Rev. 1/5/04

'97-'03 FORD F150 2WD
6" SUSPENSION SYSTEM
P/N. 10-42297

INSTALLATION INSTRUCTIONS

NOTE: Each Lift Kit, and options to Lift Kits are packaged separately. Therefore installation procedures are covered in separate instructions. Familiarize yourself with each set of instructions before beginning.

Parts List

Item	Description	Qty	Illus.
Box 1 of 6			
20-52297-1	Front Crossmember	1	8
20-52297-2	Rear Crossmember	1	8,9,12
20-69371	Hardware Pack Containing: (Sway Bar Extension)		
20-832803	Sway Bar Extension (6 ½")	2	13
13-22743-Z	Button Head, ½" - 13 x 3" Lg.	4	13
15-11616	Bushing, Inner	4	13
15-11629	Bushing, Outer	4	13
13-30681-Z	Retainer Washer, 1-1/4"	4	13
20-68305	Hardware Pack Containing: (RCD Universal)		
13-20447-Z	Unslot Hex, #10 x ½"	4	
15-10966	Clamp, 3/8" x 3/8" x .203"	4	
15-11395	Wire Tie, 6"	4	
15-11447	Wire Tie, 8"	2	
15-11460	Wire Tie, 11"	2	
20-68110	Hardware Pack Containing: (Front Bumpstop Extension)		
20-52297-9	Bracket, Bumpstop Extension	2	11
13-20081-Z	Hex Bolt, 3/8" - 16 x 1 ¼" Lg.	2	11
13-30012-Z	Flat Washer, 3/8" SAE	4	11
13-10022-Z	Nyloc Nut, 3/8" -16	2	11
13-22717-Z	Self Tapping, 5/16" - 18 x ¾" Lg.	2	11
20-68123	Hardware Pack Containing: (Rear Crossmember Brace)		
20-52297-11	Brace, Crossmember (Drvr.)	1	9
20-52297-12	Brace, Crossmember (Pass.)	1	9
13-22600-Z	Hex Bolt, ½" - 13 x 2 ½" Lg. Gr. 8	4	9
13-30382-Z	Flat Washer, ½" Hrdn.	8	9
13-10514-Z	Top Lock Nut, ½" - 13	4	9
20-68136	Hardware Pack Containing: (Front & Rear Crossmember)		
13-22808-Z	Hex Bolt, 5/8" - 11 x 6" Lg. Gr. 8	2	8
13-21950-Z	Hex Bolt, 5/8" - 11 x 5 ½" Lg. Gr. 8	2	8
13-22418-Z	Hex Bolt, 5/8" - 11 x 2" Lg. Gr. 8	1	8
13-30369-Z	Flat Washer, 5/8" Hrdn.	10	8
13-10345-Z	Top Lock Nut, 5/8" Hrdn.	5	8
20-832621	Spacer, Front Crossmember	1	8
20-68149	Hardware Pack Containing: (Cotter Pins)		
13-90724	Cotter Pin, 7/64" x 1 ½"	8	

Box 2 of 6

20-52297-3	Front Spindle (Drvr)	1	13
20-52297-4	Front Spindle (Pass)	1	13

Box 3 of 6

20-52297-19	Compression Strut, Stainless	2	12
20-51099-22	Bracket, Strut Mount Frame	2	12
20-51292-11	Bracket, Strut Mount Crossmember	2	12
20-68162	Hardware Pack Containing: (Compression Strut)		
13-20069-Z	Hex Bolt, ½" - 13 x 4" Lg.	4	12
13-20164-Z	Hex Bolt, ½" - 13 x 1 ½" Lg.	2	12
13-30034-Z	Flat Washer, ½" SAE	12	12
13-10038-Z	Nyloc Nut, ½" - 13	6	12
20-68175	Hardware Pack Containing: (Compression Strut)		
15-11148	Bushing, Red	8	12
20-830918	Sleeve, ¾" x 2 ¾" Lg.	4	12

Box 4 of 6

20-20140-1	Coil Springs, '97 - 03 F150	2	

Box 5 of 6

20-830645	Block, Rear 2"	2	15
13-90438	U-Bolts, 9/16" - 18 x 10 5/8"	4	15
20-68188	Hardware Pack Containing: (Rear U-Bolt)		
13-30330	Flat Washer, 9/16" Hrdn.	8	15
13-10423	High Nut, 9/16" - 18	8	15
20-68045	Hardware Pack Containing: (Rear Bumpstop)		
20-52297-16	Extension, Bumpstop, Rear	2	14
20-52297-17	Relocator, Brake line, Rear	1	14
13-20053-Z	Hex Bolt, 3/8" - 16 x 1" Lg.	3	14
13-30012-Z	Flat Washer, 3/8" SAE	6	14
13-10022-Z	Nyloc Nut, 3/8" - 16	3	14

Box 6 of 6

BE5-6141	Shock Absorber (Front)	2
BE5-6093	Shock Absorber (Rear)	2

BEFORE YOU BEGIN

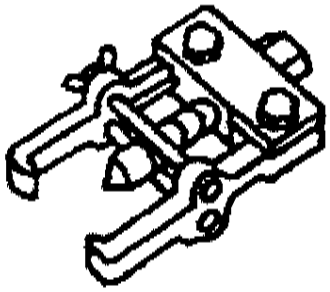
- Installation requires a professional mechanic.
- Prior to installation, carefully inspect the vehicle's steering and drive train systems, paying close attention to the Tie Rod ends, Pitman and Idler Arms, Ball Joints and wheel bearing preload. Also check steering-to-frame and suspension-to-frame attaching points for stress cracks. The overall vehicle must be in excellent working condition; repair or replace worn parts.
- Always use new cotter pins (these items are not supplied) when replacing them.
- Foot-pound torque readings are listed on Torque Specification Chart at the end of the instruction sunless specifically stated in the instruction. Apply Loctite Retaining Compound on specified bolts during installation. DO NOT USE AN IMPACT WRENCH TO TIGHTEN ANY OF THE BOLTS.
- Read instructions carefully and study the illustrations before attempting installation. *Race Care Dynamics* is not responsible for damage, failure or injury resulting from improper installation or parts substitution of this kit.
- Check all parts and hardware against the parts list to assure that your kit is complete. Report any shortages to *Race Car Dynamics* at (1-619-588-4723). The parts and hardware supplied are of high-grade material and must not be replaced by inferior parts or failure may result.
- Separate parts according to the areas they will be used. Placing the hardware with brackets before you begin will save installation time.
- This kit is supplied as a bolt-on assembly. Do not weld anything to the components and do not weld the components to the vehicle.
- All components in this kit come with a protective coating. Do not plate (i.e. chrome, cadmium, zinc, etc.) or otherwise alter the finish in any way. This could weaken the structural strength of the components.
- Secure and properly block vehicle prior to beginning installation.
- Always wear safety glasses when using power tools.

PLEASE NOTE

- WARNING: DO NOT USE WHEEL SPACERS
- Front end realignment is necessary
- Speedometer recalibration is necessary if bigger tires (10% more than stock diameter) are installed.Clears 35" x 12.50" tires on 16" x 8" wheels, requires wheels with a maximum of 4 5/8" of back spacing.

The following special tools will be required for the proper removal and/or installation of this kit

Pitman Arm Puller
#T64P-3509-F



Coil Spring Compressor
#D78P-3510-A

FRONT DISASSEMBLY

1. Raise the vehicle and remove wheels and tires. If working without a shop hoist, put vehicle in gear, set emergency brake, and block rear wheels, in front and behind tires. Loosen Lug nuts. Place floor jack under lower control arm's front crossmember and raise vehicle. Place safety jack stands under frame rails, behind front wheel wells and lower frame onto stands. Remove front wheels and tires.

2. Remove front shock absorbers. Use a wrench to hold the top of the shock absorber stem and back nut off the stem. Remove bottom bolts from Lower Control Arm and pull the shock out from below.

3. Remove nut, stabilizer bolt and spacer assembly from the front lower control arm (**Illustration 1**). Rotate stabilizer bar up and out of the way.

NOTE: Be sure to remove parts from both driver and passenger side of vehicle and keep parts separate. Also check parts for wear or damage.

Illustration 1

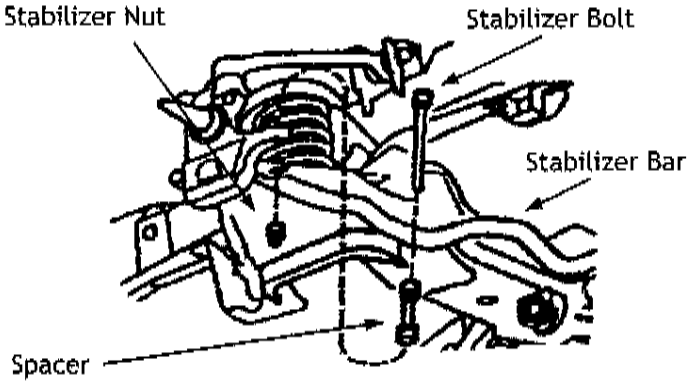


Illustration 2

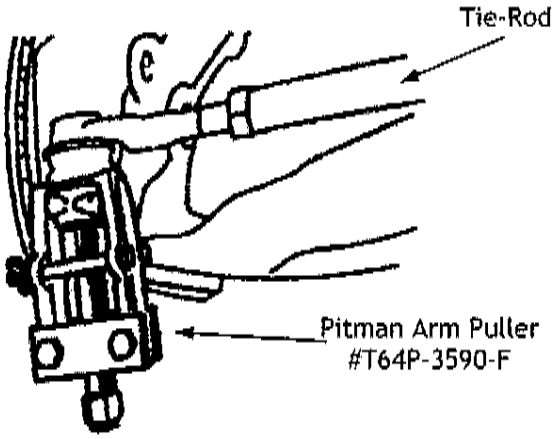
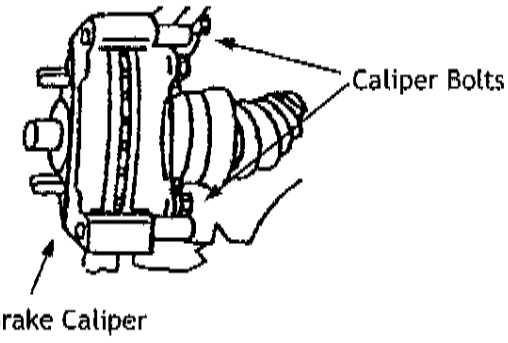


Illustration 3



4. Locate the tie rod ends and remove cotter pin and castellated nut. Attach Pitman Arm Puller (T64P-3590-F). Separate tie rod end from front spindle (**Illustration 2**).

5. Locate the (two) caliper bolts on front brake calipers (**Illustration 3**). Remove bolts and lift disc brake caliper off disc brake rotor. Position brake calipers aside. Use wire or plastic tie to support caliper. Do not let caliper hang by the brake lines.

CAUTION: Do not allow brake caliper to hang by the brake hose.

6. Disconnect the front ABS brake sensor from spindle, if applicable.

7. Remove grease cap, cotter pin, retainer nut, spindle nut, retainer washer, and remove front brake rotor and set components aside (**Illustration 4**). Also locate and remove the three bolts attaching splash shield (**Illustration 5**).

8. Use a suitable floor jack to support the front lower control arm near the spring seat. Raise the jack until it just supports the lower control arm.

CAUTION: The floor jack must remain under the front lower control arm spring seat during disassembly to hold the spring and control arm in position or personal injury may result.

9. Install coil spring compressor tool (D78P-5310-A) or equivalent and compress the coil spring.

10. Locate front upper ball joint. Remove cotter pin and castellated nut from ball joint. Use Pitman Arm Puller (T64P-3590-F) to apply pressure until ball joint breaks loose from upper part of the front spindle (**Illustration 6**).

Illustration 4

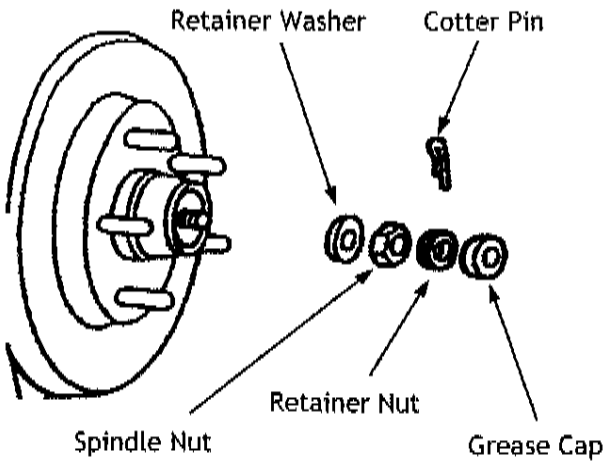


Illustration 5

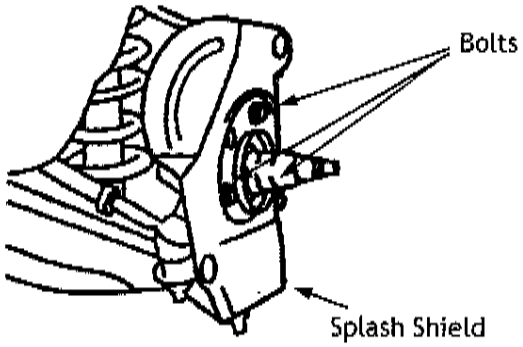
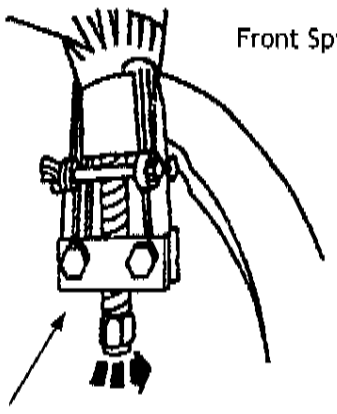


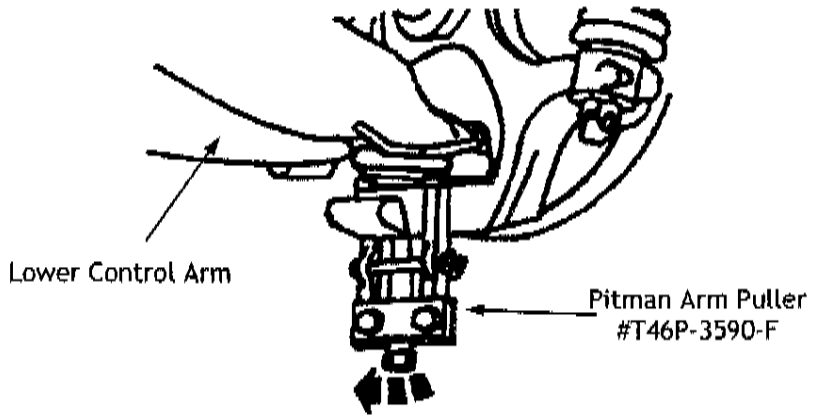
Illustration 6



Pitman Arm Puller #T64P-3590-F

Illustration 7

11. Locate front lower ball joint. Remove cotter pin and castellated nut from ball joint. Use Pitman Arm Puller (T64P-3590-F) to apply pressure until ball joint breaks loose from lower part of the front spindle (**Illustration 7**).



12. Slowly release the floor jack. Once all pressure has been released, remove front coil spring and spring compressor.

13. Remove nuts, washers and bolts securing the lower control arm to frame and set arm aside.

14. **Repeat steps 2 through 13 on opposite side.**

FRONT ASSEMBLY

1. Install front crossmember (20-52297-1) into existing front lower control arm mounting position, using hardware previously removed. Make sure that bolt heads are facing to the front of the vehicle (Illustration 8). Do not tighten at this time.

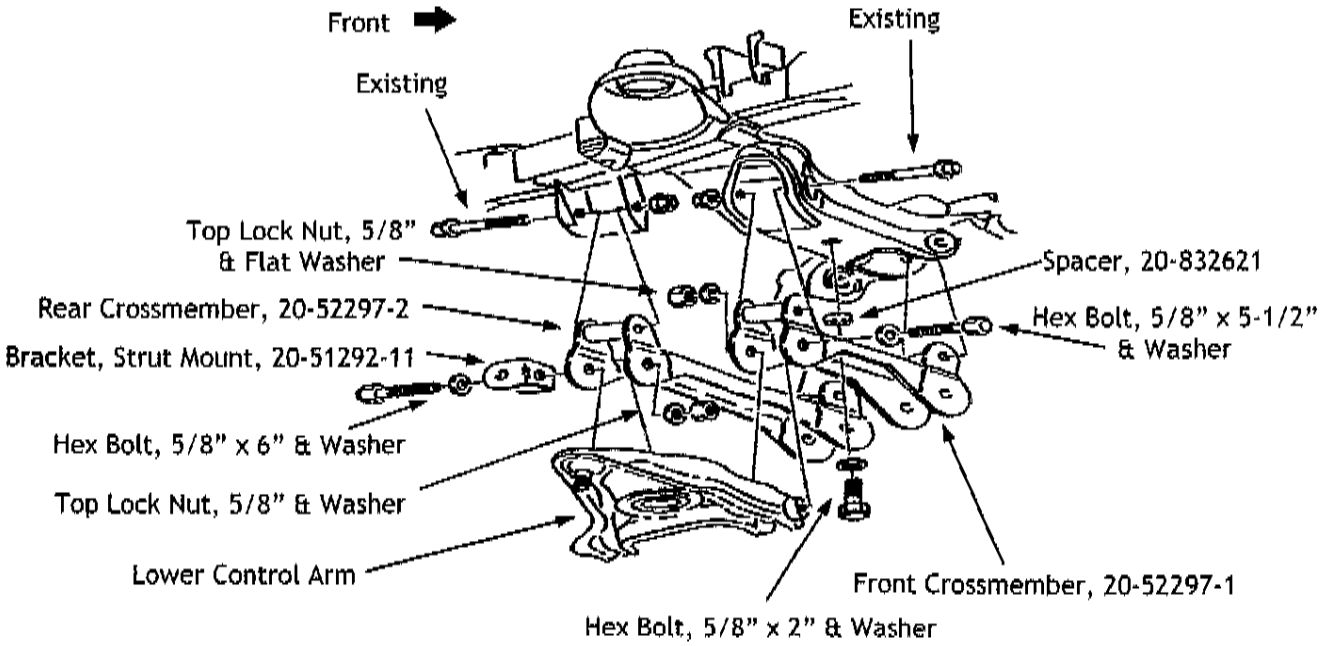


Illustration 8

2. Install Front Crossmember spacer (20-832621) between the gap of the existing upper front crossmember and new installed crossmember using the hardware provided (**Illustration 8**). Do not tighten at this time.

3. Install Rear Crossmember (20-52297-2) into existing rear lower control arm mounting positions using hardware previously removed (**Illustration 8**). Do not tighten at this time.

4. Re-install existing lower control arm into new front and rear crossmember mounting areas. Attach Strut Mount Bracket (20-51292-11) to rear crossmember and lower control arm. Make sure bolt head is installed with head facing to the rear of the vehicle (**Illustration 8**). Attach using hardware provided. Do not tighten at this time.

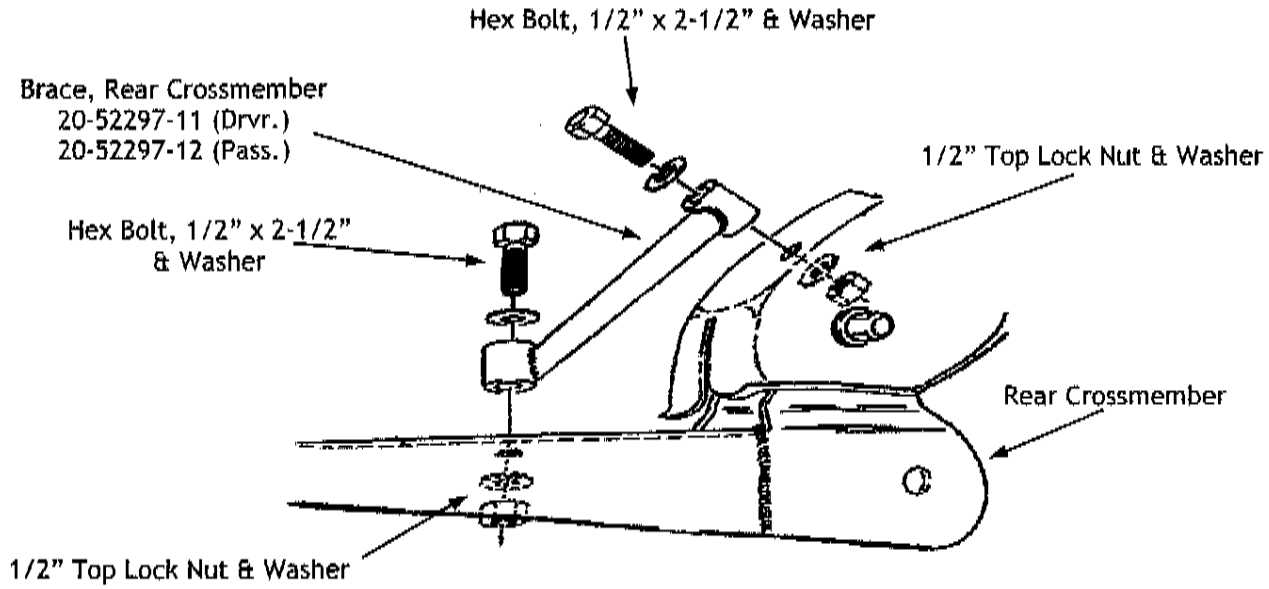


Illustration 9

5. Locate Rear Crossmember Brace (20-52297-11 Drvr.) and (20-52297-12 Pass). Align mounting hole locations on top of rear crossmember and existing upper control arm mounting areas (**Illustration 9**). Attach using hardware provided. Do not tighten at this time.

6. Use suitable floor jack to support the lower control arm spring seat. Reinstall the coil spring insulator previously removed onto the new Coil Spring (20-20140-1).

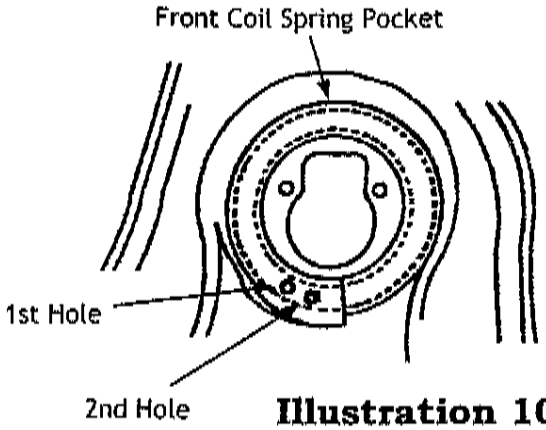


Illustration 10

7. Position the coil spring on the lower control arm spring seat. Make sure the end of the coil spring covers the first hole and is visible in the second hole (**Illustration 10**).

8. Install coil spring compressor (D78P-5310A) or equivalent, and compress coil spring. Place top of coil spring into the upper frame spring pocket. Be sure to keep the lower control arm supported with the floor jack.

9. Install new Front Spindles (20-52297-3 Drvr.) and (20-52297-4 Pass) to lower control arm ball joints. Use castellated nut previously removed and supplied cotter pin.

10. Using floor jack raise lower control arm enough to attach front spindle to upper ball joint. Fasten using castellated nut previously removed. Next attach tie rod ends using castellated nuts previously removed. Torque upper ball joint nuts to 5-77 ft lbs. Torque lower ball joint nuts to 83-113 ft. lbs. Torque tie rod ends nuts to 57-78 ft. lbs. Install new cotter pins provided to upper/lower ball joints and tie rod ends.

11. If applicable, attach ABS sensor previously removed to front spindle using self-tapping hardware.

12. Locate then use the template located on the back page of this instruction sheet to mark and trim existing brake shields (driver and passenger side) to provide clearance for tie rod ends. Install brake shield to new spindle using hardware previously removed.

13. Remove coil spring compressor tool. Install new supplied longer front shock absorbers (BE5-6141).

14. Install brake rotor onto new front spindle and torque spindle nut to 17-24 ft. lbs. Loosen spindle nut completely and re-torque to **17 in. lbs.** Install remaining existing hardware removed and new supplied cotter pin.

15. Attach brake caliper assembly to new front spindle. Torque caliper support bolt to 125-169 ft. lbs.

16. Locate and remove existing front bumpstops.

17. Locate Bumpstop Extension Bracket (20-52297-9). Install existing bumpstop to bumpstop extension using existing hardware (**Illustration 11**). Install bumpstop assembly into its original position using hardware provided.

18. Attach existing brake line hose to bumpstop extension bracket with self-tapping hardware provided. (**Illustration 11**).

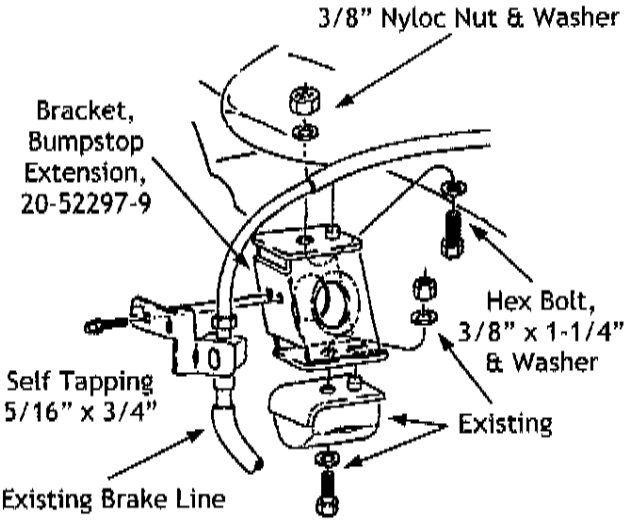


Illustration 11

NOTE: On some models the brake line hose-indexing pin may need to be filed down to fit into the indexing hole of the bumpstop extension.

19. Install Bushings (15-11148) and Sleeves (20-830918) into both ends of Later Compression Struts (20-52297-19). Attach lateral compression strut to Strut Mount Bracket located on Rear Crossmember using hardware provided (**Illustration 12**). Do not tighten at this time.

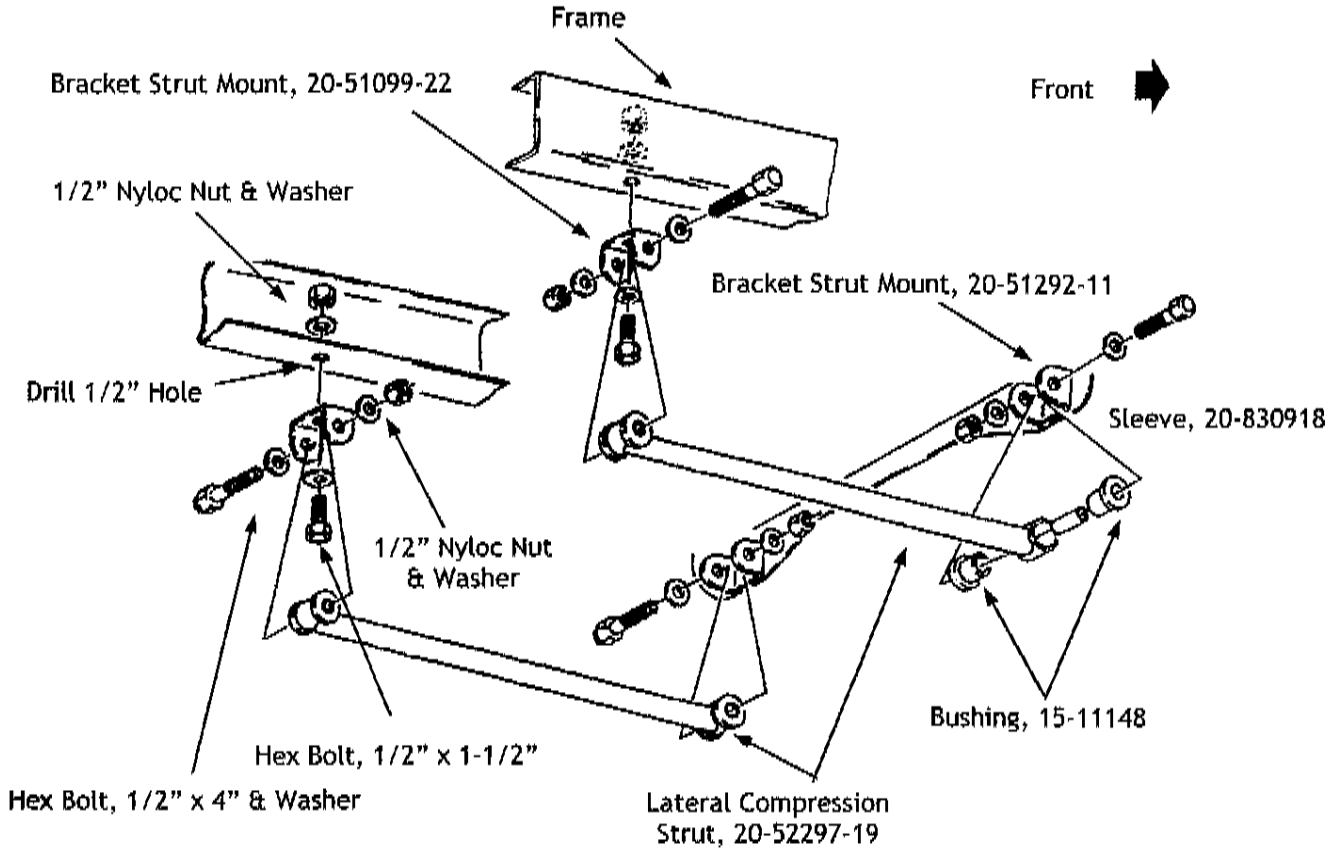


Illustration 12

20. Attach Strut Mount Bracket (20-51099-22) to opposite end of compression strut. Rotate the compression strut assembly upward until bracket contacts the bottom of the frame rail. Using the bracket as a guide, mark and center punch the mounting hole locations. Drill ½" diameter hole at each of the marked locations. Install using the ½" hardware provide. Torque the ½" nuts to 65 ft. lbs.

21. Cycle suspension through full travel cycle and check for adequate clearance between shocks, bumpstops and brake line hoses.

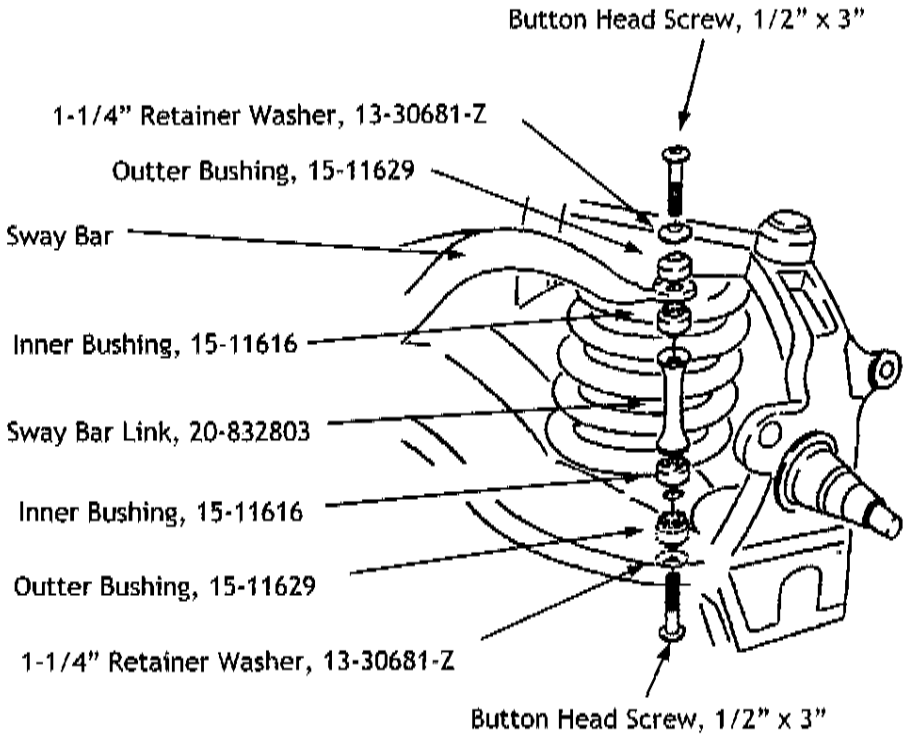
22. Install front wheels and lower the vehicle to the ground. Torque lug nuts to 61-83 ft. lbs.

23. Torque existing control arm nut to 121-148 ft. lbs. starting with front, then the rear.

24. Make sure the lower control arm is at curb position at ride height. Torque 5/8" nuts to 175 ft. lbs. Next, torque the ½" nuts attaching front crossmember spacer and rear crossmember braces to 85 ft. lbs.

25. Install both ends of sway bar to lower arms using Sway Bar Link Extension (20-832803) and hardware provided (**Illustration 13**).

Illustration 13



REAR INSTALLATION

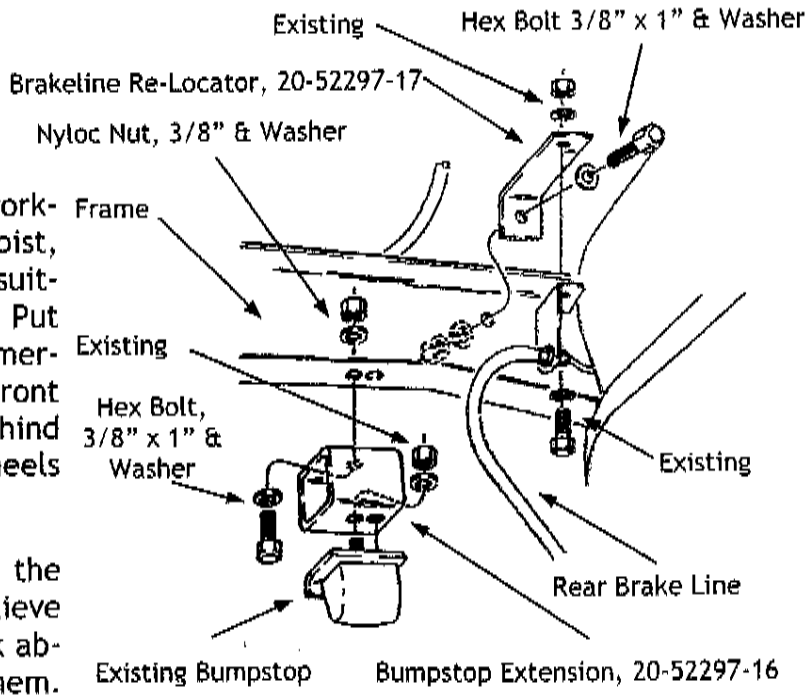


Illustration 14

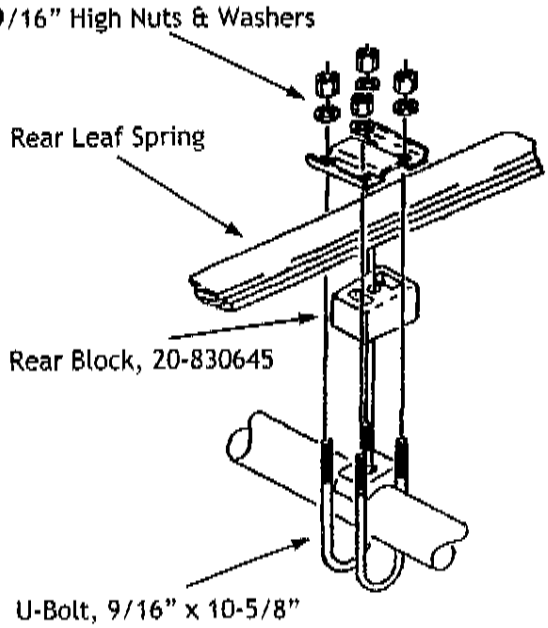
1. Raise the vehicle. If working without a shop hoist, support vehicle with suitable safety jack stands. Put vehicle in gear, set emergency brake and block front wheels, in front and behind tires. Remove rear wheels and tires.

2. With a floor jack, raise the rear axle enough to relieve the tension on the shock absorbers and remove them. Disconnect axle vent hose and electrical coupling from axle housing and differential.

3. Locate the rear brake line bracket on the driver's side rear of vehicle and disconnect bracket from frame (**Illustration 14**).

4. With differential properly supported remove the four rear U-bolts attaching rear axle to leaf springs. Carefully lower rear axle approximately six inches.

Illustration 15



CAUTION: Do not allow axle to hang by any hoses or cables.

5. Insert new riser Block (20-830645) on axle pad (**Illustration 15**). Make sure pin in the bottom of Block indexes into the hole of the axle housing spring pad. The short end of the Block faces toward the front of the vehicle. Carefully raise rear axle until Block makes contact with lead spring. Make sure center bolt is aligned with hole in Block.

6. Attach the axle springs using new U-Bolts (13-90438), Flat Washers (13-

30330), High Nuts (13-10423) and existing spring plates. Torque High Nuts to 100 ft. lbs.

7. **Repeat applicable steps 3 through 6 on passenger side.**

8. Install new longer shock absorbers (BE5-6093) using existing hardware. Torque upper shock bolts to 13 ft. lbs. and lower bolts to 52 ft. lbs.

9. Refer to **Illustration 14** and attach Brake Line Locator Bracket (20-52297-17) to the inside of the frame rail with 3/8" - 16 x 1" Hex Bolt and related hardware provided. Rotate the original bracket up and attach to Locator Bracket using existing hardware.

10. Remove existing bumpstop from the bottom of the frame rail.

11. Assemble existing bumpstop to Rear Bumpstop Extension (20-52297-16) using existing hardware. Make sure the index tab is aligned with hole location on Extension Bracket.

12. Attach bumpstop assembly to the frame at original bumpstop location with 3/8" - 16 x 1" Hex Bolt and related hardware provided. Torque 3/8" nuts to 30 ft. lbs.

13. **Repeat steps 10 through 12 on opposite side.**

14. Install wheels and tires. Lower vehicle and torque lug nuts to specifications listed on last page.

SOME FINAL NOTES

- After installation is complete, double check that all nuts and bolts are tight. Refer to the chart on the last page for torque specifications. (Do not re-tighten nuts and bolts where Loctite compound was applied).

- If new tires are installed that are more than 10% taller than original tires, the speedometer must be recalibrated for the anti-lock brake system (if applicable) to function properly. Contact an authorized Ford dealer for details on re-calibration.

- Bleed Brake System according to O.E. specifications (only if hose's were changed). Use Ford approved brake fluid only.

- With vehicle on floor, cycle steering lock to lock and inspect steering, suspension and driveline systems for proper operation, tightness and adequate clearance. Recheck brake/hose fitting for leaks. Be sure all hoses are long enough.

- Have headlights readjusted to proper setting.
- Realign front end to factory specifications. Be sure vehicle is at desired ride height prior to realignment.

TORQUE SPECIFICATIONS (Grade 8 & Class 10.9)

5/16" NUTS	20 ft. lbs.	M6	9 ft. lbs.
3/8" NUTS	35 ft. lbs.	M8	23 ft. lbs.
7/16" NUTS	60 ft. lbs.	M10	45 ft. lbs.
1/2" NUTS	90 ft. lbs.	M12	75 ft. lbs.
9/16" NUTS	160 ft. lbs.	M14	120 ft. lbs.
5/8" NUTS	175 ft. lbs.	M16	165 ft. lbs.

EXISTING TORQUE SPECIFICATIONS

(*Factory Torque Specifications may very from year to year and model to model. Refer to factory manual for your specific vehicle to verify torque specifications.*)

Front disc brake caliper slide pins	21-26 ft. lbs.
Front disc brake caliper support bolt	125-169 ft. lbs.
Front lower arm ball joint castellated nut	83-112 ft. lbs.
Front lug nuts	83-112 ft lbs.
Front shock absorber lower nut	19-25 ft. lbs.
Front shock absorber upper nut	34-46 ft. lbs.
Front suspension lower arm nuts	121-147 ft. lbs.
Front upper arm ball joint castellated nut	56-76 ft. lbs.
Front stabilizer bar link nuts	16-21 ft. lbs.
Rear shock bolt	45-59 ft. lbs.
Tie rod end castellated nut	57-78 ft. lbs.
Spindle Nut (front wheel hub)	17 In. Lbs.
Wheel, stock lug nuts	61-83 ft. lbs.