




Special Testing Procedures

Special Tool(s)

 ST2538-A	Air Test Plate and Gaskets, Transmission 307-433-01, 307-433-02, 307-433-03
 ST1565-A	Transmission Fluid Pressure Gauge 307-004 (T57L-77820-A)
 ST2834-A	Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool

The special tests are designed to aid the technician in diagnosing the hydraulic and mechanical portion of the transmission.

Engine Idle Speed Check

Refer to the Powertrain Control/Emissions Diagnosis (PC/ED) manual for diagnosis and testing of the engine idle speed.

Line Pressure Test

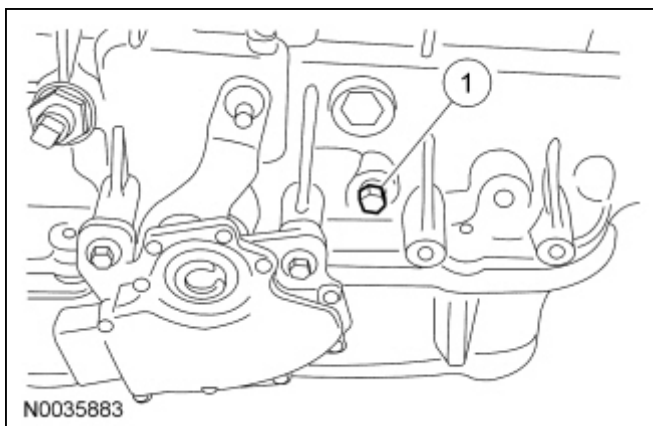
NOTICE: Carry out Line Pressure Test prior to carrying out Stall Speed Test. If line pressure is low at stall, do not carry out the Stall Speed Test or further transmission damage will occur. Do not maintain Wide Open Throttle (WOT) in any gear range for more than 5 seconds.

NOTE: Certain sensor failures may cause high line pressure, Failure Mode Effect Management actions. Be sure that the self test and electrical repairs have been completed or test results may be incorrect.

NOTE: The line pressure tap is used to verify output pressure from Pressure Control Solenoid A (PCA) or Pressure Control Solenoid B (PCB) by turning one solenoid off, while verifying the output from the other solenoid. The second pressure tap is used to verify the output from Pressure Control Solenoid C (PCC).

This test verifies that the line pressure is within specification.

1. Connect the Transmission Fluid Pressure Gauge to the line pressure tap.
2. Start the engine and check line pressures. Refer to the following Line Pressure Chart to determine if line pressure is within specifications.

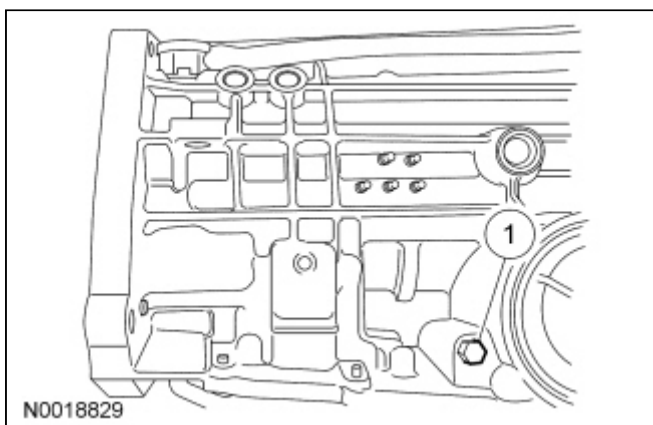


Item	Part Number	Description
1	1390685-S430	Line pressure tap

Line Pressure Chart — 4.0L and 4.6L Engines

Range	Idle Pressure		WOT Stall Pressure	
	PCC	Line	PCC	Line
N	0-103 kPa (0-15 psi)	758-1,034 kPa (110-150 psi)		
R	758-862 kPa (110-125 psi)	965-1,551 kPa (140-225 psi)	758-862 kPa (110-125 psi)	2,000-2,482 kPa (290-360 psi)
(D), 2, 1	0-103 kPa (0-15 psi)	758-1,045 kPa (110-150 psi)	0-103 kPa (0-15 psi)	1,448-1,793 kPa (210-260 psi)

- If the line pressure is not within specification, check the [PCC](#) pressure.
- Connect the Transmission Fluid Pressure Gauge to the [PCC](#) pressure tap.



Item	Part Number	Description
1	1390685-S430	Pressure Control Solenoid C (PCC) tap

- Start the engine and check the [PCC](#) pressure. Refer to Line Pressure Diagnosis Chart in this section for specification.
- If the [PCC](#) pressure is not within specification, [GO to Pinpoint Test D](#) to diagnose [PCC](#) operation. If [PCC](#) operation is OK, refer to Line Pressure Diagnosis Chart in this section for line pressure concern causes.
- When pressure tests are complete, install the pressure tap plugs.
 - Tighten to 13 Nm (115 lb-in).

Line Pressure Diagnosis Chart

Test Results	Possible Source
High at Idle — All Ranges	<ul style="list-style-type: none"> • Wiring harnesses • Pressure Control Solenoid C (PCC) boost valve • <u>PCC</u> solenoid • Main regulator valve
Low at Idle — All Ranges	<ul style="list-style-type: none"> • Low transmission fluid level • Transmission fluid inlet filter/seal • Main control body • Cross leaks • Gaskets • Pump • Separator plate
Low — All Forward Ranges	<ul style="list-style-type: none"> • Forward clutch • Main control • Overdrive (O/D) servo • Intermediate servo
Low in PARK Only	<ul style="list-style-type: none"> • Valve body
Low in REVERSE Only	<ul style="list-style-type: none"> • Separator plate • Rear servo piston, cover seal • Reverse clutch • <u>O/D</u> servo • Intermediate servo • Valve body • Forward clutch
Low in NEUTRAL Only	<ul style="list-style-type: none"> • Valve body • <u>O/D</u> servo • Intermediate servo
Low in D Only	<ul style="list-style-type: none"> • Forward clutch • <u>O/D</u> servo • Intermediate servo • Valve body
Low in D Only ((D) Cancelled)	<ul style="list-style-type: none"> • Forward clutch • <u>O/D</u> servo • Intermediate servo • Valve body
Low in 1st Position	<ul style="list-style-type: none"> • Forward clutch • Valve body
Low in 2nd Position	<ul style="list-style-type: none"> • Intermediate servo • <u>O/D</u> servo • Intermediate servo • Forward clutch
Low in 3rd Position	<ul style="list-style-type: none"> • Intermediate servo • <u>O/D</u> servo • Forward clutch

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

NOTICE: After testing each of the following range D, 3, 2, 1 and R, move the transmission selector lever to N and run the engine at 1,000 rpm to allow the torque converter to cool before testing the next range, otherwise transmission damage can occur.

NOTICE: Do not maintain Wide Open Throttle (WOT) in any range for more than 5 seconds, otherwise transmission damage can occur.

NOTICE: If the engine rpm recorded by the scan tool exceeds maximum specified rpm, release the accelerator pedal immediately, otherwise transmission damage can occur. Clutch or band slippage is indicated.

NOTE: Prolonged use of this procedure may set DTC P0712, P1783. After carrying out Stall Speed Test, run Key ON Engine OFF (KOEO) test. Clear the DTCs.

NOTE: The Stall Speed Test should be carried out with the engine and transmission at normal operating temperatures.

This test checks the operation of the following items:

- Torque Converter Clutch (TCC)
- Forward clutch
- Low One-Way Clutch (OWC) assembly
- Engine operation
- Overdrive (O/D) OWC assembly

1. Connect a scan tool to the vehicle.
2. Press the accelerator pedal to the floor WOT in each range. Record rpm reached in each range. Stall speeds should be as follows:

Stall Speed Chart

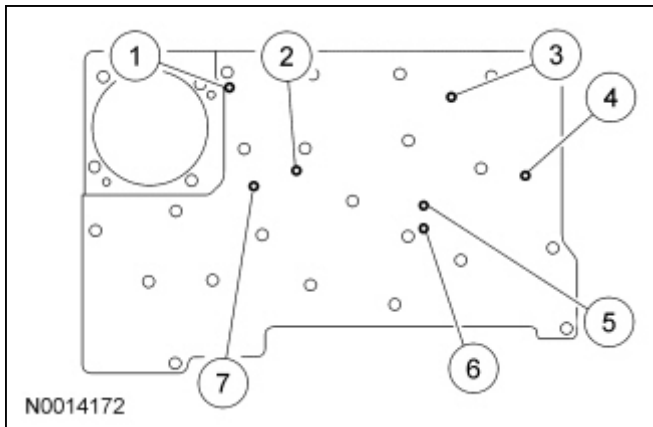
Vehicle	Engine	rpm
Mustang	4.0L	2,678-3,130
Mustang	4.6L	2,556-3,014

If the stall speeds were too high, refer to the following Stall Speed Diagnosis Chart. If the stall speeds were too low, first check the engine idle speed. If the engine idle is OK, remove the torque converter and check the torque converter OWC for slippage.

Stall Speed Diagnosis Chart

Selector Lever Position	Stall Speeds High	Stall Speeds Low
D, D ((D) cancelled) and 1	<u>O/D OWC</u> , rear <u>OWC</u>	—
D ((D) cancelled), 2 and 1	Forward clutch, <u>O/D OWC</u>	—
D	Forward clutch, <u>O/D OWC</u>	—
D, D ((D) cancelled), 3, 2, 1 and R	General pressure concerns, forward clutch, <u>O/D OWC</u>	Converter <u>OWC</u> or engine driveability concerns
R Only	High/reverse, high clutch, low and reverse band/servo	—
2 Only	Intermediate band/servo	—
1 Only	Low/reverse band/servo	—

Air Pressure Tests



Item	Description
1	Reverse servo
2	Intermediate servo
3	<u>O/D</u> servo
4	Coast clutch
5	Forward clutch
6	Direct clutch
7	Reverse servo modulator

A no-drive or erratic shift condition may be due to inoperative bands and clutches. To diagnose these conditions, a series of checks can be made by substituting air pressure for fluid pressure to determine the location of the damaged or obstructed component.

Follow the procedure to determine the location of the inoperative clutch or band by substituting air pressure into the various test plate passages.

NOTE: Use only dry, regulated 276 kPa (40 psi) maximum air pressure.

1. Remove the main control valve body. Refer to [Main Control Valve Body](#) in this section.
2. Install the Transmission Air Test Plate and Gasket. Tighten to 10 Nm (89 lb-in).
3. **NOTE:** Do not apply air to the Transmission Air Test Plate vent hole.

Apply air to the appropriate clutch or servo port (refer to plate layout diagram). Refer to the Air Pressure Test Diagnostic Chart for conditions, possible causes and actions.

4. After the testing is completed, remove the Transmission Air Test Plate and Gasket and proceed with any repairs that are needed.
5. After the repairs are completed, install the main control valve body. Refer to [Main Control Valve Body](#) in this section.

Air Pressure Test Diagnostic Chart

Condition	Possible Causes	Actions
Dull thud heard or movement felt when air is applied and released	Clutches, bands and fluid passages are OK.	Concerns may not be in the transmission. Check the PCM, wiring harness and non-transmission related components.
No drive	Clutches and bands inoperative.	Disassemble the transmission, clean and inspect to locate area of concern.

Erratic shifts	Clutches and bands inoperative due to incorrect pressures.	Disassemble the transmission, clean and inspect to locate area of concern.
No dull thud heard	Clutches, bands and fluid passages may be damaged or obstructed.	Disassemble the transmission, clean and inspect to locate area of concern.
No movement felt	Clutches, bands and fluid passages may be damaged or obstructed.	Disassemble the transmission, clean and inspect to locate area of concern.
Hissing sound heard	Clutch seals or check ball may be damaged or leaking.	Disassemble the transmission, clean and inspect to locate area of concern.
Servos do not operate	Seals and pistons may be damaged. Supply and release ports may be obstructed. Spring may be broken.	Disassemble the transmission, clean and inspect to locate area of concern.
Multiple clutches are applied	Fluid passages in the center support or the clutch cylinders may be obstructed.	Disassemble the transmission, clean and inspect to locate area of concern. Check fluid passages in the center support for obstructions.
