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2004 FORD Five Hundred OEM Service and Repair Workshop Manual

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Is the resistance less than 3 ohms?

Yes	GO to H6
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No	REPAIR the open circuit.
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H6 CHECK THE PARK LOCK PAWL SOLENOID TASV CIRCUIT FOR A SHORT TO GROUND

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C168A-12	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	 <p>Guided Routine available in the on-line Workshop Manual. After programming the new PCM (powertrain control module) , CARRY OUT the transmission strategy download. REFER to: Transmission Strategy Download (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, General Procedures).</p>
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No	REPAIR the short to ground.
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H7 CHECK THE PARK LOCK PAWL SOLENOID CONTROL CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect PCM (powertrain control module) C1232T .

Positive Lead	Measurement / Action	Negative Lead
C168A-26	\bar{V}	Ground

Is any voltage present?

Yes	REPAIR the short to power.
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No	GO to H10
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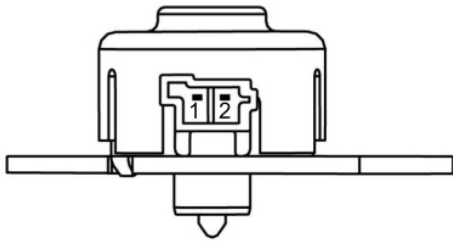
H10 CHECK THE TRANSMISSION INTERNAL WIRING HARNESS FOR AN OPEN

- Ignition OFF.
- Drain the transmission fluid and remove the transmission fluid pan.
REFER to: [Transmission Fluid Pan, Gasket and Filter](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Removal and Installation).
- Disconnect Park lock pawl solenoid C178 .
- Disconnect Transmission fluid auxiliary pump C1792 .
- Connect Transmission vehicle harness C168A .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C178-1	Ω	C1232T-32
C178-2	Ω	C1232T-78

Are the resistances less than 3 ohms?

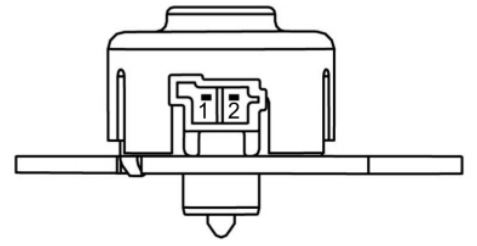
Yes	GO to H11
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E345026

Park lock pawl solenoid component
side pin 1

Ω



E345026

Park lock pawl solenoid component
side pin 2

Is the resistance between 17 and 27 ohms?

Yes	GO to H13
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No	<p>INSTALL a new park lock pawl solenoid. REFER to: Park Lock Pawl Solenoid (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Removal and Installation).</p>
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H13 CHECK THE PARK LOCK PAWL SOLENOID FOR A SHORT TO GROUND

- Measure:

Positive Lead	Measurement / Action	Negative Lead
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For DTC (diagnostic trouble code)

P2888, P2889 and/or P288A, INSPECT and CONNECT all electrical connectors, CLEAR the DTC (diagnostic trouble code)

, then CARRY OUT the KOEO (key on, engine off)

PCM (powertrain control module)

self-test. If DTC (diagnostic trouble code)

P2888, P2889 and/or P288A returns,



Guided Routine available in the on-line Workshop Manual.

After programming the new PCM (powertrain control module)

, CARRY OUT the transmission strategy download.

REFER to: [Transmission Strategy Download](#)

(307-01A Automatic Transmission - 10-Speed Automatic Transmission - 10R80, General Procedures).

For DTC (diagnostic trouble code)

P07E4, P07E6, and/or P288B, RESOLVE the park engagement symptom.

REFER to: [Diagnosis By Symptom](#)

(307-01A Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Diagnosis and Testing).

No

INSTALL a new park lock pawl solenoid.

REFER to: [Park Lock Pawl Solenoid](#)

(307-01A Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Removal and Installation).

PINPOINT TEST I : OSS, TSS, ISSA, ISSB SENSOR (PERFORMANCE)

Refer to Wiring Diagrams Cell 30 for schematic and connector information.

Normal Operation and Fault Conditions These diagnostic trouble codes (DTCs) indicate a non-electrical fault with one of the transmission speed sensors. The PCM (powertrain control module) determined the sensor and circuit are electrically okay, but detected a sensor drop out, a noise spike, or a mismatch in sensor speed readings for the gear commanded. This could be caused by too large of a sensor air gap, an undetected clutch fault, internal transmission failure or a sensor fault. **TSS Sensor** The TSS (turbine shaft speed) sensor is a Hall-effect type sensor that provides a signal to the PCM (powertrain control module)

PCM (powertrain control module) P0792:00	Intermediate Shaft Speed Sensor 'A' Circuit Range/Performance: No Sub Type Information	Intermediate shaft speed sensor A rationality fault. No circuit fault is detected, but the sensor fails for signal drop out, noise spikes, and/or does not match other sensor speeds for the current gear state. Common causes of this DTC (diagnostic trouble code) are sensor air gap too large, an internal sensor fault or an undetected clutch fault.
PCM (powertrain control module) P2746:00	Intermediate Shaft Speed Sensor 'B' Circuit Range/Performance: No Sub Type Information	Intermediate shaft speed sensor B rationality fault. No circuit fault is detected, but the sensor fails for signal drop out, noise spikes, and/or does not match other sensor speeds for the current gear state. Common causes of this DTC (diagnostic trouble code) are sensor air gap too large, an internal sensor fault or an undetected clutch fault.

Possible Sources

- Connectors damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals
- Loose sensor or incorrect air gap
- speed sensor fault
- Undetected clutch fault

I1 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the PCM (powertrain control module) self-test.

Are any gear ratio, clutch fault or speed sensor circuit fault diagnostic trouble codes (DTCs) present?

Yes	RESOLVE any gear ratio, clutch fault or speed sensor circuit fault diagnostic trouble codes (DTCs) first.
No	For DTC P0716, GO to I2 For DTC P0721, GO to I3 For DTC P0792, GO to I4 For DTC P2746, GO to I5

I2 CHECK THE TSS SENSOR

- Using a diagnostic scan tool, clear all diagnostic trouble codes (DTCs) from the PCM (powertrain control module).

- Using a diagnostic scan tool, clear all diagnostic trouble codes (DTCs) from the PCM (powertrain control module) .

NOTE

The PCM (powertrain control module) will disable all gears except 7th and reverse if it detects a speed sensor fault. This is a failsafe action that does not necessarily indicate an internal transmission fault.

Road test the vehicle. Pay attention for any observable symptoms that could indicate a clutch fault or internal transmission failure.

- Ignition OFF.
- Road test the vehicle a second time.
- Using a diagnostic scan tool, retrieve all continuous memory diagnostic trouble codes (CMDTCs) from the PCM (powertrain control module) .

Is DTC (diagnostic trouble code) P0721 present?

<p>Yes</p>	<p>If any gear ratio, clutch fault or speed sensor circuit fault diagnostic trouble codes (DTCs) are now present, RESOLVE those first.</p> <p>If any observable symptoms that indicate a clutch fault or internal transmission failure are present, RESOLVE those next.</p> <p>REFER to: Diagnosis By Symptom (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).</p> <p>If DTC (diagnostic trouble code) P0721 returns alone, GO to Pinpoint Test D</p> <p>If no circuit faults are found, REMOVE the transmission fluid auxiliary pump and INSPECT the OSS (output shaft speed) sensor. Make sure it is properly mounted and free of damage. CHECK the vehicle wiring harness for any possible sources of RFI (radio frequency interference) . REPAIR or INSTALL new components as necessary.</p> <p>REFER to: Output Shaft Speed (OSS) Sensor (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Removal and Installation).</p>
<p>No</p>	<p>An OSS (output shaft speed) sensor fault is not present at this time. If any observable symptoms are present,</p> <p>REFER to: Diagnosis By Symptom (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).</p>

- Using a diagnostic scan tool, clear all diagnostic trouble codes (DTCs) from the PCM (powertrain control module) .

NOTE

The PCM (powertrain control module) will disable all gears except 7th and reverse if it detects a speed sensor fault. This is a failsafe action that does not necessarily indicate an internal transmission fault.

Road test the vehicle. Pay attention for any observable symptoms that could indicate a clutch fault or internal transmission failure.

- Ignition OFF.
- Road test the vehicle a second time.
- Using a diagnostic scan tool, retrieve all continuous memory diagnostic trouble codes (CMDTCs) from the PCM (powertrain control module) .

Is DTC (diagnostic trouble code) P0792 present?

<p>Yes</p>	<p>If any gear ratio, clutch fault or speed sensor circuit fault diagnostic trouble codes (DTCs) are now present, RESOLVE those first.</p> <p>If any observable symptoms that indicate a clutch fault or internal transmission failure are present, RESOLVE those next.</p> <p>REFER to: Diagnosis By Symptom (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).</p> <p>If DTC (diagnostic trouble code) P0792 returns alone, GO to Pinpoint Test D</p> <p>If no circuit faults are found, REMOVE the main control valve body and INSPECT the intermediate shaft speed A (ISSA) sensor. Make sure it is properly mounted and free of damage. CHECK the vehicle wiring harness for any possible sources of RFI (radio frequency interference) . REPAIR or INSTALL new components as necessary.</p> <p>REFER to: Intermediate Speed Sensor A (ISSA) (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Removal and Installation).</p>
<p>No</p>	<p>An intermediate shaft speed A (ISSA) sensor fault is not present at this time. If any observable symptoms are present,</p> <p>REFER to: Diagnosis By Symptom (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).</p>

- Using a diagnostic scan tool, clear all diagnostic trouble codes (DTCs) from the PCM (powertrain control module) .

NOTE

The PCM (powertrain control module) will disable all gears except 7th and reverse if it detects a speed sensor fault. This is a failsafe action that does not necessarily indicate an internal transmission fault.

Road test the vehicle. Pay attention for any observable symptoms that could indicate a clutch fault or internal transmission failure.

- Ignition OFF.
- Road test the vehicle a second time.
- Using a diagnostic scan tool, retrieve all continuous memory diagnostic trouble codes (CMDTCs) from the PCM (powertrain control module) .

Is DTC (diagnostic trouble code) P2746 present?

<p>Yes</p>	<p>If any gear ratio, clutch fault or speed sensor circuit fault diagnostic trouble codes (DTCs) are now present, RESOLVE those first.</p> <p>If any observable symptoms that indicate a clutch fault or internal transmission failure are present, RESOLVE those next.</p> <p>REFER to: Diagnosis By Symptom (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).</p> <p>If DTC (diagnostic trouble code) P2746 returns alone, GO to Pinpoint Test D</p> <p>If no circuit faults are found, REMOVE the main control valve body and INSPECT the intermediate shaft speed B (ISSB) sensor. Make sure it is properly mounted and free of damage. CHECK the vehicle wiring harness for any possible sources of RFI (radio frequency interference) . REPAIR or INSTALL new components as necessary.</p> <p>REFER to: Intermediate Speed Sensor B (ISSB) (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Removal and Installation).</p>
<p>No</p>	<p>An intermediate shaft speed B (ISSB) sensor fault is not present at this time. If any observable symptoms are present,</p> <p>REFER to: Diagnosis By Symptom (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).</p>

(307-02A Transmission Cooling - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

PINPOINT TEST K : P0702, P0882, P0883, P0884

Refer to Wiring Diagrams Cell 23 for schematic and connector information.

Normal Operation and Fault Conditions The transmission control system is an integrated part of the PCM (powertrain control module) . If the PCM (powertrain control module) supply voltage drops below or rises above operating voltage, the transmission control system may not operate properly. **DTC Fault**

Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PCM (powertrain control module) P0702:00	Transmission Control System Electrical: No Sub Type Information	This DTC (diagnostic trouble code) indicates the PCM (powertrain control module) detected a supply voltage either above or below threshold.
PCM (powertrain control module) P0882:00	TCM Power Input Signal Low: No Sub Type Information	This DTC (diagnostic trouble code) indicates the PCM (powertrain control module) detected a supply voltage of less than 9 volts.
PCM (powertrain control module) P0883:00	TCM Power Input Signal High: No Sub Type Information	This DTC (diagnostic trouble code) indicates the PCM (powertrain control module) detected a supply voltage of greater than 21 volts.
PCM (powertrain control module) P0884:00	TCM Power Input Signal Intermittent: No Sub Type Information	This DTC (diagnostic trouble code) indicates the PCM (powertrain control module) was unable to store fault data due to an unexpected loss of power.

Possible Sources

- Charging system concern
- Connectors damaged or pushed-out terminals, corrosion, loose wires and missing or damaged seals
- Low voltage to the PCM (powertrain control module)

K1 CHECK THE PCM (POWERTRAIN CONTROL MODULE) FOR DIAGNOSTIC TROUBLE CODES (DTCs)