

2002 Ford Windstar
2002 STEERING Power Steering - Windstar

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Power Steering - Windstar

SPECIFICATIONS

GENERAL SPECIFICATIONS

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Item	Specification
Lubricants	
Steering Gear Grease C3AZ-19578-A	ESW-M1C87-A
Multi-Purpose (ATF) Transmission Fluid XT-2-QDX	Mercon(R)
Silicone Dielectric Compound D7AZ-19A331-A	ESE-M1C171-A

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Description	N.m	lb-ft	lb-in
Front wheel spindle tie-rod-to-steering gear	100	74	-
Intermediate steering shaft bolt pinch	40	30	-
Power steering fluid cooler mounting bolts (3.0L engine)	8	-	71
Power steering fluid cooler mounting bolts (3.8L engine without trailer tow package)	8	-	71
Power steering pressure (PSP) switch	11	8	-
Power steering pump bracket bolts and nut (CII pump)	47	35	-
Power steering pump mounting bolts (CII pump)	47	35	-
Power steering pump mounting bolts (CIII pump)	25	18	-
Power steering pump reservoir mounting bolt (CIII pump)	7	-	62
Pressure line at pump (CII pump)	40	30	-
Pressure line fitting at pump (CIII pump)	40	30	-
Pressure line at steering gear	40	30	-
Return line at steering gear	40	30	-
Steering gear-to-subframe mounting nut	133	98	-
Subframe to body bolts	133	98	-
Tie-rod end jam nut	55	41	-
Tie-rod end to nut	56 (1)	41 (1)	-
Transmission and power steering fluid cooler mounting bolts (3.8L engine with trailer tow packages)	8	-	71
Stabilizer bar link -to-strut nuts	90	66	-
Exhaust flex pipe-to-manifold bolts	40	30	-

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Inner tie-rod	100	74	-
(1) Once torque is reached, continue turning to align slot in nut with cotter pin hole in tie rod.			

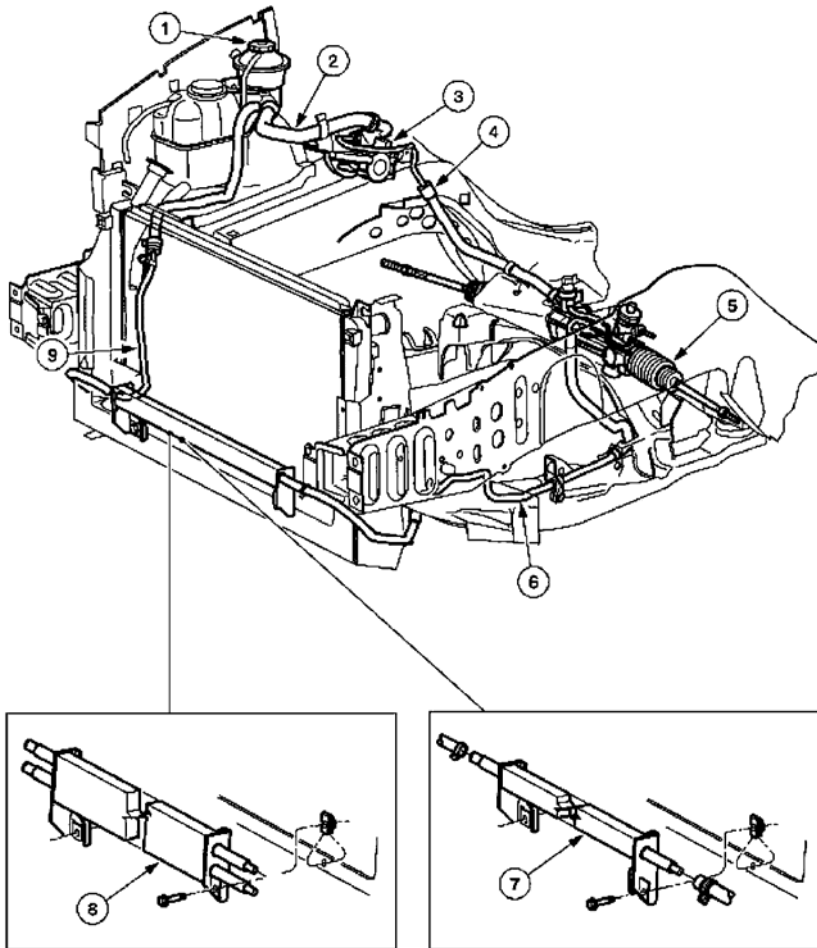
DESCRIPTION AND OPERATION

POWER STEERING

Steering System Components - 3.8L Engine (CIII Power Steering Pump)

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Item	Part Number	Description
1	3R700	Power steering pump reservoir
2	3E525	Power steering reservoir pump hose
3	3A674	Power steering pump
4	3A719	Power steering hose
5	3504	Steering gear
6	3A713	Power steering hose
7	3D746	Power steering fluid cooler (vehicles without trailer tow package)
8	3F749	Transmission and power steering fluid cooler assembly (vehicles with trailer tow package)
9	3493	Power steering hose

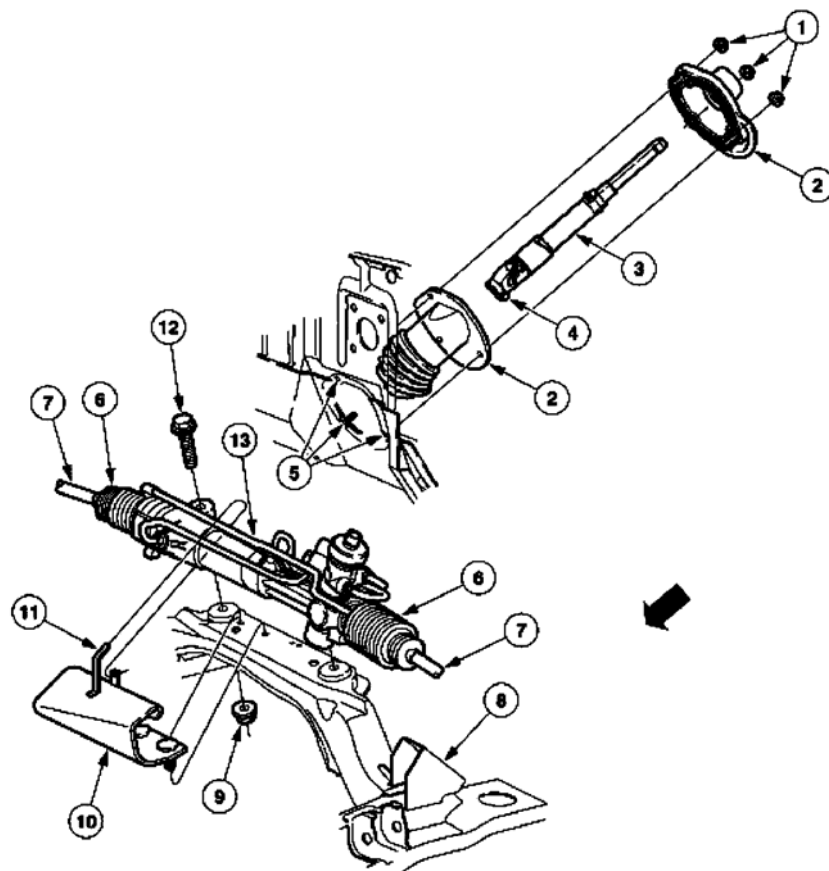
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Fig. 1: Identifying Steering System Components - 3.8L Engine (CIII Power Steering Pump)
Courtesy of FORD MOTOR CO.

Steering Gear Mounting

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Item	Part Number	Description
1	N804795	Nut (3 req'd)
2	3E735	Steering column opening weather seal
3	3C662	Intermediate steering shaft
4	W705118-S428	Pinch bolt
5	—	Studs (PIA to the body)
6	3332	Front suspension steering ball stud dust seal
7	3280	Front wheel spindle tie-rod
8	5C145	Front sub -frame
9	N803956-S1036	Lock nut (2 req'd)
10	3F570	Heat shield
11	95873-S101	Tie strap
12	N805382-S190	Bolt (2 req'd)
13	3504	Steering gear

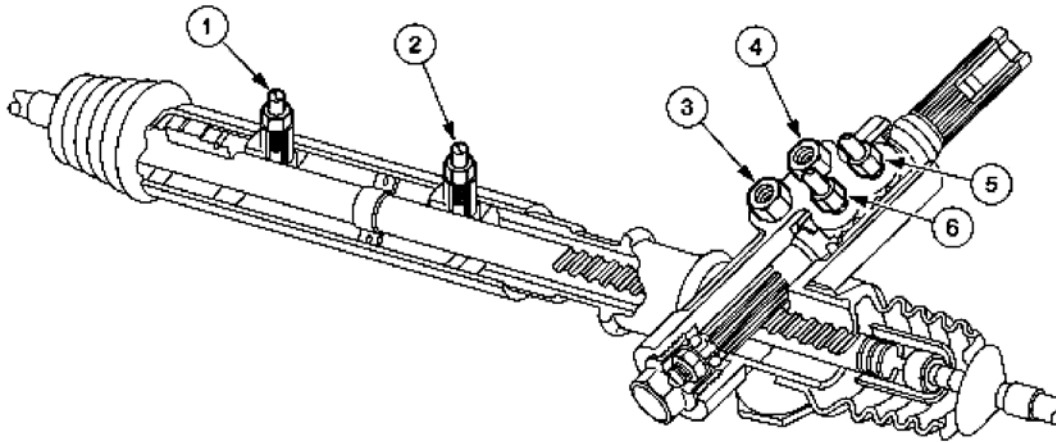
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Fig. 2: View Of Steering Gear Mounting Component
Courtesy of FORD MOTOR CO.

Steering Gear (Typical)

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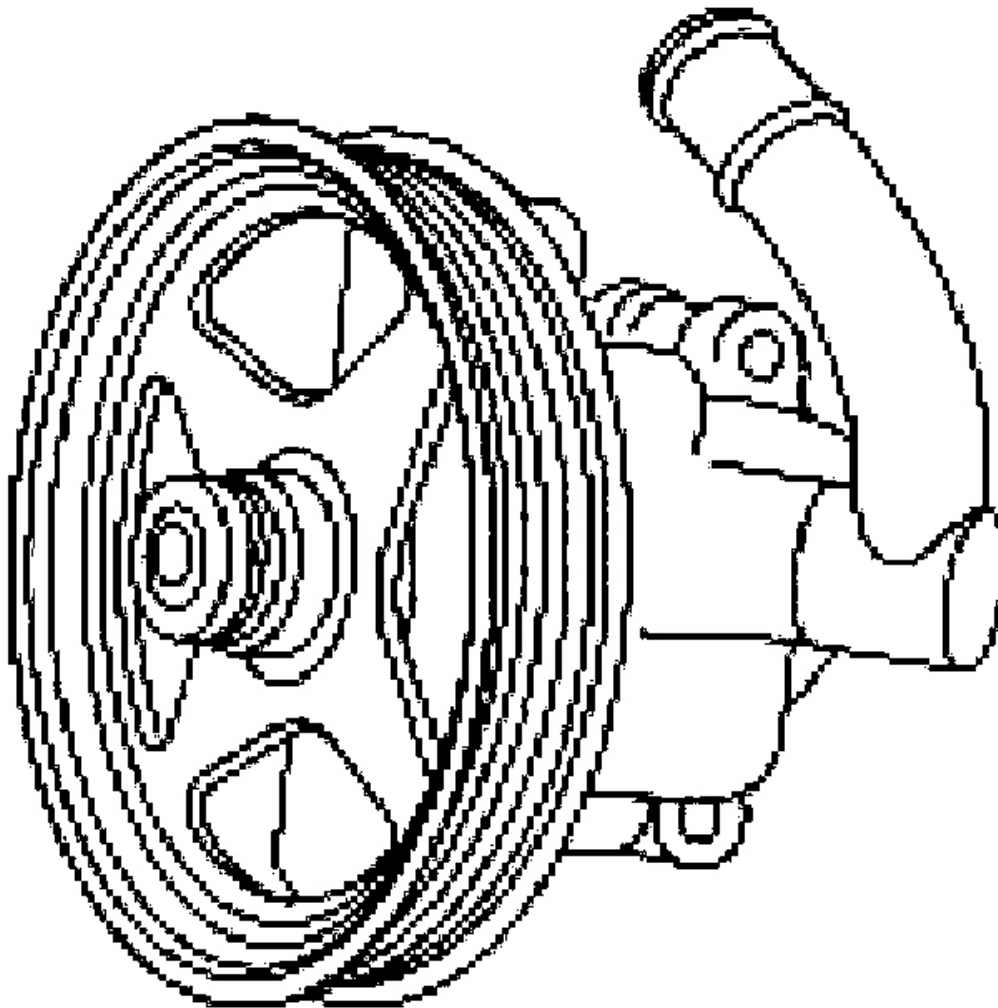


Item	Part Number	Description
1	—	Oil flow — right turn
2	—	Oil flow — left turn
3	—	Return port (out)
4	—	Pressure port (in)
5	—	To left turn port
6	—	To right turn port

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Fig. 3: Identifying Steering Gear (Typical) Components
Courtesy of FORD MOTOR CO.

Power Steering Pump (CIII) - 3.8L Engine



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Fig. 4: Identifying Power Steering Pump (CIII) - 3.8L Engine
Courtesy of FORD MOTOR CO.

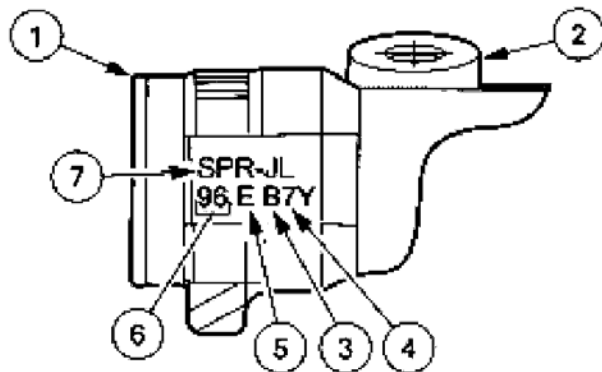
Power Steering Pressure (PSP) Switch

A power steering pressure (PSP) switch (3N824) is located on the power steering pressure hose. It sends a signal to the powertrain control module (PCM) (12A650) to increase idle speed for idling stability when power steering pump pressure increases above the set pressure value.

Power Steering Gear Identification

CAUTION: Always use the ID code when ordering service parts.

The steering gear identification code is stamped into the housing.



Item	Part Number	Description
1	—	Steering gear housing
2	—	Mounting boss
3	—	Shift code
4	—	Day code
5	—	Month code
6	—	Build year
7	—	Steering gear model code

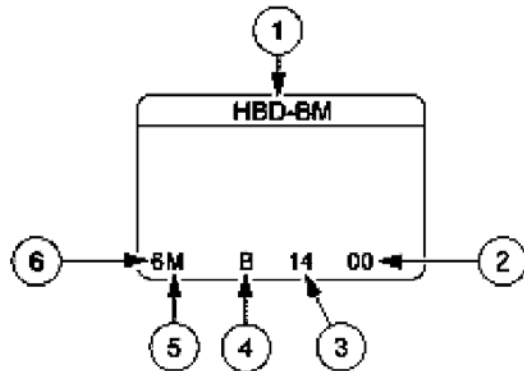
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Fig. 5: Identifying Steering Gear Identification Code Stamped Into Housing
 Courtesy of FORD MOTOR CO.

Power Steering Pump Identification

CAUTION: Always use the ID code when ordering service parts.

The pump identification code is located on a tag attached to the power steering pump.



Item	Part Number	Description
1	—	Model code
2	—	For manufacturing purposes only
3	—	Day of the month (A = Jan., B = Feb., etc., I is not used)
4	—	Shift
5	—	Month
6	—	Year

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Fig. 6: Identifying Pump Identification Code Located On A Tag Attached To Power Steering Pump
Courtesy of FORD MOTOR CO.

DIAGNOSIS AND TESTING

POWER STEERING

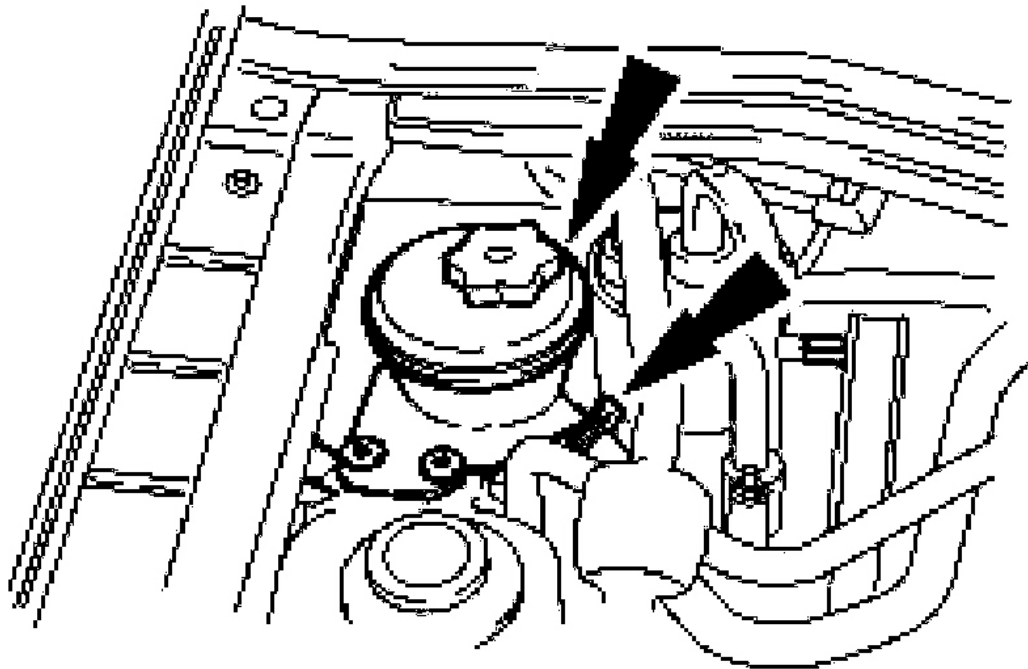
Refer to STEERING SYSTEM-GENERAL INFORMATION .

REMOVAL AND INSTALLATION

RESERVOIR - CIII PUMP

Removal

1. Disconnect the power steering reservoir pump hose (3E525) and power steering hose (3493). Remove the screw and the power steering pump reservoir (3R700).



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Fig. 7: Disconnecting Power Steering Reservoir Pump Hose (3E525) And Power Steering Hose (3493)

Courtesy of FORD MOTOR CO.

Installation

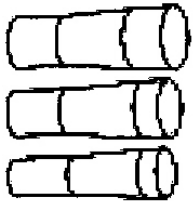
1. Follow the removal procedure in reverse order.
2. Fill and leak check the system. Refer to **STEERING SYSTEM-GENERAL INFORMATION** .

PUMP - CIII

Special Tool(s)

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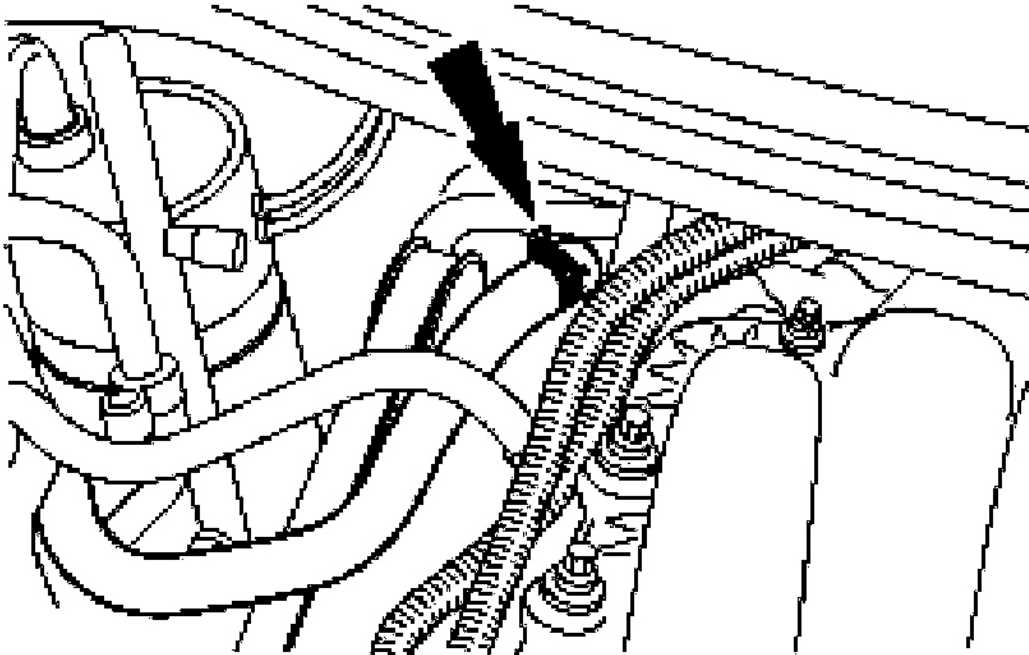
Teflon Seal Replacer Set
211-D027 (D90P -3517-A)

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Fig. 8: Identifying Special Tool(s)
Courtesy of FORD MOTOR CO.

Removal

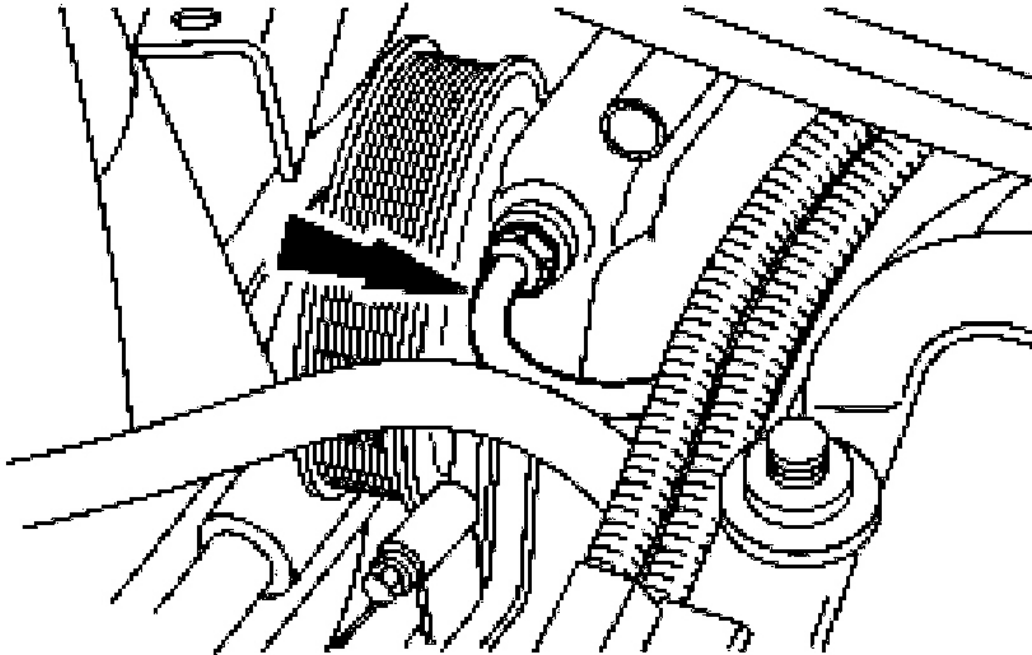
1. Remove the drive belt.
2. Disconnect the power steering reservoir pump hose (3E525).



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Fig. 9: Disconnecting Power Steering Reservoir Pump Hose (3E525)
Courtesy of FORD MOTOR CO.

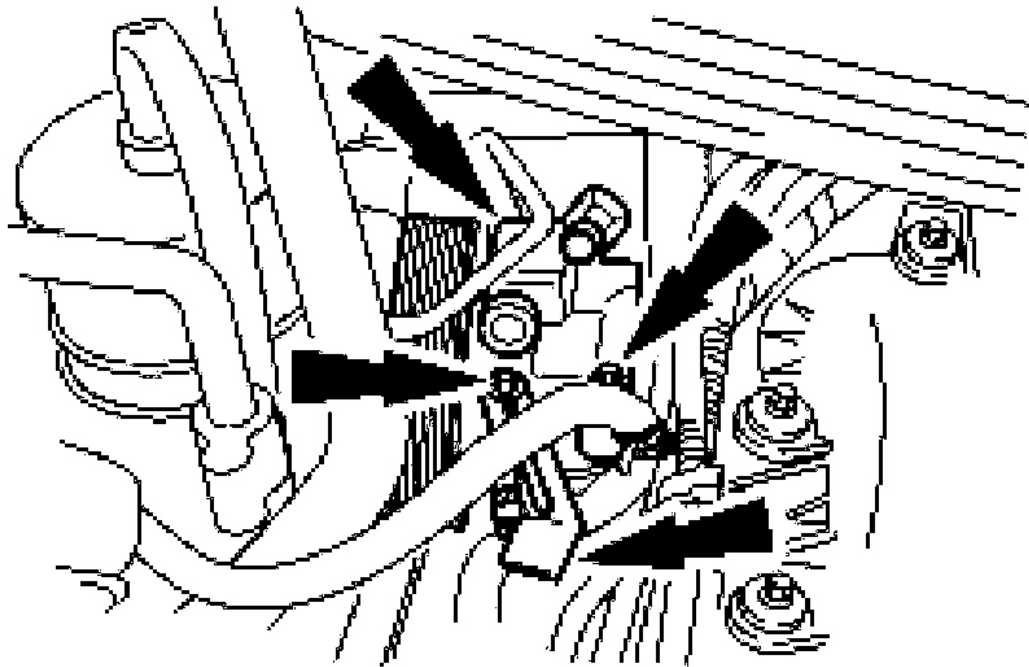
3. Disconnect the power steering hose (3A719). Remove and discard the seal.



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Fig. 10: Disconnecting Power Steering Hose (3A719)
Courtesy of FORD MOTOR CO.

4. Remove the four bolts, two brackets and power steering pump (3A674).



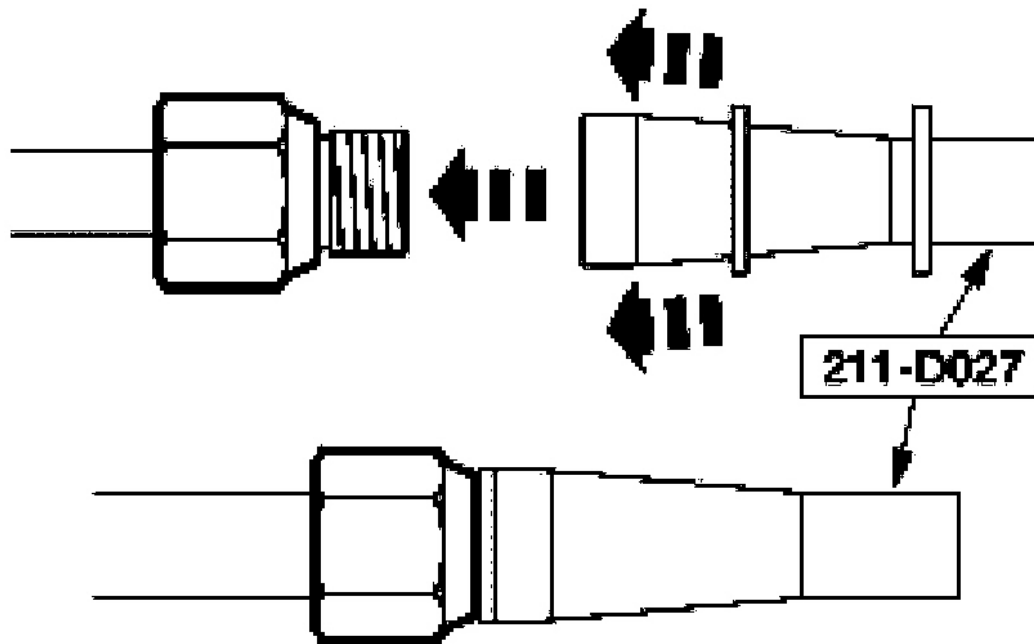
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Fig. 11: Removing Bolts, Brackets And Power Steering Pump (3A674)
Courtesy of FORD MOTOR CO.

5. Remove the power steering pump pulley. Refer to **PULLEY - CHH PUMP** .

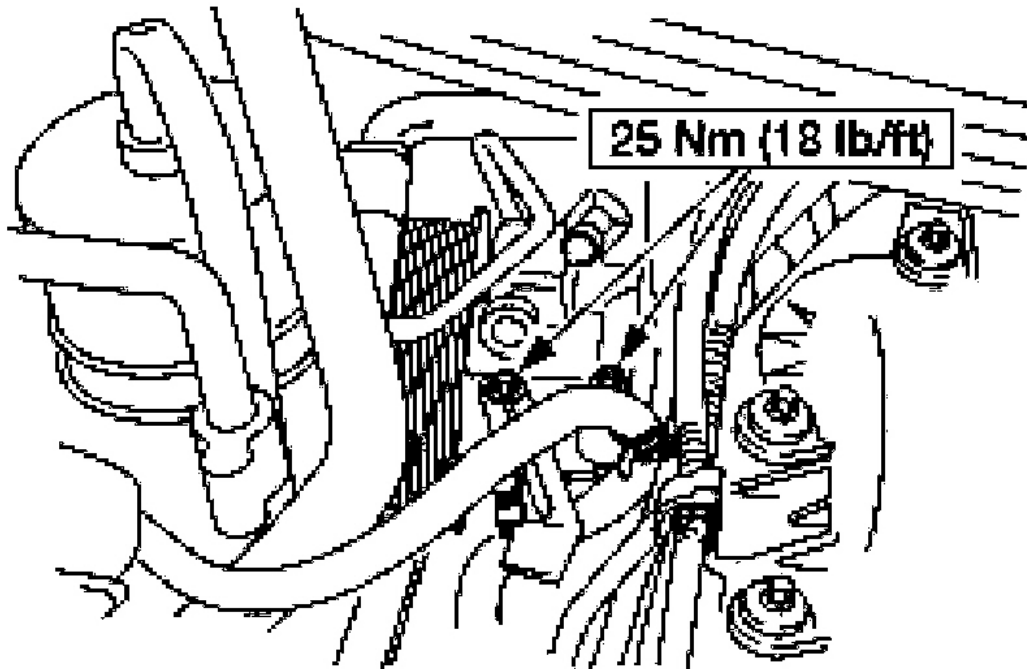
Installation

1. To install, reverse the removal procedure.
 - Using the special tool, install a new seal on the power steering hose.



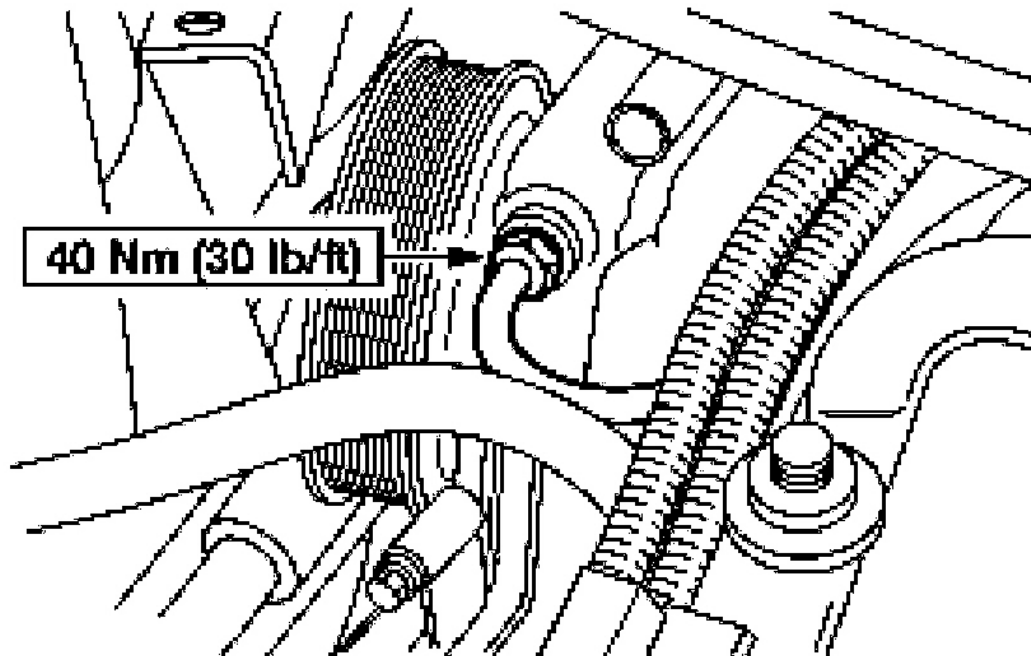
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Fig. 12: Installing A Seal On Power Steering Hose
Courtesy of FORD MOTOR CO.



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Fig. 13: Installing Bolts, Brackets And Power Steering Pump (3A674)
Courtesy of FORD MOTOR CO.

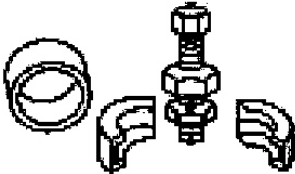


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Fig. 14: Connecting Power Steering Hose (3A719)
Courtesy of FORD MOTOR CO.

PULLEY - CHH PUMP

Special Tool(s)

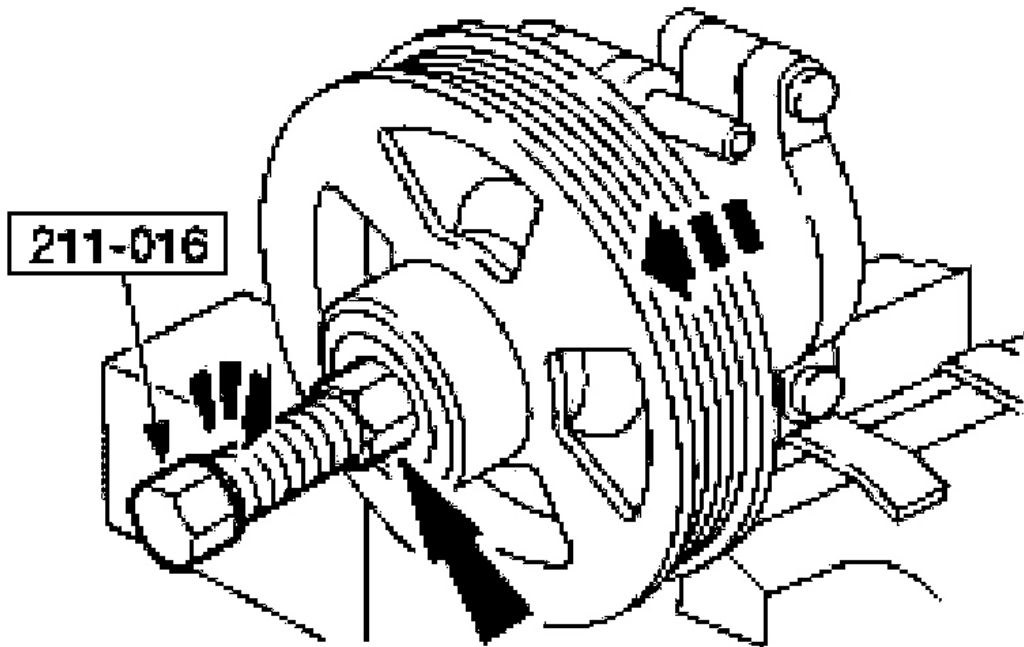
	Steering Pump Pulley Remover 211-016 (T69L-10300-B)
	Steering Pump Pulley Replacer 211-185 (T91P-3A733-A)

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Fig. 15: Identifying Special Tool(s)
Courtesy of FORD MOTOR CO.

Removal

1. Remove the power steering pump (3A674). Refer to **PUMP - CIII** .
2. Using the special tool, remove the power steering pump pulley.

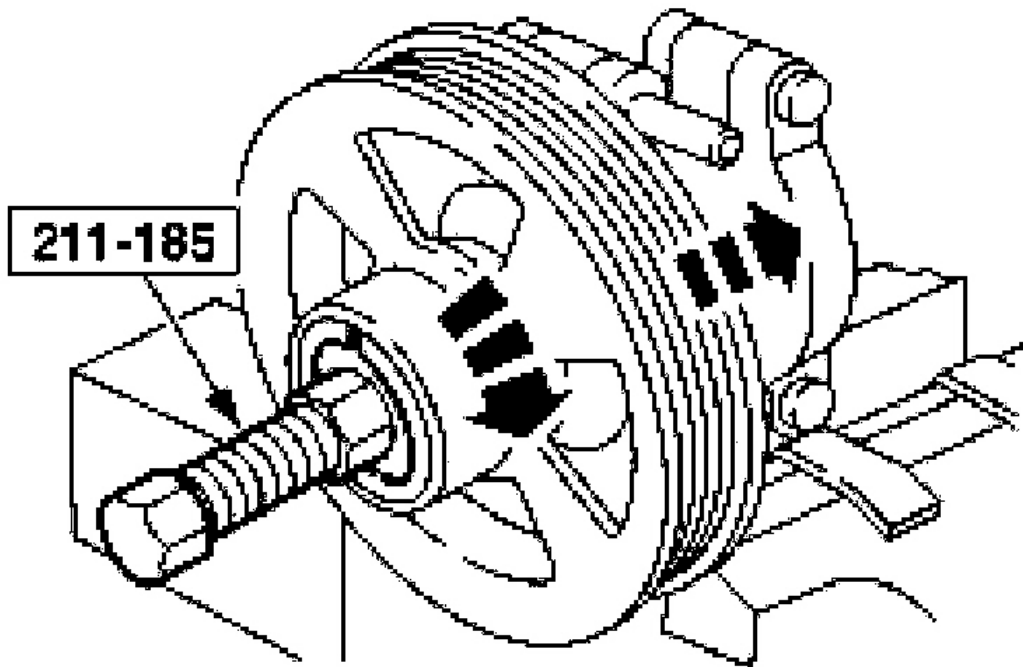


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Fig. 16: Removing Power Steering Pump Pulley
Courtesy of FORD MOTOR CO.

Installation

1. Using the special tool, install the power steering pump pulley.
 - Inspect the power steering pump pulley for paint marks in the web area near the hub. If there are two paint marks, discard and install a new power steering pump pulley. If there is no paint or one paint mark, use a paint pencil to mark the web area near the hub.



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Fig. 17: Installing Power Steering Pump Pulley
Courtesy of FORD MOTOR CO.

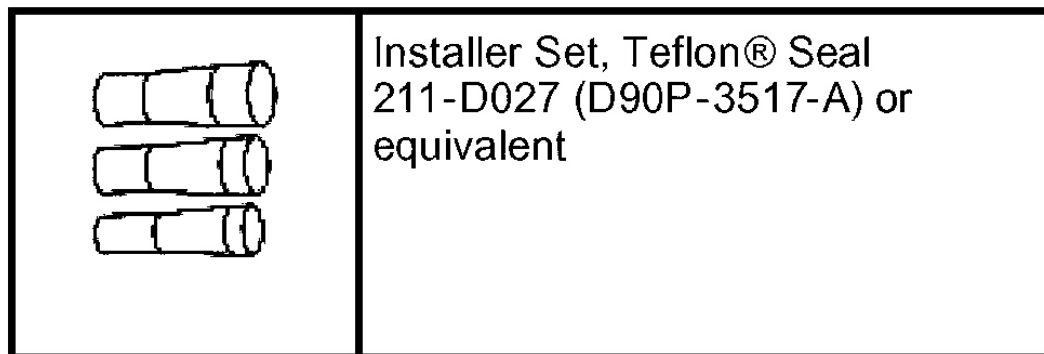
- Install the power steering pump. Refer to **PUMP - CIII** .

HOSE

Special Tool(s)

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Fig. 18: Identifying Special Tool(s)
Courtesy of FORD MOTOR CO.

Removal

1. Refer to the System View illustration in **DESCRIPTION AND OPERATION** for the hose routing and retention points.

Installation

CAUTION: While repairing the power steering system, care should be taken to prevent the entry of contaminants or premature failure of the power steering components can result.

NOTE: When connecting a fitting with a Teflon(R) seal, a new seal must be installed.

1. Using the special tool, install a Teflon(R) seal over a fitting.
 - Fill and leak check the system. Refer to **STEERING SYSTEM-GENERAL INFORMATION** .

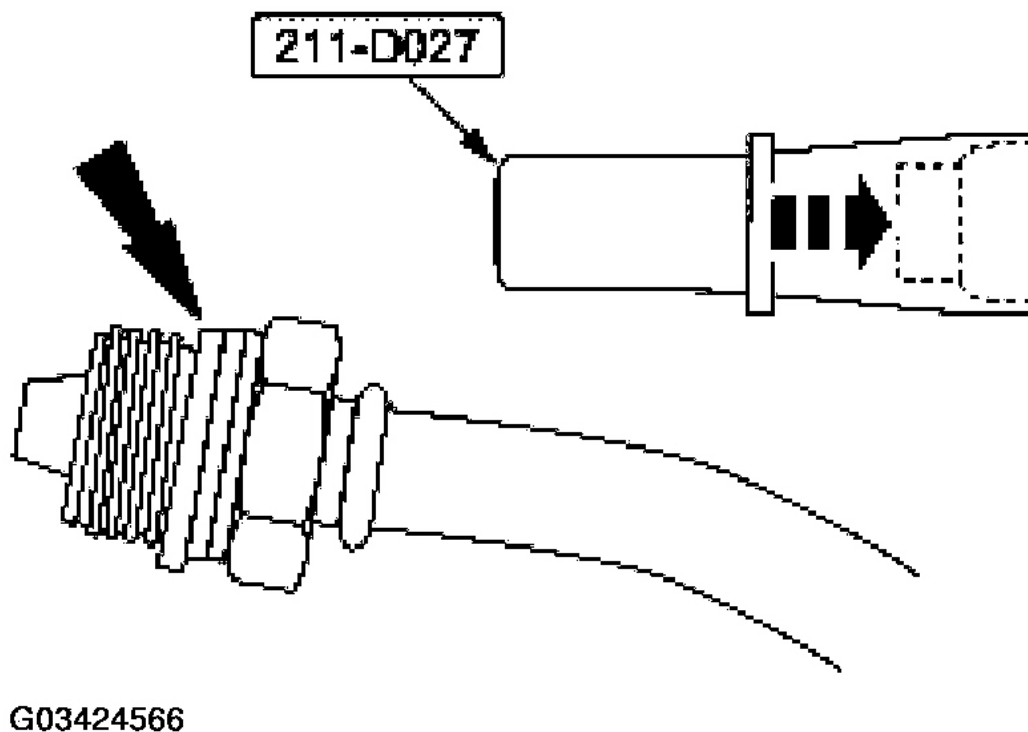


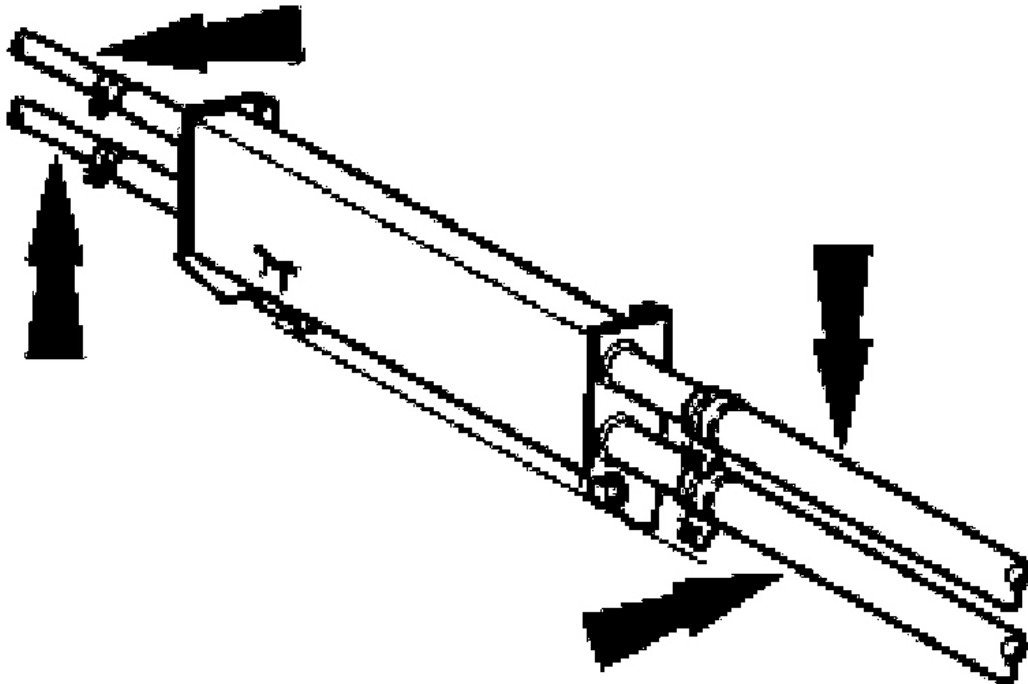
Fig. 19: Installing A Teflon(R) Seal Over A Fitting
Courtesy of FORD MOTOR CO.

COOLER - FLUID

Removal

NOTE: The transmission and power steering fluid cooler assembly (3F749) is shown in this procedure. The removal and installation of the other power steering fluid cooler (3D746) is similar.

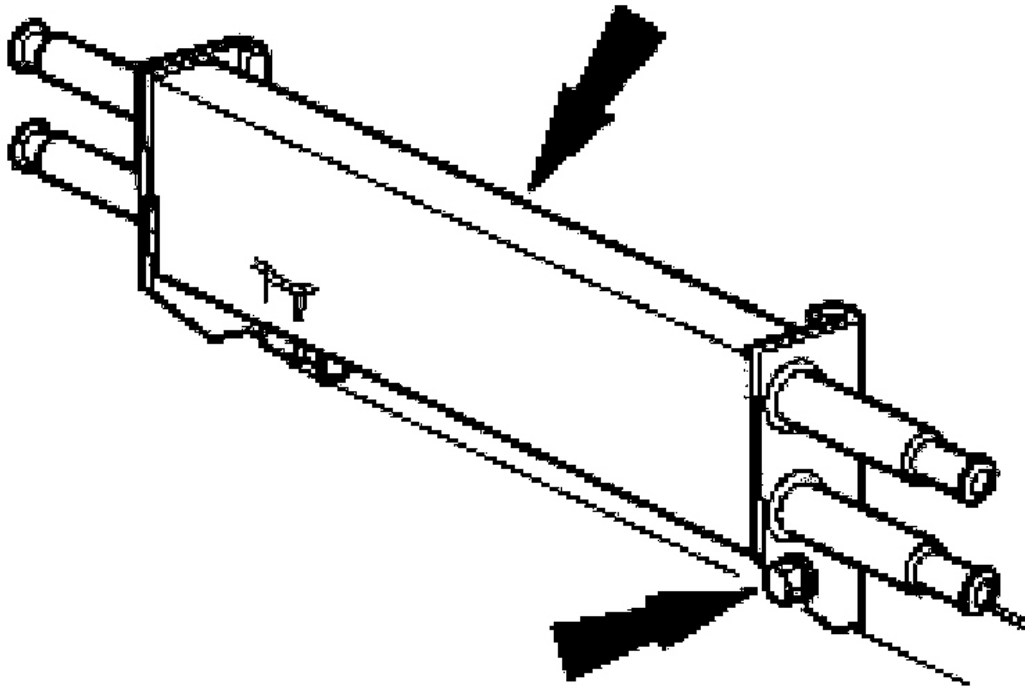
1. Disconnect the battery ground cable.
2. Remove the front bumper (17757).
3. Label and disconnect the power steering hose (3A713), power steering hose (3493) and the transmission fluid lines.



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Fig. 20: Disconnecting Power Steering Hose And Transmission Fluid Lines
Courtesy of FORD MOTOR CO.

4. Remove the bolts and the transmission and power steering fluid cooler assembly.

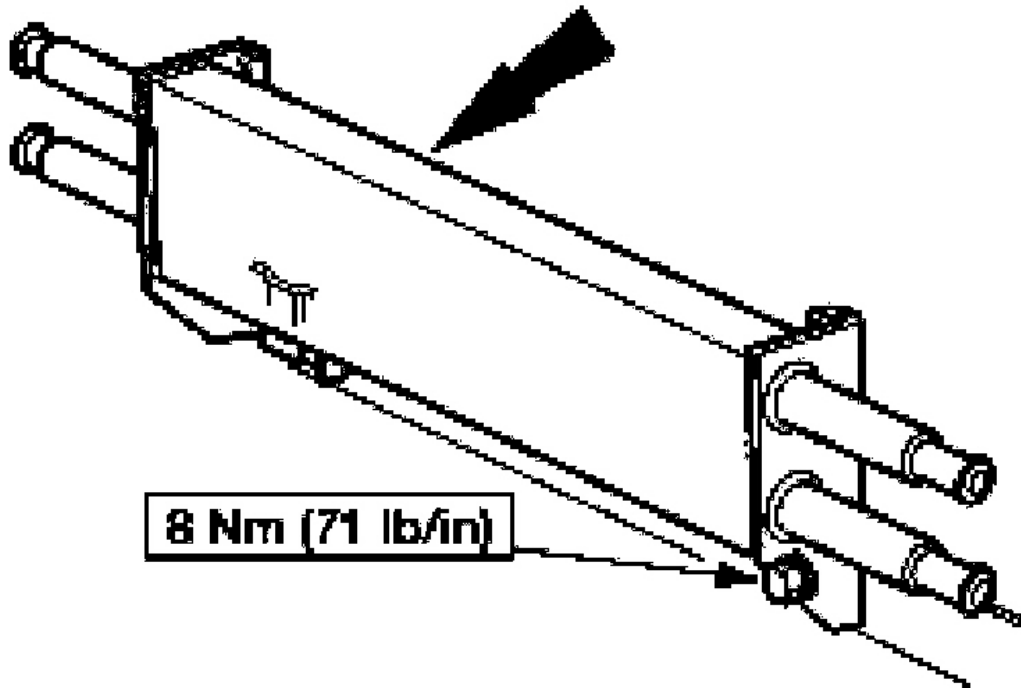


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Fig. 21: Identifying Transmission And Power Steering Fluid Cooler Assembly
Courtesy of FORD MOTOR CO.

Installation

CAUTION: The power steering hoses and transmission fluid lines must be connected to transmission and power steering fluid cooler assembly as noted during removal to prevent power steering system and transmission failure.



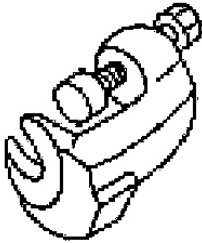
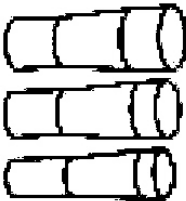
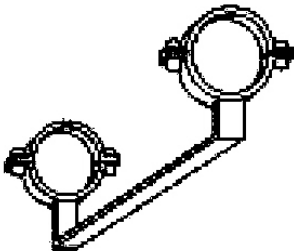
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Fig. 22: Installing Transmission And Power Steering Fluid Cooler Assembly
Courtesy of FORD MOTOR CO.

1. To install, reverse the removal procedure.
2. Fill and leak check the power steering system and transmission. Refer to **STEERING SYSTEM-GENERAL INFORMATION** .

STEERING GEAR

Special Tool(s)

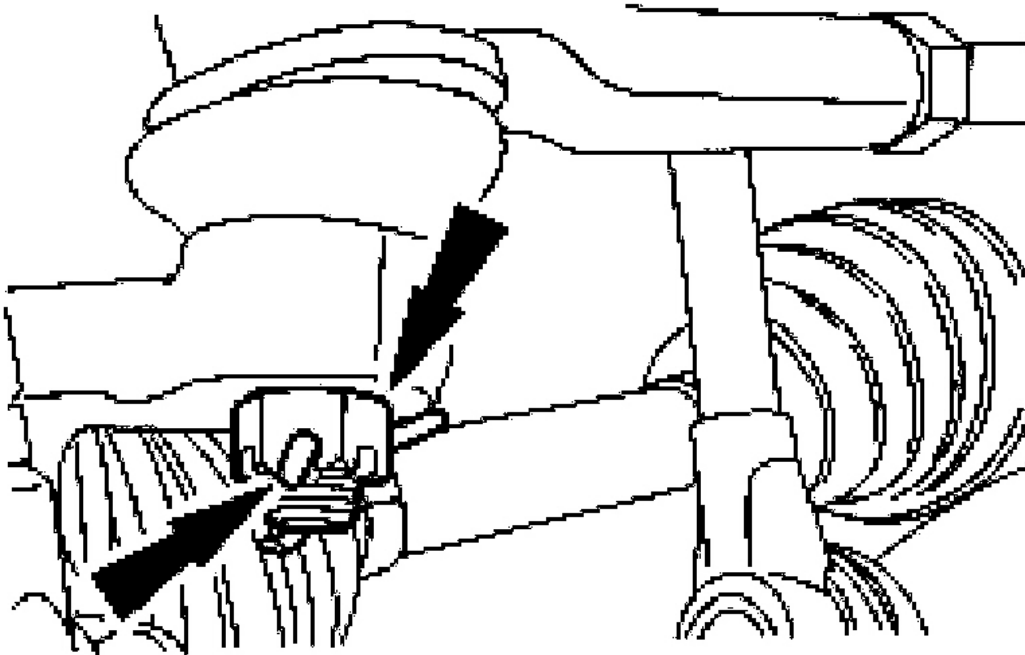
	Tie Rod End Separator 211-105 (T85M-3395-A)
	Teflon® Seal Replacer Set 211-D027 (D90P-3517-A)
	Holding Fixture, Flexible Exhaust Pipe 309-001 (T94T-6000-AH)

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Fig. 23: Identifying Special Tool(s)
Courtesy of FORD MOTOR CO.

Removal

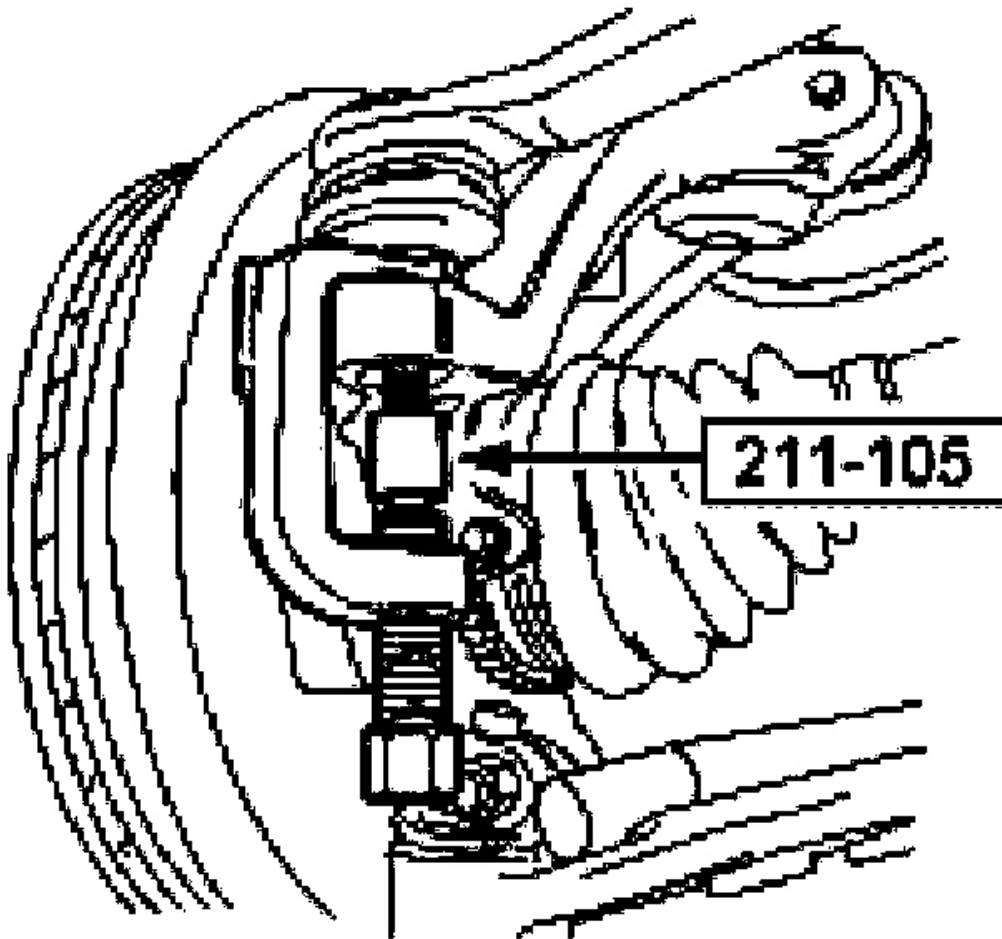
1. Place the wheels in the straight-ahead position and the ignition switch in the OFF position.
2. Remove the front wheel and tire assemblies. Refer to **WHEELS & TIRES** .
3. Remove the cotter pins and castellated nuts.
 - Discard the cotter pins.



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Fig. 24: Discarding Cotter Pins
Courtesy of FORD MOTOR CO.

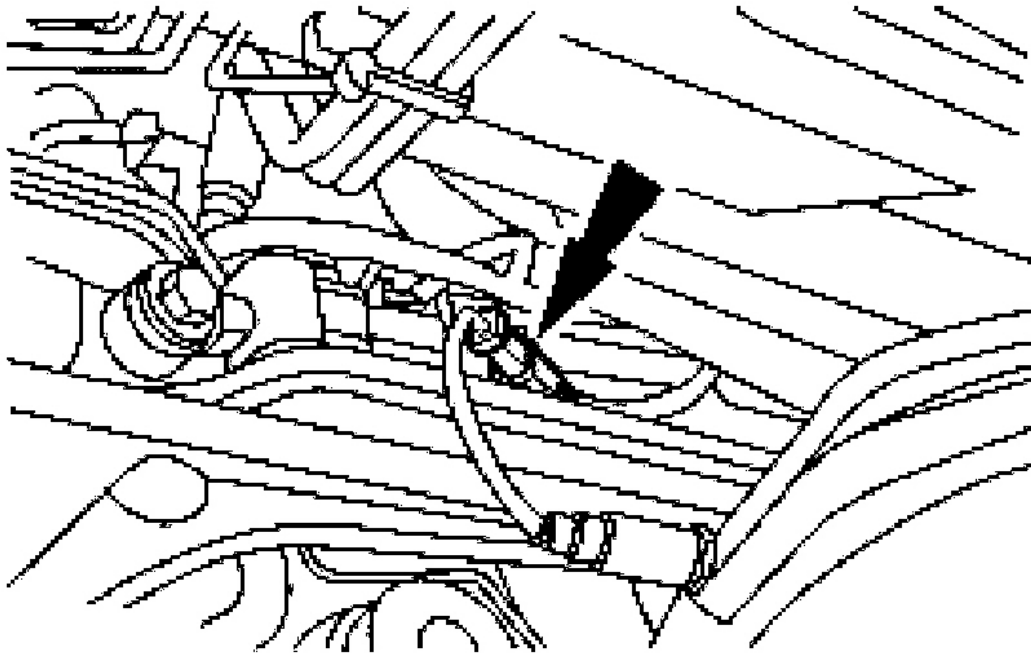
4. Using the special tool, disconnect the tie-rod ends.



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Fig. 25: Disconnecting Tie-Rod Ends
Courtesy of FORD MOTOR CO.

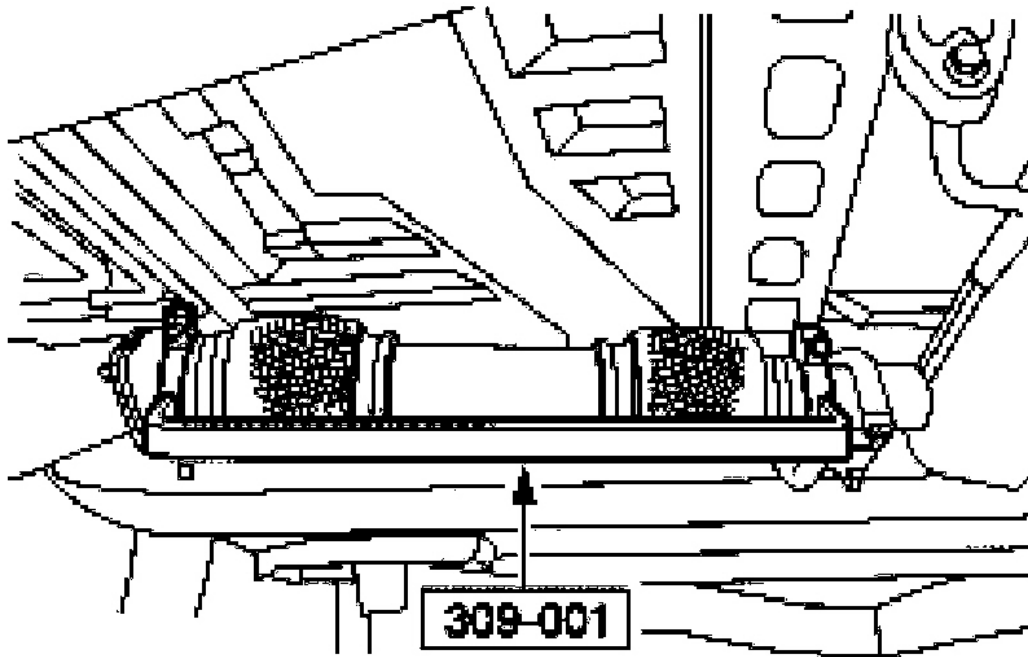
5. Disconnect the two heated oxygen sensor electrical connectors.



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Fig. 26: Disconnecting Heated Oxygen Sensor Electrical Connectors
Courtesy of FORD MOTOR CO.

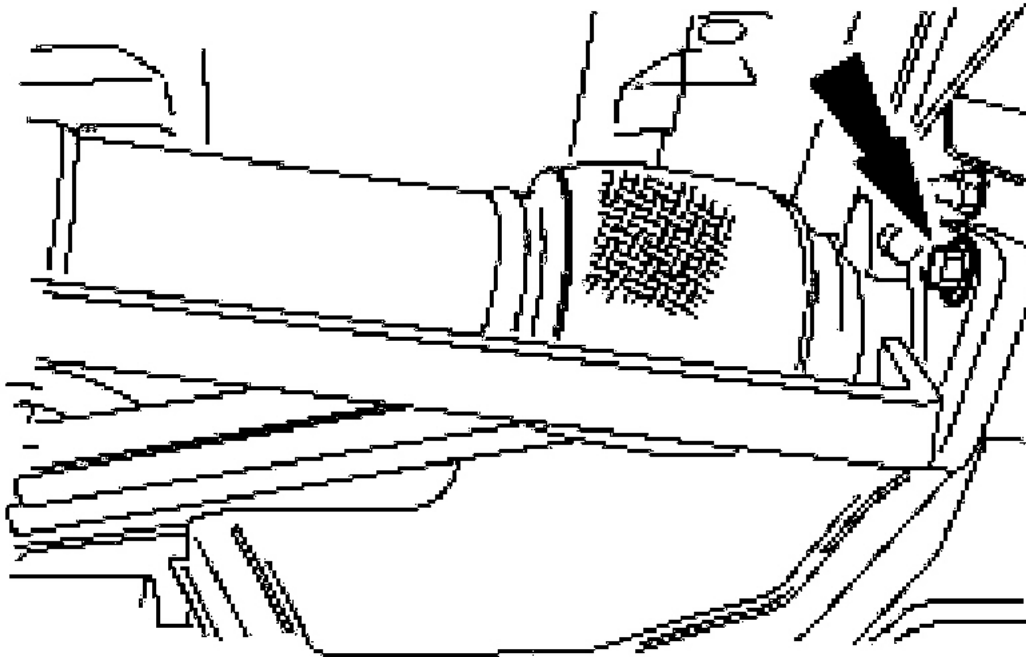
6. Using the special tool, support the flex pipe.



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Fig. 27: Supporting Flex Pipe
Courtesy of FORD MOTOR CO.

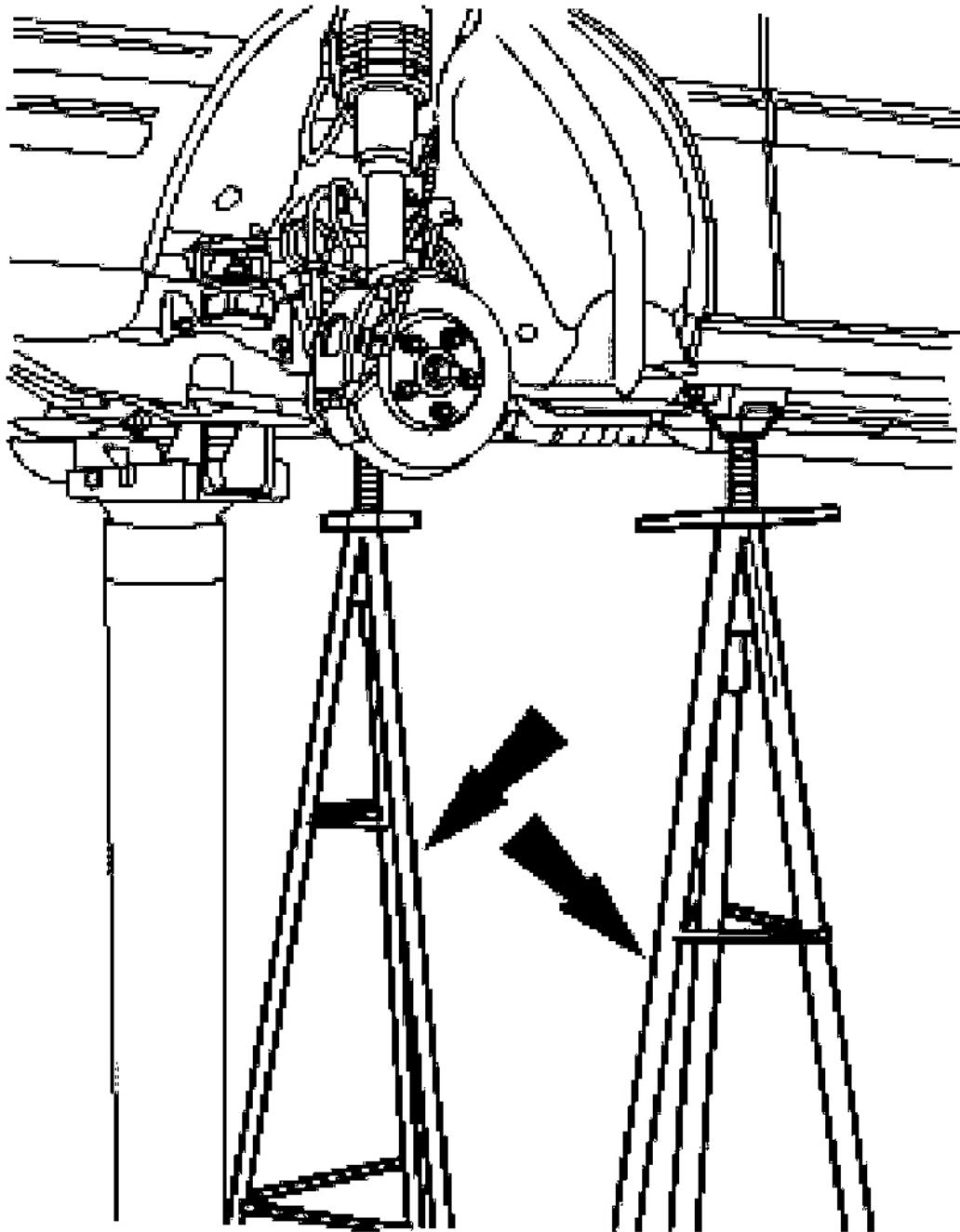
7. Remove the two flange bolts.



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Fig. 28: Removing Flange Bolts
Courtesy of FORD MOTOR CO.

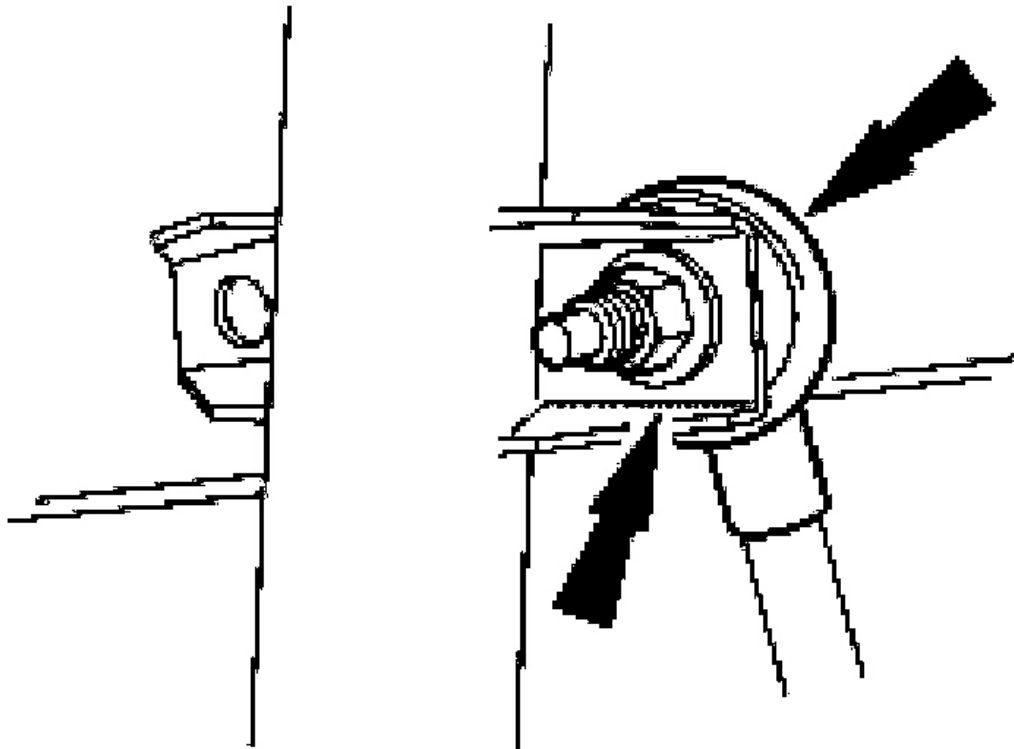
8. Support the front subframe with jack stands under the front jack pads.



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Fig. 29: Supporting Front Subframe With Jack Stands Under Front Jack Pads
Courtesy of FORD MOTOR CO.

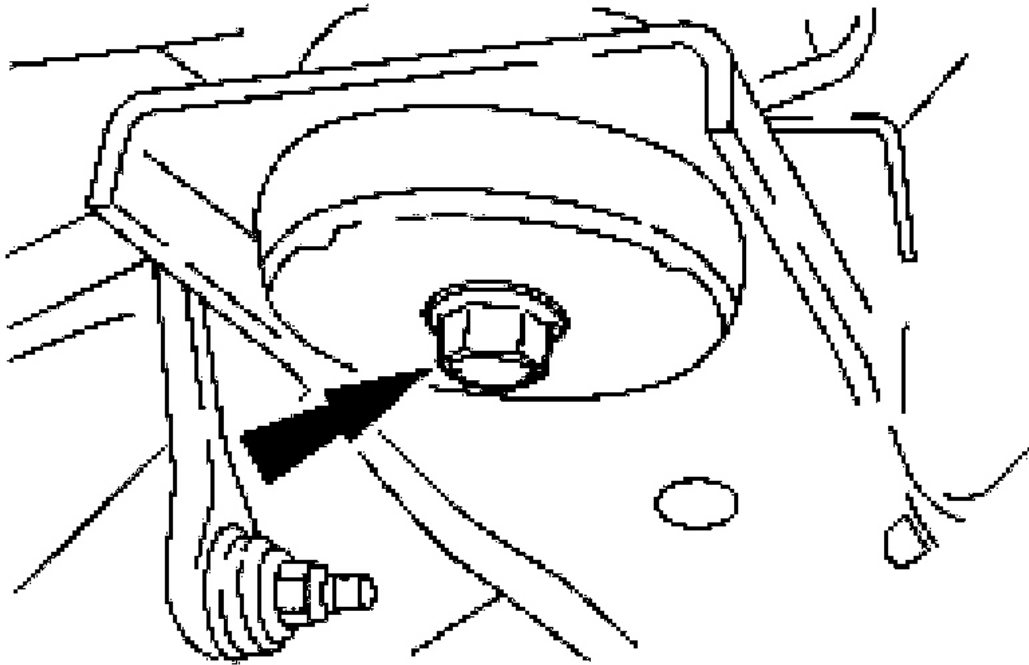
9. Remove the nuts and disconnect the stabilizer bar links from the struts.



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Fig. 30: Disconnecting Stabilizer Bar Links From Struts
Courtesy of FORD MOTOR CO.

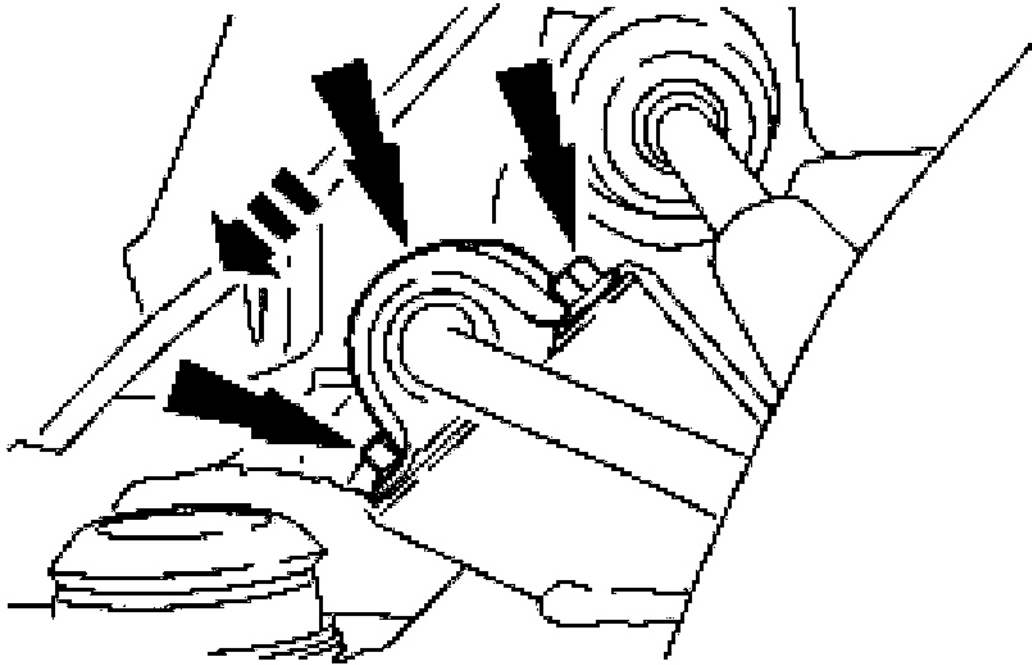
10. Remove and discard the two bolts.



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Fig. 31: Discarding Bolts
Courtesy of FORD MOTOR CO.

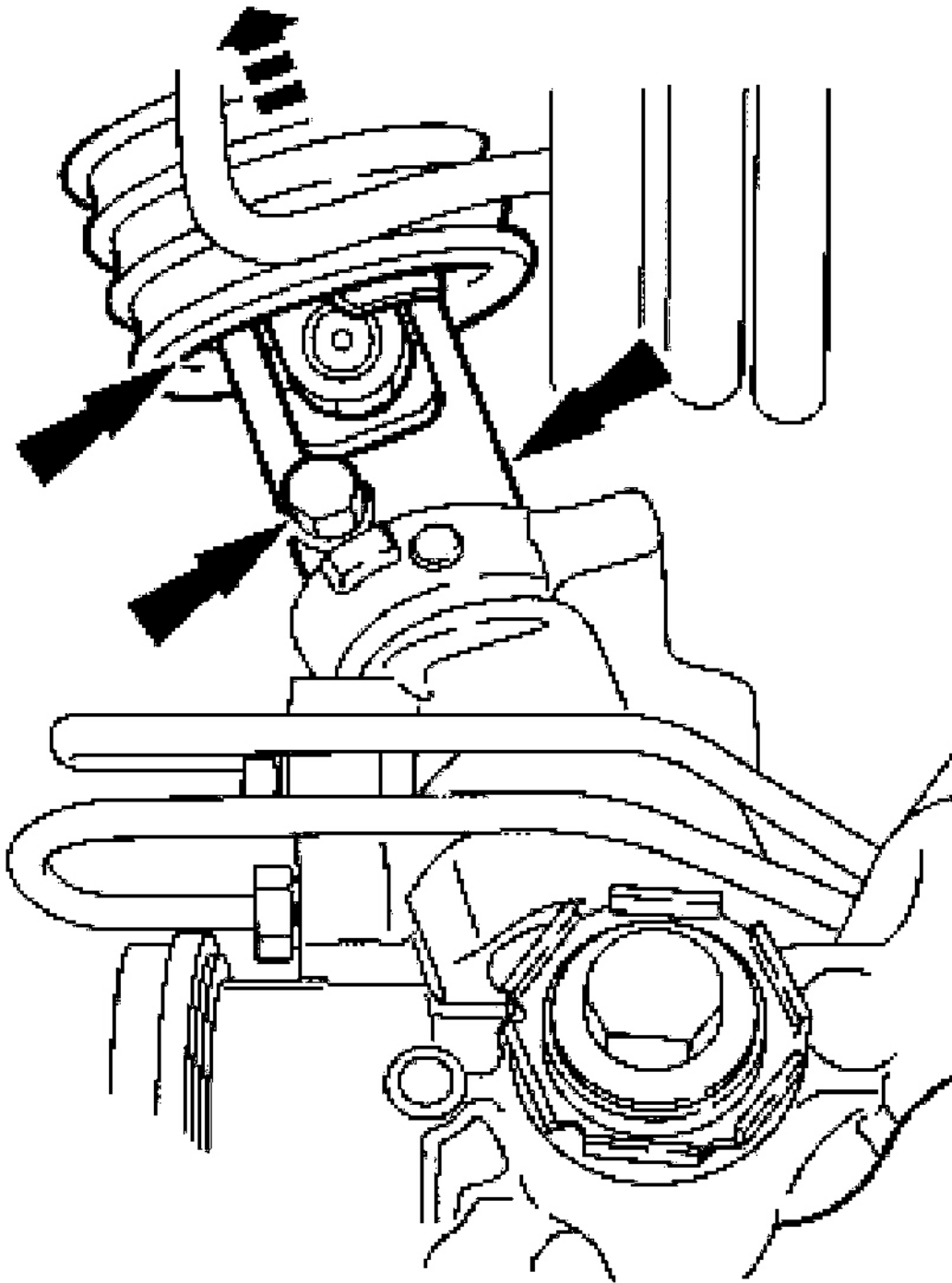
11. Lower the subframe approximately 3-4 inches to gain access to the stabilizer bar bracket insulators.
12. Remove the four bolts and the stabilizer bar and links.



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Fig. 32: Removing Bolts And Stabilizer Bar And Links
Courtesy of FORD MOTOR CO.

13. Position the dash opening weather seal aside. Remove and discard the pinch bolt. Disconnect the intermediate steering shaft.



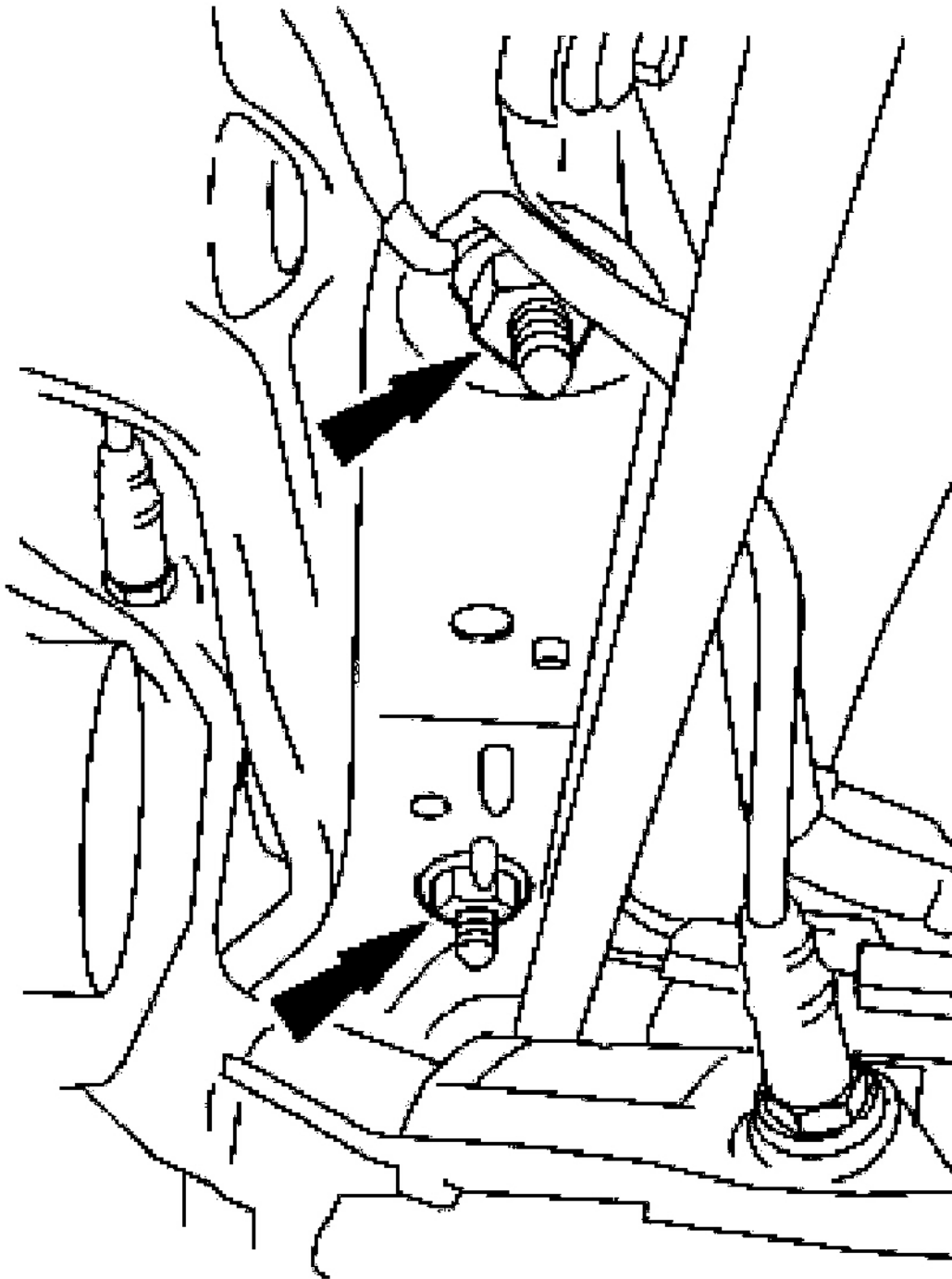
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Fig. 33: Disconnecting Intermediate Steering Shaft

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Courtesy of FORD MOTOR CO.

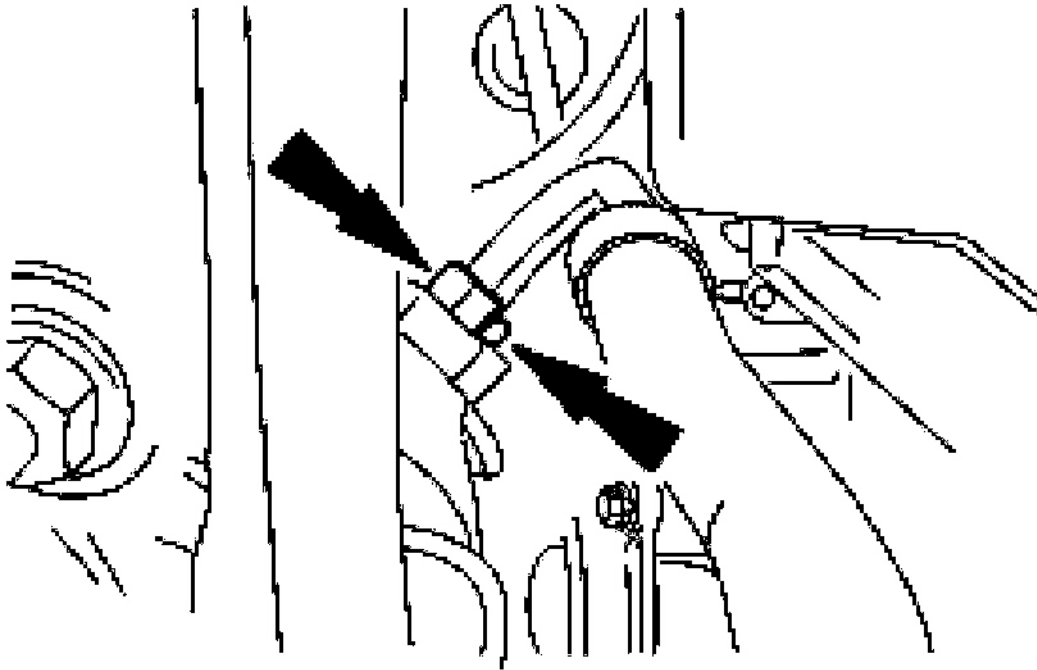
14. Remove and discard the tie strap. Position the heat shield aside.
15. Remove the nuts.



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Fig. 34: Positioning Heat Shield Aside
Courtesy of FORD MOTOR CO.

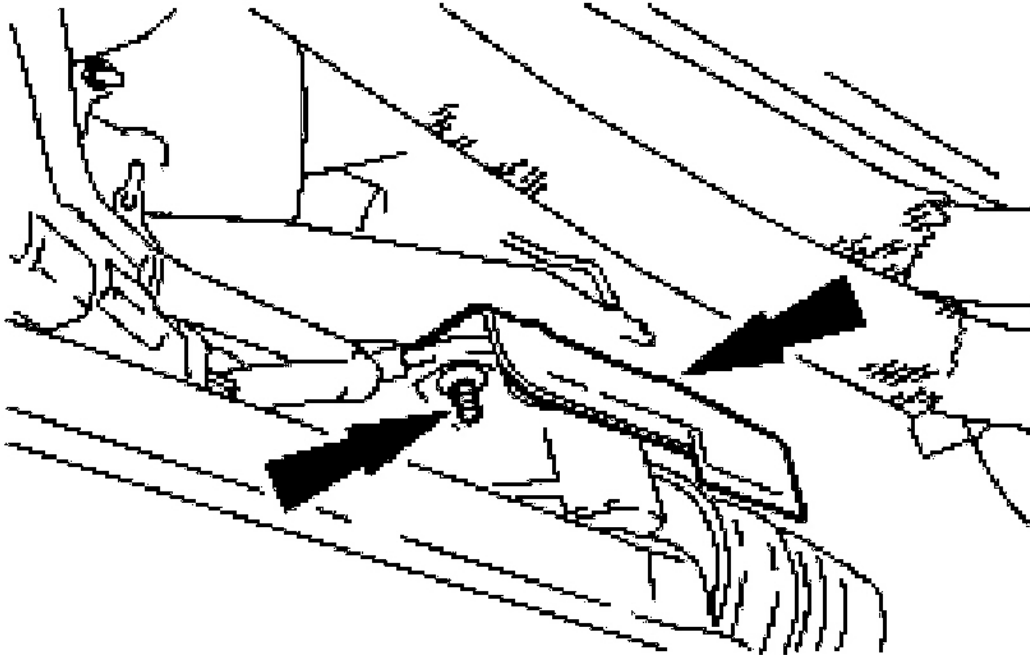
16. Disconnect the power steering lines. Remove and discard the seals.



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Fig. 35: Disconnecting Power Steering Lines
Courtesy of FORD MOTOR CO.

17. Remove the screw. Position the bracket aside.



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Fig. 36: Positioning Bracket Aside
Courtesy of FORD MOTOR CO.

18. Rotate the steering gear and remove it through the LH wheel well.

Installation

NOTE: New Teflon(R) seals must be installed any time the lines are disconnected from the steering gear.

1. Using the special tool, install new seals (388898-S) on the power steering lines.

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