

2005 Ford Focus ZX5 S

2005 ACCESSORIES & BODY, CAB Uni-Body, Subframe And Mounting System - Focus

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Uni-Body, Subframe And Mounting System - Focus

SPECIFICATIONS

TORQUE SPECIFICATIONS

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Description	Nm	lb-ft	lb-in
Crossmember bolts (M12)	115	85	-
Crossmember bolts (M14)	200	148	-
Engine support insulator-to-transaxle center bolt	50	37	-
Instrument panel lower panel bolts	9	-	80
Lower arm ball joint pinch bolts	50	37	-
Power steering line clamp-to-steering gear bolt	23	17	--
Stabilizer bar link nuts	50	37	-
Steering column shaft bolt	28	21	-
Steering gear heat shield bolts	7	-	62
Tie-rod end nuts	47	35	-
Hood release cable nut	20	15	-

DESCRIPTION AND OPERATION

FRAME ASSEMBLY

The front subframe is bolted to the body and is used to:

- aid in structural support
- provide mounting surfaces for the steering gear
- provide mounting surfaces for the front suspension lower control arms, the engine

mounts and for the front stabilizer bar

GENERAL PROCEDURES

BODY MISALIGNMENT CHECK

CAUTION: Never apply excessive heat to the bumper surface. Heat could cause the bumper to distort. When collecting exhaust fumes in the service area, never attach a metal collector to the exhaust tail pipe as the heat could damage the bumper.

1.

CAUTION: Any attempt to cold-straighten a severely bent bracket may cause rupture of the welds (if any) and may also cause cracks in the bent part. Never heat the area to more than 670°C (1,238°F). Always use temperature-indicating crayons when applying heat to any part.

CAUTION: Do not attempt to correct any serious misalignment in one pulling/pushing operation. Damage to the structure may occur.

To align or square up a body, take 2 opposite diagonal measurements between the front, center or rear pillars. Take the measurements between reference points, such as crease lines or weld joints, which are diagonally opposite each other on the 2 pillars being measured. Since all measurements should be made from the bare metal, remove all interior trim or chassis components from the points being checked. For additional information, refer to **INTERIOR TRIM AND ORNAMENTATION** .

2. Align each section proportionately, until the proper dimensions are obtained. If body alignment is questionable, refer to **UNDERBODY MISALIGNMENT CHECK**.
3. Due to the design and construction of the unibody vehicle, it is important to monitor the upper body structure while making any corrections to the underbody structure.
4. Roughly straighten badly damaged areas before taking measurements for squaring up the unibody body. Remove the glass to prevent breakage. For additional information, refer to **GLASS, FRAMES AND MECHANISMS** . In severe cases, reinforcement brackets and other inner construction parts may have to be removed or cut to permit restoration of the outer shell and pillars without excessive strain on the parts.
5. In case of severe or sharp bends, it may be necessary to use heat. Never heat the area to more than 670°C (1,238°F). Always use temperature-indicating crayons when applying heat to any part.

UNDERBODY MISALIGNMENT CHECK

All vehicles

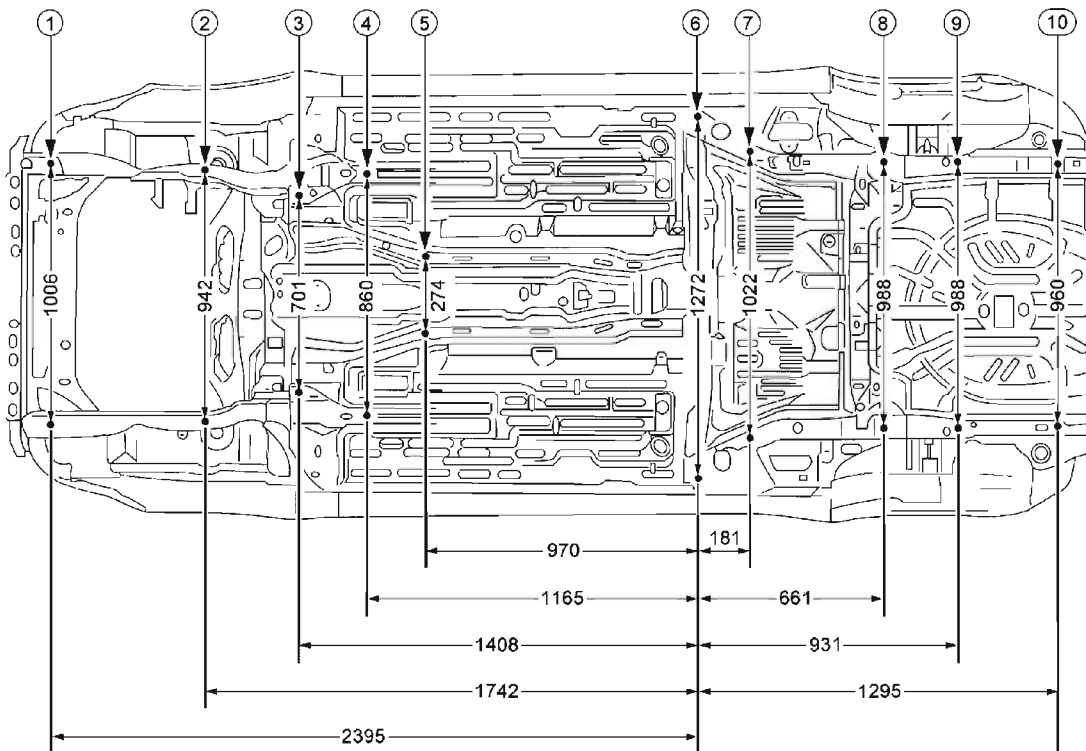
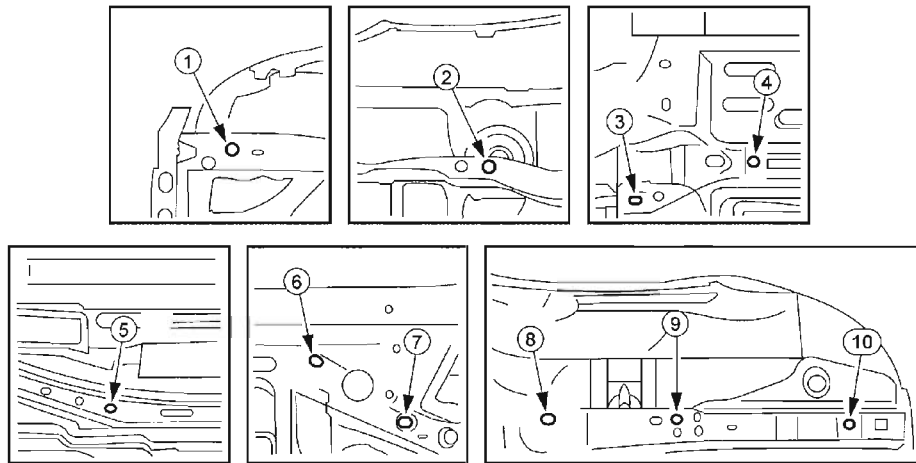
1. The dimensions of the underbody must be restored to provide the correct front and rear wheel alignment geometry.
2. All the dimensions are measured between the centers of the existing holes in the underbody unless otherwise specified.
3. Inspect all underbody structural members for cracks, twists or bends. Check all welded connections for cracks. Inspect the support brackets for looseness. Carry out any necessary repairs or install new components as necessary.

Coupe and 5-Door

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Unit: mm



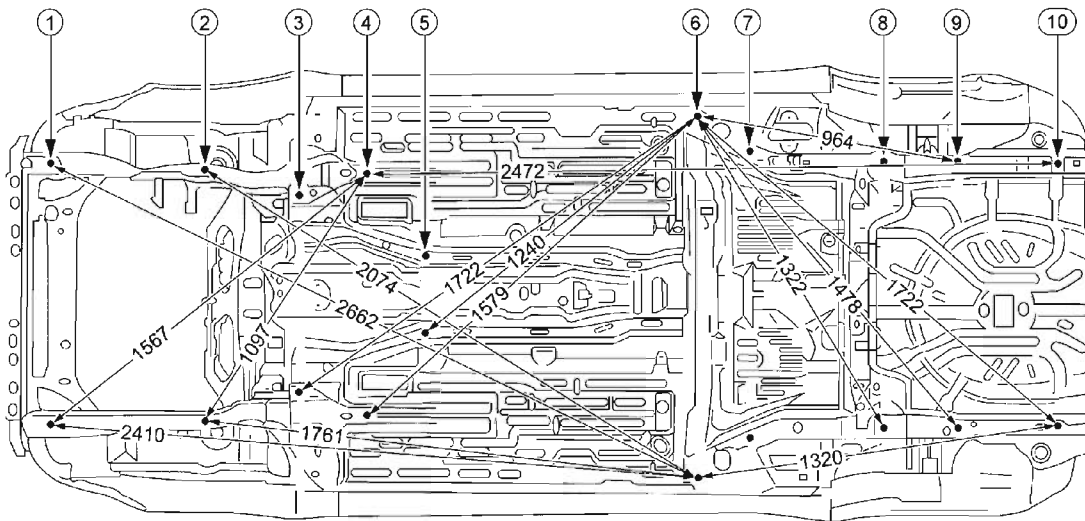
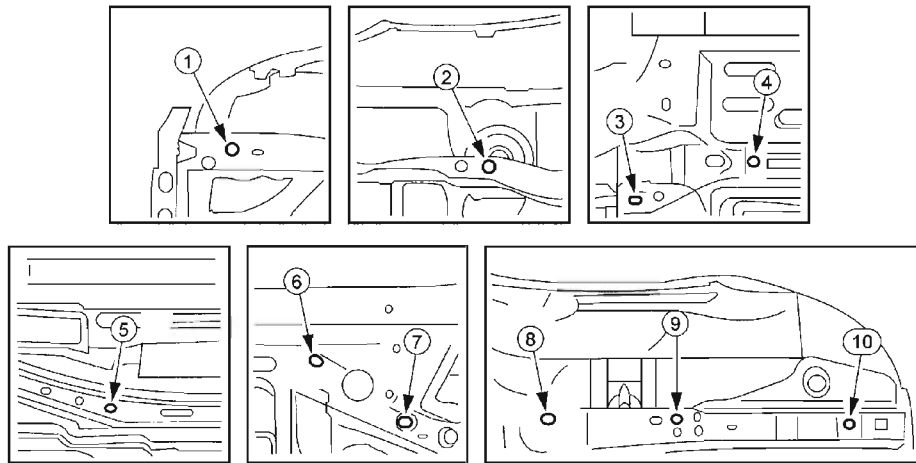
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Fig. 1: Identifying Underbody Misalignment Coupe And 5-Door Components (1 Of 2)
Courtesy of FORD MOTOR CO.

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Unit: mm



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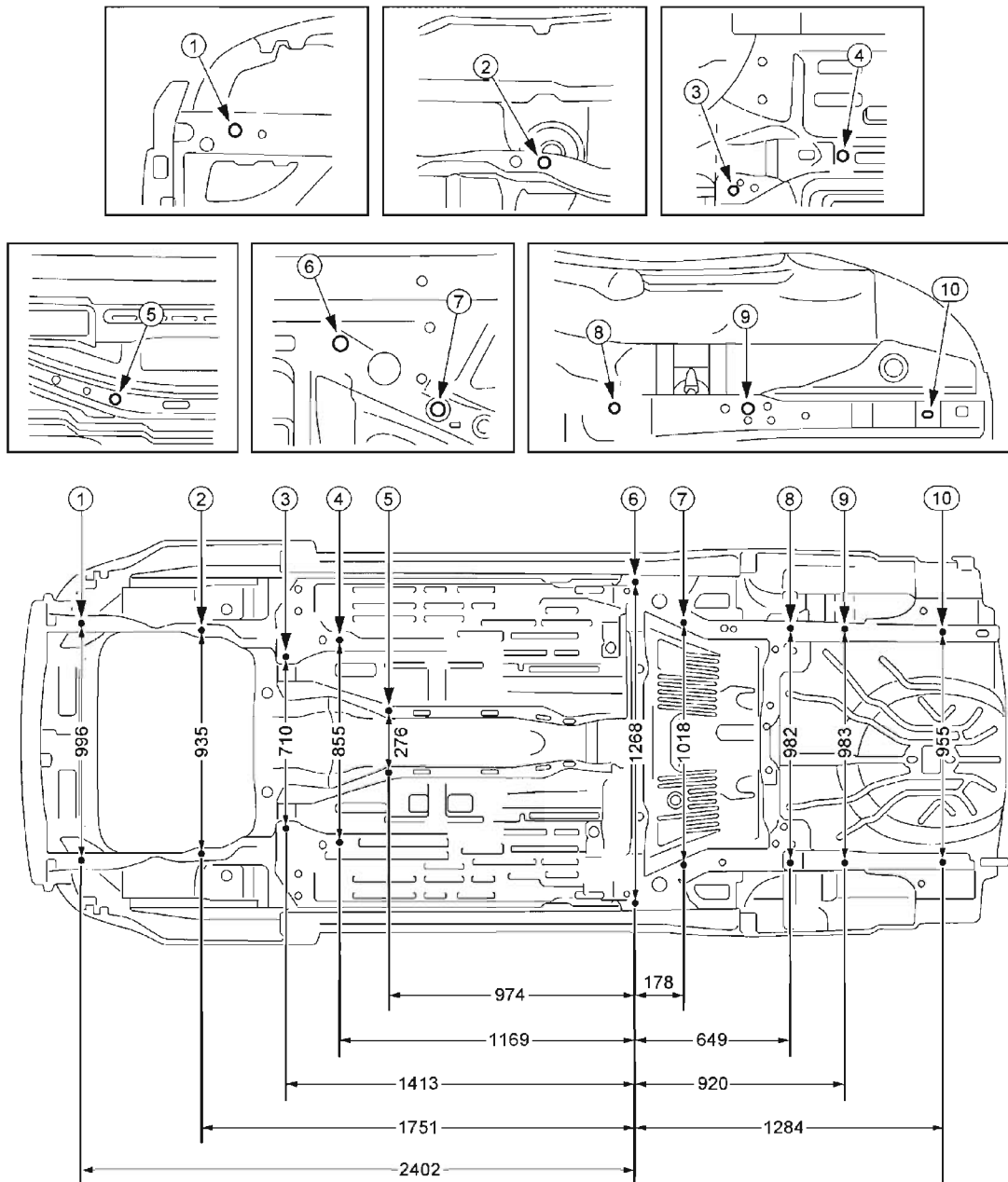
Fig. 2: Identifying Underbody Misalignment Coupe And 5-Door Components (2 Of 2)
Courtesy of FORD MOTOR CO.

Sedan

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Unit: mm



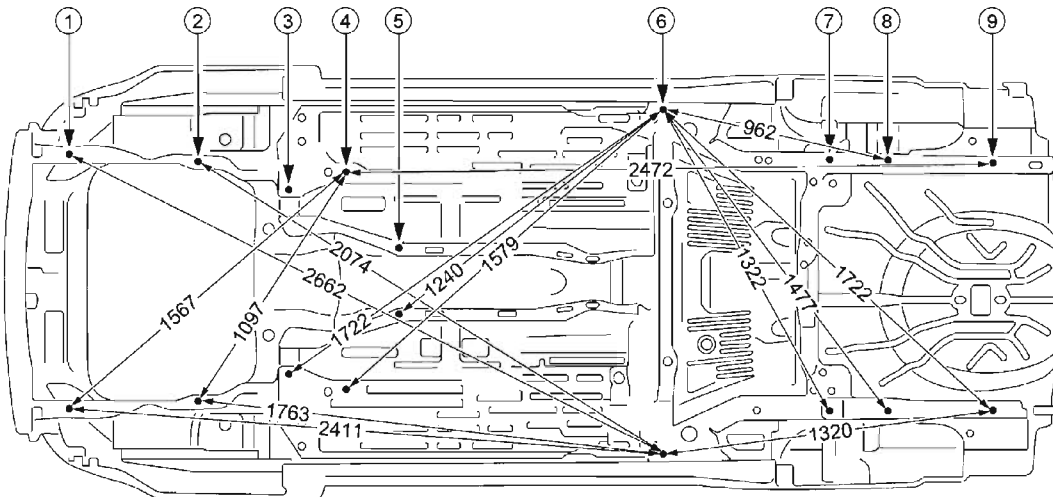
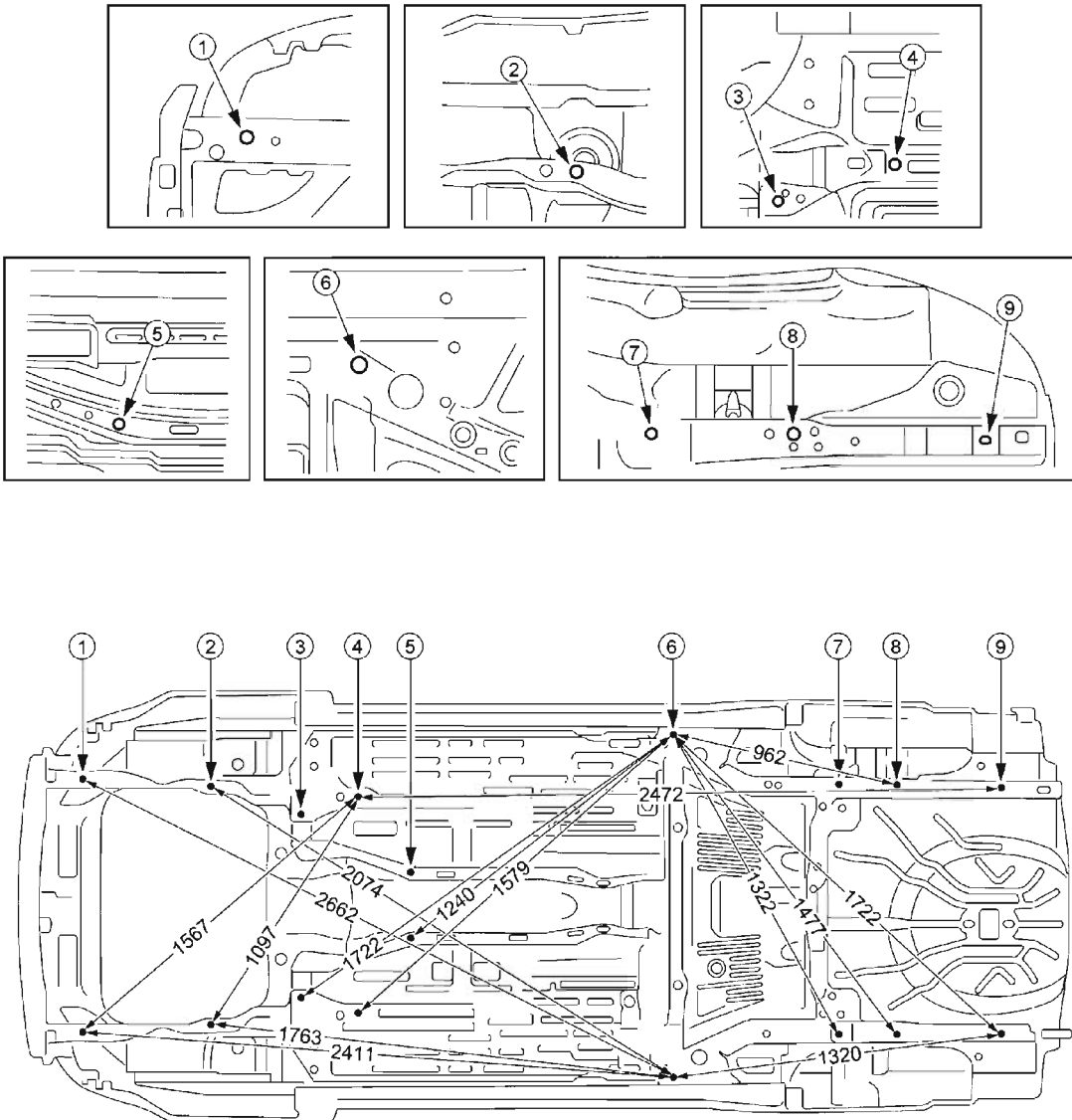
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Fig. 3: Identifying Underbody Misalignment Sedan Components (1 Of 2)
Courtesy of FORD MOTOR CO.

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Unit: mm



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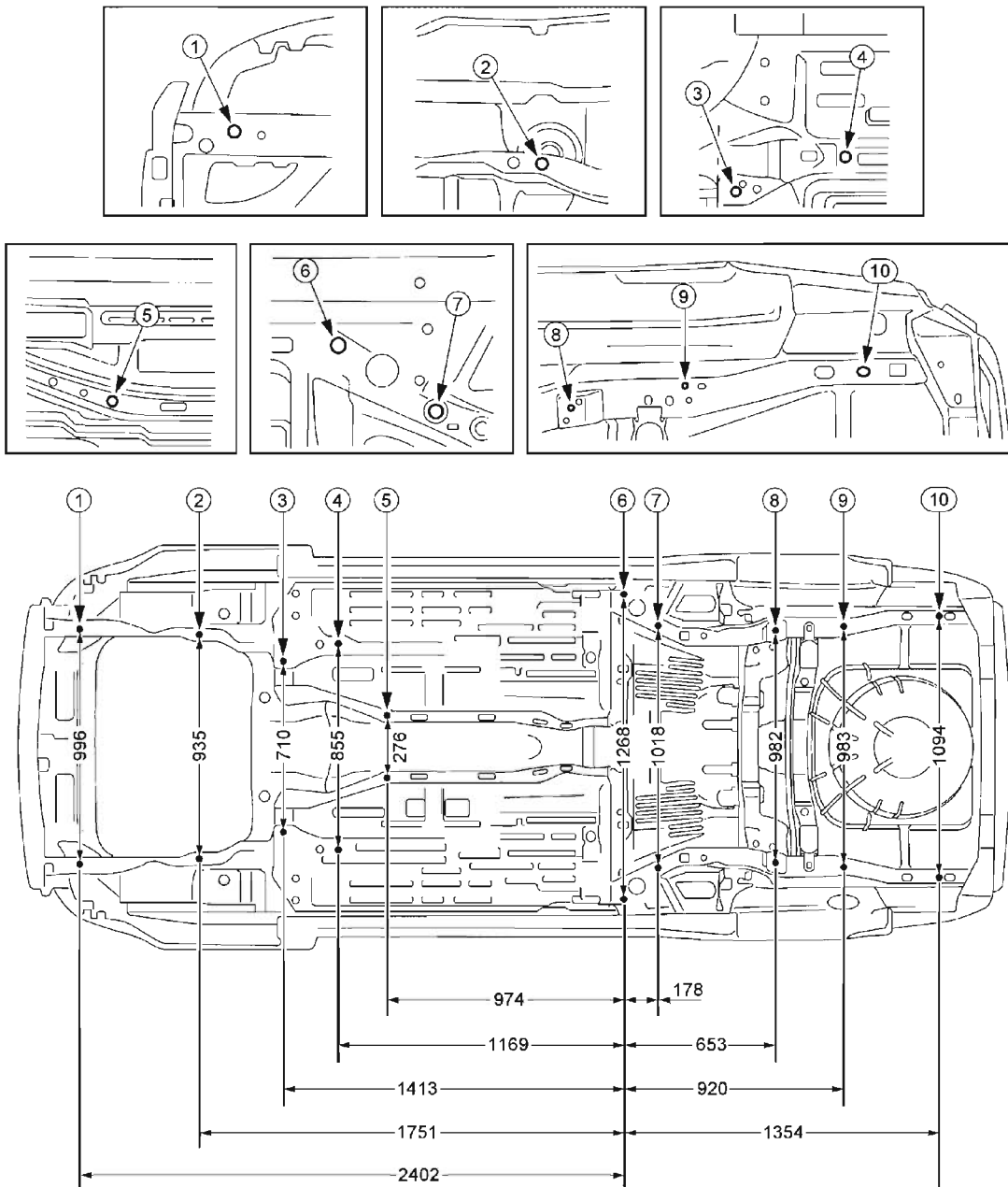
Fig. 4: Identifying Underbody Misalignment Sedan Components (2 Of 2)
Courtesy of FORD MOTOR CO.

Wagon

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Unit: mm



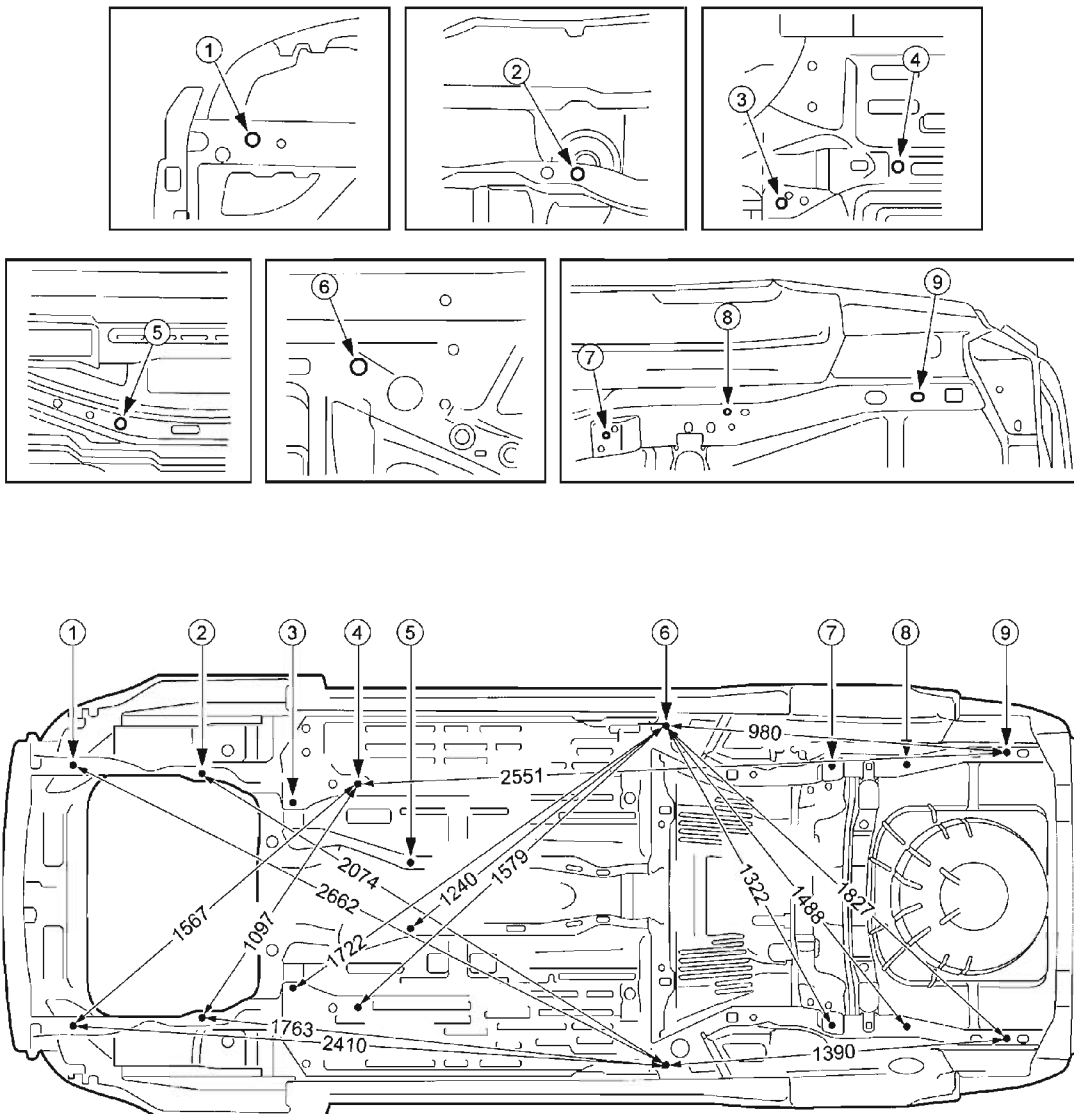
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Fig. 5: Identifying Underbody Misalignment Wagon Components (1 Of 2)
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Unit: mm



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Fig. 6: Identifying Underbody Misalignment Wagon Components (2 Of 2)
Courtesy of FORD MOTOR CO.

REMOVAL AND INSTALLATION

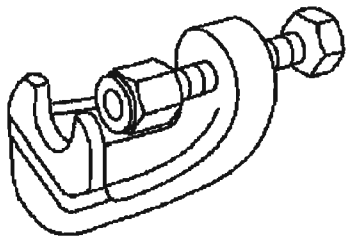
FRONT SUBFRAME

Special Tool(s)

SPECIAL TOOL CHART

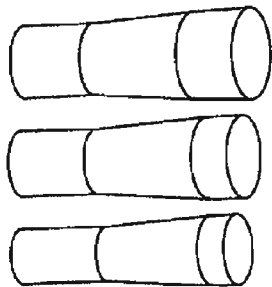
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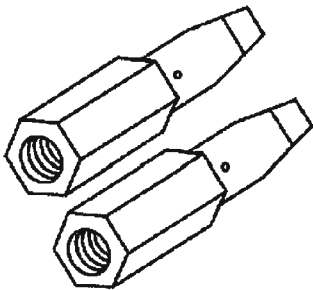
ST1106-A

Remover, Tie-Rod End 211-001 (TOOL-3290-D)



ST1444-A

Installer Set, Teflon(R) Seal 211-D027 (D90P-3S17-A) or equivalent



ST1974-A

Alignment Pins, Subframe 502-002 (T94P-2100-AH)

Removal

1. Center the steering wheel and secure it in position.
 - Remove the ignition key and lock the steering in position.

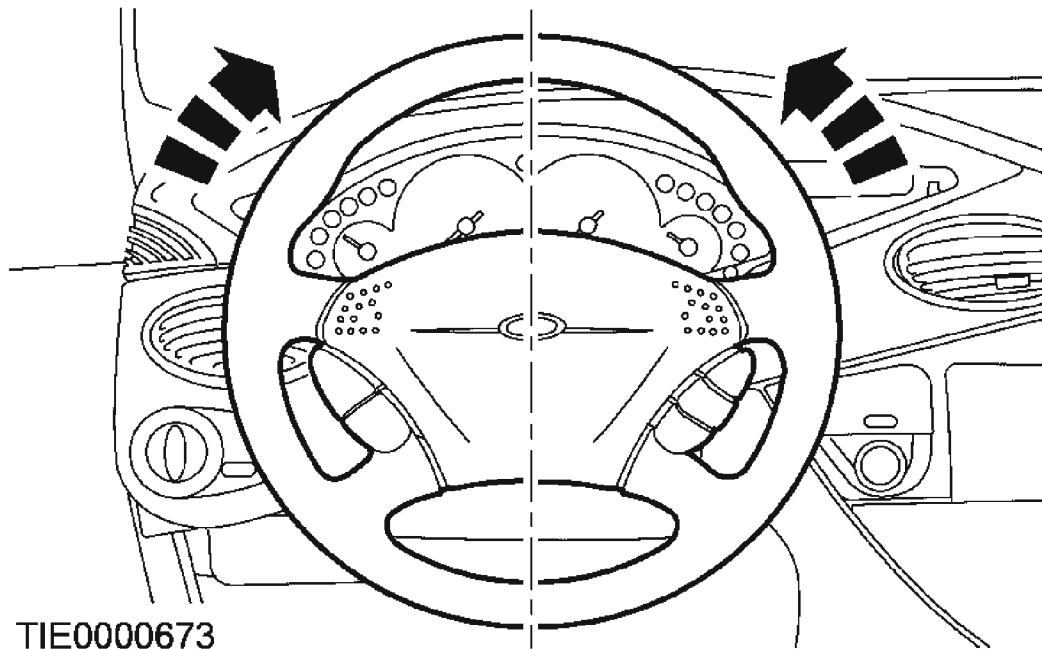


Fig. 7: Removing Ignition Key And Lock Steering In Position
Courtesy of FORD MOTOR CO.

2. Disconnect the steering column shaft from the steering column coupling shaft.
 - Discard the bolt.

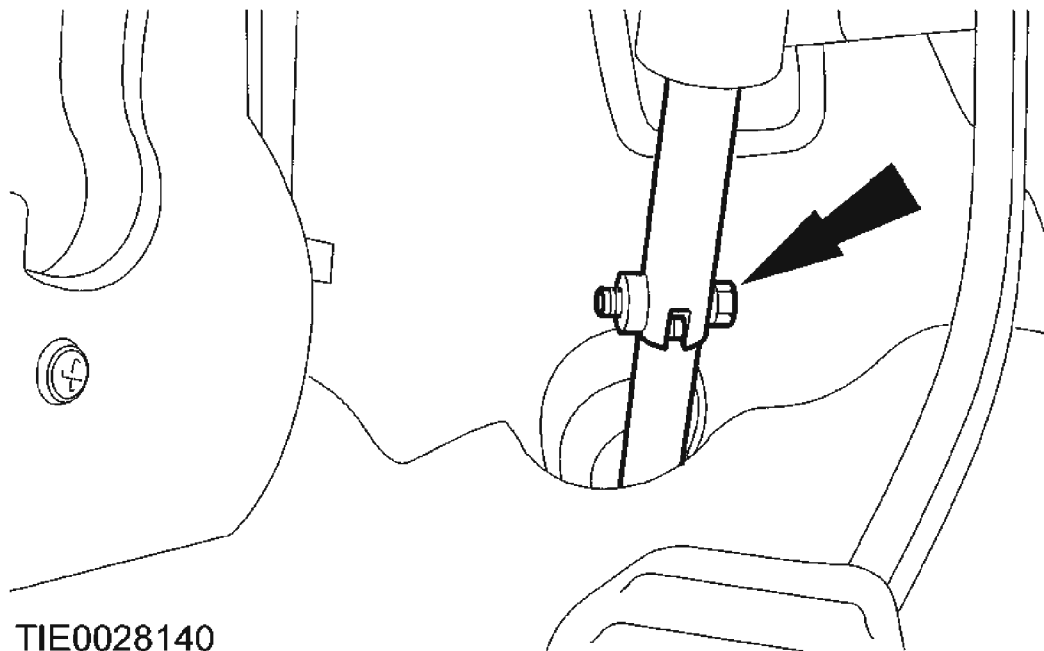


Fig. 8: Disconnecting Steering Column Shaft From Steering Column Coupling Shaft

Courtesy of FORD MOTOR CO.

3. Remove the front wheels and tires. For additional information, refer to **WHEELS AND TIRES** .

CAUTION: Leave the tie-rod end nuts in place to protect the ball joint studs.

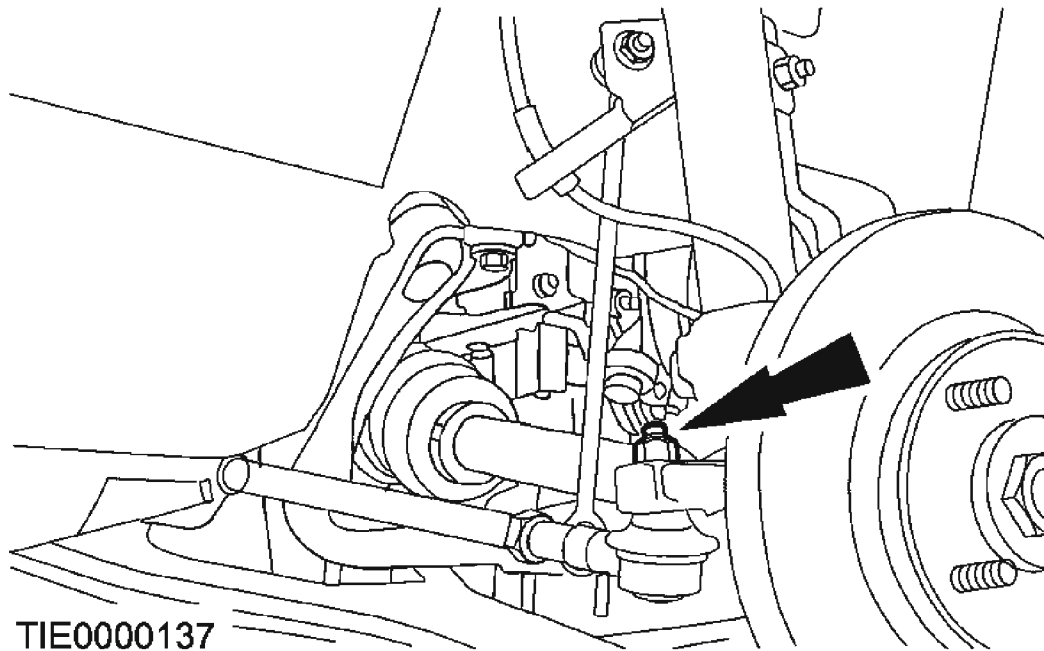


Fig. 9: Removing Front Wheels And Tires
Courtesy of FORD MOTOR CO.

4. Loosen the tie-rod end nut on both sides.

CAUTION: Protect the ball joint seal to prevent damage.

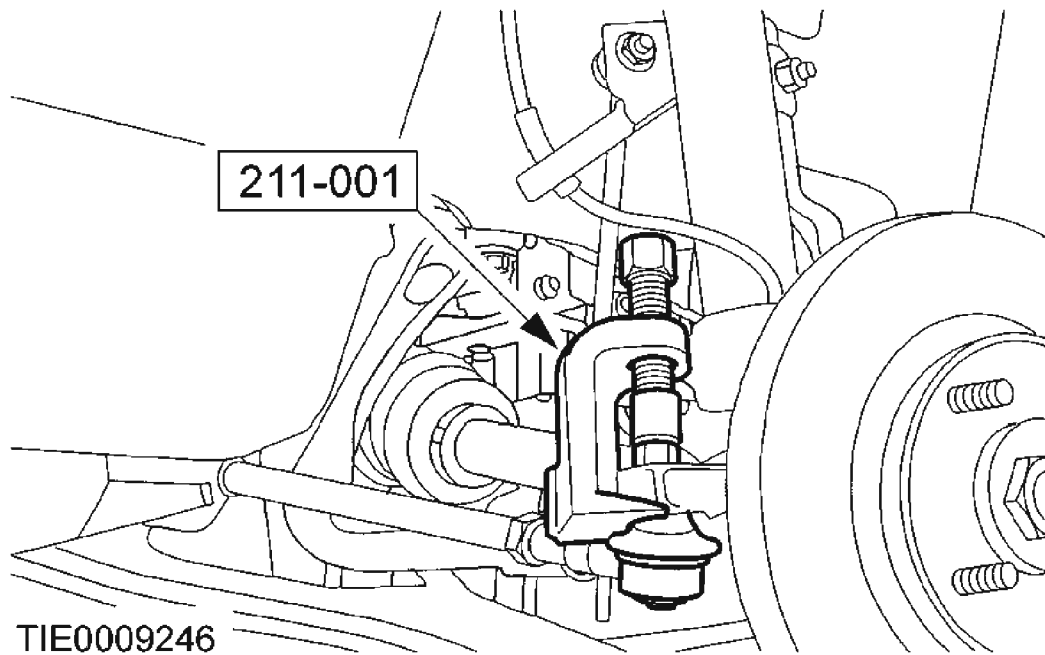


Fig. 10: Removing And Discard Tie-Rod End Nuts
Courtesy of FORD MOTOR CO.

5. Using the special tool, disconnect the tie-rod end from the wheel knuckle on both sides.
 - Remove and discard the tie-rod end nuts.
6. Remove the stabilizer bar link nuts on both sides.

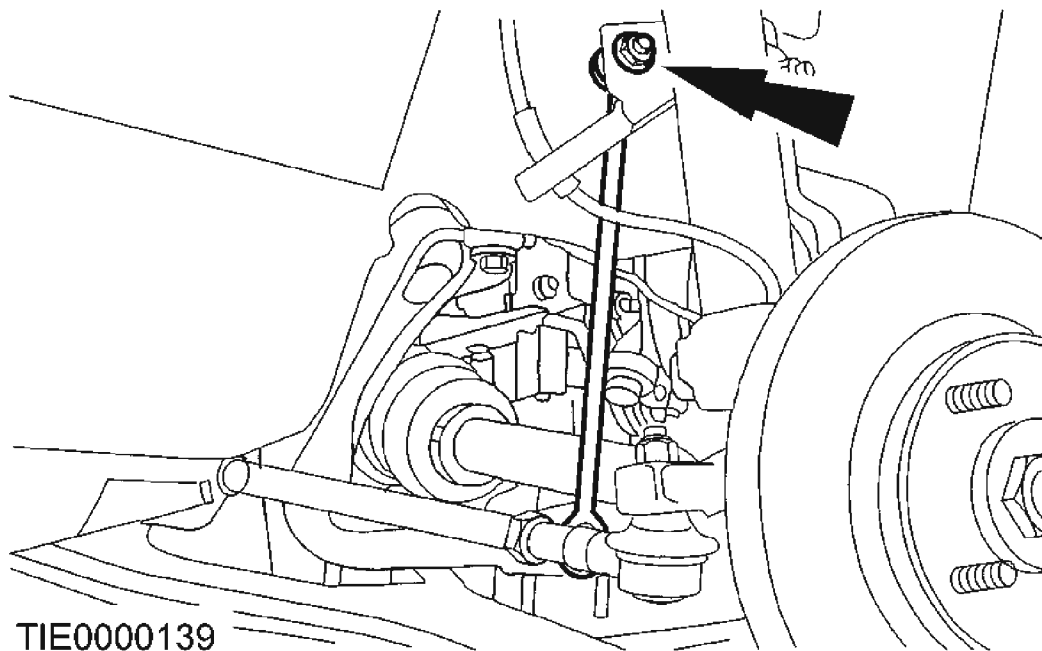


Fig. 11: Removing Stabilizer Bar Link Nuts On Both Sides
Courtesy of FORD MOTOR CO.

7. Remove the engine support insulator-to-transaxle center bolt.

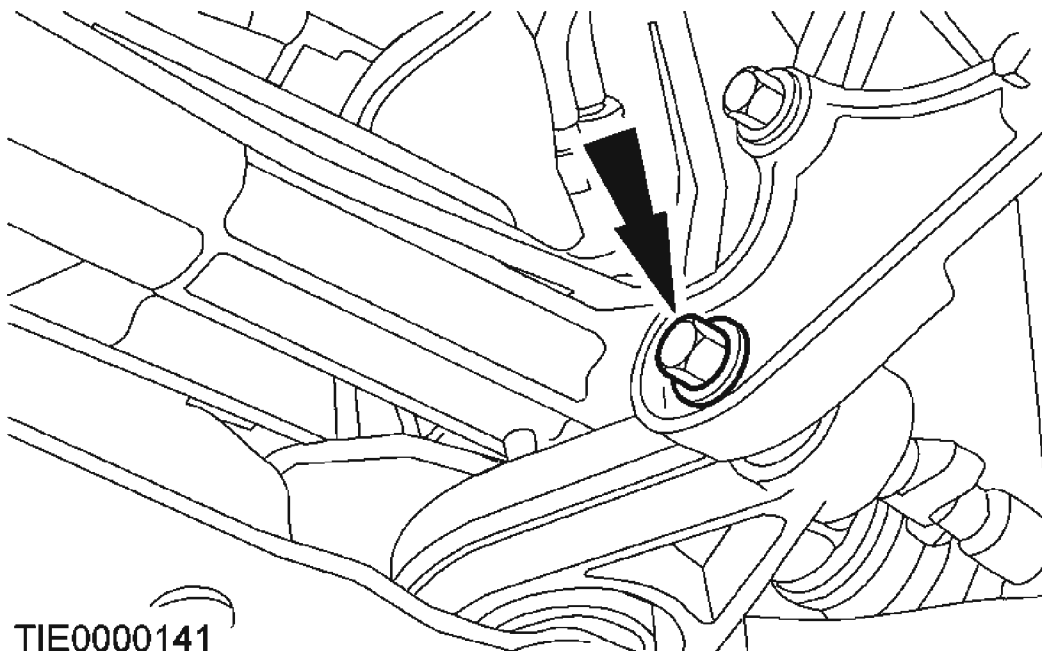


Fig. 12: Removing Engine Support Insulator-To-Transaxle Center Bolt
Courtesy of FORD MOTOR CO.

8. Remove the two steering gear heat shield bolts.

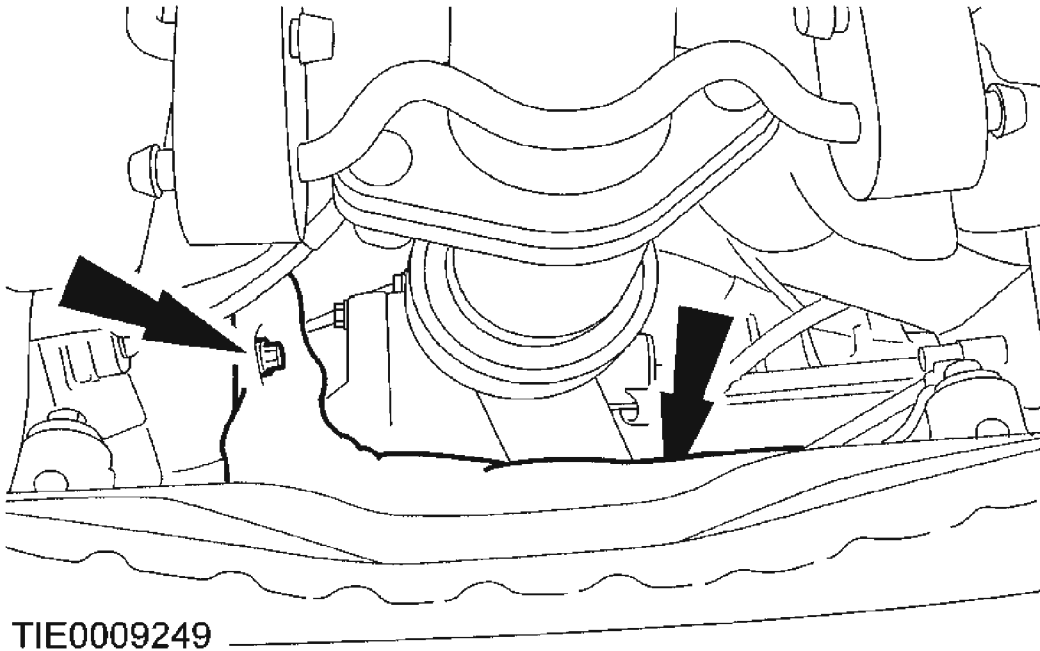


Fig. 13: Removing Steering Gear Heat Shield Bolts
Courtesy of FORD MOTOR CO.

9. Disconnect the power steering line to the clamp.

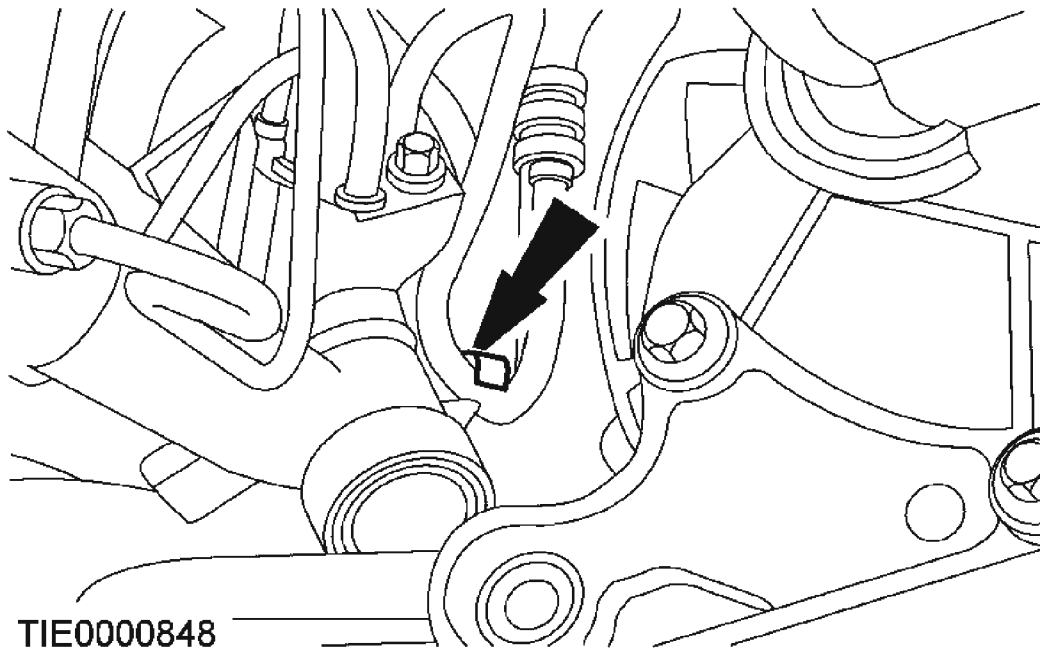


Fig. 14: Disconnecting Power Steering Line To Clamp
Courtesy of FORD MOTOR CO.

10. Disconnect the power steering lines from the power steering gear.
 1. Remove the bolt.
 2. Rotate the power steering line clamp clockwise.
 - Allow the remaining oil to drain into a suitable container.
 - Discard the O-ring seals.

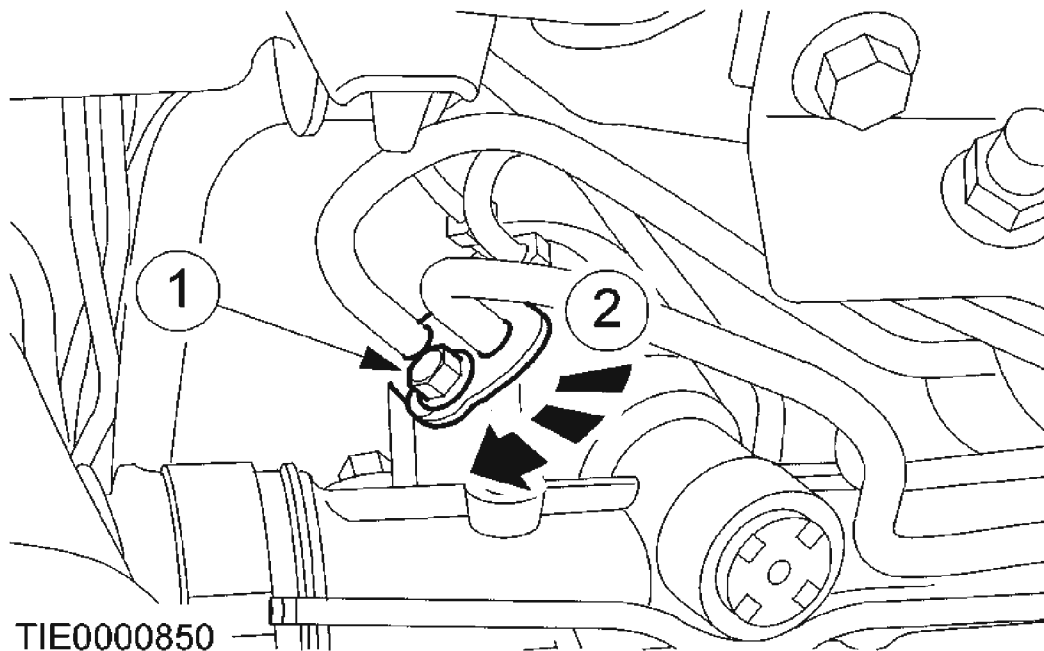
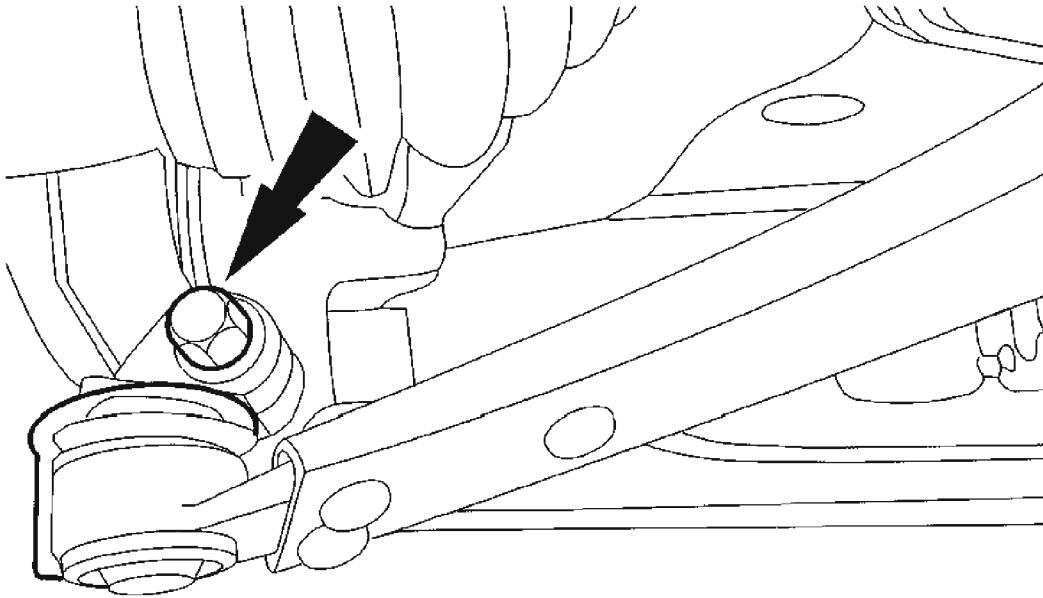


Fig. 15: Disconnecting Power Steering Lines From Power Steering Gear
Courtesy of FORD MOTOR CO.

11. Using a suitable support table, support the crossmember.

CAUTION: Protect the ball joint seal to prevent damage.

NOTE: Separate the ball joint from the wheel knuckle as the subframe is lowered.



TIE0025402

Fig. 16: Disconnecting Lower Arm Ball Joint From Wheel Knuckle On Both Sides
Courtesy of FORD MOTOR CO.

12. Disconnect the lower arm ball joint from the wheel knuckle on both sides.
 - Remove the heat shields
13. Remove the crossmember bolts (support removed for clarity).

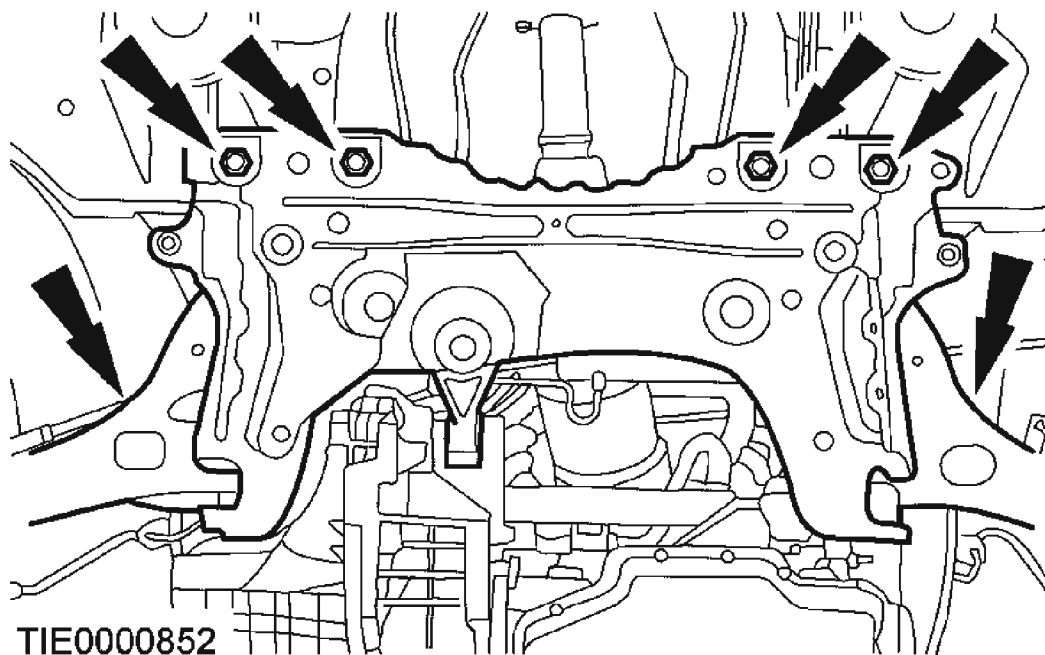


Fig. 17: Removing Crossmember Bolts
Courtesy of FORD MOTOR CO.

14. Remove the crossmember.

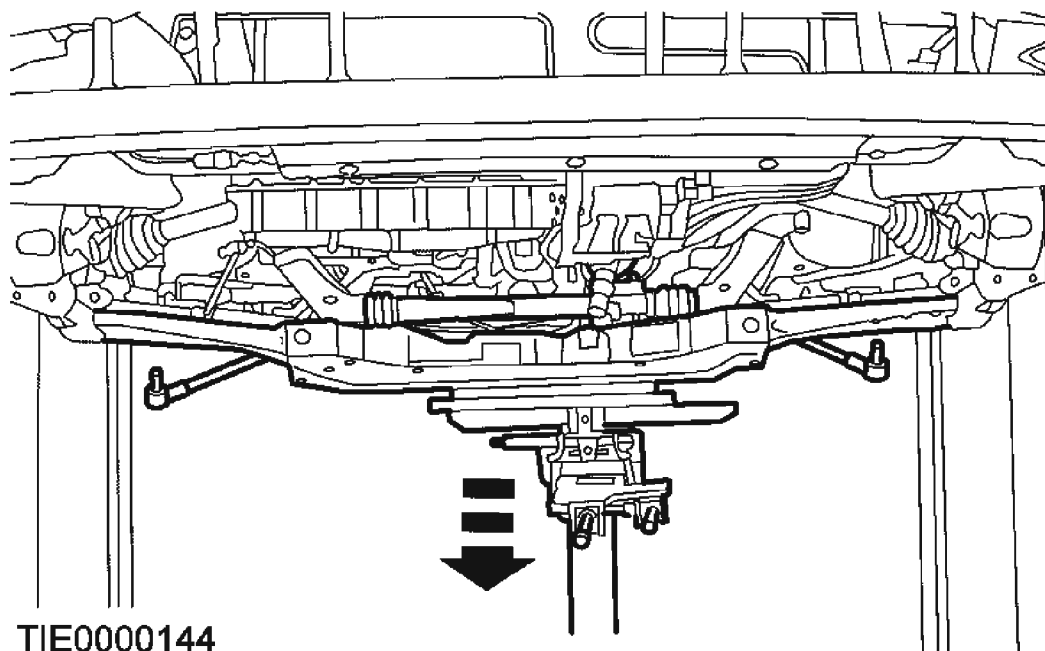


Fig. 18: Removing Crossmember
Courtesy of FORD MOTOR CO.

Installation

1. Using a suitable support table, position and align the crossmember.
 1. Insert the alignment pins through the crossmember alignment holes and the washers.
 2. Slide the locking plates on top of the washers and into the groove of the tool and tighten the alignment pin sleeve.
 3. Raise the crossmember engaging the alignment pins into the chassis aligning holes.

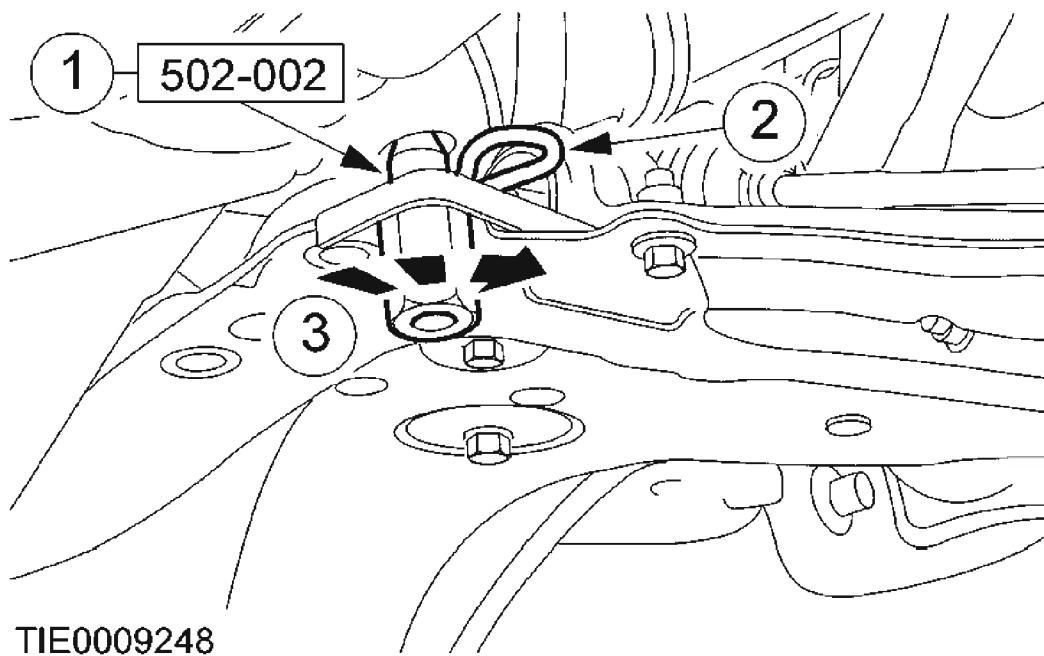


Fig. 19: Positioning And Align Crossmember
Courtesy of FORD MOTOR CO.

2. Loosely install the crossmember bolts.
3. Remove the crossmember alignment pins.

CAUTION: While tightening the crossmember bolts, make sure the crossmember does not move.

4.

Install the crossmember bolts (support removed for clarity).

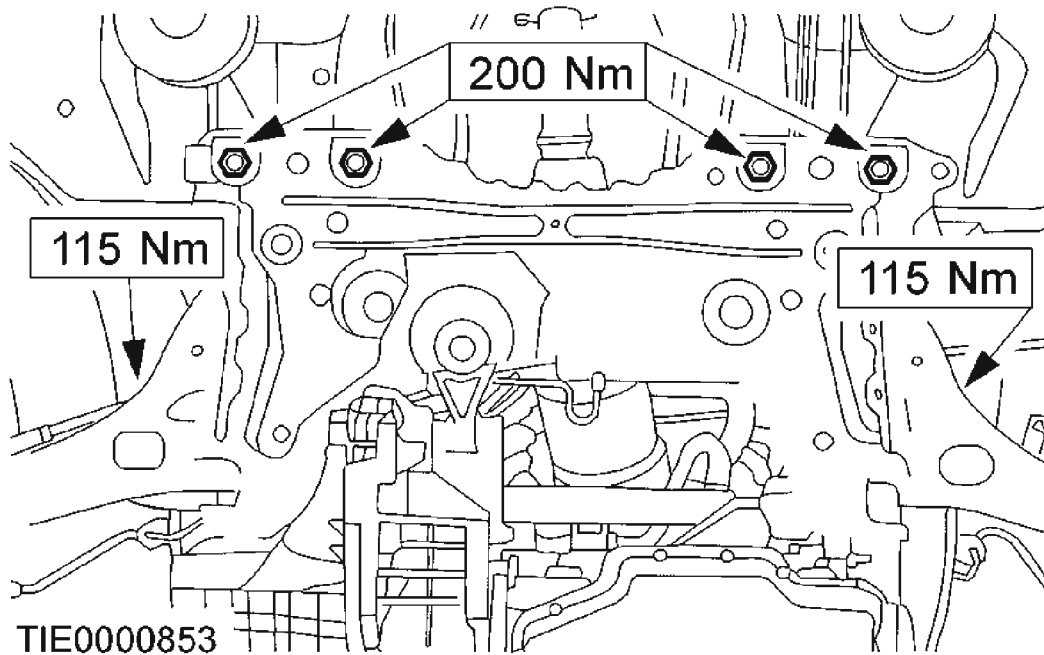
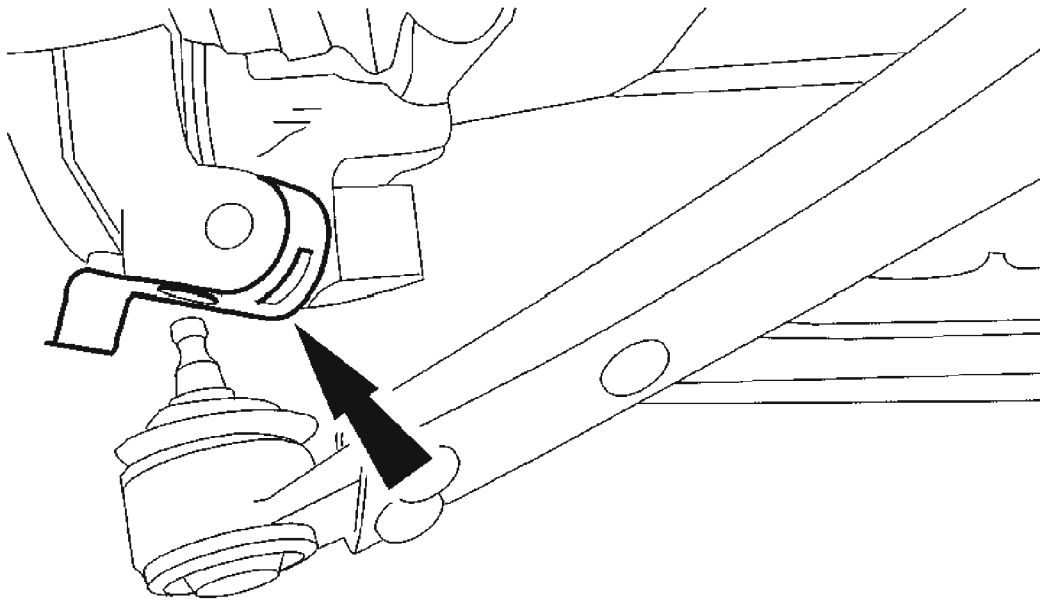


Fig. 20: Removing Crossmember Alignment Pins
Courtesy of FORD MOTOR CO.

5. Remove the support table.
6. Install the heat shield on both sides.

CAUTION: Make sure the heat shield is installed to prevent damage to the ball joint.

NOTE: Align the ball joint with the steering knuckle as the subframe is moved into place.

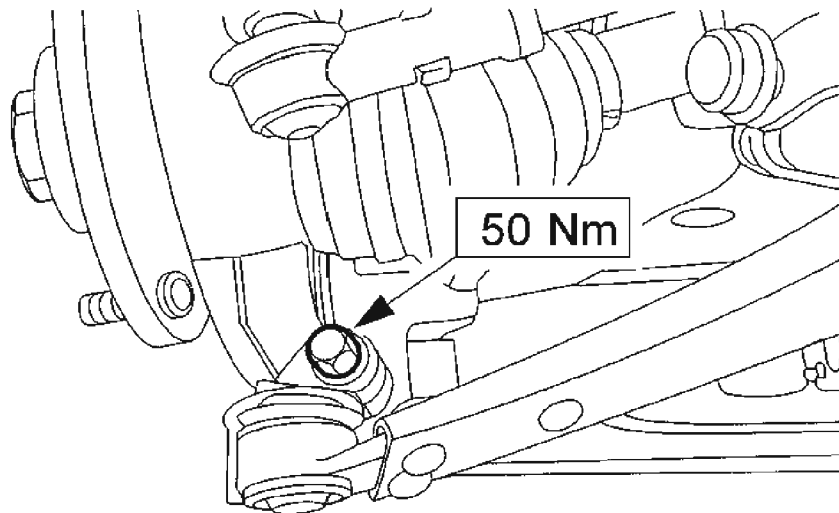


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Fig. 21: Aligning Ball Joint With Steering Knuckle As Subframe Moved Into Place

Courtesy of FORD MOTOR CO.

7. Position the lower arm ball joint to the wheel knuckle on both sides and install the bolts.



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Fig. 22: Positioning Lower Arm Ball Joint To Wheel Knuckle On Both Sides
Courtesy of FORD MOTOR CO.

8. Using the special tool, install new o-ring seals (high pressure hose pin, 3F886-AA, return hose pin 3F886-BA) onto the power steering lines.

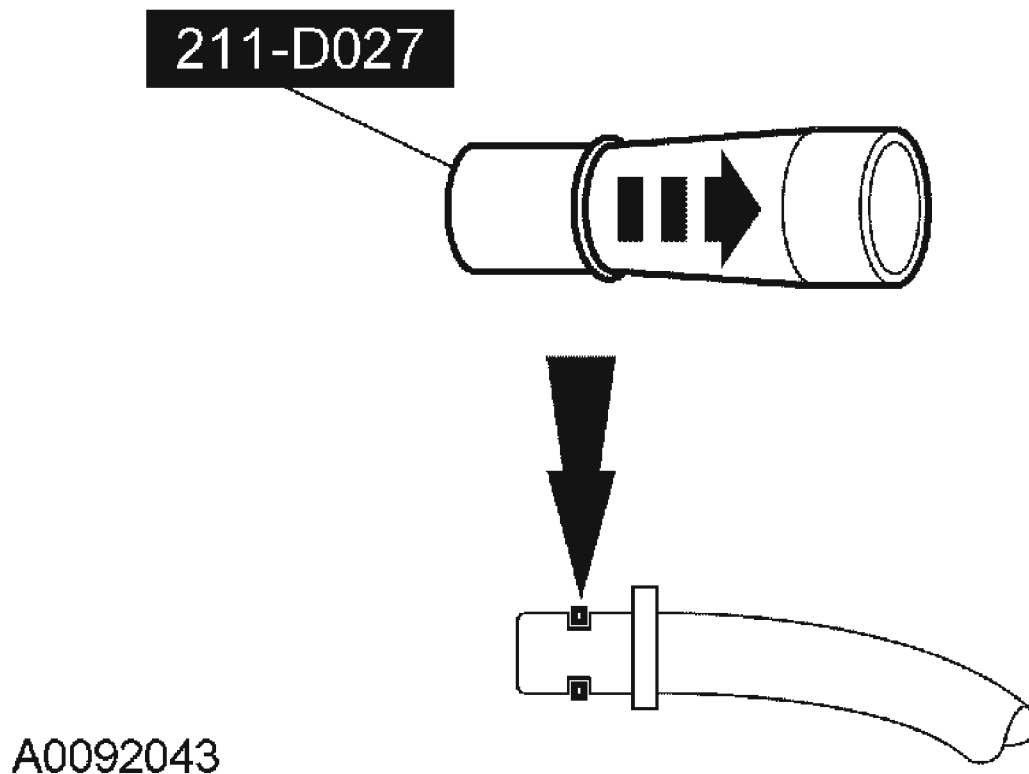


Fig. 23: Installing O-Ring Seals
Courtesy of FORD MOTOR CO.

9. Connect the power steering lines to the power steering gear.
 - Rotate the power steering line clamp counterclockwise and install the bolt.

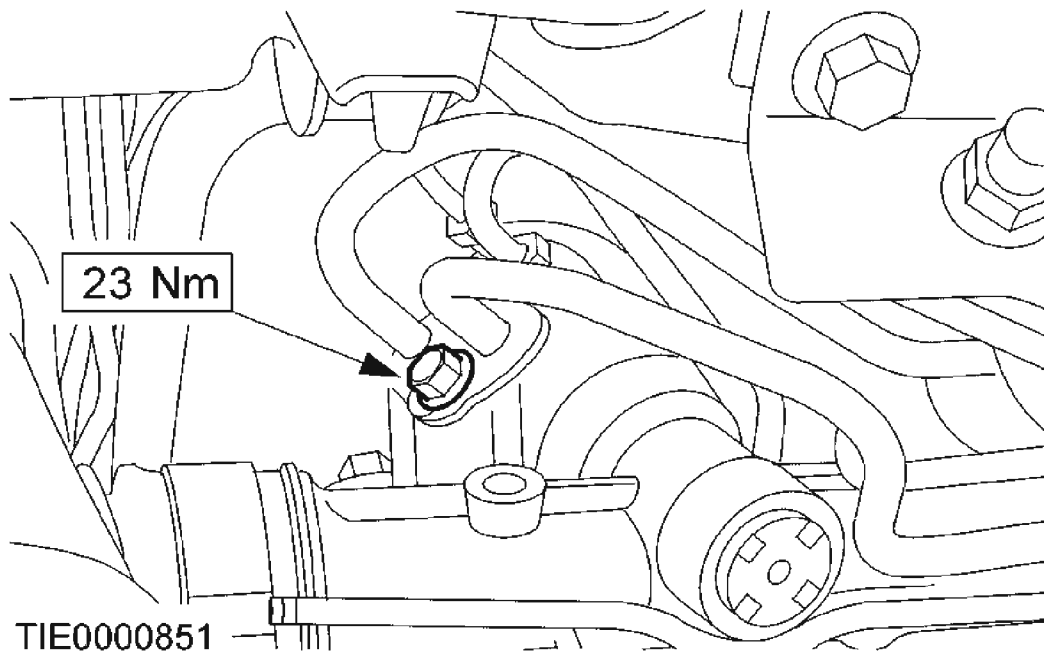


Fig. 24: Connecting Power Steering Lines To Power Steering Gear
Courtesy of FORD MOTOR CO.

10. Attach the power steering line to the clamp.

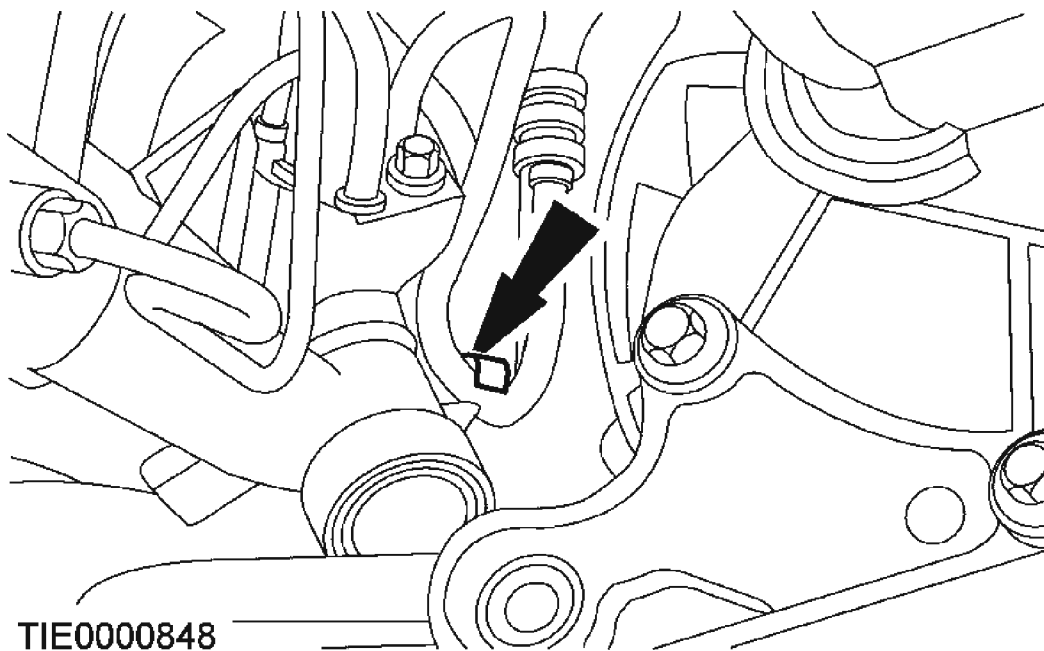


Fig. 25: Attaching Power Steering Line To Clamp
Courtesy of FORD MOTOR CO.

11. Install the two steering gear heat shield bolts.

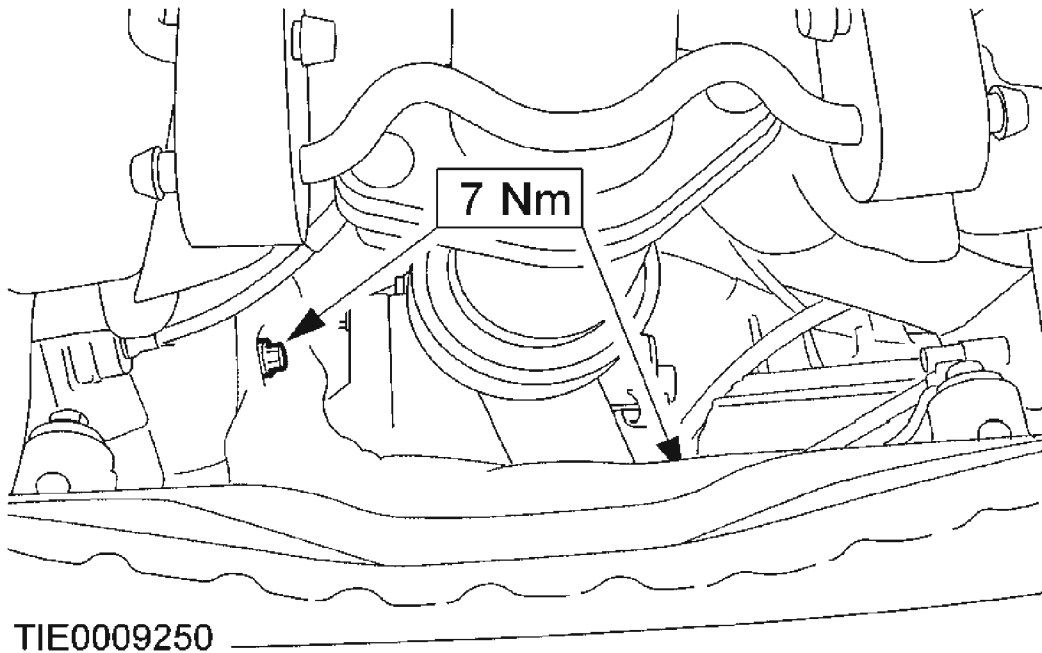


Fig. 26: Installing Steering Gear Heat Shield Bolts
Courtesy of FORD MOTOR CO.

12. Install the engine support insulator to transaxle center bolt.

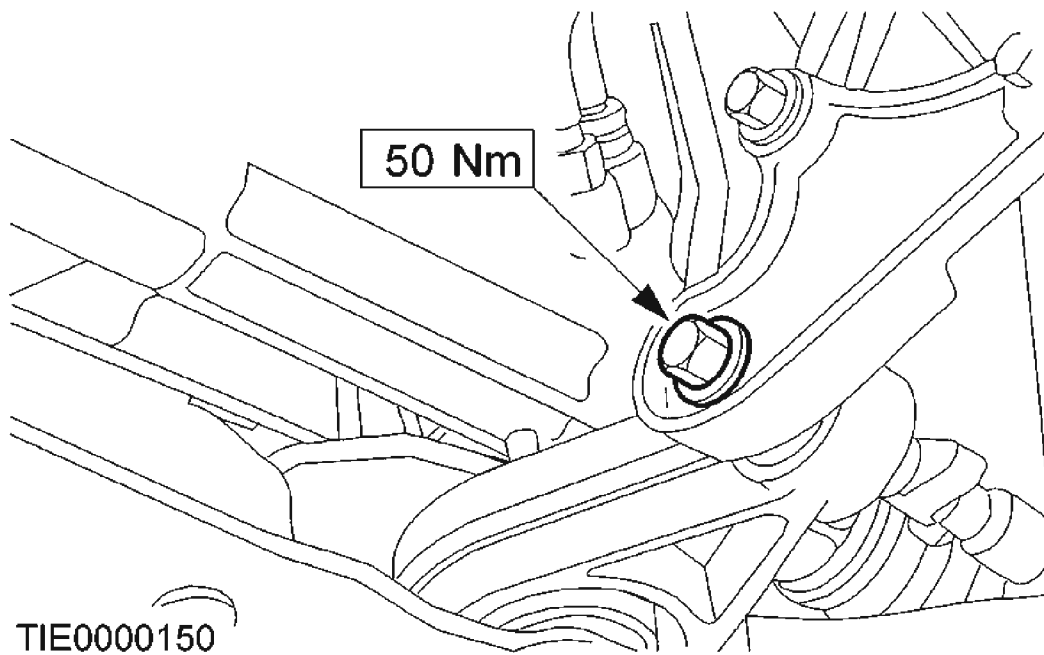


Fig. 27: Installing Engine Support Insulator To Transaxle Center Bolt
Courtesy of FORD MOTOR CO.

13. Install the two stabilizer bar link nuts.

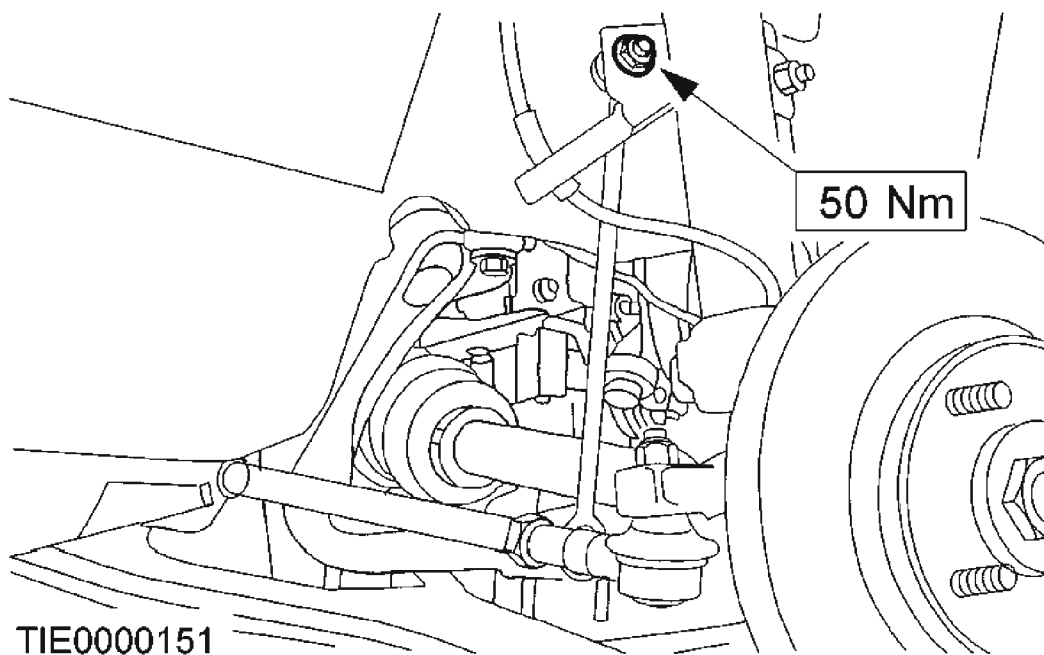


Fig. 28: Installing Stabilizer Bar Link Nuts
Courtesy of FORD MOTOR CO.

14. Install the two tie-rod end nuts.

WARNING: Install new tie-rod end nuts. Failure to follow this instruction may result in personal injury.

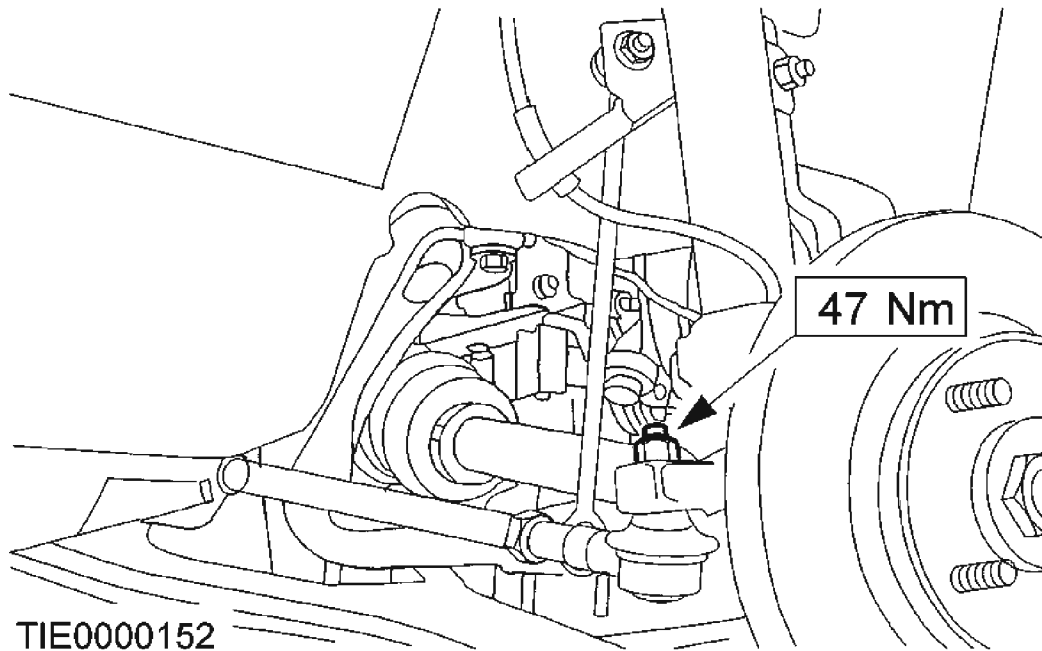


Fig. 29: Installing Tie-Rod End Nuts
Courtesy of FORD MOTOR CO.

15. Install the front wheels and tires. For additional information, refer to **WHEELS AND TIRES**.

WARNING: Use a new bolt. Failure to follow these instructions may result in personal injury.

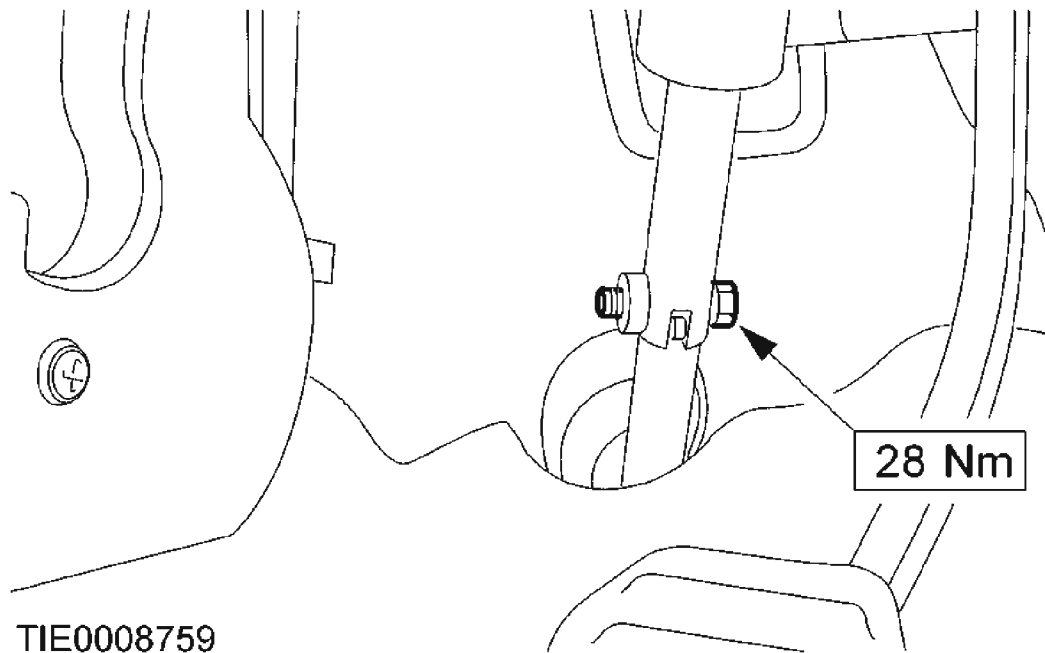


Fig. 30: Connecting Steering Column Shaft To Steering Column Coupling Shaft
Courtesy of FORD MOTOR CO.

16. Connect the steering column shaft to the steering column coupling shaft.
 - Install the bolt.
17. Fill and bleed the power steering system. For additional information, refer to **STEERING SYSTEM-GENERAL INFORMATION** .