

FRAME AND BUMPERS

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BUMPERS

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REMOVAL AND INSTALLATION

FRONT TOW HOOK

Some Jeep vehicles are equipped with front emergency tow hooks. The tow hooks should be used for **EMERGENCY** purposes only.

REMOVAL

- (1) Remove the torx bolts that attach the tow hook to the bumper (Fig. 1).
- (2) Separate the tow hook from the bumper.

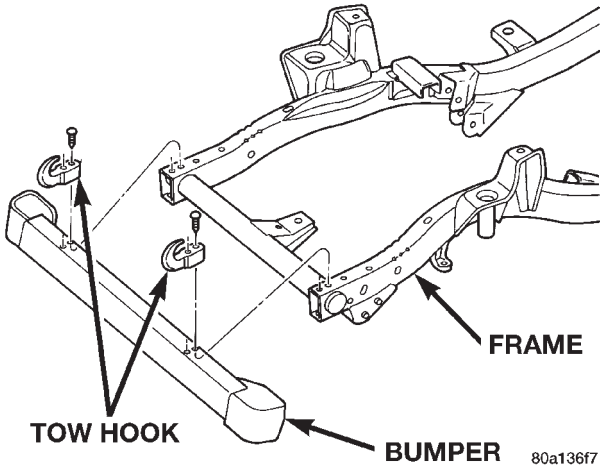


Fig. 1 Front Tow Hook

INSTALLATION

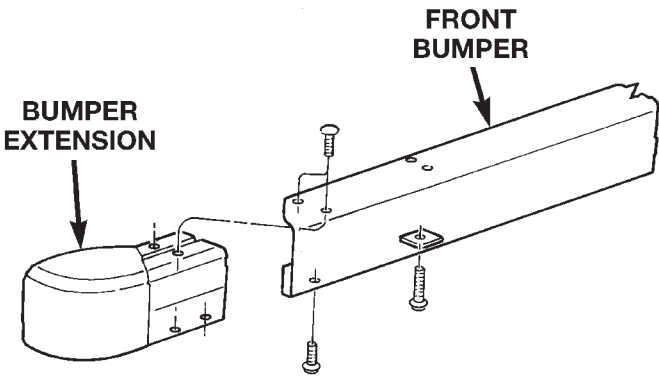
- (1) Position the tow hook on the bumper.

- (2) Install the torx bolts that attach the tow hook to the bumper. Tighten the bolts to 108 N·m (80 ft. lbs.) torque.

FRONT BUMPER EXTENSION

REMOVAL

- (1) Remove the screws attaching the bumper extension to the bumper (Fig. 2).
- (2) Separate the extension from the bumper.



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Fig. 2 Bumper Extension

INSTALLATION

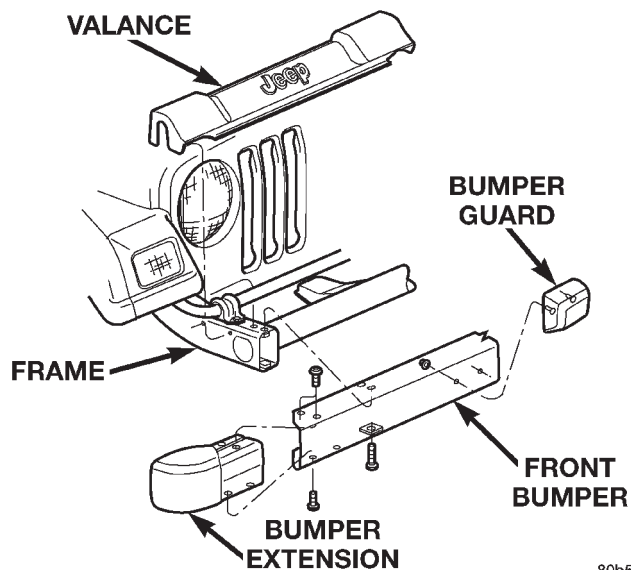
- (1) Position the extension on the bumper.
- (2) Install the screws attaching the bumper extension to the bumper.

REMOVAL AND INSTALLATION (Continued)

FRONT BUMPER

REMOVAL

- (1) If equipped, disconnect the fog lamp harness connector.
- (2) Remove the screws that attach the bumper to the frame rail (Fig. 3).
- (3) If equipped, remove the tow hook.
- (4) Separate the bumper from the vehicle.

*Fig. 3 Front Bumper Components*

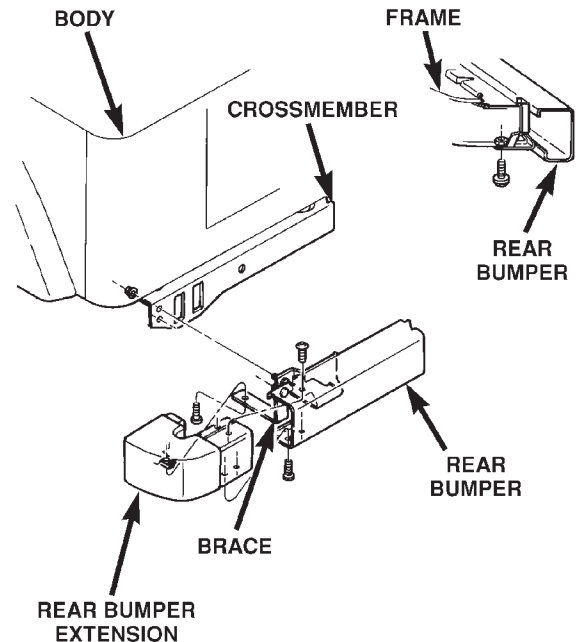
INSTALLATION

- (1) Position the bumper on the vehicle.
- (2) If equipped, install the tow hook.
- (3) Install the screws that attach the bumper to the frame rail. Tighten the screws to 104 N·m (77 ft. lbs.) torque.
- (4) If equipped, Connect the fog lamp harness connector.

REAR BUMPER EXTENSION

REMOVAL

- (1) Remove the screws attaching the bumper extension to the bumper (Fig. 4).
- (2) Separate the extension from the bumper.

*Fig. 4 Rear Bumper Components*

INSTALLATION

- (1) Position the extension on the bumper.
- (2) Install the screws attaching the bumper extension to the bumper.

REAR BUMPER

REMOVAL

- (1) Remove the bolt attaching the bumper to frame rail (Fig. 4).
- (2) If equipped, separate the rear tow eye from the bumper.
- (3) Remove the nuts attaching the bumper to the rear frame crossmember.
- (4) Separate the bumper from the vehicle.

INSTALLATION

- (1) Position the bumper on the vehicle.
- (2) Install the nuts attaching the bumper to the rear frame crossmember. Tighten the nuts to 67 N·m (50 ft.lbs.) torque.
- (3) If equipped, position the rear tow eye on the bumper.
- (4) Install the bolt attaching the bumper to frame rail. Tighten the bolts to 67 N·m (50 ft.lbs.) torque.

FRAME

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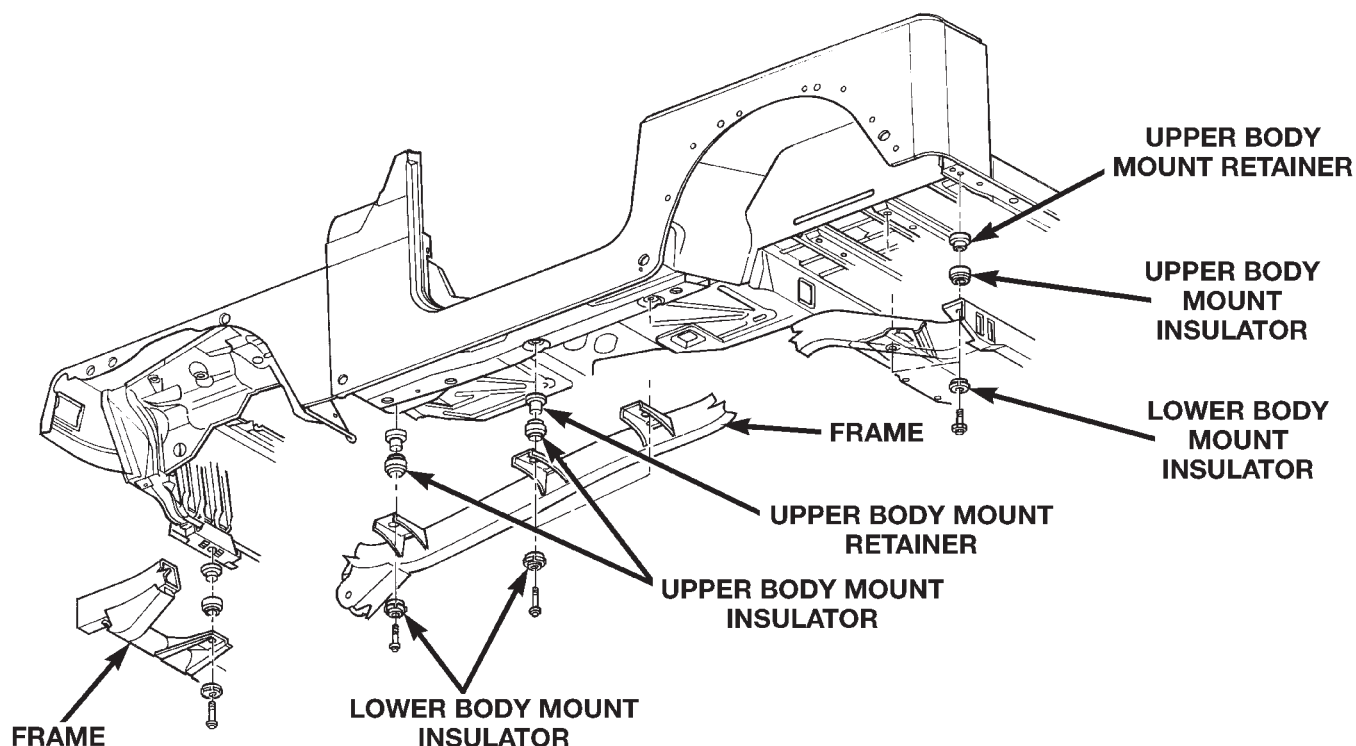
GENERAL INFORMATION

GENERAL INFORMATION

The Jeep TJ frame is the structural center of the vehicle. In addition to supporting the body and payload, the frame provides a station for the engine. The vehicle body is attached to the frame with holddowns (Fig. 1). The torque specification for the holddown bolts are: Radiator to frame, tighten to 47 N·m (35 ft.

lbs.) torque. Main floor to frame, tighten to 67 N·m (50 ft. lbs.) torque. Rear floor to frame, tighten to 47 N·m (35 ft. lbs.) torque.

The frame is constructed of mild-strength rectangular tubing and crossmembers. The crossmembers join the siderails and retain them in alignment in relation to each other. This provides resistance to frame twists and strains.



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Fig. 1 Body Holddowns

SERVICE PROCEDURES

FRAME SERVICE

SAFETY PRECAUTIONS AND WARNINGS

WARNING: USE EYE PROTECTION WHEN GRINDING OR WELDING METAL, SERIOUS EYE INJURY CAN RESULT. BEFORE PROCEEDING WITH FRAME REPAIR INVOLVING GRINDING OR WELDING, VERIFY THAT VEHICLE FUEL SYSTEM IS NOT LEAKING OR IN CONTACT WITH REPAIR AREA, PERSONAL INJURY CAN RESULT. DO NOT ALLOW OPEN FLAME TO CONTACT PLASTIC BODY PANELS. FIRE OR EXPLOSION CAN RESULT. WHEN WELDED FRAME COMPONENTS ARE REPLACED, 100% PENETRATION WELD MUST BE ACHIEVED DURING INSTALLATION. IF NOT, DANGEROUS OPERATING CONDITIONS CAN RESULT. STAND CLEAR OF CABLES OR CHAINS ON PULLING EQUIPMENT DURING FRAME STRAIGHTENING OPERATIONS, PERSONAL INJURY CAN RESULT. DO NOT VENTURE UNDER A HOISTED VEHICLE THAT IS NOT SUPPORTED ON SAFETY STANDS, PERSONAL INJURY CAN RESULT.

CAUTION: Do not reuse damaged fasteners, quality of repair would be suspect. Do not drill holes in top or bottom frame rail flanges, frame rail failure can result. Do Not use softer than Grade 3 bolts to replace production fasteners, loosening or failure can result. When using heat to straighten frame components do not exceed 566°C (1050°F), metal fatigue can result. Welding the joints around riveted cross members and frame side rails can weaken frame.

FRAME STRAIGHTENING

When necessary, a conventional frame that is bent or twisted can be straightened by application of heat. The temperature must not exceed 566°C (1050°F). The metal will have a dull red glow at the desired temperature. Excessive heat will decrease the strength of the metal and result in a weakened frame.

Welding the joints around riveted cross members and frame side rails is not recommended.

A straightening repair process should be limited to frame members that are not severely damaged. The replacement bolts, nuts and rivets that are used to join the frame members should conform to the same specifications as the original bolts, nuts and rivets.

FRAME REPAIRS

DRILLING HOLES

Do not drill holes in the top and bottom of frame rail, metal fatigue can result causing frame failure. Holes drilled in the side of the frame rail must be at least 38 mm (1.5 in.) from the top and bottom flanges.

Additional drill holes should be located away from existing holes.

WELDING

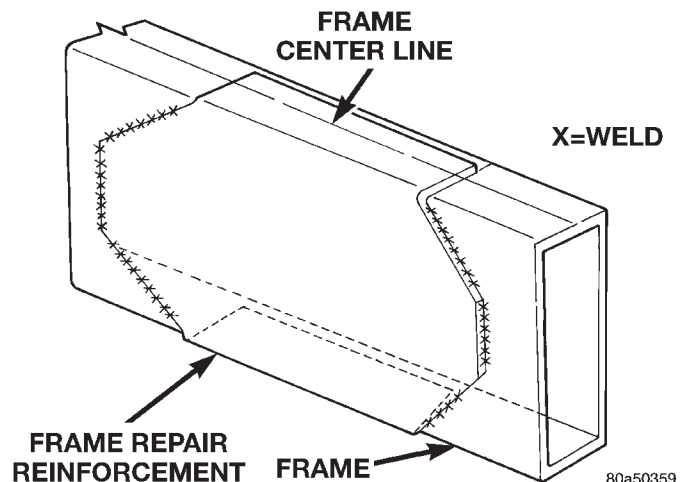
Use MIG, TIG or arc welding equipment to repair welded frame components.

Frame components that have been damaged should be inspected for cracks before returning the vehicle to use. If cracks are found in accessible frame components perform the following procedures.

- (1) Drill a hole at each end of the crack with a 3 mm (0.125 in.) diameter drill bit.
- (2) Using a suitable die grinder with 3 inch cut off wheel, V-groove the crack to allow 100% weld penetration.
- (3) Weld the crack.
- (4) If necessary when a side rail is repaired, grind the weld smooth and install a reinforcement channel (Fig. 2) over the repaired area.

CAUTION: A reinforcement should never be used on the front section of the frame. The frame section forward of the suspension mounts contains energy management holes (Fig. 3). Reinforcing this area may effect energy management.

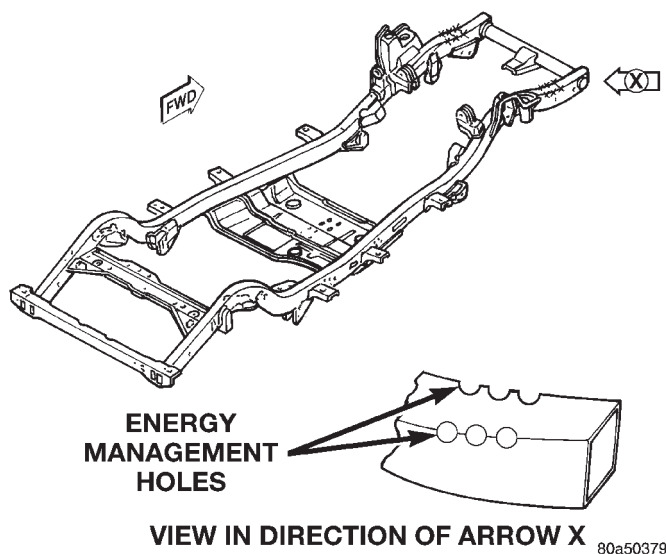
NOTE: If a reinforcement is required, it should completely cover the repaired area. The reinforcement should also overlap the top and bottom of the frame by more than 50% of its width. Weld as indicated (Fig. 2).



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Fig. 2 Frame Reinforcement

SERVICE PROCEDURES (Continued)

*Fig. 3 Energy Management Holes***FRAME FASTENERS**

Bolts and nuts can be used to repair frames or to install a reinforcement section on the frame.

Conical-type washers are preferred over the splitting type lock washers. Normally, grade-5 bolts are adequate for frame repair. **Grade-3 bolts or softer should not be used.** Tightening bolts/nuts with the correct torque, refer to the Introduction Group at the front of this manual for tightening information.

REMOVAL AND INSTALLATION**TRANSFER CASE SKID PLATE**

The transmission and transfer case crossmember is integrated with the transfer case skid plate.

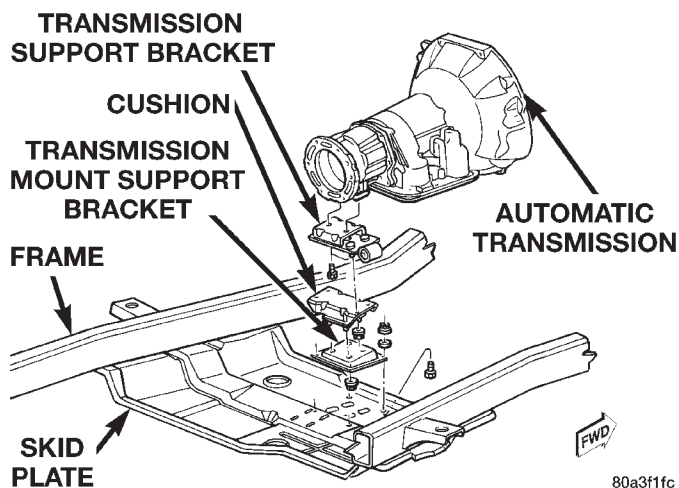
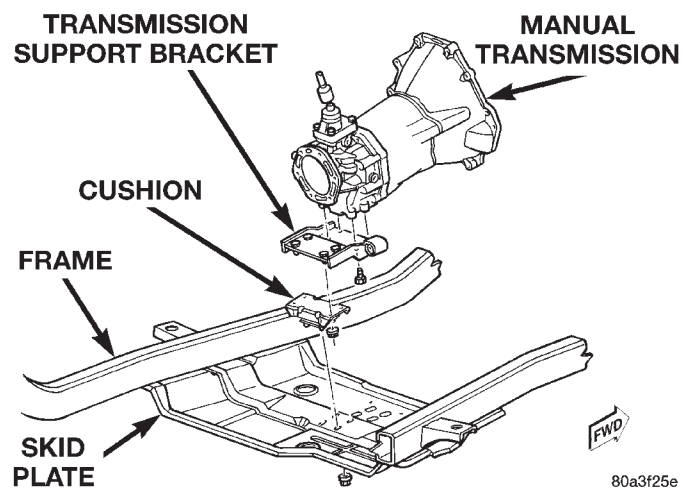
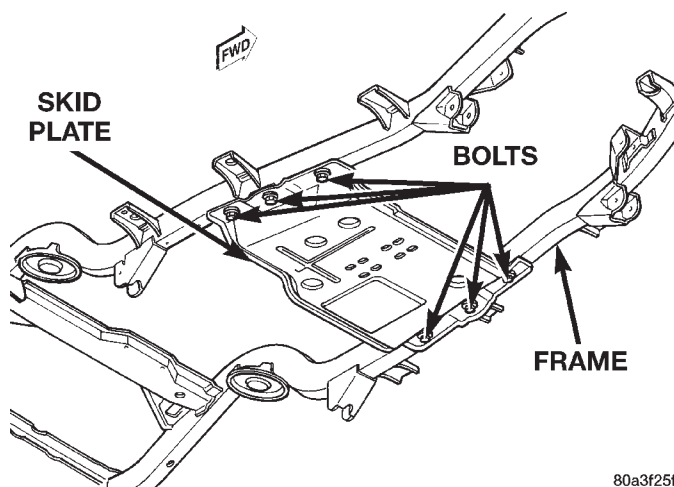
REMOVAL

WARNING: THE TRANSFER CASE AND TRANSMISSION ARE SUPPORTED BY THE TRANSFER CASE SKID PLATE. BEFORE REMOVING THE TRANSFER CASE SKID PLATE, ENSURE THAT THE TRANSMISSION IS PROPERLY SUPPORTED.

- (1) Raise and support the vehicle.
- (2) Place a support under the transmission.
- (3) Remove the nuts attaching the transmission mount to the skid plate (Fig. 4) and (Fig. 5).
- (4) Remove the bolts attaching the skid plate to the frame (Fig. 6).
- (5) Separate the skid plate from the vehicle.

INSTALLATION

- (1) Position the skid plate on the vehicle.

*Fig. 4 Transmission Mount—Automatic Transmission**Fig. 5 Transmission Mount—Manual Transmission**Fig. 6 Transfer Case Skid Plate*

- (2) Install the bolts attaching the skid plate to the frame. Tighten the bolts to 74 N·m (55 ft. lbs.) torque.

REMOVAL AND INSTALLATION (Continued)

(3) Install the nuts attaching the transmission mount to the skid plate. Tighten the nuts to 28 N·m (21 ft. lbs.) torque.

(4) Remove the support under the transmission.

(5) Remove the support from under the vehicle and lower the vehicle.

FUEL TANK SKID PLATE

REMOVAL

(1) Position a support under the fuel tank skid plate.

(2) Remove the protective caps from the end of the strap studs.

(3) Remove the nuts that attach the skid plate to the straps and to the crossmembers (Fig. 7).

(4) Separate the fuel tank strap from the skid plate.

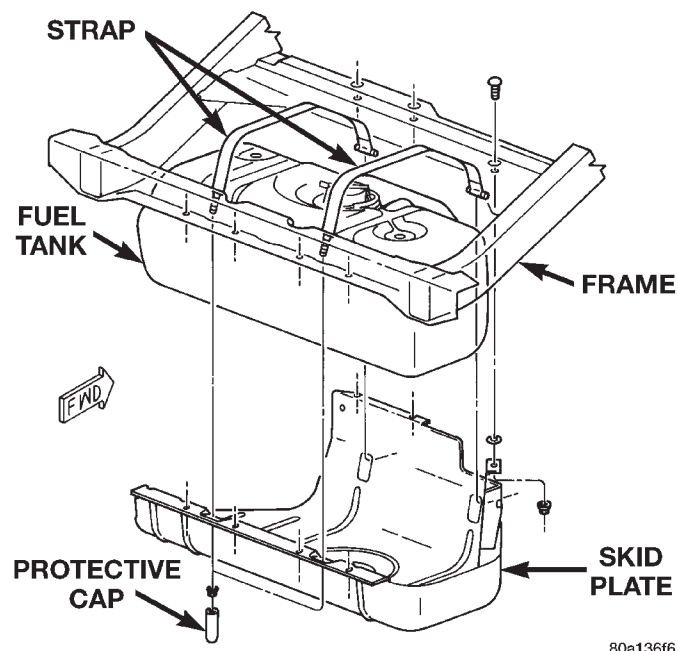
(5) Support the fuel tank and remove the skid plate from the vehicle.

INSTALLATION

(1) Attach the skid plate to the fuel tank strap.

(2) Position and support the skid plate under the fuel tank.

(3) Install the nuts to attach the skid plate to the straps and to the frame crossmembers. Tighten the fuel tank strap nuts to 5 N·m (40 in. lbs.) torque. Tighten the skid plate-to-crossmember nuts with 16 N·m (138 in. lbs.) torque.



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Fig. 7 Fuel Tank Skid Plate

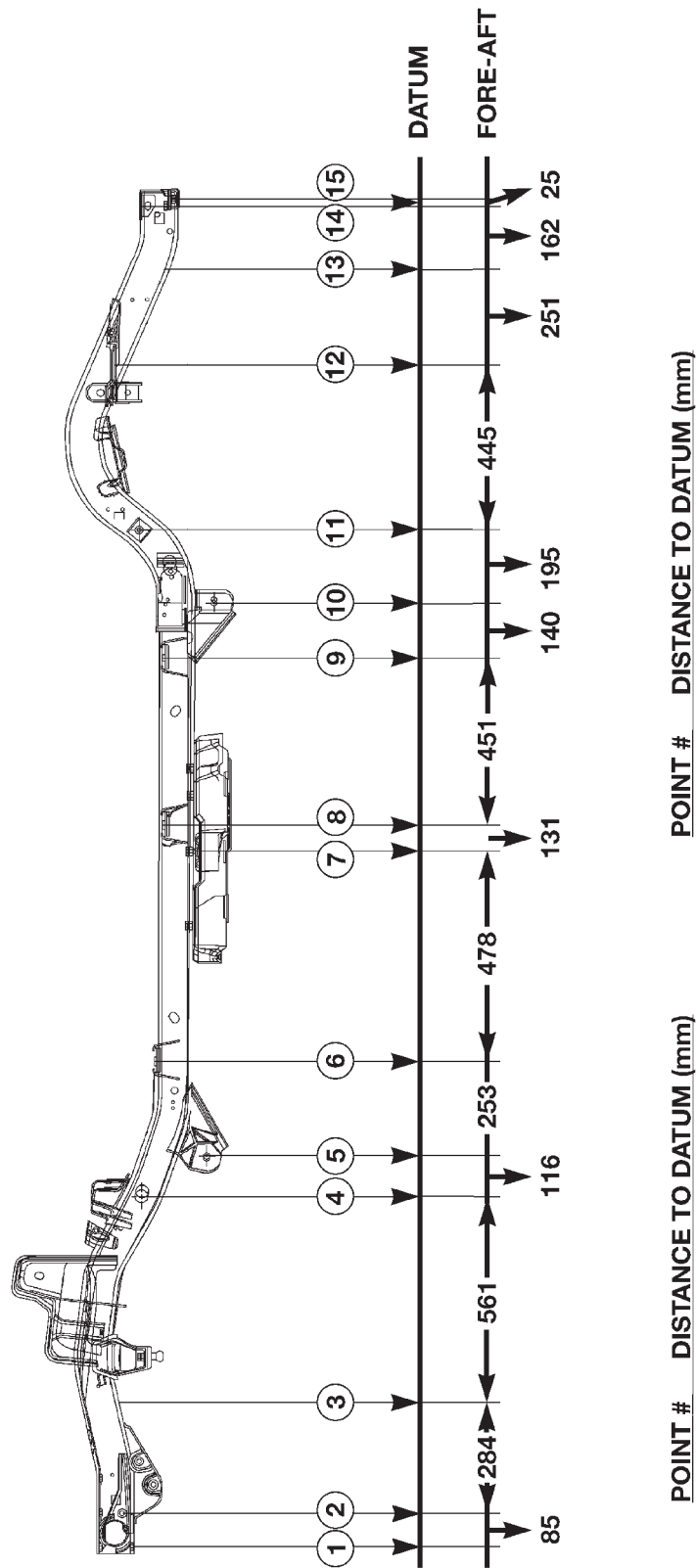
(4) Install the protective caps on the end of the strap studs.

(5) Remove the support from under the skid plate.

SPECIFICATIONS

FRAME DIMENSIONS

FRAME SIDE VIEW



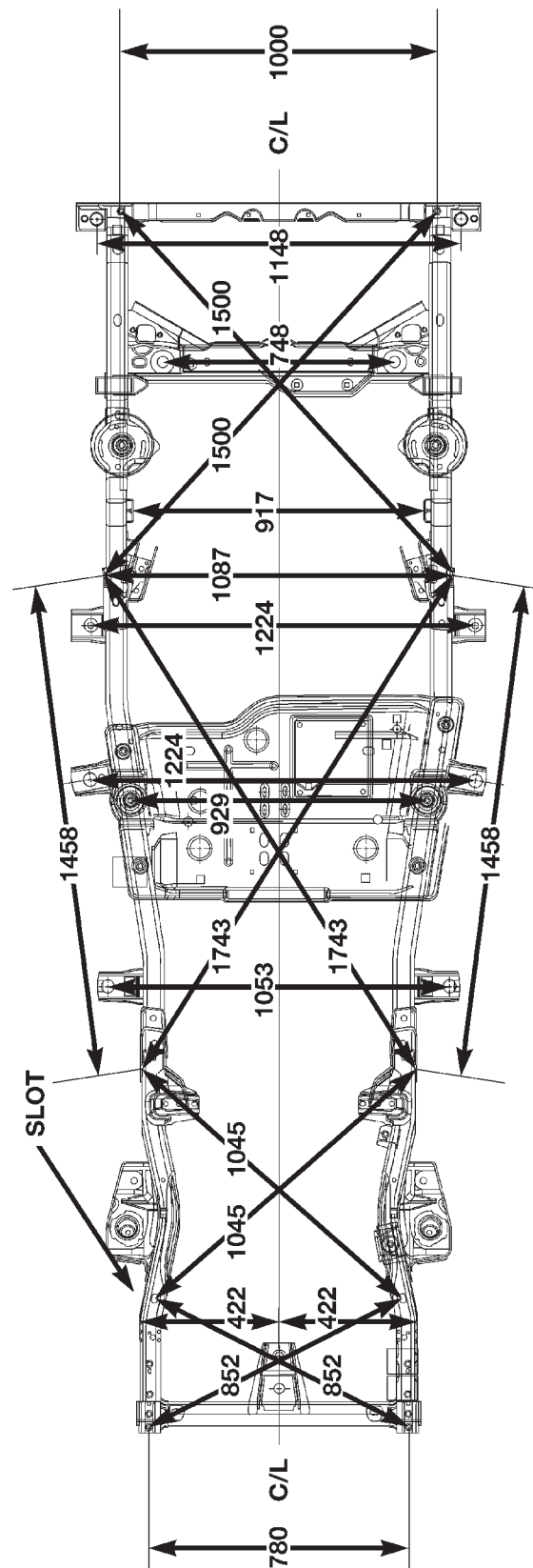
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2.	534	9.	445
3.	543	10.	309
4.	494	11.	512
5.	317	12.	577
6.	460	13.	474
7.	359	14.	505
		15.	406

1.	BOTTOM OF SIDERAIL
2.	CENTER OF HOLE
3.	BOTTOM OF SIDERAIL,
	CENTER OF SLOT
4.	CENTER OF HOLE, OUTBOARD
5.	CENTER OF HOLE, OUTBOARD
6.	BOTTOM OF BRACKET
7.	BOTTOM OF SIDERAIL
8.	BOTTOM OF BRACKET
9.	BOTTOM OF BRACKET
10.	CENTER OF HOLE, OUTBOARD
11.	CENTER OF HOLE, INBOARD
12.	BOTTOM OF CROSSMEMBER
13.	CENTER OF HOLE, OUTBOARD
14.	BOTTOM OF BRACKET
15.	BOTTOM OF FRAME

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SPECIFICATIONS (Continued)

FRAME TOP VIEW



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SPECIFICATIONS (Continued)

TORQUE SPECIFICATIONS

DESCRIPTION	TORQUE
Front Bumper Screw	104 N·m (77 ft. lbs.)
Front Tow Hook Screw	108 N·m (80 ft. lbs.)
Fuel Tank Skid Plate Nuts . . .	16 N·m (138 in. lbs.)
Fuel Tank Strap Nuts	5 N·m (40 in. lbs.)
Main Floor holdown Bolt	47 N·m (35 ft. lbs.)
Radiator Holdown Bolt	47 N·m (35 ft. lbs.)
Rear Bumper Bolt	67 N·m (50 ft. lbs.)
Rear Bumper Nut	67 N·m (50 ft. lbs.)
Rear Floor holdown Bolt	47 N·m (35 ft. lbs.)
Transfer Case Skid Plate Bolts . .	74 N·m (55 ft. lbs.)
Transmission Mount Nuts	28 N·m (21 ft. lbs.)

