the solenoid body service tag on the transmission case but do not match the solenoid body identification and strategy numbers displayed on the scan tool, a solenoid body strategy data download is required.



Item	Part Number	Description
1	-	13 - digit solenoid body strategy
2	-	7 - digit solenoid body identification

/body>

Solenoid Body Strategy Download

1. Using the scan tool, select module Programming and Programmable Parameters under the toolbox icon and select transmission. Follow the instructions displayed on the scan tool.
There are fields to enter the solenoid body 7-digit identification and 13-digit strategy recorded from the solenoid body.

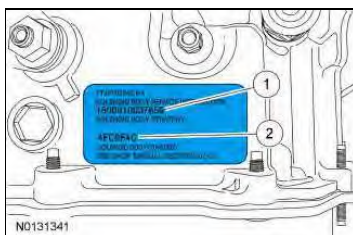
2. **NOTICE: If the solenoid body information is not correct, transmission damage or driveability concerns can occur.**

Enter the solenoid body identification and strategy.

The scan tool verifies the numbers entered are valid and display a message if the information is not valid.

The scan tool will check to verify the file is present on the scan tool. If the file is present, the technician may proceed with downloading the file to the PCM. If the file is not present, the scan tool will need to be connected to the PTS server to download the file onto the scan tool.

3. Verify the file is present on the scan tool. If the file is present, go to Step 8. If the file is not present, continue with this prore.
4. Connect the scan tool to the PTS server.
The screen will display a progress bar when connecting to the network.
5. Follow the instructions on the network to download the strategy file to the scan tool.
The screen will display a progress bar when downloading the strategy file to the scan tool and display a message if it is downloaded successfully.
6. If the scan tool cannot connect to the PTS server, download the file from www.motorcraft.com.
If the scan tool cannot download a strategy from the web site, a partial strategy will automatically be downloaded.
7. Reconnect the scan tool to the vehicle.
8. Follow the instructions displayed on the scan tool.
9. If a new solenoid body was installed, compare the 7-digit identification and the 13-digit strategy fields from the solenoid body to the replacement solenoid body tag provided with the solenoid body service kit and place it over the existing identification tag.
The scan tool will automatically download the strategy file or partial strategy file to the PCM and will display a progress bar while downloading. The scan tool will display a message when it is finished downloading the data that states that the file was downloaded successfully.



Item	Part Number	Description
1	-	13 - digit solenoid body strategy

2	-	7 - digit solenoid body identification
---	---	--

10. **NOTICE:** If a drive cycle is not completed, erratic shifts and driveability concerns may occur.

Test drive the vehicle. Refer to Solenoid Body Strategy Drive Cycle in this section.

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Solenoid Body Strategy Drive Cycle

NOTE: Always drive the vehicle in a safe manner according to driving conditions and obey all traffic laws.

NOTE: The engine and transmission must be at normal operating temperature.

1. Bring the transmission to normal operating temperature.
 2. With the engine running and the brake applied, move the selector lever through the gears in the following order, pausing in each gear for 4 seconds: N, R, N, D, R, D, N. Repeat this pattern 2 times. If any engagements feel soft or harsh, repeat this procedure.
 3. Drive the vehicle and accelerate at a moderate throttle so that the upshifts occur at 2,000 rpm up to 80 km/h (50 mph) and brake moderately to a stop. Repeat this pattern 2 times.
 4. Drive the vehicle and accelerate at a moderate throttle so the upshifts occur at 3,000 rpm up to 80 km/h (50 mph) and brake moderately to a stop. Repeat this pattern 2 times.
 5. With the engine running and the brake applied, move the selector lever through the gears in the following order, pausing in each gear for 4 seconds: N, R, N, D, R, D, N. Repeat this pattern 2 times.
 6. a stop, accelerate to 40 km/h (25 mph), then release the throttle. Keep the throttle closed and pull the selector lever into the "L" position and allow the vehicle to coast down to 16 km/h (10 mph). Repeat this pattern 2 times.
-

SECTION 307-01: Automatic Transmission - 6F35
GENERAL PROCEDURES

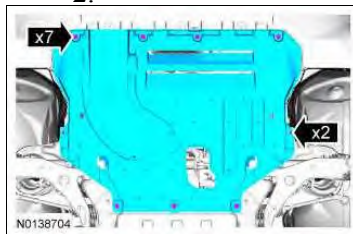
Transmission Fluid Level Check

Material

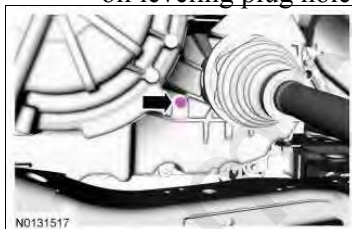
Item	Specification
Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC	MERCON® LV

1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#) .

2.



3. Start the engine and move the selector lever slowly through each gear, stopping in each position and allowing the transmission to engage. /ol>
4. With the engine running in PARK on a level hoist make sure the transmission is at normal operating temperature 85-93° C (185-200° F). Check the transmission fluid is even with the oil leveling plug hole.



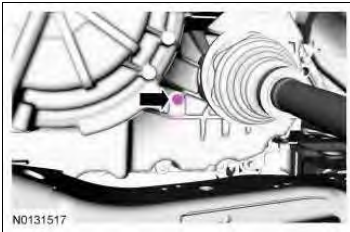
5. **NOTICE:** Use only transmission fluid specific for this transmission. Do not use any supplemental transmission fluid additives or cleaning agents. The use of these products can cause internal transmission components to fail, which will affect the operation of the transmission.

If the transmission fluid is not even with the oil leveling plug hole, add clean transmission fluid in increments of 0.25L (0.5 pt) until the transmission fluid is even with the oil leveling plug hole.

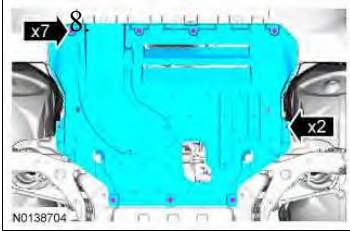
Materials: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.



6. • Tighten to 8 Nm (71 lb-in).



7.



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SECTION 307-01: Automatic Transmission - 6F35
GENERAL PROCEDURES

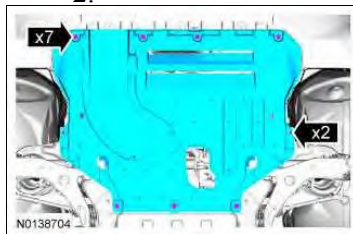
Transmission Fluid Drain and Refill

Material

Item	Specification
Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC	MERCON® LV

1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#) .

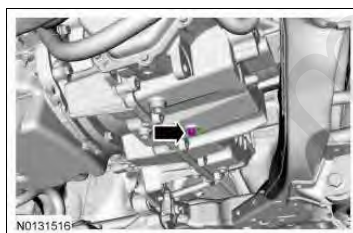
2.



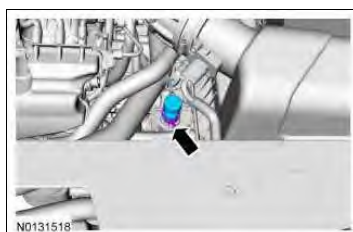
3. **NOTE:** If an internal problem is suspected, drain the transmission fluid through a paper filter. A small amount of metal particles may be found from normal wear. If an excessive amount of metal or friction material is present, the transmission will need to be overhauled.

Remove the drain plug and drain the transmission fluid. Install the drain plug.

- Tighten to 12 Nm (106 lb-in).



4. Compress the constant tension clamp and remove the transmission vent from the fill tube.



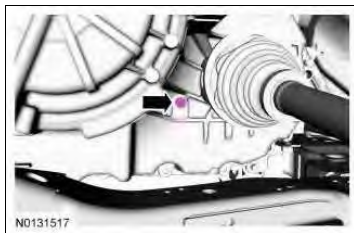
5. **NOTICE:** Use only transmission fluid specific for this transmission. Do not use any supplemental transmission fluid additives or cleaning agents. The use of these products can cause internal transmission components to fail, which will affect the operation of the transmission.

NOTICE: The following fluid amounts listed below are for initial fill only. The transmission fluid must be even with the oil leveling plug hole and the transmission must be at normal operating temperature 85-93°C (185-200°F) or transmission damage can occur.

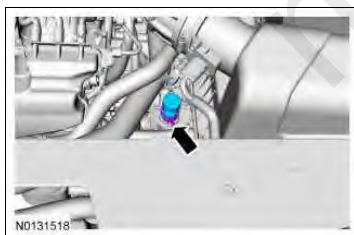
Refer to the chart below and fill the transmission to the initial fill amount with clean transmission fluid.

Transmission Repair	Initial Fill Amount
6 L (6.34 qt)	
Main control overhaul or replace (with out transmission overhaul)	5 L (5.28 qt)
Transmission draining and filling (for engine and halfshaft related repairs)	4 L (4.23 qt)

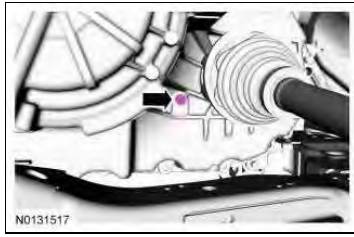
6. Start the engine and move the selector lever slowly through each gear, stopping in each position and allowing the transmission to engage.
7. With the engine running in PARK on a level hoist, remove the oil leveling plug and allow the transmission fluid to drain until its even with the oil leveling plug hole. If the transmission fluid does not drain from the oil leveling plug hole add transmission fluid in increments of .25 L (0.264 qt) until the transmission fluid is even with the oil leveling plug hole. Install the oil leveling plug.
Materials: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.
 - Tighten to 8 Nm (71 lb-in).



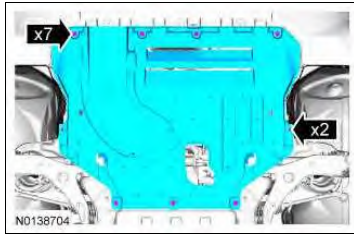
8. With the clamp facing the front of the vehicle, compress the constant tension clamp and install the transmission vent on the fill tube.



9. Drive the vehicle until the transmission is at normal operating temperature 85-93°C (185-200°F).
10. With the engine running in PARK on a level hoist at normal operating temperature 85-93°C (185-200°F), remove the oil leveling plug and allow the transmission fluid to drain until it is even with the oil leveling plug hole. Install the oil leveling plug.
 - Tighten to 8 Nm (71 lb-in).



11.



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SECTION 307-01: Automatic Transmission - 6F35
GENERAL PROCEDURES

Transmission Fluid Exchange

Special Tool(s)

	ATF Fluid Exchanger W/Power Steering Fluid Exchanger 199-00059
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Material

Item	Specification
Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC	MERCON® LV

NOTICE: Use transmission fluid specific for this transmission. Do not use any supplemental transmission fluid additives or cleaning agents. The use of these products can cause internal transmission components to fail, which will affect the operation of the transmission.

1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#) .
 2. Use the ATF Fluid Exchanger W/Power Steering Fluid Exchanger to change the fluid.
 3. Connect the ATF Fluid Exchanger W/Power Steering Fluid Exchanger to the transmission fluid cooler tube after the transmission fluid cooler on the return tube. This will help remove any foreign material trapped in the transmission fluid coolers.
 4. Perform the transmission fluid exchange using the ATF Fluid Exchanger W/Power Steering Fluid Exchanger. Follow the manufacturer's instructions included with the machine.
 5. Once the transmission fluid exchange is completed, disconnect the ATF Fluid Exchanger W/Power Steering Fluid Exchanger. Reconnect any disconnected transmission fluid cooler tubes.
 6. With the engine running, check and make sure the transmission is at normal operating temperature 85-93°C (185-200°F). Check and adjust the transmission fluid level. Refer to [Transmission Fluid Level Check](#) . Check for leaks.
-

SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

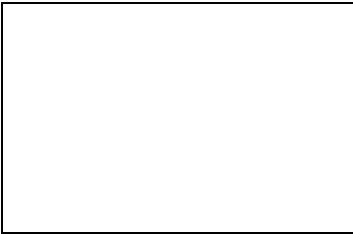
Main Control Cover

Material

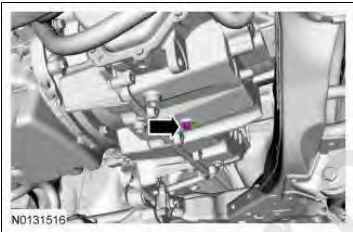
Item	Specification
Ultra Silicone Sealant TA-29	-

1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#) .
2. Remove the ACL assembly. Refer to [Section 303-12](#) .

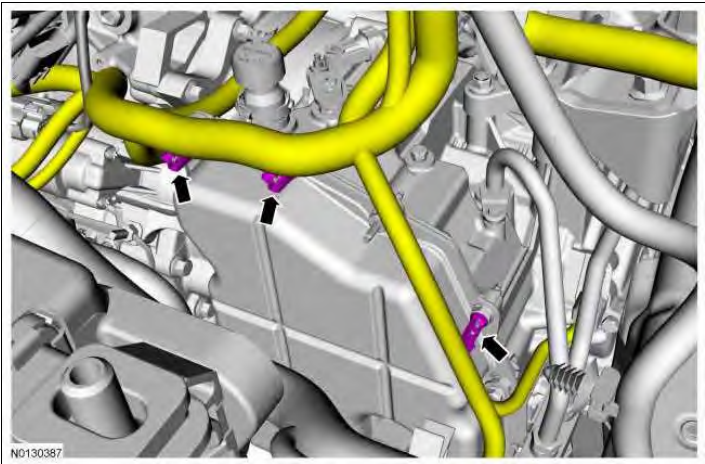
3.



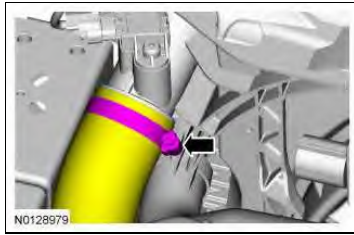
4. Drain the transmission fluid.
 - Tighten to 12 Nm (106 lb-in).



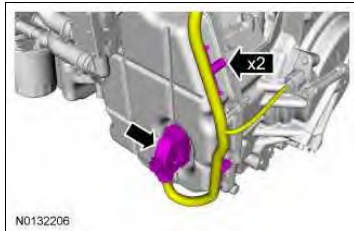
5.



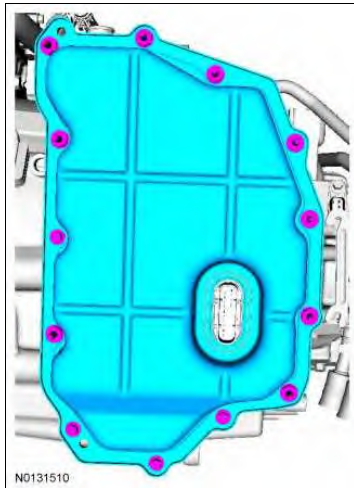
6.



7.

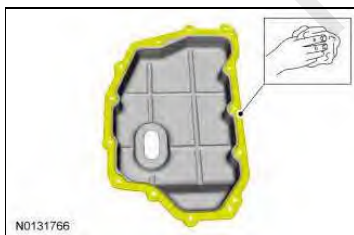


8. **NOTE:** Note the location of the studbolts for assembly.

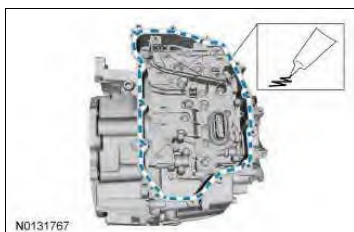


Installation

1. Clean the specified component with the specified material.

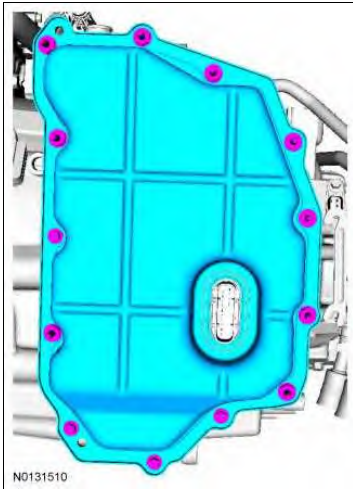


2. Apply the substance from the specified tube.
Material: Ultra Silicone Sealant TA-29.

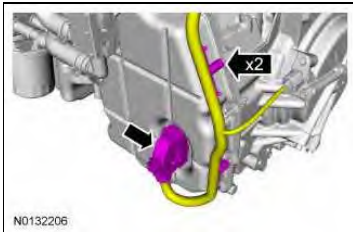


3. **NOTE:** Install the studbolts in the locations noted during disassembly.

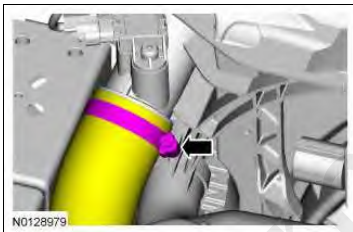
- Tighten to 12 Nm (106 lb-in).



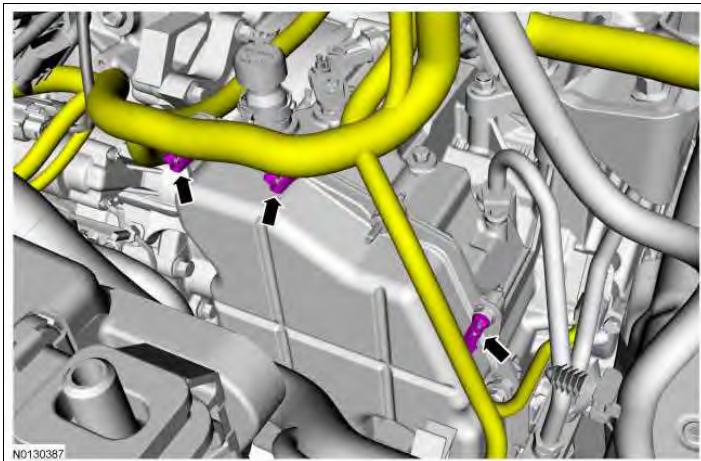
4.



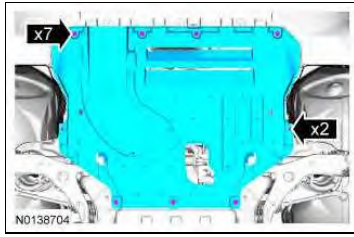
5. • Tighten to 5 Nm (44 lb-in).



6. • Tighten to 12 Nm (106 lb-in).



7.



8. Install the ACL assembly. Refer to Section 303-12 .

9. Fill the transmission with transmission fluid. Refer to Transmission Fluid Drain and Refill .

SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

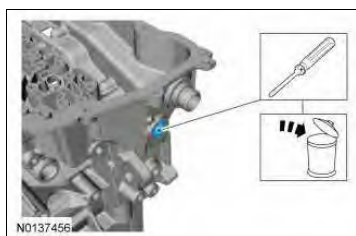
Manual Control Lever Shaft Seal

Special Tool(s)

 ST2999-A	Manual Lever Seal Installer 307-581
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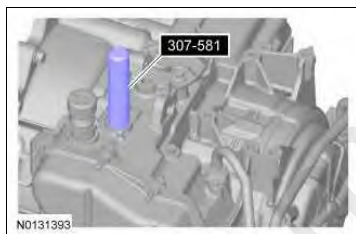
Removal

1. Remove the TR sensor. Refer to [Digital Transmission Range \(TR\) Sensor](#) .
2. Screwdriver. Discard the specified component. Follow local disposal regulations.



Installation

1. Special Tool(s): Manual Lever Seal Installer 307-581.



2. Install the TR sensor. Refer to [Digital Transmission Range \(TR\) Sensor](#) .
-

SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

Digital Transmission Range (TR) Sensor

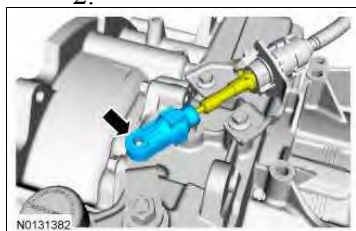
Special Tool(s)

 ST1634-A	Remover, Roll Pin 211-061 (T78P-3504-N1)
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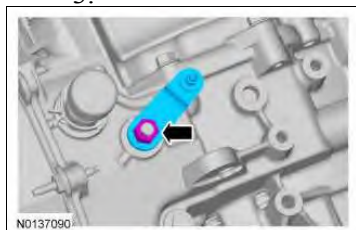
Removal

1. Remove the main control cover. Refer to [Main Control Cover](#) .

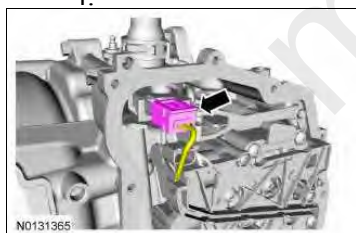
2.



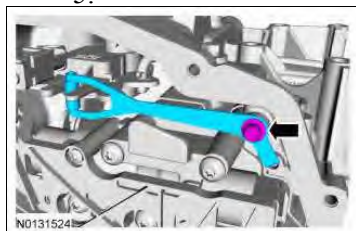
3.



4.

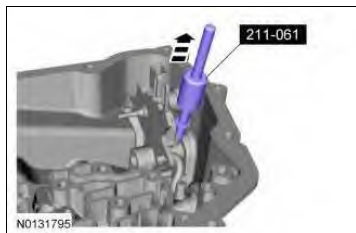


5.

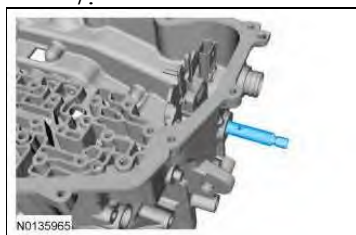


6. **NOTICE:** Do not drive the manual control shaft pin through the manual control shaft. The manual control shaft pin will contact the transmission case causing damage to the transmission case.

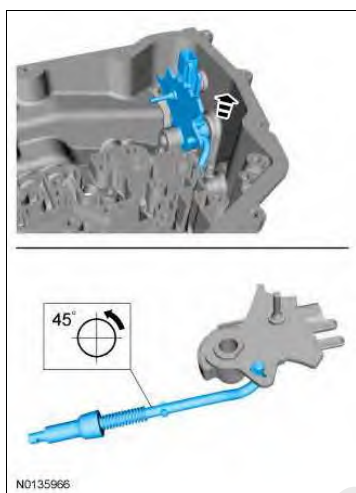
Special Tool(s): Remover, Roll Pin 211-061 (T78P-3504-N1).



7.

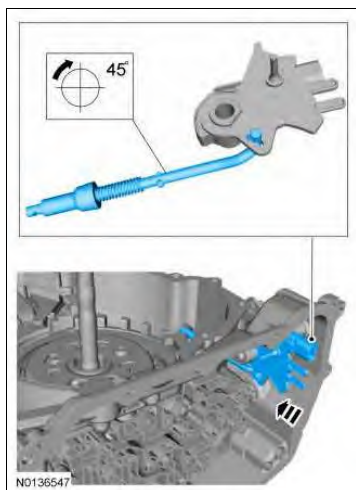


8. Turn the component CCW through 45 degrees.

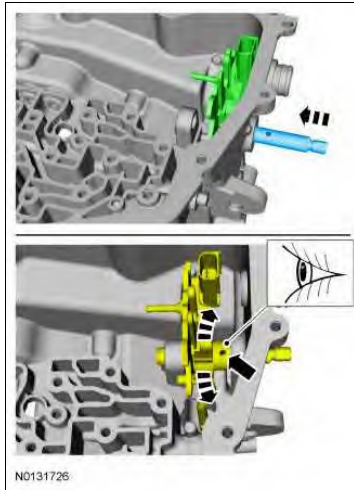


Installation

1. Turn the component CW through 45 degrees.

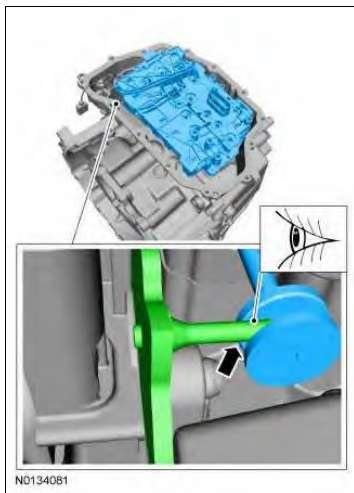


2. Align the manual control shaft pin holes. Visual check.

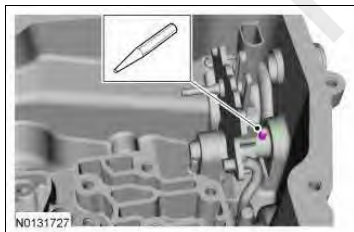


3. **NOTE:** Be sure that the TR sensor manual pin is correctly installed in the manual valve.

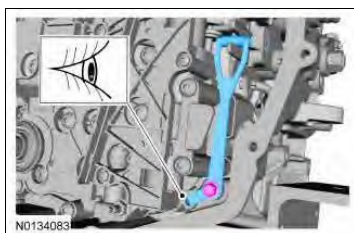
Visual check.



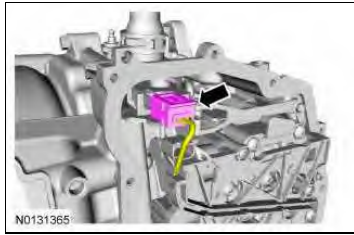
4. Pin punch.
New TR sensor locking pin.



5. Alignment tab in the alignment hole. Visual check.
• Tighten to 13 Nm (115 lb-in).



6.

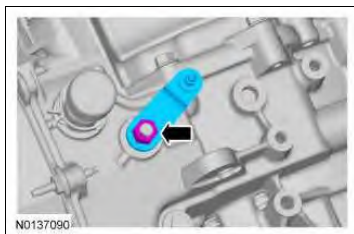


7. Install the main control cover. Refer to [Main Control Cover](#) .

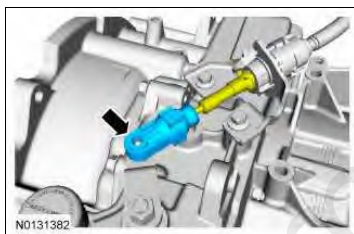
8. **NOTICE:** Make sure that when installing the manual control lever it is fully seated onto the manual control lever shaft or damage to the manual control lever shaft will occur and the lever will come loose.

NOTICE: Make sure to hold the manual control lever while tightening the manual control lever nut or damage to the manual control lever and park components will occur.

- Tighten to 24 Nm (18 lb-ft).



9. Connect the selector lever cable end to the manual control lever with the manual control lever and selector lever in DRIVE. Check selector lever cable adjustment. Refer to [Section 307-05](#) .



SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

Solenoid Body Leadframe

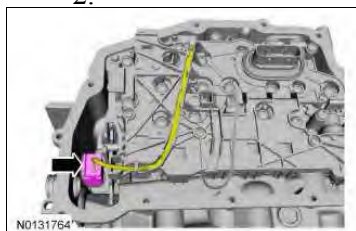
Special Tool(s)

 ST3066-A	Pins, Leadframe Guide 307-636
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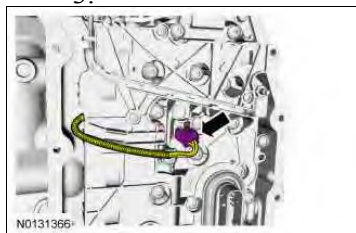
Removal

1. Remove the main control cover. Refer to [Main Control Cover](#) .

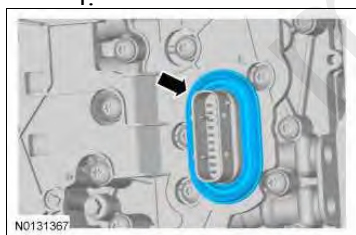
2.



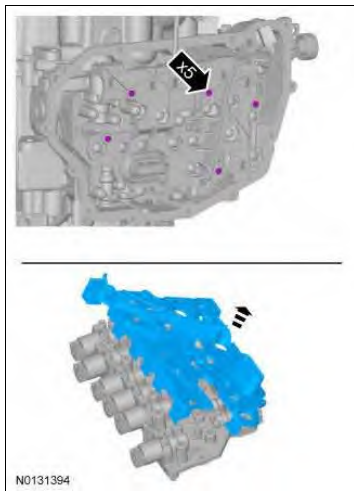
3.



4.

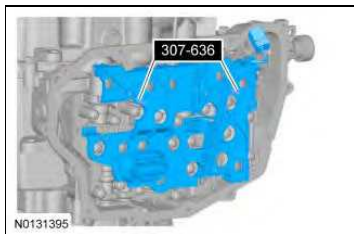


5. **NOTICE:** Be careful not to bend or twist the leadframe or the solenoid terminals when removing the leadframe or damage can occur to the leadframe or the solenoids.

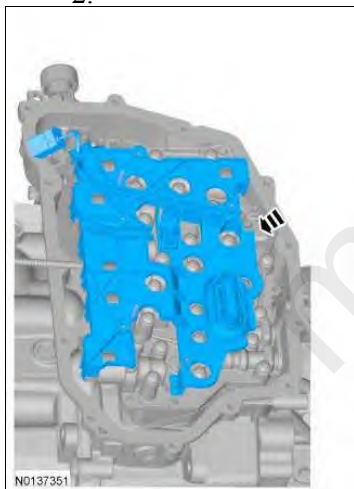


Installation

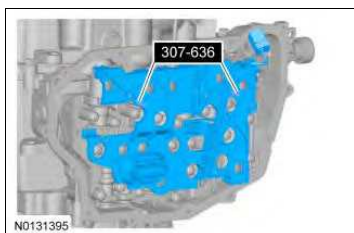
1. Special Tool(s): Pins, Leadframe Guide 307-636.



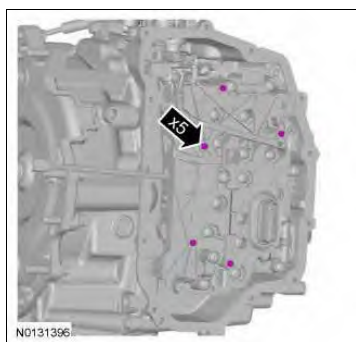
- 2.



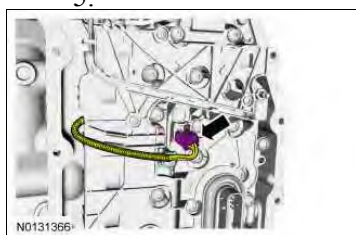
3. Special Tool(s): Pins, Leadframe Guide 307-636.



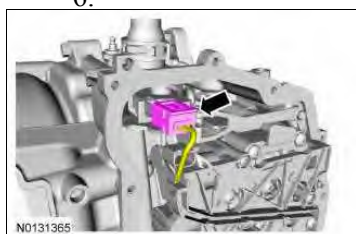
- 4.



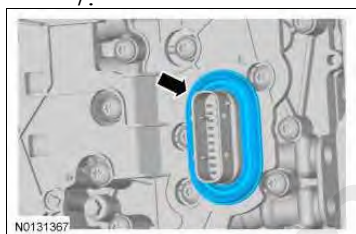
5.



6.



7.



8. Install the main control cover. Refer to Main Control Cover .

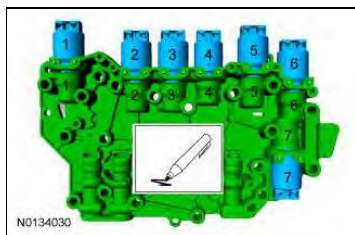
SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

Solenoids

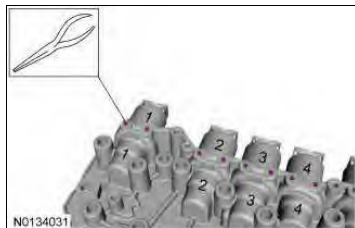
Removal

1. Remove the solenoid body leadframe. Refer to [Solenoid Body Leadframe](#) .
2. **NOTICE:** The solenoids are calibrated from the factory and are not all the same. Failure to mark the solenoids to the ports they were originally in can result in mixing the solenoids and can cause damage to the transmission or a harsh shift.

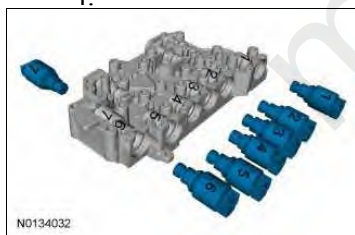
Number the solenoids and the solenoid body to correspond with the ports from which the solenoids are located in the solenoid body. Marker.



3. Long-nosed pliers.



- 4.

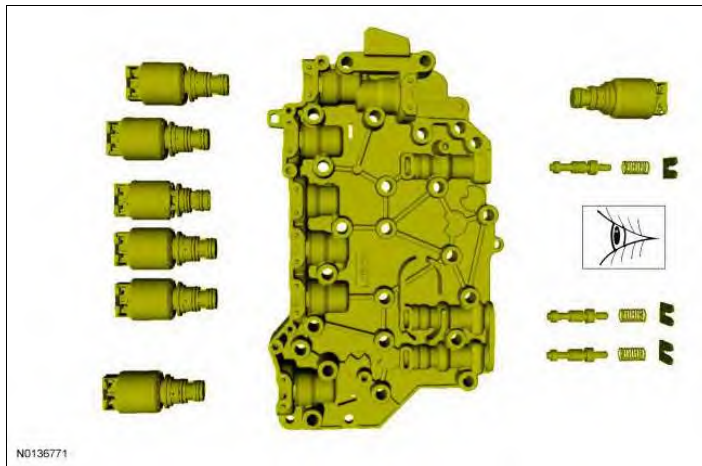


Installation

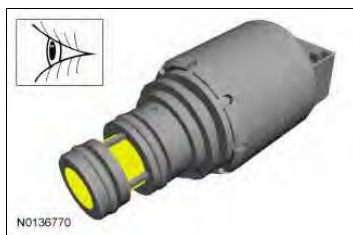
1. **NOTICE:** Be careful not to wash the numbers from the solenoids or the solenoid body. Failure to install the solenoids in the ports they were originally in can result in damage to the transmission or a harsh shift.

NOTICE: Do not stone or polish any valves or damage to the valves can occur. If the valves do not move freely during assembly, install a new solenoid body.

Clean and inspect the solenoid body, solenoids and valve assemblies for damage. Visual check.



2. Inspect the solenoid screens for debris that may restrict fluid flow through the screen. Visual check.

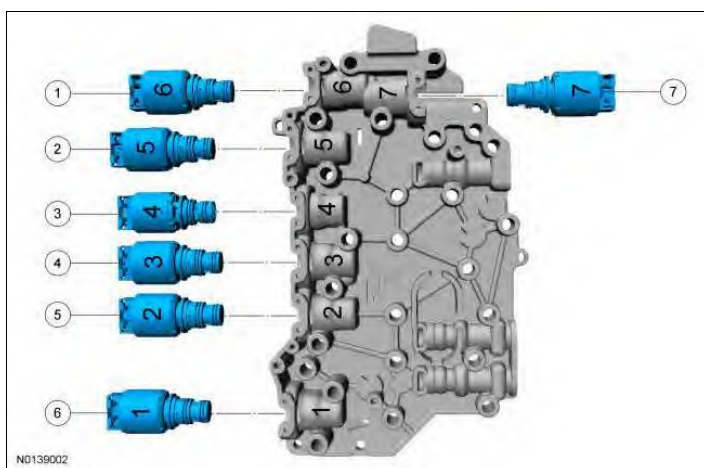


3. **NOTICE:** The solenoids are calibrated from the factory and are not all the same. Failure to install the solenoids in the ports they were originally in can result in damage to the transmission or a harsh shift.

If new solenoid(s) are not being installed, position the solenoids in the solenoid body ports from which their numbers correspond.



4. If installing a new VFS , determine the base part number of the solenoid(s). The TCC solenoid, SSA and SSC are all normally low pressure solenoids. The LPC solenoid, SSB and SSD are all normally high pressure solenoids. SSE is not a VFS ; it is an ON/OFF solenoid.



Item	Part Number	Description
1	7G136	SSB (normally high)
2	7G383	SSA (normally low)
3	7G136	SSE (normally closed [OFF])
4	7G383	TCC (normally low)
5	7G484	SSC solenoid (normally low)
6	7G136	LPC solenoid (normally high)
7	7G383	SSD solenoid (normally high)

5. If installing a new LPC solenoid, SSB , SSD or new normally low pressure solenoids TCC , SSA , SSC , note the color of the plastic nozzle and large o-ring of the solenoid. The color will be black with an orange o-ring or brown with a green o-ring and the solenoid can only be replaced with the same color solenoid. A solenoids with a black plastic nozzle and an orange large o-ring is a normally high pressure solenoid and a solenoids with a brown plastic nozzle and a green large o-ring is a normally low pressure solenoid. Visual check.



6. Determine the part number suffix by checking the solenoid service band number etched on the side of the solenoid. The band number is the last number in the group on the side of the solenoid and will be a 1, 2, 3, 4 or 5. Use the following table to determine the part number suffix and match the new solenoid base part number and suffix with the old solenoid. Visual check.

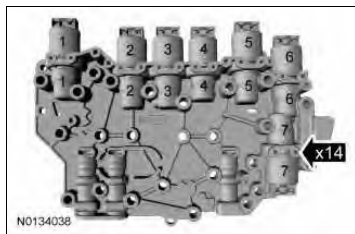
Solenoid Band Number	Part Number Suffix
1	B
2	C
3	D
4	E
5	F



7.



8. Solenoid retaining pins.



9. Install the solenoid body leadframe. Refer to Solenoid Body Leadframe .

SECTION 307-01: Automatic Transmission - 6F35

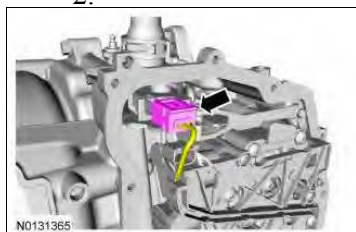
REMOVAL AND INSTALLATION

Main Control Valve Body

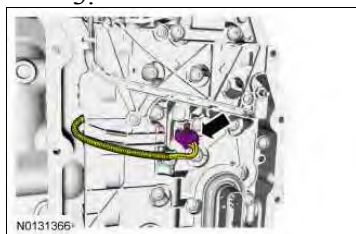
Removal

1. Remove the main control cover. Refer to [Main Control Cover](#) .

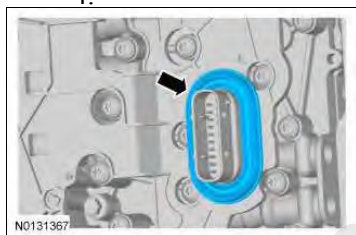
2.



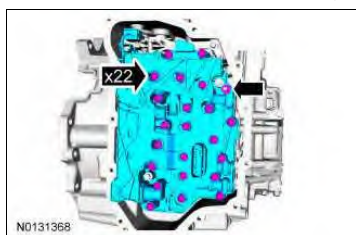
3.



4.



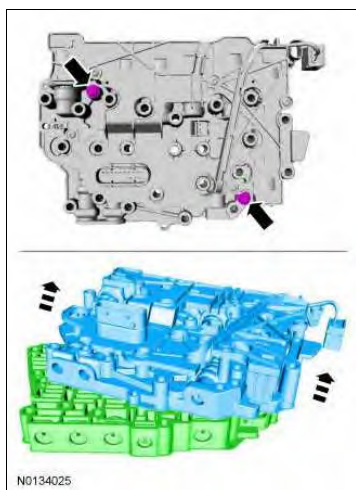
5. **NOTICE:** The main control should be handled with care or damage to the main control may occur.



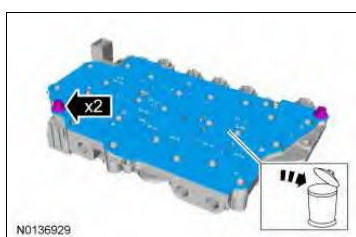
6. Discard the specified component. Follow local disposal regulations.



7.

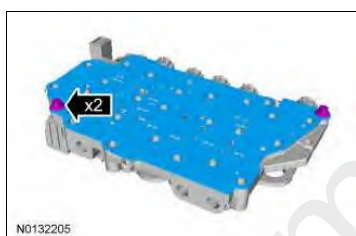


8. Discard the specified component. Follow local disposal regulations.

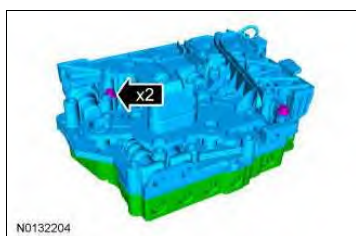


Installation

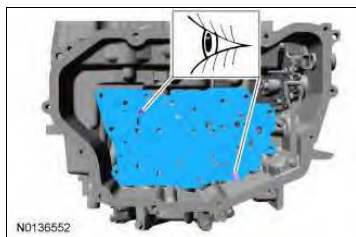
1. New separator plate.
 - Tighten to 10 Nm (89 lb-in).



2.
 - Tighten to 10 Nm (89 lb-in).

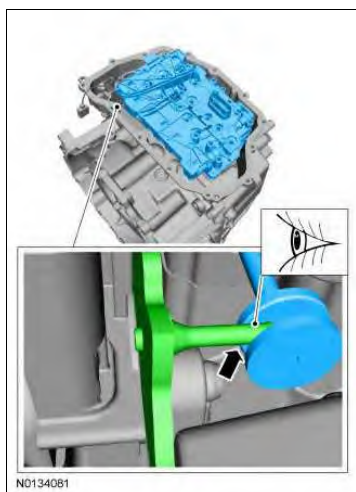


3. Align the new separator plate on the stud and the guide pin. Visual check.

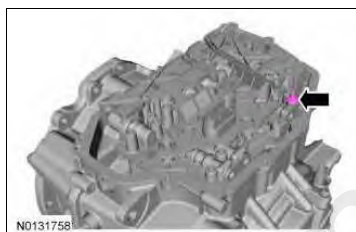


4. **NOTE:** Be sure that the manual pin (part of the TR sensor) is correctly installed in the manual valve.

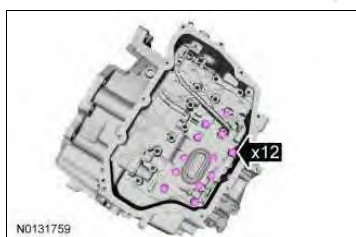
Visual check.



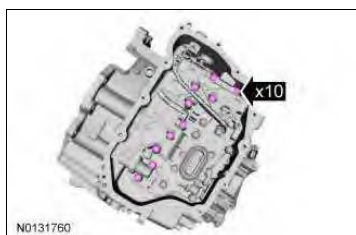
5. Nut hand-tight.



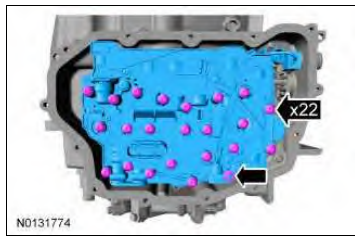
6. Short bolts hand-tight.



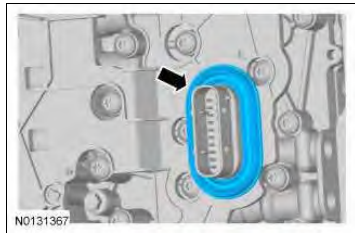
7. Long bolts hand-tight.



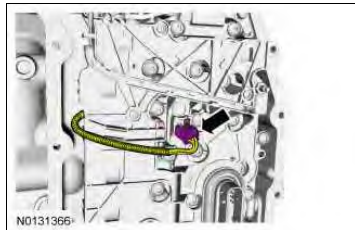
8. Tighten in a crisscross pattern.
- Tighten to 10 Nm (89 lb-in).



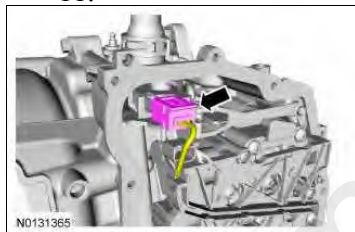
9.



10.



11.



12. Install the main control cover. Refer to Main Control Cover .
-

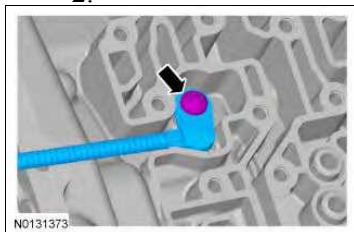
SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

Output Shaft Speed (OSS) Sensor

Removal

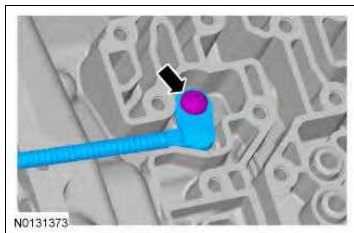
1. Remove the main control. Refer to [Main Control Valve Body](#) .

2.



Installation

1.
 - Tighten to 10 Nm (89 lb-in).



1. Install the main control. Refer to [Main Control Valve Body](#) .
-

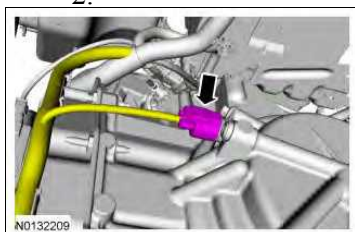
SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

Turbine Shaft Speed (TSS) Sensor

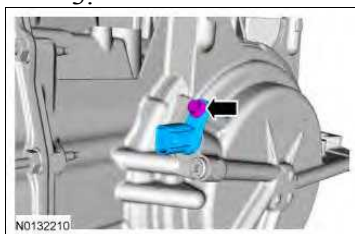
Removal

1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#) .

2.

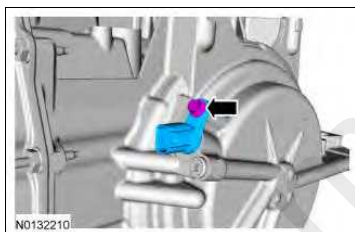


3.

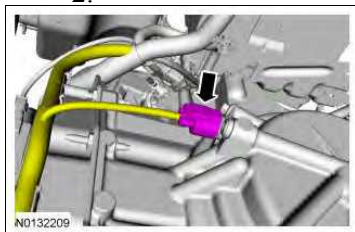


Installation

1. ♦ Tighten to 10 Nm (89 lb-in).



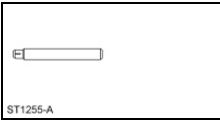
2.



SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

Halfshaft Seal - RH

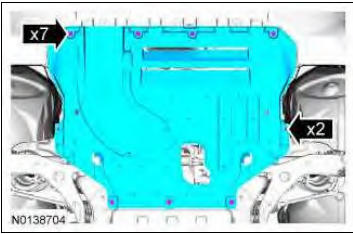
Special Tool(s)

 ST1255-A	Handle 205-153 (T80T-4000-W)
 ST3070-A	Installer, Differential Seal 307-626

Removal

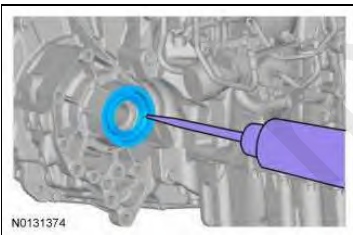
1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#) .

2.

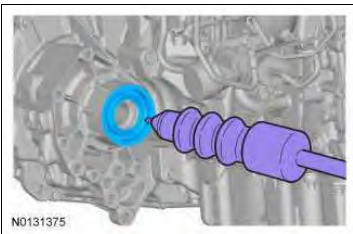


3. Remove the front RH halfshaft. Refer to [Section 205-04](#) .

4. General Equipment: Awl.

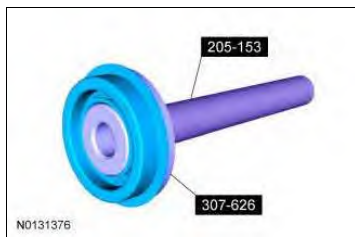


5. General Equipment: Dent Puller.

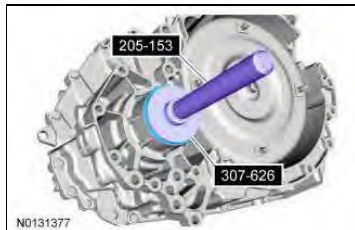


Installation

1. Special Tool(s): Installer, Differential Seal 307-626, Handle 205-153 (T80T-4000-W).

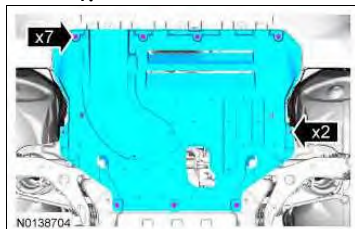


2. Special Tool(s): Installer, Differential Seal 307-626, Handle 205-153 (T80T-4000-W).



3. Install the front RH halfshaft. Refer to Section 205-04 .

4.

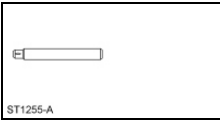


5. Check and top off the transmission fluid to the correct level. Refer to Transmission Fluid Level Check

SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

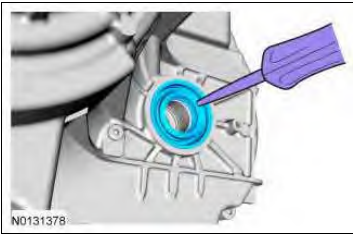
Halfshaft Seal - LH

Special Tool(s)

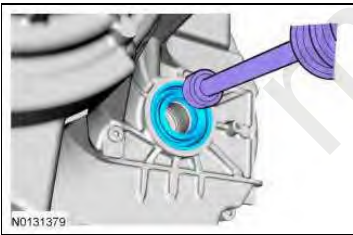
 ST1255-A	Handle 205-153 (T80T-4000-W)
 ST3070-A	Installer, Differential Seal 307-626

Removal

1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#) .
2. Remove the front LH halfshaft. Refer to [Section 205-04](#) .
3. General Equipment: Awl.

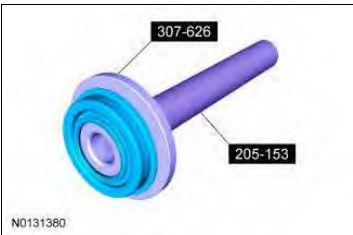


4. General Equipment: Dent Puller.

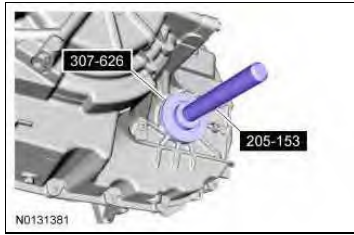


Installation

1. Special Tool(s): Installer, Differential Seal 307-626, Handle 205-153 (T80T-4000-W).



2. Special Tool(s): Installer, Differential Seal 307-626, Handle 205-153 (T80T-4000-W).



3. Install the front LH halfshaft. Refer to Section 205-04 .
 4. Check and top off the transmission fluid to the correct level. Refer to Transmission Fluid Level Check
-

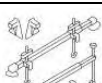
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SECTION 307-01: Automatic Transmission - 6F35

REMOVAL AND INSTALLATION

Transmission Support Insulator

Special Tool(s)

 ST3301-A	Adapter for 303-F072 303-290B-18
 ST3299-A	Adapter for 303-290A 303-290-05A
 ST3302-A	
 ST3294-A	Lifting Eye 303-1502
 ST2425-A	Support Bar, Engine 303-F072

Material

Item	Specification
Threadlock and Sealer TA-25	WSK-M2G351-A5

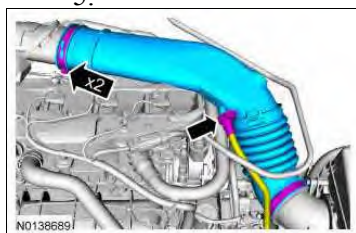
Removal

All vehicles

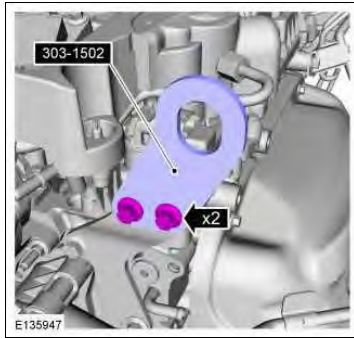
1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#) .
2. Remove the cowl panel grille. Refer to [Section 501-02](#) .
3. Remove the ACL assembly and the outlet pipe. Refer to [Section 303-12](#) .
4. Remove the battery and battery tray. Refer to [Section 414-01](#) .

Vehicles with 1.6L engine

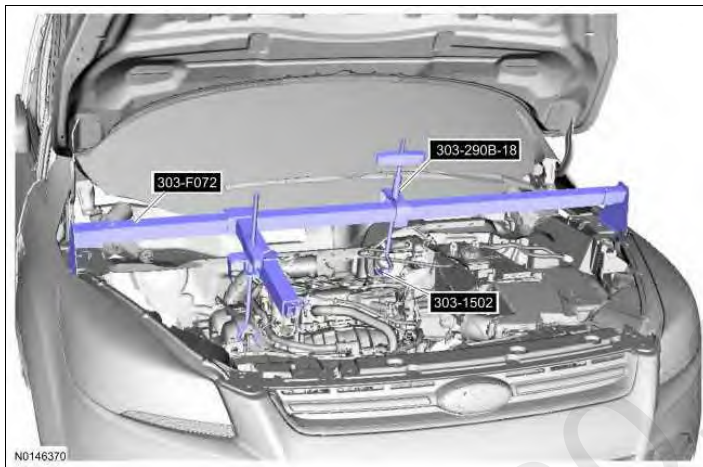
5.



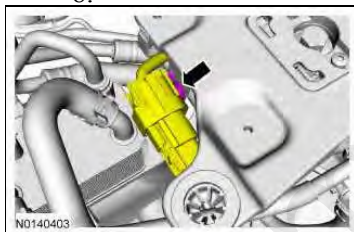
6. Special Tool(s): Lifting Eye 303-1502.



7. Special Tool(s): Engine Support Bar 303-F072, Adapter for 303-290B-18, Lifting eye 303-1502.

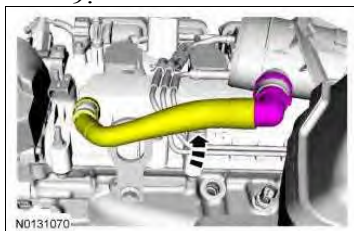


8.

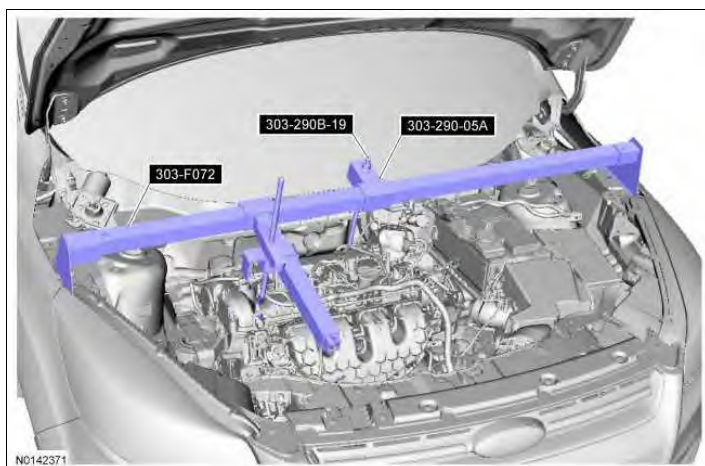


Vehicles with 2.0L engine

9.

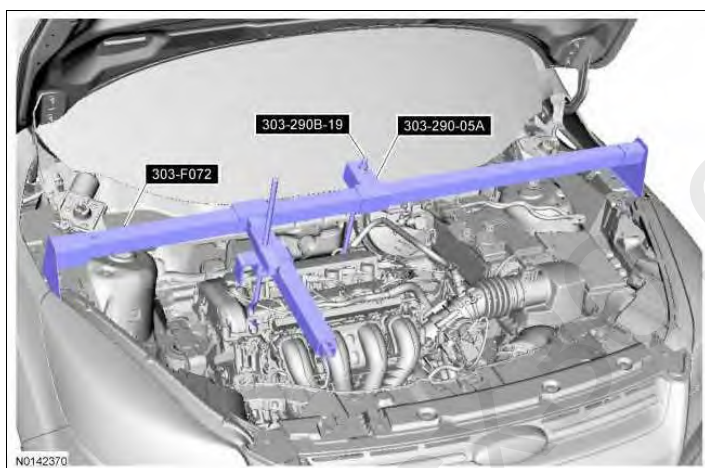


10. Special Tool(s): Support Bar, Engine 303-F072, Adapter for 303-290A 303-290-05A, Adapter for 303-290B 303-290B-19.



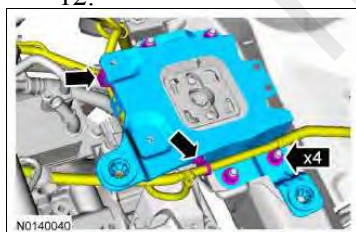
Vehicles with 2.5L engine

11. Special Tool(s): Support Bar, Engine 303-F072, Adapter for 303-290A 303-290-05A, Adapter for 303-290B 303-290B-19.

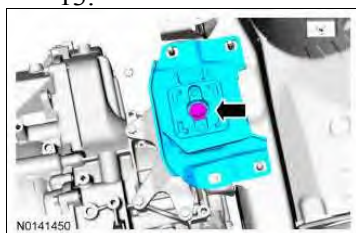


All vehicles

- 12.



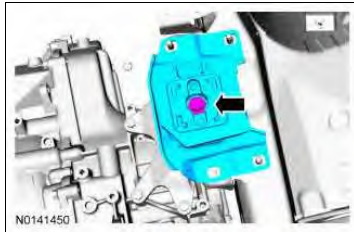
- 13.



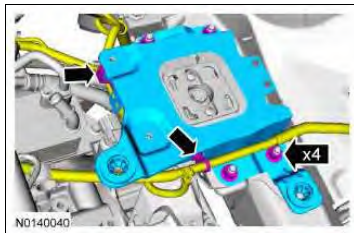
Installation

All vehicles

1. • Tighten to 148 Nm (109 lb-ft).

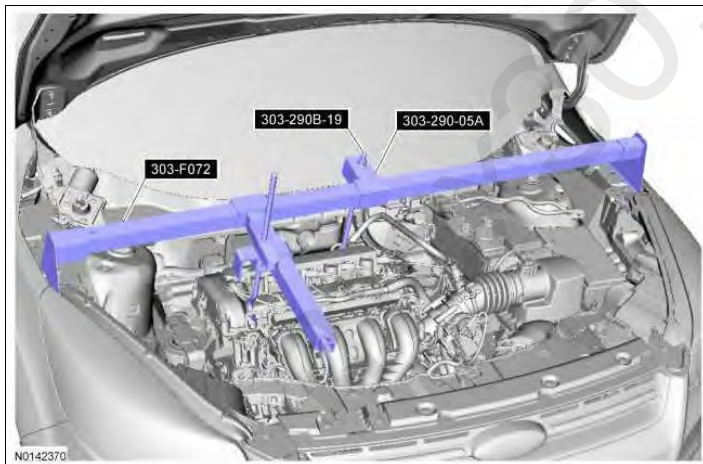


2. • Tighten to 48 Nm (35 lb-ft).



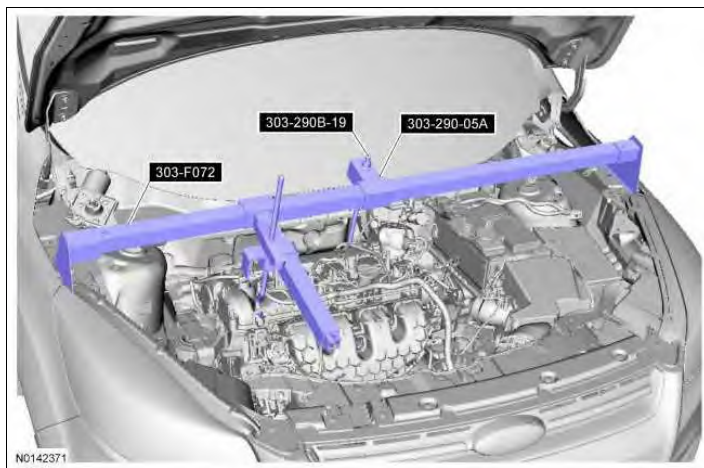
Vehicles with 2.5L engine

3. Special Tool(s): Support Bar, Engine 303-F072, Adapter for 303-290A 303-290-05A, Adapter for 303-290B 303-290B-19.

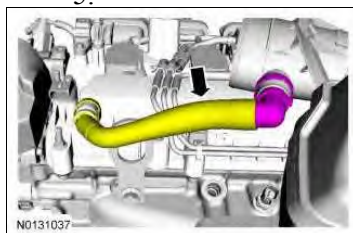


Vehicles with 2.0L engine

4. Special Tool(s): Support Bar, Engine 303-F072, Adapter for 303-290A 303-290-05A, Adapter for 303-290B 303-290B-19.

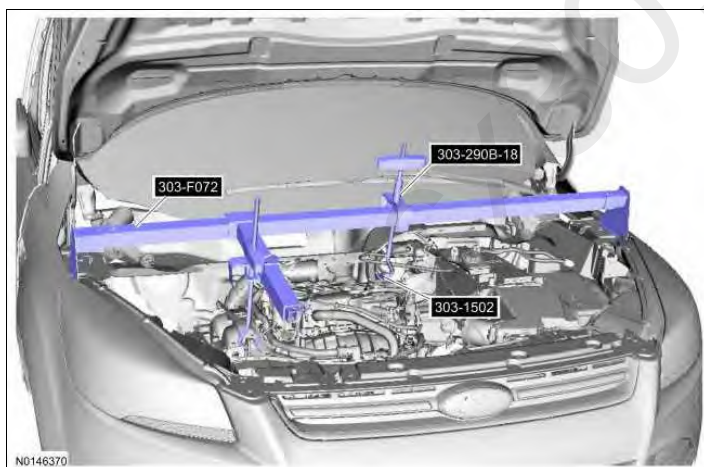


5.

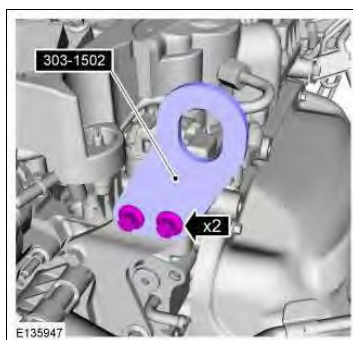


Vehicles with 1.6L engine

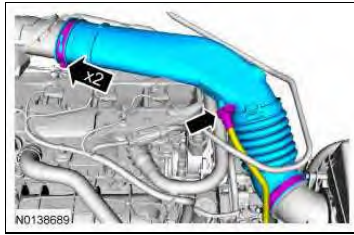
6. Special Tool(s): Engine Support Bar 303-F072, Adapter for 303-290B-18, Lifting eye 303-1502.



7. Special Tool(s): Lifting Eye 303-1502.



8. • Tighten to 5 Nm (44 lb-in).



All vehicles

9. Install the battery and battery tray. Refer to [Section 414-01](#) .
 10. Install the ACL assembly and the outlet pipe. Refer to [Section 303-12](#) .
 11. Install the cowl panel grille. Refer to [Section 501-02](#) .
-

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SECTION 307-01: Automatic Transmission - 6F35

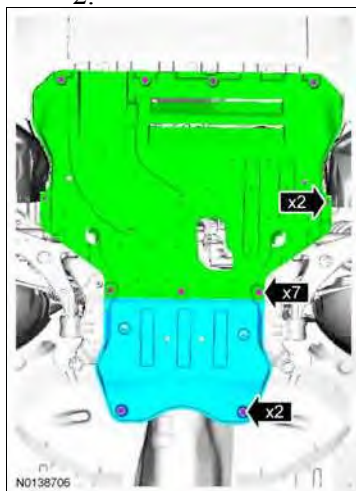
REMOVAL AND INSTALLATION

Transmission Support Insulator - Anti-Roll

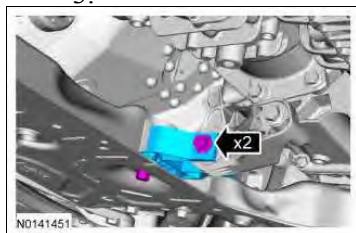
Removal

1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#).

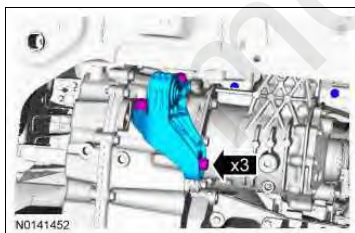
2.



3.

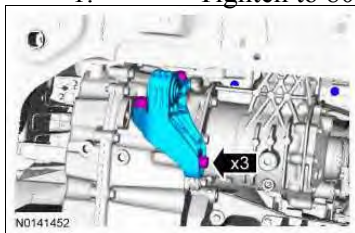


4.

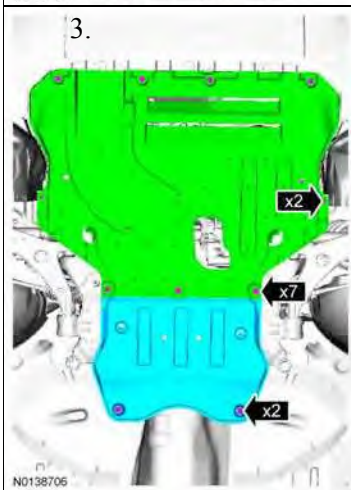


Installation

1. • Tighten to 80 Nm (59 lb-ft).



2. • Tighten to 125 Nm (92 lb-ft).



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SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

Transmission Case Bushing

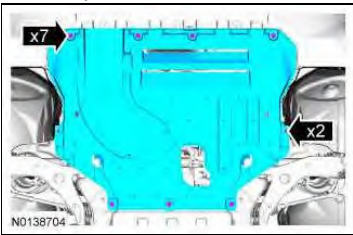
Special Tool(s)

 ST1255-A	Handle 205-153 (T80T-4000-W)
 ST1194-A	Remover, Transmission Extension Housing Bushing 308-070 (T77L-7697-E)
 ST3229-A	Installer, Bushing 307-664

Removal

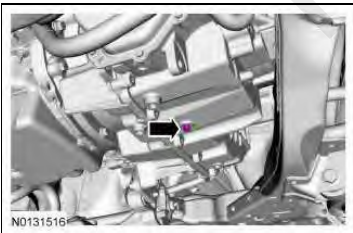
1. Remove the front LH halfshaft seal. Refer to [Halfshaft Seal - LH](#).

2.

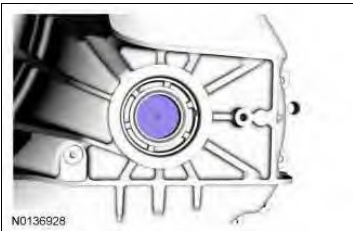


3. **NOTE:** Leave the drain plug out after the transmission fluid drains. The drain plug will need to remain out to clean any debris from the damaged or worn bushing.

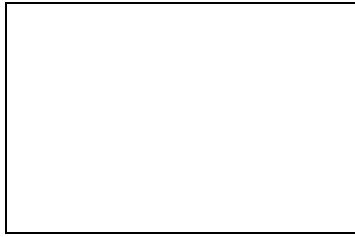
Drain the transmission fluid.



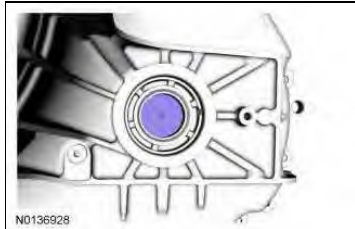
4. Special tool(s): Step Plate 205-D015 (D80L-630-4).



5. Special tool(s): Remover, Transmission Extension Housing Bushing 308-070 (T77L-7697-E).

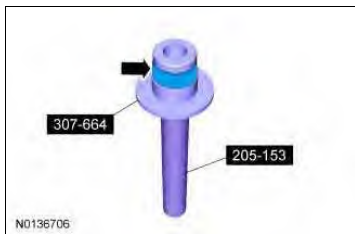


6. Special tool(s): Step Plate 205-D015 (D80L-630-4).



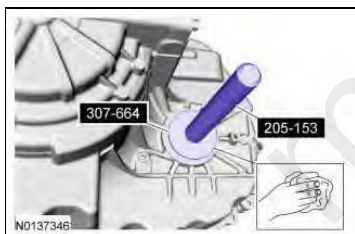
Installation

1. Special tool(s): Installer, Bushing 307-664, Handle 205-153 (T80T-4000-W).

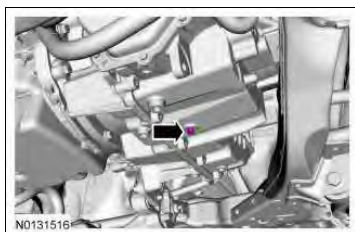


2. Clean the specified component with the specified material.

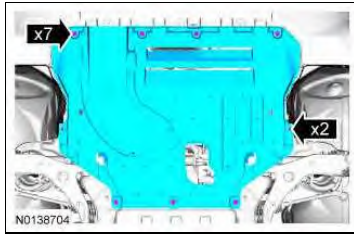
Special tool(s): Installer, Bushing 307-664, Handle 205-153 (T80T-4000-W).



3. • Tighten to 12 Nm (106 lb-in).



4.



5. Install a new LH halfshaft seal. Refer to Halfshaft Seal - LH .

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SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

Transmission - 1.6L GTDI

Special Tool(s)

 ST3301-A	Adapter for 303-F072 303-290B-18
 ST3294-A	Lifting Eye 303-1502
 ST1636-A	Retainer, Torerter 307-566
 ST2425-A	Support Bar, Engine 303-F072

Material

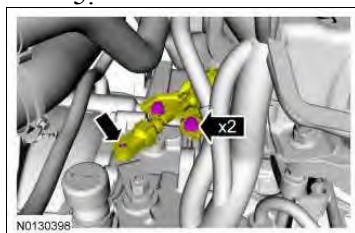
Item	Specification
Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC	MERCON® LV
Multi-Purpose Grease Motorcraft® XL-5 (aerosol) and/or CRC® SL3151	ESB-M1C93-B

Removal

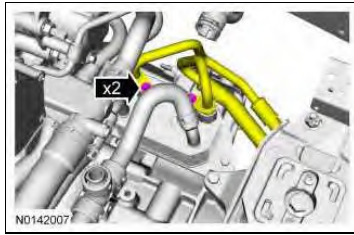
All vehicles

1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#) .
2. Remove the cowl panel grille. Refer to [Section 501-02](#) .
3. Remove the ACL assembly. Refer to [Section 303-12](#) .
4. Remove the battery and battery tray. Refer to [Section 414-01](#) .

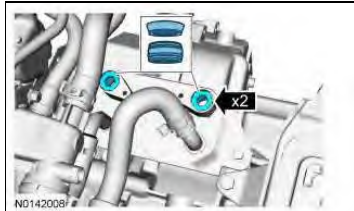
5.



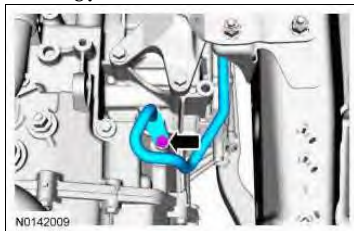
6.



7. Visual check.



8.

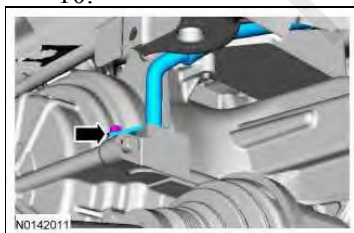


9.

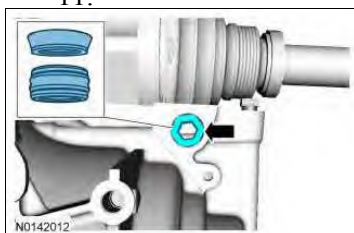


Vehicles without an auxiliary transmission fluid cooler

10.

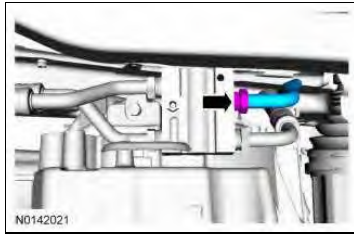


11.

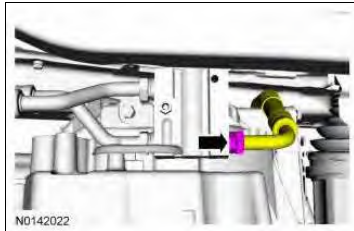


Vehicles with an auxiliary transmission fluid cooler

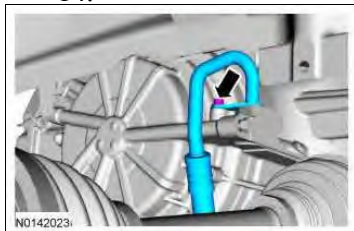
12.



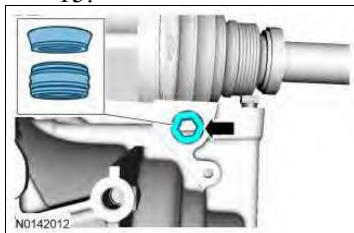
13.



14.

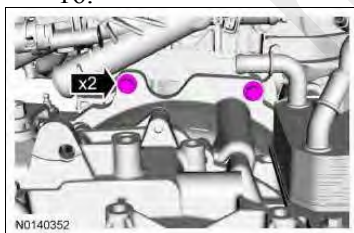


15.



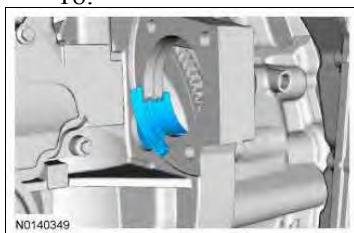
All vehicles

16.



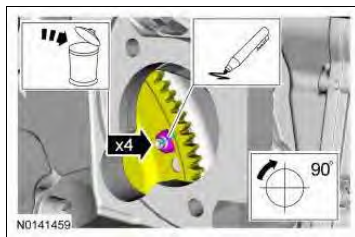
17. Remove the starter. Refer to [Section 303-06](#) .

18.

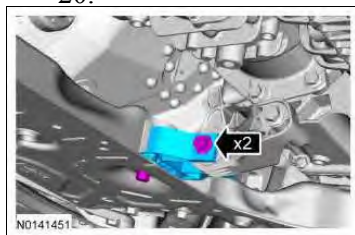


19. **NOTICE:** Only rotate the engine in a clockwise direction or engine damage will occur.

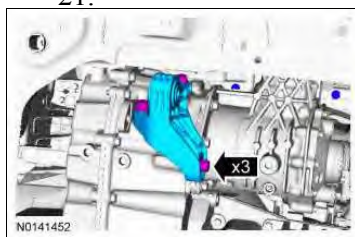
Marker. Turn the component CW degrees. Discard the specified component. Follow local disposal regulations.



20.



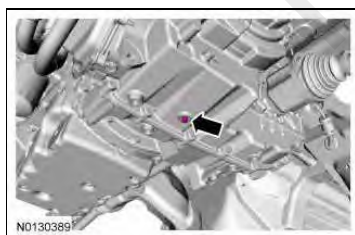
21.



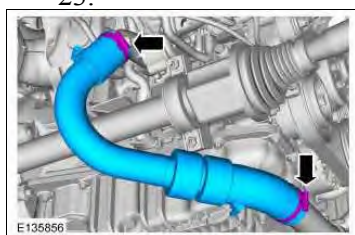
22. **NOTE:** If transmission disassembly or installation of a new transmission is necessary, drain the transmission fluid.

Drain the transmission.

- Tighten to 12 Nm (106 lb-in).



23.



FWD vehicles

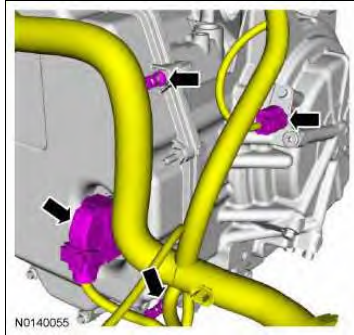
24. Remove the RH intermediate shaft and the LH halfshaft. Refer to [Section 205-04](#) .

AWD vehicles

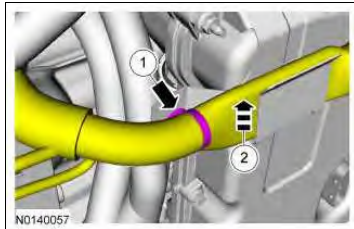
25. Remove the PTU . Refer to [Section 308-07B](#) .

All vehicles

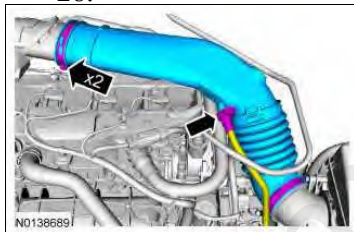
26.



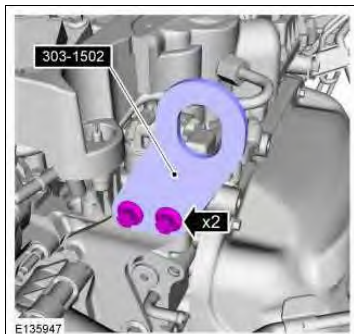
27.



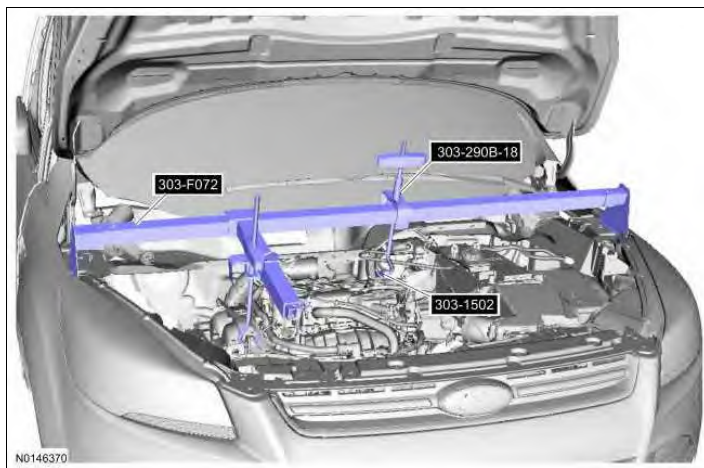
28.



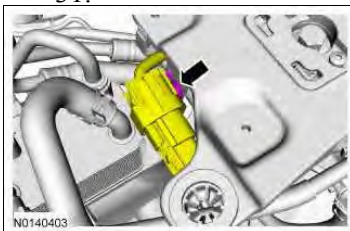
29. Special Tool(s): Lifting Eye 303-1502.



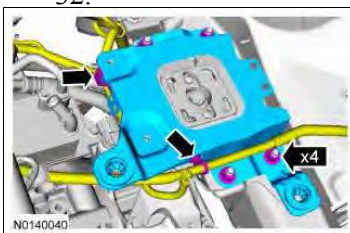
30. Special Tool(s): Engine Support Bar 303-F072, Adapter for 303-290B-18, Lifting Eye 303-1502.



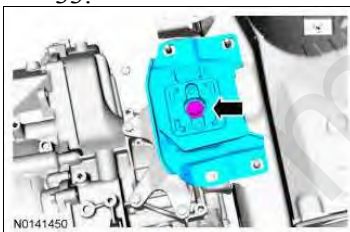
31.



32.



33.

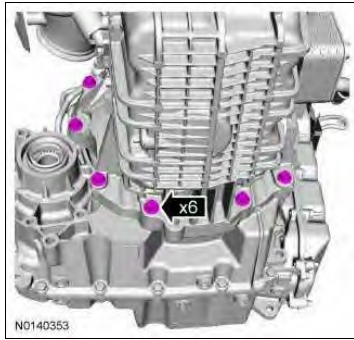


34.

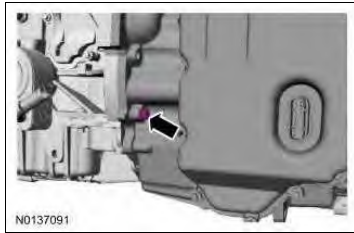


35. Support the transmission with a transmission jack. Secure the transmission to the transmission jack with a safety strap.

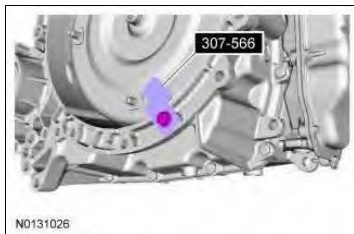
36. **NOTE:** The transaxle-to-engine bolts differ in length. Mark the bolts for correct installation.



37.



38. Special tool(s): Retainer, Torque Converter 307-566.



39. Remove the transmission from the vehicle.

40. If the transmission is to be overhauled or if installing a new or re-manufactured transmission, carry out the transmission fluid cooler backflushing and cleaning. Refer to [Section 307-02](#) .

Installation

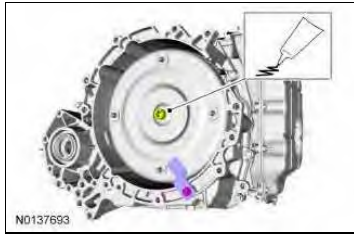
All vehicles

NOTICE: Prior to installing a new, re-manufactured or overhauled transmission, clean the transmission fluid cooler tubes. Failure to clean the transmission fluid cooler tubes can result in transmission failure.

NOTE: If the transmission was overhauled, or if installing a new transmission and the transmission fluid cooler has not been flushed, flush the transmission fluid cooler at this time. Refer to [Section 307-02](#) . Clean the transmission-mounted transmission fluid cooler tubes by hand.

1. Apply the substance from the specified tube.

Material: Multi-Purpose Grease XG-4 and/or XL-5.



2. **NOTICE:** If the transmission is not positioned on the dowel pins, damage to the transmission may occur.

If the dowel pins were pulled out of the engine block during removal, install new dowel pins in the engine block.
Visual check.



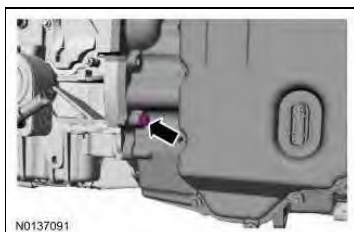
3. Support the transmission with a transmission jack. Secure the transmission to the transmission jack with a safety strap.
General Equipment: Transmission Jack.

4. **NOTE:** Align the index-mark made during removal.

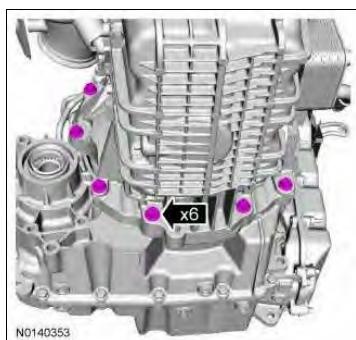
Position the transmission behind the engine and remove the Torque Converter Retainer.
Special Tool(s): Retainer, Torque Converter 307-566.



5. • Tighten to 48 Nm (35 lb-ft).



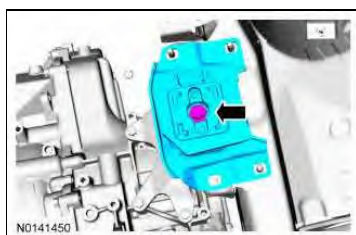
6. • Tighten to 48 Nm (35 lb-ft).



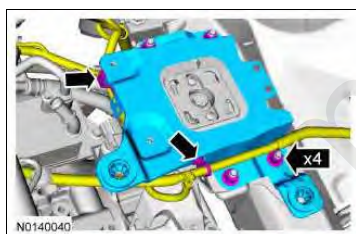
7. • Tighten to 63 Nm (46 lb-ft).



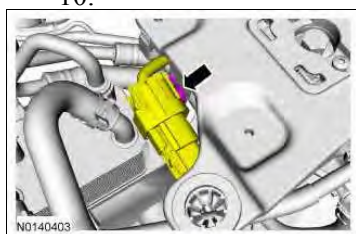
8. • Tighten to 148 Nm (109 lb-ft).



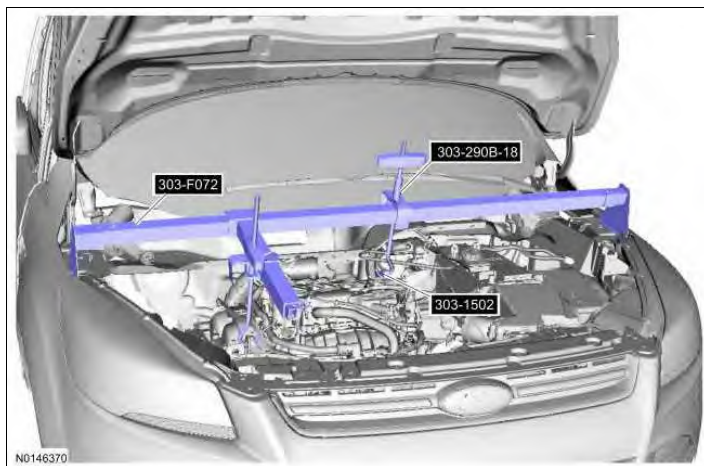
9. • Tighten to 48 Nm (35 lb-ft).



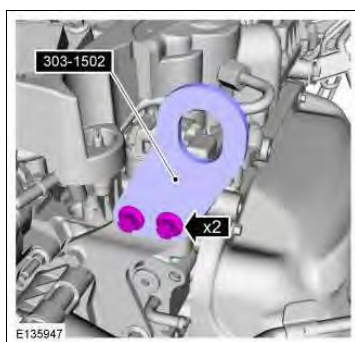
- 10.



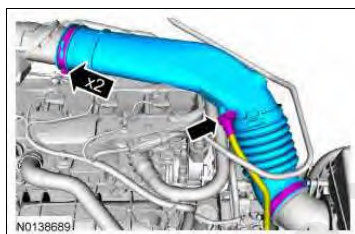
11. Special Tool(s): Engine Support Bar 303-F072, Adapter for 303-290B-18, Lifting Eye 303-1502.



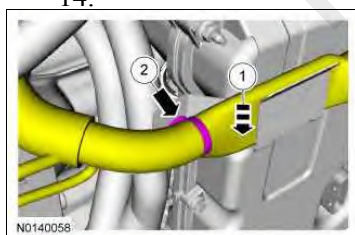
12. Special Tool(s): Lifting Eye 303-1502.



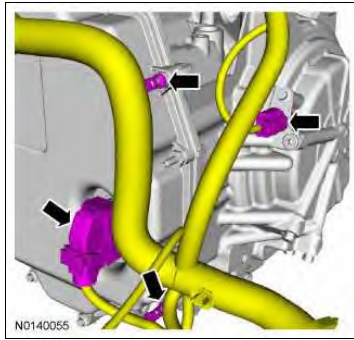
13. • Tighten to 5 Nm (44 lb-in).



14.



15.



AWD vehicles

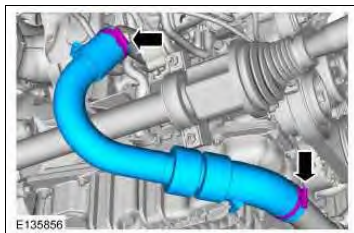
16. Install the PTU . Refer to Section 308-07B .

FWD vehicles

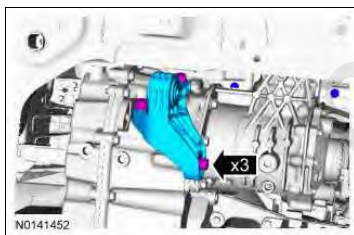
17. Install the RH intermediate shaft and the LH halfshaft. Refer to Section 205-04 .

All vehicles

18. • Tighten to 5 Nm (44 lb-in).



19. • Tighten to 80 Nm (59 lb-ft).



20. • Tighten to 125 Nm (92 lb-ft).

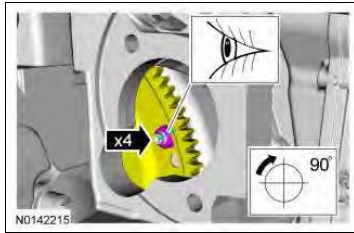


21. **NOTICE:** Rotate the engine in a CW direction only or engine damage will occur.

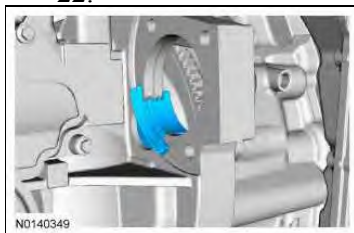
Visual check.

New torque converter nuts.

- Tighten to 48 Nm (35 lb-ft).

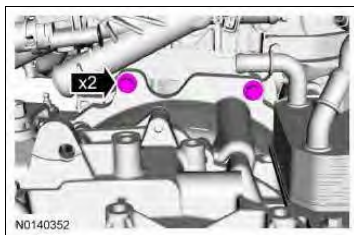


22.



23. Install the starter. Refer to Section 303-06 .

24. • Tighten to 48 Nm (35 lb-ft).



Vehicles with an auxiliary transmission fluid cooler

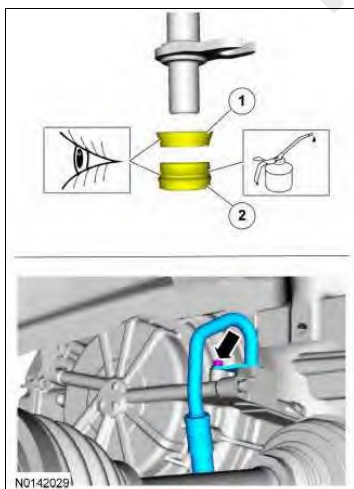
25. Visual check. Apply the specified lubricant to the specified component.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.

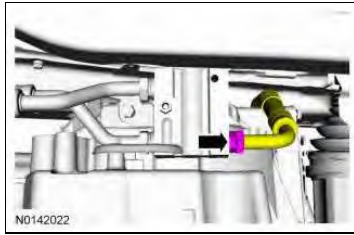
1. Backing ring (7J324)

2. Seal (7D258)

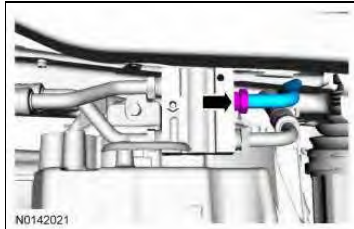
- Tighten to 9 Nm (80 lb-in).



26. • Tighten to 30 Nm (22 lb-ft).

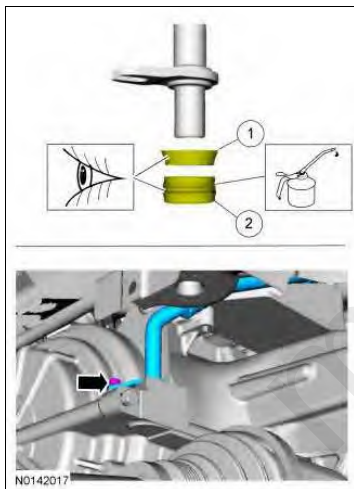


27. • Tighten to 30 Nm (22 lb-ft).



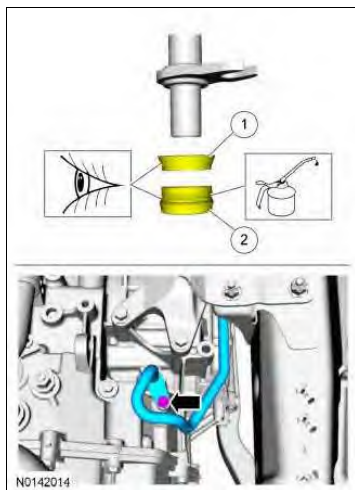
Vehicles without an auxiliary transmission fluid cooler

28. Visual check. Apply the specified lubricant to the specified component.
 Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.
1. Backing ring (7J324)
 2. Seal (7D258)
- Tighten to 9 Nm (80 lb-in).



All vehicles

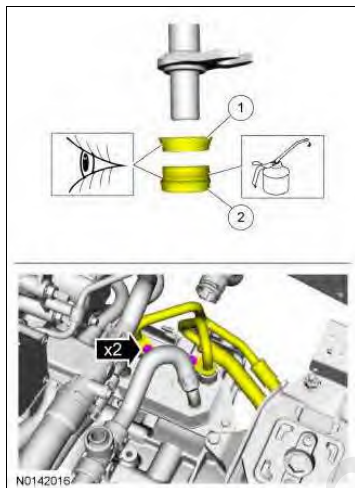
29. Visual check. Apply the specified lubricant to the specified component.
 Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.
1. Backing ring (7J324)
 2. Seal (7D258)
- Tighten to 9 Nm (80 lb-in).



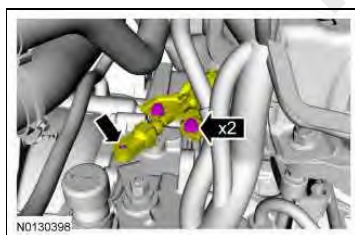
30. Visual check. Apply the specified lubricant to the specified component.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.

1. Backing ring (7J324)
2. Seal (7D258)
 - Tighten to 9 Nm (80 lb-in).



31.
 - Tighten to 25 Nm (18 lb-ft).



Install the battery and battery tray. Refer to [Section 414-01](#) .

33. Install the ACL assembly. Refer to [Section 303-12](#) .

34. Install the cowl grille panel. Refer to [Section 501-02](#) .

35. Adjust the selector lever cable. Refer to [Section 307-05](#) .

36. Fill the transmission with clean transmission fluid. Refer to [Transmission Fluid Drain and Refill](#) .

37. After completing the repairs perform the Misfire Monitor Neutral Profile Correction procedure.
 38. If a new solenoid body is installed, the solenoid body strategy must be updated. Refer to [Solenoid Body Strategy Download](#) .
-

mcx30.com

SECTION 307-01: Automatic Transmission - 6F35 REMOVAL AND INSTALLATION

Transmission - 2.0L GTDI

Special Tool(s)

 ST3299-A	Adapter for 303-290A 303-290-05A
 ST3302-A	Adapter for 303-290B 303-290B-19
 ST1636-A	R Torque Converter 307-566
 ST2425-A	Support Bar, Engine 303-F072

Material

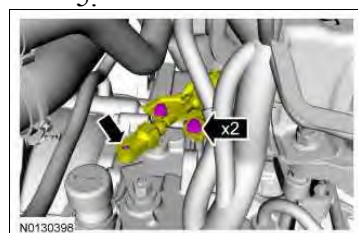
Item	Specification
Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC	MERCON® LV
Multi-Purpose Grease Motorcraft® XL-5 (aerosol) and/or CRC® SL3151	ESB-M1C93-B

Removal

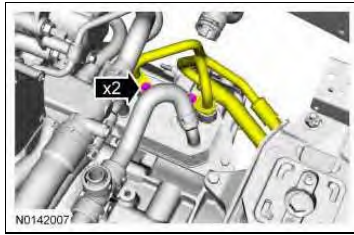
All vehicles

1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#) .
2. Remove the cowl panel grille. Refer to [Section 501-02](#) .
3. Remove the ACL assembly. Refer to [Section 303-12](#) .
4. Remove the battery and battery tray. Refer to [Section 414-01](#) .

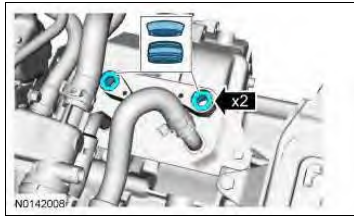
5.



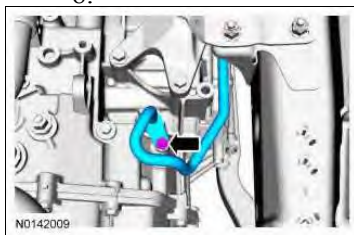
6.



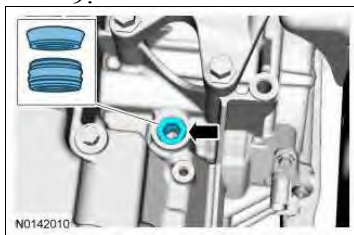
7.



8.

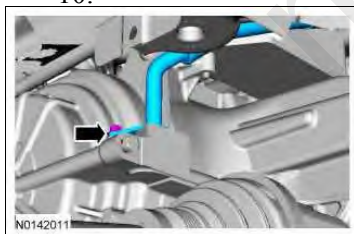


9.

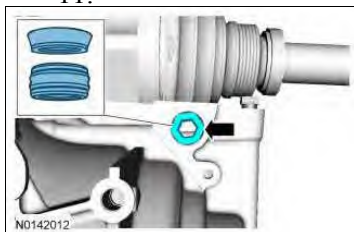


Vehicles without an auxiliary transmission fluid cooler

10.

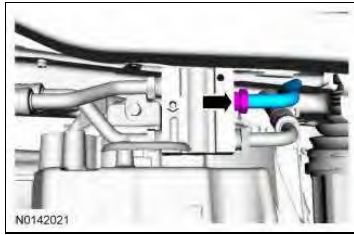


11.

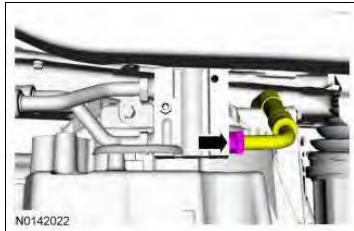


Vehicles with an auxiliary transmission fluid cooler

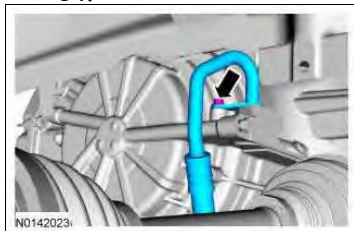
12.



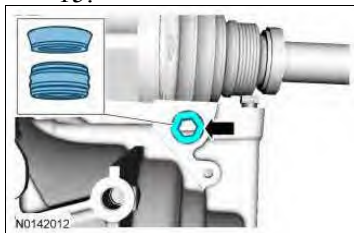
13.



14.

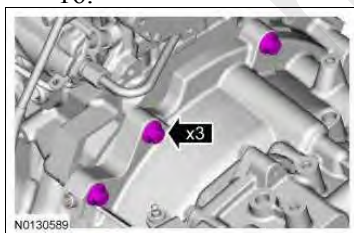


15.



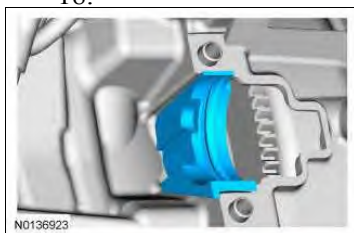
All vehicles

16.



17. Remove the starter. Refer to [Section 303-06](#) .

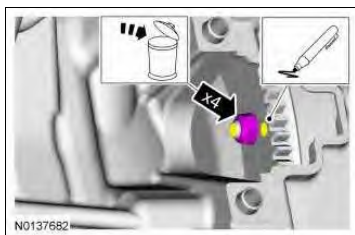
18.



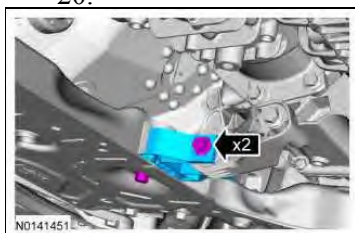
19. **NOTICE:** Only rotate the engine in a CW direction or engine damage will occur.

Marker. Discard the specified component. Follow local disposal regulations.

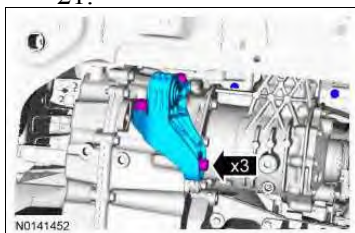
- Index mark one stud and the flexplate for assembly reference.



20.



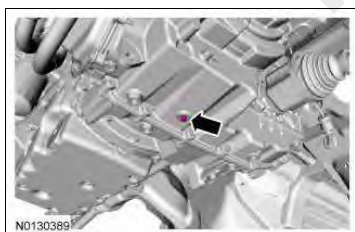
21.



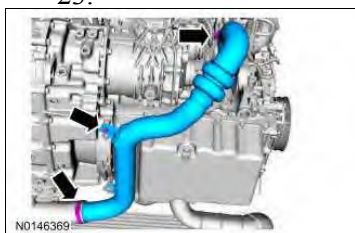
22. **NOTE:** If transmission disassembly or installation of a new transmission is necessary, drain the transmission fluid.

Drain the transmission.

- Tighten to 12 Nm (106 lb-in).



23.



AWD vehicles

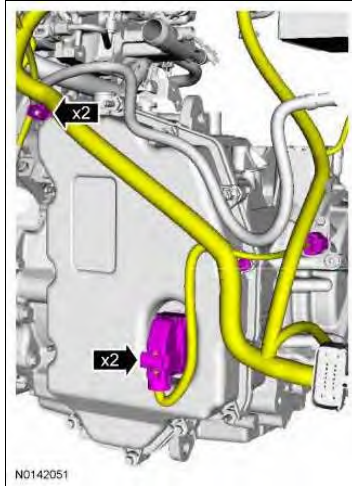
24. Remove the PTU . Refer to [Section 308-07B](#) .

FWD vehicles

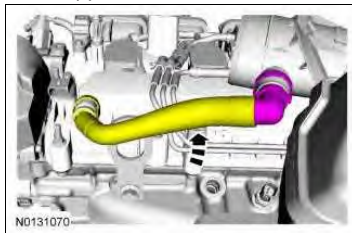
25. Remove the RH intermediate shaft and the LH halfshaft. Refer to [Section 205-04](#) .

All vehicles

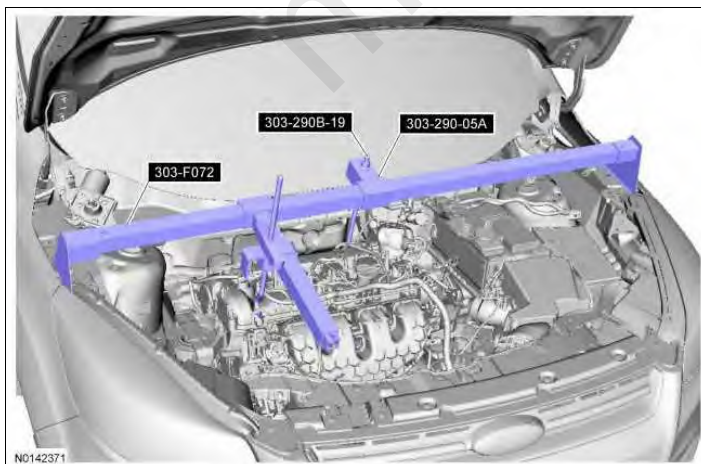
26.



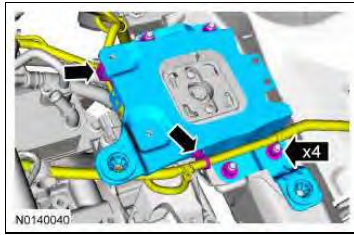
27.



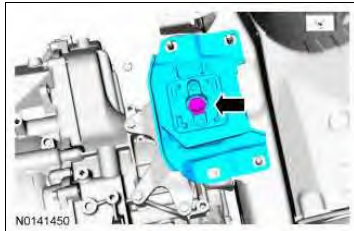
28. Special Tool(s): Support Bar, Engine 303-F072, Adapter for 303-290A 303-290-05A, Adapter for 303-290B 303-290B-19.



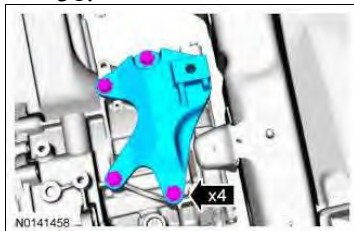
29.



30.

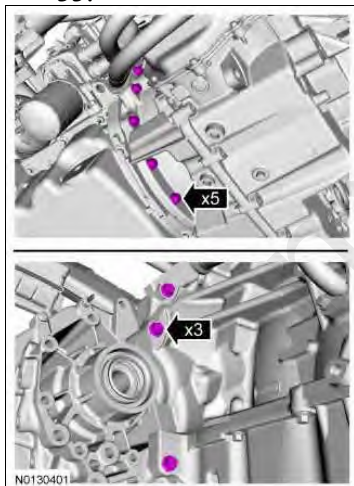


31.

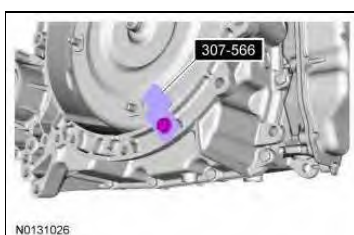


32. Support the transmission with a transmission jack. Secure the transmission to the transmission jack with a safety strap.

33.



34. Special tool(s): Retainer, Torque Converter 307-566.



35. Remove the transmission from the vehicle.

36. If the transmission is to be overhauled or if installing a new or re-manufactured transmission, carry out the transmission fluid cooler backflushing and cleaning. Refer to [Section 307-02](#) .

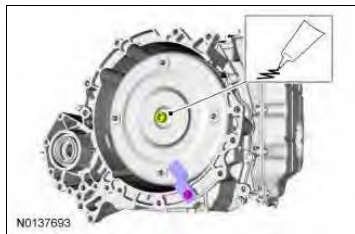
Installation

All vehicles

NOTICE: Prior to installing a new, re-manufactured or overhauled transmission, clean the transmission fluid cooler tubes. Failure to clean the transmission fluid cooler tubes can result in transmission failure.

NOTE: If the transmission was overhauled, or if installing a new transmission and the transmission fluid cooler has not been flushed, flush the transmission fluid cooler at this time. Refer to [Section 307-02](#) . Clean the transmission-mounted transmission fluid cooler tubes by hand.

1. Apply the substance from the specified tube.
Material: Multi-Purpose Grease XG-4 and/or XL-5.



2. **NOTICE:** If the transmission is not positioned on the dowel pins, damage to the transmission may occur.

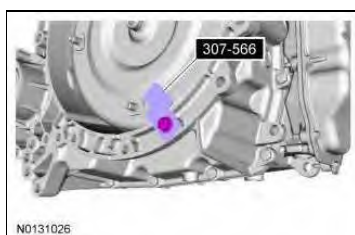
If the dowel pins were pulled out of the engine block during removal, install new dowel pins in the engine block.

Visual check.



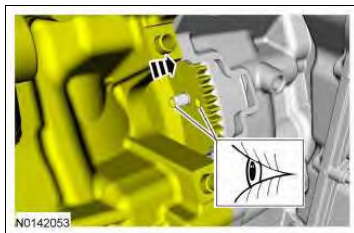
3. Support the transmission with a transmission jack. Secure the transmission to the transmission jack with a safety strap.
General Equipment: Transmission Jack.

4. Position the transmission behind the engine and remove the Torque Converter Retainer.
Special Tool(s): Retainer, Torque Converter 307-566.

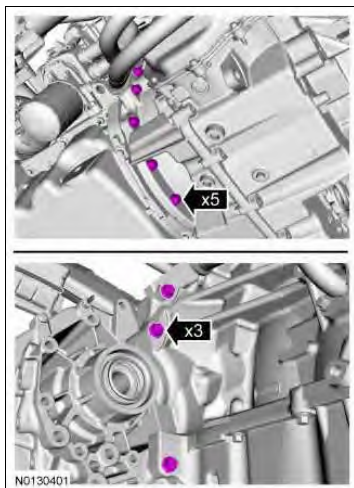


5. **NOTICE:** Rotate the engine in a clockwise direction only or engine damage will occur.

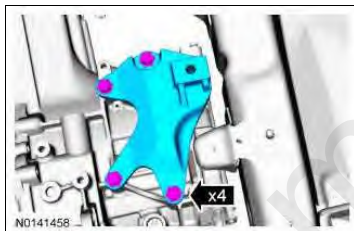
Visual check. Align the index-mark made during removal.



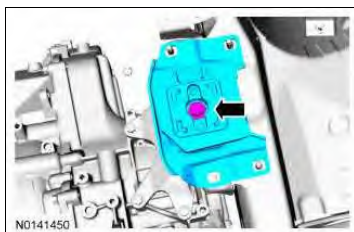
6. • Tighten to 48 Nm (35 lb-ft).



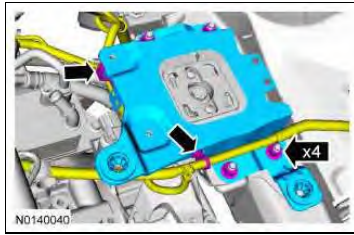
7. • Tighten to 63 Nm (46 lb-ft).



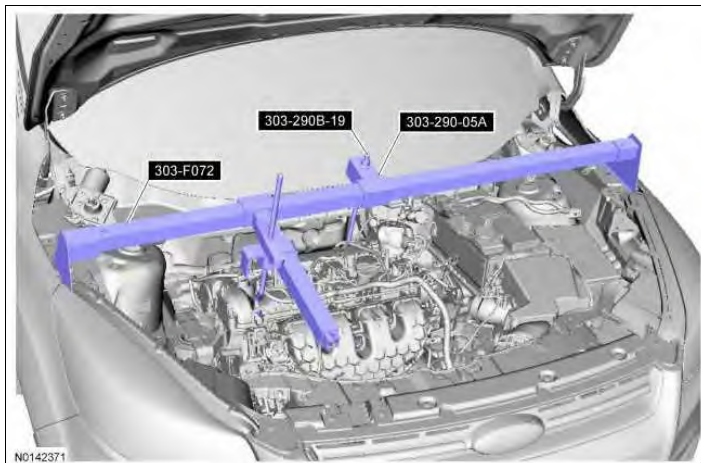
8. • Tighten to 148 Nm (109 lb-ft).



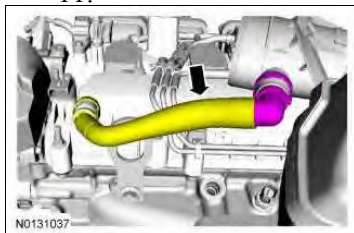
9. • Tighten to 48 Nm (35 lb-ft).



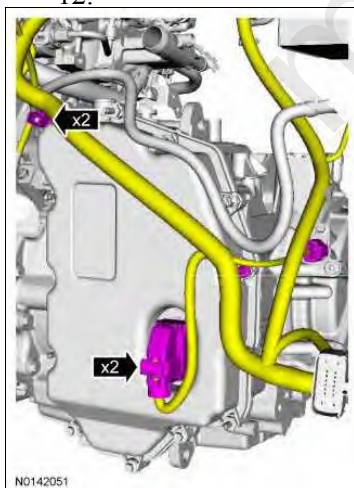
10. Special Tool(s): Support Bar, Engine 303-F072, Adapter for 303-290A 303-290-05A, Adapter for 303-290B 303-290B-19.



11.



12.



AWD vehicles

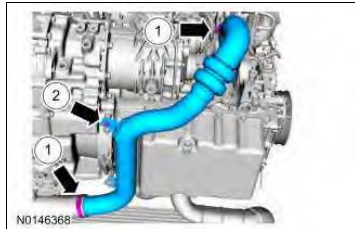
13. Install the PTU . Refer to [Section 308-07B](#) .

FWD vehicles

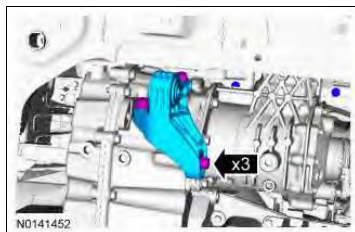
14. Install the RH intermediate shaft and the LH halfshaft. Refer to [Section 205-04](#) .

All vehicles

15.
 1. Tighten to 5 Nm (44 lb-in).
 2. Tighten to 11 Nm (97 lb-in).



16.
 - Tighten to 80 Nm (59 lb-ft).



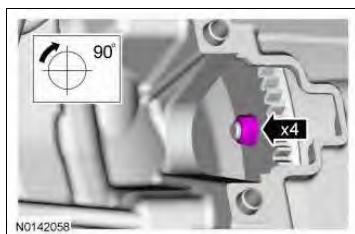
17.
 - Tighten to 125 Nm (92 lb-ft).



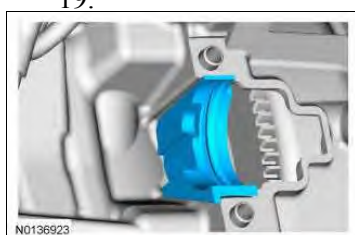
18. **NOTICE:** Rotate the engine in a CW direction only or engine damage will occur.

New torque converter nuts.

- Tighten to 40 Nm (30 lb-ft).

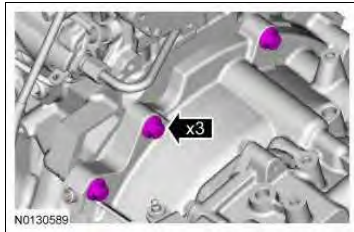


- 19.



20. Install the starter. Refer to [Section 303-06](#) .

21. • Tighten to 48 Nm (35 lb-ft).

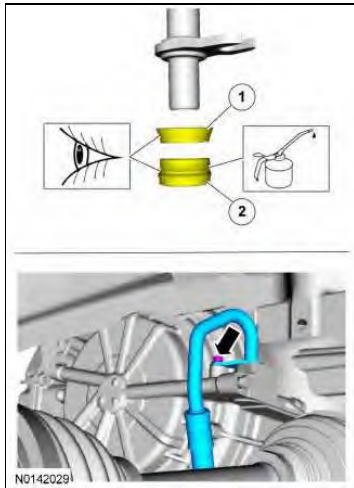


Vehicles with an auxiliary transmission fluid cooler

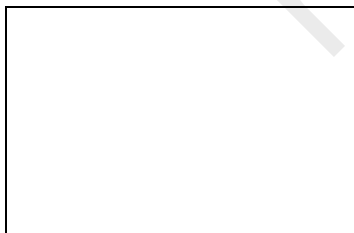
22. Visual check. Apply the specified lubricant to the specified component.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.

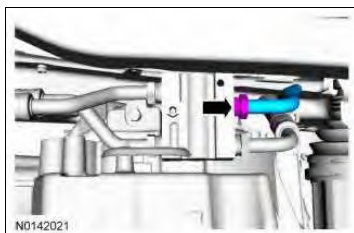
1. Backing ring (7J324)
 2. Seal (7D258)
- Tighten to 9 Nm (80 lb-in).



23. • Tighten to 30 Nm (22 lb-ft).



24. • Tighten to 30 Nm (22 lb-ft).

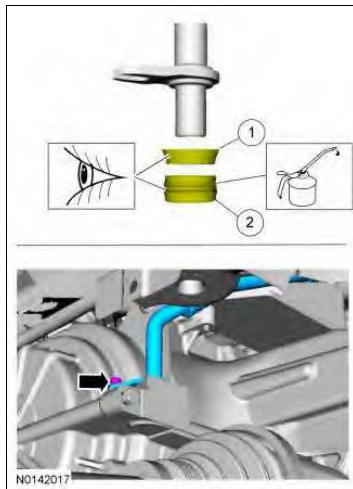


Vehicles without an auxiliary transmission fluid cooler

25. Visual check. Apply the specified lubricant to the specified component.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.

1. Backing ring (7J324)
2. Seal (7D258)
 - Tighten to 9 Nm (80 lb-in).

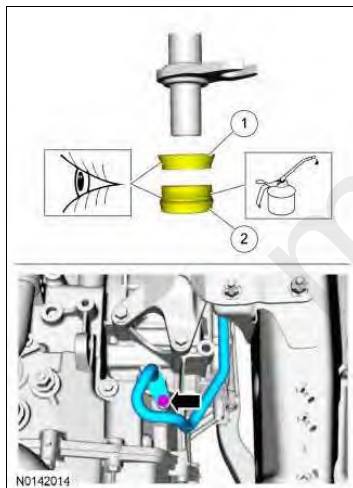


All vehicles

26. Visual check. Apply the specified lubricant to the specified component.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.

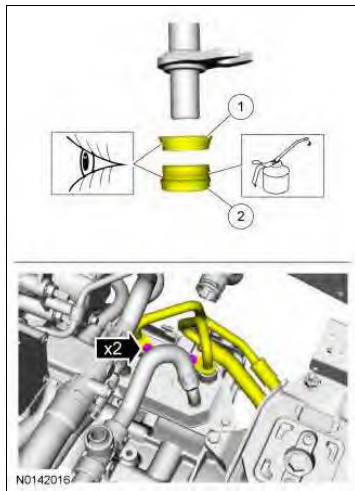
1. Backing ring (7J324)
2. Seal (7D258)
 - Tighten to 9 Nm (80 lb-in).



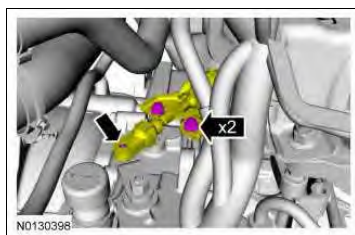
27. Visual check. Apply the specified lubricant to the specified component.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.

1. Backing ring (7J324)
2. Seal (7D258)
 - Tighten to 9 Nm (80 lb-in).



28. • Tighten to 25 Nm (18 lb-ft).

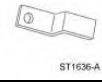


29. Install the battery and battery tray. Refer to [Section 414-01](#) .
30. Install the ACL assembly. Refer to [Section 303-12](#) .
31. Install the cowl grille panel. Refer to [Section 501-02](#) .
32. Adjust the selector lever cable. Refer to [Section 307-05](#) .
33. Fill the transmission with clean transmission fluid. Refer to [Transmission Fluid Drain and Refill](#) .
34. After completing the repairs perform the Misfire Monitor Neutral Profile Correction procedure.
35. If a new solenoid body is installed, the solenoid body strategy must be updated. Refer to [Solenoid Body Strategy Download](#) .
-

SECTION 307-01: Automatic Transmission - 6F35
REMOVAL AND INSTALLATION

Transmission - 2.5L

Special Tool(s)

 ST3299-A	Adapter for 303-290A 303-290-05A
 ST3302-A	Adapter for 303-290B 303-290B-19
 ST1636-A	Retainer, Torerter 307-566
 ST2425-A	Support Bar, Engine 303-F072

Material

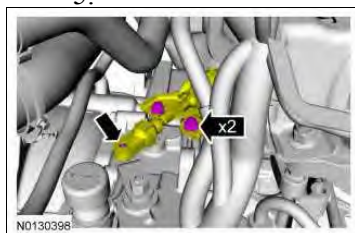
Item	Specification
Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC	MERCON® LV
Multi-Purpose Grease Motorcraft® XL-5 (aerosol) and/or CRC® SL3151	ESB-M1C93-B

Removal

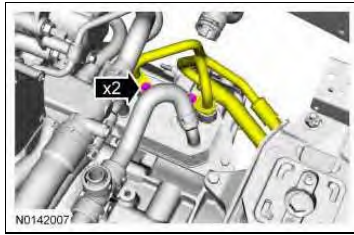
All vehicles

1. With the vehicle in NEUTRAL, position it on a hoist. Refer to [Section 100-02](#) .
2. Remove the cowl panel grille. Refer to [Section 501-02](#) .
3. Remove the ACL assembly. Refer to [Section 303-12](#) .
4. Remove the battery and battery tray. Refer to [Section 414-01](#) .

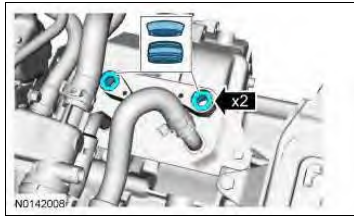
5.



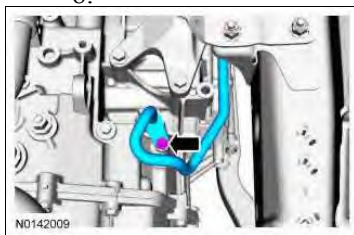
6.



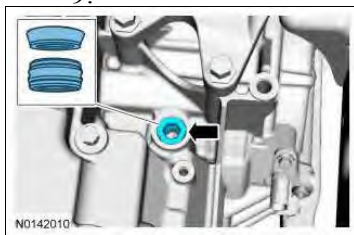
7.



8.

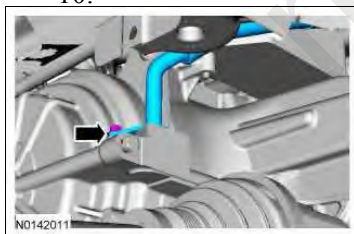


9.

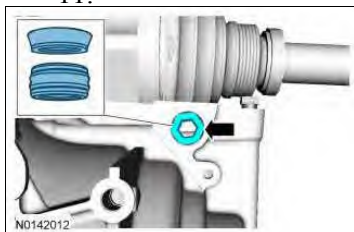


Vehicles without an auxiliary transmission fluid cooler

10.

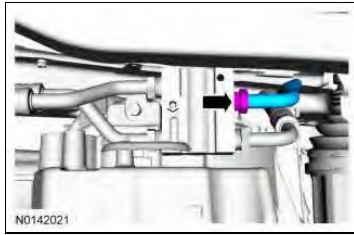


11.

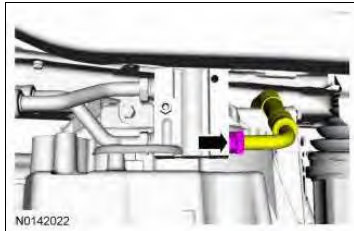


Vehicles with an auxiliary transmission fluid cooler

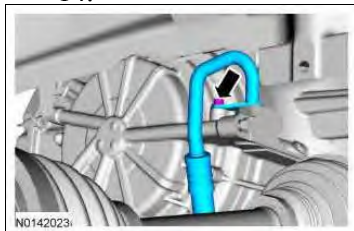
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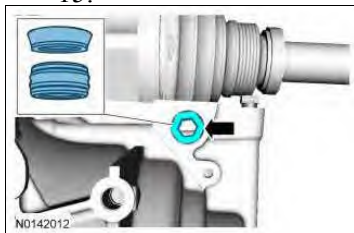
13.



14.

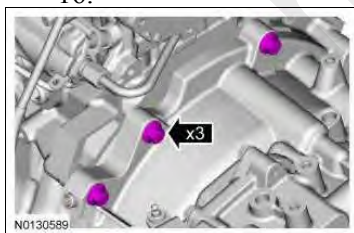


15.



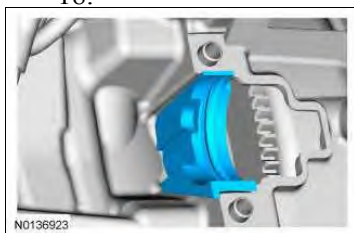
All vehicles

16.



17. Remove the starter. Refer to [Section 303-06](#) .

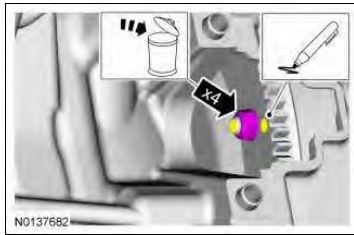
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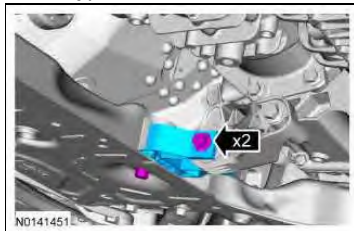
19. **NOTICE:** Only rotate the engine in a CW direction or engine damage will occur.

Marker. Discard the specified component. Follow local disposal regulations.

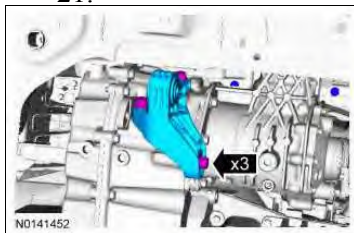
- Index mark one stud and the flexplate for assembly reference.



20.



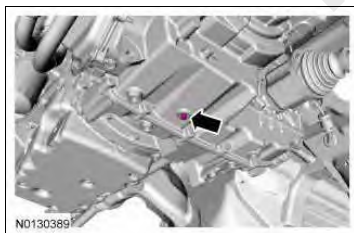
21.



22. **NOTE:** If transmission disassembly or installation of a new transmission is necessary, drain the transmission fluid.

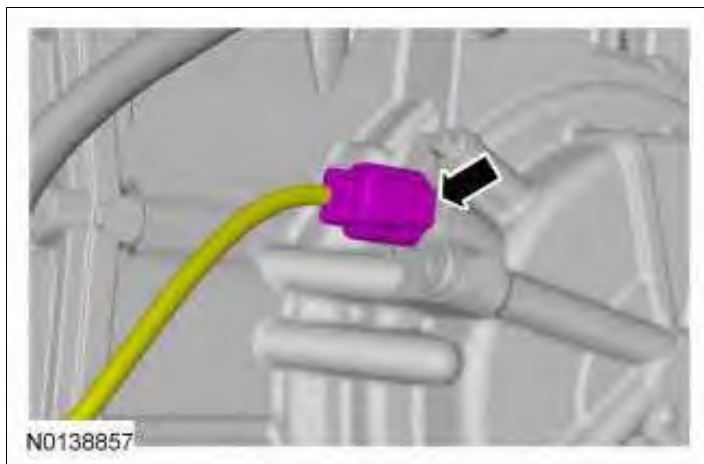
Drain the transmission.

- Tighten to 12 Nm (106 lb-in).

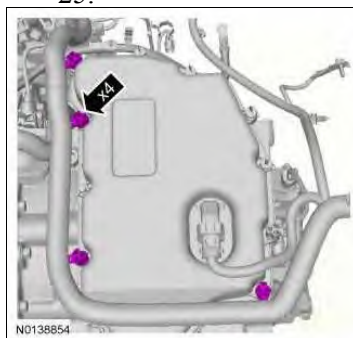


23. Remove the RH intermediate shaft and the LH halfshaft. Refer to [Section 205-04](#) .

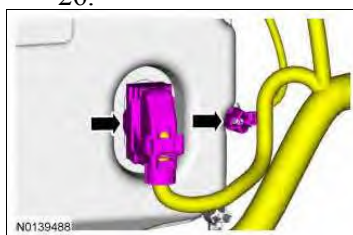
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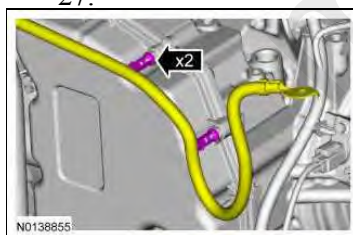
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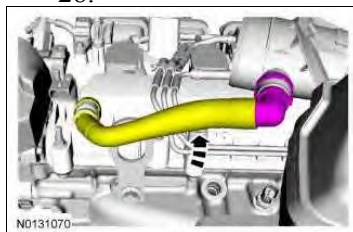
26.



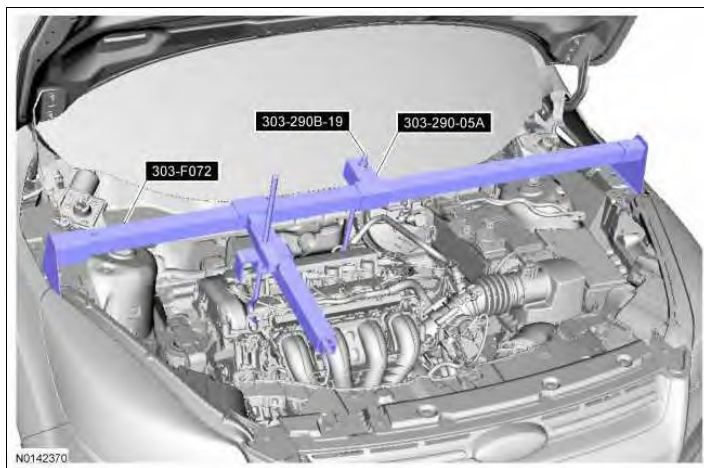
27.



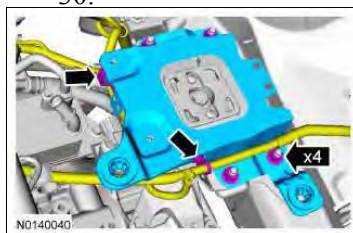
28.



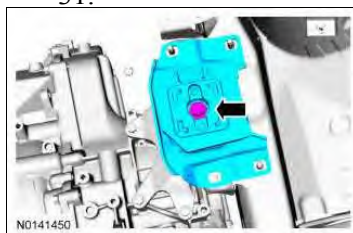
29. Special Tool(s): Support Bar, Engine 303-F072, Adapter for 303-290A 303-290-05A, Adapter for 303-290B 303-290B-19.



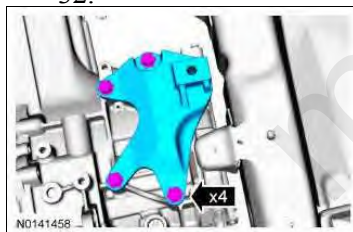
30.



31.

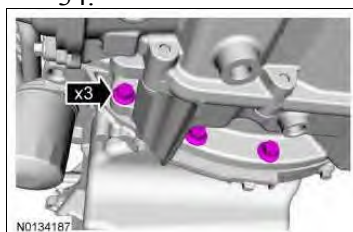


32.

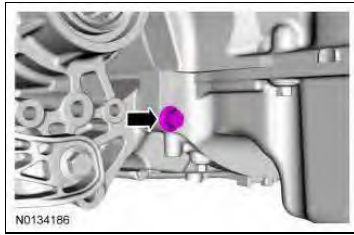


33. Support the transmission with a transmission jack. Secure the transmission to the transmission jack with a safety strap.

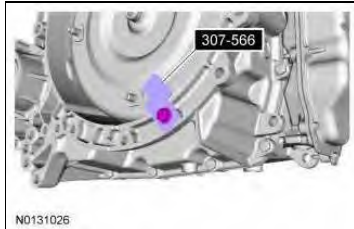
34.



35.



36. Special tool(s): Retainer, Torque Converter 307-566.



37. Remove the transmission from the vehicle.

38. If the transmission is to be overhauled or if installing a new or re-manufactured transmission, carry out the transmission fluid cooler backflushing and cleaning. Refer to [Section 307-02](#) .

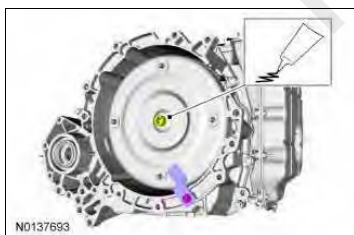
Installation

All vehicles

NOTICE: Prior to installing a new, re-manufactured or overhauled transmission, clean the transmission fluid cooler tubes. Failure to clean the transmission fluid cooler tubes can result in transmission failure.

NOTE: If the transmission was overhauled, or if installing a new transmission and the transmission fluid cooler has not been flushed, flush the transmission fluid cooler at this time. Refer to [Section 307-02](#) . Clean the transmission-mounted transmission fluid cooler tubes by hand.

1. Apply the substance from the specified tube.
Material: Multi-Purpose Grease XG-4 and/or XL-5.



2. **NOTICE:** If the transmission is not positioned on the dowel pins, damage to the transmission may occur.

If the dowel pins were pulled out of the engine block during removal, install new dowel pins in the engine block.

Visual check.



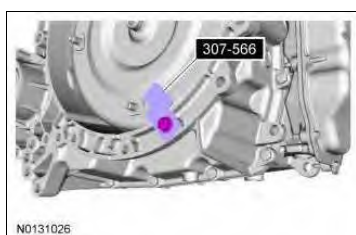
3. Support the transmission with a transmission jack. Secure the transmission to the transmission jack with a safety strap.

General Equipment: Transmission Jack.

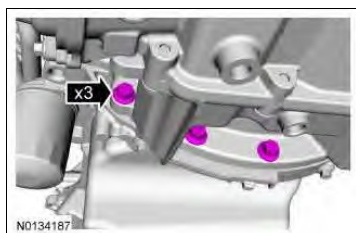
4. **NOTE:** Align the index-mark made during removal.

Position the transmission behind the engine and remove the Torque Converter Retainer.

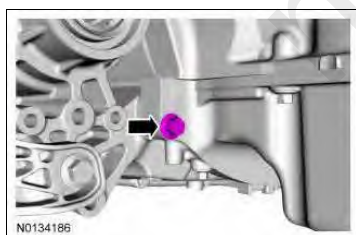
Special Tool(s): Retainer, Torque Converter 307-566.



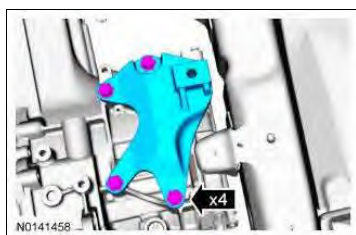
5. • Tighten to 48 Nm (35 lb-ft).



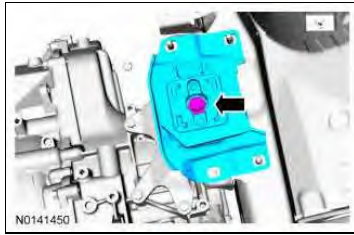
6. • Tighten to 48 Nm (35 lb-ft).



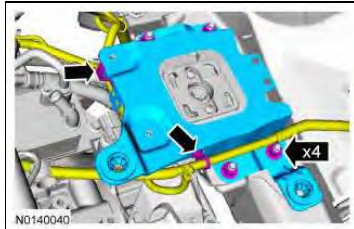
7. • Tighten to 63 Nm (46 lb-ft).



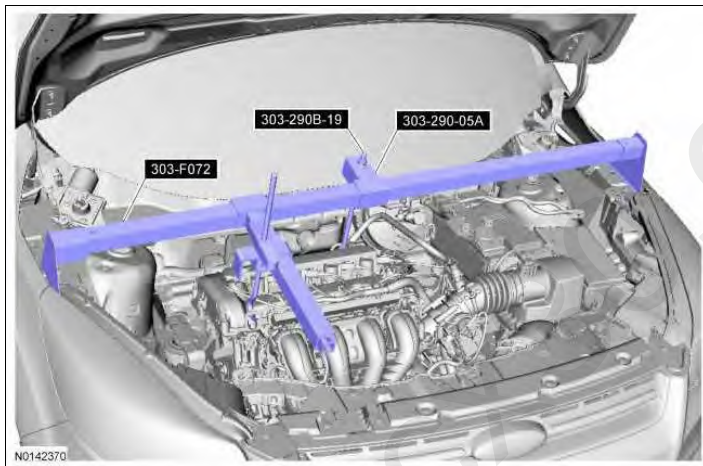
8. • Tighten to 148 Nm (109 lb-ft).



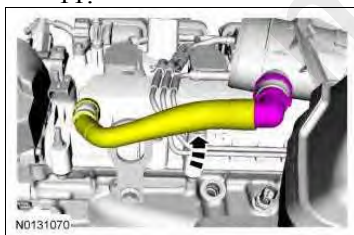
9. • Tighten to 48 Nm (35 lb-ft).



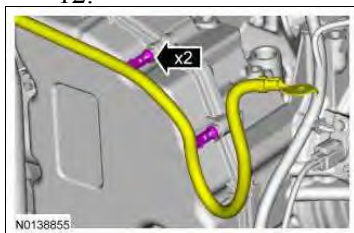
10. Special Tool(s): Support Bar, Engine 303-F072, Adapter for 303-290A 303-290-05A, Adapter for 303-290B 303-290B-19.



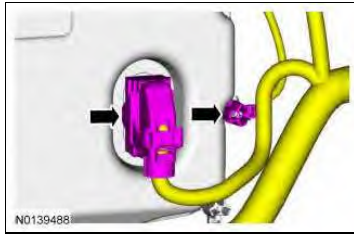
- 11.



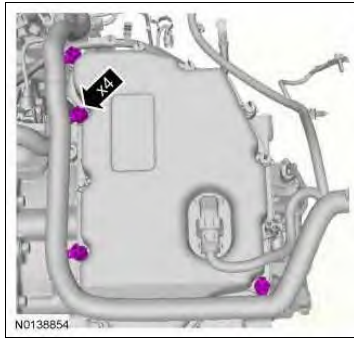
- 12.



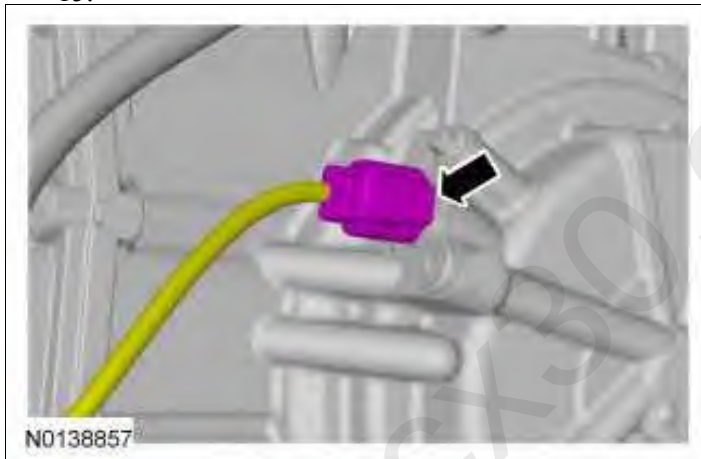
- 13.



14.



15.

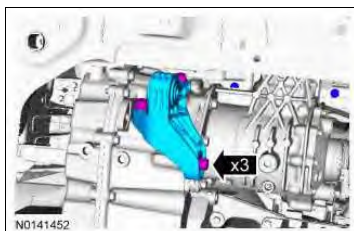


All vehicles

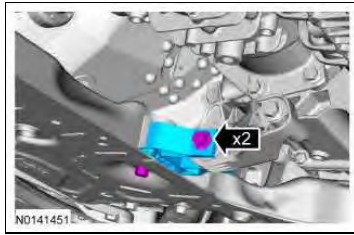
16. Install the RH intermediate shaft and the LH halfshaft. Refer to [Section 205-04](#) .

17. Install the catalytic converter. Refer to [Section 309-00](#) .

18. Tighten to 80 Nm (59 lb-ft).



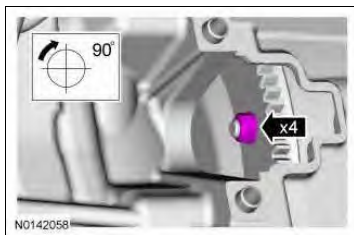
19. Tighten to 125 Nm (92 lb-ft).



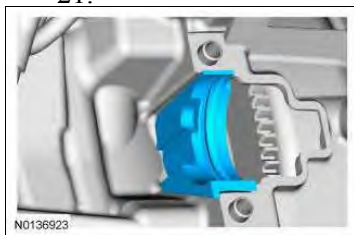
20. **NOTICE:** Rotate the engine in a CW direction only or engine damage will occur.

New torque converter nuts.

- Tighten to 40 Nm (30 lb-ft).

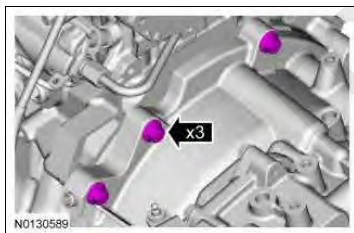


21.



22. Install the starter. Refer to [Section 303-06](#) .

23. • Tighten to 48 Nm (35 lb-ft).



Vehicles with an auxiliary transmission fluid cooler

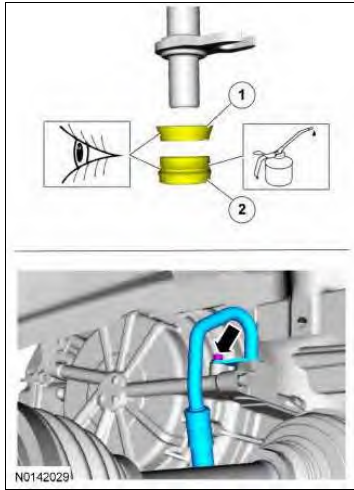
24. Visual check. Apply the specified lubricant to the specified component.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.

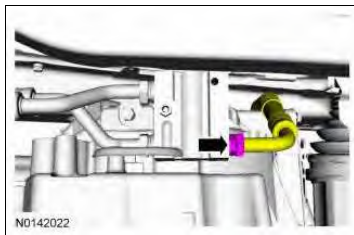
1. Backing ring (7J324)

2. Seal (7D258)

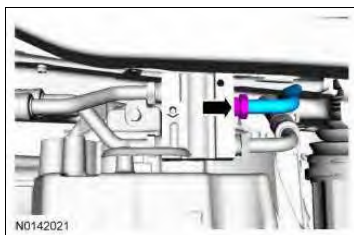
- Tighten to 9 Nm (80 lb-in).



25. • Tighten to 30 Nm (22 lb-ft).

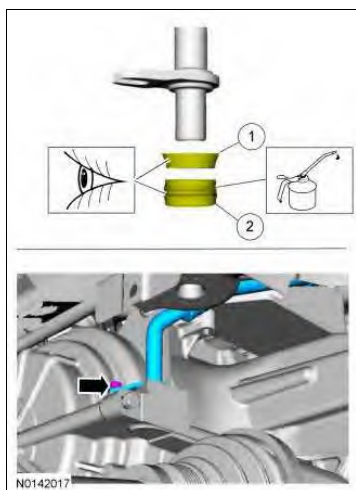


26. • Tighten to 30 Nm (22 lb-ft).



Vehicles without an auxiliary transmission fluid cooler

27. Visual check. Apply the specified lubricant to the specified component.
 Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.
1. Backing ring (7J324)
 2. Seal (7D258)
 - Tighten to 9 Nm (80 lb-in).

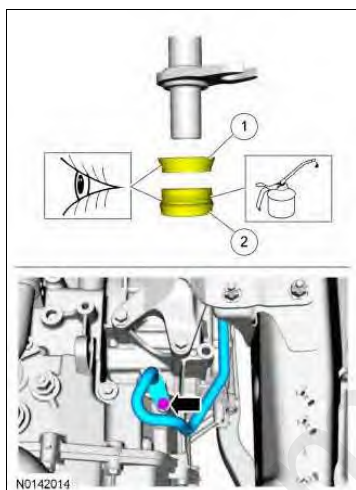


All vehicles

28. Visual check. Apply the specified lubricant to the specified component.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.

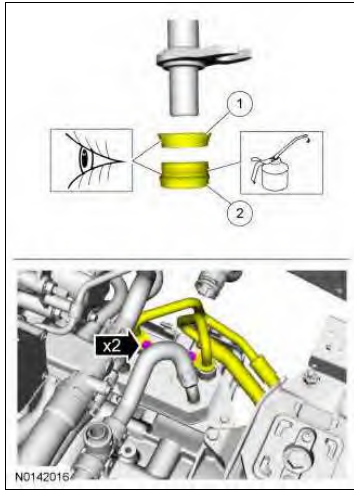
1. Bac ring (7J324)
2. Seal (7D258)
 - Tighten to 9 Nm (80 lb-in).



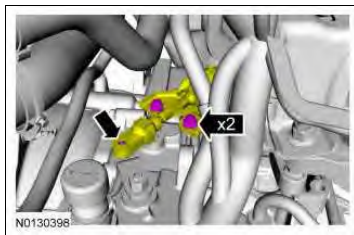
29. Visual check. Apply the specified lubricant to the specified component.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.

1. Backing ring (7J324)
2. Seal (7D258)
 - Tighten to 9 Nm (80 lb-in).



30. • Tighten to 25 Nm (18 lb-ft).

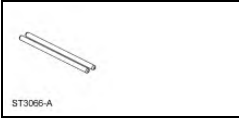


31. Install the battery and battery tray. Refer to [Section 414-01](#) .
32. Install the ACL assembly. Refer to [Section 303-12](#) .
33. Install the cowl grille panel. Refer to [Section 501-02](#) .
34. Adjust the selector lever cable. Refer to [Section 307-05](#) .
35. Fill the transmission with clean transmission fluid. Refer to [Transmission Fluid Drain and Refill](#) .
36. After completing the repairs perform the Misfire Monitor Neutral Profile Correction procedure.
37. If a new solenoid body is installed, the solenoid body strategy must be updated. Refer to [Solenoid Body Strategy Download](#) .
-

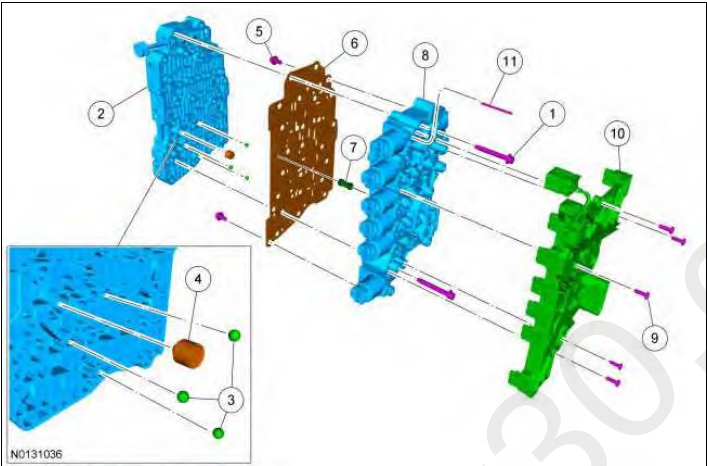
SECTION 307-01: Automatic Transmission - 6F35
DISASSEMBLY AND ASSEMBLY

Main Control - Overhaul

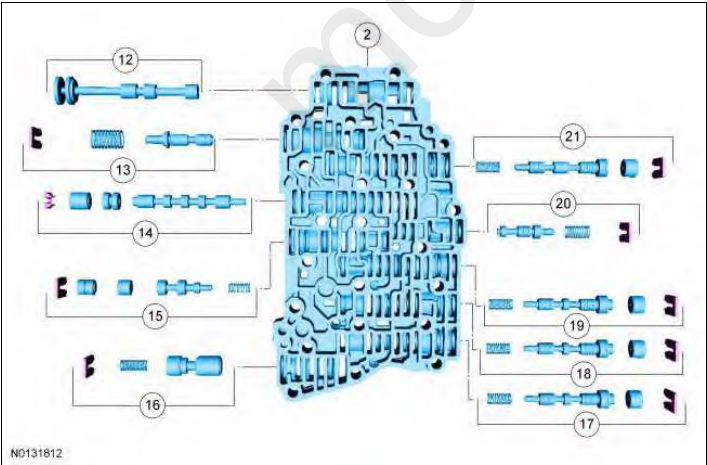
Special Tool(s)

 ST3006-A	Pins, Leadframe Guide 307-636
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Main Control



Main Control Valve Body



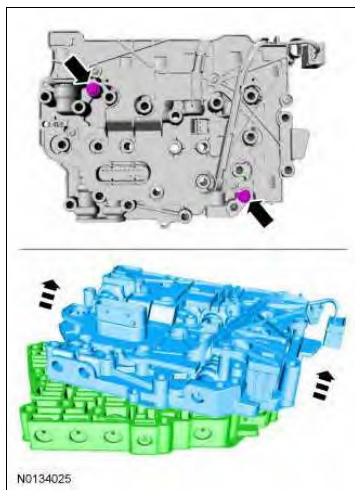
Solenoid Body

Item	Part Number	Description
1	W500303	Solenoid body-to-valve body bolt (2 required)

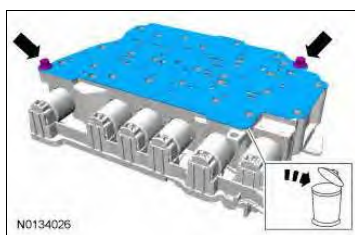
2	7A100	Main control valve body
3	7E195	Check balls (3 required)
4	7J191	Solenoid damper (SSA)
5	N605770	Solenoid body-to-valve body separator plate bolt (2 required)
6	7Z490	Solenoid body-to-valve body separator plate
7	7K221	Circuit filter
8	7G391	Solenoid body
9	W505513	Leadframe screw (5 required)
10	7G276	Leadframe
11	7H111	Solenoid retaining pin (14 required)
12	7C389	Manual valve
13	7G473	Solenoid pressure regulator valve assembly
14	7G179	Clutch bypass valve
15	7G307	TCC regulator valve
16	7B200	Control pressure regulator
17	7D102	Direct (3, 5, R) clutch regulator valve
18	7D102	Intermediate (2, 6) clutch regulator valve
19	7D102	Forward (1, 2, 3, 4) clutch regulator valve
20	7J187	Forward (1, 2, 3, 4) clutch latch valve
21	7D102	Low reverse/overdrive (4, 5, 6) clutch regulator valve
22	7J187	Direct (3, 5, R) clutch latch valve
23	7J187	Intermediate (2, 6) clutch latch valve
24	7J187	Low reverse/overdrive (4, 5, 6) clutch latch valve
25	7G383	LPC solenoid
26	7G136	SSC
27	7G136	TCC solenoid
28	7G484	SSE ON/OFF solenoid
29	7G136	SSA
30	7G383	SSB
31	7G383	SSD

Main Control Valve Body

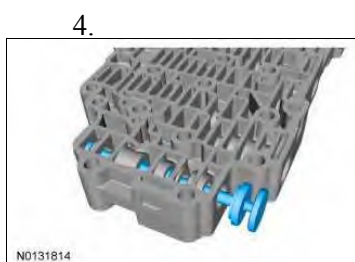
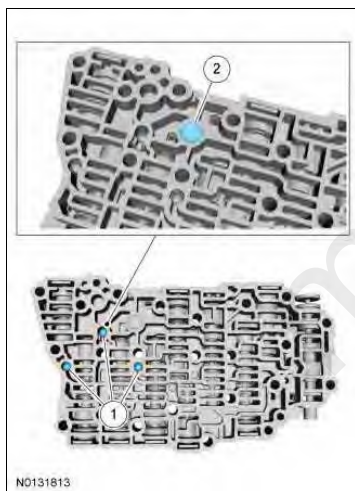
1.



2. Discard the specified component. Follow local disposal regulations.



3.
 1. Check balls
 2. Solenoid damper

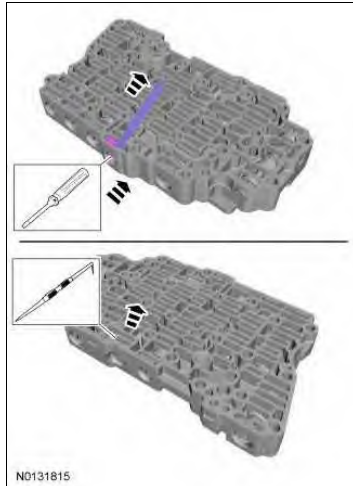


4. **NOTICE:** Remove the valves by tapping the valve body on the palm of the hand to slide the valves out of the bores or by threading a 4-mm bolt into the valves and pulling them out. It may be necessary to remove the valves and springs using a pick. If it is necessary to use a pick, use extreme caution to prevent damaging the valves or valve bores. If necessary, disassemble parts

of the main control valve body in small groups. Take special care when handling the main control components, since they are the most precise and delicate parts of the transmission. Neatly arrange the parts as they are removed to avoid mixing similar pieces.

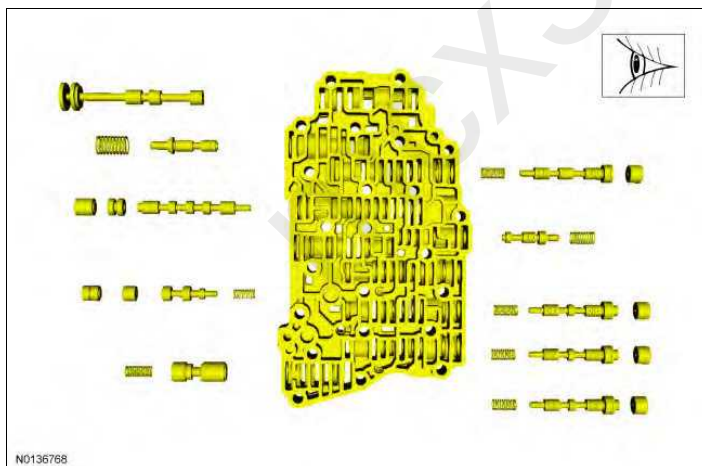
NOTE: The bypass valve is held in with a spring-loaded retainer. Be careful not to lose the retainer when removing it.

Use a pick to remove the bypass valve retainer. Screwdriver. Scriber.
General Equipment: Magnet, 4-mm bolt.



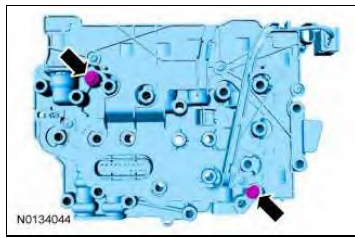
6. **NOTICE:** Do not stone or polish any valves or damage to the valves can occur. If the valves do not move freely, install a new assembly.

Clean the valves, springs and main control valve body. Visual check.



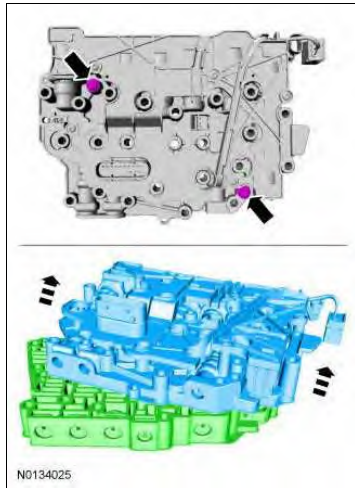
7. **NOTICE:** Do not stone or polish any valves or damage to the valves can occur. If the valves do not move freely during assembly, install a new valve body.

For valve and spring locations refer to the Valve Body illustration at the beginning of this procedure.

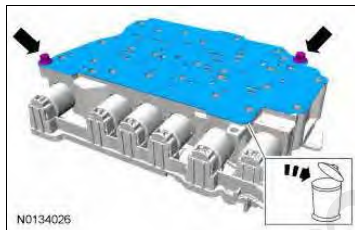


Solenoid Body

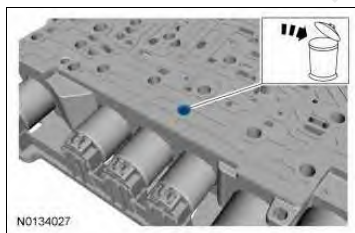
13. If not previously done, separate the solenoid body from the valve body.



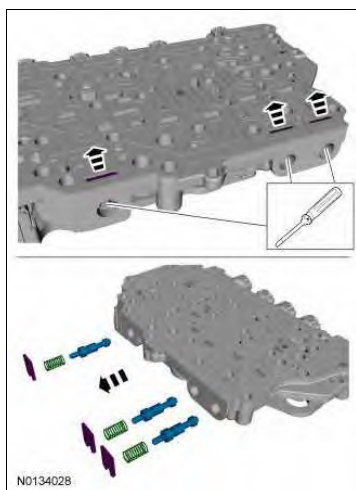
14. Discard the specified component. Follow local disposal regulations.



15. Discard the specified component. Follow local disposal regulations.

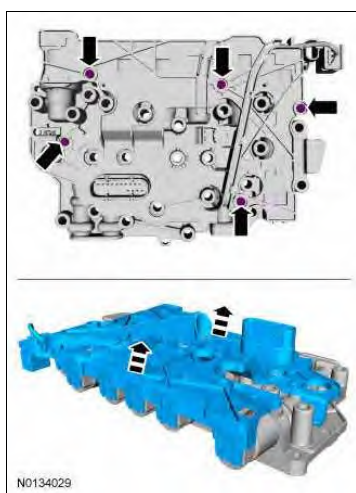


16. Compress the valve springs and remove the retainers with a magnet. Remove the individual valves and springs from the solenoid body by tapping it on the palm of the hand to slide the valves out of the bores. Screwdriver.
General Equipment: Magnet.



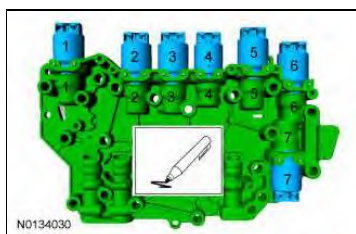
17. **NOTICE:** Be careful not to bend or twist the solenoid body leadframe or the solenoid terminals when removing the leadframe or damage can occur to the leadframe or the solenoids.

Lift straight up evenly.

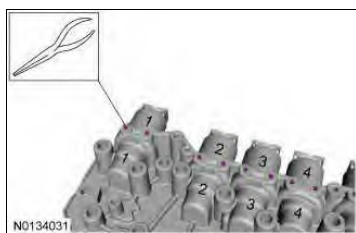


18. **NOTICE:** The solenoids are calibrated from the factory and are not all the same. Failure to mark the solenoids to the ports they were originally in can result in mixing the solenoids and can cause damage to the transmission or a harsh shift.

Number the solenoids and the solenoid body to correspond with the ports from which the solenoids are located in the solenoid body. Marker.



19. Long-nosed pliers.



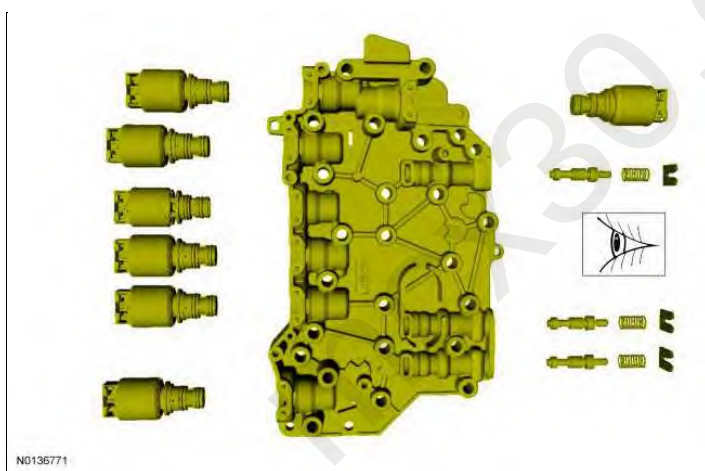
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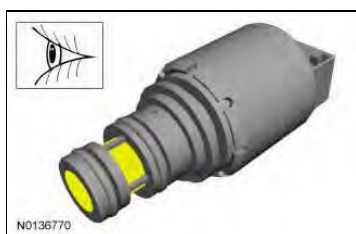
21. **NOTICE:** Be careful not to wash the numbers from the solenoids or the solenoid body. Failure to install the solenoids in the ports they were originally in can result in damage to the transmission or a harsh shift.

NOTICE: Do not stone or polish any valves or damage to the valves can occur. If the valves do not move freely during assembly, install a new solenoid body.

Clean and inspect the solenoid body, solenoids and valve assemblies for damage. Visual check.



22. Inspect the solenoid screens for debris that may restrict fluid flow through the screen. Visual check.

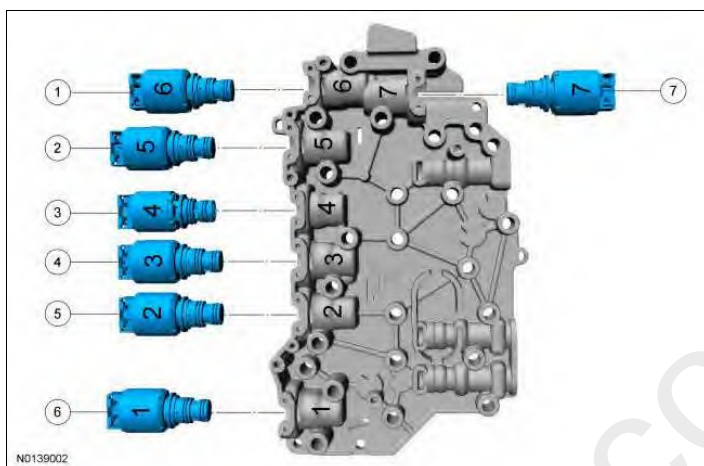


23. **NOTICE:** The solenoids are calibrated from the factory and are not all the same. Failure to install the solenoids in the ports they were originally in can result in damage to the transmission or a harsh shift.

If new solenoid(s) are not being installed, position the solenoids in the solenoid body ports from which their numbers correspond.



24. If installing a new VFS , determine the base part number of the solenoid(s). The TCC solenoid, SSA and SSC are all normally low pressure solenoids. The LPC solenoid, SSB and SSD are all normally high pressure solenoids. SSE is not a VFS ; it is an ON/OFF solenoid.



Item	Part Number	Description
1	7G136	SSB (normally high)
2	7G383	SSA (normally low)
3	7G136	SSE (normally closed [OFF])
4	7G383	TCC (normally low)
5	7G484	SSC solenoid (normally low)
	7G136	LPC solenoid (normally high)
7	7G383	SSD solenoid (normally high)

25. If installing a new LPC solenoid, SSB , SSD or new normally low pressure solenoids TCC , SSA , SSC , note the color of the plastic nozzle and large o-ring of the solenoid. The color will be black with an orange o-ring or brown with a green o-ring and the solenoid can only be replaced with the same color solenoid. A solenoids with a black plastic nozzle and an orange large o-ring is a normally high pressure solenoid and a solenoids with a brown plastic nozzle and a green large o-ring is a normally low pressure solenoid. Visual check.



26. Determine the part number suffix by checking the solenoid service band number etched on the side of the solenoid. The band number is the third digit on the side of the solenoid and will be a 1, 2, 3, 4 or 5. Use the following table to determine the part number suffix and match the new solenoid base part number and suffix with the old solenoid. Visual check.

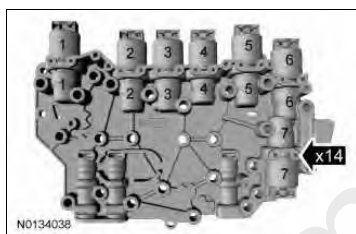
Solenoid Band Number	Part Number Suffix
1	B
2	C
3	D
4	E
5	F



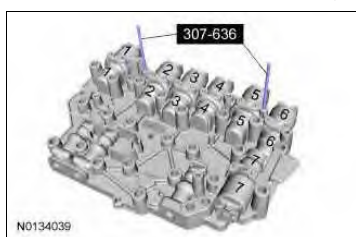
27.



28. Solenoid retaining pins.

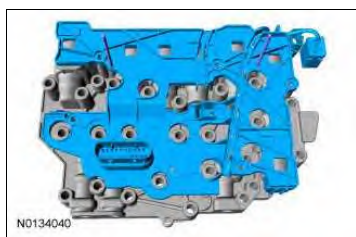


29. Special Tool(s): Pins, Leadframe Guide 307-636.

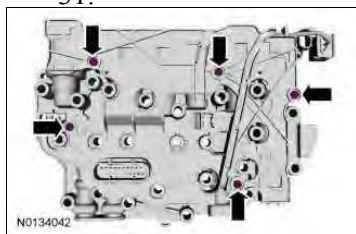


30. **NOTICE:** Be careful not to bend or twist the solenoid body leadframe or the solenoid terminals when installing the leadframe or damage can occur to the leadframe or the solenoids.

Push straight down evenly.

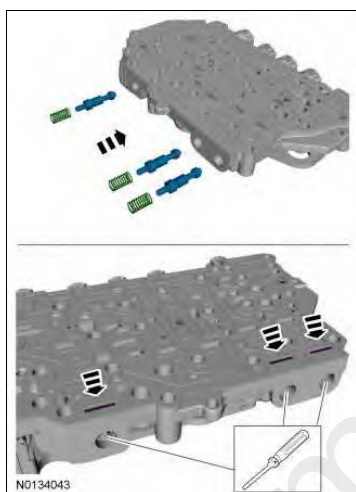


31.

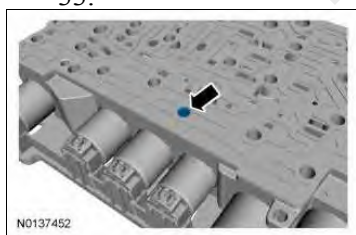


32. **NOTICE:** If the valves do not move freely during assembly, install a new solenoid body. Failure to install a new solenoid body can result in a harsh shift or damage to the transmission.

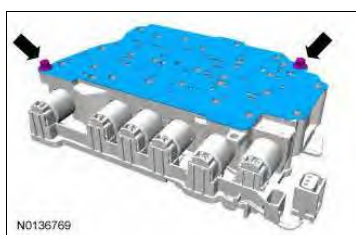
For valve and spring location, refer to the Solenoid Body illustration at the beginning of this procedure. Screwdriver.



33.

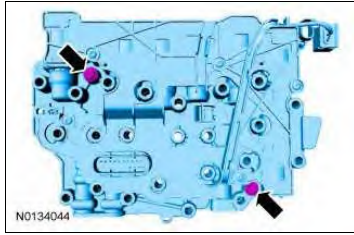


34. • Tighten to 10 Nm (89 lb-in).



35. If not previously done, refer to Main Control Valve Body in this procedure for disassembly and assembly of the valve body.

36. • Tighten to 10 Nm (89 lb-in).

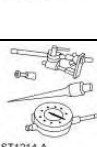
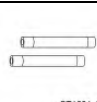
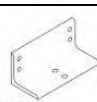
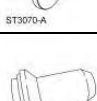


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SECTION 307-01: Automatic Transmission - 6F35
DISASSEMBLY AND ASSEMBLY

Transmission - Overhaul

Special Tool(s)

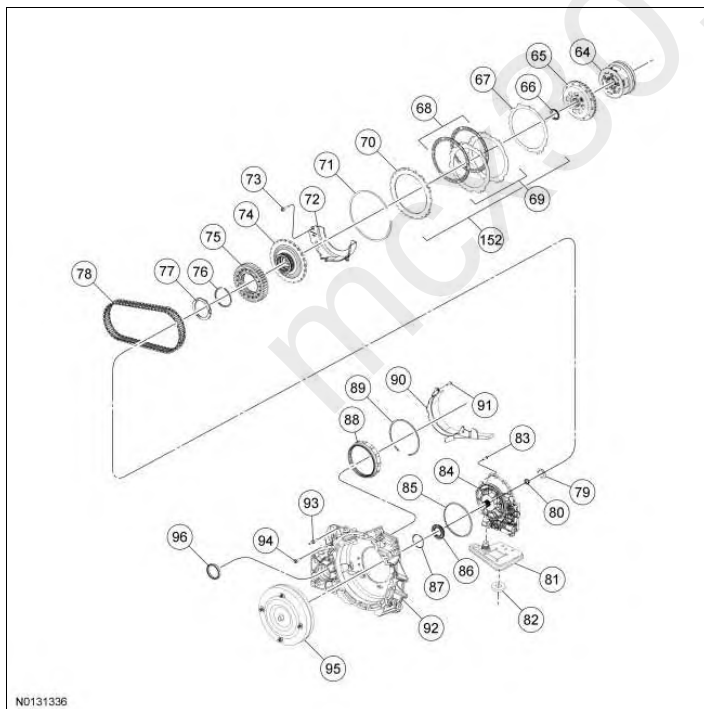
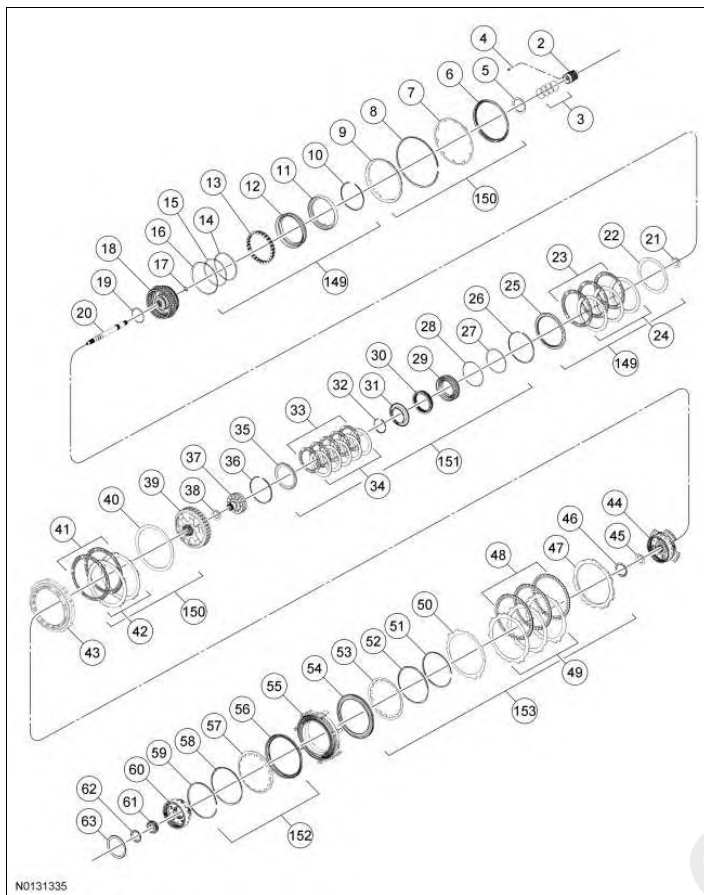
 ST3068-A	Compressor, Center Support Piston Spring 307-630
 ST2987-A	Compressor, Forward Clutch Spring 307-574 (includes 307-574/1 and 307-574/2)
 ST3029-A	Compressor, Forward/Intermediate Spring 307-584 (includes 307-584/1 and 307-584/2)
 ST2994-A	Compressor, Overdrive Clutch, Balance Piston and Direct Clutch 307-589 (includes 307-589/1 and 307-589/2)
 ST1214-A	Dial Indicator Gauge With Holding Fixture 100-002 (TOOL-4201-C)
 ST1255-A	Handle 205-153 (T80T-4000-W)
 ST1531-A	Handle, Torque Converter 307-091 (T81P-7902-C)
 ST3069-A	Holding Fixture 307-625
 ST1186-A	Holding Fixture, Transmission 307-003 (T57L-500-B)
 ST2996-A	Input Shaft Support Seal Installer (Back Plate, Multiple Rings) 307-578 (includes 307-578/1, 307-578/2 and 307-578/3)
 ST3071-A	Installer, Converter Seal 307-627
 ST3070-A	Installer, Differential Seal 307-626
 ST2525-A	Installer, RH Halfshaft Fluid Seal 307-428

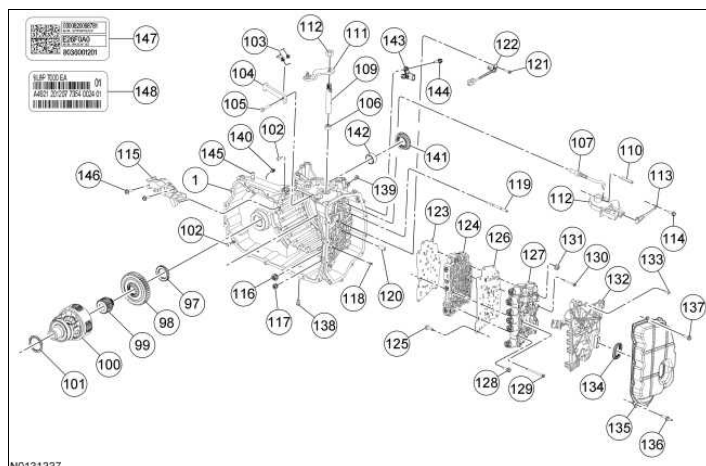
 ST2999-A	Manual Lever Seal Installer 307-581
 ST1634-A	Remover, Roll Pin 211-061 (T78P-3504-N1)
 ST1636-A	Retainer, Torque Converter 307-566
 ST1185-A	Slide Hammer 100-001 (T50T-100-A)
 ST3064-A	Seal Installer, Turbine Shaft 307-634
 ST3062-A	Seal Protector, 2-6 Piston 307-632
 ST3067-A	Seal Protector, Low Reverse Piston 307-628 (includes 307-628/1 and 307-628/2)
 ST3062-A	Seal Protector, Low Reverse / 1-2-3-4 Piston 307-629
 ST3065-A	Seal Protector, Turbine Shaft 307-635
 ST1954-A	Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055)
 ST3063-A	Spring Compressor, 2-6 Piston Return 307-633 (Includes 307-633/1 and 307-633/2)

Material

Item	Specification
Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC	MERCON® LV
Ultra Silicone Sealant TA-29	-

Disassembled Views





Item	Part Number	Description
1	7005	Transmission case
2	7A130	Clutch support tower
3	7D019	Clutch support tower seals (4 required)
4	W302855	Clutch support tower bolt (3 required)
5	7F242	No. 1 thrust bearing
6	7E005	Intermediate (2, 6) clutch piston
7	7B070	Intermediate (2, 6) clutch piston return spring
8	7D483	Intermediate (2, 6) clutch return spring snap ring
9	7E005	Intermediate (2, 6) clutch apply ring
10	7C122	Direct (3, 5, R) clutch cylinder snap ring
11	7F283	Direct (3, 5, R) clutch cylinder
12	7A262	Direct (3, 5, R) clutch piston
13	7F235	Direct (3, 5, R) clutch piston return spring
14	7C099	Direct (3, 5, R) clutch piston inner (rear) seal
15	7C099	Direct (3, 5, R) clutch piston inner (front) seal
16	7A548	Direct (3, 5, R) clutch piston outer seal
17	7C122	Input shaft snap ring
18	7G384	Direct (3, 5, R)/overdrive (4, 5, 6) clutch cylinder and hub assembly
19	7A548	Overdrive (4, 5, 6) clutch piston inner seal
20	7F213	Input shaft
21	7D234	No. 2 thrust bearing
22	7B070	Direct (3, 5, R) clutch wave spring
23	7B164	Direct (3, 5, R) clutch friction plates (3 required)
24	7B442	

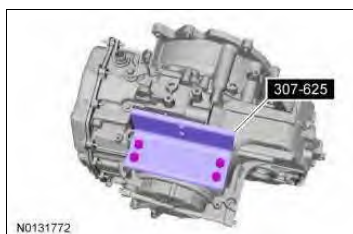
		Direct (3, 5, R) clutch steel plates (3 required)
25	7B066	Direct (3, 5, R) clutch pressure plate
26	7D483	Direct (3, 5, R) clutch snap ring
27	7A548	Overdrive (4, 5, 6) clutch piston outer (rear) seal
28	7A548	Overdrive (4, 5, 6) clutch piston outer (front) seal
29	7A262	Overdrive (4, 5, 6) clutch piston
30	7F222	Overdrive (4, 5, 6) clutch piston return spring
31	7H360	Overdrive (4, 5, 6) clutch balance piston
32	7C122	Overdrive (4, 5, 6) clutch piston snap ring
33	7B164	Overdrive (4, 5, 6) clutch friction plates (5 required)
34	7B442	Overdrive (4, 5, 6) clutch steel plates (5 required)
35	7B066	Overdrive (4, 5, 6) clutch pressure plate
36	7D483	Overdrive (4, 5, 6) clutch snap ring
37	7H351	Overdrive (4, 5, 6) clutch hub
38	7D234	No. 3 thrust bearing
39	7A019	Rear planetary sun gear and shell assembly
40	7E085	Intermediate (2, 6) clutch wave spring
41	7B164	Intermediate (2, 6) clutch friction plates (2 required)
42	7B442	Intermediate (2, 6) clutch steel plates (2 required)
43	7A089	OWC
44	7D491	Rear planet carrier/center ring gear
45	7C096	No. 6 thrust bearing
46	7G177	No. 5 thrust bearing
47	7B066	Low/reverse clutch pressure plate
48	7B164	Low/reverse clutch friction plates (3 required)
49	7B442	Low/reverse clutch steel plates (3 required)
50	7E085	Low/reverse clutch wave spring
51	7C122	Low/reverse clutch piston snap ring
52	7H318	Low/reverse clutch piston snap ring retainer
53	7B070	Low/reverse clutch piston return spring
54	7D402	Low/reverse clutch piston
55	7L328	Center support

56	7A262	Forward (1, 2, 3, 4) clutch piston
57	7B070	Forward (1, 2, 3, 4) clutch piston return spring
58	7D041	Forward (1, 2, 3, 4) clutch piston snap ring retainer
59	7H365	Forward (1, 2, 3, 4) clutch piston snap ring
60	7D491	Center planetary carrier/front ring gear
61	7D063	Center planetary sun gear
62	7C096	No. 7 thrust bearing
63	7C096	No. 8 thrust bearing
64	7D491	Front planetary carrier/rear ring gear
65	7A019	Front planetary sun gear and shell assembly
66	7D234	No. 10 thrust bearing
67	7B070	Forward (1, 2, 3, 4) clutch wave spring
68	7B164	Forward (1, 2, 3, 4) clutch friction plates (2 required)
69	7B442	Forward (1, 2, 3, 4) clutch steel plates (2 required)
70	7B066	Forward (1, 2, 3, 4) clutch pressure plate
71	7D483	Forward (1, 2, 3, 4) clutch snap ring
72	7978	Transmission fluid baffle
73	W500214	Transmission fluid baffle bolt (2 required)
74	7060	Park gear
75	7G132	Drive chain drive sprocket
76	7C122	Drive sprocket snap ring
77	7G099	No. 13 thrust washer
78	7G249	Drive chain
79	7D234	No. 11 thrust washer
80	7048	Input shaft seal
81	7A098	Transmission fluid filter
82	7L027	Magnet
83	W302860	Pump-to-torque converter housing bolt (8 required)
84	7A103	Pump assembly
85	7A248	Pump assembly-to-torque converter housing O-ring seal
86	7A248	Torque converter hub seal
87	7P113	Torque converter hub seal retainer
88	7F343	Differential ring gear
89	7C122	Differential ring gear snap ring
90	7H245	Differential transmission fluid baffle
91	W500214	

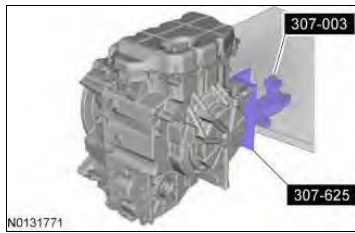
		Differential transmission fluid baffle bolt (2 required)
92	7975	Torque converter housing
93	W701606	Torque converter housing stud bolt
94	7A443	Torque converter housing bolt (16 required)
95	7902	Torque converter
96	1177	RH halfshaft seal
97	7G355	No. 12 thrust bearing
98	7G132	Drive chain driven sprocket
99	7F342	Differential sun gear
100	7F465	Differential assembly
101	7G112	No. 15 thrust bearing
102	7B362	Torque converter housing-to-transmission case guide pins
103	7D070	Park pawl spring
104	7A441	Park pawl
105	7D071	Park pawl pin
106	7F337	Manual control shaft seal
107	7A232	Park pawl actuator rod
108	7H557	TR sensor
109	7C493	Manual control shaft
110	7G100	Manual control shaft pin
111	7A256	Manual control lever
112	W708455	Manual control lever nut
113	7E332	Manual valve detent spring
114	W711235	TR sensor detent spring bolt
115	7J387	Fluid reservoir
116	7A248	Clutch feed seal (large)
117	7A248	Clutch feed seal (small) (4 required)
118	7B431	Main control alignment pin
119	7C207	Main control stud
120	7G199	Main control-to-transmission case seal (2 required)
121	W713644	OSS sensor bolt
122	7H103	OSS sensor
123	7Z490	Main control-to-transmission case separator plate
124	7A100	Main control valve body
125	N605770	Separator plate-to-solenoid body bolt (2 required)
126	7Z490	Main control valve body-to-solenoid body separator plate
127	7G391	Solenoid body
128	W500303	

		Solenoid body-to-valve body bolt (2 required)
129	W302863	Main control-to-transmission case bolt (long) (10 required)
130	W302862	Main control-to-transmission case bolt (short) (12 required)
131	W520412	Main control nut
132	7G276	Main control leadframe
133	W505513	Main control leadframe screw (5 required)
134	7B329	Main control-to-cover seal
135	7G004	Main control cover
136	W714629	Main control cover stud bolt (5 required)
137	W500214	Main control cover bolt (8 required)
138	7010	Drain plug
139	7H398	Line pressure tap
140	-	Oil leveling plug
141	1177	LH halfshaft seal
142	7025	LH halfshaft bushing
143	7M101	TSS sensor
144	W500214	TSS bolt
145	7A246	Vent tube
146	W500214	Fluid reservoir bolts
147	7G342	Solenoid body strategy tag
148	7B148	Transmission service identification tag
149	-	Direct clutch (3, 5, R)
150	-	Intermediate clutch (2, 6)
151	-	Overdrive clutch (4, 5, 6)
152	-	Forward clutch (1, 2, 3, 4)
153	-	Low/reverse clutch

1. Special Tool(s): Holding Fixture 307-625.



2. Special Tool(s): Holding Fixture, Transmission 307-003 (T57L-500-B), Holding Fixture 307-625.
General Equipment: Work Bench.

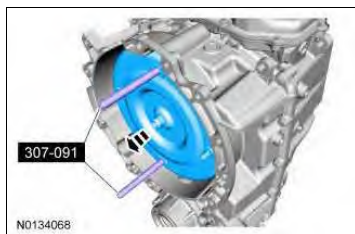


3. Special Tool(s): Retainer, Torque Converter 307-566.



4. **NOTICE:** The torque converter is heavy. Be careful not to drop it or damage will result.

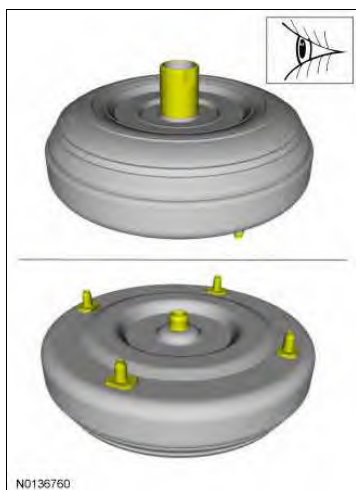
Special Tool(s): Handle, Torque Converter 307-091 (T81P-7902-C).



5. **NOTICE:** Do not use water-based cleaners or mineral spirits to clean or flush the torque converter or transmission damage will occur. Use only clean transmission fluid designated for the transmission and torque converter being serviced.

Visual check.

1. Inspect the sealing surface for a groove worn from the seal. Install a new torque converter if necessary.
2. A new or remanufactured torque converter must be installed if one or more of the following statements is true:
 - ◆ A torque converter malfunction has been determined based on complete diagnostic procedures.
 - ◆ The torque converter stud or studs, impeller hub or bushing are damaged.
 - ◆ The torque converter exhibits external discoloration (due to overheating).
 - ◆ There is evidence of transmission assembly or fluid contamination due to the following transmission or converter failure modes.
 - ◆ Major metallic failure
 - ◆ Multiple clutch plates or band failures
 - ◆ Sufficient component wear which results in metallic contamination
 - ◆ Water or antifreeze contamination
3. If none of the above conditions are present, continue with the following fluid inspection.
4. Pour a small amount of transmission fluid from the torque converter onto an absorbent white tissue or through a paper filter.
5. Examine the fluid for contaminants. The fluid must be free of metallic contaminants.

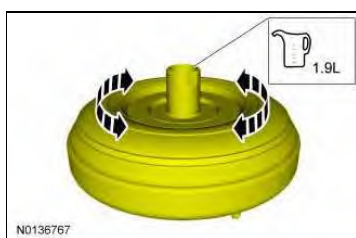


6. **NOTICE:** Do not use water-based cleaners or mineral spirits to clean or flush the torque converter or transmission damage will occur.

Drain the remaining fluid from the torque converter. Apply the specified amount of fluid.

- Agitate by hand.
- Thoroughly drain the fluid.

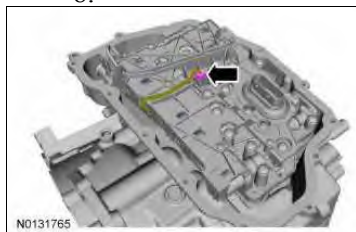
Material: Clean Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.



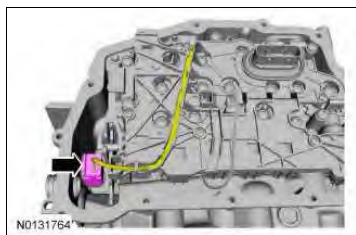
7. **NOTE:** Note the location of the stud bolts for assembly.



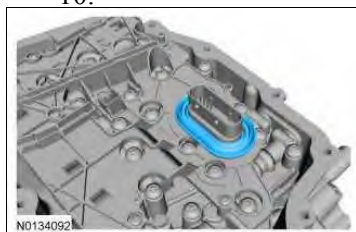
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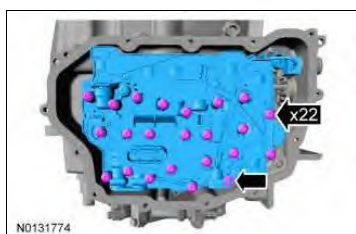
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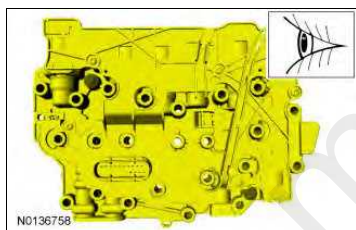
10.



11. **NOTE:** Note the location of the short and long main control-to-transmission case bolts for reassembly.



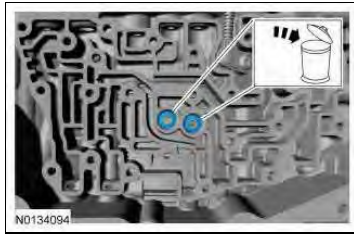
12. Clean and inspect the main control assembly for damage. If damage is found install a new main control assembly. If the main control assembly is not damaged, disassemble the main control assembly and clean it. Refer to Main Control - Overhaul .Visual check.



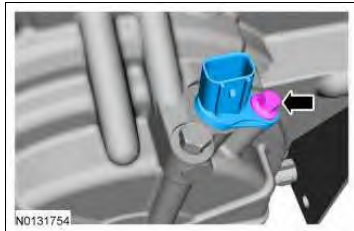
13. Discard the specified component. Follow local disposal regulations.



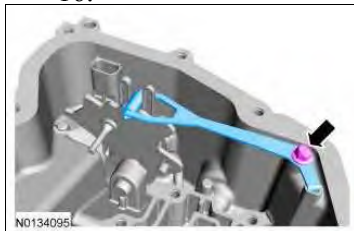
14. Discard the specified component. Follow local disposal regulations.



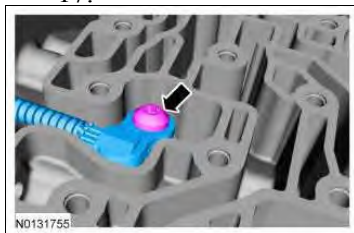
15.



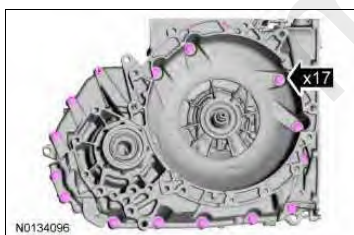
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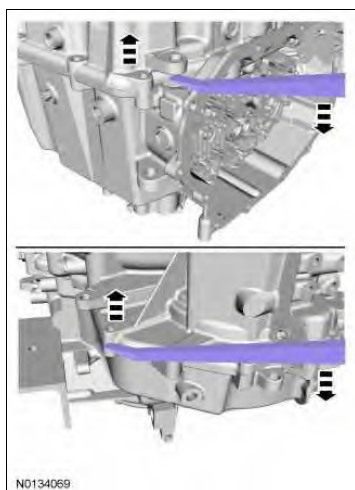
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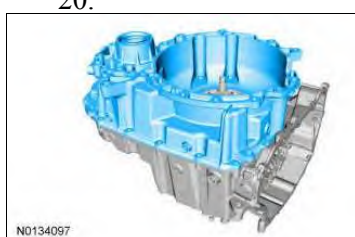
18. **NOTE:** Note the location of the stud bolts for assembly.



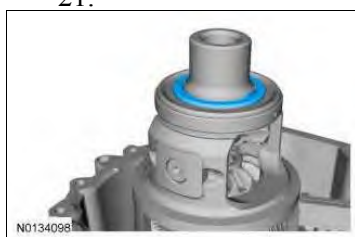
19. General Equipment: Pry Bar.



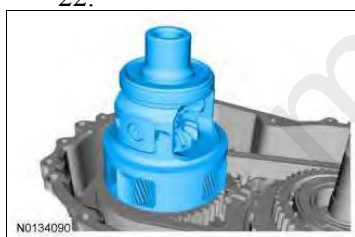
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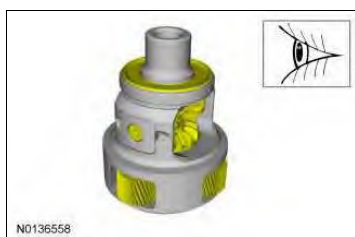
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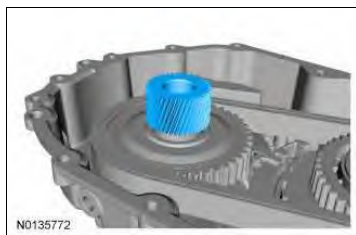
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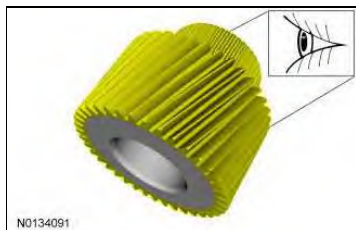
23. Check that bearings spin freely and do not move back and forth or side to side excessively. Check for damage or excessive wear. Install new components, if necessary. Refer to Differential Gear Assembly. Visual check.



24.



25. Check for damage or excessive wear. Visual check.



26.



27.



28. **NOTE:** Simultaneously lift the drive, driven sprockets and chain.



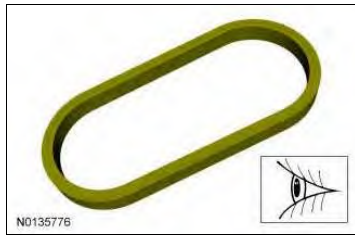
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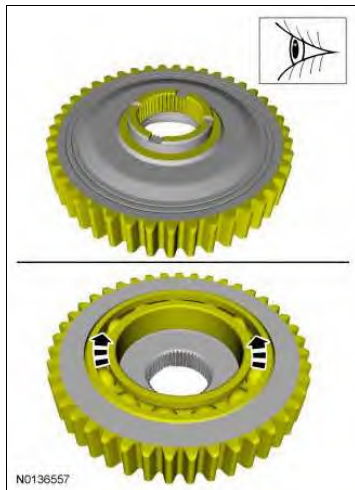
30. Check for damage or excessive wear. Visual check.

- Check for stretching or tightness of the chain links.

- Check that the chain moves freely.



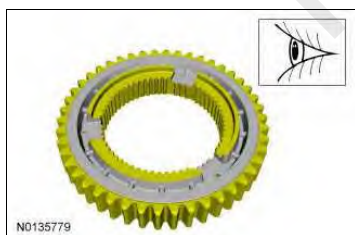
31. Check that bearing spins freely. Check for damage or excessive wear. Visual check.



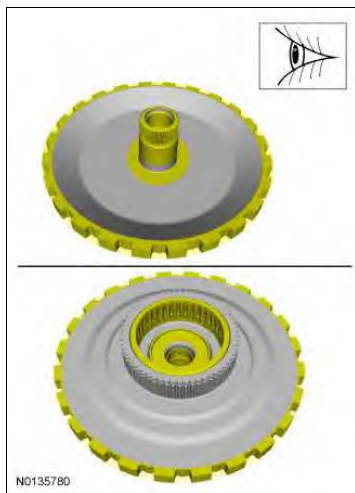
32.



33. Check for damage or excessive wear. Visual check.



34. Check for damage or excessive wear. Visual check.



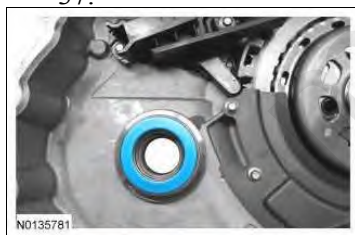
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36.



37.



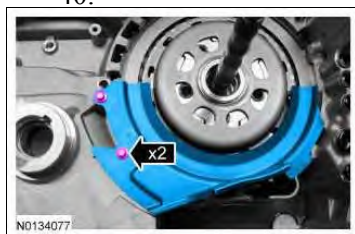
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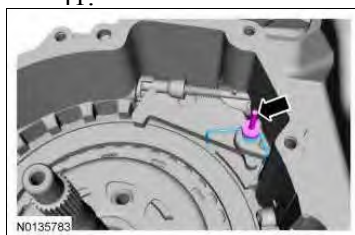
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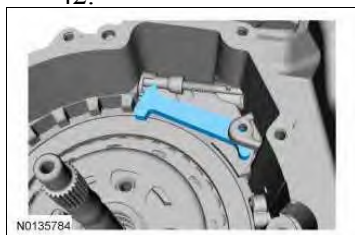
40.



41.

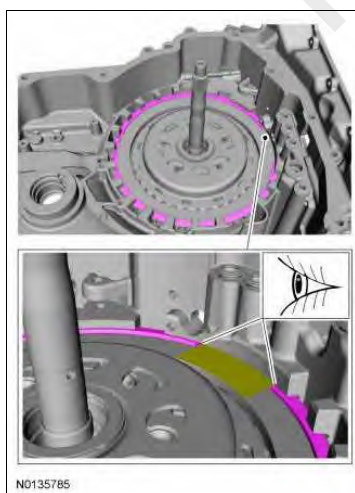


42.

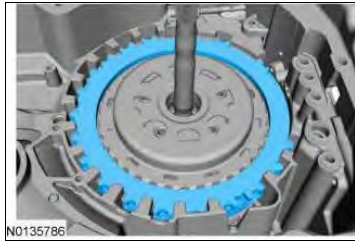


43. **NOTE:** Note the location of the snap ring gap for assembly.

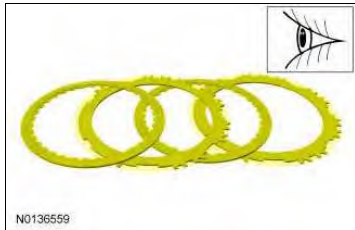
Visual check.



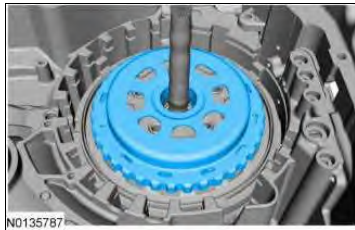
44. Clutch pressure plate, clutch plates and wave spring.



45. Inspect the clutch plate and pressure plate surfaces for damage or excessive wear. Visual check.



46.



47. Check for damage or excessive wear. Visual check.



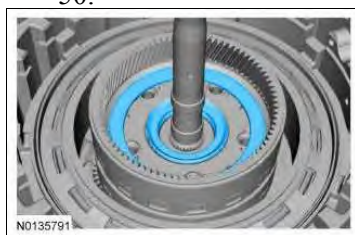
48.



49. Check that bearings spin freely and do not move back and forth or side to side excessively. Check for damage or excessive wear. Visual check.



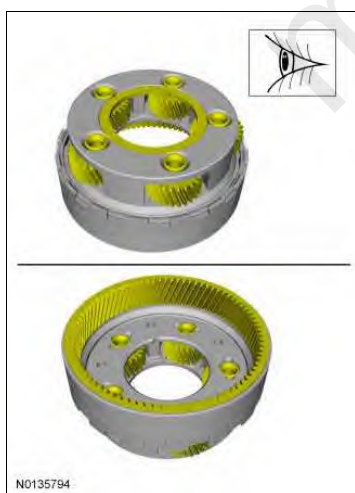
50.



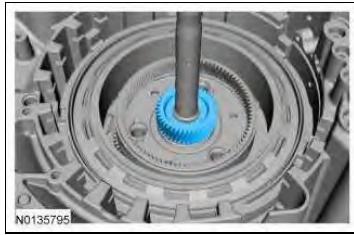
51.



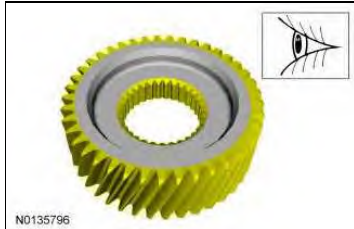
52. Check that bearings spin freely and do not move back and forth or side to side excessively. Check for damage or excessive wear. Visual check.



53.



54. Check for damage or excessive wear. Visual check.



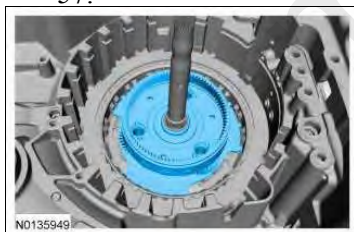
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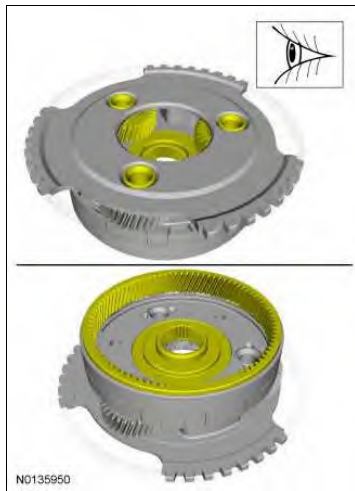
56.



57.



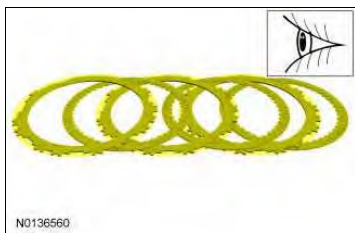
58. Check that bearings spin freely and do not move back and forth or side to side excessively. Check for damage or excessive wear. Visual check.



59. Wave spring, clutch plates and pressure plate.



60. Inspect the clutch plate and pressure plate surfaces for damage or excessive wear. Visual check.



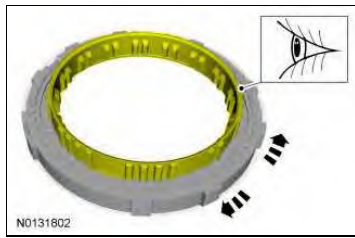
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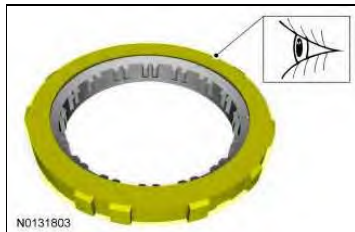
62. **NOTICE:** Do not clean in water or with water-based solvents. Damage to the component may occur.

NOTE: The low OWC should not be disassembled.

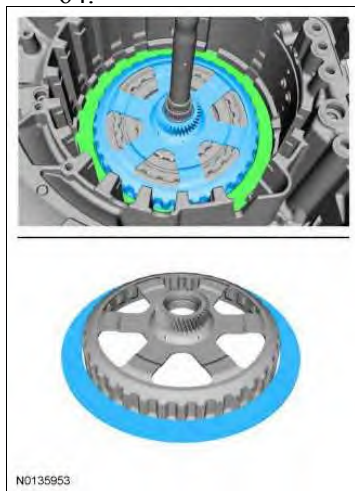
Check for cracks and damaged splines. The internal splined section should rotate clockwise and lock when rotated counterclockwise. Visual check.



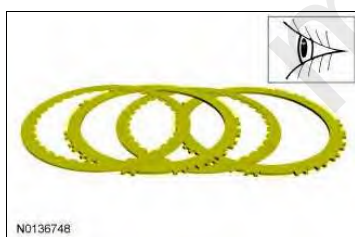
63. Check for burned or excessively worn surface. Visual check.



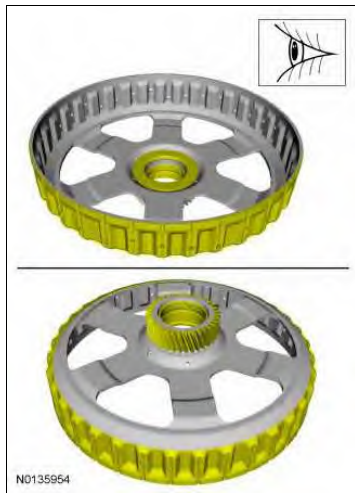
64.



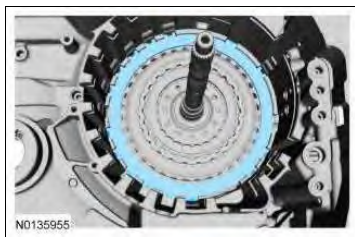
65. Inspect the clutch plate surfaces for damage or excessive wear. Visual check.



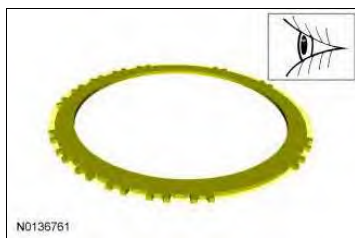
66. Check for damage or excessive wear. Visual check.



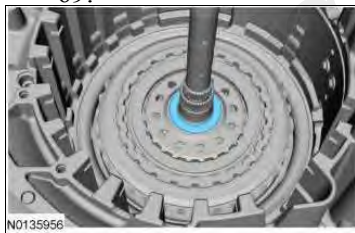
67. Pressure plate and the wave spring.



68. Inspect the pressure plate surface for damage or excessive wear. Visual check.



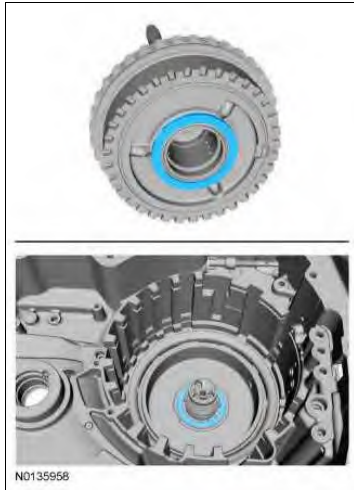
69.



70.



71. **NOTE:** If the No. 1 thrust bearing is stuck to the overdrive/direct clutch assembly, remove the No. 1 thrust bearing from the overdrive/direct clutch assembly.



72.

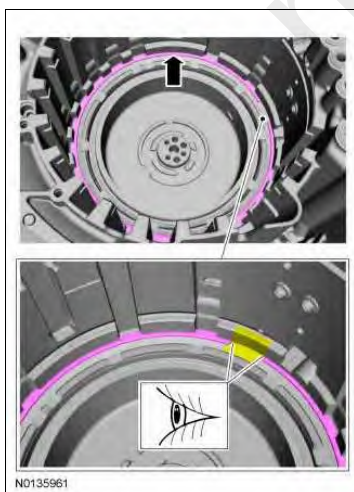


73.



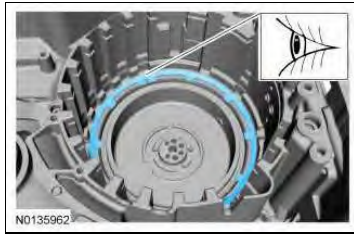
74. **NOTE:** Note the location of the snap ring gap for assembly.

Visual check.



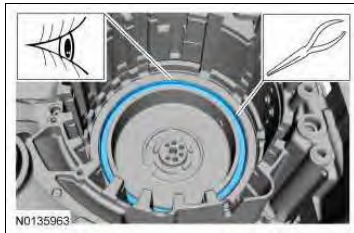
75. **NOTE:** Note the position of the return spring for assembly.

Visual check.

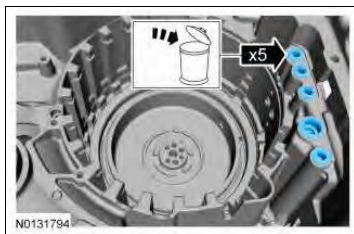


76. **NOTE:** Note the position of the intermediate clutch piston for assembly.

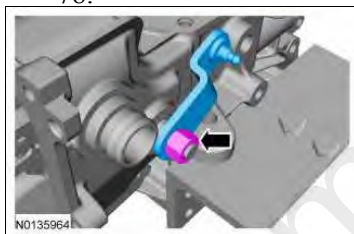
Visual check. Long-nosed pliers.



77. Discard the specified component. Follow local disposal regulations.

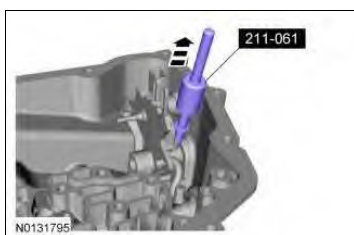


78.

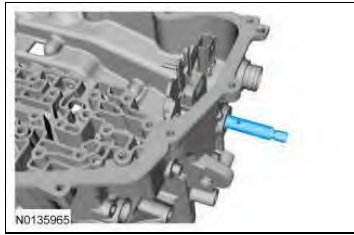


79. **NOTICE:** Do not drive the manual control shaft pin through the manual control shaft. The manual control shaft pin will contact the transmission case causing damage to the transmission case.

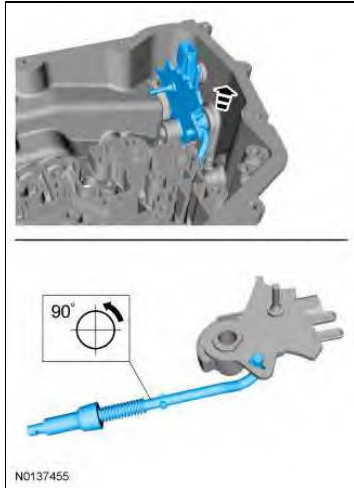
Special Tool(s): Remover, Roll Pin 211-061 (T78P-3504-N1).



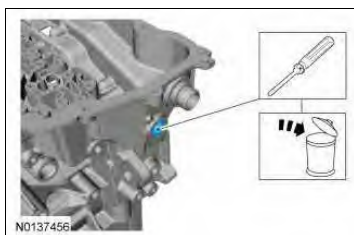
80.



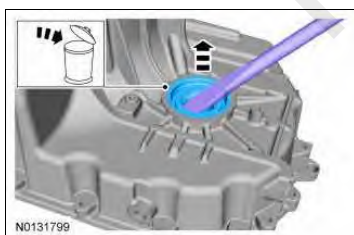
81. Turn the component CCW through 90 degrees.



82. Screwdriver. Discard the specified component. Follow local disposal regulations.

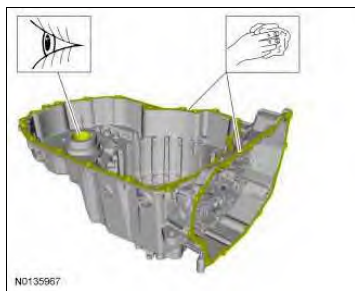


83. Discard the specified component. Follow local disposal regulations.
General Equipment: Pry Bar.

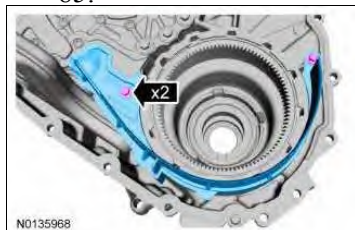


84. **NOTICE:** If the LH transmission case bushing or the LH halfshaft bushing surface shows signs of excessive wear or damage, a new LH transmission case bushing and a new LH halfshaft must be installed, or excessive noise or transmission failure can occur.

If the LH transmission case bushing or the LH halfshaft shows signs of excessive wear or damage, install new components. Refer to Transmission Case . Visual check. Clean the specified component with the specified material.



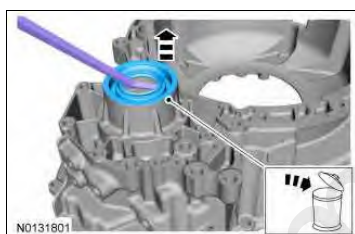
85.



86.



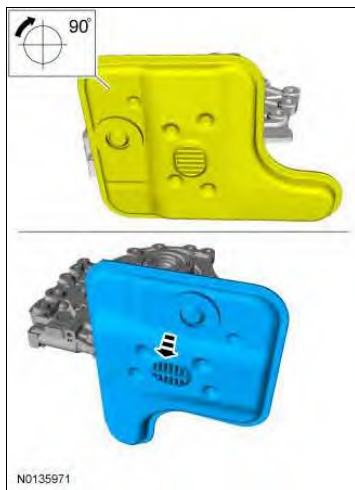
87. Discard the specified component. Follow local disposal regulations.
General Equipment: Pry bar.



88. If the differential ring gear shows signs of excessive wear or damage replace the differential ring gear.
Refer to Transmission Case . Visual check. Clean the specified component with the specified material.



89. Turn the component CW through 90 degrees.

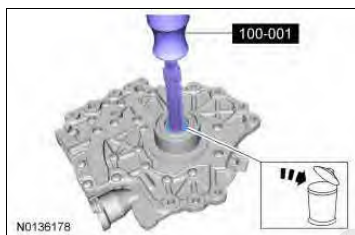


90.



91. Discard the specified component. Follow local disposal regulations.

Special Tool(s): Slide Hammer 100-001 (T50T-100-A), Collet, 3/4 Inch to 7/8 Inch 303-D019 (D810L-100-Q).



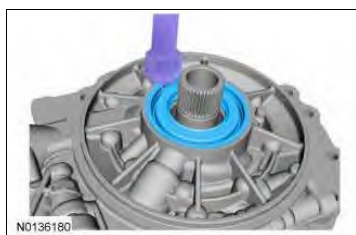
92.



93.



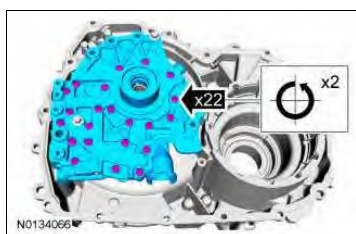
94. General Equipment: Dent puller.



95. Bolts hand-tight.



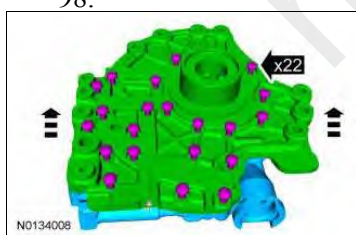
96. Turn the component CCW through 2 complete turns.



97.



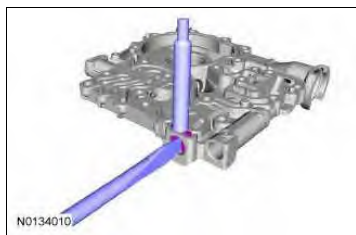
98.



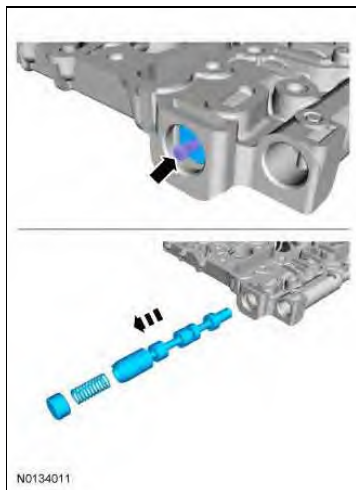
99.



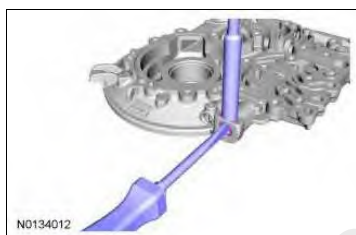
100. Compress the valve spring with a screwdriver and remove the retainer with a magnet.
General Equipment: Screwdriver, Magnet.



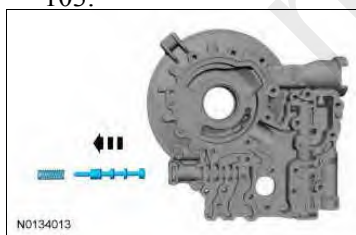
101. General Equipment: M4 bolt.



102. Compress the valve spring with a screwdriver and remove the retainer with a magnet.
General Equipment: Screwdriver, Magnet.

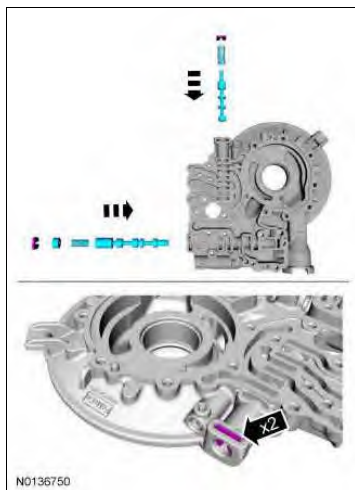


103.



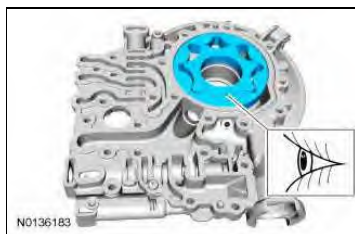
104. Clean and inspect the components of the pump assembly for wear or damage. Inspect the fluid drained from the pump assembly for excessive metal or foreign material. If excessive wear, damage or excessive metal is found, replace the pump assembly as an assembly.

105. **NOTE:** TCC control valve retainer shown assembled in the pump body, main pressure regulator valve retainer similar.

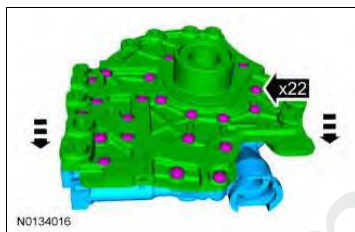


106. **NOTE:** The dot on the inner pump gear faces up.

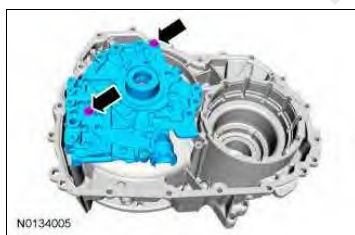
Visual check.



107. Bolts hand-tight.



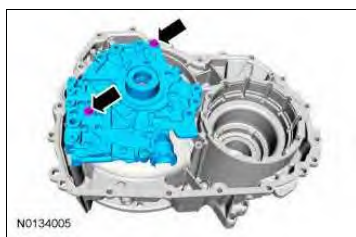
108. Bolts hand-tight.



109. • Tighten to 10 Nm (89 lb-in).



110.

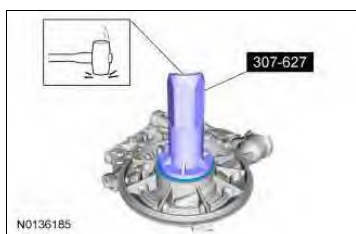


111. Special Tool(s): Installer, Converter Seal 307-627.

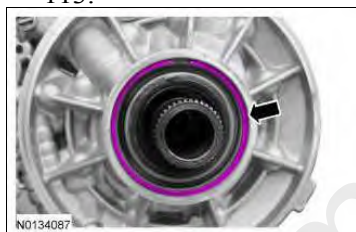


112. Mallet.

Special Tool(s): Installer, Converter Seal 307-627.



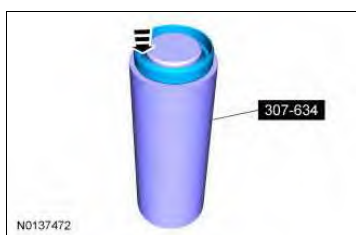
113.



114.

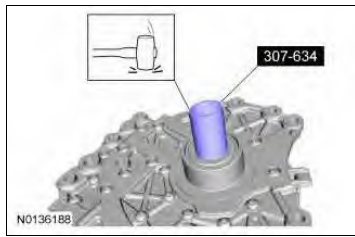


115. Special Tool(s): Seal Installer, Turbine Shaft 307-634.



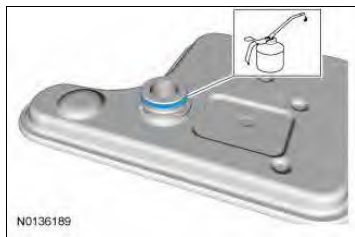
116. Mallet.

Special Tool(s): Seal Installer, Turbine Shaft 307-634.



117. New O-ring. Apply the specified lubricant to the specified component.

Material: Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.



118.



119. Turn the component CCW through 90 degrees.



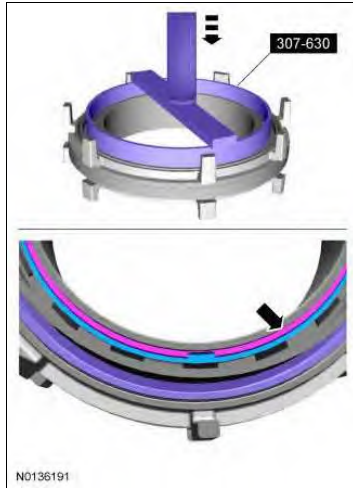
120. **NOTICE:** The piston return spring, snap ring or snap ring retainer from the low/reverse clutch side of the center support are not interchangeable with the forward clutch side of the center support. When disassembling the center support, be careful not to mix the components from the low/reverse clutch side with the forward clutch side of the center support. Failure to assemble the center support with the components in the correct side will result in damage to the center support, low/ reverse or forward clutch.

NOTE: The low/reverse clutch piston in the center support is the side of the center support with the long legs.

Position the center support on a press with the long legs facing up.

Special Tool(s): Compressor, Center Support Piston Spring 307-630.

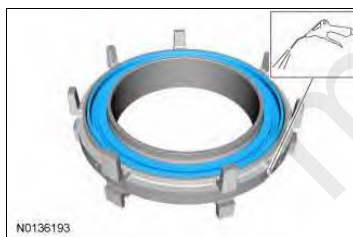
General Equipment: Shop Press.



121.



122. Apply 483 kPa (70 psi) of air pressure. Air Blow Gun.

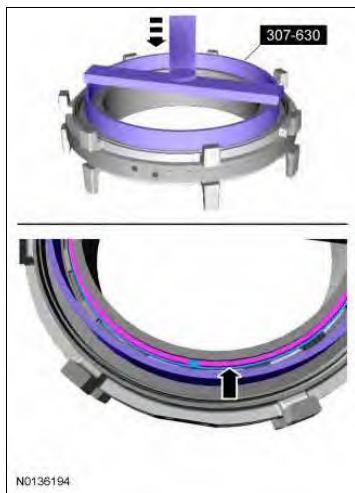


123. **NOTE:** The forward clutch piston in the center support is the side of the center support with the short legs.

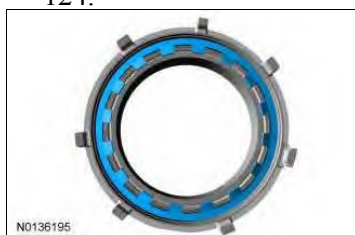
Position the center support on a press with the short legs facing up.

Special Tool(s): Compressor, Center Support Piston Spring 307-630.

General Equipment: Shop Press.



124.



125. Apply 483 kPa (70 psi) of air pressure. Air Blow Gun.



126. Check for damage or excessive wear. Visual check.



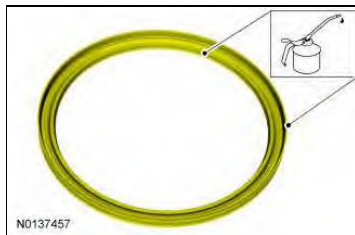
127. **NOTE:** The forward clutch piston in the center support is the side of the center support with the short legs.

Short leg side of the center support facing up.

Special Tool(s): Seal Protector, Low Reverse Piston 307-628/2, Seal Protector, Low Reverse / 1-2-3-4 Piston 307-629.



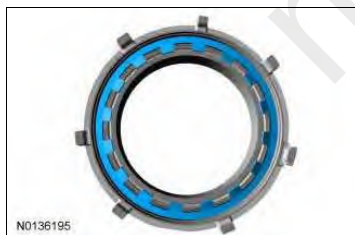
128. Apply the specified lubricant to the specified component.
 Shop Supplies: Petroleum Jelly.



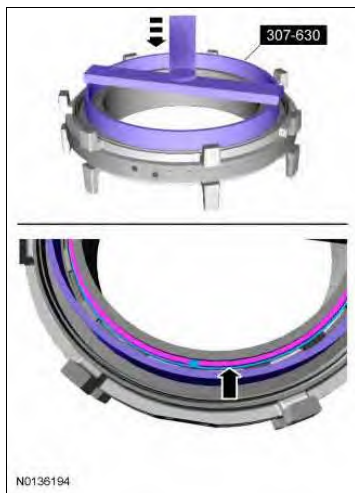
129. Special Tool(s): Seal Protector, Low Reverse Piston 307-628/2, Seal Protector, Low Reverse / 1-2-3-4 Piston 307-629.



130. **NOTICE:** The piston return spring, snap ring or snap ring retainer from the low/reverse clutch side of the center support are not interchangeable with the forward clutch side of the center support. When assembling the center support, be careful not to mix the components from the low/reverse clutch side with the forward clutch side of the center support. Failure to assemble the center support with the components in the correct side will result in damage to the center support, low/reverse or forward clutch.



131. Position the center support on a press with the short legs facing up.
 Special Tool(s): Compressor, Center Support Piston Spring 307-630.
 General Equipment: Shop Press.



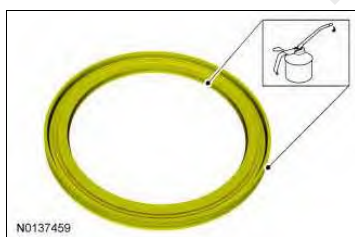
132. Check the snap ring to be sure it is seated in the groove. Screwdriver.



133. Position the center support with the long legs facing up.
Special Tool(s): Seal Protector, Low Reverse Piston 307-628 (includes 307-628/1 and 307-628/2).



134. Apply the specified lubricant to the specified component.
Shop Supplies: Petroleum Jelly.



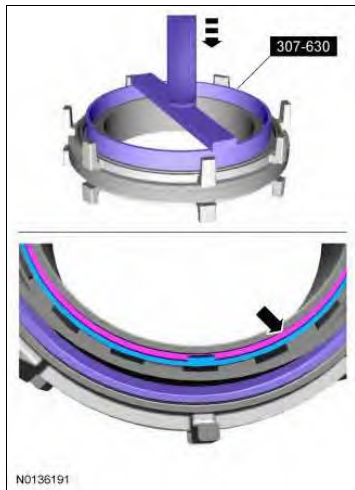
135. Special Tool(s): Seal Protector, Low Reverse Piston 307-628 (includes 307-628/1 and 307-628/2).



136.



137. Position the center support on a press with the long legs facing up.
 Special Tool(s): Compressor, Center Support Piston Spring 307-630.
 General Equipment: Shop Press.



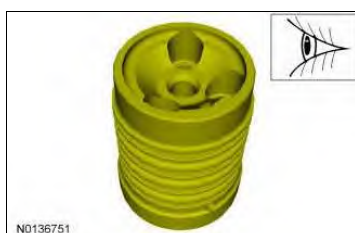
138. Check the snap ring to be sure it is seated in the groove. Screwdriver.



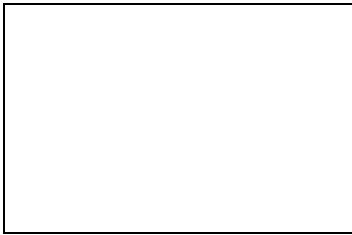
139. Discard the specified component. Follow local disposal regulations.



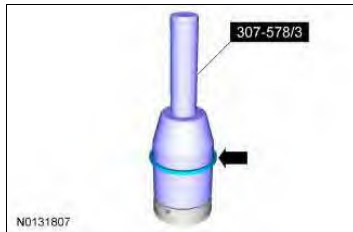
140. Check for damage or excessive wear. Visual check.



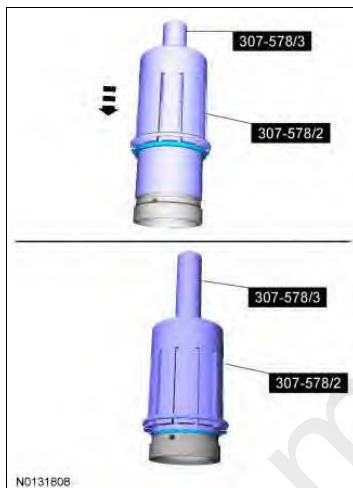
141. Align the bottom edge of the tool with the top edge of the bottom Teflon® seal groove.
Special Tool(s): Input Shaft Support Seal Installer (Back Plate, Multiple Rings) 307-578/3.



142. Special Tool(s): Input Shaft Support Seal Installer (Back Plate, Multiple Rings) 307-578/3.



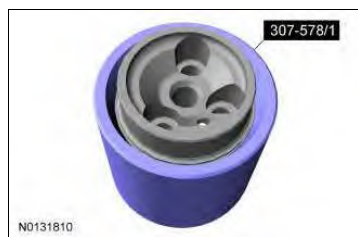
143. Special Tool(s): Input Shaft Support Seal Installer (Back Plate, Multiple Rings) 307-578/2, Input Shaft Support Seal Installer (Back Plate, Multiple Rings) 307-578/3.



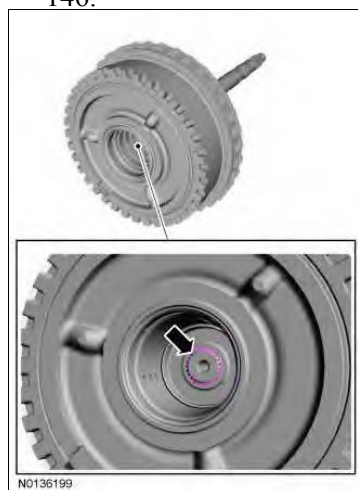
144. Remove tools and repeat steps for the other 3 Teflon® seals.
Special Tool(s): Input Shaft Support Seal Installer (Back Plate, Multiple Rings) 307-578/2, Input Shaft Support Seal Installer (Back Plate, Multiple Rings) 307-578/3.



145. Special Tool(s): Input Shaft Support Seal Installer (Back Plate, Multiple Ring) 307-578/1.



146.



147.



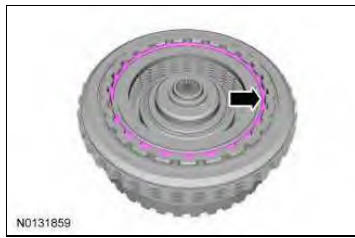
148.



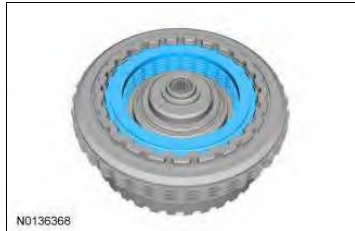
149.



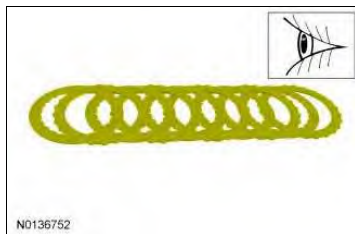
150.



151.



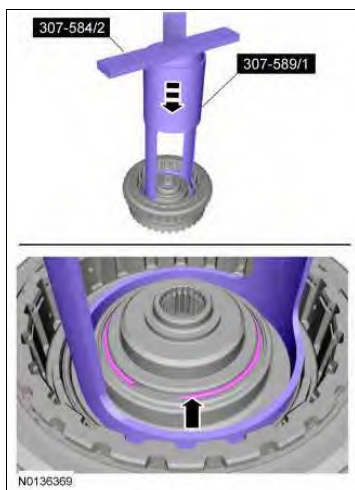
152. Inspect the clutch plate and pressure plate surfaces for damage or excessive wear. Visual check.



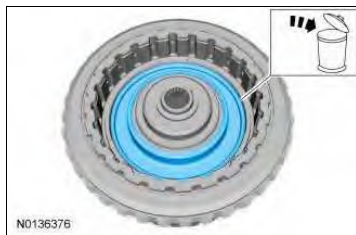
153. Special Tool(s): Compressor, Overdrive Clutch, Balance Piston and Direct Clutch 307-589/1, Compressor, Forward/Intermediate Spring 307-584/2.



154. Special Tool(s): Compressor, Overdrive Clutch, Balance Piston and Direct Clutch 307-589/1, Compressor, Forward/Intermediate Spring 307-584/2.
General Equipment: Shop Press.



155. Discard the specified component. Follow local disposal regulations.



156.

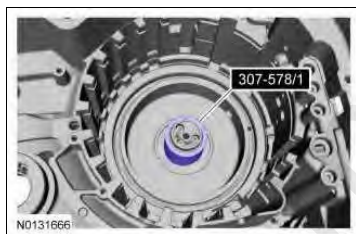


157. • Tighten to 12 Nm (106 lb-in).



158. Remove the special tool.

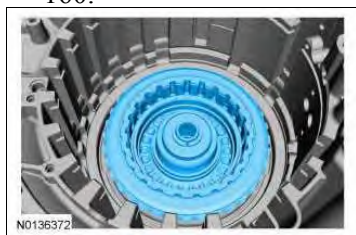
Special Tool(s): Input Shaft Support Seal Installer (Back Plate, Multiple Rings) 307-578/1.



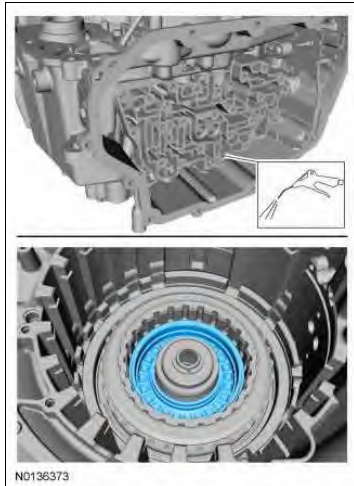
159.



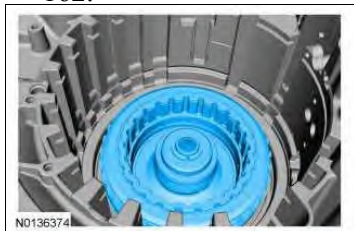
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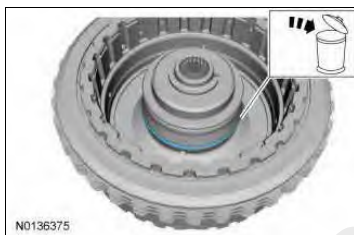
161. Apply compressed air to the piston port. Air Blow Gun.



162.



163. Discard the specified component. Follow local disposal regulations.



164. Discard the specified component. Follow local disposal regulations.

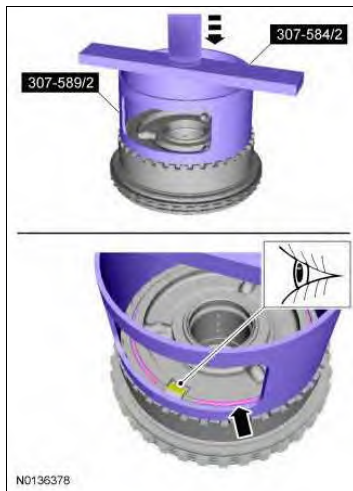


165. **NOTICE:** Only compress the direct clutch piston return spring far enough to take the tension from the direct clutch cylinder off the snap ring. If the piston is compressed too far, the piston alignment tab may be broken off.

Visual check.

Special Tool(s): Compressor, Overdrive Clutch, Balance Piston and Direct Clutch 307-589/2, Compressor, Forward/Intermediate Spring 307-584/2.

General Equipment: Shop Press.



166.



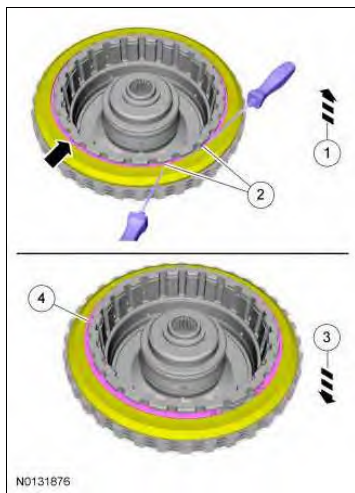
167. Discard the specified component. Follow local disposal regulations.



168.



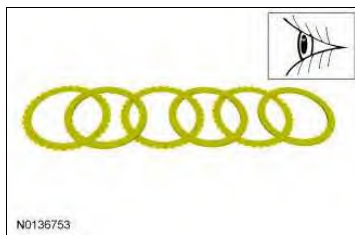
- 169.
1. Slightly lift up on the clutch so that the snap ring floats freely.
 2. Compress the snap ring.
 3. Allow the clutch and pressure plate to drop so that the snap ring is out of the pressure plate groove.
 4. Remove the snap ring.
- General Equipment: Screwdrivers.



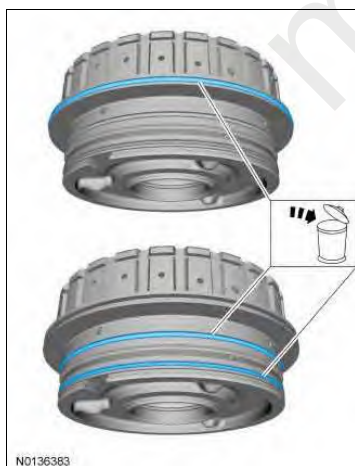
170.



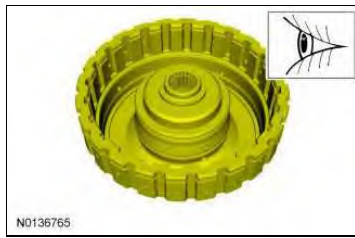
171. Inspect the clutch plate and pressure plate surfaces for damage or excessive wear. Visual check.



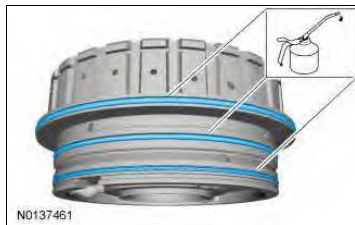
172. Discard the specified component. Follow local disposal regulations.



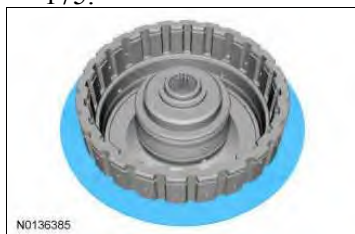
173. Check for damage or excessive wear. Visual check.



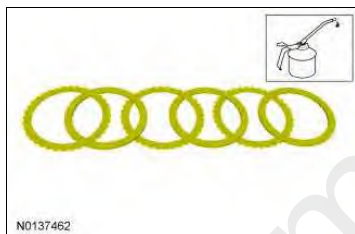
174. Apply the specified lubricant to the specified component.
Shop Supplies: Petroleum Jelly.



175.



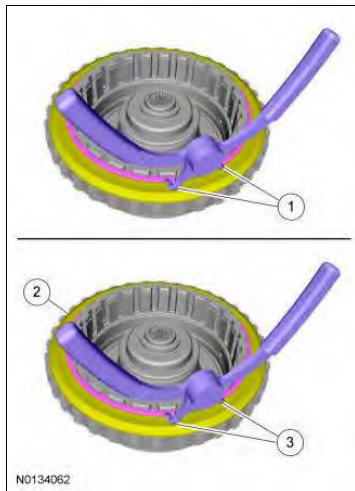
176. Soak the clutch plates. Apply the specified lubricant to the specified component.
Material: Clean Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.



177.



- 178.
1. Compress the snap ring.
 2. Lift the clutch so that the snap ring is in the groove of the pressure plate.
 3. Release the tension on the snap ring.
- General Equipment: Snap-ring Pliers.



179. **NOTE:** Install the return spring with the flat side facing down.



180. Apply the specified lubricant to the specified component.
Shop Supplies: Petroleum Jelly.



181.

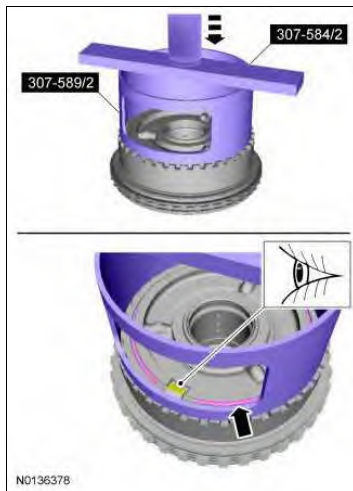


182. **NOTICE:** Only compress the direct clutch piston return spring far enough to take the tension from the direct clutch cylinder off the snap ring. If the piston is compressed too far, the piston alignment tab may be broken off.

Visual check.

Special Tool(s): Compressor, Overdrive Clutch, Balance Piston and Direct Clutch 307-589/2, Compressor, Forward/Intermediate Spring 307-584/2.

General Equipment: Shop Press.



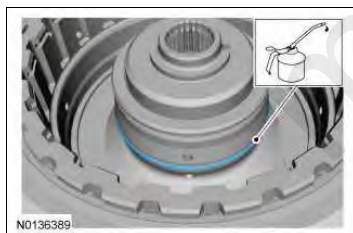
183. Apply the specified lubricant to the specified component.

Shop Supplies: Petroleum Jelly.

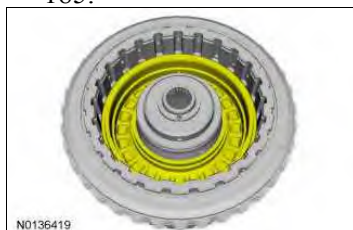


184. Apply the specified lubricant to the specified component.

Shop Supplies: Petroleum Jelly.

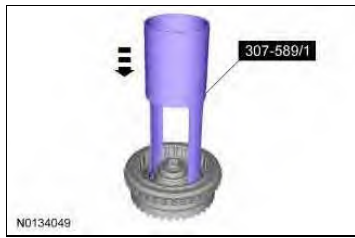


185.



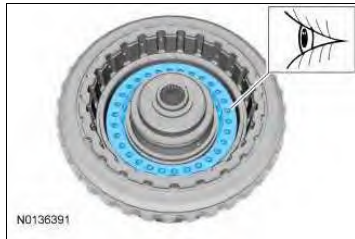
186. Install by hand.

Special Tool(s): Compressor, Overdrive Clutch, Balance Piston and Direct Clutch 307-589/1.

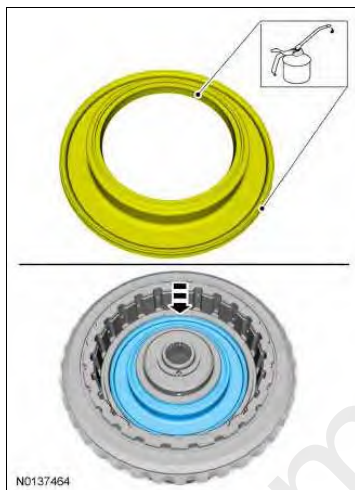


187. **NOTE:** Holes face up on the clutch piston return spring.

Visual check.



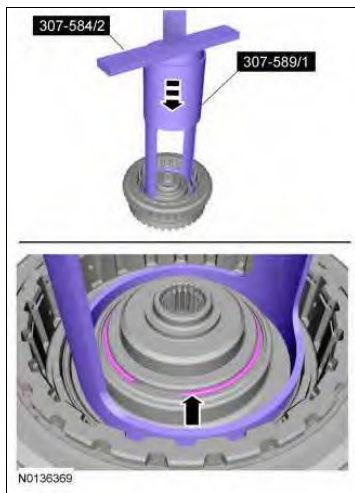
188. Apply the specified lubricant to the specified component.
Shop Supplies: Petroleum Jelly.



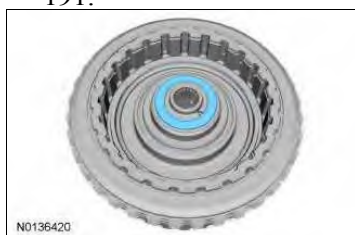
189. Special Tool(s): Compressor, Overdrive Clutch, Balance Piston and Direct Clutch 307-589/1,
Compressor, Forward/Intermediate Spring Compressor 307-584/2.



190. Special Tool(s): Compressor, Overdrive Clutch, Balance Piston and Direct Clutch 307-589/1,
Compressor, Forward/Intermediate Spring Compressor 307-584/2.
General Equipment: Shop Press.



191.



192.



193. Soak the clutch plates. Apply the specified lubricant to the specified component.
Material: Clean Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.



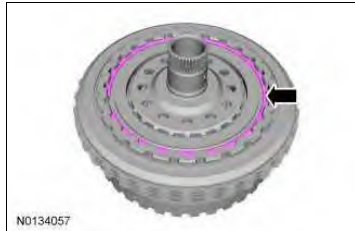
194.



195.



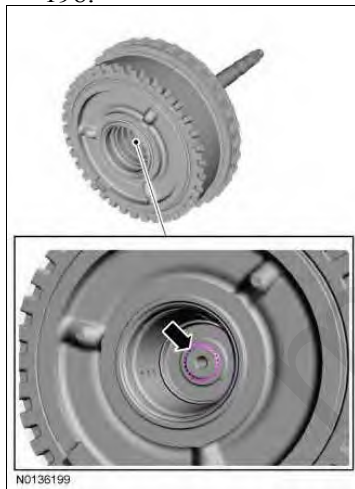
196.



197.



198.



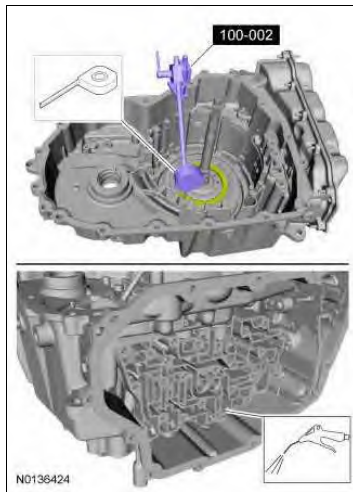
199. Special Tool(s): Dial Indicator Gauge With Holding Fixture 100-002 (TOOL-4201-C).



200. Position the plunger on the overdrive (4, 5, 6) clutch pressure plate. Apply 483 kPa (70 psi) of air pressure to the overdrive (4, 5, 6) clutch piston port while recording the clutch pack clearance on the Dial Indicator. The clearance should be between 0.950 mm (0.037 in) and 1.778 mm (0.07 in). If the clearance is out of range, check the overdrive (4, 5, 6) clutch pack for correct installation. If the

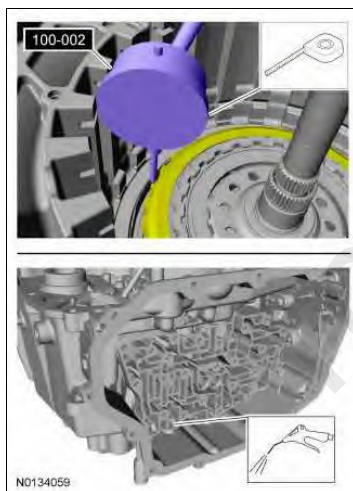
overdrive (4, 5, 6) clutch pack is correctly installed, install a new overdrive (4, 5, 6) clutch pack. Air Blow Gun. Measure the length or distance.

Special Tool(s): Dial Indicator Gauge With Holding Fixture 100-002 (TOOL-4201-C).

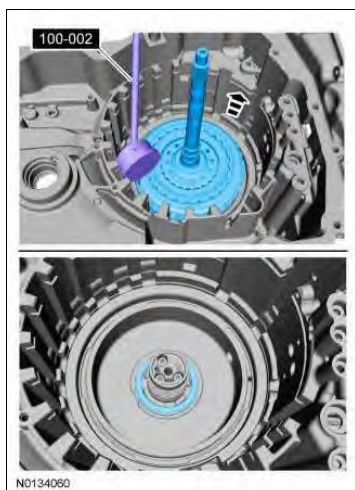


201. Position the plunger on one of the top direct (3, 5, R) clutch plate tabs. Apply 483 kPa (70 psi) of air pressure to the direct (3, 5, R) clutch piston port while recording the clutch pack clearance on Dial Indicator. The clearance should be between 0.412 mm (0.016 in) and 1.728 mm (0.068 in). If the clearance is out of range, check the direct (3, 5, R) clutch pack for correct installation. If the direct (3, 5, R) clutch pack is correctly installed, install a new direct (3, 5, R) clutch pack. Air Blow Gun. Measure the length or distance.

Special Tool(s): Dial Indicator Gauge With Holding Fixture 100-002 (TOOL-4201-C).



202. Special Tool(s): Dial Indicator Gauge With Holding Fixture 100-002 (TOOL-4201-C).

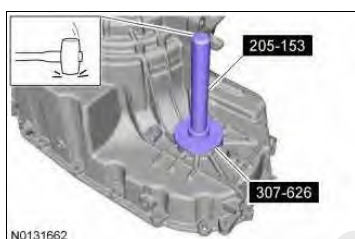


203. Special Tool(s): Handle 205-153 (T80T-4000-W), Installer, Differential Seal 307-626.

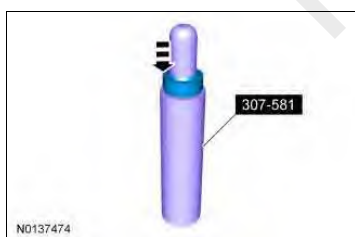


204. Mallet.

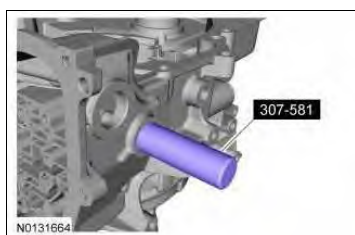
Special Tool(s): Handle 205-153 (T80T-4000-W), Installer, Differential Seal 307-626.



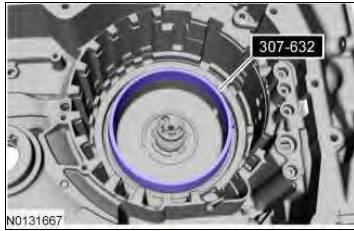
205. Special Tool(s): Manual Lever Seal Installer 307-581.



206. Special Tool(s): Manual Lever Seal Installer 307-581.

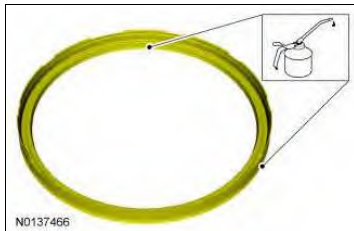


207. Special Tool(s): Seal Protector, 2-6 Piston 307-632.



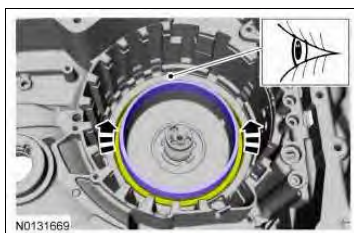
208. Apply the specified lubricant to the specified component.

Material: Clean Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.



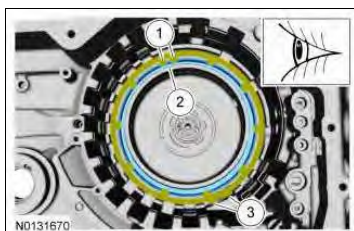
209. **NOTICE:** Be sure the bleed hole is aligned in the correct position as noted during disassembly or damage to the transmission can occur.

Visual chk.

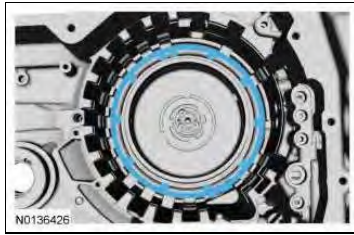


210. Position the clutch piston return spring on the piston to align the piston before pushing it in its bore. The tabs of the return spring should fit into the indentions of the piston and the 2 outer tabs should be at the clockwise most position of the open area at the bottom of the transmission case. The bleed hole on the piston should be aligned between the inner double tabs of the return spring.

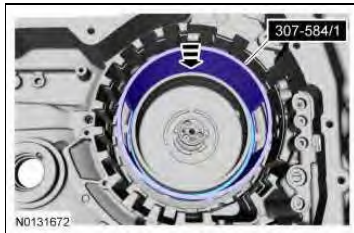
1. Inner double tabs
2. Bleed hole
3. Outer tabs



211.



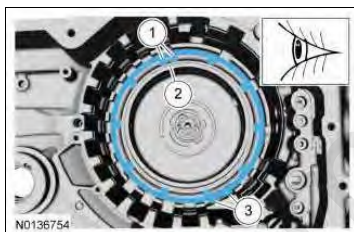
212. Push the clutch piston into the clutch cylinder by hand.
Special Tool(s): Compressor, Forward/Intermediate Spring 307-584/1.



213. **NOTICE:** Be sure the return spring is positioned correctly with the forward clutch bleed hole aligned between the inner double tabs and the outer tab in the clockwise most position of the slot at the bottom of the case or damage to the transmission can occur.

The tabs of the return spring should fit into the indentions of the piston and the 2 outer tabs should be at the clockwise most position of the slot at the bottom of the case. The bleed hole on the piston should be aligned between the inner double tabs of the return spring. Visual check.

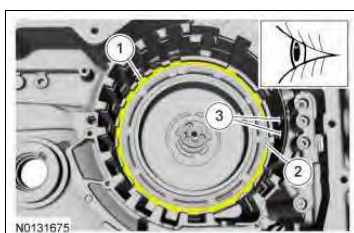
1. Inner double tabs
2. Bleed hole
3. Outer tabs



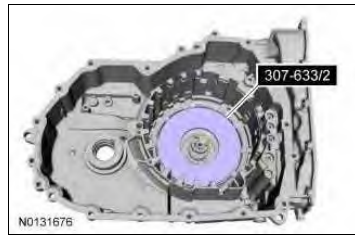
214. **NOTICE:** Be sure the snap ring is aligned with the gap facing the front of the transmission or damage to the transmission can occur. The front of the transmission is where the low/reverse and forward (1, 2, 3, 4) clutch hydraulic ports are located.

Align the gap of the snap ring to face the front of the transmission. Visual check.

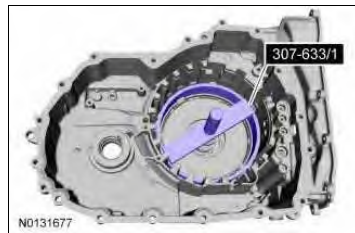
1. Snap ring
2. Snap ring gap
3. Clutch hydraulic ports (located at the front of the transmission case)



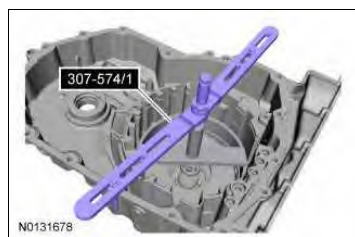
215. Special Tool(s): Spring Compressor, 2-6 Piston Return 307-633/2.



216. Special Tool(s): Spring Compressor, 2-6 Piston Return 307-633/1.



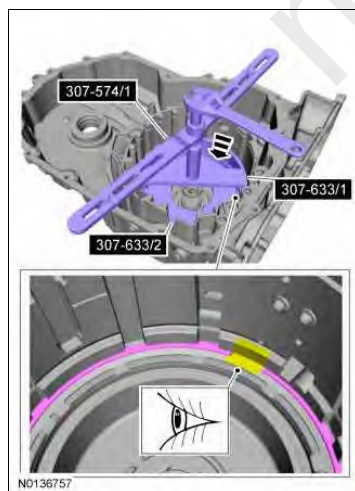
217. Special Tool(s): Compressor, Forward Clutch Spring 307-574/1.



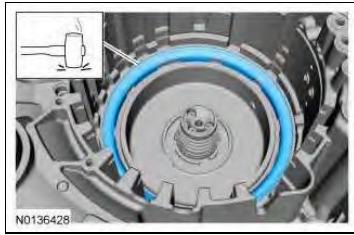
218. **NOTICE:** Be sure the return spring is centered or it can bind on the snap ring groove and cause damage to the transmission case.

Special Tool(s): Compressor, Forward Clutch Spring 307-574/1, Spring Compressor, 2-6 Piston Return 307-633 (Includes 307-633/1 and 307-633/2).

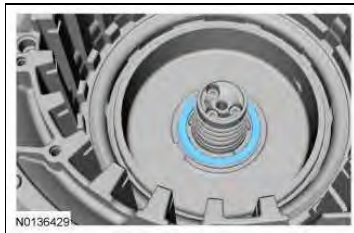
General Equipment: Wrench.



219. Tap the ring in place. Mallet.



220. **NOTICE:** Be sure to install the No. 1 thrust bearing with the flat side facing up or damage to the transmission can occur.



221.



222. **NOTICE:** Be sure to install the No. 3 thrust bearing with the flat side facing down or damage to the transmission can occur.



223.

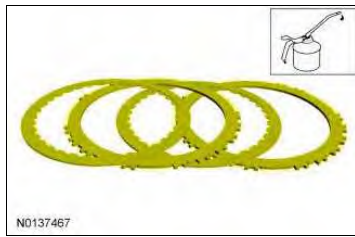


224. Clutch wave spring.



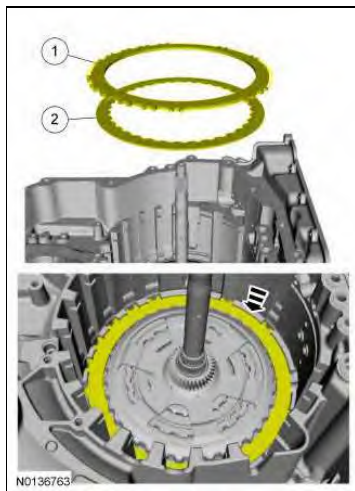
225. Soak the clutch plates. Apply the specified lubricant to the specified component.

Material: Clean Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.

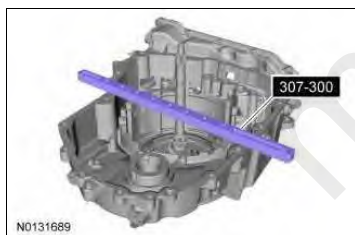


226. Position the clutch plates, temporarily reversing the top friction and steel plates for the clutch stack-up measurement.

1. Steel plate
2. Friction plate



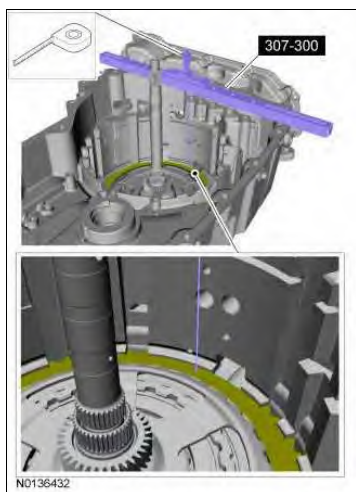
227. Special Tool(s): Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055).



228. Record as measurement A, the distance from the Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055) to the top of the clutch plate at 3 different points and average the 3 distances. Measure the length or distance.

Special Tool(s): Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055).

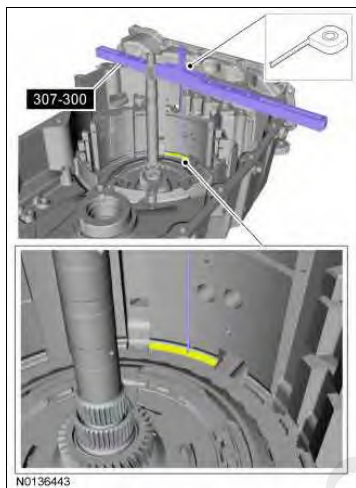
General Equipment: Depth Gauge.



229. Record as measurement B, the distance from the top of Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055) to the transmission case step above the intermediate (2, 6) clutch. Measure the length or distance.

Special Tool(s): Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055).

General Equipment: Depth Gauge.

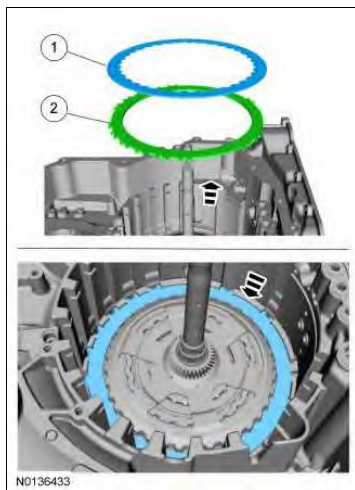


230. Subtract measurement B from measurement A. The clearance should be between 0.240 mm (0.009 in) and 2.60 mm (0.102 in). If the clearance is out of range, check the intermediate (2, 6) clutch pack for correct installation. If the intermediate (2, 6) clutch pack is correctly installed, install a new clutch pack.

Description	Reading
Measurement A	
Measurement B	
Subtract measurement B from measurement A and check to see if it is within range of 0.240 mm (0.009 in) and 2.60 mm (0.102 in)	

231. **NOTE:** When the intermediate (2, 6) clutch is correctly installed, a friction plate is on top.

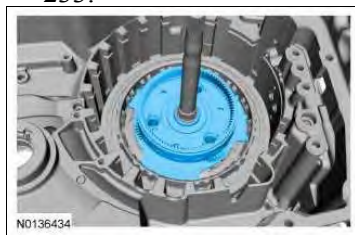
1. Friction plate
2. Steel plate



232.



233.

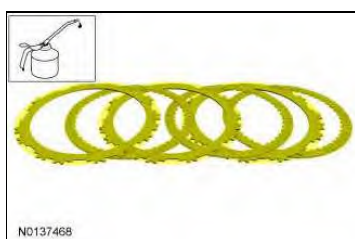


234. **NOTE:** Note the position of the pressure plate. When installing the center support, the long support legs must fit through the pressure plate and rest on the OWC .



235. Soak the clutch plates.

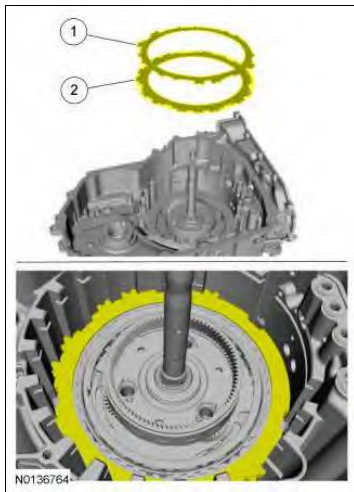
Material: Clean Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.



236. Position the wave spring and clutch plate, temporarily reversing the wave spring and steel plate for

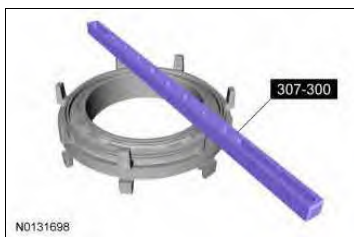
the clutch stack-up measurement.

1. Steel plate.
2. Wave spring.



237. Position the center support with the long legs facing up.

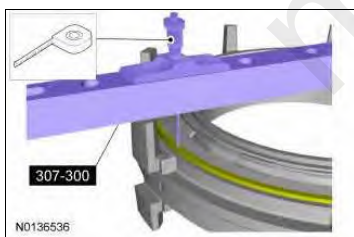
Special Tool(s): Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055).



238. Record as measurement A, the distance from the top of Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055) to the contact surface of the low/reverse clutch piston. Measure the length or distance.

Special Tool(s): Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055).

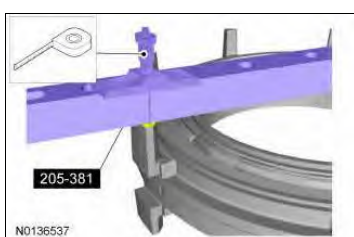
General Equipment: Depth Gauge.



239. Record as measurement B, the distance from the top of Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055) to the leg surface of the center support. Measure the length or distance.

Special Tool(s): Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055).

General Equipment: Depth Gauge.



240. Subtract measurement B from measurement A and record as measurement C.

Description	Reading
Measurement A	
Measurement B	
Subtract measurement B from measurement A and record as measurement C.	

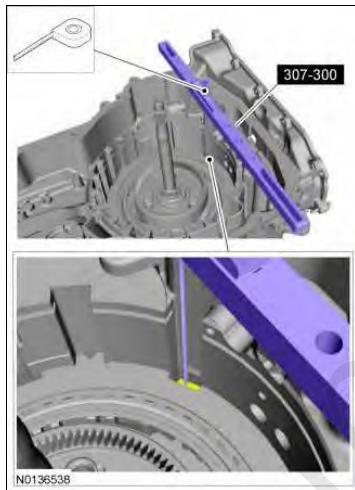
241. Special Tool(s): Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055).



242. Record as measurement D, the distance from the Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055) to the top of the OWC . Measure the length or distance.

Special Tool(s): Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055).

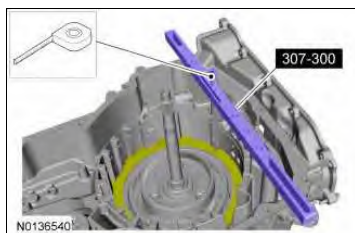
General Equipment: Depth Gauge.



243. Record as measurement E, the distance from the top of Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055) to the top of the low/reverse clutch at 3 different points and average the 3 distances. Measure the length or distance.

Special Tool(s): Shim Selection Gauge 307-300 (T94P-77000-Q) (17-055).

General Equipment: Depth Gauge.



244. Subtract measurement E from measurement D and record as measurement F.

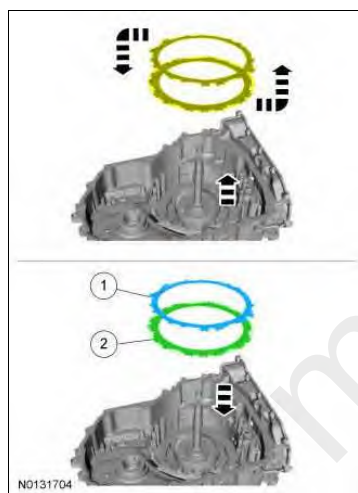
Description	Reading
Measurement D	
Measurement E	
Subtract measurement E from measurement D and record as measurement F	

245. Subtract measurement F from measurement C to get the low/reverse clutch clearance. The clearance should be between 0.406 mm (0.015 in) and 2.000 mm (0.078 in). If the clearance is out of range, check the low/reverse clutch pack for correct installation. If the low/reverse clutch pack is correctly installed, install a new clutch pack.

Description	Reading
Measurement C	
Measurement F	
Subtract measurement F from measurement C and check to see if it is within range of 0.406 mm (0.015 in) and 2.000 mm (0.078 in)	

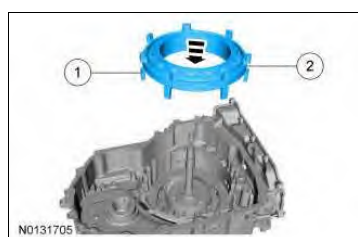
246. **NOTE:** When the low/reverse clutch is correctly installed, the wave spring is on top.

1. Wave spring
2. Steel plate



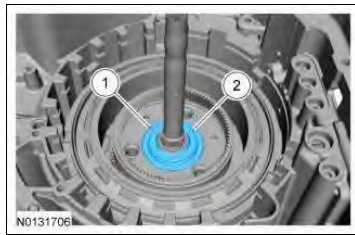
247. **NOTE:** Be sure the center support is installed with the long support legs facing down and the feed holes facing the front of the transmission.

1. Long legs face down.
2. Feed holes face the front of the transmission case.

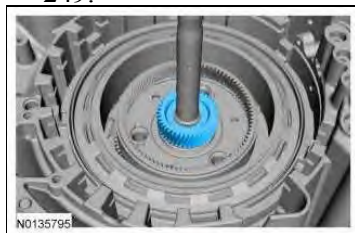


248. 1. No. 5 thrust bearing

2. No. 6 thrust bearing



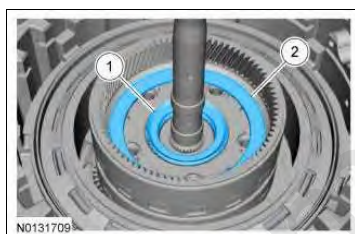
249.



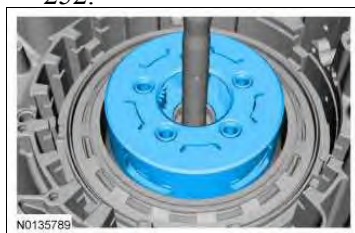
250.



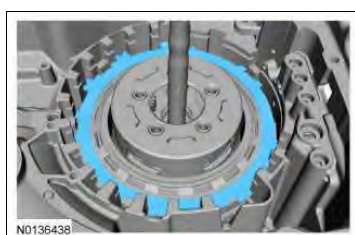
251. 1. No. 7 thrust bearing
2. No. 8 thrust bearing



252.

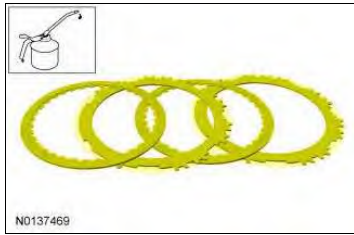


253. Wave spring.

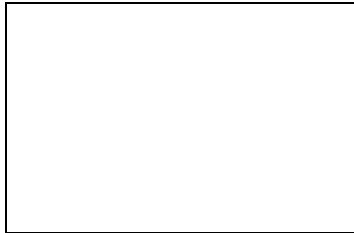


254. Soak the clutch plates. Apply the specified lubricant to the specified component.

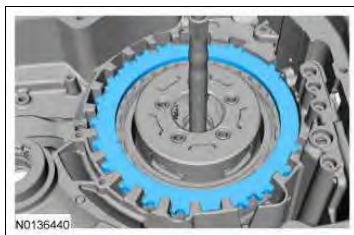
Material: Clean Motorcraft® MERCON® LV Automatic Transmission Fluid XT-10-QLVC.



255. Clutch plates.

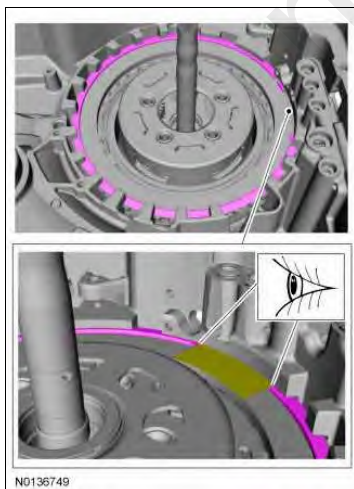


256. Pressure plate.

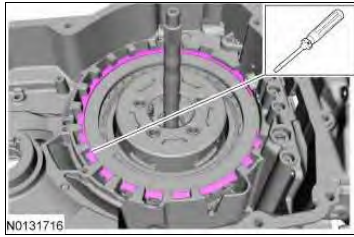


257. **NOTICE:** Be sure to install the forward (1, 2, 3, 4) clutch beveled snap ring with the flat side facing down or the snap ring can come loose, causing damage to the transmission.

Clutch beveled snap ring with the flat side down with the gap facing the front of the transmission.
Visual check.

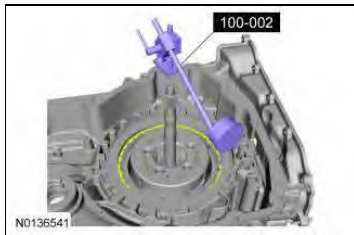


258. Seat the snap ring in the snap ring groove. Screwdriver.

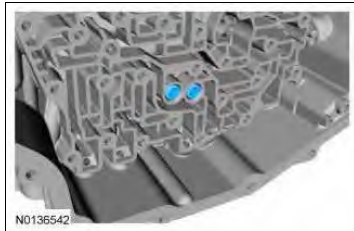


259. Position the plunger on the top clutch friction plate.

Special Tool(s): Dial Indicator Gauge With Holding Fixture 100-002 (TOOL-4201-C).

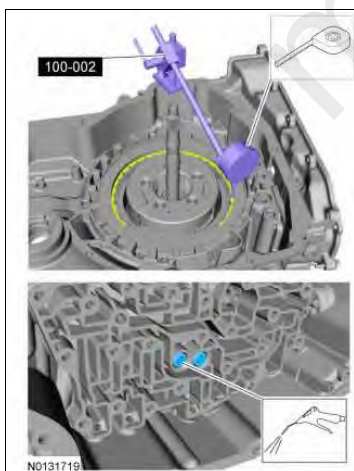


260.

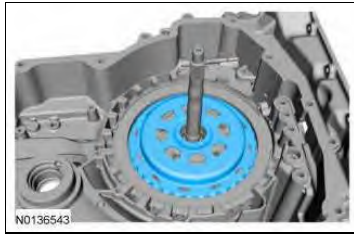


261. Apply 483 kPa (70 psi) of air pressure to the clutch piston port while recording the clutch pack clearance on the Dial Indicator. The clearance should be between 0.076 mm (0.002 in) and 1.840 mm (0.072 in). If the clearance is out of range, check the forward (1, 2, 3, 4) clutch pack for correct installation and the transmission for correct assembly. If the forward (1, 2, 3, 4) clutch pack is correctly installed, install a new forward (1, 2, 3, 4) clutch pack. Measure the length or distance. Air Blow Gun.

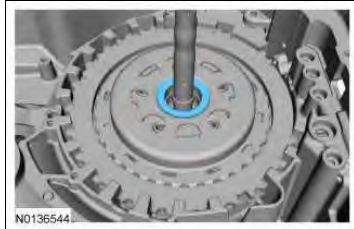
Special Tool(s): Dial Indicator Gauge With Holding Fixture 100-002 (TOOL-4201-C).



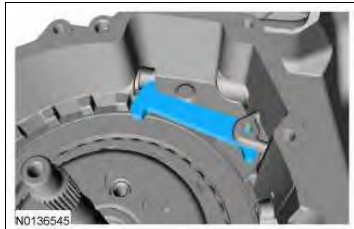
262.



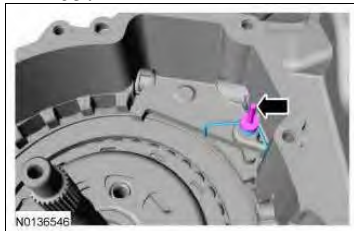
263.



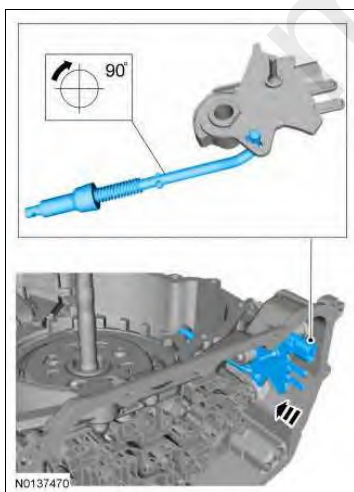
264.



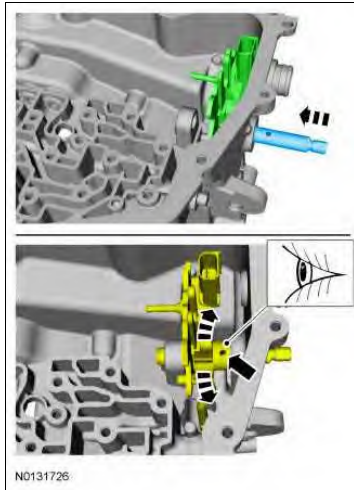
265.



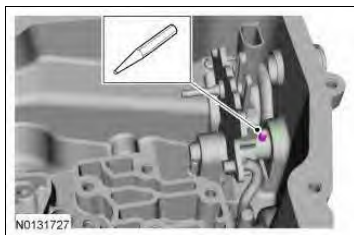
266. Turn the component CW through 90 degrees.



267. Align the manual control shaft pin holes. Visual check.

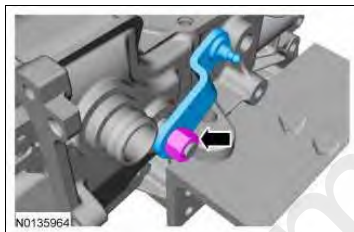


268. Pin punch.

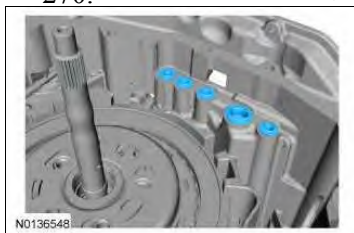


269. **NOTICE:** Make sure to hold the manual control lever while tightening the manual control lever nut or damage to the manual control lever and park components will occur.

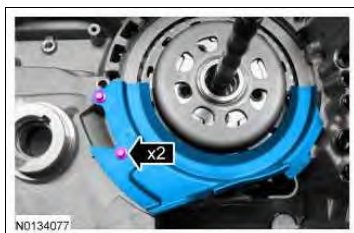
- Tighten to 24 Nm (18 lb-ft).



270.



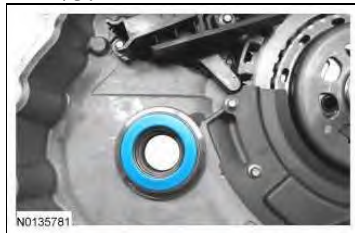
271. • Tighten to 12 Nm (106 lb-in).



272. • Tighten to 12 Nm (106 lb-in).

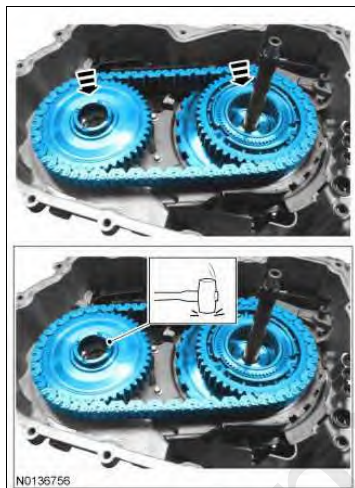


273.



274. **NOTE:** Simultaneously lower the drive, driven sprockets and chain.

Lightly tap on the driven sprocket to be sure it is fully seated in the case. Mallet.



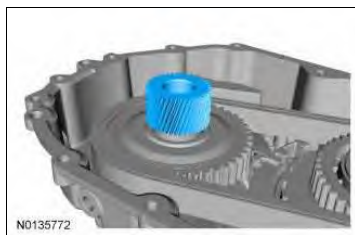
275.



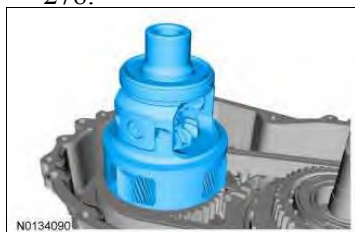
276.



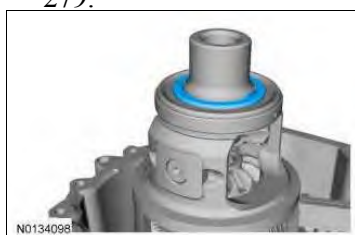
277.



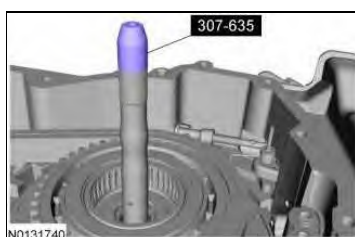
278.



279.

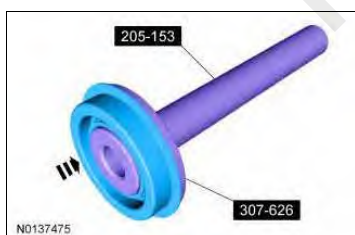


280. Special Tool(s): Seal Protector, Turbine Shaft 307-635.



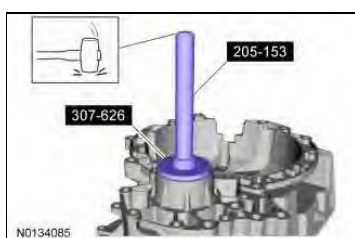
281. FWD Vehicles.

Special Tool(s): Handle 205-153 (T80T-4000-W), Installer, Differential Seal 307-626.



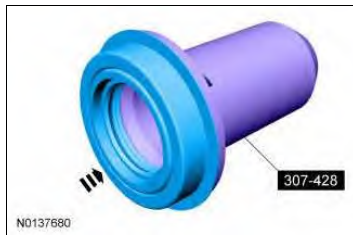
282. FWD Vehicles. Mallet.

Special Tool(s): Handle 205-153 (T80T-4000-W), Installer, Differential Seal 307-626.



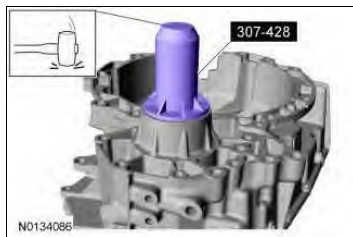
283. AWD Vehicles.

Special Tool(s): Installer, RH Halfshaft Fluid Seal 307-428.



284. AWD Vehicles. Mallet.

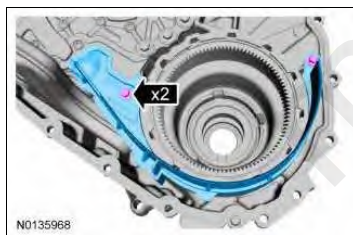
Special Tool(s): Installer, RH Halfshaft Fluid Seal 307-428.



285. • Tighten to 35 Nm (26 lb-ft).



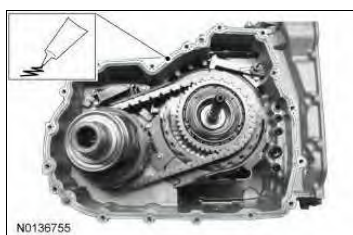
286. • Tighten to 12 Nm (106 lb-in).



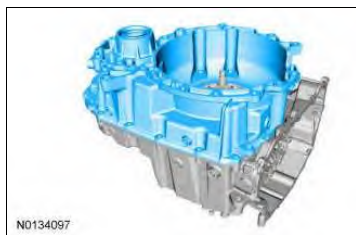
287. **NOTE:** Be sure the sealing surfaces of the torque converter housing and the transmission housing are free of oil before applying silicone.

Apply the substance from the specified tube.

Material: Ultra Silicone Sealant TA-29.

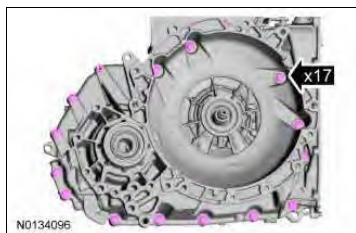


288.

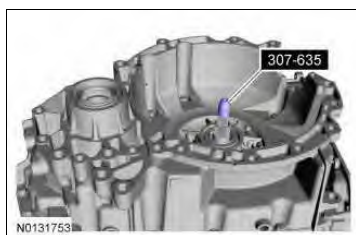


289. **NOTE:** Be sure the torque converter housing stud bolt is in the correct location as noted during disassembly.

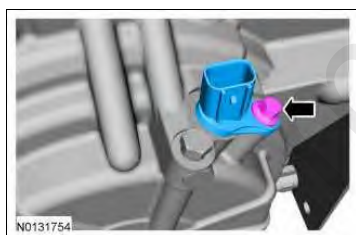
- Tighten to 24 Nm (18 lb-ft).



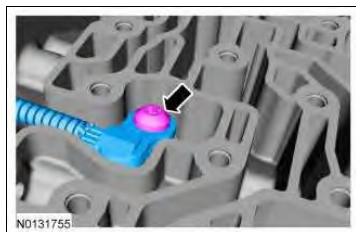
290. Remove the special tool.
Special Tool(s): Seal Protector, Turbine Shaft 307-635.



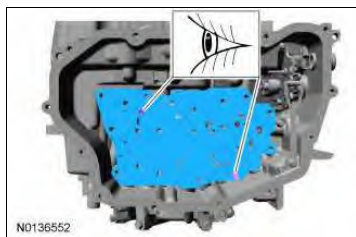
291. • Tighten to 10 Nm (89 lb-in).



292. • Tighten to 10 Nm (89 lb-in).

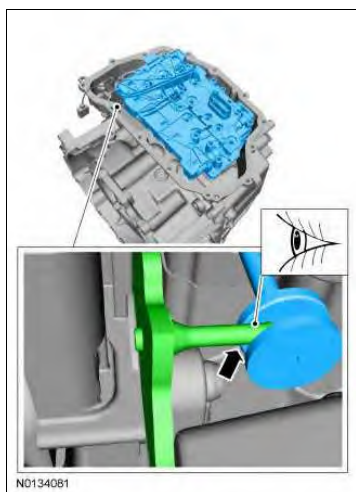


293. Align the new separator plate on the stud and the guide pin. Visual check.

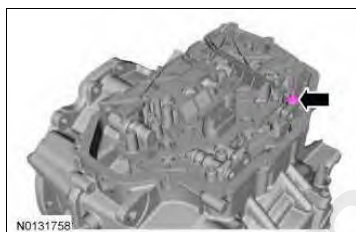


294. **NOTE:** Be sure that the manual pin (part of the TR sensor) is correctly installed in the manual valve.

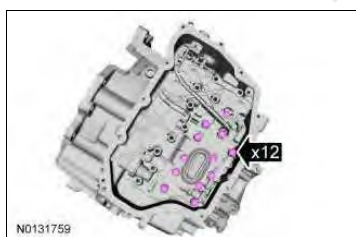
Visual check.



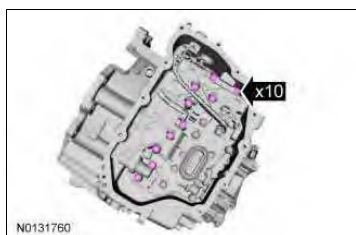
295. Nut hand-tight.



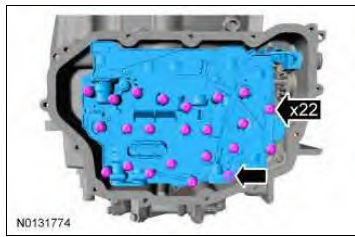
296. Short bolts hand-tight.



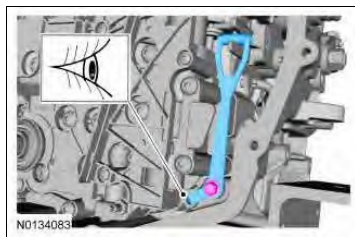
297. Long bolts hand-tight.



298. Tighten in a crisscross pattern.
- Tighten to 10 Nm (89 lb-in).

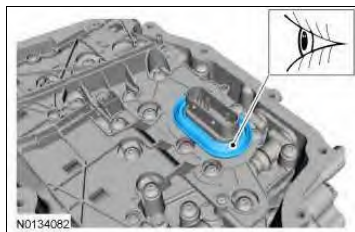


299. Alignment tab in the alignment hole. Visual check.
- Tighten to 13 Nm (115 lb-in).

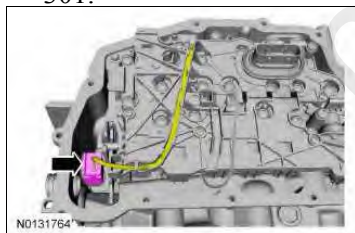


300. **NOTE:** Be sure the main control-to-cover seal is installed with the holes facing up.

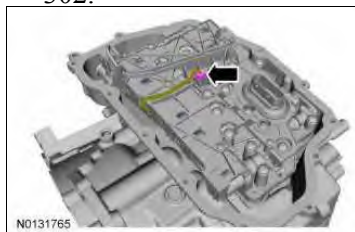
Visual check.



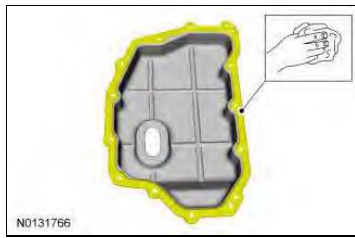
- 301.



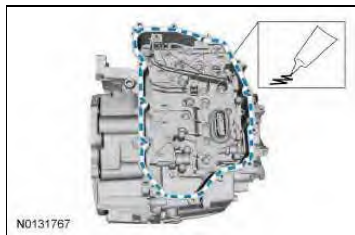
- 302.



303. Clean the specified component with the specified material.



304. Apply the substance from the specified tube.
Material: Ultra Silicone Sealant TA-29.



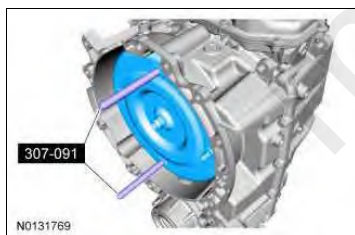
305. **NOTE:** Install the main control cover stud bolts in the correct location as noted during disassembly.

- Tighten to 12 Nm (106 lb-in).



306. **NOTICE:** The torque converter is heavy. Be careful not to drop it or damage will result.

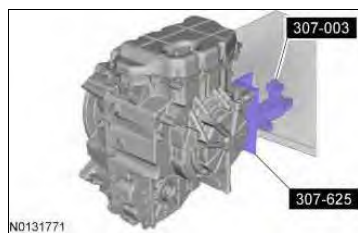
Special Tool(s): Handle, Torque Converter 307-091 (T81P-7902-C).



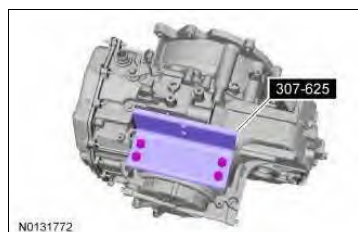
307. Special Tool(s): Retainer, Torque Converter 307-566.



308. Special Tool(s): Holding Fixture, Transmission 307-003 (T57L-500-B), Holding Fixture 307-625.



309. Special Tool(s): Holding Fixture 307-625.

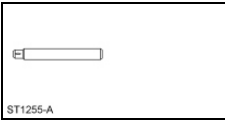
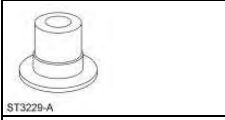
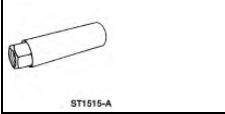


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SECTION 307-01: Automatic Transmission - 6F35
DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES

Transmission Case

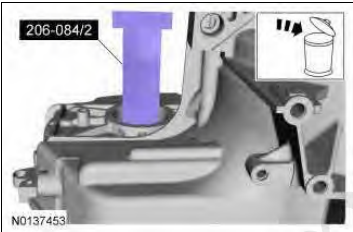
Special Tool(s)

 ST1255-A	Handle 205-153 (T80T-4000-W)
 ST3229-A	Installer, Bushing 307-664
 ST1815-A	

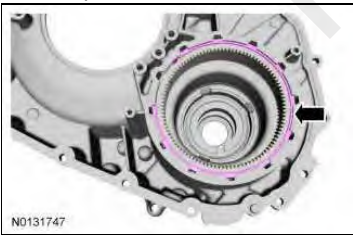
Disassembly

1. **NOTE:** Press the bushing out of the transmission case from the outside to the inside so that the transmission case rests on a flat surface.

Discard the specified component. Follow local disposal regulations.
Special Tool(s): Installer, Wheel Speed Sensor Ring 206-084/2.
General Equipment: Shop Press.



2.

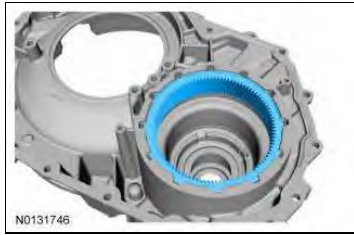


3.



Assembly

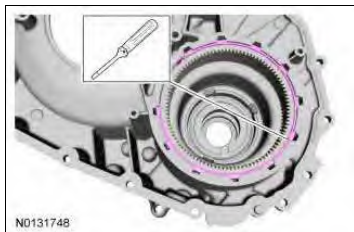
1.



2. **NOTICE:** Be sure the flat side of the beveled snap ring is facing down or the ring can come loose, causing damage to the transmission.



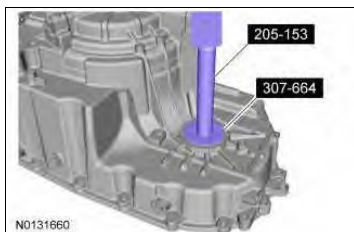
3. Seat the snap ring. Screwdriver.



4. Special Tool(s): Handle 205-153 (T80T-4000-W), Installer, Bushing 307-664.



5. Special Tool(s): Handle 205-153 (T80T-4000-W), Installer, Bushing 307-664.
General Equipment: Shop Press.

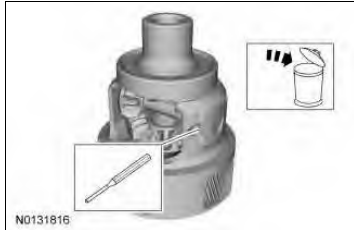


SECTION 307-01: Automatic Transmission - 6F35
DISASSEMBLY AND ASSEMBLY OF SUBASSEMBLIES

Differential Gear Assembly

Disassembly

1. Pin punch. Discard the specified component. Follow local disposal regulations.

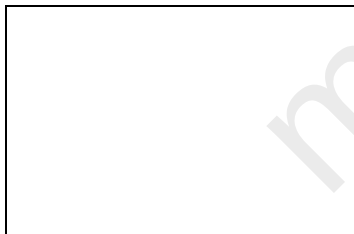


2.

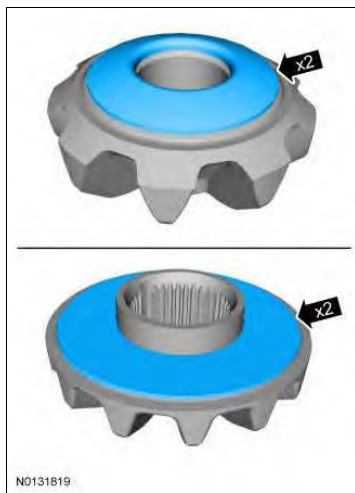


3. **NOTICE:** Do not mix up the washers from the side or spider gears that they were originally assembled with. Assembly of the differential with the wrong washers can cause excessive wear to the differential carrier, spider or side gears.

1. Side gear
2. Spider gear



4. **NOTICE:** Do not mix up the washers from the side or spider gears that they are assembled with. Assembly of the differential with the wrong washers can cause excessive wear to the differential carrier, spider or side gears.

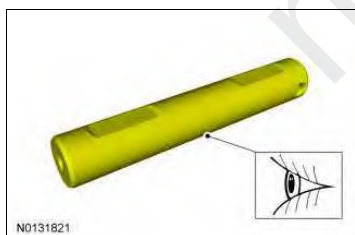


Assembly

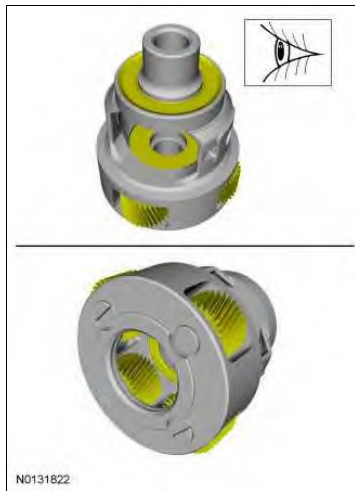
1. Check for damage or excessive wear. Visual check.



2. Check for damage or excessive wear. Visual check.



3. Check that bearings spin freely and do not move back and forth or side to side excessively. Check for damage or excessive wear. Visual check.



4. **NOTICE:** Do not mix up the washers from the side or spider gears that they were originally assembled with. Assembly of the differential with the wrong washers can cause excessive wear to the differential carrier, spider or side gears.



5.



6.



7. Align the roll pin holes. Visual check.



8. New roll pin. Pin punch.

