

SECTION 04-01B Suspension, Front, 4-Wheel Drive

SUBJECT	PAGE	SUBJECT	PAGE
VEHICLE APPLICATION	04-01B-1	REMOVAL AND INSTALLATION (Cont'd.)	
DESCRIPTION AND OPERATION		Axle Pivot Bushing.....	04-01B-17
Axle	04-01B-9	Axle, Front	04-01B-16
Component Replacement	04-01B-8	Ball Joint.....	04-01B-15
Components	04-01B-8	Bumper, Front	04-01B-23
Fasteners, Suspension	04-01B-9	Insulators, Radius Arm.....	04-01B-16
Hubs, Automatic Locking.....	04-01B-9	Radius Arm, F-150 and Bronco.....	04-01B-15
Hubs, Manual Locking.....	04-01B-9	Shock Absorber, F-150 and Bronco Equipped with Quad Front Shock Absorbers	04-01B-12
Shock Absorber, Front	04-01B-9	Shock Absorber, F-250 and F-350.....	04-01B-12
Suspension, F-150 and Bronco with Dana Model 44 Front Drive Axle	04-01B-1	Spring, Coil, F-150 and Bronco	04-01B-9
Suspension, F-250 with Dana Model 50 Front Drive Axle	04-01B-4	Spring, Leaf, F-250 and F-350.....	04-01B-11
Suspension, F-350 with Dana Model 60 Monobeam Front Drive Axle	04-01B-6	Stabilizer Bar.....	04-01B-18
Wheel Bearing and Wheel Hub.....	04-01B-9	Stabilizer Bar Link Assembly, F-150 and Bronco	04-01B-18
DIAGNOSIS AND TESTING		Stabilizer Bar Link Assembly, F-250.....	04-01B-20
Suspension, Front.....	04-01B-9	Stabilizer Bar Link Assembly, F-350.....	04-01B-22
REMOVAL AND INSTALLATION		Wheel Hub Bolt	04-01B-14
Axle Bearing Bracket, F-250	04-01B-17	Wheel Spindle	04-01B-12
Axle Pivot Bracket, F-150 and Bronco	04-01B-16	SPECIFICATIONS.....	04-01B-23
		SPECIAL SERVICE TOOLS/EQUIPMENT	04-01B-24

VEHICLE APPLICATION

F-150, F-250, F-350 4x4 and Bronco

DESCRIPTION AND OPERATION

Suspension, F-150 and Bronco with Dana Model 44 Front Drive Axle

The F-150 4x4 and Bronco Independent Front Suspension (IFS) system is composed of a Dana 44 two-piece front driving axle assembly, two helical front coil springs (5310) and two radius arms.

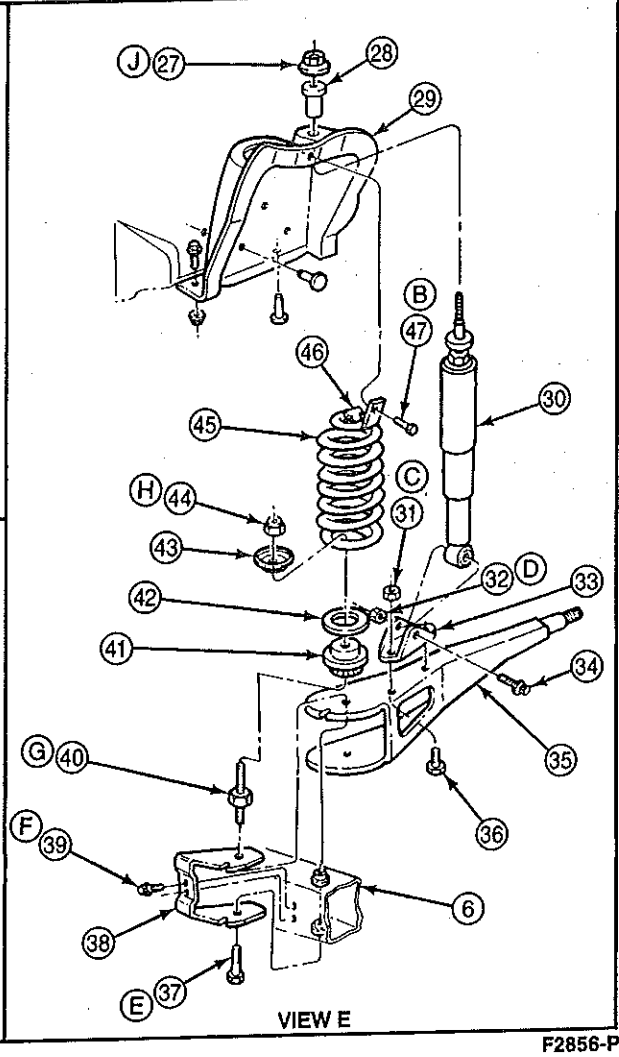
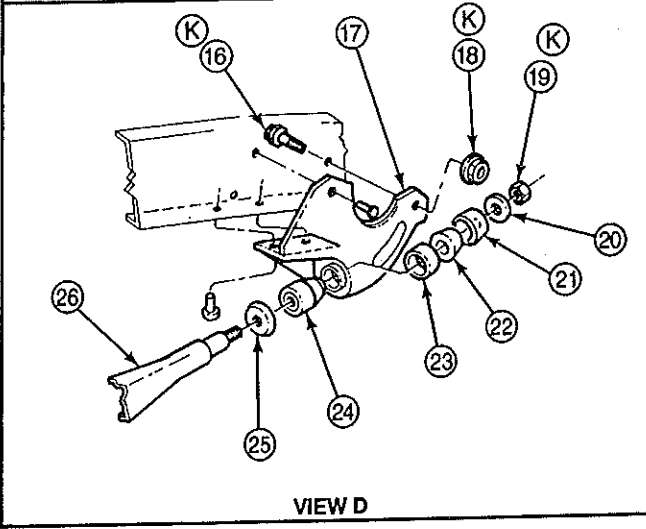
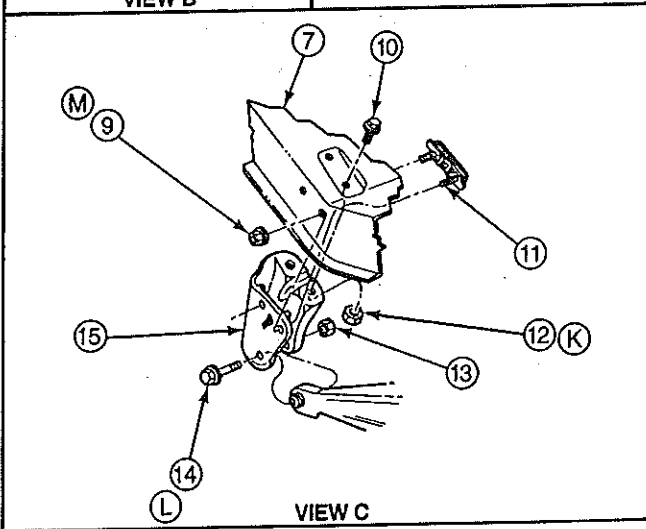
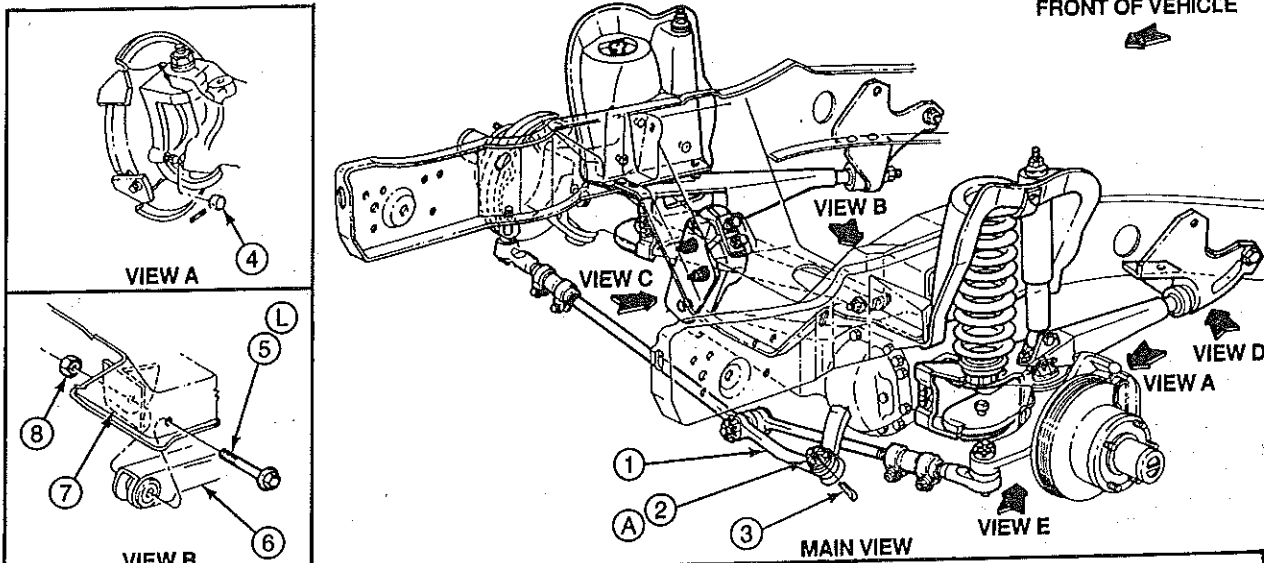
- The front driving axle consists of two independent axle arm assemblies.
- One end of each axle arm assembly is anchored to the frame (5005).

- The other end of each axle arm assembly is supported by the front coil spring and radius arm.

DESCRIPTION AND OPERATION (Continued)

Front Suspension, F-150 and Bronco with Dana Model 44 IFS Front Drive Axle

FRONT OF VEHICLE



F2856-P

DESCRIPTION AND OPERATION (Continued)

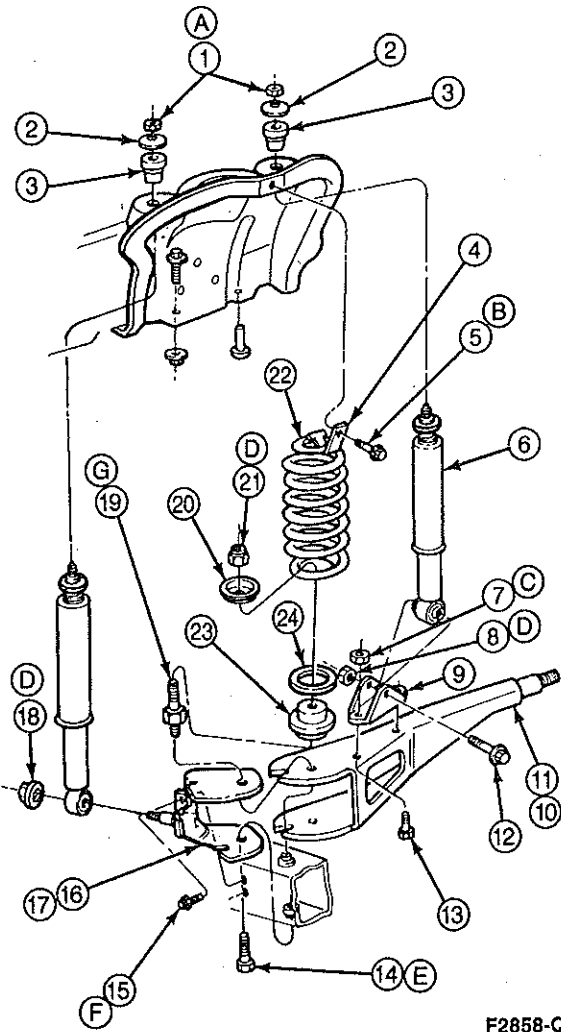
Item	Part Number	Description
1	3B008	Steering Rod Link
2	800895	Nut
3	642569	Cotter Pin
4	380288	Steering Cap
5	801079	Bolt
6	3002	Axle
7	5019	Front Crossmember
8	620604	Nut
9	802073	Nut
10	802114	Bolt
11	802246	Bolt
12	802073	Nut
13	620604	Nut
14	801079	Bolt
15	3K090	Front Axle Bearing Bracket
16	802210	Bolt
17	3B183	Radius Arm Bracket
18	800937	Nut
19	34922	Nut
20	379572	Washer
21	2B463	Shield (RH Only)
22	3A184	Outer Insulator
23	3B244	Spacer
24	3B203	Front Insulator
25	3B186	Front Retainer
26	3405	Radius Arm
27	N805348	Nut and Washer
28	18198	Insulator
29	5B315	Spring and Shock Bracket
30	18124	Front Shock Absorber
31	620468	Nut
32	620469	Nut
33	18126	Shock Bracket
34	805033	Bolt

(Continued)

Item	Part Number	Description
35	3405	Radius Arm
36	605921	Bolt
37	58740	Bolt
38	3B446	Front Axle Radius Arm Bracket
39	40954	Bolt (2 Req'd)
40	390678	Stud
41	5B316	Lower Spring Seat
42	5414	Front Spring Insulator
43	5A349	Retainer
44	388833	Nut
45	5310	Front Coil Spring
46	5A333	Upper Retainer
47	40949	Bolt
A	—	Tighten to 71-100 N·m (52-74 Lb·Ft)
B	—	Tighten to 18-24 N·m (13-18 Lb·Ft)
C	—	Tighten to 34-46 N·m (26-33 Lb·Ft)
D	—	Tighten to 60-81 N·m (49-59 Lb·Ft)
E	—	Tighten to 434-461 N·m (320-340 Lb·Ft)
F	—	Tighten to 26-34 N·m (19-25 Lb·Ft)
G	—	Tighten to 326-352 N·m (240-260 Lb·Ft)
H	—	Tighten to 94-134 N·m (70-100 Lb·Ft)
J	—	Tighten to 34-46 N·m (26-33 Lb·Ft)
K	—	Tighten to 113-153 N·m (84-112 Lb·Ft)
L	—	Tighten to 213-287 N·m (157-211 Lb·Ft)
M	—	Tighten to 104-148 N·m (77-109 Lb·Ft)

DESCRIPTION AND OPERATION (Continued)

Front Suspension, F-150 and Bronco with Handling Package (Quad Shocks)



F2858-Q

Item	Part Number	Description
1	805348	Nut and Washer
2	802084	Washer
3	18198	Insulator
4	5A333	Front Spring Upper Mounting Retainer
5	40949	Bolt
6	18124	Front Shock Absorber
7	620468	Nut
8	620469	Nut
9	18126	Shock Bracket
10	3405	Radius Arm (RH)
11	3A292	Radius Arm (LH)

(Continued)

Item	Part Number	Description
12	805033	Bolt (Must Be Installed in Direction Shown)
13	605921	Bolt
14	58740	Bolt
15	40954	Bolt
16	18A151	Front Lower Shock Bracket (RH)
17	18A153	Front Lower Shock Bracket (LH)
18	N806085	Nut and Washer
19	390678	Stud
20	5A349	Retainer
21	N800895	Nut
22	5310	Front Coil Spring
23	5A307	Lower Spring Seat
24	5414	Front Spring Insulator
A	—	Tighten to 34-47 N·m (25-35 Lb·Ft)
B	—	Tighten to 18-24 N·m (13-18 Lb·Ft)
C	—	Tighten to 34-46 N·m (26-33 Lb·Ft)
D	—	Tighten to 60-80 N·m (44-59 Lb·Ft)
E	—	Tighten to 434-461 N·m (320-339 Lb·Ft)
F	—	Tighten to 26-34 N·m (19-25 Lb·Ft)
G	—	Tighten to 326-352 N·m (240-260 Lb·Ft)

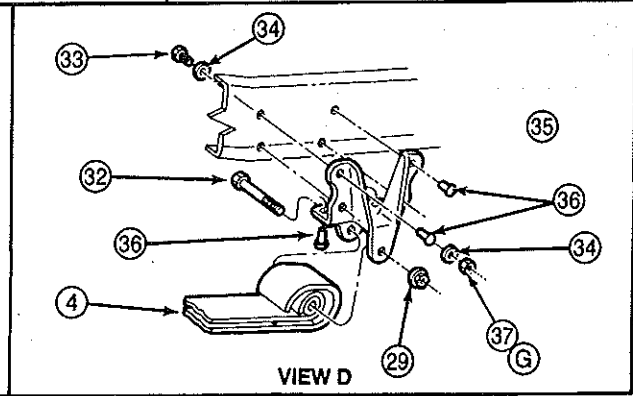
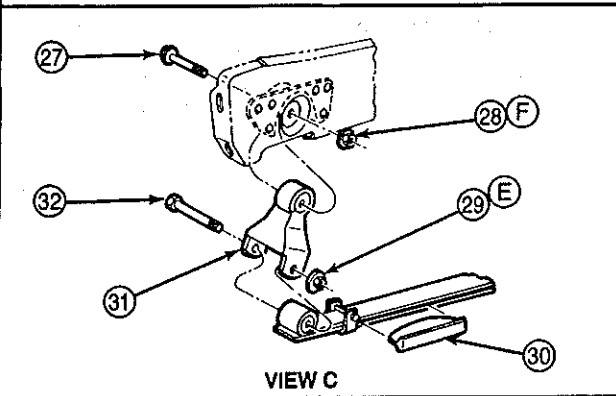
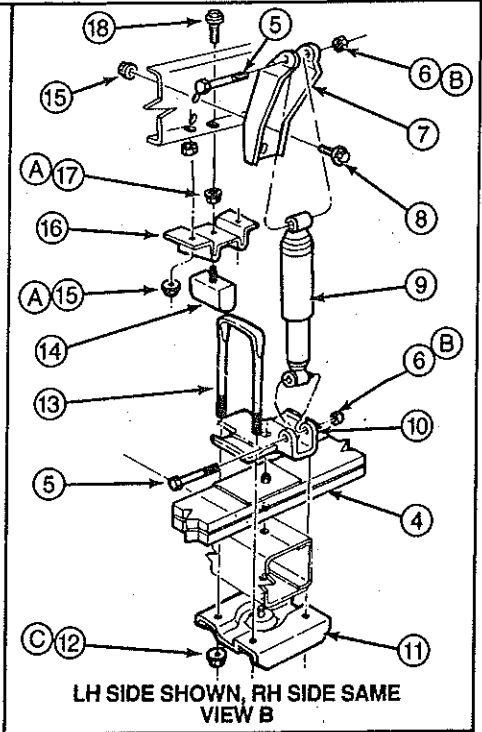
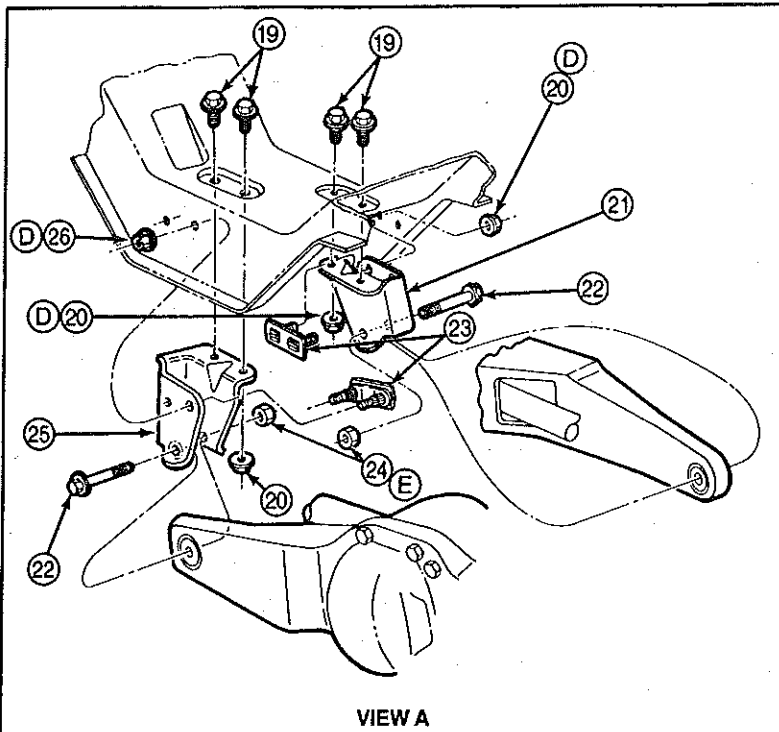
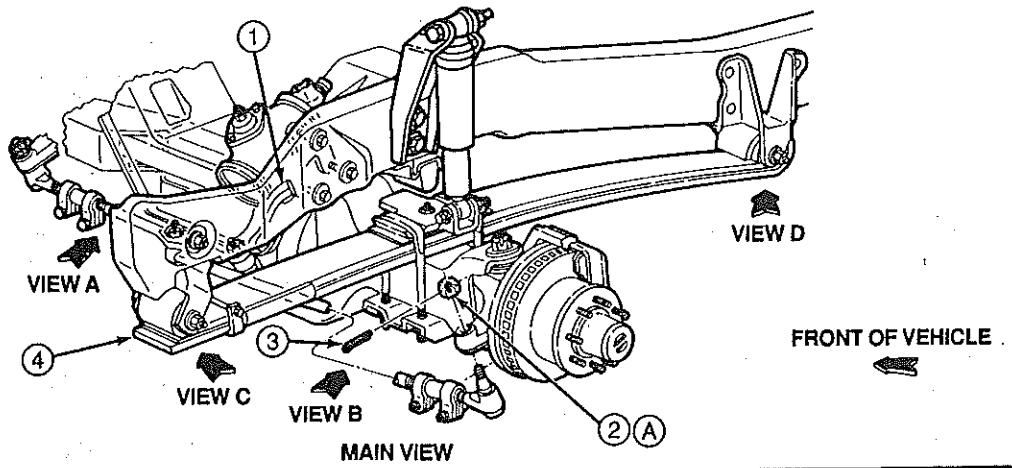
Suspension, F-250 with Dana Model 50 Front Drive Axle

The F-250 4x4 Independent Front Suspension (IFS) system has a Dana Model 50 two-piece driving axle attached to the frame (5005) with two semi-elliptic, leaf-type springs.

- Each spring is clamped to the axle arm assembly with two U-bolts.
- The rear eye of the spring is attached to the front spring mounting bracket (5340).
- The front of the spring is attached to a shackle bracket.
- The front shock absorbers (18124) are the direct, double-acting type. They are attached to a frame bracket at the top and to the U-bolt spacer plate at the bottom.

DESCRIPTION AND OPERATION (Continued)

Front Suspension, F-250 with Dana Model 50 IFS Front Drive Axle



F2857-M

DESCRIPTION AND OPERATION (Continued)

Item	Part Number	Description
1	3590	Steering Gear Sector Shaft Arm
2	800895	Nut
3	642569	Cotter Pin
4	5310	Front Leaf Spring
5	800021	Bolt
6	620469	Nut
7	18183	Front Shock Absorber Mounting Bracket
8	605815	Bolt
9	18124	Front Shock Absorber
10	5458	Front Spring Plate Spacer
11	5A500	U-Bolt Spacer
12	801342	Nut
13	801485	U-Bolt
14	4002	Front Jounce Bumper
15	620483	Nut
16	3B251	Front Jounce Bumper Bracket
17	620482	Nut
18	605933	Bolt
19	802114	Bolt
20	802073	Nut
21	3078	Front Suspension Lower Arm
22	802039	Bolt
23	802299	Bolt and Retainer
24	620604	Nut

(Continued)

Item	Part Number	Description
25	3K090	Front Axle Bearing Bracket
26	802073	Nut
27	601521	Bolt
28	620485	Nut
29	620484	Nut
30	5L302	Spring Insulator Sleeve
31	5K316	Front Spring Front Shackle
32	800991	Bolt
33	58634	Bolt
34	44877	Washer
35	5340	Front Spring Mounting Bracket
36	647097	Rivet
37	34987	Nut
A	—	Tighten to 77-103 N·m (57-80 Lb·Ft)
B	—	Tighten to 60-80 N·m (44-59 Lb·Ft)
C	—	Tighten to 113-153 N·m (83-113 Lb·Ft)
D	—	Tighten to 88-118 N·m (65-87 Lb·Ft)
E	—	Tighten to 149-201 N·m (110-148 Lb·Ft)
F	—	Tighten to 170-230 N·m (125-170 Lb·Ft)
G	—	Tighten to 47-78 N·m (35-57 Lb·Ft)

Suspension, F-350 with Dana Model 60 Monobeam Front Drive Axle

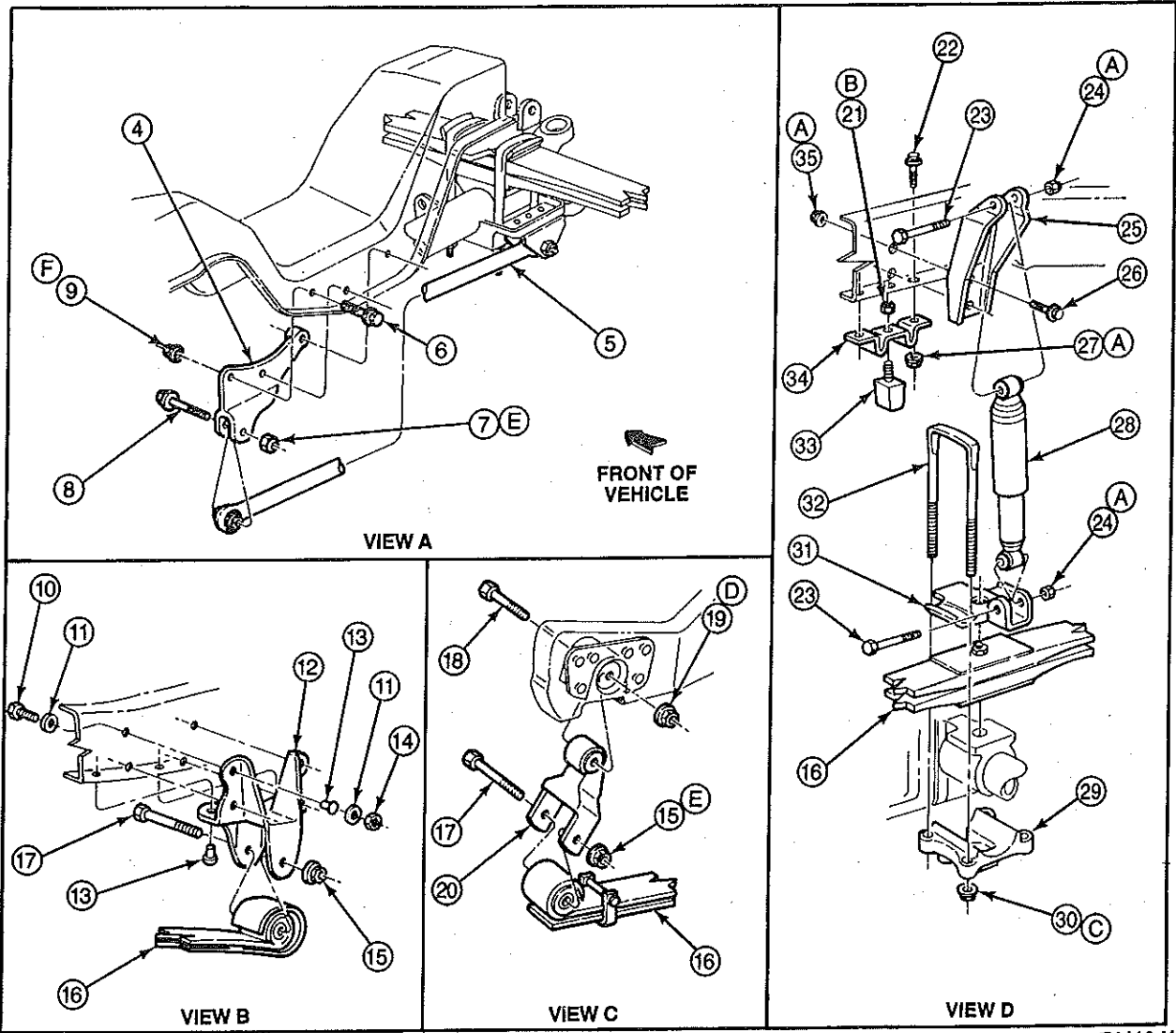
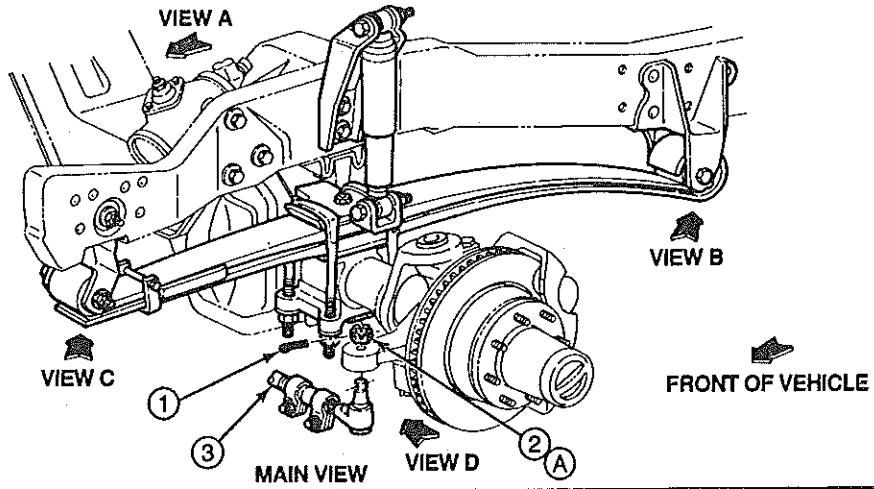
The F-350 4x4 has a Dana Model 60 Monobeam one-piece driving axle attached to the frame (5005) with two semi-elliptical, leaf-type springs.

- Each spring is clamped to the axle assembly with two U-bolts.
- The rear eye of the spring is attached to the front spring mounting bracket (5340).

- The front of the spring is attached to a shackle bracket.
- On the right spring cap, a tracking bar is attached with the opposite end mounted on the front crossmember (5019).
- The front shock absorbers (18124) are the direct double-acting type. They are attached to a front shock absorber mounting bracket (18183) at the top and to the U-bolt spacer plate at the bottom.

DESCRIPTION AND OPERATION (Continued)

Front Suspension, F-350 with Dana Model 60 Monobeam Front Drive Axle



F4418-H

DESCRIPTION AND OPERATION (Continued)

Item	Part Number	Description
1	642569	Cotter Pin
2	800895	Nut
3	3A131	Tie Rod End
4	3A094	Tracking Bar Mounting Bracket
5	3239	Tracking Bar Assembly
6	601415	Bolt
7	620604	Nut
8	803960	Bolt
9	802073	Nut
10	58634	Bolt
11	44877	Washer
12	5340	Front Spring Mounting Bracket
13	647097	Rivet
14	34987	Nut
15	620484	Nut
16	5310	Front Leaf Spring
17	800991	Bolt
18	601521	Bolt
19	620485	Nut
20	5K316	Shackle Assembly
21	620482	Nut
22	605933	Bolt

(Continued)

Item	Part Number	Description
23	800021	Bolt
24	620469	Nut
25	18183	Front Shock Absorber Mounting Bracket
26	605815	Bolt
27	620468	Nut
28	18124	Front Shock Absorber
29	5A316	Spring Cap
30	801342	Nut
31	5458	Spacer Plate
32	801485	U-Bolt
33	4002	Front Jounce Bumper
34	3B251	Mounting Bracket
35	620483	Nut
A	—	Tighten to 68-92 N·m (51-67 Lb·Ft)
B	—	Tighten to 30-40 N·m (23-29 Lb·Ft)
C	—	Tighten to 115-163 N·m (85-120 Lb·Ft)
D	—	Tighten to 170-230 N·m (126-169 Lb·Ft)
E	—	Tighten to 163-203 N·m (121-149 Lb·Ft)
F	—	Tighten to 88-118 N·m (65-87 Lb·Ft)

Components

- Front wheel spindles (3105) or front wheel hub and spindles (3K207) transmit steering input, pivoting on the front suspension lower and upper ball joints, and support front disc brake calipers (2B121).
- Front axles control lateral (side-to-side) movement of each front wheel (1007). Inner pivot attachment to the front crossmember (5019) is pivot point for suspension.
- Front suspension ball joints connect front wheel spindle to outer ends of the front suspension.
- Front shock absorbers (18124) provide necessary suspension dampening control.
- Front coil springs (5310) allow proper setting of suspension ride heights and control suspension travel during driving/handling maneuvers.
- Front stabilizer bar (5482) transmits forces to control vehicle roll during cornering.

Component Replacement

- Gas-pressurized front shock absorbers (18124) must be replaced as an assembly. The front shock absorbers may be serviced individually. Replace only the damaged parts.
- Front coil springs (5310) may be replaced individually.
- Front spring insulators (5414) may be replaced individually.
- Front wheel spindles (3105) may be replaced individually.
- Wheel hub and bearing assemblies may be replaced individually.
- Radius arms may be replaced individually.
- Front axles may be replaced individually.
- Ball joints may be replaced individually.
- Front stabilizer bar links (5K483) may be replaced individually.
- Front stabilizer bar (5482) may be replaced.
- Stabilizer bar bracket insulators may be replaced individually.
- Stabilizer bar brackets (5486) may be replaced individually.

DESCRIPTION AND OPERATION (Continued)**Fasteners, Suspension**

Suspension fasteners are important attaching parts because they could affect performance of vital components and systems, and/or could result in major service expense. They must be replaced with fasteners of the same part number or with an equivalent part if replacement becomes necessary. **DO NOT** use a replacement part of lesser quality or substitute design. Torque values must be as specified during assembly to ensure proper retention of parts. New fasteners must be used whenever old fasteners are loosened or removed and when new components are installed.

Axle

One end of each axle is attached to the front wheel spindle (3105) and a radius arm, and the other end is attached to a frame pivot bracket on the opposite side of the vehicle.

Each front wheel spindle is held in place on the axle by ball joints on I-beam axles which pivot on bronze bushings pressed in the upper and lower ends of the front wheel spindle on forged I-beam axles. A thrust bearing is installed between the lower end of the axle and the front wheel spindle to support the load on the axle. The steering arm is an integral part of the front wheel spindle.

Shock Absorber, Front

The hydraulic front shock absorbers (18124) are of the direct, double-acting type. They provide a continuous dampening effect both on compression and rebound. These front shock absorbers are of telescopic design with rubber grommets at the mounting points for quiet operation. The front shock absorbers are sealed and non-adjustable, and must be replaced as complete assemblies.

Wheel Bearing and Wheel Hub

The front wheels attach to the wheel hub (1104). The wheel hub is part of the front disc brake rotor. The front disc brake hub and rotor (1102) is supported by an inner and outer wheel bearing. The front disc brake hub and rotor is retained to the spindle with a nut and a washer.

Hubs, Automatic Locking

Refer to Section 05-03A in the Powertrain, Drivetrain Manual.

Hubs, Manual Locking

Refer to Section 05-03A in the Powertrain, Drivetrain Manual.

DIAGNOSIS AND TESTING**Suspension, Front**

Refer to Section 04-00 and Section 00-04.

REMOVAL AND INSTALLATION**Spring, Coil, F-150 and Bronco****Removal**

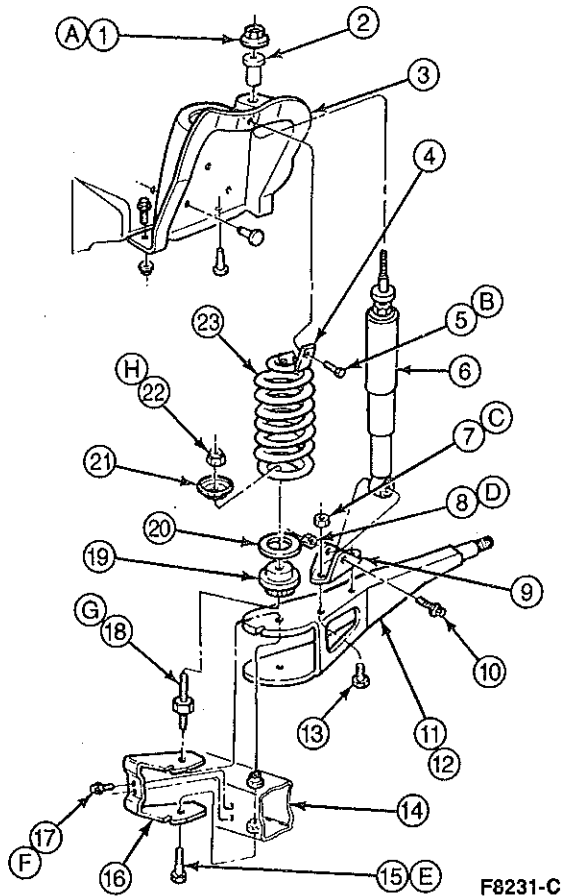
1. **CAUTION:** The axle must be supported on the jack throughout spring removal and installation, and must not hang by the front brake hose (2078). If the length of the front brake hose is not sufficient to provide adequate clearance for removal and installation of the front coil spring (5310), the disc brake caliper (2B120) must be removed from the spindle according to the procedures specified in Section 06-03. After removal, the disc brake caliper must be placed on the frame or otherwise supported to prevent suspending the disc brake caliper from the caliper hose. These precautions are absolutely necessary to prevent serious damage to the tube portion of the front brake hose assembly.

Raise the vehicle on a twin-post (axle contact type) hoist. If a frame hoist is used, raise the vehicle and position tall jack stands under the front axle. Lower the hoist until the axle is in the normal ride height position.

2. Remove the front shock absorber-to-lower bracket attaching bolt and nut.
3. For vehicles equipped with quad shocks, remove the attaching nut and front shock lower mount from the stud on the bracket.
4. Remove front coil spring lower retainer attaching nut from inside of the spring coil.
5. Remove front coil spring upper retainer attaching screw and upper retainer.
6. Position safety stands under the frame side rails and lower the axle enough to relieve tension from the front coil spring. If a frame hoist is used, slowly lower the hoist enough to relieve tension on the front coil springs.
7. Remove the front coil spring lower retainer and the front coil spring.

REMOVAL AND INSTALLATION (Continued)

Front Coil Spring, F-150 and Bronco with Dana Model 44 IFS



Item	Part Number	Description
1	N805348	Nut and Washer Assembly
2	18198	Insulator
3	5B315	Spring and Shock Bracket
4	5A333	Upper Retainer
5	40949	Bolt
6	18124	Front Shock Absorber
7	620468	Nut
8	620469	Nut
9	18126	Shock Bracket
10	805033	Bolt (Must Be Installed in Direction Shown)
11	3405	Radius Arm (RH)
12	3A292	Radius Arm (LH)
13	605921	Bolt
14	3002	Axle
15	58740	Bolt

(Continued)

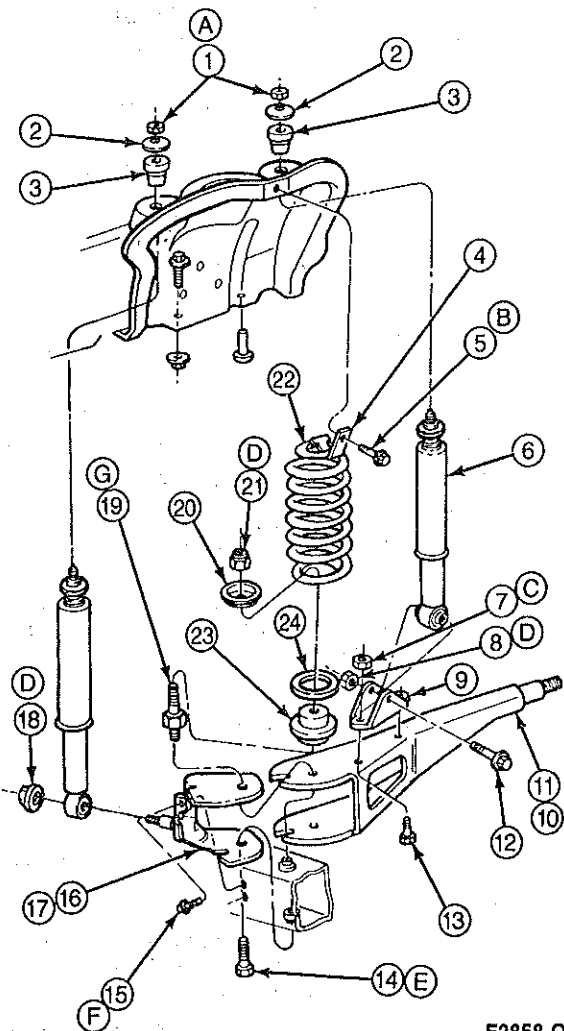
Item	Part Number	Description
16	3B446	Front Axle Radius Arm Bracket
17	40954	Bolt (2 Req'd)
18	390678	Stud
19	5B316	Lower Spring Seat
20	5414	Front Spring Insulator
21	5A349	Retainer
22	388833	Nut
23	5310	Front Coil Spring
A	—	Tighten to 34-46 N·m (26-33 Lb-Ft)
B	—	Tighten to 18-24 N·m (13-18 Lb-Ft)
C	—	Tighten to 34-46 N·m (26-33 Lb-Ft)
D	—	Tighten to 60-81 N·m (45-60 Lb-Ft)
E	—	Tighten to 364-440 N·m (269-325 Lb-Ft) Then Hand-Tighten to 434-461 N·m (320-340 Lb-Ft)
F	—	Tighten to 26-34 N·m (19-25 Lb-Ft)
G	—	Tighten to 258-311 N·m (190-230 Lb-Ft) Then Hand-Tighten to 326-352 N·m (240-260 Lb-Ft)
H	—	Tighten to 94-134 N·m (70-100 Lb-Ft)

Installation

- Place the front coil spring in position and slowly raise the front axle, or raise the hoist if a frame hoist is being used. Make sure front coil springs are positioned correctly in the upper spring seats.
- Position the front spring lower retainer over the stud and lower seat and install the attaching nut 94-134 N·m (70-100 lb-ft).
- Position the upper retainer over the front spring and install the attaching screws 18-24 N·m (13-18 lb-ft).
- Position the front shock absorber (18124) to the lower bracket and install the attaching bolt and nut with the bolt head toward the tire. Tighten the bolt and nut to 60-81 N·m (45-60 lb-ft).
If the vehicle has quad shocks, position the front shock absorber in place and install the attaching nut. Tighten to 60-81 N·m (45-60 lb-ft).
- Remove safety stands and lower the vehicle.

REMOVAL AND INSTALLATION (Continued)

Quad Shocks, F-150 and Bronco with Dana Model 44 IFS Front Drive Axle



F2858-Q

Item	Part Number	Description
1	805348	Nut and Washer
2	802084	Washer
3	18198	Insulator
4	5A333	Front Spring Upper Mounting Retainer
5	40949	Bolt
6	18124	Front Shock Absorber
7	620468	Nut
8	620469	Nut

(Continued)

Item	Part Number	Description
9	18126	Shock Bracket
10	3405	Radius Arm (RH)
11	3A292	Radius Arm (LH)
12	805033	Bolt (Must Be Installed in Direction as Shown)
13	605921	Bolt
14	58740	Bolt
15	40954	Bolt (2 Req'd)
16	18A151	Front Lower Shock Bracket (RH)
17	18A153	Front Lower Shock Bracket (LH)
18	N806085	Nut and Washer
19	390678	Stud
20	5A349	Retainer
21	N800895	Nut
22	5310	Front Coil Spring
23	5A307	Lower Spring Seat
24	5414	Front Spring Insulator
A	—	Tighten to 34-47 N·m (25-35 Lb·Ft)
B	—	Tighten to 18-24 N·m (13-18 Lb·Ft)
C	—	Tighten to 34-46 N·m (26-33 Lb·Ft)
D	—	Tighten to 60-81 N·m (45-60 Lb·Ft)
E	—	Tighten to 434-461 N·m (320-339 Lb·Ft)
F	—	Tighten to 26-34 N·m (19-25 Lb·Ft)
G	—	Tighten to 326-352 N·m (240-260 Lb·Ft)

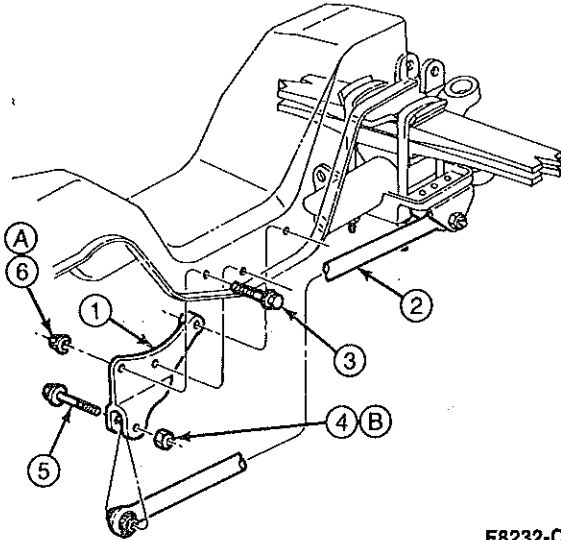
Spring, Leaf, F-250 and F-350

Removal

1. Raise the vehicle with a frame hoist until the weight is off the front leaf spring with the wheels still touching the floor. Support the axle to prevent rotation.
2. Disconnect the lower end of the front shock absorber (18124) from the U-bolt spacer.

REMOVAL AND INSTALLATION (Continued)

- Remove the U-bolts, U-bolt cap and spacer. For vehicles equipped with a Dana Model 60 Monobeam front drive axle, remove two tracking bar-to-right spring cap retaining bolts and tracking bar mounting bracket.



F8232-C

Item	Part Number	Description
1	3A094	Tracking Bar Mounting Bracket
2	3293	Tracking Bar Assembly
3	601415	Bolt
4	620604	Nut
5	803960	Bolt
6	802073	Nut
A	—	Tighten to 88-118 N·m (65-87 Lb·Ft)
B	—	Tighten to 163-203 N·m (120-150 Lb·Ft)

- Remove the nut from the hanger bolt retaining the spring at the rear. Drive out the hanger bolt.
- Remove front shackle connecting nut to spring eye.
- Drive out the shackle bolt and remove the spring.

Installation

- Position the new spring on the spring seat. Install the shackle bolt through the shackle and spring and tighten to 163-203 N·m (120-150 lb-ft).
- Position rear of spring allowing rear hanger bolt to be installed. Install the nut and tighten to 163-203 N·m (120-150 lb-ft).
- Position the U-bolt spacer and place the U-bolts in position through holes in the spring seat cap. Install but do not tighten the U-bolt nuts.

- Make sure the spring center bolt is aligned with the indentation in the axle housing.
- If vehicle is equipped with a tracking bar, connect mounting bracket and right spring cap retaining bolts.
- Connect the lower end of the front shock absorber to the U-bolt spacer.
- Lower the vehicle and tighten the U-bolt nuts to 115-163 N·m (85-120 lb-ft).

Wheel Spindle

Refer to Section 05-03A, Section 05-03B or Section 05-03C in the Powertrain, Drivetrain Manual.

Shock Absorber, F-250 and F-350

CAUTION: The low pressure gas front shock absorbers (18124) are charged with nitrogen gas to 931 kPa (135 psi) for 1-inch and 1-3/16-inch bore, and 1034 kPa (150 psi) for 1-3/8-inch bore. Do not attempt to open, puncture or apply heat to the shock absorbers.

Removal

- Remove front shock absorber-to-upper shock bracket nut and bolt.
- Disconnect the lower end of the front shock absorber bolt and nut from the U-bolt plate.
- Compress the front shock absorber and remove.

Installation

- Insert front shock absorber into the front shock absorber mounting bracket (18183). Insert bolt and tighten nut to 60-81 N·m (45-60 lb-ft).
- Attach the lower end of the front shock absorber to the U-bolt plate by installing the nut and bolt. Tighten to 60-81 N·m (45-60 lb-ft).

Shock Absorber, F-150 and Bronco Equipped with Quad Front Shock Absorbers

CAUTION: The low pressure gas front shock absorbers (18124) are charged with nitrogen gas to 931 kPa (135 psi) for 1-inch and 1-3/16-inch bore and 1034 kPa (150 psi) for 1-3/8-inch bore. Do not attempt to open, puncture or apply heat to the shock absorbers.

Removal

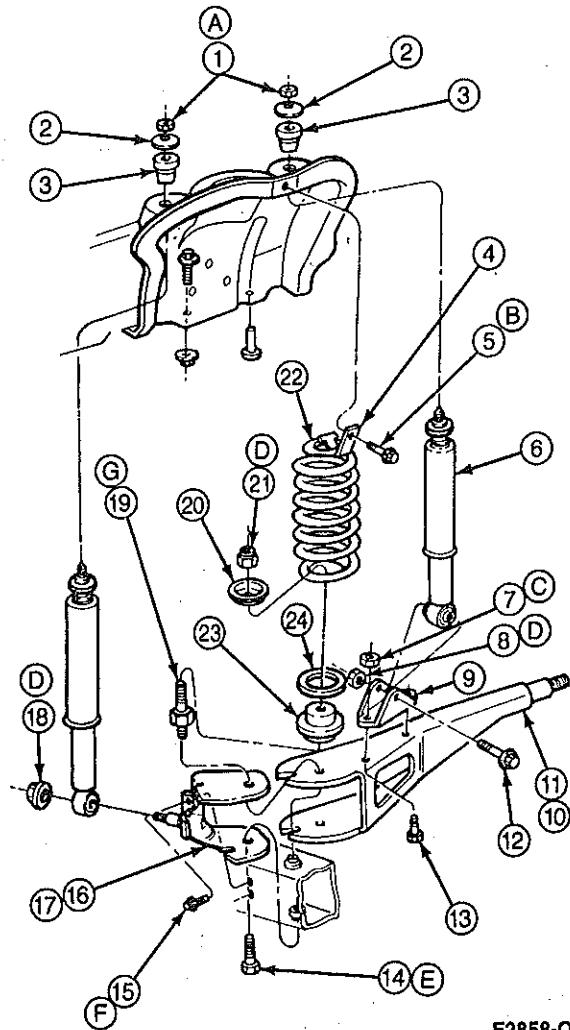
- Insert a wrench to hold the upper front shock absorber retaining nut.
- Loosen the stud by turning the hex on the exposed (lower) part of the stud. Remove nut and washer.

REMOVAL AND INSTALLATION (Continued)

3. Disconnect the lower end of the front shock absorber from the bracket, bolt and nut for rearward of front axle installation, and nut and washer for forward of front axle installation.
4. Compress the front shock absorbers and remove.

Installation

1. Insert new one-piece insulators into the top surface of the upper spring seat (use soap solution to aid in installation).
2. Insert front shock absorber stud through insulator. Replace steel washer and hand-start nut.
3. Insert a wrench to hold the nut and tighten to 34-47 N·m (25-35 lb-ft) by turning the hex provided on the stud.
4. For installation of the rearward front shock absorber, attach the lower end of the front shock absorber to the bracket by installing the nut and bolt with the bolt head toward the tire. Tighten to 60-81 N·m (45-60 lb-ft).
5. For installation of the forward front shock absorber, attach the lower end of front shock absorber to the bracket by installing washer (concave surface to nut) and tighten nut to 60-80 N·m (44-59 lb-ft).

Quad Shocks, F-150 and Bronco with Dana Model 44 IFS

F2858-Q

Item	Part Number	Description
1	805348	Nut and Washer
2	802084	Washer
3	18198	Insulator
4	5A333	Front Spring Upper Mounting Retainer
5	40949	Bolt
6	18124	Front Shock Absorber
7	620468	Nut
8	620469	Nut
9	18126	Shock Bracket
10	3405	Radius Arm (RH)
11	3A292	Radius Arm (LH)
12	805033	Bolt (Must Be Installed in Direction Shown)
13	605921	Bolt

(Continued)

REMOVAL AND INSTALLATION (Continued)

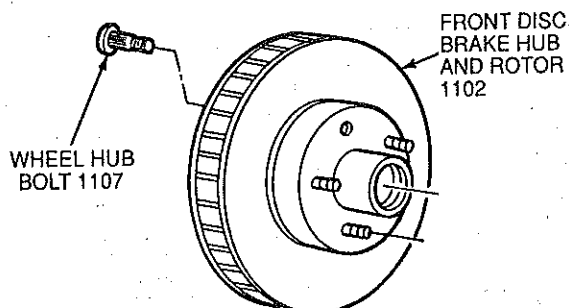
Item	Part Number	Description
14	58740	Bolt
15	40954	Bolt
16	18A151	Front Lower Shock Bracket (RH)
17	18A153	Front Lower Shock Bracket (LH)
18	N806085	Nut and Washer
19	390678	Stud
20	5A349	Retainer
21	N800895	Nut
22	5310	Front Coil Spring
23	5A307	Lower Spring Seat
24	5414	Front Spring Insulator
A	—	Tighten to 34-47 N·m (25-35 Lb·Ft)
B	—	Tighten to 18-24 N·m (13-18 Lb·Ft)
C	—	Tighten to 34-46 N·m (26-33 Lb·Ft)
D	—	Tighten to 60-80 N·m (44-59 Lb·Ft)
E	—	Tighten to 433-460 N·m (320-340 Lb·Ft)
F	—	Tighten to 26-34 N·m (19-25 Lb·Ft)
G	—	Tighten to 326-352 N·m (240-260 Lb·Ft)

Wheel Hub Bolt

CAUTION: Service must be performed on any damaged components or the component that caused lug bolt (1107) to require replacement.

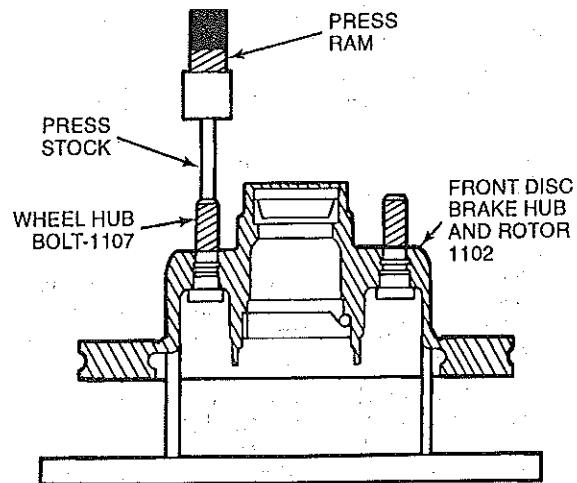
Removal

1. Raise the vehicle and install safety stands.
2. Remove the wheel and tire.
3. Remove the front disc brake hub and rotor (1102). Refer to Section 05-03C in the Powertrain, Drivetrain Manual.



H4507-D

4. Position the front disc brake hub and rotor in a press so ram pressure is not directly exerted on the surface of front disc brake hub and rotor. With appropriate press stock, press the lug bolt from the front disc brake hub and rotor. Discard the lug bolt.



H4508-C

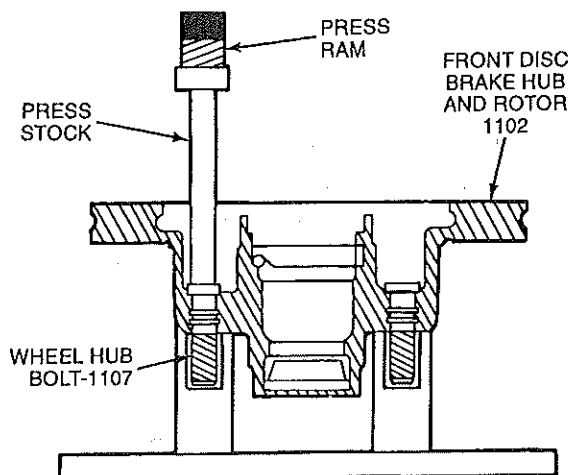
5. Inspect lug nuts (1012) for damaged threads. Discard if damaged.

Installation

1. Position a new lug bolt in the hole. Align the serrations of the new lug bolt with the serration marks from the old lug bolt. With a hammer, lightly tap the lug bolt until the serrations on the lug bolt are started in the hole. Make sure the lug bolt is not installed off-center in front disc brake hub and rotor.
2. Position the front disc brake hub and rotor in a press so the front disc brake hub and rotor is supported on the wheel mounting flange. Allow enough clearance for the lug bolt to pass through the hole. Do not apply ram pressure directly on the rotor surface of front disc brake hub and rotor.

REMOVAL AND INSTALLATION (Continued)

3. With appropriate press stock, press the stud flush against the inner surface of the hub and rotor.



H4509-C

4. Install the front disc brake hub and rotor as described in Section 05-03C in the Powertrain, Drivetrain Manual.
5. Replace any damaged lug nuts.
6. Install the wheel (1007) and tire.

Ball Joint

Refer to Section 05-03A in the Powertrain, Drivetrain Manual.

Radius Arm, F-150 and Bronco**Removal**

Refer to illustrations under Spring, Coil, F-150 and Bronco, in the Removal and Installation portion of this section.

1. Raise the vehicle and position safety stands under the frame side rails and a jack such as Rotunda Hi-Lift Jack 164-R3508 or equivalent under the axle.
2. Remove the front wheel and tire assembly. Refer to Section 04-04.
3. Disconnect the front stabilizer bar (5482) at the stabilizer link, if equipped.
4. Remove the shock absorber-to-lower bracket attaching bolt and nut and pull the front shock absorber (18124) free of the radius arm.
5. On vehicles equipped with quad front shock absorbers, remove the attaching nut and forward shock lower mount from the stud on the bracket.

6. Remove spring lower retainer attaching bolt from inside of the spring coil.
7. Loosen the axle pivot bolt.
8. Remove radius arm-to-frame bracket nut.
9. Remove the radius arm rear plastic spacer and insulator.
10. **CAUTION: When lowering the axle, the axle must be supported on the jack throughout radius arm removal and installation, and must not be permitted to hang by the front brake hose (2078). If the length of the front brake hose is not sufficient to provide adequate clearance for removal and installation of the spring seat, the disc brake caliper (2B120) must be removed from the spindle. Refer to Section 06-03. After removal, the disc brake caliper must be placed on the frame or otherwise supported to prevent suspending the disc brake caliper from the caliper hose. These precautions are absolutely necessary to prevent serious damage to the tube portion of the caliper hose assembly.**

Lower the axle, remove the lower spring retainer, insulator and spring seat and allow the axle to move forward.

11. Remove the two bolts attaching the front axle to radius arm bracket to axle tube.
12. Remove spring retainer, insulator, lower spring seat and stud.
13. Remove radius arm bracket-to-axle tube bolt.
14. Remove the front axle radius arm bracket.
15. Move the axle forward and remove the radius arm from the axle. Remove the radius arm from the frame bracket.

Installation

1. Clean all the mating surfaces between the radius arm, axle and bracket prior to reassembly.
2. Position the forward washer and insulator on the rear of the radius arm and insert the radius arm into the frame bracket.
3. Position the rear spacer, insulator and washer on the radius arm and loosely install the attaching nut.
4. Position the radius arm, forward shock mount bracket (quad shock equipped vehicles) and front axle-to-radius arm bracket on the axle.
5. **NOTE: New stud and bolt are required because of the adhesive coating on the original bolts. If new fasteners are not available, thoroughly clean the old fasteners and apply Loctite® No. 242 or equivalent to the threads of the fasteners.**
Loosely install a new stud and bolt attaching the radius arm to the axle.
6. Tighten the radius arm rear attaching nut to 113-153 N·m (84-112 lb-ft).
7. Install and tighten the bracket-to-axle attachment screws to 34-46 N·m (26-33 lb-ft).

REMOVAL AND INSTALLATION (Continued)

8. Tighten the radius arm to axle lower bolt to 434-461 N·m (320-340 lb-ft) and the upper stud type bolt to 326-351 N·m (240-260 lb-ft).
9. Position the spring lower seat with the locating tab positioned in the radius arm notch spring insulator.
10. Using Rotunda Hi-Lift Jack 164-R3508 or equivalent, raise axle until front coil spring (5310) is resting on lower spring seat.
11. Install lower spring retainer and nut. Tighten to 94-134 N·m (70-100 lb-ft).
12. **NOTE:** It is important that the attaching bolt be installed with the head toward the tire to maximize clearance to brake system components.
Position the front shock absorber to the lower bracket. Install the attaching bolt and nut and tighten to 71-100 N·m (52-74 lb-ft).
13. Connect the front stabilizer bar to the front stabilizer bar link (5K483), if equipped. Tighten nut to 71-100 N·m (52-74 lb-ft).
14. Install front disc brake calipers if removed. Inspect brake hydraulic lines for damage. Refer to Section 06-03.
15. Install the front wheel and tire assembly. Refer to Section 04-04.
16. Lower vehicle and, with the weight on the suspension, tighten axle pivot bushing bolt and nut to 163-203 N·m (120-150 lb-ft).

Insulators, Radius Arm**Removal**

1. Remove front stabilizer bar link attachment. Rotate stabilizer bar up and out of the way.
2. **CAUTION: The axle must be supported on the jack throughout spring removal and installation. Do not hang by the brake hose. If the length of the brake hose is not sufficient to provide adequate clearance for removal and installation of the spring, the front disc brake caliper (2B121) must be removed from the front wheel spindle (3105). Refer to Section 06-03. After removal, the front disc brake caliper must be placed on the frame or otherwise supported to prevent suspending the front wheel spindle from the caliper hose. These precautions are absolutely necessary to prevent serious damage to the tube portion of the caliper hose.**
Raise the front of the vehicle and place safety stands under the frame. Place a jack under the axle.
3. Disconnect the lower end of the front shock absorber (18124) from the shock lower stud.
4. Remove the front coil spring (5310). Loosen the axle pivot bolt.

5. Remove radius arm to radius arm bracket attaching nut and washer. Remove the outer insulator (and shield on right radius arm only) and spacer.
6. Move the radius arm and axle forward out of the radius arm bracket.
7. Remove the inner insulator and retainer.

Installation

1. Follow removal procedures in reverse order.
2. Tighten radius arm-to-rear bracket nut to 113-153 N·m (84-112 lb-ft). Tighten upper shock bolt to 34-46 N·m (26-33 lb-ft). Tighten axle pivot bolt to 434-461 N·m (320-339 lb-ft).

Axle, Front

Refer to Section 05-03A in the Powertrain, Drivetrain Manual.

Axle Pivot Bracket, F-150 and Bronco

Refer to illustration under Spring, Coil, F-150 and Bronco, in the Removal and Installation portion of this section.

Removal

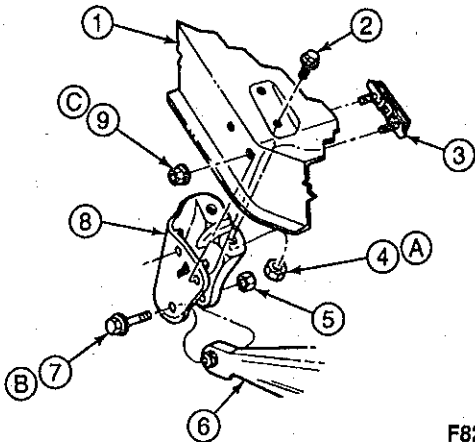
1. Raise vehicle on a hoist. Place a tall jack under the axle arm near the front axle bearing bracket (3K090) and slowly raise the vehicle so axle is supported by the jack.
2. Remove the axle-to-bracket retainer bolt and nut.
3. If necessary, pry the axle out of the front axle bearing bracket. Raise the hoist slowly to disengage the axle from the front axle bearing bracket.
4. If necessary, raise the engine to provide access to the vertical fasteners in the top of the front crossmember (5019). Refer to the appropriate engine section in Group 03 in the Powertrain, Drivetrain Manual.
5. Remove and discard all bearing bracket-to-crossmember fasteners. Remove the front axle bearing bracket.

Installation

1. **NOTE:** The two rearward vertical fasteners must be installed with bolt heads adjacent to the engine oil pan to maintain required clearance. The bolt and retainer assembly must be installed with bolt heads on the inside of the bearing bracket surface.
Position the front axle bearing bracket to the front crossmember. Loosely assemble the bolts, retainer assembly and nuts. Do not tighten at this time.

REMOVAL AND INSTALLATION (Continued)

2. To ensure correct positioning of the front axle bearing bracket, tighten in two stages.
 - Tighten the two forward fasteners to 103-155 N·m (76-114 lb-ft) first.
 - Then tighten the two rearward vertical nuts and bolts in the top of the front crossmember to 104-148 N·m (77-109 lb-ft).
3. Lower the hoist until the axle engages the front axle bearing bracket. Install the bolt and nut. Tighten to 213-288 N·m (157-211 lb-ft).
4. Remove the jack and lower the vehicle.



F8233-B

Item	Part Number	Description
1	5019	Crossmember
2	802114	Bolt
3	802246	Bolt
4	802073	Nut
5	620604	Nut
6	3002	Left Axle Arm
7	801079	Bolt
8	3K090	Axle Pivot Bracket
9	802073	Nut
A	—	Tighten to 104-148 N·m (77-109 Lb-Ft)
B	—	Tighten to 213-287 N·m (157-211 Lb-Ft)
C	—	Tighten to 88-118 N·m (65-87 Lb-Ft)

Axle Pivot Bushing

Refer to Section 05-03A in the Powertrain, Drivetrain Manual.

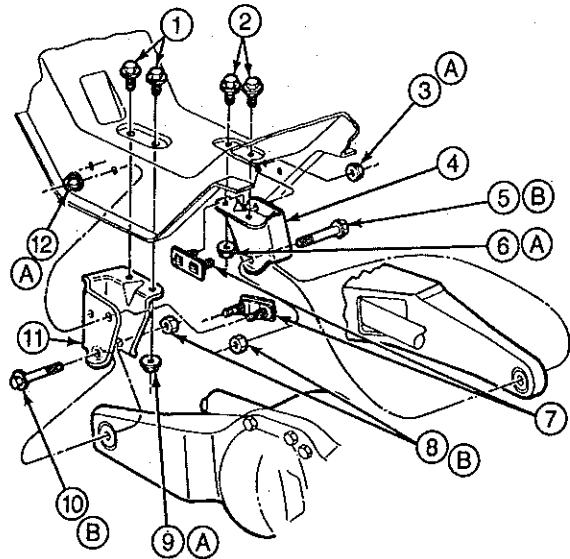
Axle Bearing Bracket, F-250

Removal

1. **WARNING: IF THE AXLE ARMS ARE NOT SECURELY SUPPORTED, THE AXLE ARMS WILL DROP SUDDENLY 102-152MM (4-6 INCHES).**

Raise vehicle on a hoist. Place supports securely under the axle arms near the front axle bearing bracket (3K090) and remove the front axle bearing bracket bolts.

2. If necessary, pry the axle out of the front axle bearing bracket and lower the axle.
3. If necessary, raise the engine to provide access to the vertical fasteners in the top of the front crossmember as follows:
 - Loosen the right and left engine mount bolts.
 - Align the fan blade to clear the shroud and raise the engine 51mm (2 inches).
 - Block engine securely in place.
4. Remove and discard all front axle bearing bracket-to-crossmember fasteners and remove the front axle bearing brackets.



F8234-B

Item	Part Number	Description
1	802114	Bolt
2	802114	Bolt
3	802073	Nut
4	3B178	Right Axle Pivot Bracket
5	802039	Bolt
6	802073	Nut
7	802299	Bolt and Retainer
8	620604	Nut

(Continued)

REMOVAL AND INSTALLATION (Continued)

Item	Part Number	Description
9	802073	Nut
10	802039	Bolt
11	3K090	Front Axle Bearing Bracket
12	802073	Nut
A	—	Tighten to 88-118 N·m (65-87 Lb-Ft)
B	—	Tighten to 115-163 N·m (85-120 Lb-Ft)

Installation

- NOTE: The vertical fasteners for each front axle bearing bracket must be installed with bolt heads adjacent to the engine oil pan to maintain required clearance. Horizontal fasteners must be installed with the bolt heads on the inside surface of the front axle bearing brackets.
Position the front axle bearing bracket to the front crossmember (5019) and loosely assemble the bolts, retainer assembly and nuts. Do not tighten at this time.
- To make sure positioning of the front axle bearing brackets is correct, tighten the horizontal fasteners in the side of the front crossmember to 88-118 N·m (65-87 lb-ft). Tighten the vertical fasteners in the top of the front crossmember to 88-118 N·m (65-87 lb-ft).
- Position the axles in the front axle bearing bracket. Install the pivot bolt and tighten nut to 115-163 N·m (85-120 lb-ft).

- Remove the blocks under the engine and lower the engine into position. Tighten the bolts to specification listed in the appropriate engine section in Group 03.

Stabilizer Bar**Stabilizer Bar Link Assembly, F-150 and Bronco****Removal**

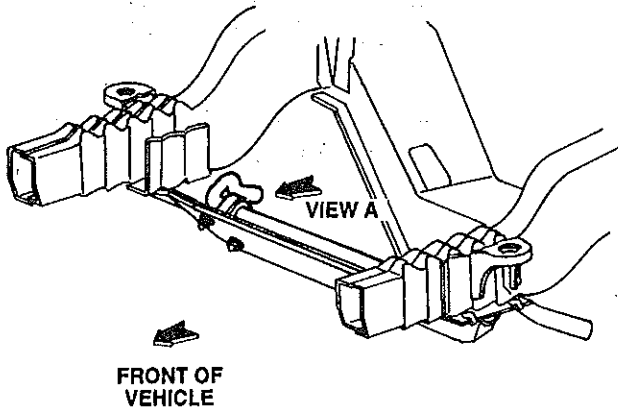
- Remove nuts, bolts and washers connecting the front stabilizer bar (5482) to connecting links.
- Remove nuts and bolts of the front stabilizer bar retainer.
- Remove front stabilizer bar retainer.
- Remove the front stabilizer bar and insulator. The stud does not have to be removed. The bracket-to-frame assembly may be removed but not the front crossmember.

Installation

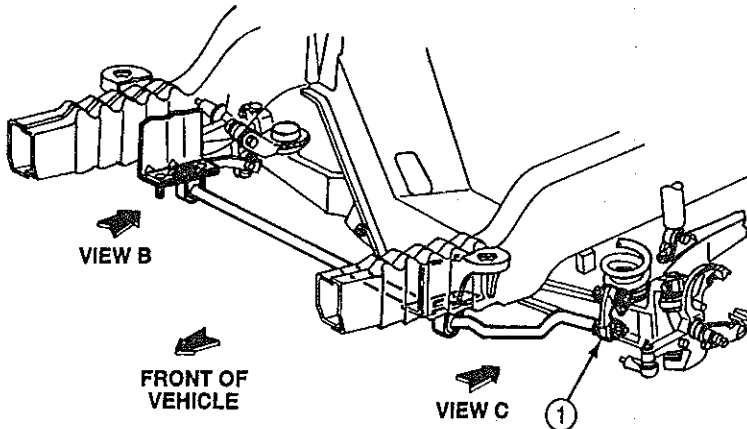
- Install insulators on front stabilizer bar.
- Position front stabilizer bar with insulators to stabilizer bar brackets and install attaching nuts and bolts. Tighten retainer nuts to 34-46 N·m (25-33 lb-ft).
- Install link to front stabilizer bar attaching bolt and nut. Tighten to 70-100 N·m (52-73 lb-ft).

REMOVAL AND INSTALLATION (Continued)

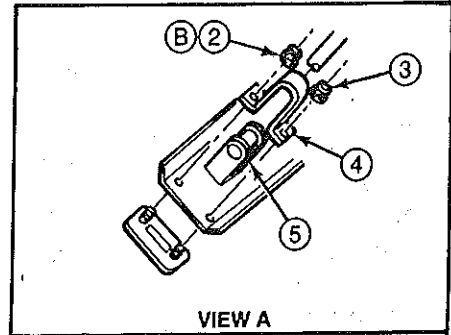
Front Stabilizer Bar, F-150 and Bronco with Dana Model 44 Front Drive Axle



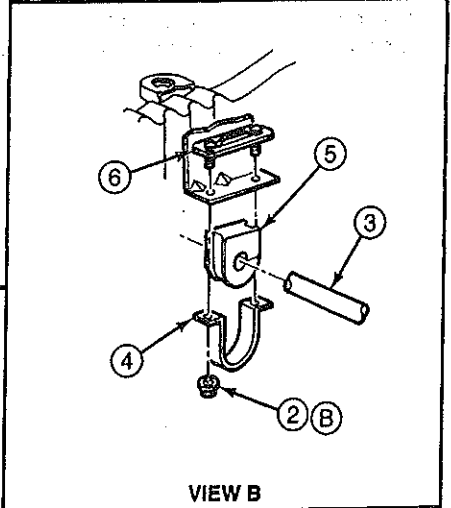
F-150



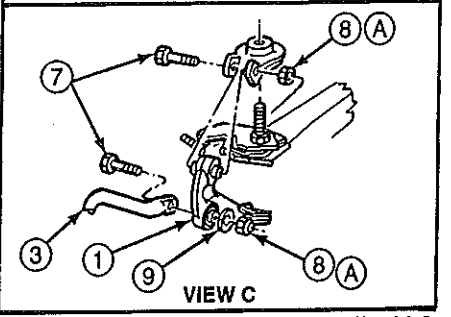
BRONCO



VIEW A



VIEW B



VIEW C

F7714-C

Item	Part Number	Description
1	5K483	Front Stabilizer Bar Link
2	N620482-S36	Nut, M12 x 1.75 Hex Flange
3	5482	Front Stabilizer Bar
4	3B353	Retainer, Stabilizer Bar, Front
5	5484	Insulator, Stabilizer Bar, Front
6	N806789-S2	Bolt and Retainer, M10-1.5 x 33.5 Hex

(Continued)

Item	Part Number	Description
7	N605704-S2	Bolt, M12-1.75 x 65 Hex
8	N620469-S2	Nut, M12 x 1.75
9	N801527-S2	Washer, 13 x 34 x 2.5
A	—	Tighten to 72-108 N·m (53-79 Lb·Ft)
B	—	Tighten to 34-46 N·m (25-34 Lb·Ft)

REMOVAL AND INSTALLATION (Continued)**Stabilizer Bar Link Assembly, F-250****Removal**

1. Remove bolts, washers and nuts securing the stabilizer bar links to spring seat caps (both sides).
2. For vehicles equipped with a Dana Model 50 Monobeam front drive axle, remove the nut, washer, and bolt securing the stabilizer bar links to the stabilizer bar brackets (both sides).
3. Remove nuts, washers and insulators attaching stabilizer bar links to front stabilizer bar.
4. Remove link assemblies.
5. Remove nuts and bolts securing retainers to stabilizer bar bracket and remove retainers.

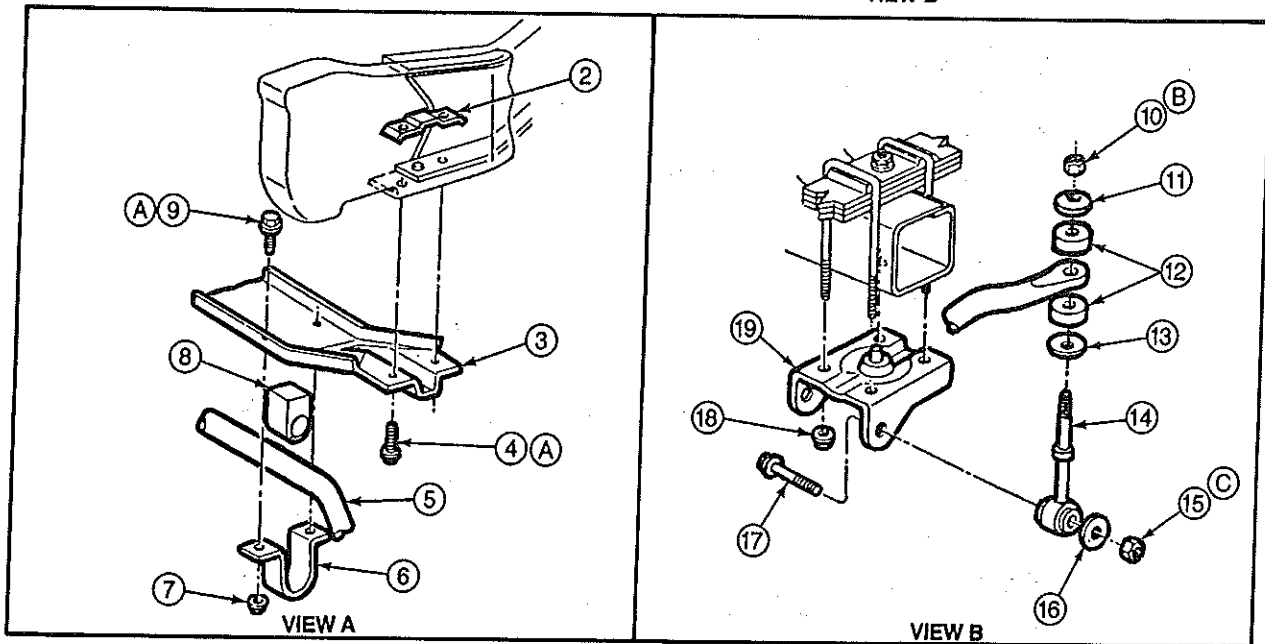
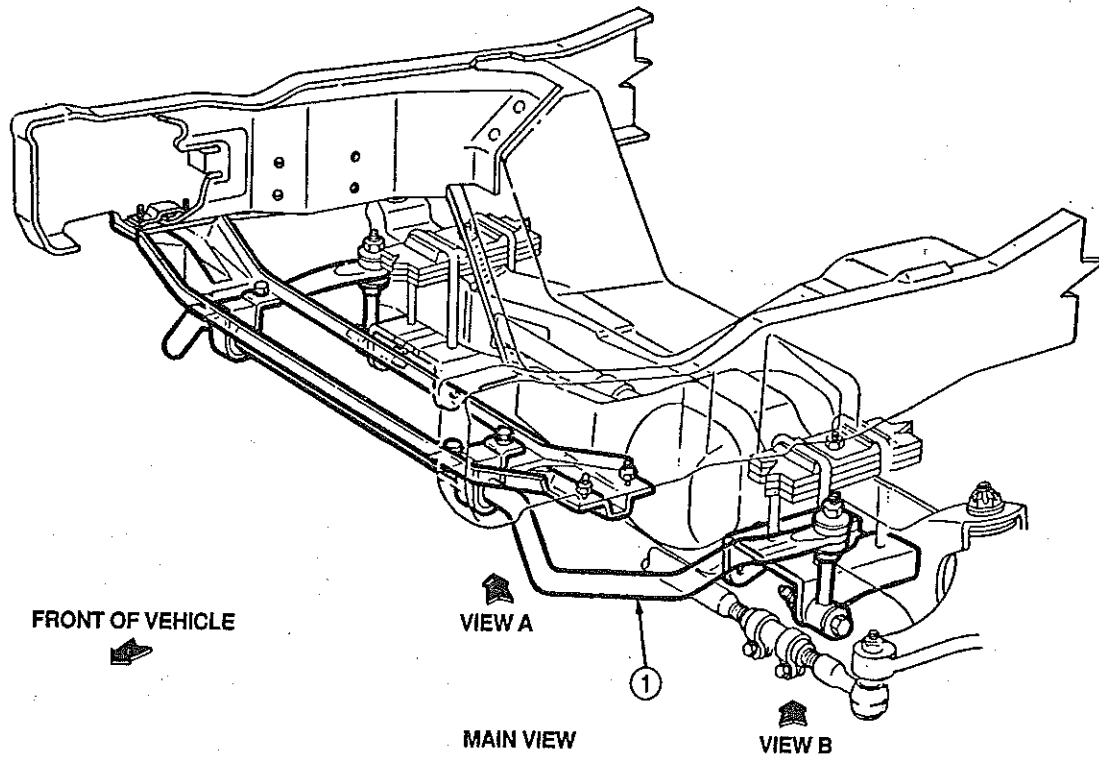
6. Remove front stabilizer bar.

Installation

1. Replace the components in reverse order of removal without tightening bolts.
2. Tighten nuts connecting stabilizer bar links to spring seat caps on both sides 70-100 N·m (52-73 lb-ft).
3. Tighten nuts connecting stabilizer bar links to stabilizer bar 21-33 N·m (16-24 lb-ft).
4. Tighten nuts and bolts connecting retainers to stabilizer bar bracket 34-46 N·m (26-33 lb-ft).

REMOVAL AND INSTALLATION (Continued)

Front Stabilizer Bar and Stabilizer Bar Link Assembly, F-250 with Dana Model 50 IFS Front Drive Axle



F2860-F

Item	Part Number	Description
1	5482	Front Stabilizer Bar
2	5L488	Plate Assembly
3	5486	Stabilizer Bar Bracket

(Continued)

Item	Part Number	Description
4	605919	Bolt
5	5482	Front Stabilizer Bar
6	3B353	Stabilizer Bar Bracket
7	620482	Nut

(Continued)

REMOVAL AND INSTALLATION (Continued)

Item	Part Number	Description
8	5484	Rack and Pinion Mounting Bracket Insulator
9	605811	Bolt
10	384485	Nut
11	18041	Washer
12	4A037	Insulator
13	18171	Washer
14	5K483	Front Stabilizer Bar Link
15	620469	Nut

(Continued)

Item	Part Number	Description
16	801527	Washer
17	605704	Bolt
18	801342	Nut
19	5A500	Spring Seat Cap
A	—	Tighten to 34-46 N·m (26-33 Lb·ft)
B	—	Tighten to 21-33 N·m (16-24 Lb·ft)
C	—	Tighten to 70-100 N·m (52-73 Lb·ft)

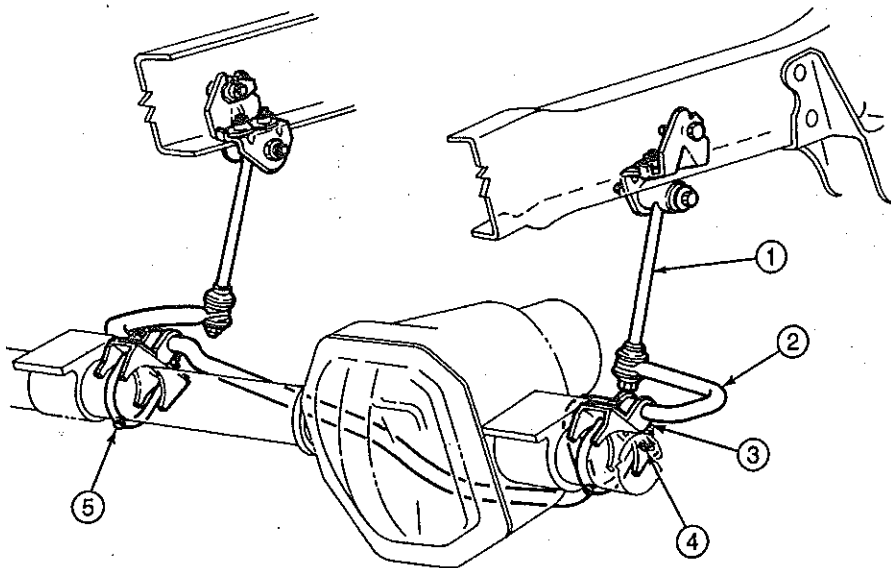
Stabilizer Bar Link Assembly, F-350**Removal**

1. Disconnect left and right ends of the front stabilizer bar from the link assembly attached to the frame side rail mounting brackets.
2. Disconnect the retainer bolts and U-bolt. Remove the front stabilizer bar from the front axle.
3. Remove front stabilizer bar link (5K483) from the frame side rail mounting brackets.

Installation

1. Loosely assemble the entire front stabilizer bar system with both link assemblies loosely attached to the frame mounting brackets.
2. Position front stabilizer bar on the axle.

3. Check to be sure front stabilizer bar insulators are seated in the retainers, and front stabilizer bar is centered between the front leaf springs.
4. Attach the front stabilizer bar to the axle by assembling the retainers to the axle mounting brackets. Tighten retaining bolts and U-bolt to 48-68 N·m (36-50 lb-ft).
5. Install the link assemblies to the frame mounting brackets using the bolts, washers, and lock nuts. Tighten the lock nut to 70-100 N·m (52-73 lb-ft).
6. Install the link assembly to the front stabilizer bar with two cup washers, two rubber insulators, and one lock nut. Tighten the lock nut to 21-33 N·m (16-24 lb-ft).

Stabilizer Bar, F-350 with Dana Model 60 Monobeam Front Drive Axle

E6336-C

REMOVAL AND INSTALLATION (Continued)

Item	Part Number	Description
1	5K483	Front Stabilizer Bar Link
2	5482	Front Stabilizer Bar

(Continued)

Item	Part Number	Description
3	5486	Stabilizer Bar Bracket
4	N606088S	Bolt
5	5455	U-Bolt

Bumper, Front**Removal**

1. Remove the hex-head bolt or nut that holds front suspension bumper to frame.
2. Remove front suspension bumper (3020).

Installation

1. Position front suspension bumper in the same holes as those from which it was removed in frame.
2. Install the hex-head bolt and tighten to 17-23 N·m (13-16 lb-ft).

SPECIFICATIONS

TORQUE SPECIFICATIONS, F-150, F-250 4x4 AND BRONCO

Description	N·m	Lb·Ft
Shock Bracket to Axle	26-34	19-25
Radius Arm to Axle, Upper Stud, Bronco, F-150 4x4	326-352	240-260 (Hand-Tighten)
Radius Arm to Axle, Lower Bolt, Bronco, F-150 4x4	434-461	320-339 (Hand-Tighten)
Front Spring to Axle U-Bolt, F-250 4x4	115-163	85-120
Front Spring Assembly to Hanger Bracket, F-250 4x4	149-201	109-148
Front Spring Shackle to Frame, F-250 4x4	203-285	150-210
Front Spring to Shackle, F-250 4x4	115-163	85-120
Radius Arm to Bracket, Bronco, F-150 4x4	113-153	84-112
Spring Retainer to Spring Seat and Shock Bracket, Bronco, F-150 4x4	18-24	13-18
Lower Spring Retainer to Radius Arm, Bronco, F-150 4x4	94-134	70-100
Front Shock Bracket to Frame, F-250 4x4	71-100	52-74
Front Shock to Shock Bracket, Lower, Bronco, F-150 4x4	60-80	44-59
Front Shock Absorber Stud, Upper, Bronco, F-150 4x4	34-46	26-33
Front Shock to Front Spring Plate Spacer, Lower, F-250 4x4	60-81	45-60
Front Shock to Bracket, Upper, F-250 4x4	71-100	52-74

(Continued)

TORQUE SPECIFICATIONS, F-150, F-250 4x4 AND BRONCO (Cont'd)

Description	N·m	Lb·Ft
Front Suspension Bumper to Bumper Bracket, F-250 4x4	30-41	22-30
Front Shock Bracket to Radius Arm	34-46	26-33
Bumper Bracket to Frame, F-250 4x4	77-103	57-75
Front Suspension Bumper to Upper Spring Seat, Bronco, F-150 4x4	17-23	13-16
Radius Arm Pivot Bracket to Frame, Bronco, F-150 4x4	104-148	77-109
Stabilizer Bar Link to Spring Seat, Bronco, F-150 4x4	72-108	53-79
Stabilizer Bar Link to Stabilizer Bar, Bronco, F-150 4x4	72-108	53-79
Stabilizer Bar Retainer to Bracket, Bronco	34-46	25-34
Stabilizer Bar Retainer to Crossmember and Mounting Bracket, F-150 4x4	34-46	25-34
Axle Pivot Bracket to Frame (Horizontal)	88-118	65-87
Axle Pivot Bracket to Frame, F-150 4x4, Bronco (Vertical)	103-149	75-109
Axle Pivot Bracket to Frame, F-250 4x4 (Vertical)	149-201	109-148
Radius Arm Bracket to Axle	213-287	157-211

TORQUE SPECIFICATIONS, F-350 4x4 WITH DANA 60 MONOBEAM FRONT DRIVE AXLE

Description	N·m	Lb·Ft
Bumper Mounting Bracket to Frame	76-104	52-74
Bumper to Mounting Bracket	30-40	22-30
Front Shock Bracket to Frame	68-92	51-67
Front Shock to Shock Bracket, Upper	60-81	45-60
Front Shock to Spacer Plate Bracket, Lower	60-81	45-60
Front Spring Assembly to Shackle	163-203	120-150
Front Spring Assembly to Spring Bracket	163-203	120-150
Front Spring Shackle to Frame	170-230	126-169
Stabilizer Bar Link Assembly Mounting Bracket to Frame	34-46	26-33
Stabilizer Bar Link Assembly to Mounting Bracket	70-100	52-73
Stabilizer Bar to Link Assembly	21-33	16-24
Tie Rod End to Spindle Arm	77-103	57-80

(Continued)

SPECIFICATIONS (Continued)

TORQUE SPECIFICATIONS, F-350 4x4 WITH DANA 60
MONOBEAM FRONT DRIVE AXLE (Cont'd)

Description	N·m	Lb·Ft
Tracking Bar Assembly to Mounting Bracket	163-203	120-150
Front Spring Mounting Bracket to Frame	47-78	35-57
Tracking Bar Mounting Bracket to Crossmember	88-118	65-87
U-Bolt to Front Spring Cap	115-163	85-120
U-Bolt to Stabilizer Bar Mounting Bracket (RH)	48-68	36-50
Stabilizer Bar to Mounting Bracket (LH)	48-68	35-50

SPECIAL SERVICE TOOLS/EQUIPMENT

ROTUNDA EQUIPMENT

Model	Description
164-R3508	Hi-Lift Jack