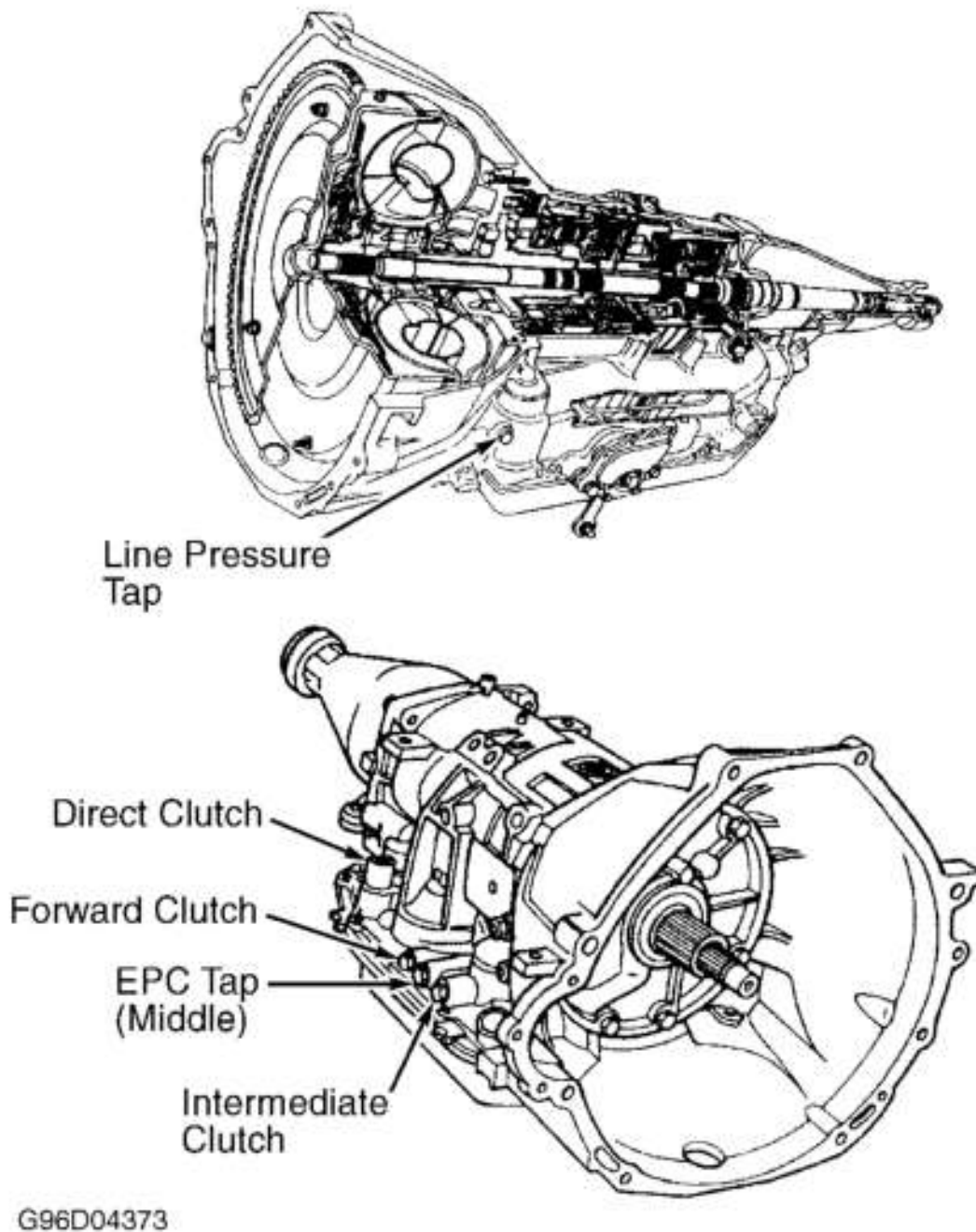


## TESTING

**NOTE:** For electronic component diagnostic procedures, see **4R70W ELECTRONIC CONTROLS** article. AODE is mechanically identical to 4R70W. For additional AODE specifications, see **AODE SPECIFICATIONS** at end of this article and **WIRING DIAGRAMS** in **AUTO TRANS DIAGNOSIS - FORD 4R70W CONTROLS** article.

### ROAD TEST

1. Check minimum throttle upshifts in "OD". Transmission should start in 1st gear, shift to 2nd, then shift to 3rd, and finally shift to 4th gear at approximately the speeds shown in **4R70W SHIFT SPEED SPECIFICATIONS** .
2. With transmission in 4th gear (Overdrive), completely depress accelerator pedal. Transmission should downshift to 3rd or 2nd gear, depending on vehicle speed. See **4R70W SHIFT SPEED SPECIFICATIONS** for shift speeds.
3. Since closed throttle downshifts are extremely difficult to detect, it may be necessary to attach 0-100 psi (0-7.0 kg/cm<sup>2</sup> ) pressure gauges to forward and direct clutch pressure taps in order to detect Overdrive to 3rd gear and 3rd to 2nd gear coast downshifts. See **Fig. 6** .
4. With gauges attached, a 4th to 3rd gear coast (closed throttle) downshift is detected by the application of the forward clutch. Pressure will increase from 0-60 psi (0-4.2 kg/cm<sup>2</sup> ). The 3rd to 2nd gear downshift is detected by release of direct clutch pressure. Pressure will decrease from 60-0 psi (4.2-0 kg/cm<sup>2</sup> ).
5. When selector lever is moved from either "OD" or "D" ranges to "1" position, transmission should downshift into 2nd gear if vehicle speed is above 25 MPH, and into 1st gear if speed is less than 25 MPH.



**Fig. 6: Identifying Control Pressure Taps**  
 Courtesy of FORD MOTOR CO.

**CONTROL PRESSURE TEST**

**CAUTION:** Perform line pressure test before stall speed test. If line pressure is low at stall, DO NOT perform stall speed test or transmission damage will occur.

1. Connect a 0-300 psi (0-21.1 kg/cm<sup>2</sup>) pressure gauge to line pressure port tap on left side of transmission case forward of control lever. See **Fig. 6** . Gauge hose must be long enough to read gauge while operating engine.
2. With engine at normal operating temperature, apply parking and service brakes. Check line pressure at idle and WOT stall in all ranges. See **CONTROL PRESSURE SPECIFICATIONS** . If pressure is not as specified, perform **EPC PRESSURE CHECK** .

### EPC Pressure Check

1. Connect a 0-100 psi (0-7.0 kg/cm<sup>2</sup>) pressure gauge to EPC pressure tap at right side of transmission case. See **Fig. 6** . Gauge hose must be long enough to read gauge while operating engine.
2. With engine at normal operating temperature, apply parking and service brakes. Check EPC pressure at idle and WOT stall in all ranges. See **CONTROL PRESSURE SPECIFICATIONS** . If pressure is not as specified, go to PINPOINT TEST E in **AUTO TRANS DIAGNOSIS - FORD 4R70W CONTROLS** article, to diagnose EPC operation. If EPC operation is okay, go to **LINE PRESSURE TEST RESULTS** .

**NOTE:** Pressure test at idle position must be taken with engine at normal operating temperature. Pressure test at WOT position should be taken at full stall conditions. Run engine at a fast idle in "N" for 15 seconds to cool fluid between tests.

## CONTROL PRESSURE SPECIFICATIONS

### 1995 4R70W CONTROL PRESSURE SPECIFICATIONS (PSI)

Throttle Position	Line Pressure	EPC Pressure
Idle - Reverse Range		
Crown Victoria Grand Marquis, Town Car	67-109	0-9
Cougar, T-Bird (3.8L)	31-69	0-9
Cougar, T-Bird (4.6L)	31-65	0-7
Thunderbird SC	31-65	0-7
Mark VIII	54-109	0-12
"E" & "F" Series	54-96	0-9
Idle - All Other Ranges		
Crown Victoria Grand Marquis, Town Car	41-74	0-9
Cougar, T-Bird (3.8L)	55-94	15-25
Cougar, T-Bird (4.6L)	43-81	7-17
Thunderbird SC	31-65	0-7
Mark VIII	32-75	0-12
Mustang (3.8L)	49-88	11-21
Mustang (4.6L)	31-65	0-7
"E" & "F" Series	36-75	3-13
WOT @ Stall - Reverse Range		
Crown Victoria Grand Marquis, Town Car	220-280	83-93
Mark VIII	207-280	83-93
All Other Models	207-267	83-93

WOT @ Stall - All Other Ranges (All Models)	160-210	83-93
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### 1996 4R70W CONTROL PRESSURE SPECIFICATIONS (PSI)

Throttle Position	Line Pressure	EPC Pressure
Idle - Reverse Range		
Crown Victoria Grand Marquis, Town Car	84-128	15-25
Cougar, T-Bird (3.8L)	60-104	3-13
Cougar, T-Bird (4.6L)	68-112	7-17
Explorer, "E" & "F" Series	64-108	5-15
Mark VIII	54-92	0-7
Mustang (3.8L)	60-104	3-13
Mustang (4.6L)	54-92	0-7
Idle - All Other Ranges		
Crown Victoria Grand Marquis, Town Car	55-94	15-25
Cougar, T-Bird (3.8L)	55-94	15-25
Cougar, T-Bird (4.6L)	43-81	7-17
"E" & "F" Series	39-78	5-15
Thunderbird SC	31-65	0-7
Mark VIII	49-88	11-21
Mustang (3.8L)	31-65	0-7
Mustang (4.6L)	31-65	0-7
WOT @ Stall - Reverse Range (All Models)	207-267	83-93
WOT @ Stall - All Other Ranges (All Models)	160-210	83-93

### LINE PRESSURE TEST RESULTS

#### High At Idle In All Ranges

Main regulator valve sticking, EPC solenoid sticking. Check transmission wiring harness. Perform QUICK TEST. See [AUTO TRANS DIAGNOSIS - FORD 4R70W CONTROLS](#) article.

#### Low At Idle In All Ranges

Low fluid level, restricted inlet filter or damaged filter inlet seal, loose valve body bolts, damaged gaskets or separator plate, pump leakage, case leakage, faulty valve body, excessively low engine idle, fluid too hot or main regulator valve sticking.

#### Low In "P"

Valve body loose, faulty main oil regulator valve sticking or low-reverse servo leakage.

#### Low In "R"

Separator plate, reverse clutch or low-reverse servo leakage. Valve body loose.

#### Low In "N"

Loose valve body or main oil regulator valve sticking.

### Low In "D"

Faulty forward clutch, main oil regulator valve or loose valve body.

### Low In "2nd"

Forward clutch, intermediate clutch or valve body leakage.

### Low In "1st"

Forward clutch, low-reverse servo or valve body leakage.

## DIRECT CLUTCH PRESSURE TEST

**NOTE:** Shift quality is affected when test gauges are attached to transmission. DO NOT accelerate or decelerate rapidly during test. Transmission failure could result.

1. Attach pressure gauges capable of reading 300 psi (21.1 kg/cm<sup>2</sup>) to the forward clutch pressure tap and the direct clutch pressure tap. See **Fig. 6**. Mount gauges inside vehicle.
2. Drive vehicle. When pressure is applied to the direct clutch, note pressure difference between forward clutch pressure reading and direct clutch pressure reading.
3. If the difference is less than 15 psi (1.05 kg/cm<sup>2</sup>), direct clutch circuit is okay. If difference is greater than specification, there is a leak in direct clutch pressure circuit. Repair as necessary.

## 4R70W SHIFT SPEED SPECIFICATIONS

**NOTE:** Shift speeds shown are approximate. All shift speeds may vary somewhat due to production tolerances and emission control equipment.

**NOTE:** To determine deceleration shift speeds, release throttle once transaxle has shifted into 4th gear (O/D). Manually downshift shift lever into next lower gear and record speed at which downshift occurs. Continue downshifting and recording vehicle speed until transaxle has downshifted into low gear.

## COUGAR & THUNDERBIRD

Operating Condition	Shift Speed MPH (3.8L)	Shift Speed MPH (4.6L)
Light Throttle		
1-2	8-14	10-13
2-3	18-23	19-23
3-4	28-36	32-37
4-3	28-32	29-33
3-2	12-16	18-19
2-1	6-10	9-12
Full Throttle (WOT)		
1-2	34-44	38-47
2-3	62-72	71-83

3-2	25-62	62-69
2-1	10-25	30-35

### 1995 CROWN VICTORIA, GRAND MARQUIS & TOWN CAR

Operating Condition	Shift Speed MPH (2.73 Axle Ratio)	Shift Speed MPH (3.27 Axle Ratio)
Light Throttle		
1-2	9-12	7-10
2-3	22-26	19-22
3-4	40-44	33-37
4-3	33-35	27-29
3-2	13-15	12-14
2-1	8-10	6-8
WOT		
1-2	44-49	36-41
2-3	86-93	71-76
3-2	78 Max.	66 Max.
2-1	34 Max.	28 Max.

### 1996 CROWN VICTORIA, GRAND MARQUIS & TOWN CAR

Operating Condition	Shift Speed MPH
Light Throttle	
1-2	6-15
2-3	12-26
3-4	30-48
4-3	27-36
3-2	9-16
2-1	5-10
WOT	
1-2	35-58
2-3	64-100
3-4	65-105
3-2	36-78
2-1	24-40

### MARK VIII

Operating Condition	Shift Speed MPH (1995)	Shift Speed MPH (1996)
Light Throttle		
1-2	7-10	6-15
2-3	16-20	12-26
3-4	32-37	30-48
4-3	30-32	27-36
3-2	17-19	9-16
2-1	6-8	5-10

<b>WOT</b>		
1-2	50-55	35-58
2-3	94-100	64-100
3-4	N/A	65-105
4-3	N/A	75-92
3-2	82 Max.	36-78
2-1	40 Max.	24-40

### MUSTANG (3.8L)

<b>Operating Condition</b>	<b>Shift Speed MPH</b>	
<b>Light Throttle</b>		
1-2		9-11
2-3		21-23
3-4		41-43
4-3		29-31
3-2		14-16
2-1		7-9
<b>WOT</b>		
1-2		40-45
2-3		69 Max.
3-2		29 Max.
2-1		N/A

### MUSTANG (4.6L)

<b>Operating Condition</b>	<b>Shift Speed MPH (3.08 Axle Ratio)</b>	<b>Shift Speed MPH (3.27 Axle Ratio)</b>
<b>Light Throttle</b>		
1-2	9-11	8-11
2-3	26-30	25-29
3-4	39-44	37-42
4-3	27-29	25-27
3-2	15-17	13-15
2-1	7-9	7-9
<b>WOT</b>		
1-2	40-45	37-42
2-3	74-79	69-74
3-2	72 Max.	68 Max.
2-1	35 Max.	33 Max.

### THUNDERBIRD SC (3.8L)

<b>Operating Condition</b>	<b>Shift Speed MPH</b>
<b>Light Throttle</b>	
1-2	7-10
2-3	16-20
3-4	31-34

4-3	30-32
3-2	16-18
2-1	7-9
WOT	
1-2	38-43
2-3	70-75
3-2	65 Max.
2-1	27 Max.

### 1995 E-150 (5.0L)

Operating Condition	Shift Speed MPH
Light Throttle	
1-2	8-12
2-3	16-22
3-4	35-40
4-3	29-35
3-2	12-16
2-1	5-9
WOT	
1-2	35-45
2-3	65-72
3-4	85-92
4-3	80-88
3-2	60-65
2-1	28-32

### 1995 F-150 (5.0L)

Operating Condition	Shift Speed MPH
Light Throttle	
1-2	7-11
2-3	16-22
3-4	39-46
4-3	28-35
3-2	12-16
2-1	5-9
WOT	
1-2	36-43
2-3	65-76
3-4	90-105
4-3	83-90
3-2	58-65
2-1	28-33

### 1996 EXPLORER, E-150 & F-150 (5.0L)

Operating Condition	Shift Speed MPH
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Light Throttle	
1-2	8-12
2-3	17-22
3-4	33-40
4-3	21-26
3-2	12-16
2-1	5-9
WOT	
1-2	34-38
2-3	60-70
3-4	90-100
4-3	80-90
3-2	50-60
2-1	25-30

## STALL SPEED TEST

**CAUTION: Perform line pressure test before stall speed test. If line pressure is low at stall, DO NOT perform stall speed test or transmission damage will occur.**

### Testing Precautions

When performing stall test, **DO NOT** hold throttle open longer than 5 seconds. Allow a cooling period of 15 seconds with transmission in "N" and engine speed at 1000 RPM between each test. If engine speed exceeds maximum limits shown, release accelerator immediately, as this is an indication of clutch or band slippage.

### Testing Procedure

Bring engine to normal operating temperature. Apply parking and service brakes. Stall test transmission in each driving range at WOT. Note maximum RPM obtained. Engine speed should be within limits. See **STALL SPEED SPECIFICATIONS TABLE** . If maximum RPM obtained is not within specifications, see **STALL SPEED TEST RESULTS** .

## STALL SPEED SPECIFICATIONS

Application	RPM
1995	
Cougar, T-Bird (3.8L)	2201-2579
Cougar, T-Bird (4.6L)	1977-2337
Crown Victoria & Grand Marquis (Except Police)	2000-2330
Crown Victoria & Grand Marquis (Police)	2010-2360
Mark VIII	2343-2734
Town Car (Except W/Tow Package)	2000-2330
Town Car (W/Tow Package)	2035-2380
Thunderbird SC	1770-2086
"E" & "F" Series	2138-2524
1996	

Cougar, T-Bird (3.8L)	1880-2210
Cougar, T-Bird (4.6L)	2012-2375
Crown Victoria, Grand Marquis (Except Police)	2034-2381
Crown Victoria, Grand Marquis (Police)	2058-2416
Explorer, "E" & "F" Series	2136-2488
Mark VIII	2362-2741
Mustang 3.8L	1863-2200
Mustang 4.6L	2324-2737
Town Car	2053-2412

## STALL SPEED TEST RESULTS

### Low In All Ranges

Check engine tune-up. Check torque converter using bench test for stator one-way clutch slippage.

### High In "D" Position

Check planetary one-way clutch.

### High In "D", "2" & "1" Position

Check forward clutch or intermediate clutch.

### High In "D", "2", "1" & "R" Position

Perform CONTROL PRESSURE TEST .

### High In "R" Position

Check reverse clutch and/or low-reverse band or servo.

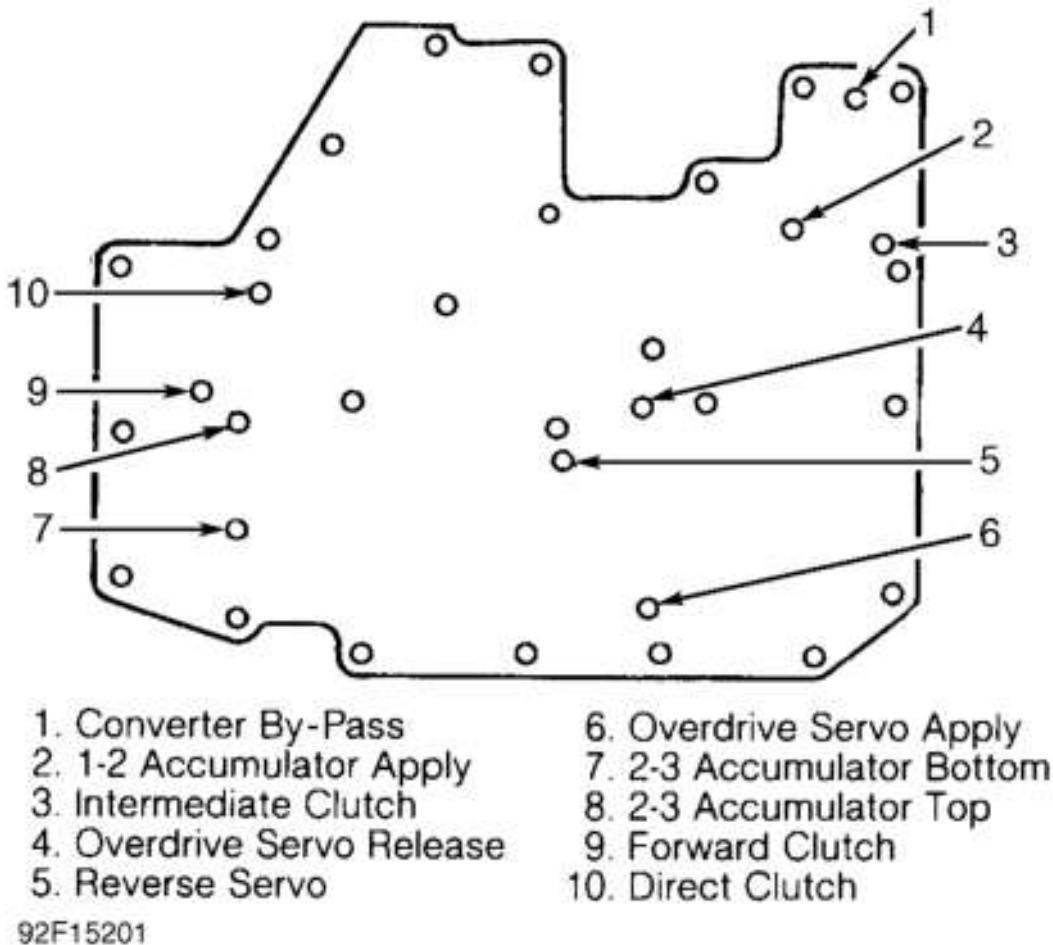
## AIR PRESSURE TESTS

### Test Procedures

1. A no-drive condition can exist even with correct transmission fluid pressure, because of inoperative clutches or bands. The inoperative units can be located by substituting air pressure for fluid pressure to determine location of malfunction.
2. Remove main control (valve body) assembly from transmission. See ON-VEHICLE SERVICE . Using attaching screws, install Transmission Test Plate (T92P-7006-A) and gasket. Tighten bolts to 89-106 INCH lbs. (10-12 N.m)
3. With a rubber-tipped air nozzle, apply air pressure into the appropriate locations specified in the following tests. See Fig. 7 . If servo or accumulator does not move when air is applied, clean and inspect to locate cause. If during test, 2 clutches apply or clutch fails to operate, check fluid passages in case and front pump for blockage or damage.

**NOTE:** Air pressure should be regulated to 40 psi (2.8 km/cm<sup>2</sup> ) maximum. Compressed air used for test should be filtered and dry to avoid

contaminating transmission fluid.



**Fig. 7: Identifying Air Pressure Test Ports On Adapter Plate**  
Courtesy of FORD MOTOR CO.

#### **Reverse Clutch**

Apply air pressure to reverse clutch passage. A dull thud can be heard when clutch piston is applied, or movement can be felt by placing fingertips on clutch drum.

#### **Forward Clutch**

Apply air pressure to the forward clutch apply passage in the adapter plate. A dull thud can be heard when clutch piston is applied, or movement can be felt by placing fingertips on input shell.

#### **Intermediate Clutch**

Apply air pressure to intermediate clutch apply passage in the adapter plate. A dull thud can be heard or felt if clutch is operating properly.

### **Overdrive Servo**

Apply air pressure to overdrive servo apply passage. Operation of the band is indicated by tightening of the band around reverse clutch drum. A thud can be felt on the servo cover when the servo returns to the release position as a result of spring force from the release spring. The band will then relax.

### **Low-Reverse Servo**

Apply air pressure to low-reverse servo apply passage. A dull thud can be heard when the low-reverse band tightens around the planetary drum. Movement of the ring gear should also be detected.

### **Direct Clutch**

Apply air pressure to direct clutch passage in the adapter plate. A dull thud can be heard or felt on the drive shaft if clutch is operating properly.

### **2-3 Accumulator**

Apply air pressure to 2-3 accumulator passage. Accumulator piston should unseat and can be detected by inserting a metal rod into 2-3 piston hole. When piston unseats, rod will move.