

1983 Ford Mustang GL

1983 AUTOMATIC TRANSMISSIONS C5 Diagnosis & Overhaul

1983 AUTOMATIC TRANSMISSIONS**C5 Diagnosis & Overhaul****APPLICATION****TRANSMISSION APPLICATION**

Application	Transmission Model
Ford	
Fairmont (3.3L)	C-5
LTD (3.8L)	C-5
Mustang	C-5
Pickup F100 (3.8L & 4.9L)	C-5
Ranger (2.3L & 2.8L)	C-5
Thunderbird (3.8L)	C-5
Mercury	
Capri (3.8L)	C-5
Cougar (3.8L)	C-5
Marquis (3.3L)	C-5
Zephyr (3.3L)	C-5

IDENTIFICATION**TRANSMISSION**

The C-5 automatic transmission is identified by code letter "C" (passenger cars) or "W" (trucks), which is shown on lower line of Vehicle Certification Label under "TR" or "TRANS". Label is located on driver's door lock panel of pillar. Transmission may also be identified by a metal tag which is attached under lower front intermediate servo cover bolt. The first line on tag shows transmission model prefix and suffix. A number appearing after the suffix indicates that internal parts have been changed after initial production start up.

TRANSMISSION IDENTIFICATION CODES

Application	Code
Ranger & F100 Pickup	"W"
All Other Models	"C"

GEAR RATIOS**TRANSMISSION GEAR RATIOS**

Gear Range	Gear Ratio
Manual Low 1	2.46
Drive	
Low	2.46

Second	1.46
High	1.00
Reverse	2.19

DESCRIPTION & OPERATION

The C-5 transmission is a fully automatic 3 speed unit capable of providing automatic upshifts and downshifts through 3 forward gear ratios and also capable of providing manual selection of first and second gears. See **Fig. 1**. The unit consists essentially of a converter clutch torque converter, a compound planetary gear train controlled by 2 bands, 2 disc clutches, a one-way clutch and a hydraulic control system. See **Fig. 2**.

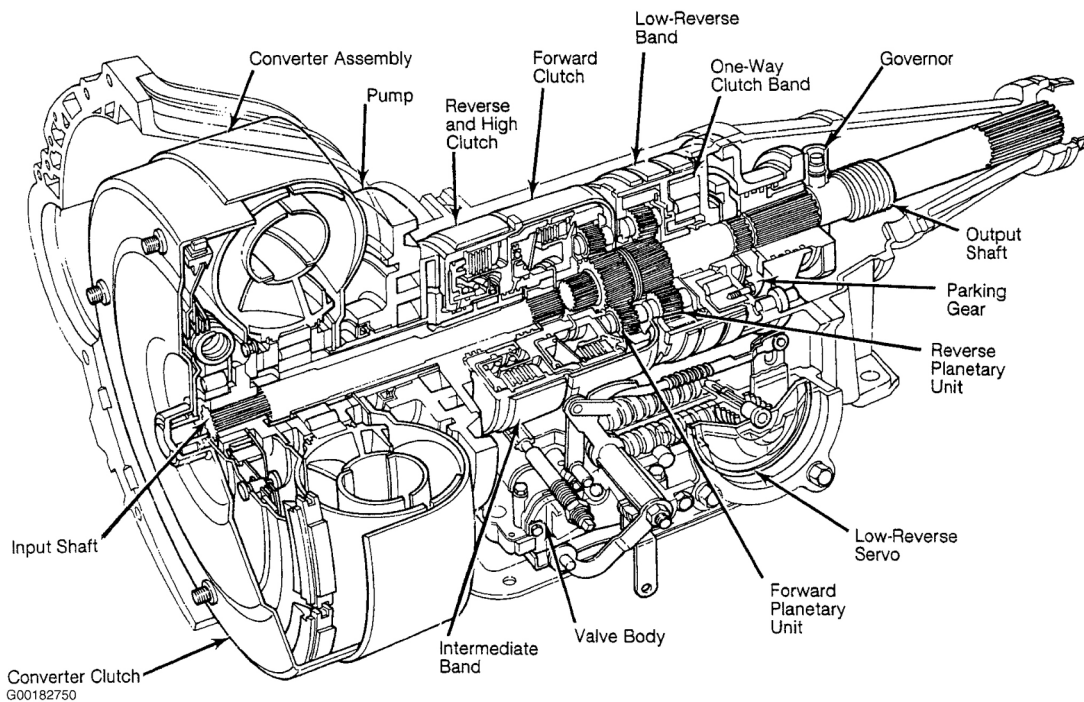
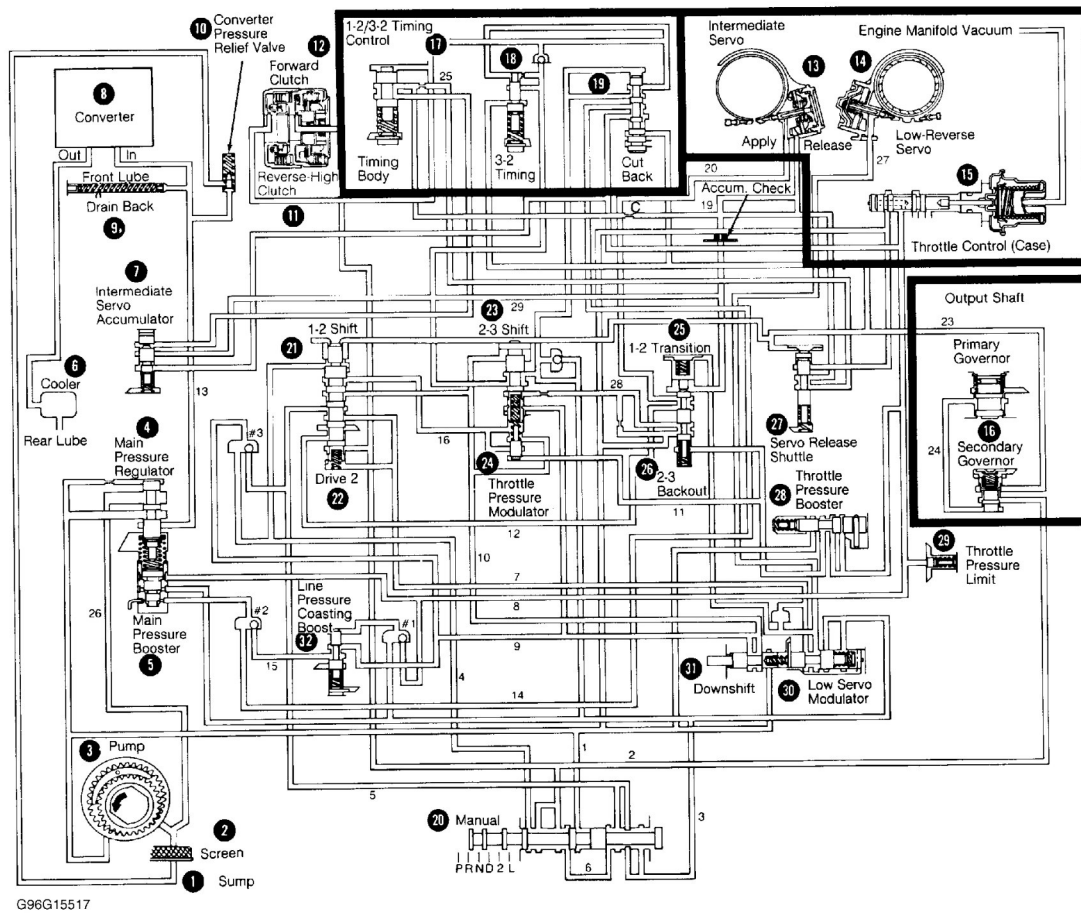


Fig. 1: Cutaway View Of Transmission Assembly (C-5)
 Courtesy of FORD MOTOR CO.



1983 Ford Mustang GL

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4. With transmission in "2" position, transmission should operate only in second gear.

NOTE: **Preceding check will determine if governor pressure and shift control valves are operating properly.**

5. With transmission in third gear and road speed above 30 MPH, transmission should shift to second gear when selector lever is moved from "D", to "2" or "1". When same manual shift is made below 25 MPH, transmission will shift from second or third to first.
6. Slipping or engine speed flare-up in any gear usually indicates clutch or band problems. In most cases, the clutch or band that is slipping can be determined by noting transmission operation in all selector lever positions, and comparing which internal units are applied in those positions. See **CLUTCH & BAND APPLICATIONS**.

CLUTCH & BAND APPLICATIONS

CLUTCH & BAND APPLICATIONS

Gear	Application
1st (D Range)	Forward Clutch & One-Way Clutch
1st (1 Range)	Forward Clutch & Low-Reverse Band
2nd	Forward Clutch & Intermediate Band
3rd	Rev. & High Clutch & Forward Clutch
Reverse	Rev. & High Clutch & Low-Reverse Band
Neutral/Park	N/A

SHIFT SPEED SPECIFICATIONS

NOTE: **Specifications given are approximate. All shift speeds may vary somewhat due to production tolerances, rear axle ratio, or emission equipment. For shift speeds, refer to appropriate illustration. See Fig. 3 -Fig. 9**

MODELS PEP-R, PEP-W

Throttle	Range	Shift	OPS—R.P.M.	1	2	3
Closed (Above 17" Vacuum)	D	1-2	413-456	12-13	11-13	10-11
	D	2-3	580-761	17-22	15-20	14-18
	D	3-1	331-366	10-11	9-10	8-9
	1	2-1	1074-1271	31-37	29-34	25-30
To Detent (Torque Demand)	D	1-2	907-1187	26-35	24-32	21-28
	D	2-3	1600-1852	47-54	43-49	38-44
	D	3-2	1459-1614	43-47	39-43	34-38
Through Detent (W.O.T.)	D	1-2	1480-1718	43-50	39-46	35-40
	D	2-3	2621-2901	76-85	70-77	62-68
	D	3-2	2359-2516	69-73	63-67	56-59
	D	3-1 2-1	1061-1292	31-38	28-34	25-30

Axle Ratio	Tire Size	Use Column No.
2.47:1	P185/75R14	1
	P195/75R14	1
	205/70HR14	1
	220/55R390	1
2.73:1	P185/75R14	2
	P195/75R14	2
	205/70HR14	2
	220/55R390	2
3.08:1	P185/75R14	3
	P195/75R14	3

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Fig. 3: Shift Speeds In MPH (Models PEP-R & PEP-W)
Courtesy of FORD MOTOR CO.

MODELS PEP-B1

Throttle	Range	Shift	OPS—R.P.M.	1
Closed (Above 17" Vacuum)	D	1-2	411-457	11-12
	D	2-3	580-761	15-20
	D	3-1	331-366	9-10
	1	2-1	1074-1269	28-33
To Detent (Torque Demand)	D	1-2	845-1185	22-31
	D	2-3	1527-1850	40-49
	D	3-2	1436-1610	38-42
Through Detent (W.O.T.)	D	1-2	1464-1716	39-45
	D	2-3	2600-2898	68-76
	D	3-2	2338-2513	62-66
	D	3-1 2-1	1046-1290	28-34

Axle Ratio	Tire Size	Use Column No.
2.73:1	P185/75R14	1
	P195/75R14	1
	205/70HR14	1
	220/55R390	1

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Fig. 4: Shift Speeds In MPH (Model PEP-B1)
 Courtesy of FORD MOTOR CO.

MODELS PEP-V

Throttle	Range	Shift	OPS—R.P.M.	1	2
Closed (Above 17" Vacuum)	D	1-2	421-467	12-14	12-14
	D	2-3	586-807	17-23	17-24
	D	3-1	331-366	10-11	10-11
	1	2-1	1091-1313	32-38	32-39
To Detent (Torque Demand)	D	1-2	831-1193	24-35	25-35
	D	2-3	1496-1845	44-54	44-55
	D	3-2	1330-1542	39-45	40-46
Through Detent (W.O.T.)	D	1-2	1506-1769	44-51	45-53
	D	2-3	2655-2971	77-87	79-89
	D	3-2	2387-2582	69-75	71-77
	D	3-1 2-1	1080-1332	31-39	32-40

Axle Ratio	Tire Size	Use Column No.
2.47:1	P185/75R14	1
	P195/75R14	2
	P205/70R14	1
	220/55R390	1
	205/60R390	1

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Fig. 5: Shift Speeds In MPH (Model PEP-V)
Courtesy of FORD MOTOR CO.

MODELS PEN-P, G, S, U, Y, Z, CA

Throttle	Range	Shift	OPS—R.P.M.	1	2
Closed (Above 17" Vacuum)	D	1-2	399-446	10-11	11-12
	D	2-3	585-847	15-22	15-22
	D	3-1	331-366	8-9	9-10
	1	2-1	1091-1317	28-34	29-35
To Detent (Torque Demand)	D	1-2	492-964	13-25	13-25
	D	2-3	1107-1551	29-40	29-41
	D	3-2	1040-1515	27-39	27-40
Through Detent (W.O.T.)	D	1-2	1514-1775	39-46	40-47
	D	2-3	2683-3008	69-78	71-80
	D	3-2	2426-2633	63-68	64-70
	D	3-1 2-1	1094-1344	28-35	29-35

Axle Ratio	Tire Size	Use Column No.
2.73	P175/75R14	1
	190/65R390	
2.73	P185/75R14	2
	P195/75R14	2
	P205/70R14	2
	195/70HR14	2

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Fig. 6: Shift Speeds In MPH (Models PEN-P, G, S, U, Y, Z, CA)
Courtesy of FORD MOTOR CO.

MODELS PEN-AA, AB, BA

Throttle	Range	Shift	OPS—R.P.M.	1	2
Closed (Above 17" Vacuum)	D	1-2	398-449	10-12	10-12
	D	2-3	582-854	15-22	15-23
	D	3-1	331-366	8-9	9-10
	1	2-1	1091-1317	28-34	29-35
To Detent (Torque Demand)	D	1-2	490-994	13-26	13-26
	D	2-3	1085-1589	28-41	29-42
	D	3-2	978-1545	35-40	26-41
Through Detent (W.O.T.)	D	1-2	1506-1781	39-46	40-47
	D	2-3	2673-3016	69-78	71-80
	D	3-2	2416-2641	62-68	64-70
	D	3-1 2-1	1087-1348	28-35	29-36

Axle Ratio	Tire Size	Use Column No.
2.73	P175/75R14	1
	190/65R390	
2.73	P185/75R14	2
	P195/75R14	2
	P205/70R14	2
	195/70HR14	2

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Fig. 7: Shift Speeds In MPH (Models PEN-AA, AB, BA)
 Courtesy of FORD MOTOR CO.

MODELS PEA-CR1

Throttle	Range	Shift	OPS—R.P.M.	1	2	3
Closed (Above 17" Vacuum)	D	1-2	409-444	11-12	12-13	13-14
	D	2-3	655-864	19-24	19-25	20-27
	D	3-1	331-366	9-10	10-11	10-11
	1	2-1	1104-1303	31-37	32-38	34-40
To Detent (Torque Demand)	D	1-2	490-910	14-26	14-27	15-28
	D	2-3	1079-1489	30-42	31-45	33-46
	D	3-2	1017-1498	29-42	30-44	31-46
Through Detent (W.O.T.)	D	1-2	1513-1751	43-49	44-51	46-54
	D	2-3	2682-2975	76-84	78-87	82-91
	D	3-2	2435-2610	69-74	71-76	75-80
	D	3-1 2-1	1100-1329	31-38	32-39	34-41

Axle Ratio	Tire Size	Use Column No.
2.73:1	P195/75R15SL	1
	P215/75R15SL	2
	P235/75R15XL	3

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Fig. 8: Shift Speeds In MPH (Models PEA-CR1)
Courtesy of FORD MOTOR CO.

MODELS PEJ-AE1

Throttle	Range	Shift	OPS—R.P.M.	1	2	3	4	5	6
Closed (Above 17" Vacuum)	D	1-2	405-440	8-9	8-9	8-9	8-9	8-9	8-9
	D	2-3	880-1116	18-23	18-24	19-24	17-21	17-22	18-22
	D	3-1	331-386	6-7	7-8	7-8	6-7	6-7	6-7
	1	2-1	1478-1724	30-35	31-37	32-37	28-33	29-34	30-35
To Detent (Torque Demand)	D	1-2	831-1441	17-30	18-30	18-31	16-28	16-28	17-29
	D	2-3	1477-2004	30-41	31-43	32-44	28-38	29-39	30-40
	D	3-2	1458-1740	30-36	31-37	32-38	28-33	29-34	29-35
Through Detent (W.O.T.)	D	1-2	1977-2283	40-47	42-49	43-50	38-44	39-45	40-46
	D	2-3	3071-3438	63-70	65-73	67-75	59-66	66-68	62-69
	D	3-2	2743-2965	58-60	58-63	60-65	53-57	54-58	55-60
	D	3-1 2-1	1485-1768	30-36	32-38	32-39	28-34	29-35	30-36

Axle Ratio	Tire Size	Use Column No.
3.45	185/75R14SL	1
	195/75R14SL	2
	P205/75R14SL	3
	P205/75R14XL	3
3.73	185/75R14SL	4
	195/75R14SL	5
	P205/75R14SL	6
	P205/75R14XL	

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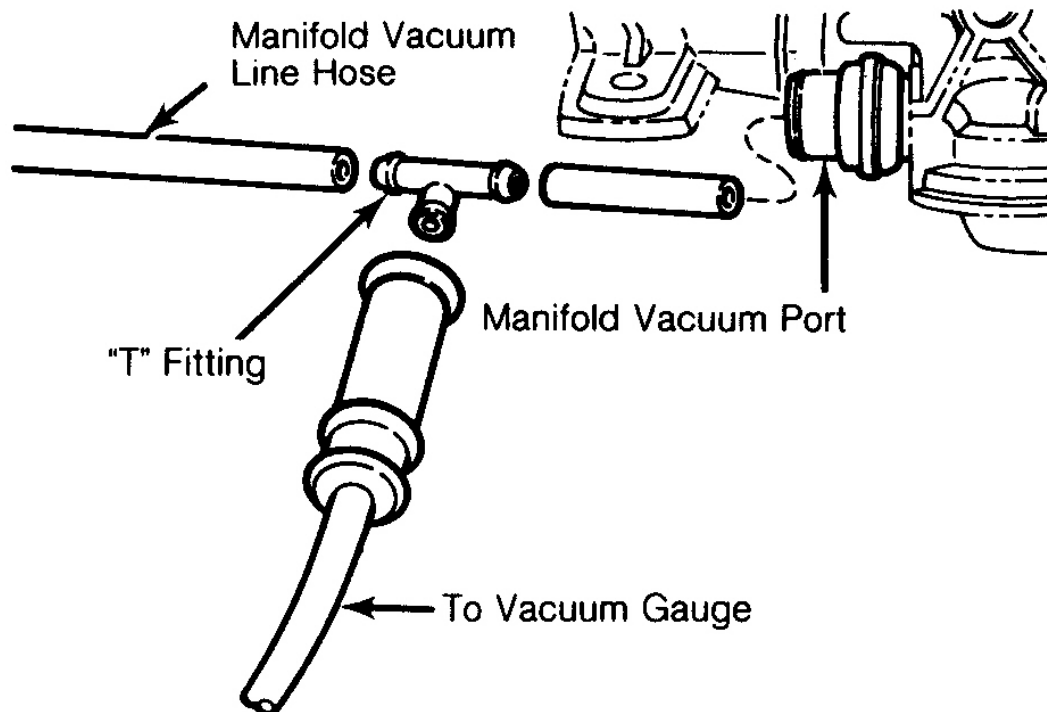
Fig. 9: Shift Speeds In MPH (Models PEJ-AE1)

Courtesy of FORD MOTOR CO.

CONTROL PRESSURE TEST

Engine Vacuum Method

1. Attach a tachometer to engine, and install a vacuum gauge (using a "T") into manifold vacuum line or vacuum diaphragm unit. See **Fig. 10** . Attach a 0-400 psi gauge to control pressure take-off point at transmission. See **Fig. 11** .
2. Apply both parking and service brakes. Start engine, read and record control pressure in all selector positions at specified manifold vacuum. Compare with specifications. See **Fig. 12** .



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Fig. 10: Vacuum Gauge Installation
Courtesy of FORD MOTOR CO.

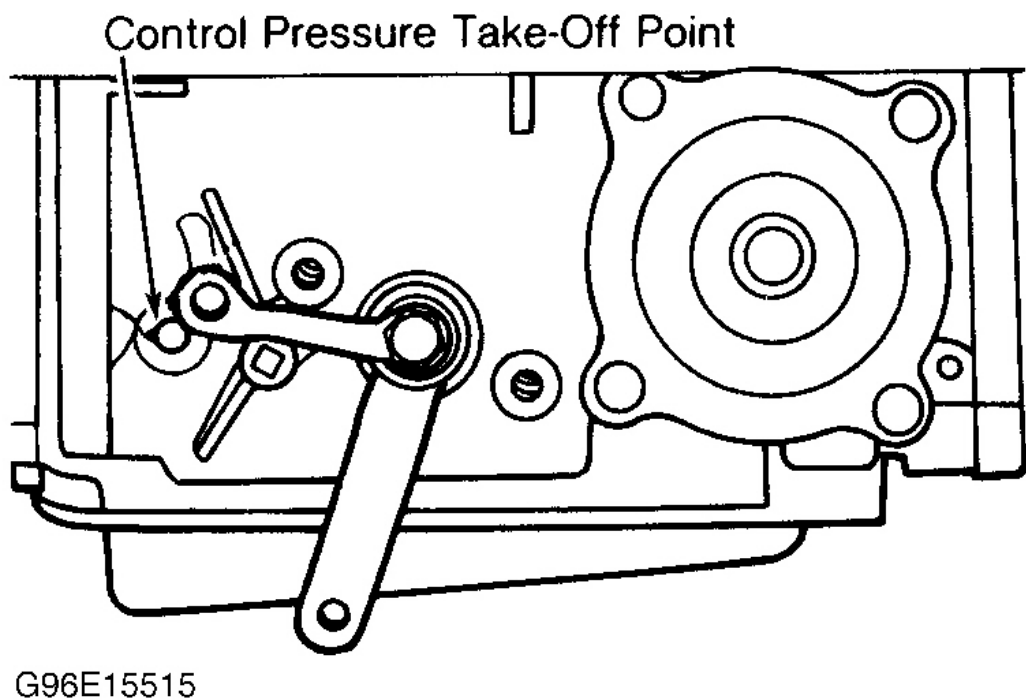


Fig. 11: View Of Left Side Of Transmission Case
Courtesy of FORD MOTOR CO.

CONTROL PRESSURE SPECIFICATIONS

Transmission Model	Range	Idle		
		15" & Above	10"	WOT Stall Thru Detent
PEN-G,P,S,U,Y,Z	D	55-70	94-107	162-174
	2,1	107-119	100-112	162-174
	R	91-117	156-178	271-291
	P,N	55-70	94-107	162-174
PEN-AA,AB	D	54-72	92-109	161-176
	2,1	107-119	100-112	161-176
	R	90-121	154-182	268-293
	P,N	54-72	92-109	161-176
PEP-V	D	64-68	86-97	160-169
	2,1	105-114	100-109	160-169
	R	78-96	144-162	267-281
	P,N	64-68	86-97	160-169
PEP-R	D	67-80	99-110	157-165
	2,1	102-112	99-110	157-165
	R	113-133	166-184	261-275
	P,N	67-80	99-110	157-165
PEP-B @	D	66-81	97-111	153-165
	2,1	102-112	103-111	153-165
	R	110-134	162-174	256-274
	P,N	66-81	97-111	153-165
PEJ-AE,AG	D	60-64	83-94	157-165
	2,1	101-111	97-106	157-165
	R	70-90	139-156	262-275
	P,N	60-64	83-94	157-165
PEJ-AF, AH @	D	60-64	82-96	155-167
	2,1	102-110	97-106	155-167
	R	69-94	137-160	259-278
	P,N	60-94	82-96	155-167
PEJ-AJ	D	57-61	83-93	157-165
	2,1	101-111	97-106	157-165
	R	70-90	139-156	262-275
	P,N	57-61	83-93	157-165
PEJ-AK @	D	57-61	82-96	155-167
	2,1	102-110	97-106	155-167
	R	69-94	137-147	259-279
	P,N	57-61	83-93	157-167
PEA-CR	D	64-68	83-94	163-172
	2,1	109-117	104-114	163-172
	R	79-85	139-157	272-287
	P,N	64-68	83-94	163-172

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Fig. 12: Control Pressure Specifications Chart

Courtesy of FORD MOTOR CO.

Vacuum Pump Method

NOTE: **Pressure gauges affect shift quality of transmission.**

1. Attach tachometer to engine. Attach a 0-400 psi pressure gauge to control pressure take-off point at transmission.
2. Disconnect and temporarily plug manifold vacuum line at vacuum diaphragm unit. Connect a remote vacuum source, such as the vacuum pump provided in a distributor tester.
3. Apply both parking and service brakes. Start engine and vacuum pump. Set vacuum at 15 in. Hg, read and record control pressure in all shift selector position. See **Fig. 12** .

CONTROL PRESSURE TEST RESULTS

Control Pressure Low At Idle In All Ranges

1. Check engine EGR system. Check for low fluid level or restricted intake screen or filter. Check for loose oil tubes or loose valve body.
2. Check for loose regulator to case bolts, excessive leakage in front pump, case, control valve body, or a sticking control pressure regulator valve.

Control Pressure High At Idle In All Ranges

Check engine EGR system. Check vacuum diaphragm unit, manifold vacuum line, throttle valve, and control rod. Check for sticking regulator boost valve(s).

Control Pressure Okay At Idle In All Ranges, But Low At 10 in. Hg.

Check vacuum diaphragm unit. Control rod or throttle valve are stuck.

Control Pressure Okay At Idle In All Ranges, Okay At 10 in. Hg, But Low At 1 in. Hg.

Check for excessive leakage, low pump capacity, or restricted oil pan screen.

Control Pressure Low In "2"

Check forward clutch and/or front servo.

Control Pressure Low In "D"

Check for faulty forward clutch.

Control Pressure Low In "1"

Check forward clutch and/or rear servo.

1983 Ford Mustang GL

1983 AUTOMATIC TRANSMISSIONS C5 Diagnosis & Overhaul

Control Pressure Low In "R"

Check reverse-high clutch and/or rear servo.

STALL SPEED TEST

Test Precautions

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

Testing Procedure

1. Install tachometer and fully apply parking and service brakes. Start engine and run at curb idle and at normal operating temperature.
2. Stall test transmission in each driving range at full throttle. Note maximum RPM obtained. Engine speed should be within specified limits. See **STALL SPEED SPECIFICATIONS** table.

STALL SPEED SPECIFICATIONS

Engine Size	Converter Size	Stall Speed RPM
2.3L ⁽¹⁾	10 1/4"	2675-3068
3.3L	10 1/4"	1503-1760
3.3L	12"	1527-1785
3.8L	12"	1648-1911
3.8L ⁽²⁾	12"	1737-2022
(1) 4WD Ranger only.		
(2) F100 pickup only.		

STALL SPEED TEST RESULTS

Stall Speed Too High

In "D", "2", "1" and "R", general transmission problems are indicated and a control pressure test should be made to locate faulty unit(s). In "D" only, planetary one way clutch slippage is indicated. In "D", "2" and "1", forward clutch slippage is indicated. In "R" only, high clutch or reverse band slippage is indicated.

Stall Speed Too Low

Converter stator one-way clutch or engine performance is faulty.

AIR PRESSURE CHECKS

1. A "no drive" condition can exist, even with correct transmission fluid pressure, because of inoperative

clutches or bands. Erratic shifts could be caused stuck governor valve.

2. The inoperative units can be located through a series of checks by substituting air pressure for the fluff pressure to determine location of malfunction.
3. To make air pressure checks, loosen oil pan bolts and allow transmission to drain. Remove oil pan and control valve body. Apply air to fluid passages to ensure that unit operation is as follows:

Forward Clutch

Apply air pressure to forward clutch pass. A dull thud can be heard when clutch piston is applied. Movement of the piston can be felt by placing finger tips on input shell.

Governor

Apply air pressure to control pressure-to-governor passage and listen for a sharp clicking or whistling noise indicating governor valve movement.

Reverse-High Clutch

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

Intermediate Servo

1. Hold air nozzle in intermediate servo apply passage. Operation of servo is indicated by tightening of intermediate band around drum.
2. While continuing to apply air pressure at servo apply passage, apply air pressure to intermediate servo release passage. Intermediate servo should release band against the applied pressure.

Low-Reverse Servo

NOTE: If air pressure applied to either of the clutch passages fails to operate a clutch or operates both clutches at once, remove and, with air pressure, check fluid passages in case and oil pump to detect obstructions.

Apply air pressure to low-reverse servo apply passage. Low-Reverse band should tighten around drum if servo is operating properly.

GOVERNOR CHECK

CAUTION: DO NOT exceed 60 MPH speedometer speed during governor pressure test.

1. Raise vehicle and support, so that rear wheels are clear of floor. Disconnect and plug vacuum line to vacuum diaphragm unit. Connect hose from a remote vacuum pump to vacuum diaphragm unit.
2. Attach tachometer to engine. Attach a 0-400 psi pressure gauge to control pressure take-off point at transmission.

NOTE: After each test, shift into Neutral and run engine at 1000 RPM to cool transmission.

3. Place transmission in manual "2", no load on engine, and apply 10 in. Hg to vacuum diaphragm unit. Increase speed slowly and watch speedometer. Check MPH at which control pressure cutback occurs. It should occur at 10-20 MPH.
4. Decrease vacuum at vacuum diaphragm to 0-2 in. Hg, and repeat check. Control pressure cutback should occur at 30-50 MPH. Governor is okay if cutback occurs within these specifications.
5. If cutback does not occur within specification, check shift speeds to verify that it is the governor and not a stuck cutback valve, then repair or replace governor.

VACUUM DIAPHRAGM CHECK

Vacuum Supply To Diaphragm Unit

1. Check supply by disconnecting vacuum line at vacuum unit and connect it to a vacuum gauge. With engine idling, gauge must show steady acceptable vacuum.
2. If reading is low, check for vacuum leak or poor engine vacuum. If reading is okay, rapidly accelerate engine momentarily. Reading must drop rapidly at acceleration and return immediately upon release of accelerator.
3. If reading does not change or changes slowly, transmission vacuum line is plugged, restricted, or connected to a reservoir supply. Correct as necessary

Vacuum Diaphragm Unit

1. Remove unit from transmission. Use a distributor tester equipped with a vacuum pump. Start pump and set regulator knob so that vacuum gauge 18 in. Hg, with end of hose blocked off.
2. Connect vacuum hose to manifold vacuum port. If gauge still reads 18 in. Hg, vacuum unit diaphragm is not leaking. If reading does not hold at 18 in. Hg, but drops, diaphragm is leaking and unit must be replaced.
3. As hose is removed from vacuum unit, hold finger over end of control rod. When hose is removed, the internal spring of vacuum unit should push control rod outward.
4. Check also for presence of transmission fluid in vacuum side of diaphragm or in vacuum hose. If fluid is present, diaphragm is leaking and must be replaced.

REMOVAL & INSTALLATION

NOTE: See REMOVAL & INSTALLATION - FORD MOTOR CO. article.

TORQUE CONVERTER

NOTE: For torque converter service procedures, refer to procedures given in C-6 DIAGNOSIS & OVERHAUL article.

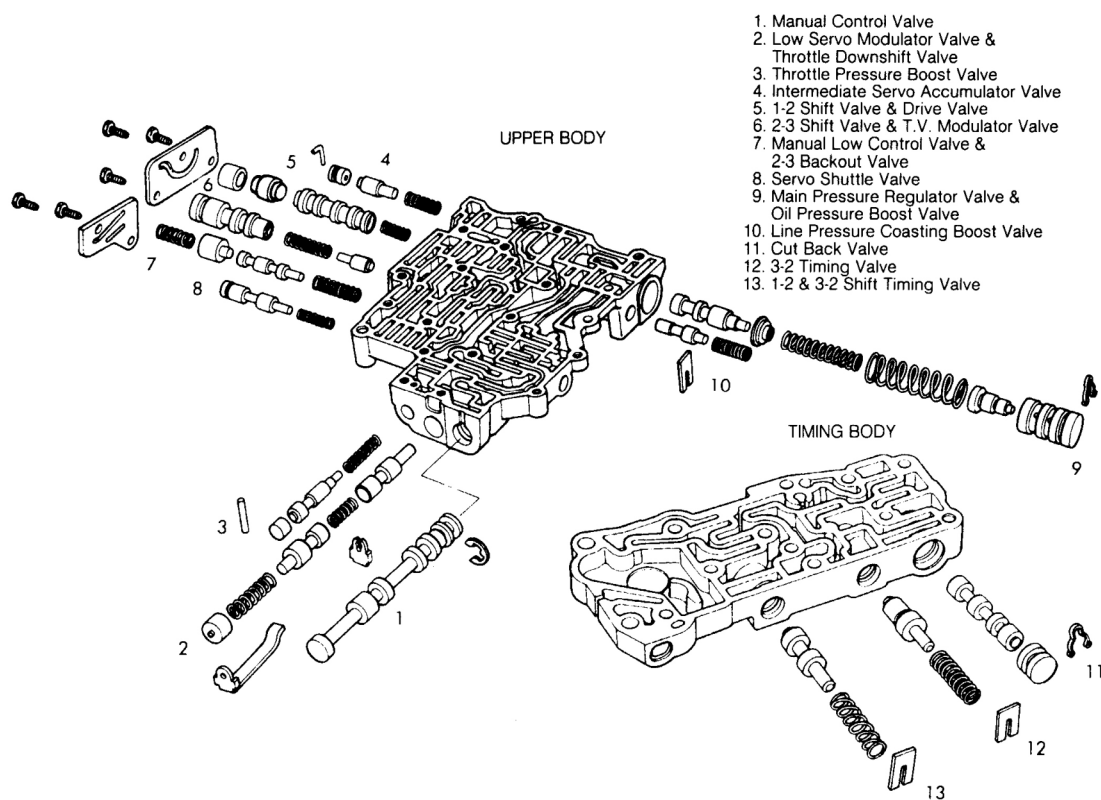
ON-VEHICLE REPAIRS

CONTROL VALVE BODY

NOTE: The nylon plug will be found in transmission pan, it is used to retain transmission fluid within transmission during shipment and should be discarded when oil pan is removed.

Disassembly

1. Raise and support vehicle. Drain transmission fluid. Remove oil pan retaining bolts, pan and gasket. Shift transmission manual lever to "P" position and remove 2 bolts retaining detent spring to valve body and case.
2. Remove filter retaining bolt and remove filter. Remove remaining valve body-to-case retaining bolts. Hold manual valve in valve body to prevent damaging valve. Remove valve body from case. See **Fig. 13**.



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Fig. 13: Exploded View Of Valve Body Assembly
Courtesy of FORD MOTOR CO

Reassembly

1. Place manual lever in "P" position. Position valve body in case. Place inner downshift lever between

downshift lever stop and downshift valve.

2. Make sure that the 2 lands on end of manual valve engage actuating pin on manual detent lever. Install 7 body-to-case bolts, but do not tighten at this time.
3. Position detent spring on lower valve body. Install spring-to-case bolt finger tight. Hold detent spring roller it in center of manual lever and install detent spring-to-lower valve body bolt. Tighten retaining bolt.
4. Tighten all control body-to-case retaining bolts. Position filter and install retaining bolt and tighten. Position gasket on pan and install pan and retaining bolts and tighten.

INTERMEDIATE SERVO

NOTE: On some models it may be necessary to remove crossmember and/or oil cooler line to gain access to servo cover bolts.

Disassembly

Raise and support vehicle. Remove servo cover retaining bolts. Remove identification tag. Remove servo cover, gasket, piston and piston return spring. Remove piston from cover and seals from piston.

Reassembly

1. Install new seals on piston, lubricate seals with transmission fluid. Install piston into cover. Install return spring into case. Install new gasket to cover.
2. Install piston and cover into transmission case. Use two 5/16-18 x 1 1/4 bolts, 180° apart to position cover against case. Install identification tag and 2 retaining bolts. Remove aligning bolts.

NOTE: If band cannot be adjusted properly, ban struts are not in position. Remove oil pan and valve body, install struts. Reinstall valve body and pan. Adjust band and check fluid level.

3. Install remaining retaining bolts and tighten. Install crossmember and adjust intermediate band. Check fluid level.

LOW-REVERSE SERVO

Disassembly

1. Raise vehicle on a hoist, loosen reverse band adjusting screw lock nut. Tighten band adjusting screw to 10 ft. lbs. (14 N.m) to prevent band strut from falling down when servo is removed.

NOTE: On some models it may be necessary to remove crossmember and support transmission to gain access to Low Reverse Servo. The piston seal cannot be replaced without replacing piston. Seal is bonded to piston.

2. Remove servo cover-to-case retaining bolts, servo cover and seal. Remove servo piston from case.

Reassembly

1. Install piston into case. Install a new seal on cover. Install cover by using two 5/16-18 x 1 1/4" bolts, 180° apart to position servo cover on case. Install 2 cover retaining bolts.

NOTE: If band cannot be adjusted properly, low-reverse band struts are not in position. Remove oil pan and valve body. Install struts, valve body and oil pan. Adjust band. Refill transmission with fluid.

2. Remove aligning bolts and install remaining 2 retaining bolts. Tighten all retaining bolts. Adjust low-reverse band. Lower vehicle and check transmission fluid level.

EXTENSION HOUSING BUSHING & SEAL**Disassembly**

CAUTION: When bushing is installed, the fluid return drain hole must face downward in alignment with extension housing fluid return groove.

Raise vehicle and support. Disconnect propeller shaft from transmission. Remove seal using a tapered chisel or seal remover tool. Remove bushing using a puller.

Reassembly

1. Install new bushing using a driver. Inspect sealing surface of universal joint yoke. If damaged, replace yoke. Remove any scores in counter bore of housing with a crocus cloth.
2. Using a driver, install new seal into extension housing. Lubricate seal, yoke and splines. Install propeller shaft.

EXTENSION HOUSING**Disassembly & Reassembly**

1. Raise and support vehicle. Disconnect propeller shaft and speedometer cable from transmission. Support transmission with a jack.
2. Remove rear support-to-crossmember retaining bolts and nuts. Raise transmission and remove rear support from extension housing.
3. Remove extension housing-to-case retaining bolts and vacuum tube clip. On "cable" floor shift models, remove retainer from extension housing. On all models, remove extension housing.
4. To install, reverse removal procedures. Tighten all bolts and adjust fluid level.

GOVERNOR**Disassembly & Reassembly**

1. With extension housing removed, remove governor housing-to-governor distributor retaining bolts.

Remove housing from distributor.

2. To install, reverse removal procedures. Tighten all bolts, and adjust fluid level.

TRANSMISSION DISASSEMBLY

NOTE: Ten thrust washers are used in this transmission, with No. 1 located at the front pump and No. 10 located at the parking pawl ring gear. It is important that each thrust washer be installed in the correct position during reassembly.

1. Remove converter assembly. Mount transmission to holding fixture. Loosen transmission oil pan retaining bolts and allow fluid to drain. Remove oil pan bolts, pan, and gasket.
2. Remove filter retaining bolt and filter. Remove valve body retaining bolts and lift valve body out of transmission case. Remove filter screen from pick-up passage.

NOTE: Check stator support for No. 1 thrust washer. If washer is not present, remove it from top of reverse-high clutch.

3. Remove converter housing retaining bolt and detach housing from case. Insert a large screw between input shell and reverse planet carrier, and input shell forward until pump can be removed from case.
4. Loosen intermediate band adjusting screw lock nut, thread adjusting screw out of case, and remove band struts. Turn intermediate band counterclockwise until band lugs are aligned with clearance relief provided in case.
5. Remove band, clutch packs, front planetary, and input shell, as an assembly. Remove reverse planetary assembly. Loosen low-reverse band adjusting screw lock nut, thread adjusting screw out of case, and remove band struts.
6. Remove lock nut from adjusting screw and discard lock nut. Rotate low-reverse band until lugs are aligned with clearance relief provided in case. Remove band. Remove extension housing retaining bolts, vacuum diaphragm and throttle valve.
7. Remove extension housing and gasket. Remove and discard rubber shipping plug from output shaft. Remove governor retaining bolts and slide governor off output shaft.
8. Using a magnet, lift governor filter out of governor distributor body. Using snap ring pliers, remove snap ring retaining reverse ring gear and hub assembly to output shaft.
9. Remove reverse ring gear hub and assembly. To gain access to snap ring, it may be necessary to push the output shaft forward.
10. Remove low-reverse drum and detach No. 8 thrust washer from drum. Lift governor distributor and output shaft out of case as an assembly.
11. Remove distributor sleeve retaining bolts and lift sleeve from case taking care not to bend oil tubes. Remove parking gear and No. 10 thrust washer.
12. Remove parking pawl, pivot pin, and return spring from case as an assembly. Using socket (T65P-713456-13 or equivalent) remove one-way clutch outer race retaining bolts, positioning one hand in case to catch clutch assembly before last bolt is removed.

COMPONENT DISASSEMBLY & REASSEMBLY

NOTE: **Handle all parts carefully to avoid damaging bearing or mating surfaces. Lubricate all internal parts with clean automatic transmission fluid only (gaskets and thrust washers may be held in place with petroleum jelly). Use all new gaskets, and tighten all bolts evenly.**

CONTROL VALVE BODY

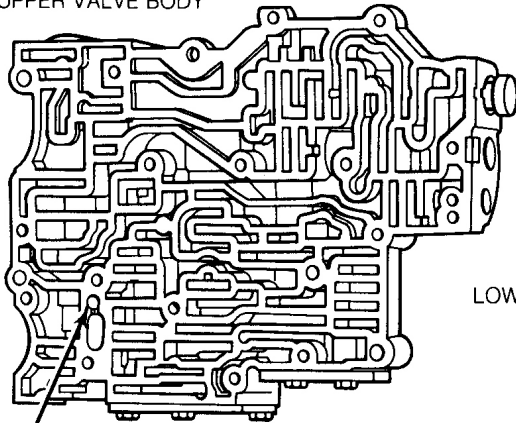
Disassembly

1. Remove timing body retaining bolts. Remove timing body and relief valve from lower body. Remove timing body separator plate retaining screw, separator plate, check valve, and check ball from timing body.
2. Remove upper body to lower body retaining bolts, turn valve body over and remove lower body to upper body retaining bolts. Hold separator plate against lower body and lift lower body half away from upper body half.
3. Turn lower body over and place it on a bench with separator plate facing up. Remove separator plate and gasket from body and discard gasket.
4. Remove check balls and pressure limit valve from lower body half. Remove the check ball from upper body half.

Reassembly

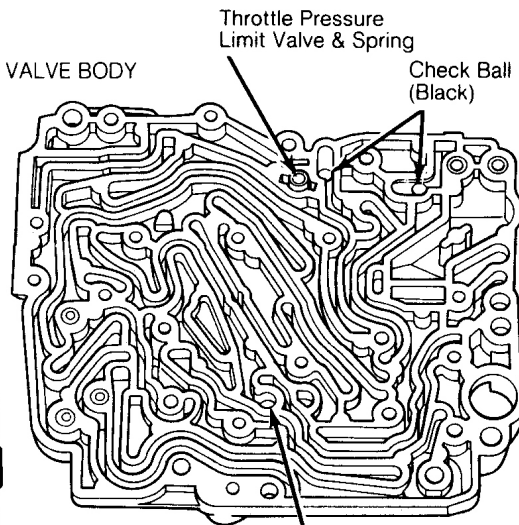
1. Install check valve and check ball in timing body. Position separator and gasket with plate on timing body. Install retaining bolts and tighten using alignment pins to prevent plate from turning.
2. Install check balls and pressure limit valve in lower half of valve body. The steel ball is larger than other check balls and must be positioned as shown in **Fig. 14** .

UPPER VALVE BODY



Check Ball

LOWER VALVE BODY

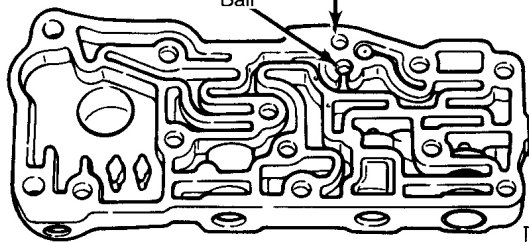


Throttle Pressure Limit Valve & Spring

Check Ball (Black)

Check Valve Puck (Black or Tan)

Check Ball



TIMING VALVE BODY

Check Ball (Steel)

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Fig. 14: Check Ball Location In Valve Body Components
Courtesy of FORD MOTOR CO

3. Install gasket and separator plate on lower body half. Install check ball in upper body half. Hold separator plate firmly against lower body half while turning it over.
4. Position lower body half on upper body half. Install retaining bolts and tighten. Turn valve body over and install upper to lower body retaining bolts and tighten.
5. Install decent spring and roller assembly on lower body half. Position a drift punch in valve body to hold assembly in alignment. Install retaining bolt and tighten.
6. Install check valve in lower body half and position timing body on lower body half. Install timing body retaining bolts and tighten.

INTERMEDIATE SERVO

Disassembly & Reassembly

1. Remove servo cover, gasket, piston, and return spring. Remove seal rings from piston and servo piston cover. Using snap ring pliers, remove snap ring and remove piston rod from piston. See **Fig. 15**.
2. To reassemble, reverse disassembly procedure.

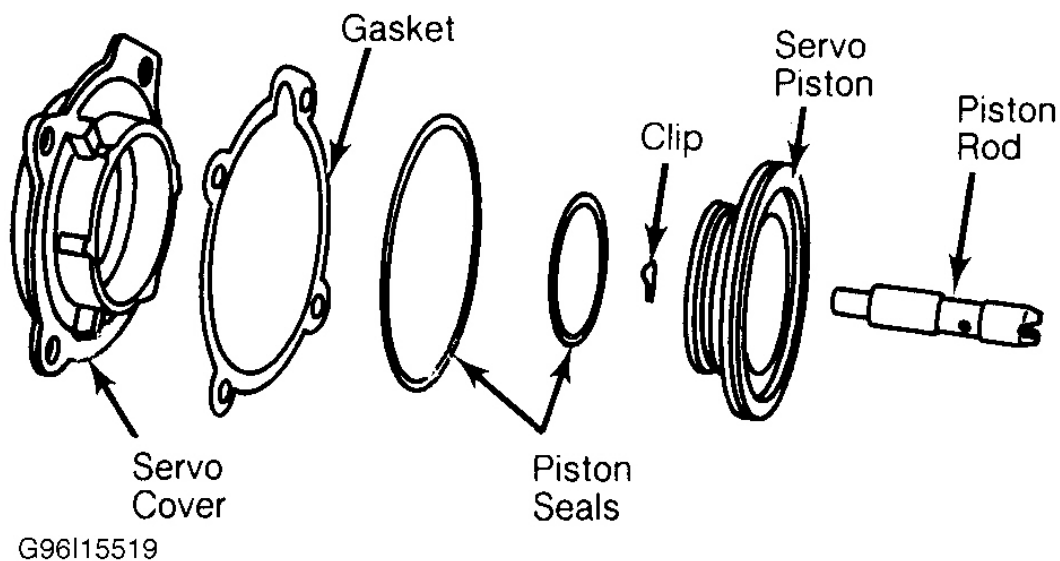


Fig. 15: Exploded View Of Intermediate Servo
Courtesy of FORD MOTOR CO

LOW-REVERSE SERVO

Disassembly & Reassembly

1. Remove servo cover, cover seal, piston, and piston return spring from transmission case. See **Fig. 16**.
2. To reassemble, reverse disassembly procedure.

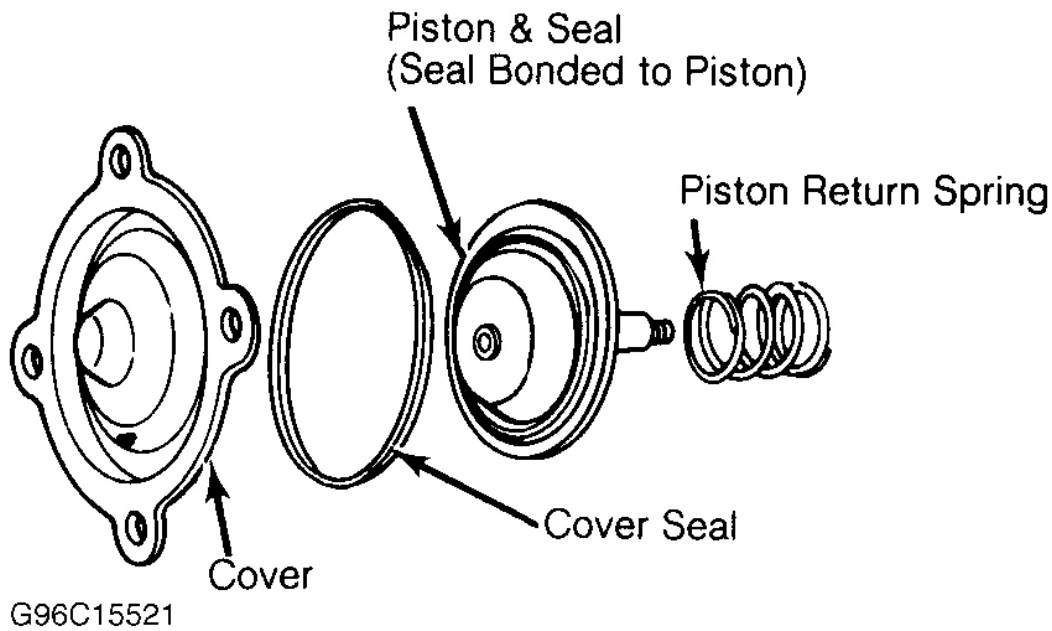


Fig. 16: Exploded View Of Low-Reverse Servo
Courtesy of FORD MOTOR CO

GOVERNOR

Disassembly & Reassembly

1. Remove snap ring from governor bore. Remove primary valve spring, spring seat washer, and primary valve. Remove secondary valve spring retaining plate. Remove secondary valve and spring from governor bore. See **Fig. 17** .
2. To reassemble, reverse disassembly procedure.

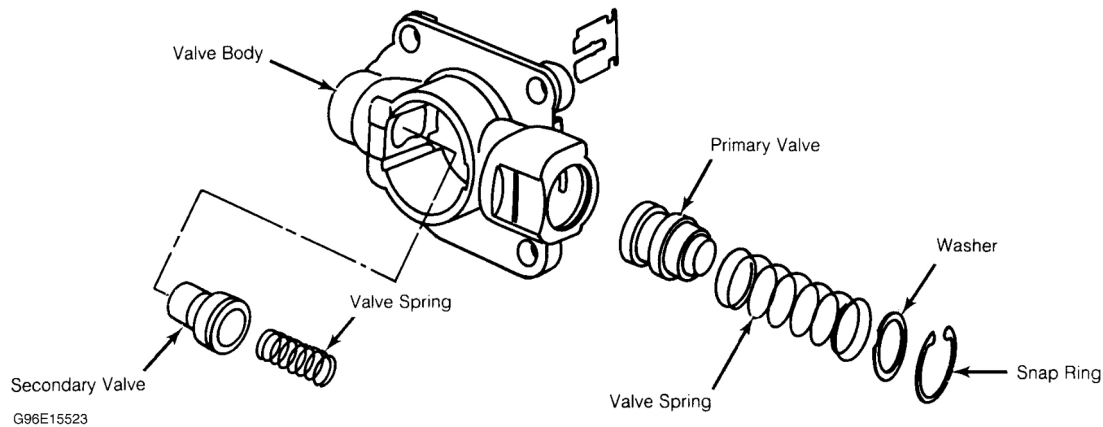


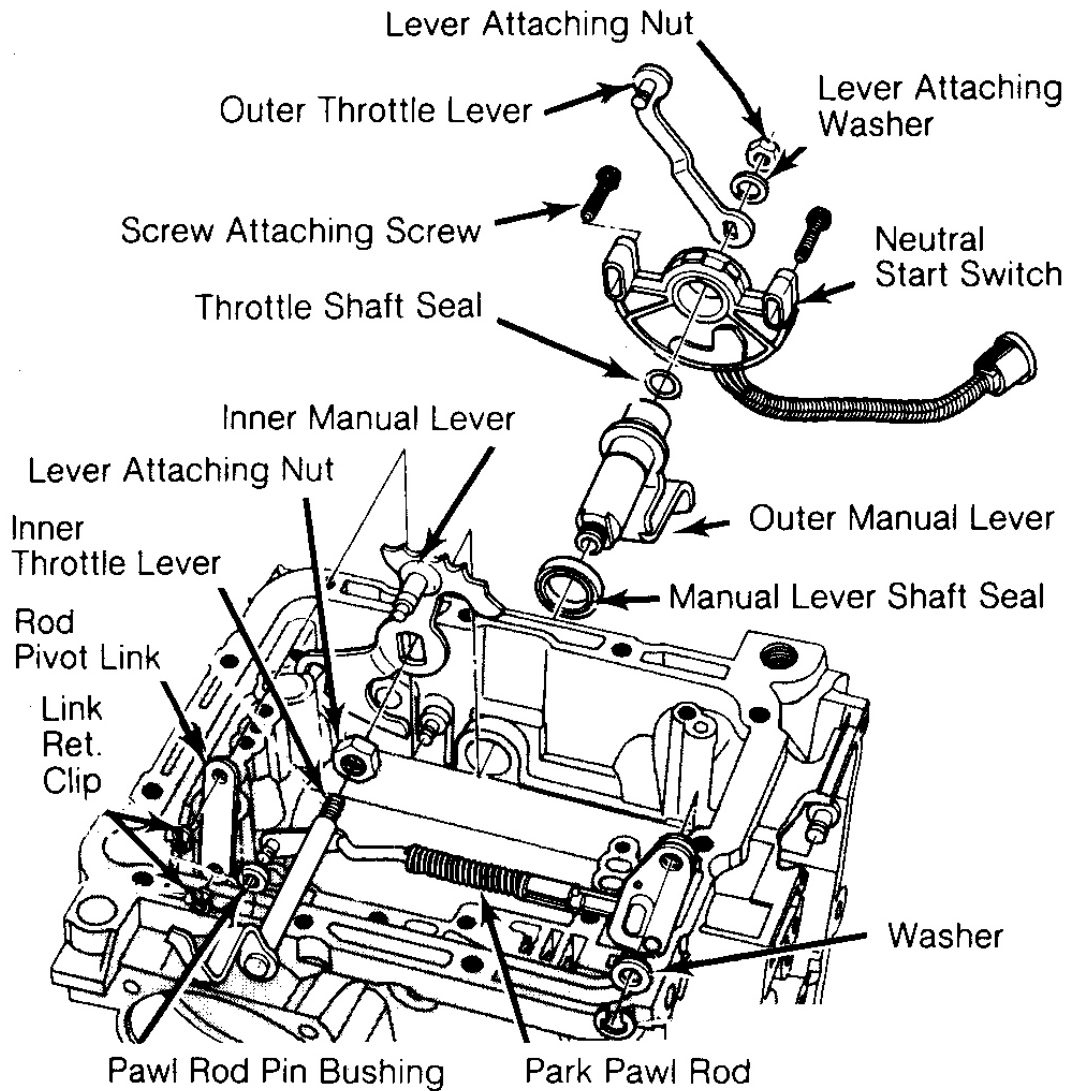
Fig. 17: Exploded View Of Governor Assembly
Courtesy of FORD MOTOR CO

MANUAL & THROTTLE LINKAGE

Disassembly

NOTE: Shaft seal is located in the neutral safety switch and will be removed when shaft is pulled out of case.

1. Remove outer throttle lever retaining nut and lock washer. Remove lever from shaft. Remove inner lever and shaft assembly. See **Fig. 18**.
2. Remove retaining bolts and slide neutral safety switch off outer manual lever. Remove inner manual lever retaining nut and lever. Remove outer manual lever and shaft assembly.
3. Using large screwdriver, pry out manual lever shaft seal from case. Remove front parking pawl linkage retaining clip. Remove rear parking pawl linkage retaining clip, flat washer and linkage.



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Fig. 18: Exploded View Of Manual & Throttle Linkage
Courtesy of FORD MOTOR CO

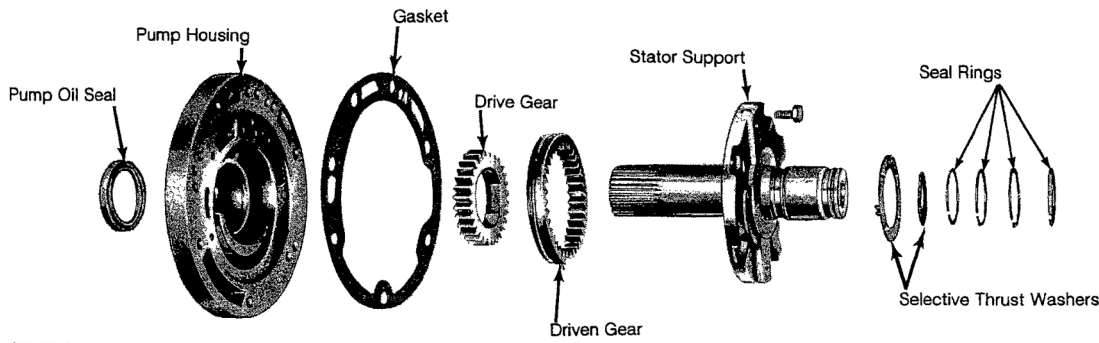
Reassembly

Install manual lever shaft seal using seal installer (T74P-77498-A or equivalent). If tool is not available, a socket can also be used. Reverse disassembly procedures to complete reassembly.

FRONT PUMP

Disassembly

1. Remove No. 1 and 2 thrust washers from stator support. Remove the teflon and cast iron seal rings from stator support. See **Fig. 19** .
2. Remove retaining bolts and lift stator support out of pump body. Remove gears from pump body. Using hammer and punch, drive out converter hub seal from pump body. Using hammer and punch, drive out converter hub seal from pump body.

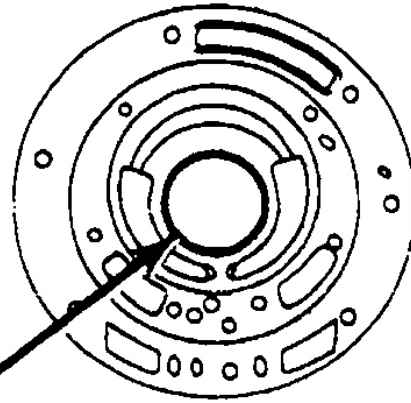


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Fig. 19: Exploded View Of Oil Pump Assembly
Courtesy of FORD MOTOR CO.

Pump Housing Bushing Replacement

1. If bushing is worn or damaged, press old bushing out, using bushing remover (T66L-7003-B9). Press new bushing in place, using bushing installer (T66L-7003-B5) and tool handle.
2. Make sure bushing is installed with slot and groove positioned to rear of pump body and 60° below horizontal centerline. See **Fig. 20** .



**Install Bushing With Groove
And Slot In This Position**

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Fig. 20: View Of Oil Pump Housing
Courtesy of FORD MOTOR CO.

Reassembly

1. Install drive and driven gears into pump housing. Each pump gear has an identification mark on chamfered side of gear teeth. Chamfered side of gear must be positioned downward against face of pump housing.
2. Place stator support in pump housing. Install and tighten retaining bolts. Install 4 new oil seal rings on stator support and make sure that rings are not overstretched, and that cut ends are in same relation as the cut.
3. Check pump for free rotation by placing pump on converter drive hub and turning pump housing.
4. If front pump oil seal requires replacement, mount pump in transmission case. Remove and install oil seal using proper puller and driver.

REVERSE-HIGH CLUTCH

Disassembly

1. Remove clutch pack retaining ring and clutch pack from drum. See **Fig. 21** . Using clutch spring compressor (T65L-77515-A or equivalent), compress piston return spring. Remove spring retaining ring using external snap ring pliers.

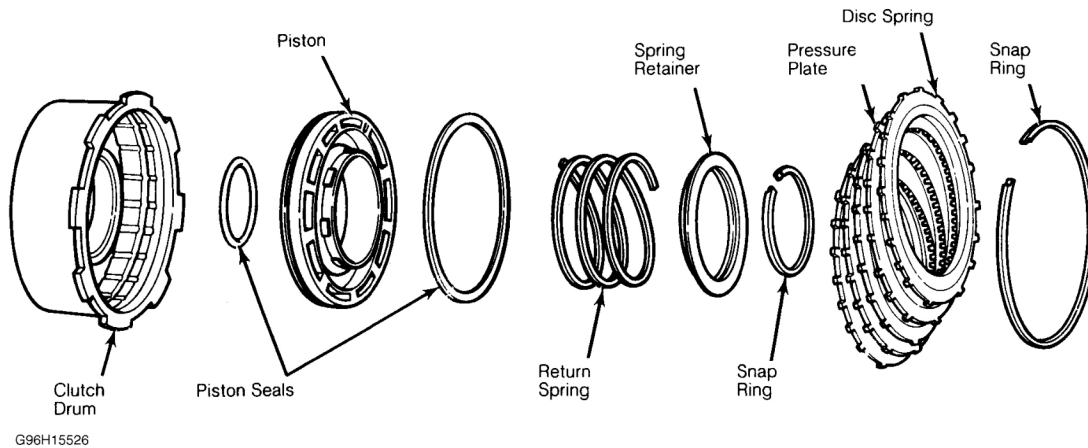


Fig. 21: Exploded View Of Reverse-High Clutch Assembly
Courtesy of FORD MOTOR CO

2. Remove clutch piston. If piston is difficult to remove, air pressure can be used to help remove piston. Remove clutch piston seal and inner seal from clutch drum hub reassembly.

Reassembly

1. To complete reassembly, reverse disassembly procedures. If old composition plates are to be used, clean by wiping with a lint-free cloth.
2. If new composition plates are to be installed, soak in transmission fluid for 15 minutes before installing.
3. To check clutch pack clearance, install steel plate in clutch drum. Install composition and steel plates alternately until 2 composition plates remain. Install remaining 2 composition plates, disc spring and pressure plate (thicker steel plate). Install retaining ring.

NOTE: This is not correct plate installation sequence. This sequence is only used to check clutch park clearance.

- 4.
5. Using a feeler gauge, check the clearance between pressure plate and retaining ring. If clearance exceeds .025-.050" (.64-1.35 mm), install a snap ring of required thickness. Snap rings are available in .050-.054", .064-.068", .078-.082" and .092-.096" (1.35-1.37, 1.63-1.73, 1.98-2.08, 2.34-2.44, and 2.64-2.74 mm) thicknesses.

NOTE: Using air pressure, check clutch for proper operation. Clutch should be heard and felt to assure smooth operation, without leakage. Piston should return to released position when air pressure is removed.

6. After clearance has been checked and proper snap ring selected, remove clutch plates from clutch drum and reinstall as follows: install a steel plate, then alternately install composition and steel plates. Install pressure plate and disc spring with splines facing snap ring. Install retaining ring.

FORWARD CLUTCH

Disassembly

1. Remove clutch pack retaining ring remove clutch plates from drum. Using a screwdriver, disengage piston retaining ring from clutch drum ring groove. See **Fig. 22**.

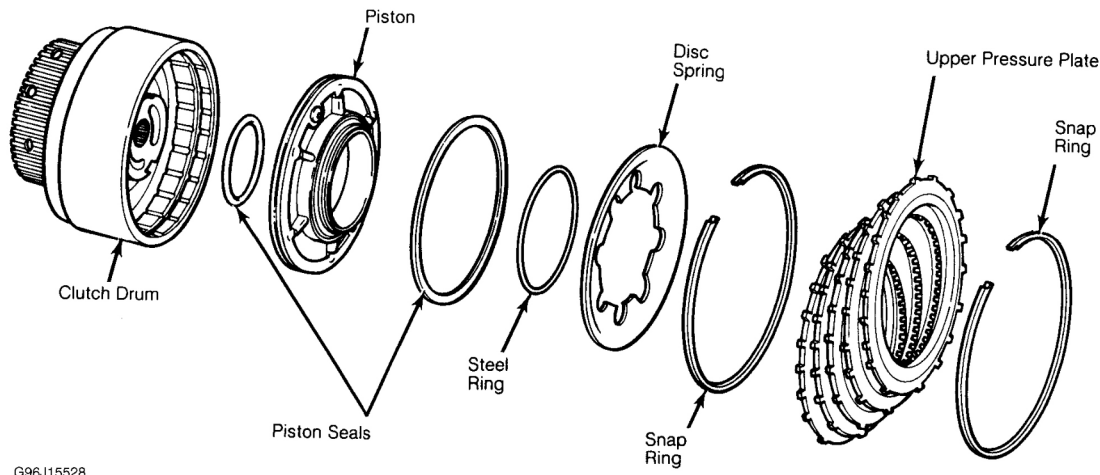


Fig. 22: Exploded View Of Forward Clutch Assembly
Courtesy of FORD MOTOR CO

2. Remove piston retaining ring, piston return spring, and thrust ring. Remove clutch piston outer seal from piston and inner seal from clutch drum hub.

Reassembly

1. If new clutch plates are installed, they must be soaked in transmission fluid for 15 minutes before clutch pack is assembled.
2. Starting with a composition plate, then alternately install composition and steel plates. The last plate to be installed is the rear pressure plate.
3. Install clutch pack retaining ring. Using feeler gauge, check clearance between pressure plate retaining ring. Hold pressure plate down when making measurement.
4. Clearance should be .025-.050" (.64-1.35 mm). If clearance is not within limits, install a snap ring of required thickness. Snap rings are available in .050-.054", .064-.068", .078,.082", .092-.096", and .104-.108" (1.35-1.37, 1.63-1.73, 1.98-2.08, 2.34-2.44, and 2.64-2.74 mm) thicknesses. See **CLUTCH PLATE USAGE** table.
5. Apply air pressure to clutch and check operation. Clutch should be heard and felt to assure smooth operation, without leakage. Piston should return to released position when air pressure is removed.

CLUTCH PLATE USAGE

Application	Steel Plates	Composition Plates
Reverse-High Clutch All Models	3	3

Forward Clutch All Models (Exc. Ranger)	4	5
Ranger	3	4

FORWARD CLUTCH HUB & RING GEAR

Disassembly & Reassembly

Remove forward clutch hub snap ring and withdraw hub from ring gear. See **Fig. 23** . If necessary, remove and install clutch hub bushing using bushing drivers.

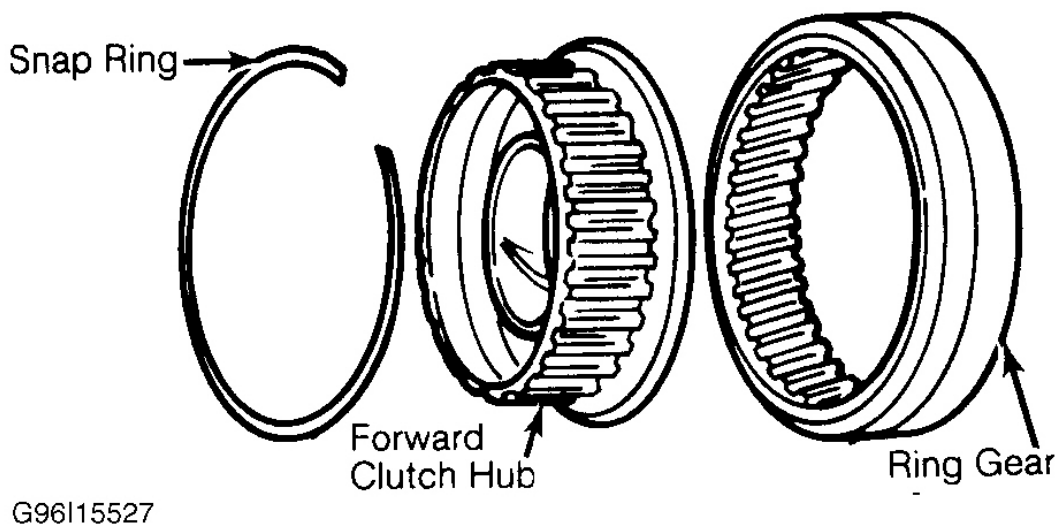


Fig. 23: View Of Forward Clutch Hub And Ring Gear
Courtesy of FORD MOTOR CO

Reassembly

Install forward clutch hub in ring gear, make sure hub is bottomed in groove, of gear. Install clutch hub snap ring, being sure snap ring is fully seated in groove of ring gear.

INPUT SHELL & SUN GEAR

Disassembly

Remove external snap ring from sun gear, remove thrust washer No. 5. Remove sun gear from inside input shell. Remove internal snap ring from sun gear.

Sun Gear Bushing Replacement

Remove old bushings by using bushing remover to press both bushings through and out of gear. Install new

bushings separately using bushing installer to press a new bushing in each end of gear. See **Fig. 24** .

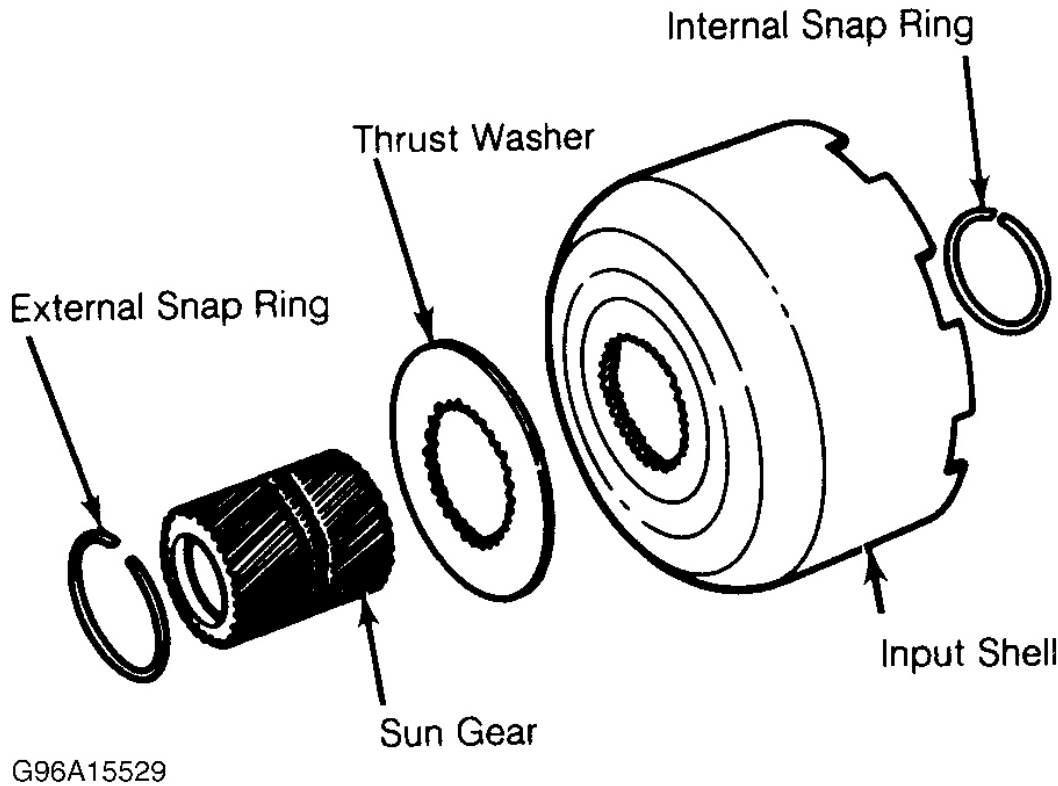


Fig. 24: Input Shell & Sun Gear Assembly
Courtesy of FORD MOTOR CO

SUN GEAR BUSHING TOOLS

Application	Tool Number
Bushing Remover	
Pickup (F100)	T66L-7003-B6
Ranger	T66L-7003-C6
All Others	T66L-7003-C5
Bushing Installer (All Models)	T66L-7003-C3

Reassembly

To reassemble, reverse disassembly procedure.

OUTPUT SHAFT & GOVERNOR DISTRIBUTOR

Disassembly

Using expanding type snap ring pliers, remove distributor to output shaft snap ring. Slide governor distributor off output shaft. Using snap ring pliers, remove seal rings on distributor body.

Reassembly

Install seal rings on distributor body, and reverse disassembly procedure.

REVERSE RING GEAR & HUB

Disassembly

Remove hub snap ring from reverse ring gear and withdraw hub from ring gear. See **Fig. 25**.

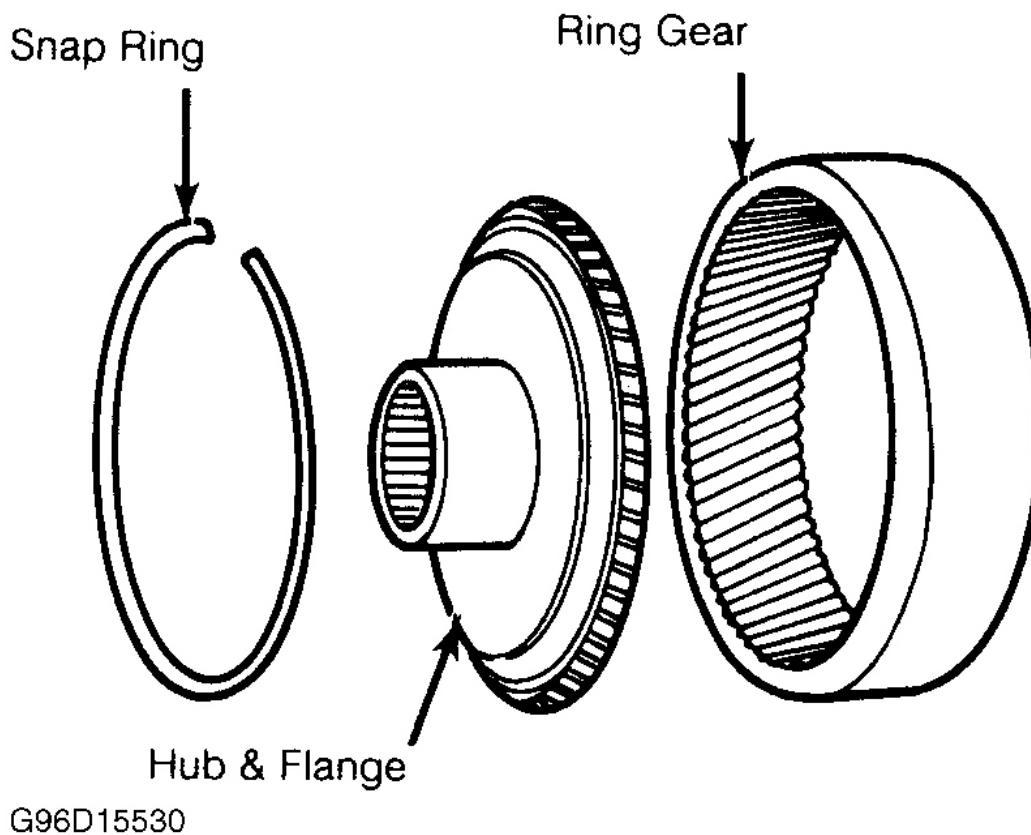


Fig. 25: Reverse Ring Gear & Hub
Courtesy of FORD MOTOR CO

Reassembly

Install hub in reverse ring gear, make sure hub is fully seated in groove. Install snap ring in reverse ring gear,

make sure snap ring is fully seated in snap ring groove of ring gear.

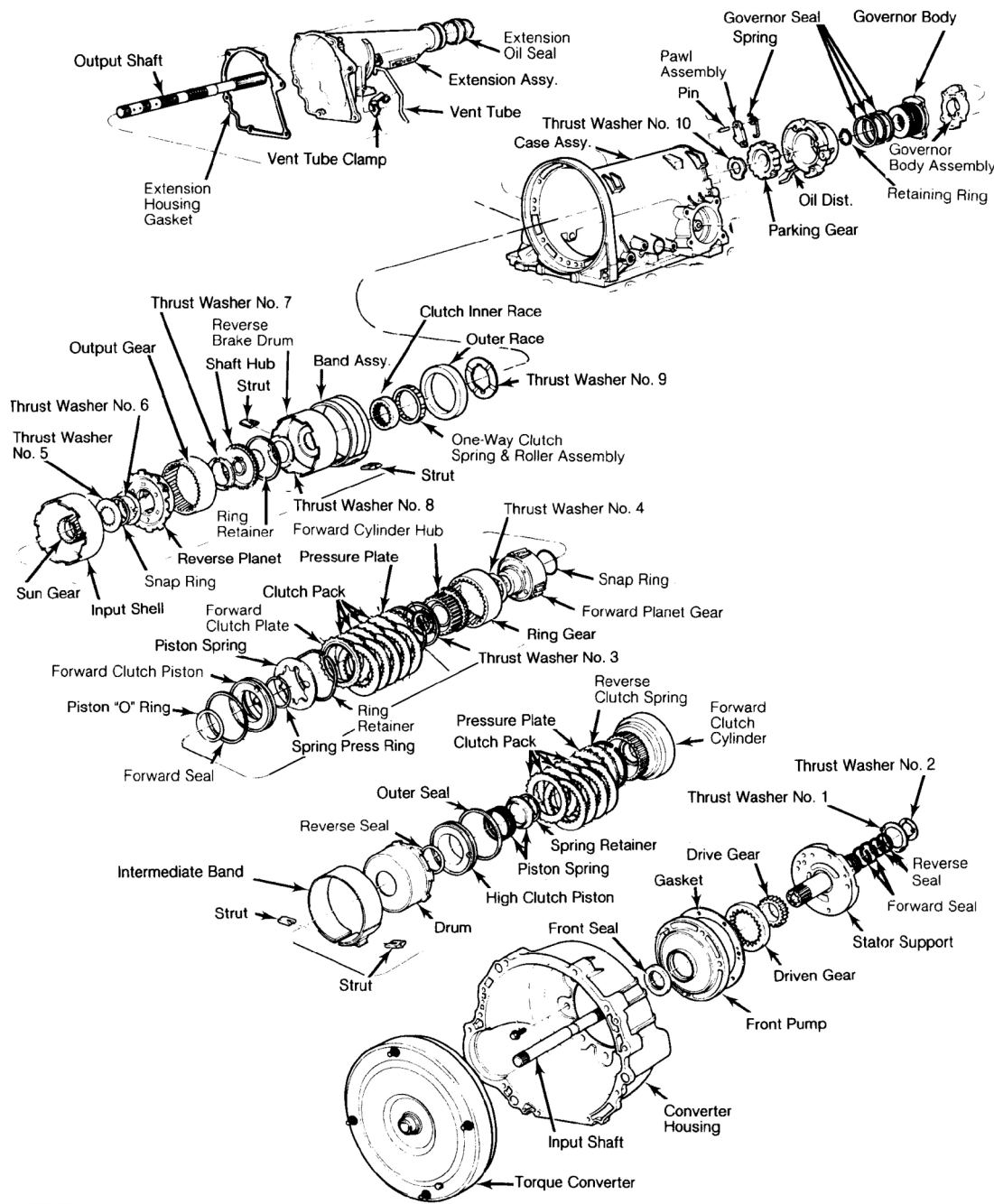
LOW-REVERSE BRAKE DRUM BUSHING REPLACEMENT

Disassembly & Reassembly

To remove bushing, use a cape chisel and cut along bushing seam until chisel breaks through bushing wall. Pry loose ends of bushing up with an awl and remove bushing. Use bushing driver (T66L-7003-B6) to install new bushing.

TRANSMISSION REASSEMBLY

NOTE: Handle all parts carefully to avoid damaging bearing and mating surfaces. Lubricate all parts with clean automatic transmission fluid only (gaskets and thrust washers may be held in place with petroleum jelly). Use all new gaskets and seals. Tighten all bolts evenly. See Fig. 26 .



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Fig. 26: Exploded View Of Transmission Showing Main Components
Courtesy of FORD MOTOR CO.

1. Install low-reverse servo piston and return spring in transmission case. Place a new seal on servo cover and position cover on case, install bolts and tighten.
2. Position new gasket on intermediate servo cover, make sure that notch in gasket will align with fluid port in case. Install servo cover, piston, and return spring as an assembly. Install cover bolts and tighten.
3. Lightly coat No. 9 thrust washer with petroleum position washer jelly and in case. See **SELECTIVE**

THRUST WASHER SPECIFICATIONS table. Position one-way clutch in case. Install bolts and tighten. Install parking pawl, pivot pin, and return spring in case as an assembly. Install distributor sleeve retaining bolts and tighten.

4. Position No. 10 thrust washer and parking gear in case. Install pawl spring by looping the bend in spring over spring seat provided in case.
5. Install distributor sleeve on case, make sure oil tubes are properly seated in case fluid passages.

NOTE: **Check one-way clutch for proper operation by turning low-reverse drum both counterclockwise and clock wise. Drum should turn when rotated clockwise and lock-up when turned counterclockwise.**

6. Install governor and output shaft in case as an assembly. Coat No. 8 thrust washer with petroleum jelly, and position it on low-reverse drum. Install low-reverse drum in case.
7. Install reverse ring gear and hub assembly. Using external snap ring pliers, install reverse ring gear and hub assembly retaining ring. If necessary, push output shaft forward to gain access to snap ring groove.
8. Align band lugs with clearance provided in case. Install low-reverse band, make sure the double lug faces adjuster screw.
9. Install band struts, use new lock nut on adjuster screw, and thread screw into case tightening it enough to hold band in place. Install governor screen in governor distributor body.
10. Slide governor over output shaft, install retaining bolts, and tighten. Position extension housing on case. Install throttle valve, valve rod, and altitude compensating modulator.
11. Install extension housing retaining bolts and tighten. Lightly coat No. 6 and No. 7 thrust washer with petroleum jelly and install a washer on each side of reverse planetary assembly.
12. Install reverse planetary assembly in case, making sure that lugs are fully engaged in low-reverse drum slots. Install forward clutch in reverse-high clutch drum. Lightly coat No. 3 thrust washer with petroleum jelly. Position washer on forward clutch hub.
13. Lightly coat No. 4 thrust washer with petroleum jelly. Position washer on front planetary assembly. Install planetary assembly in forward clutch hub.
14. Install forward clutch hub and ring gear in forward clutch. Install input shell and sun-gear assembly on reverse-high clutch. Rotate input shaft to ensure proper assembly of clutch packs.
15. Position clutch packs, front planetary, and input shell as an assembly in case. Align intermediate band lugs with relief clearance provided in case. Install band and struts.
16. Install new lock nut on adjuster screw and thread into case, tightening enough to hold band in position. Position new gasket on front pump assembly.
17. Place pump assembly in case, install converter housing-to-pump retaining bolts, and tighten. Install input shaft. Mount a dial indicator on case and position indicator stylus against end of input shaft.
18. Position a screwdriver against lug on reverse-high clutch and push gear train rearward by tapping on screwdriver handle. Make sure that input shaft is fully seated, then zero indicator.
19. Position a screwdriver blade between input shell and reverse planetary assembly. Pry input shell forward and observe dial indicator.
20. If end play is greater than .008-.042" (.20-1.07 mm), No. 1 and No. 2 thrust washers must be changed. Thrust washers should be replaced in pairs to obtain proper clearance.

NOTE: If end play measurement was not within specifications, it will be necessary to remove front pump assembly and install proper thrust washers to obtain proper clearance. See **TORQUE SPECIFICATIONS** . Install dial indicator and recheck end play measurement. See **Fig. 27** .

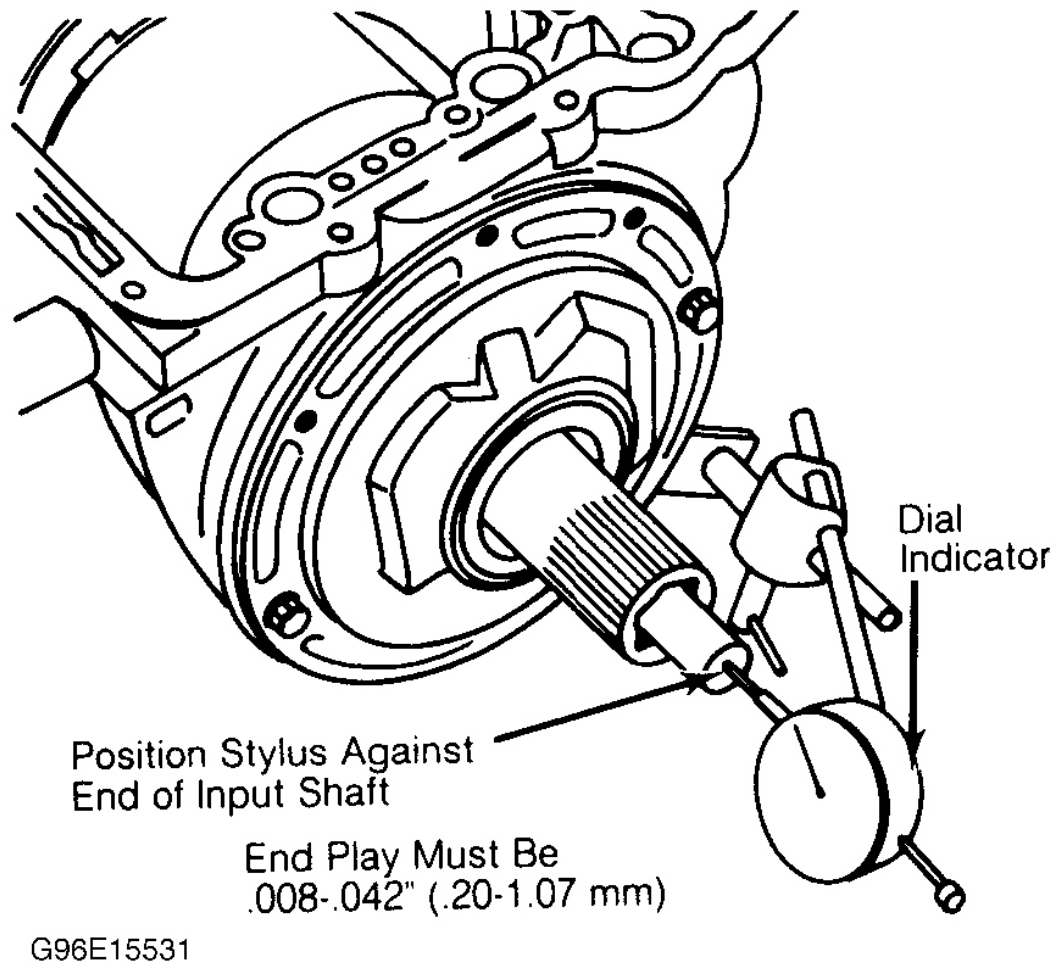


Fig. 27: Measuring Transmission End Play
Courtesy of FORD MOTOR CO.

21. If end play was within specification, remove dial indicator and bolts holding front pump assembly in case. Position converter housing on case. Install housing-to-pump retaining bolts and tighten.
22. Adjust intermediate and low-reverse bands. See **SERVICING** article. Check transmission for proper assembly by turning output shaft using a slip yoke.
23. Output shaft should turn in both directions. Using shift linkage, place transmission in "P" position, grasp yoke and attempt to turn output shaft. Output shaft should not turn in either direction.
24. Using air pressure regulated at 25 psi, apply air to proper hydraulic circuit to ensure proper assembly of

clutch packs and band servos. See **Fig. 28** . Clutches should be heard and felt, and should operate smoothly.

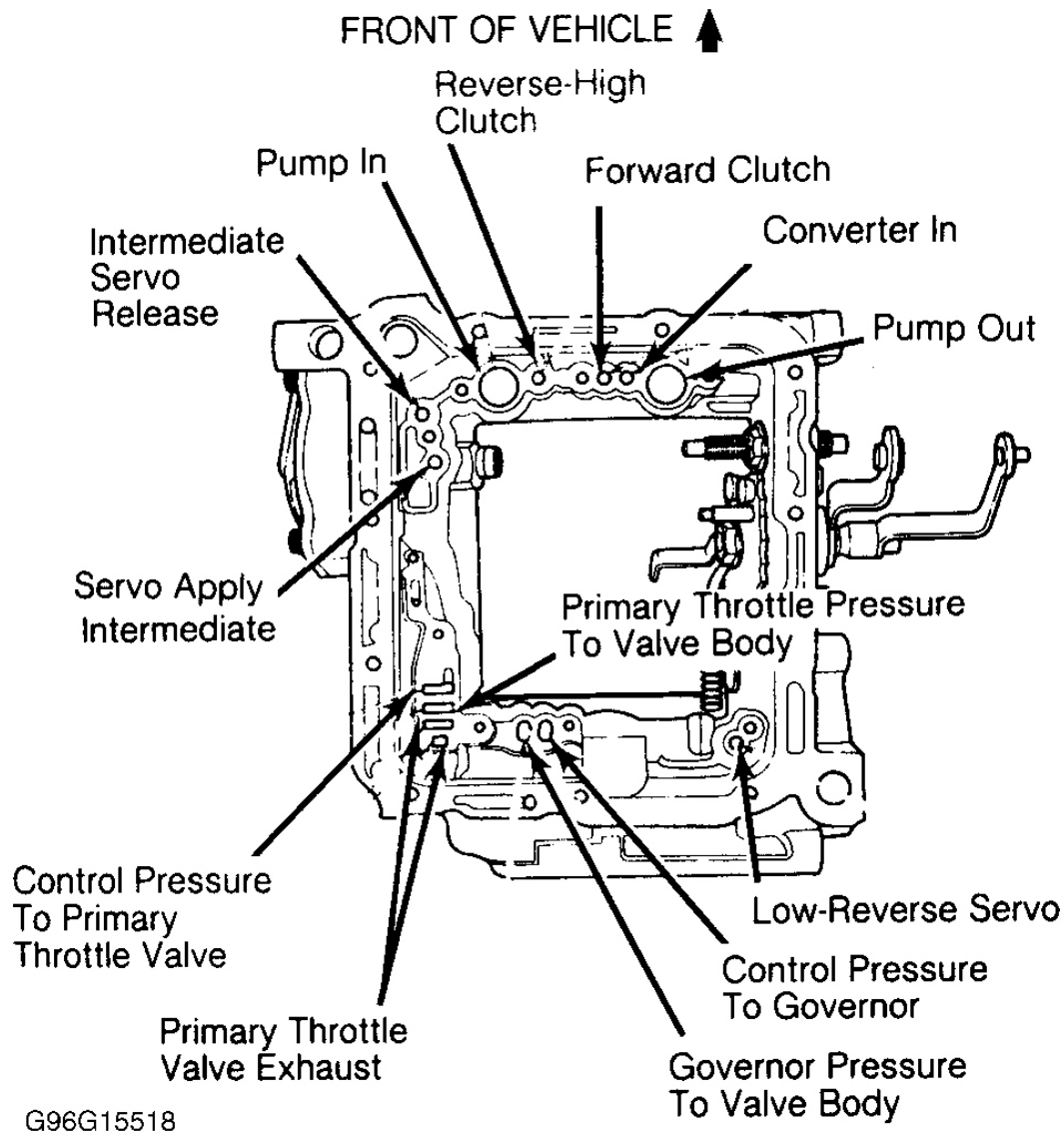
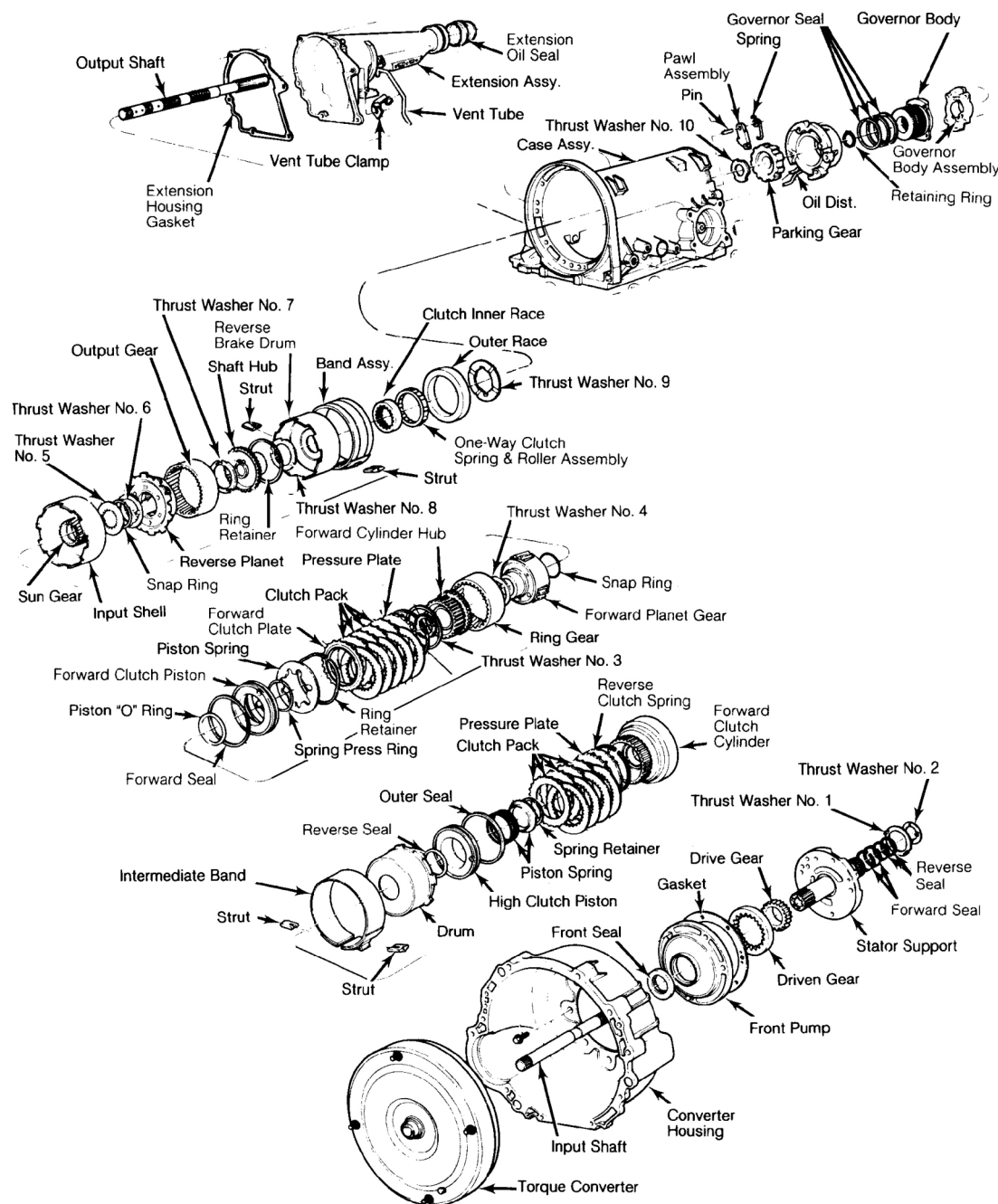


Fig. 28: Air Pressure Test Locations On Case
Courtesy of FORD MOTOR CO.

25. Check for leakage and ensure that clutch returns to released position when air pressure is removed. When air pressure is applied, it is possible to see servos in operation, and to see them release when air is removed.
26. Install inlet pump filter in case. Install valve body in case, make sure manual valve engages the manual lever. Make sure that the throttle lever is positioned to engage the throttle valve.

27. Note location of the 2 longer valve body retaining bolts, install all bolts, and tighten. Make sure filter seal is properly positioned on filter. Place filter on valve body. Install retaining bolts and tighten.
28. Position a new gasket on oil pan. Install pan on transmission housing. Install oil pan bolts and tighten. Install input shaft with oil groove end first.
29. Position torque converter on shaft making sure that it is fully seated. Make sure input shaft, stator support, and pump drive gear engage.



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Fig. 29: Exploded View Of Transmission Showing Main Components
 Courtesy of FORD MOTOR CO

SELECTIVE THRUST WASHER SPECIFICATIONS

Washer No. & Color	Thickness In. (mm)	Combined Thickness In. (mm)
1 Red	.053-.058 (1.35-1.46)	
1 Red & #2		.109-.116 (2.77-2.934)
1 Green	.070-.075 (1.78-1.90)	
1 Green & #3		.143-.150 (3.63-3.80)
1 Natural (White) ⁽¹⁾	.087-.092 (2.21-2.32)	
1 Natural & #2 ⁽¹⁾		.175-.186 (4.45-4.71)
1 Natural ⁽¹⁾	.087-.092 (2.21-2.32)	
1 Natural & #3 ⁽¹⁾		.192-.203 (4.88-5.72)

(1) Spacer must be installed next to stator support to obtain correct end play. Plus spacer .036-.0915" (.91-2.32 mm).

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Converter Housing Cover-To-Converter Housing	12-16 (17-21)
Converter Housing-To-Case	28-40 (38-55)
Drain Plug-To-Converter Cover	12-17 (16-23)
Engine Rear Cover Plate-To-Transmission	12-16 (17-21)
Extension Housing-To-Case	28-40 (38-54)
Inner Manual Lever-To-Shaft	30-40 (41-54)
Intermediate & Reverse Lock Nut	35-45 (47-61)
Oil Distributor Sleeve-To-Case	12-20 (17-27)
Oil Line-To-Transmission	18-23 (24-31)
Oil Pan-To-Case	12-16 (17-21)
Outer Throttle Lever-To-Shaft	12-16 (17-21)
Overrunning Clutch Race-To-Case	13-20 (18-27)
Pump-To-Case	28-40 (38-55)
Reactor Support-To-Pump	12-20 (17-27)
Rear Servo Cover-To-Case	16-22 (22-29)
Transmission-To-Engine	
3.8L	28-38 (38-51)
4.2L & 3.3L	40-50 (54-67)
	INCH Lbs (N.m)
Detent Spring & Lower Body-To-Upper Body	40-60 (4.5-6.7)
End Plates-To-Body	25-40 (2.8-4.5)

1983 Ford Mustang GL

1983 AUTOMATIC TRANSMISSIONS C5 Diagnosis & Overhaul

Governor-To-Oil Collector	80-120 (9.0-12.5)
Lower Body & Detent-To-Upper Body	40-60 (4.5-6.7)
Main Control-To-Case	80-120 (9.0-13.5)
Neutral Switch-To-Case	55-75 (6.2-8.5)
Pan Screen-To-Timing Valve Body	25-40 (2.8-4.5)
Pump Assembly-To-Case	28-38 (3.2-3.9)
Separator Plate-To-Timing Body	25-40 (2.8-4.5)
Upper Body-To-Lower Body (Long)	80-120 (9.0-12.5)
Upper Body-To-Lower Body (Short)	40-60 (4.5-6.7)
3-2 Timing Valve Body-To-Lower Body	
5/16" Bolts	40-60 (4.5-6.7)
3/8" Bolts	75 (8.5)
3-2 Timing Valve Body-To-Upper Body	40-60 (4.5-6.7)