

False Pretenses

Wear in servo-pin bore can cause solenoid-performance problems, gear-ratio-error codes in 5R55N/S/W

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ometimes things are not what they appear to be, especially in the transmission-repair business. This is just such a case.

A 2002 Ford Explorer with a 5R55W transmission came into a shop with a complaint of no 2nd or 5th gear. Gear-ratio-error codes P0732 and P0735 were stored, but so was code P0775, indicating a problem with pressure-control solenoid B.

We all know what gear-ratioerror codes are all about by now, but that P0775 code – that's a humdinger.

Some service manuals and scantool definitions describe this code as an electrical-circuit fault. Some manuals describe the condition as being caused by either an electrical-circuit or functional (mechanical) fault.

Of all the tech calls to the ATSG

help line pertaining to gear-ratio codes as well as codes P0775 and P0745, indicating a problem with pressure-control solenoid A, and P0975, indicating a problem with pressure-control solenoid C, we have yet to find an instance in which the code was electrically generated.

These are actually pressure-control-solenoid performance codes that also generate their related gear-ratio-error codes, as indicated in the chart in Figure 1.

For example, if pressure-control solenoid B develops a fault, it will affect 2nd and 5th gears; therefore, you also should have codes P0732

Figure 1			
Pressure-Control Solenoid in Use	Gears Affected	Gear-Ratio-Error Code	Pressure-Control Solenoid Code
PC A	3rd	P0733	P0745
PC B	2nd, 5th	P0732, P0735	P0775
PC C	4th, 5th	P0734, P0735	P0975

Figure 2a				
DTC	Transmission Application	Component	Description/Symptoms	
P0102 P0103 P1100 P1101	5R55N 5R55W 5R55S	Mass Airflow Sensor	MAF signal out of range: MAF-related transmission concerns such as high/low line pressure, incorrect shift schedule or incorrect TCC apply	
P0113	5R55N 5R55W 5R55S	Intake Air Temp Sensor	IAT sensor circuit signal high: High/low line pressure	
P0114	5R55N 5R55W 5R55S	Intake Air Temp Sensor	IAT sensor circuit out of range	
P0116	5R55N 5R55W 5R55S	Engine Coolant Temp Sensor	ECT sensor out of range	
P0117	5R55N 5R55W 5R55S	Engine Coolant Temp Sensor	ECT sensor signal low	



igure 2b			
DTC	Transmission Application	Component	Description/Symptoms
P0118	5R55N 5R55W 5R55S	Engine Coolant Temp Sensor	ECT sensor signal high
P0121 P1120 P1124	5R55N 5R55W 5R55S	Throttle Position Sensor	TPS signal out of range: Harsh engagements, firm shifts, abnormal shift scheduling, no TCC apply or TCC cycling
P0122	5R55N 5R55W 5R55S	Throttle Position Sensor	TPS signal low: Harsh engagements, firm shifts, abnormal shift scheduling, no TCC apply or TCC cycling
P0123	5R55N 5R55W 5R55S	Throttle Position Sensor	TPS signal high: Harsh engagements, firm shifts, abnormal shift scheduling, no TCC apply or TCC cycling
P1121	5R55N 5R55W 5R55S	Throttle Position Sensor	TPS signal inconsistent with MAF: Harsh engagements, firm shifts, abnormal shift scheduling, no TCC apply or TCC cycling
P1125	5R55N 5R55W 5R55S	Throttle Position Sensor	TPS signal intermittent: Harsh engagements, firm shifts, abnormal shift scheduling, no TCC apply or TCC cycling
P0705	5R55N 5R55W 5R55S	Digital Range Sensor	Digital-range-sensor circuit failure: Harsh engagement, incorrect commanded gear. Defaults to D or D5 indicator or an invalid position
P0708	5R55N 5R55W 5R55S	Digital Range Sensor	Digital-range-sensor circuit failure: Harsh engagement, incorrect commanded gear. Defaults to D or D5 indicator for all gearshift positions
P0711	5R55W 5R55S	Transmission Fluid Temp Sensor	TFT sensor signal out of range: A substitute value will be displayed
P0712	5R55N 5R55W 5R55S	Transmission Fluid Temp Sensor	TFT signal low: Firm shifts, high temperature indicated
P0713	5R55N 5R55W 5R55S	Transmission Fluid Temp Sensor	TFT sensor open circuit: Firm shifts, temperature displayed at -40°F
P0715	5R55N 5R55W 5R55S	Turbine Speed Sensor	Loss of signal from TSS: Harsh engagement, harsh shifts or harsh TCC engagement
P0717	5R55N 5R55W 5R55S	Turbine Speed Sensor	TSS signal intermittent: Harsh engagement, harsh shifts or harsh TCC engagement
P0718	5R55N 5R55W 5R55S	Turbine Speed Sensor	TSS signal erratic: Harsh engagement, harsh shifts or harsh TCC engagement
P0720	5R55N 5R55W 5R55S	Output-Shaft Speed Sensor	Loss of signal from OSS sensor: Harsh shifts, abnormal shift schedule
P0721	5R55N 5R55W 5R55S	Output-Shaft Speed Sensor	OSS-sensor signal erratic: Harsh engagement, harsh shifts

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Figure 2c			
DTC	Transmission Application	Component	Description/Symptoms
P0722	5R55N 5R55W 5R55S	Output-Shaft Speed Sensor	OSS-sensor signal intermittent: Harsh engagement, harsh shifts
P0731	5R55N 5R55W 5R55S	First- Gear Component	1st-gear ratio error: Wrong gear start, mechanical shift- solenoid fault, stuck valve or internal-component failure
P0732	5R55N 5R55W 5R55S	Second- Gear Component	2nd-gear ratio error: Incorrect gear selection, mechanical shift-solenoid fault, stuck valve or internal-component failure
P0733	5R55N 5R55W 5R55S	Third- Gear Component	3rd-gear ratio error: Incorrect gear selection, mechanical shift-solenoid fault, stuck valve or internal-component failure
P0734	5R55N 5R55W 5R55S	Fourth- Gear Component	4th-gear ratio error: Incorrect gear selection, mechanical shift-solenoid fault, stuck valve or internal-component failure
P0735	5R55N 5R55W 5R55S	Fifth- Gear Component	5th-gear ratio error: Incorrect gear selection, mechanical shift-solenoid fault, stuck valve or internal-component failure
P0740	5R55W 5R55S	TCC Solenoid Circuit Fault	TCC solenoid open or shorted: Harsh shifts, harsh engagements, engine speed higher than normal. TCC solenoid shorted to ground: Engine stalls when transmission is pulled into drive at idle
P0741	5R55W	TCC System Component	TCC stuck off: When TCC is commanded on, there is insufficient engine-speed drop because of a mechanical failure of the TCC system
P0741	5R55N	TCC System Component	TCC slippage detected: TCC disabled
P0743	5R55W 5R55S 5R55N	TCC Solenoid Circuit	TCC solenoid electrical-circuit failure: Harsh shifts and engagements, engine speed higher than normal, engine stalls in D at an idle, TCC never engages
P0745	5R55N 5R55W 5R55S	Pressure Control Solenoid A	PC A solenoid functional fault, low pressure: Slipping transmission; may be accompanied by gear-ratio-error codes. The PCM will check voltage across the solenoid. If the target voltage is not met, an electrical-circuit code also will be stored
P0748	5R55S	Pressure Control Solenoid A	PC A solenoid electrical fault, low pressure: Slipping transmission; may be accompanied by gear-ratio-error codes. The PCM will check voltage across the solenoid
P0750	5R55N 5R55W 5R55S	Shift Solenoid A	Shift solenoid A electrical-circuit failure: W/S=no 1st gear, no 4th gear. N= no 1st gear, no 4th or 5th gear. Gear- ratio-error codes may be stored
P0753	5R55N 5R55W 5R55S	Shift Solenoid A	Shift solenoid A electrical-circuit failure: W/S=no 1st gear, no 4th gear. N= no 1st gear, no 4th or 5th gear. Gear- ratio-error codes may be stored
P0755	5R55N 5R55W 5R55S	Shift Solenoid B	Shift solenoid B electrical-circuit failure: W/S=no 3rd gear, no 1st gear. N=no 1st gear, no 4th or 5th gear. Gear- ratio-error codes may be stored



Figure 2d			
DTC	Transmission Application	Component	Description/Symptoms
P0758	5R55N 5R55W 5R55S	Shift Solenoid B	Shift solenoid B electrical-circuit failure: W/S=no 3rd gear, no 1st gear. N=no 1st gear, no 4th or 5th gear. Gear- ratio-error codes may be stored
P0760	5R55N 5R55W 5R55S	Shift Solenoid C	Shift solenoid C electrical-circuit failure: No 2nd, no 5th and no 1st gear. Gear-ratio-error codes may be stored
P0763	5R55N 5R55W 5R55S	Shift Solenoid C	Shift solenoid C electrical-circuit failure: No 2nd, no 5th and no 1st gear. Gear-ratio-error codes may be stored
P0765	5R55N 5R55W 5R55S	Shift Solenoid	Shift solenoid D electrical-circuit failure: No engine braking
P0768	5R55N 5R55W 5R55S	Shift Solenoid	Shift solenoid D electrical-circuit failure: No engine braking
P0775	5R55N 5R55W 5R55S	Pressure Control Solenoid B	PC B solenoid functional fault, low pressure: Slipping transmission; may be accompanied by gear-ratio-error codes. The PCM will check voltage across the solenoid. If the target voltage is not met, an electrical-circuit code also will be stored
P0778	5R55S	Pressure Control Solenoid B	Intermittent short to ground: Voltage through the solenoid is checked. The TCIL will flash
P0779	5R55W 5R55S	Pressure Control Solenoid B	Intermittent short to ground or power: Voltage through the solenoid is checked. The TCIL will flash. No 2nd or 5th gear. Harsh engagements and shifts
P0779	5R55N	Pressure Control Solenoid B	Intermittent short to ground: Voltage through the solenoid is checked. No 2nd or 5th gear
P0791	5R55N 5R55W 5R55S	Intermediate Speed Sensor	Loss of signal from ISS: Harsh shifts
P0794	5R55N 5R55W 5R55S	Intermediate Speed Sensor	Intermittent loss of ISS signal: Harsh shifts
P0795 P0797	5R55N 5R55W	Pressure Control Solenoid C	PC solenoid C functional fault: No 4th or 5th gear, or incorrect shift pattern indicating a mechanical or hydraulic transmission fault. Voltage will be checked through the solenoid
P0796	5R55N 5R55W	Pressure Control Solenoid C	PC solenoid C electrical circuit open: Maximum PC C pressure, harsh engagements and shifts
P0798	5R55S	Pressure Control Solenoid C	PC C solenoid functional failure: Low pressure. Voltage through the solenoid will be checked; if an error is detected, an electrical-fault code will be stored
P0799	5R55N 5R55W 5R55S	Pressure Control Solenoid C	PC C solenoid intermittent short to ground: No 4th or 5th gear, or harsh shifts and engagements

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Figure 2e			
DTC	Transmission Application	Component	Description/Symptoms
P0814	5R55N	J Gate	J-gate circuit input signal failed: No illumination or incorrect illumination of the J-gate position
P0815	5R55N 5R55S (car)	Select Shift Transmission +1- Switches	SST +/- circuit input signal failed: May not be able to shift in manual mode
P0840	5R55N	Reverse Pressure Switch	RP circuit input signal failed: No engine braking in manual 3rd and 4th gears
P0960	5R55S	Pressure Control Solenoid A	PC A solenoid electrical circuit open: Maximum PC A pressure, harsh shifts and engagements
P0962	5R55\$	Pressure Control Solenoid A	PC A solenoid circuit short to ground: No 3rd gear
P0963	5R55S	Pressure Control Solenoid A	PC A solenoid or electrical circuit open: Maximum PC A pressure, harsh shifts and engagements
P0964	5R55S	Pressure Control Solenoid B	PC B solenoid or electrical circuit open: Maximum PC B pressure, harsh shifts and engagements
P0966	5R55S	Pressure Control Solenoid B	PC B solenoid short to ground: Voltage through the solenoid is checked. No 2nd or 5th gear
P0967	5R55S	Pressure Control Solenoid B	PC B solenoid short to power: Maximum PC B pressure, harsh shifts and engagement
P0968	5R55S	Pressure Control Solenoid C	PC C solenoid or electrical circuit open: Maximum PC C pressure, harsh shifts and engagements
P0970	5R55S	Pressure Control Solenoid C	PC C solenoid or electrical circuit shorted to ground: No 4th or 5th gear
P0971	5R55S	Pressure Control Solenoid C	PC solenoid C electrical circuit shorted to power: Maximum PC C pressure, harsh engagements and shifts
P0975	5R55S	Pressure Control Solenoid C	PC C solenoid functional failure: low pressure. Voltage through the solenoid will be checked; if an error is detected, an electrical-fault code will be stored
P1112	5R55N 5R55W 5R55S	Intake Air Temperature Sensor	IAT sensor circuit voltage low: High/low line pressure resulting in unacceptable shifts
P1124	5R55N 5R55W 5R55S	Throttle Position Sensor	TPS out of range: TPS signal voltage was high or low
P1460	5R55N 5R55W 5R55S	Air Conditioning Switch	A/C pressure-cycling-switch error: A/C or defrost was on during self-test; rerun with A/C off. Failed on: Line pressure slightly low with A/C off



Figure 2f				
DTC	Transmission Application	Component	Description/Symptoms	
P1572	5R55N 5R55W 5R55S	Brake-Pedal Position Switch	BPP switch circuit fault: Failed on=TCC will not engage at less than ½ throttle. Failed off=TCC will not disengage when the brake is applied	
P1636	5R55N 5R55W 5R55S	SSx	SSx ISIG communication error: The PCM has detected an error with the ISIG chip. May illuminate the MIL	
P1700	5R55N 5R55W 5R55S	Internal Transmission Solenoid	Internal-transmission-component failure: Engine speed limited to 4,000 rpm. No 1st, 3rd or 4th gear in automatic mode. FMEM is activated. May also store code P0745, P0750, P0755, P1714, P1715, P1747 or P1760	
P1702	5R55N 5R55W 5R55S	Digital Range Sensor	Digital-range-sensor signal intermittent: Codes P0705 and P0708 are also stored	
P1703	5R55N 5R55W 5R55S	Brake-Pedal Position Switch	BPP switch circuit failed on: TCC will not engage at less than ¼ throttle. Failed off: TCC will not disengage when the brake is applied	
P1704	5R55N 5R55W 5R55S	Digital Range Sensor	Digital range sensor not in Park: Commanded-line- pressure error, shift-linkage problem or DTR-sensor problem	
P1705	5R55N 5R55W 5R55S	Digital Range Sensor	DTR sensor not in Park during self-test: DTC is set	
P1711	5R55N 5R55W 5R55S	Transmission Fluid Temp Sensor	TFT out of range: Transmission not at proper operating temperature during diagnostic tests	
P1713	5R55N	Transmission Fluid Temp Sensor	TFT temperature stuck in low range: Increased line pressure, incorrect TCC apply times, harsh shifts and engagements	
P1714	5R55N 5R55W 5R55S	Shift Solenoid A	Shift solenoid A inoperative: Mechanical failure and no gear-ratio-error codes. No 1st gear, or no 4th or 5th gear	
P1715	5R55N 5R55W 5R55S	Shift Solenoid B	Shift solenoid B inoperative: Mechanical failure and no gear-ratio-error codes. No 1st or 3rd gear	
P1716	5R55N 5R55W 5R55S	Shift Solenoid C	Shift solenoid C inoperative: Mechanical failure and no gear-ratio-error codes. No 1st, 2nd or 5th gear. Incorrect gear selection	
P1717	5R55N 5R55W 5R55S	Shift Solenoid D	Shift solenoid D inoperative: Mechanical failure and no gear-ratio-error codes. No engine braking. Incorrect gear selection	
P1718	5R55N	Transmission Fluid Temp Sensor	TFT temperature stuck in high range: Increased line pressure, incorrect TCC apply times, harsh shifts and engagements	
P1740	5R55N 5R55W 5R55S	TCC System	TCC inoperative: Mechanical failure of the TCC system. Engine speed higher than expected, or engine stalls when coming to a stop	
P1744	5R55W 5R55S	TCC System	TCC performance fault: TCC slipping when commanded on, indicating a mechanical or hydraulic failure of the TCC system	

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Figure 2g				
DTC	Transmission Application	Component	Description/Symptoms	
P1746	5R55N 5R55W	Pressure Control Solenoid A	PC A solenoid circuit open: Maximum PC A pressure, harsh shifts and engagements	
P1747	5R55N 5R55W 5R55S	Pressure Control Solenoid A	PC A solenoid electrical circuit fault: No 3rd gear, may turn on or flash the MIL	
P1760	5R55N 5R55W 5R55S	Pressure Control Solenoid A	PC A solenoid Intermittent short to ground: No 3rd gear, harsh shifts and engagements when shorted to power	
P1780	5R55N 5R55W 5R55S	Transmission Control Switch	TCS input incorrect per selected position: W/S=TCS voltage incorrect; no overdrive cancel when TCS is pressed. N=no overdrive cancel when the shifter is moved	
P1783	5R55N 5R55W 5R55S	Transmission Fluid Temp Sensor	Transmission overtemp condition indicated: Transmission temperature exceeded 270°F, increased line pressure	
P1788	5R55N 5R55W	Pressure Control Solenoid B	PC B solenoid circuit open: Maximum PC B pressure, harsh shifts and engagements	
P1789	5R55W	Pressure Control Solenoid B	PC B solenoid circuit shorted to ground: No 2nd or 5th gear	

and P0735, indicating a gear-ratio error in 2nd and 5th gears.

Experience also has shown that you can have a gear-ratio-error code without an electrical solenoid code, but it is unlikely that you will have an electrical solenoid code without a gear-ratio-error code. (Does that make sense?)

As you can see by the chart, each pressure-control solenoid is responsible for supplying clutch pressure in its respective gear; hence the gear-ratio-error codes.

The No. 1 problem that I see as the cause of these solenoid-performance problems as well as the gear-ratio-error codes is wear in the servo-pin bore. The 5R55N, W and S transmissions are notorious for severely wearing the servo-pin bores.

The best way to test for this condition is to back way off the bandadjustment stud so there is no tension on the band. Make sure there is oil in the release side of the

servo bore, then air-apply the servo and see what blows out of the servo-pin-bore area of the case. You won't believe how bad it can be, and in some instances the vehicle has relatively low mileage.

Excessive wear in the servo-pin bore can be repaired by obtaining repair kits for these and other transmissions from Northland Transmission Service at www.servobore.com or 715-458-2617.

By the way, the charts in figures 2 through XX list all the codes for vehicles equipped with the 5R55N, W or S transmission, with careful attention given to "real-world" code definitions for all solenoids that are contained in these units.

THE BOTTOM LINE:

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