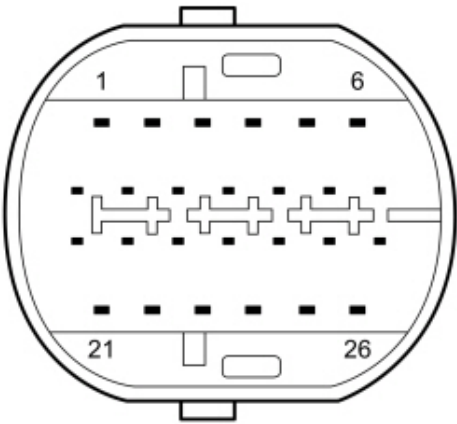
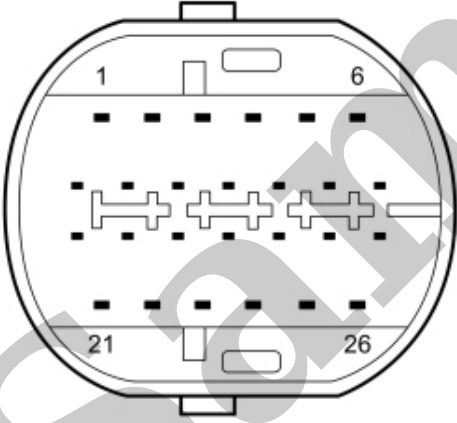


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## 1999 FORD Escort Wagon OEM Service and Repair Workshop Manual

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	Action	Lead
 <p>E275612</p> <p>Transmission component side, pin 11</p>	$\Omega$	Ground
 <p>E275612</p> <p>Transmission component side, pin 24</p>	$\Omega$	Ground

**Are the resistances greater than 10,000 ohms on the suspect circuits?**

<b>Yes</b>	GO to <a href="#">G8</a>
------------	--------------------------

<b>No</b>	INSTALL a new transmission internal wiring harness (both pieces). REFER to: <a href="#">Transmission Internal Wiring Harness</a> (307-01A Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Removal and Installation).
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- For the LPC (line pressure control) solenoid, measure

Positive Lead	Measurement / Action	Negative Lead
C1840-1	$\Omega$	C1381T-1

#### Is the resistance less than 3 ohms on the suspect circuit?

<b>Yes</b>	INSTALL a new solenoid. REFER to: <a href="#">Shift Solenoids (SS)</a> (307-01A Automatic Transmission - 10-Speed Automatic Transmission - 10R80, Removal and Installation).
<b>No</b>	There is a terminal fitment issue. REPAIR any loose, damaged or bent terminals.

#### PINPOINT TEST H : PARK LOCK PAWL SOLENOID

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

**Normal Operation and Fault Conditions** The park lock pawl solenoid is used to keep the vehicle out of park during stay in neutral mode, and during stop-start events. When the engine is running, hydraulic pressure from the A, C, D or F clutches can keep the system out of park. When the park lock pawl solenoid is energized, the solenoid pin is extended, locking the park lock pawl valve either in the park position or out of the park position. **DTC Fault Trigger Conditions**

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
PCM (powertrain control module) P07E4:00	Unable to Engage Park: No Sub Type Information	This DTC (diagnostic trouble code) indicates the PCM (powertrain control module) commanded park, but the movement timed out and the TR (transmission range) sensor does not read park. There are no TR (transmission range) sensor circuit faults.
PCM (powertrain control module)	Stuck in Park: No Sub Type Information	This DTC (diagnostic trouble code) indicates the PCM (powertrain control module) commanded movement out of

**No**

If no diagnostic trouble codes (DTCs) are set, but a symptom is present, REFER to: [Diagnosis By Symptom](#) (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).  
If there are no diagnostic trouble codes (DTCs) and no symptoms present, the system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or terminal issues.

## H2 CONFIRM PARK IS NOT MANUALLY OVERRIDDEN

- Access the PCM (powertrain control module) and monitor the TR\_PARK\_STAT (Transmission Park Position Sensor Status) PID (parameter identification)

**Does PID (parameter identification) TR\_PARK\_STAT indicate the transmission is in mechanical Park override?**

**Yes**

Remove the transmission from mechanical Park override.  
REFER to: [Transmission Park by Wire Manual Release](#) (307-05B Automatic Transmission External Controls - 10-Speed Automatic Transmission – 10R80, General Procedures).

**No**

GO to [H4](#)

## H3 CHECK LINE PRESSURE

### NOTE

The shift-by-wire variant of the 10R transmission uses hydraulic pressure to move the park lock pawl valve out of park.

- Carry out the line pressure test.  
REFER to: [Special Testing Procedures](#)(307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).

**Is line pressure within specification?**

**Yes**

GO to [H4](#)

### Is the resistance less than 3 ohms?

<b>Yes</b>	GO to <a href="#">H6</a>
------------	--------------------------

<b>No</b>	REPAIR the open circuit.
-----------	--------------------------

### H6 CHECK THE PARK LOCK PAWL SOLENOID TASV CIRCUIT FOR A SHORT TO GROUND

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C168A-12	$\Omega$	Ground

### Is the resistance greater than 10,000 ohms?



**Yes**

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).

**No**

REPAIR the short to ground.

### H7 CHECK THE PARK LOCK PAWL SOLENOID CONTROL CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect PCM (powertrain control module) C1381T .

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

**Is any voltage present?**

<b>Yes</b>	REPAIR the short to power.
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<b>No</b>	GO to <a href="#">H10</a>
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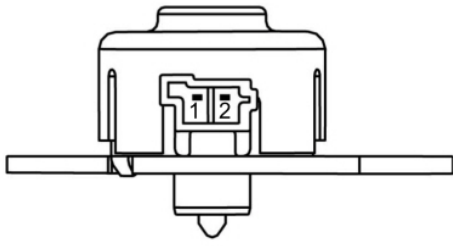
### H10 CHECK THE TRANSMISSION INTERNAL WIRING HARNESS FOR AN OPEN

- 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	$\Omega$	C1381T-32
C178-2	$\Omega$	C1381T-78

**Are the resistances less than 3 ohms?**

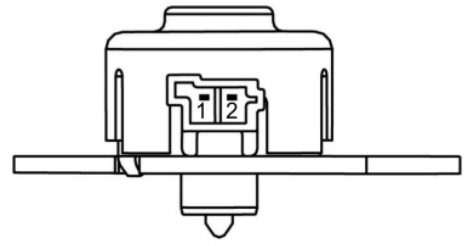
<b>Yes</b>	GO to <a href="#">H11</a>
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E345026

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?**

<b>Yes</b>	GO to <a href="#">H13</a>
------------	---------------------------

<b>No</b>	<p>INSTALL a new park lock pawl solenoid.            REFER to: <a href="#">Park Lock Pawl Solenoid</a>            (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
---------------	-------------------------	------------------

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?

<b>Yes</b>	RESOLVE any gear ratio, clutch fault or speed sensor circuit fault diagnostic trouble codes (DTCs) first.
<b>No</b>	For DTC P0716, GO to <a href="#">I2</a> For DTC P0721, GO to <a href="#">I3</a> For DTC P0792, GO to <a href="#">I4</a> For DTC P2746, GO to <a href="#">I5</a>

### 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><b>Yes</b></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: <a href="#">Diagnosis By Symptom</a> (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).</p> <p>If DTC (diagnostic trouble code) P0721 returns alone, <a href="#">GO to Pinpoint Test D</a></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: <a href="#">Output Shaft Speed (OSS) Sensor</a> (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Removal and Installation).</p>
<p><b>No</b></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: <a href="#">Diagnosis By Symptom</a> (307-01A Automatic Transmission - 10-Speed Automatic Transmission – 10R80, Diagnosis and Testing).</p>