



LINCOLN LS 5R55S HARSH ENGAGEMENTS AND/OR HARSH SHIFTS

COMPLAINT: Before or after overhaul, Lincoln LS vehicles, equipped with the 5R55S transmission may exhibit a complaint of harsh engagements and or harsh up-shifts, especially the 1-2 up-shift with no codes present. This complaint will typically come into the hot line as a problem the vehicle came in with and after overhaul, solenoid pack replacement and sometimes even valve body replacement, the problem still persists.

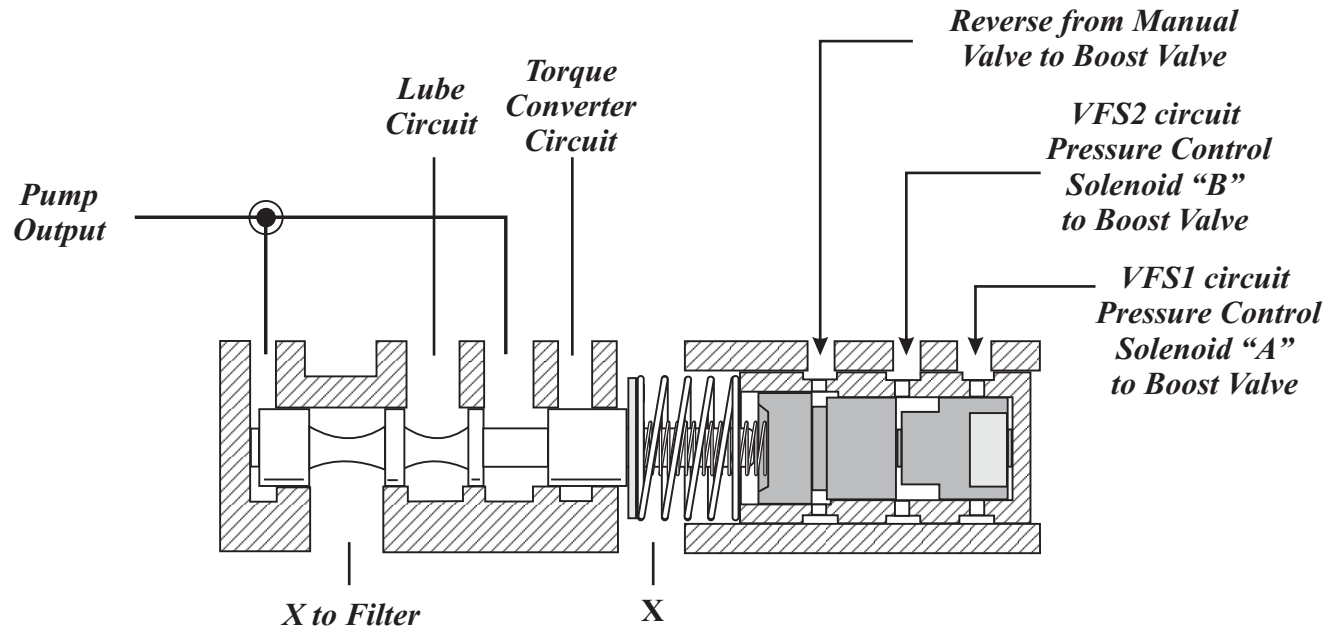
CAUSE: The cause may be, higher than normal line pressure, caused by a malfunctioning PCM incorrectly controlling Pressure Control Solenoid A or B. Refer to Figure 1 for a description of the Pressure Regulator Valve and how PCA and PCB act on the Boost Valve to Control Line Pressure.

VERIFICATION: To verify the problem is related to High Pressure, refer to Figure 2 for a location of the main line pressure port and verify idle pressure in the Drive position. The idle Pressure should be about 100 psi. on the port located in Figure 2. Typically pressure will be a minimum of 150psi. at idle when there are problems related to PCM control. Once we have verified higher than normal pressure refer to the chart in Figure 3 and note the scan tool pids listed for PCA and PCB and note that the scan tool information shows that it is being controlled according to the chart listed below from Ford. The next step is to verify that the solenoid is being controlled according to the information listed in Figure 3. Refer to Figures 4 and 5 to locate pin connection at the PCM or the case connector for the solenoid pack. Connect amp clamp or ammeter to the ground circuits for PCA and PCB and look for an amperage reading of .75 to .98 for minimum pressure in their respective circuits, to create minimum line pressure at idle. The typical reading when there are PCM problems will be near .23.

CORRECTION: To correct this condition, verify that the amp readings are not normal, make sure that harness and wire connections are clean, and if all is good replace PCM. Note: the PCM will need to be programmed by a dealer when installed.

Note: The Excel Spreadsheet is courtesy of AutoEnginuity, which is a PC based Scan tool, which is capable of recording a road test, then giving you the ability to open the spreadsheet to go over data that was recorded.

PRESSURE REGULATOR VALVE CIRCUIT I.D.

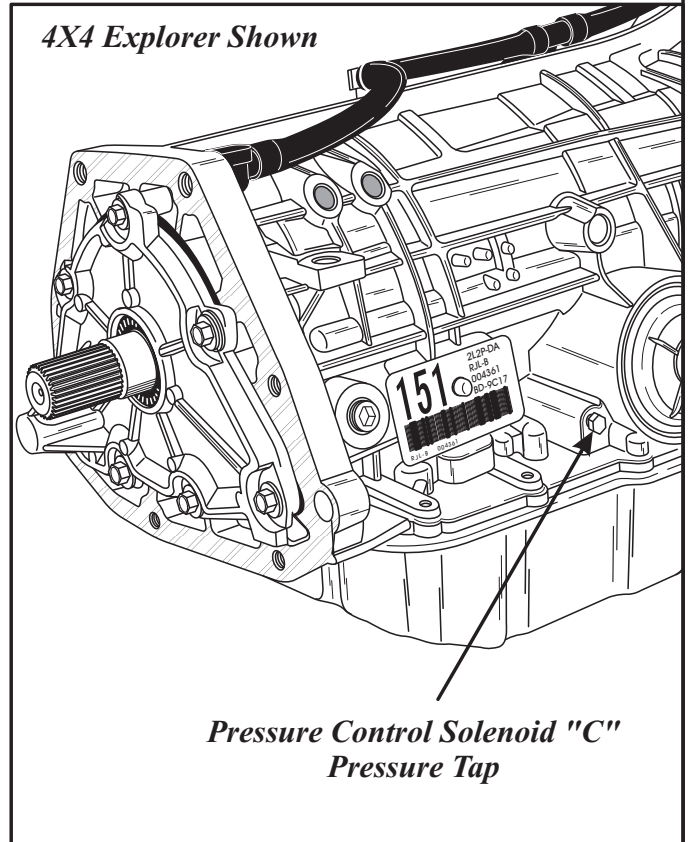
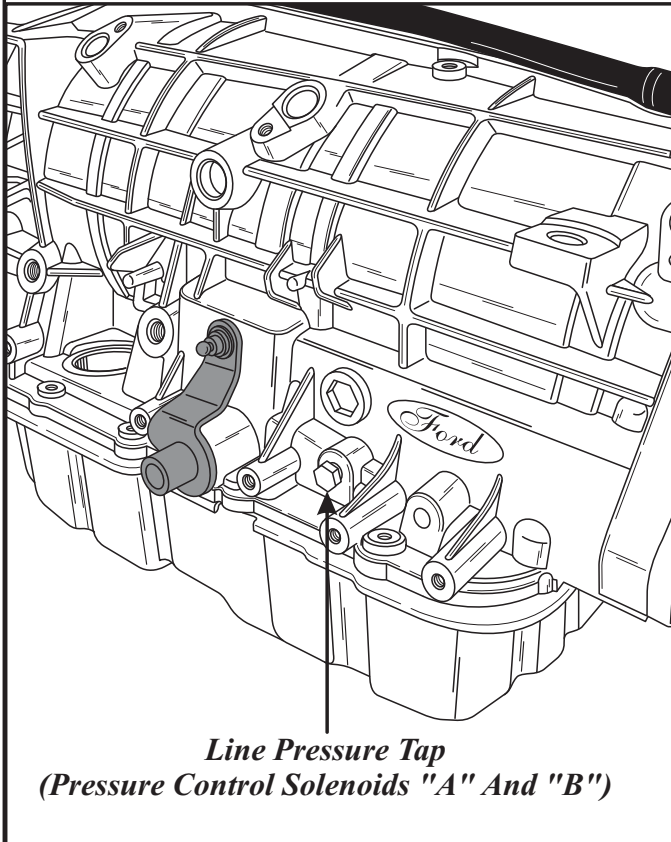


Note: The Pressure Regulator Boost Valve has three circuits fed to it to increase line pressure. The first is Line pressure feed from the Manual Valve when it is in the Reverse position. The Second is a feed from the VFS2 circuit which is Pressure Control Solenoid "B." The third is from the VFS1 circuit which is Pressure Control Solenoid "A." High Pressure in either VFS1 or VFS2 can cause higher than normal Line Pressure.

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Figure 1

LINE PRESSURE TEST



LINE PRESSURE TEST

1. There are 3 Pressure Control solenoids located in the solenoid body, PC "A", PC "B", PC "C", used to control all application pressures.
2. Start engine and check line pressures using the chart provided below to determine if the line pressure is within specifications.

Special Note: The line pressure tap is used to verify output pressure from PC "A" or from PC "B."

The 2nd pressure tap, is used to verify pressure readings from PC "C" solenoid. Use the chart below for proper specifications.

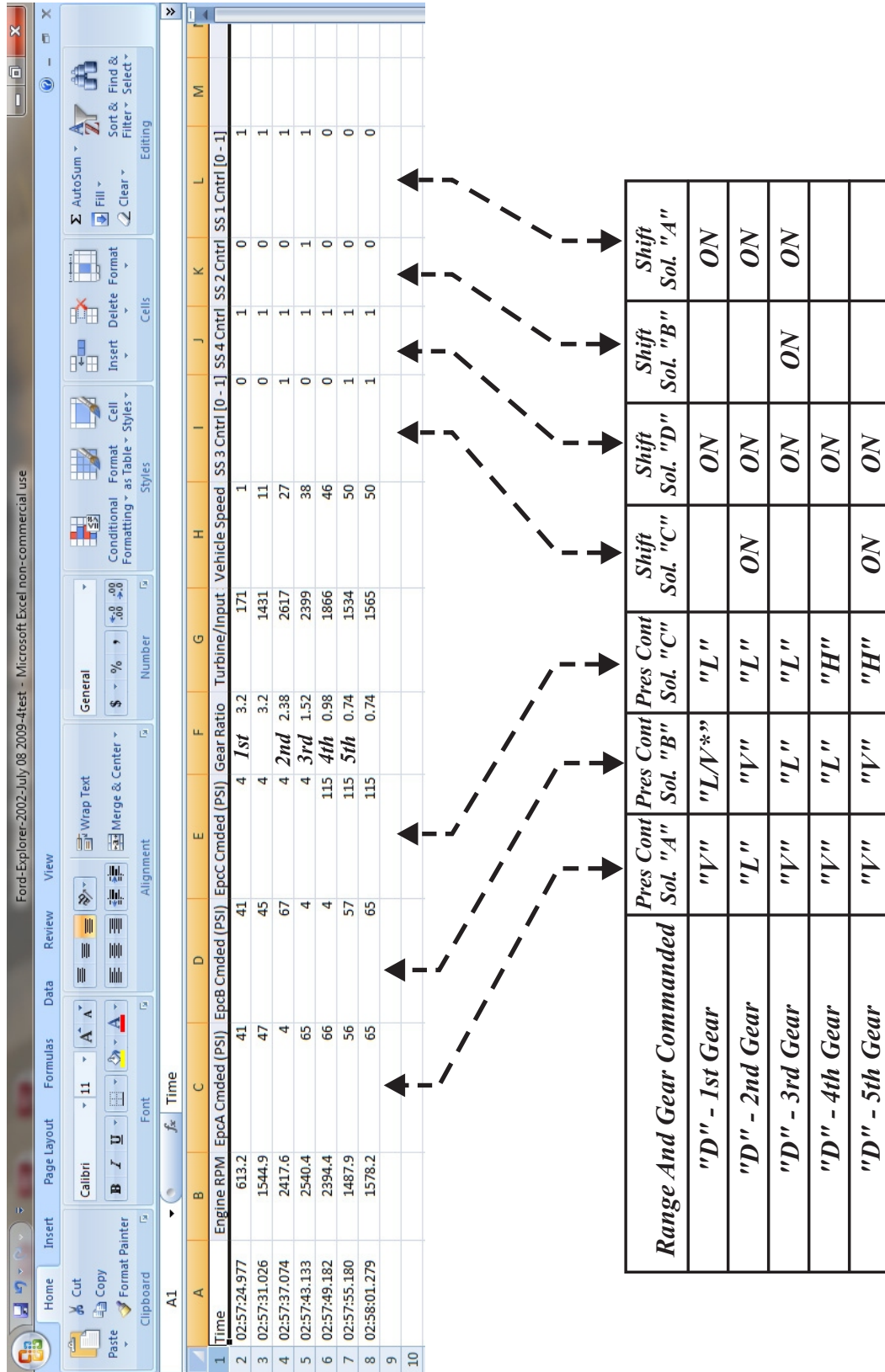
Vehicle	Range	Idle Line Pres.	WOT Line Pres.	Idle PC "C" Pres.	WOT PC "C" Pres.
Lincoln LS	P/N	90-120 psi	— — —	0-15 psi	— — —
	Reverse	100-140 psi	282-380 psi	90-120 psi	112-134 psi
	(D), 3, 2, 1	90-110 psi	228-263 psi	0-15 psi	0-15 psi

Note: Line pressure readings on a vehicle that has an incorrectly controlled PCA or PCB Solenoid usually start at 150psi. at idle in the Drive position.

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Figure 2

AUTOENGINEUTY EXCEL ROAD TEST RECORDING



FORD 5R55W/S SOLENOID APPLY CHART

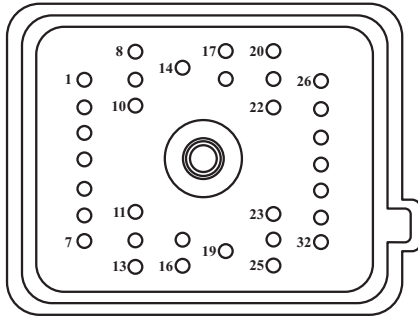
"L"= Low pressure in solenoid circuit "V"= Variable pressure in solenoid circuit "H"= High pressure in solenoid circuit
 "L/V*" may be Low or Variable - based on engine load

Summary

Both the Excel Recording and the Ford Solenoid charts shown above refer to Pressure Control Solenoid Commanded pressure. The Lower the Commanded Pressure the Higher the amperage to the solenoid. The Higher the Commanded pressure the Lower the amperage will be to the solenoid, as these solenoids are all Normally Applied.

PCM AND TRANS CONNECTOR TERMINAL I.D.

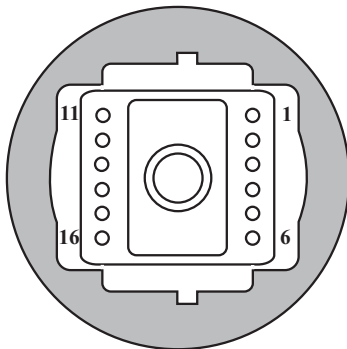
PCM Connector Number 175b(03) Number 175t (04)



PCM CONNECTOR NUMBER 175b-175t	
PIN NO.	TRANSMISSION CIRCUIT FUNCTION ONLY
1	Shift Solenoid "A" (SSA) ground control signal from PCM
2	Shift Solenoid "B" (SSB) ground control signal from PCM
7	Pressure Control Solenoid "A" (PC A) ground control signal from PCM
8	Shift Solenoid "C" (SSC) ground control signal from PCM
9	Digital Transmission Range (DTR) Sensor TR3A signal to PCM
10	Digital Transmission Range (DTR) Sensor TR4 signal to PCM
12	Pressure Control Solenoid "C" (PC C) ground control signal from PCM
13	Pressure Control Solenoid "B" (PC B) ground control signal from PCM
14	Sensor signal return (Ground)
17	Shift Solenoid "D" (SSD) ground control signal from PCM
18	Digital Transmission Range (DTR) Sensor TR2 signal to PCM
20	Torque Converter Clutch (TCC) ground control signal from PCM
21	Intermediate Shaft Speed (ISS) Sensor signal to PCM
22	Digital Transmission Range (DTR) Sensor TR1 signal to PCM
23	Transmission Fluid Temperature (TFT) Sensor signal to PCM
26	Output Shaft Speed (OSS) Sensor signal to PCM
27	Turbine Shaft Speed (TSS) Sensor signal to PCM

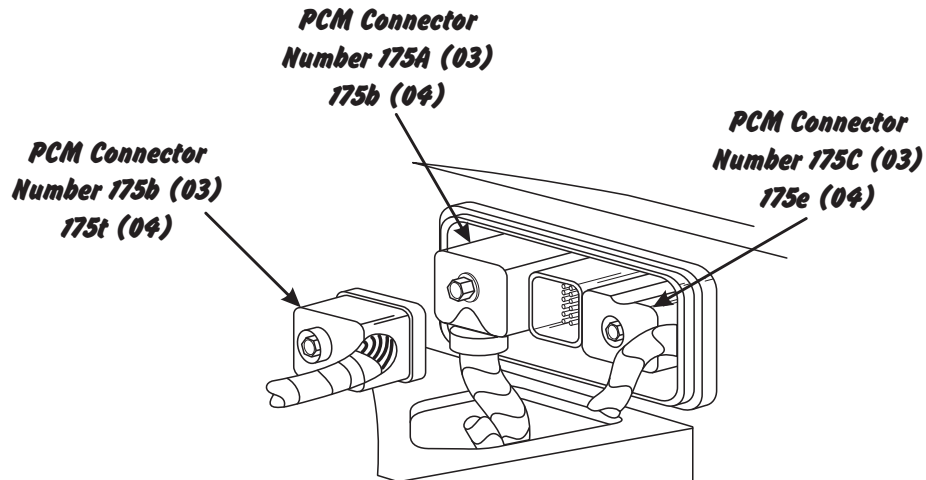
Connect amp clamp or ammeter to the ground control circuits for PCA and PCB and look for an amperage reading of .75 to .98 for minimum pressure in their respective circuits, to create minimum line pressure at idle.

Solenoid Body Connector



SOLENOID BODY CONNECTOR	
PIN NO.	CIRCUIT FUNCTION
1	Pressure Control Solenoid "B" (PC B) ground control signal from PCM
2	Transmission Fluid Temperature (TFT) Sensor signal to PCM
3	Fused Battery Voltage in from Start-Run
4	Pressure Control Solenoid "C" (PC C) ground signal from PCM
5	Shift Solenoid "D" (SSD) ground control signal from PCM
6	Shift Solenoid "C" (SSC) ground control signal from PCM
11	Pressure Control Solenoid "A" (PC A) ground control signal from PCM
12	Sensor signal return (Ground)
14	Torque Converter Clutch (TCC) ground control signal from PCM
15	Shift Solenoid "B" (SSB) ground control signal from PCM
16	Shift Solenoid "A" (SSA) ground control signal from PCM

POWERTRAIN CONTROL MODULE LOCATION



*The PCM is located behind the glove box on the passenger side of the vehicle.
The Connectors go through the firewall as shown above.*

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Figure 5