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## 2011 FORD Flex OEM Service and Repair Workshop Manual

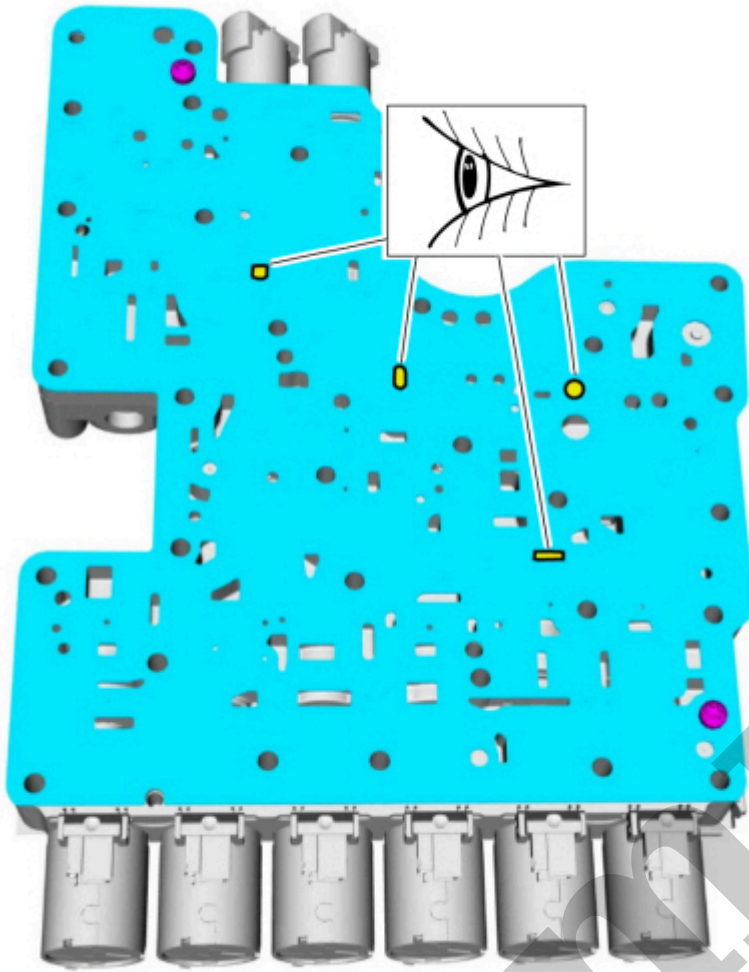
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3	TCC (torque converter clutch) control pressure
4	TCC (torque converter clutch) regulator valve
5	LPC (line pressure control) pressure
6	TCC (torque converter clutch) apply pressure
7	TCC (torque converter clutch)
8	TCC (torque converter clutch) exhaust to TCC (torque converter clutch) regulator valve
9	Torque converter anti-drainback valve
10	TCC (torque converter clutch) exhaust
11	Decreased pressure from main regulator valve

To apply to TCC (torque converter clutch) , the TCC (torque converter clutch) solenoid directs TCC (torque converter clutch) control pressure to the TCC (torque converter clutch) regulator valve, moving the valve to the left against the spring pressure. The TCC (torque converter clutch) regulator valve is positioned to connect pump output to the converter apply circuit. Fluid in the apply circuit is routed to the converter and applies the TCC (torque converter clutch) . Fluid exits the torque converter in the converter release circuit. The TCC (torque converter clutch) regulator valve connects the converter release to exhaust and fluid returns to the sump.

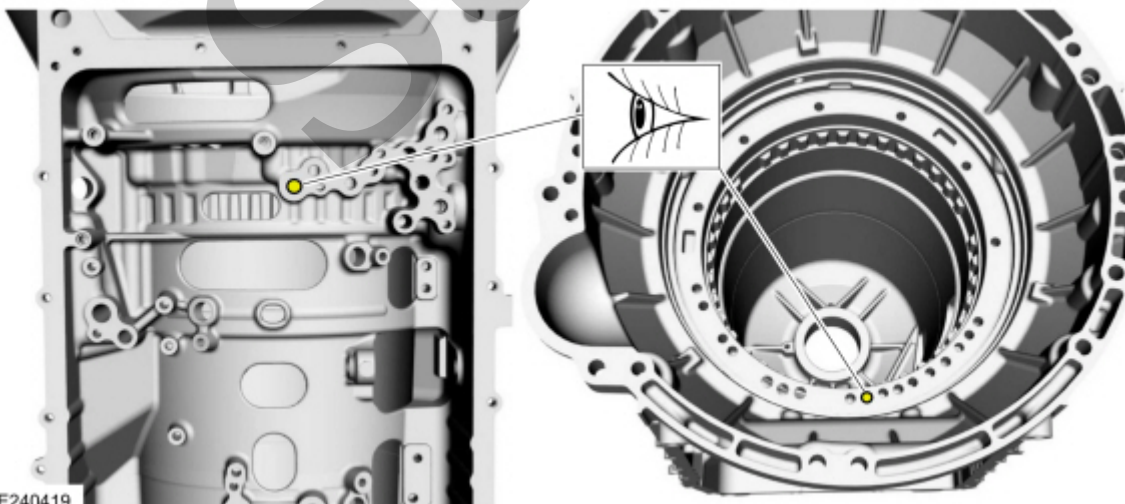
When the TCC (torque converter clutch) regulator valve is in the TCC (torque converter clutch) applied position, the converter feed circuit is connected to the from converter circuit allowing continued fluid flow to the cooler bypass valve.

### **Torque Converter Hydraulic Passages (TCC Released)**



E242014

**Torque Converter Hydraulic Passages (TCC Applied)**



E240419

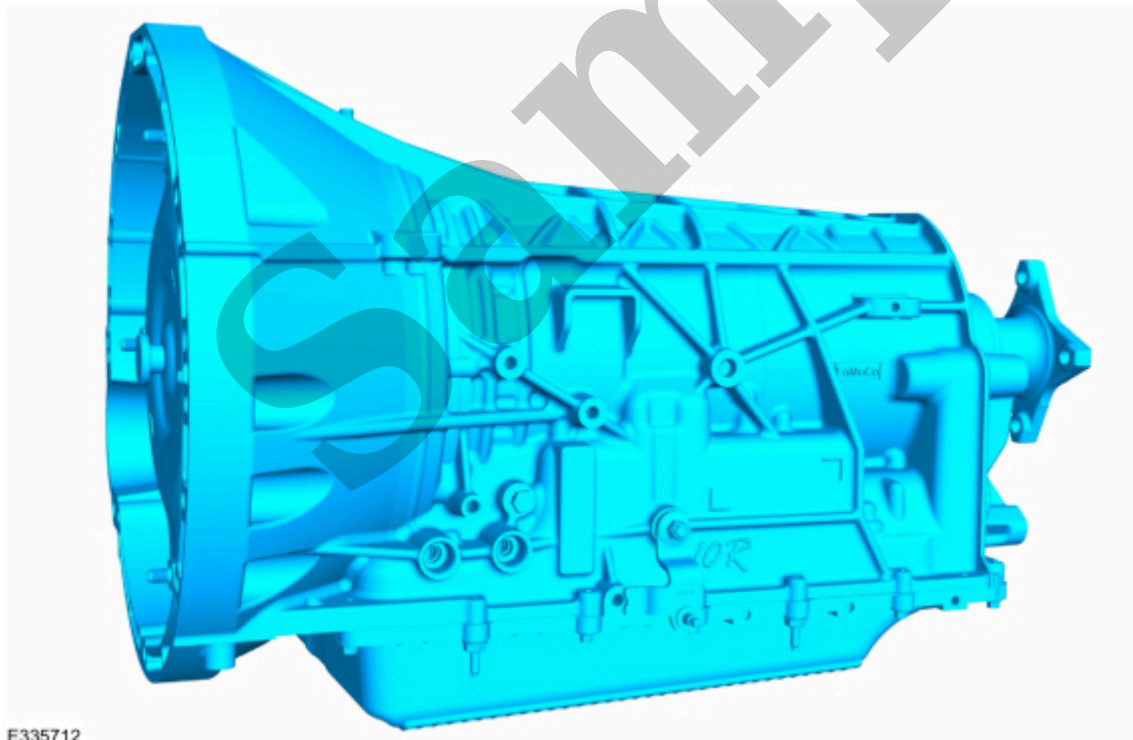


## Transmission Description - Overview

<b>307-01A Automatic Transmission - 10-Speed Automatic Transmission - 10R80</b>	<b>2022 F-150</b>
<b>Description and Operation</b>	<b>Procedure revision date: 08/5/2020</b>

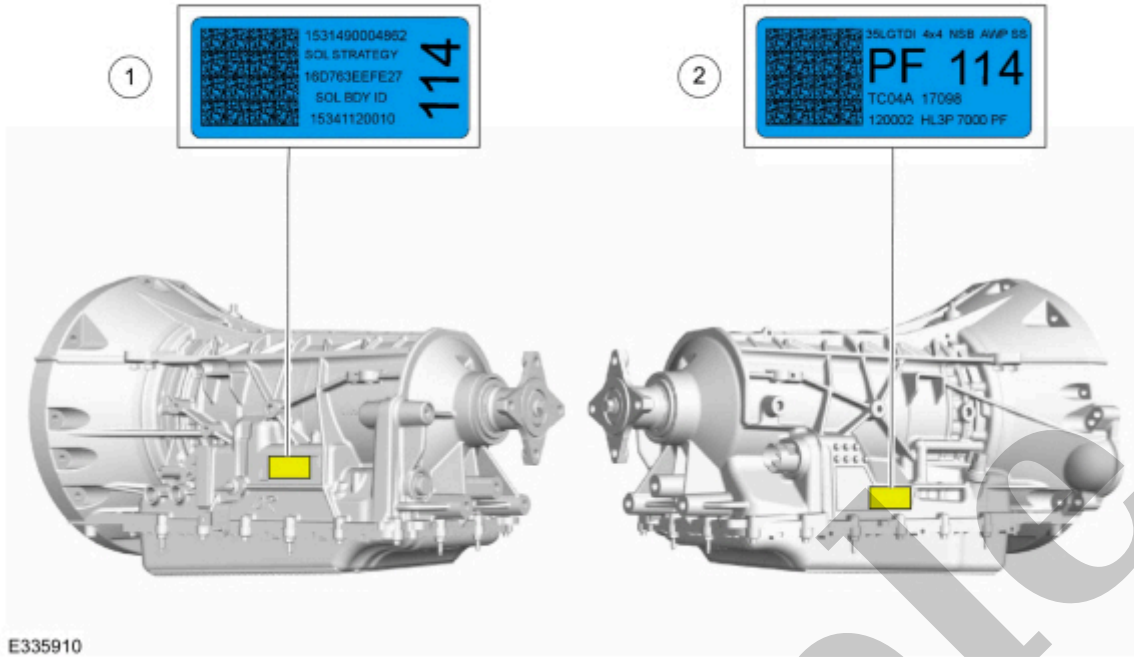
### Transmission Description - Overview

#### Overview



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The 10R80 automatic transmission is a 10-speed electronically controlled transmission with a main control valve body unit with 8 solenoids and a torque converter. Gear selection is achieved by the control of transmission fluid to operate various internal clutches. The PCM (powertrain control module) for gas engine



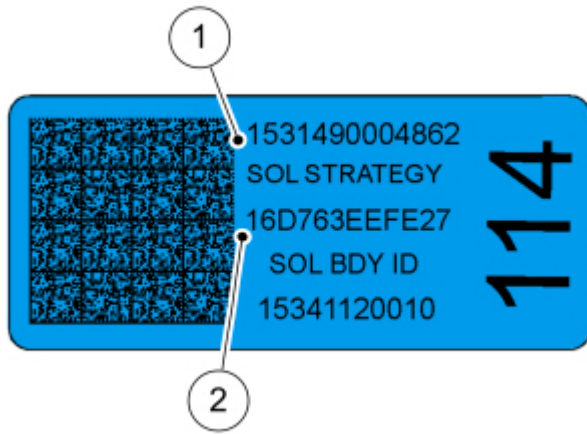
Item	Description
1	Solenoid body identification tag
2	Transmission identification tag

### Transmission identification tag



E335713

Item	Description
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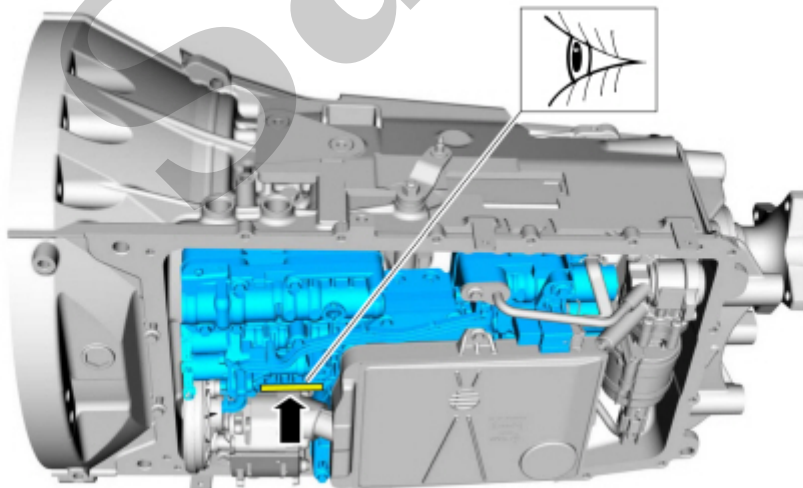


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Item	Description
1	Thirteen-digit solenoid body strategy
2	Twelve-digit solenoid body identification

Anytime a new main control is installed, a new solenoid body strategy file is downloaded into the PCM (powertrain control module) or TCM (transmission control module) using the scan tool. A replacement solenoid body tag is supplied with the new solenoid body which contains the 13-digit solenoid body strategy and the 12-digit solenoid body identification. The new tag is placed over the original solenoid body tag.

### Solenoid Body Identification and Strategy



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If the solenoid body strategy etched on the main control does not match what the scan tool displays, the solenoid body strategy must be downloaded into the PCM (powertrain control module) or TCM (transmission

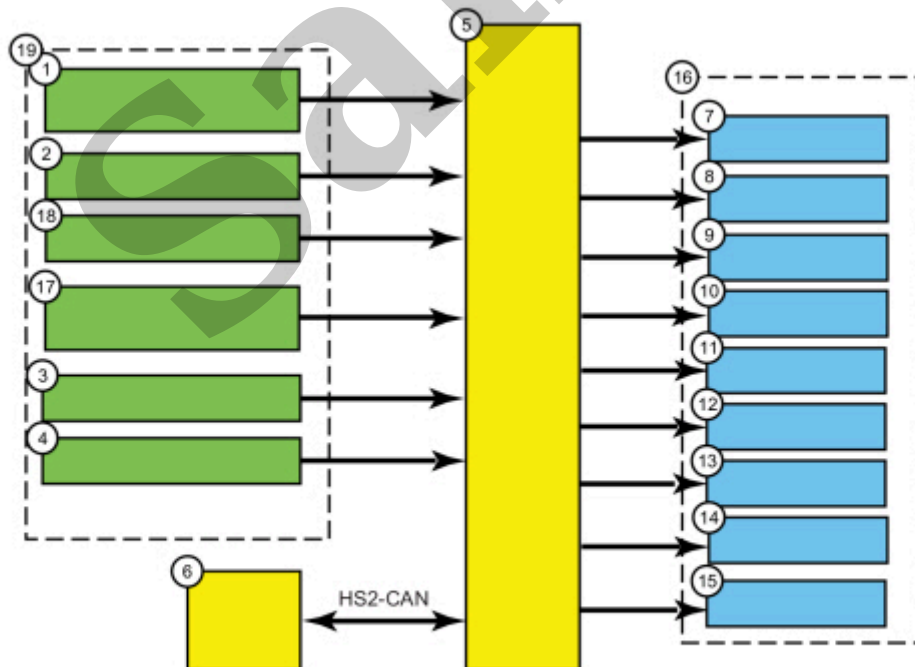
# Transmission Description - System Operation and Component Description

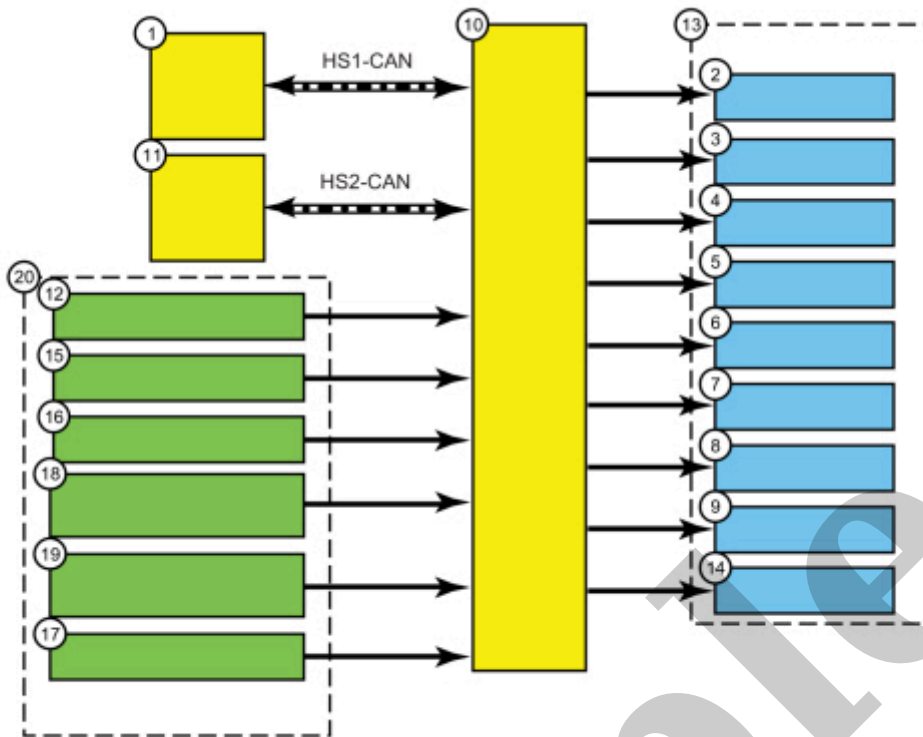
<b>307-01A Automatic Transmission - 10-Speed Automatic Transmission - 10R80</b>	<b>2022 F-150</b>
<b>Description and Operation</b>	<b>Procedure revision date: 04/6/2021</b>

## Transmission Description - System Operation and Component Description

System Diagram

Gasoline Engines





E337924

Item	Description
1	PCM (powertrain control module)
2	Park Lock Pawl Solenoid
3	SSA (shift solenoid A)
4	SSB (shift solenoid B)
5	SSC (shift solenoid C)
6	SSD (shift solenoid D)
7	SSE (shift solenoid E)
8	SSF (shift solenoid F)
9	LPC (line pressure control) Solenoid
10	TCM (transmission control module)



## System Operation

The 10R80 transmission is a 10-speed, step ratio rear wheel drive transmission that is controlled by a PCM (powertrain control module) or a TCM (transmission control module). The 10R80 has ten forward speeds, one reverse speed, four planetary gear sets, one mechanical One-Way Clutch or OWC, six friction clutches, an upper valve body, a lower valve body with eight solenoids, and PCM (powertrain control module) or TCM (transmission control module) controlled electronics. The 10R80 utilizes six shift (A-F) solenoids that are linear force solenoids. Unlike previous shift solenoids they are mechanical in nature in that no transmission fluid passes through them. CIDAS (casting integrated direct acting solenoid) s use a armature/pin assembly that moves a control valve in the main control valve body to control and apply hydraulic fluid pressure. Each clutch (A-F) is controlled by a corresponding shift solenoid (A-F). These solenoids are directly proportional in that zero current equals zero pressure and maximum current equals maximum pressure. If the power circuit to the transmission solenoids fails open, then all solenoids are failed electrically OFF, none of the clutch packs are able to engage and there is no fail safe operation.

### Upshift Gear Sequence

At times the 10-speed transmission may **skip** gears when the vehicle starts from a complete stop. This is **normal** and desired **behavior**.

At part pedal when acceleration is brisk, single step upshifts would result in very frequent shift events (very short time in gear). Double step upshifts results when a longer time is spent in gear.

However, at light pedal or road load, single step upshifts **will** occur. The small 10-speed gear steps allow the engine speed to drop to lower values than it would in the 6-speed transmission; providing for the best fuel economy. In contrast, when the 10-speed transmission is at heavy or max pedal, the small steps keep the engine closer to the horsepower peak for best performance.

### Down shift Gear Sequence

At times the 10-speed transmission may **skip** gears when the vehicle down shifts to a complete stop. This is **normal** and desired **behavior**.

The same **skip** shift strategy that is used for the upshift may be applied during down shift.

### Drive Modes

Optimum shift quality is provided in Drive (D) when the Normal Drive Mode is selected. In Manual (M) or when a different Drive Mode is selected, the strategy will provide more aggressive shifts at higher engine speeds. This is **normal** and desired **behavior**.

## Component Description

### Hydraulic Circuits

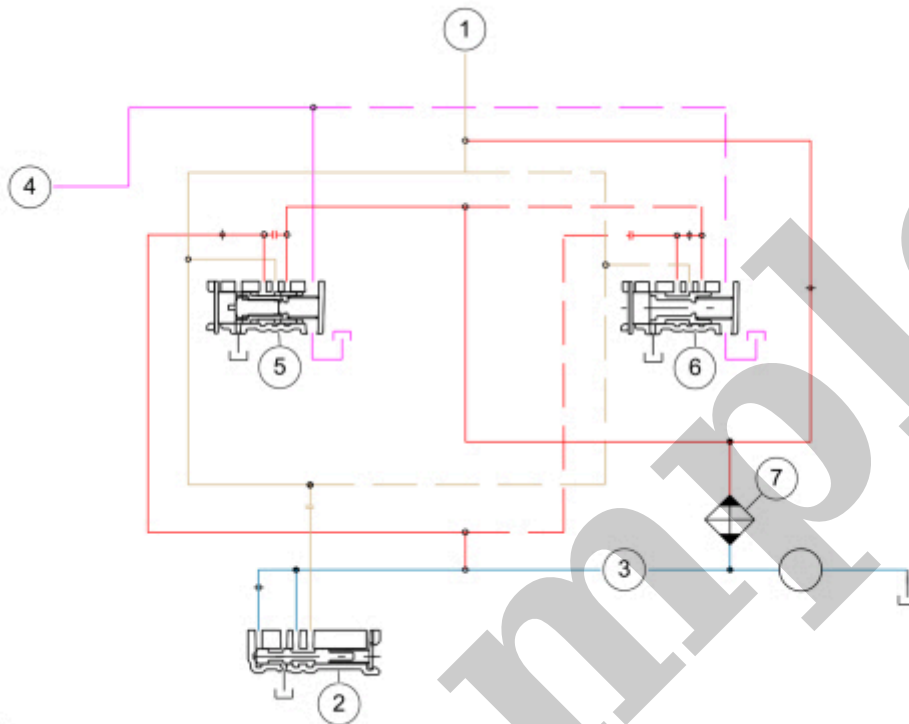
#### Line Pressure Hydraulic Circuits

pressure circuit controls the position of the main regulator valve.

The main regulator valve varies pressure in the pump output circuit.

The transmission fluid auxiliary pump, an electronic pump in turned on before an engine stop event to maintain line pressure, allowing the transmission to stay engaged during the stop event. This allows quick response on the engine restart because the transmission is already in gear.

### Lubrication Hydraulic Circuits



E238404

Item	Description
1	Fluid from torque converter
2	Lube control valve
3	Lube fluid circuit
4	Elevated exhaust pressure
5	Thermal bypass valve without active warm up
6	Cooler bypass valve with active warm up (includes Raptor)
7	Fluid cooler