

BUMPERS

WARNING: IF EQUIPPED WITH AIR CUSHION RESTRAINT SYSTEM DO NOT ATTEMPT ANY ADJUSTMENT, REPAIR OR REMOVAL OF THE FRONT BUMPER OR COMPONENTS UNTIL THE DISCONNECTION PROCEDURE IS COMPLETED. THIS PROCEDURE MUST BE FOLLOWED TO PREVENT ACCIDENTAL DEPLOYMENT OF THE SYSTEM WHICH COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEMS COMPONENTS. IN ADDITION, CARE MUST BE EXERCISED TO NEVER BUMP OR STRIKE THE BUMPER IMPULSE DETECTOR IN A MANNER WHICH COULD CAUSE INADVERTENT DEPLOYMENT OR IMPROPER OPERATION OF THE SYSTEM.

A.C.R.S. DISCONNECTION PROCEDURE

1. Turn ignition switch to "LOCK" position. Disconnect the negative battery cable from the battery and tape end.
2. If removing or replacing front bumper, remove bolts from bumper impulse detector to bumper impulse detector bracket and tape impulse detector to radiator support until bumper work is completed.

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DESCRIPTION AND OPERATION

DESCRIPTION AND OPERATION OF THE ENERGY ABSORBING UNIT

Both the front and rear bumpers on all Buicks have increased reinforcements and energy absorbing units. These modifications allow the vehicle to withstand a 5 M.P.H. barrier impact at both the front and rear bumpers without major damage.

The energy absorbing unit (Figure 2B-1) is located between the bumper and frame. It provides the mounting for the bumper and is designed to absorb low speed impact energy and return the bumper to its original position without major damage.

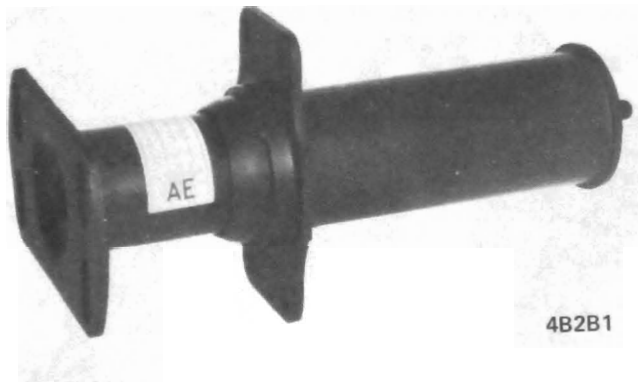


Figure 2B-1 Energy Absorbing Unit

The unit consists of two sub-assemblies. The piston tube and the cylinder tube (Figure 2B-2).

The piston tube assembly is filled with a pressured gas and consists of a bumper bracket, piston tube, orifice, seal, piston seal, piston and stop ring.

The cylinder tube assembly is filled with a hydraulic fluid and consists of a frame bracket, cylinder tube, mounting stud and metering pin.

The piston tube assembly is inserted into the cylinder tube assembly and the cylinder tube is crimped. The crimp mates with the stop ring to hold the unit together. The recess in the stop ring area is filled with grease to keep out foreign material.

When attached to the vehicle the piston tube attaches to the bumper and the cylinder tube to the frame.

The gas pressure in the piston tube assembly maintains the unit in the extended position. Extension is limited by the stop ring on the outside of the piston tube engaging the matching contour of the crimp on the cylinder tube. The engagement is also intended to provide strength to withstand jacking and towing stresses.

As the energy absorber is collapsed upon impact the hydraulic fluid in the cylinder tube is forced into the piston tube through the orifice.

The metering pin controls the rate at which the fluid passes through the orifice. This controlled passage of fluid provides the absorbing action.

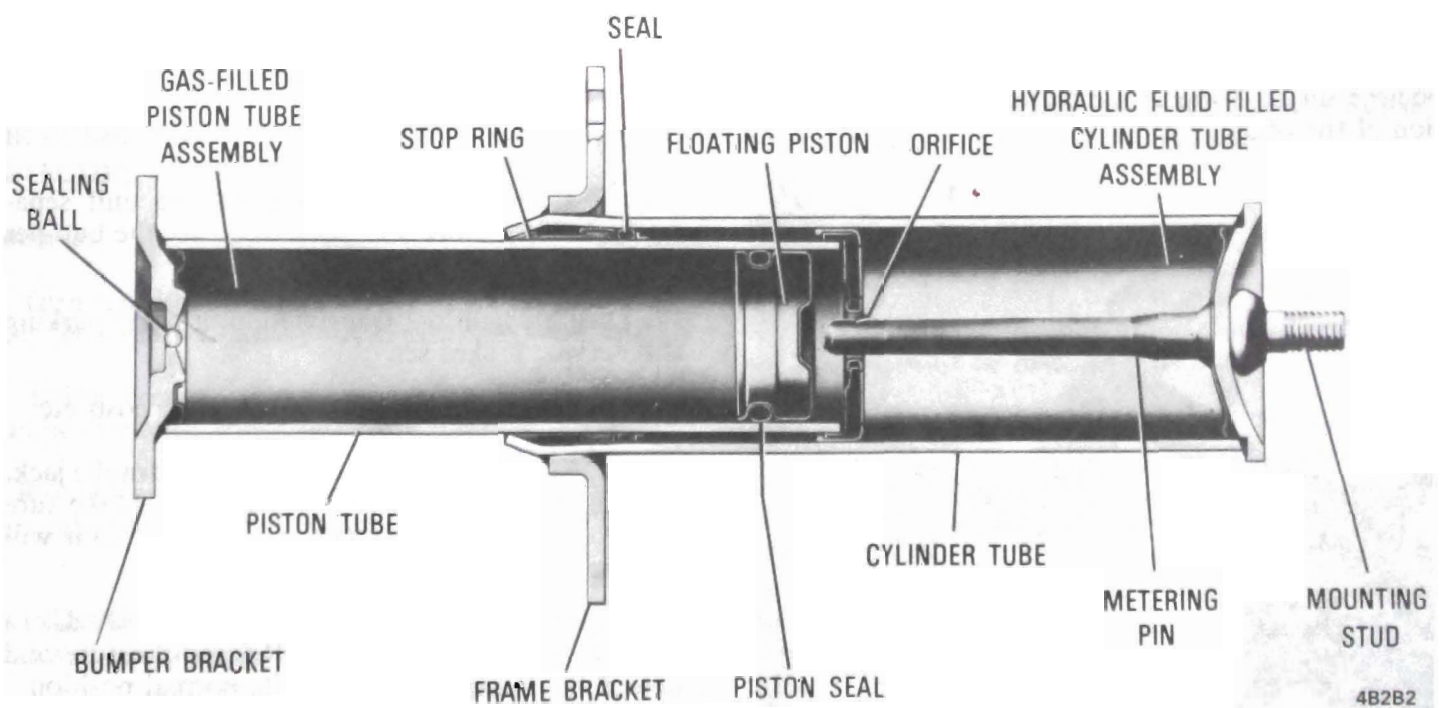


Figure 2B-2 Cutaway of Energy Absorbing Unit

The hydraulic fluid that is forced into the piston tube displaces the floating piston compressing the gas behind the floating piston. After impact the pressure of the compressed gas behind the piston forces the hydraulic fluid back into the cylinder tube extending the unit to its original position.

DIAGNOSIS

DIAGNOSIS OF ENERGY ABSORBING UNIT

1. Each energy absorber must be diagnosed separately.
2. Do not repair, weld or apply heat to the units.
3. Do not drive into barriers to test the units.

Recommendations for Handling Energy Absorbing Units

1. If a unit is to be scrapped, or is bound up, relieve pressure by providing a positive restraint such as a chain or cable and stand clear of the bumper. Relieve the gas pressure by drilling a 1/8 inch hole in the piston tube near the bumper bracket. Remove the unit only after the pressure has been relieved. Figure 2B-3. If the unit is removed from the car intact, it still should be vented before scrapping.

WARNING: WEAR APPROVED SAFETY GLASSES.

2. When removing one unit from the vehicle it may be necessary to support the bumper to prevent rotation of the other unit.



Figure 2B-3 Relieving Pressure Before Scrapping

3. Do not test the units by driving the vehicle into barriers.
4. Do not immerse units in solvents.

Leakage

Some oil wetting may be due to the grease packed into the crimp recess. However, if oil is continuously dripping from the crimp or the stud end of the unit, the unit should be replaced.

Damage

Observe the bumper bracket, piston tube, frame bracket and cylinder tube for collision damage. Scuffing of the tube is normal (Figure 2B-4). If there is obvious damage replace the unit.



Figure 2B-4 Operated Unit

On Car Test

This test involves compressing EACH unit separately 3/8" or more and observing that the bumper returns to its normal position.

1. Turn off ignition, transmission in park, parking and service brakes set.
2. Use a barrier such as a pillar, wall, post, etc.
3. Align a pressure device, such as a hydraulic jack, with the E. A. unit area of the bumper. Make sure it is positioned squarely with the bumper so it will not slip. Figure 2B-5.
4. Apply pressure to compress the unit 3/8". Use a 6" scale to determine travel. Release pressure and note if the bumper returns to its normal position.
5. If either unit fails to return to its normal position, replace it.

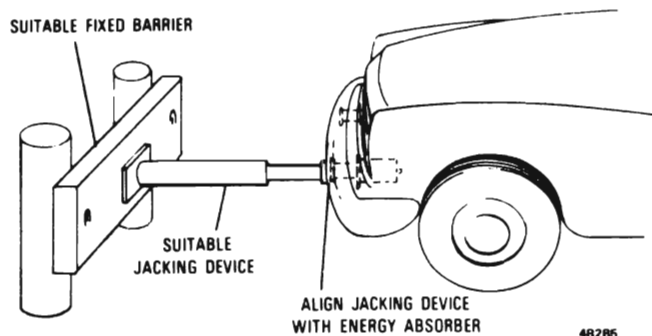


Figure 2B-5 On Car Testing

Bench Test

A suitable arbor press should be used to compress the unit $3/8$ ". Observe if it returns to its normal position. If not, this unit should be replaced.

MAINTENANCE AND ADJUSTMENTS

ALIGNMENT OF BUMPERS

The bumper brackets and supports are slotted to allow alignment to adjacent parts.

MAJOR REPAIR

AIR CUSHION RESTRAINT BUMPER IMPULSE DETECTOR, REMOVAL AND INSTALLATION

Removal

1. Turn ignition switch to "lock" position. Disconnect the negative battery cable and tape cable end.
2. Using connector remover J-24388 disconnect bumper switch harness near fuse block.
3. Remove grommet from cowl and feed wiring harness into engine compartment Figure 2B-6 or 2B-7.
4. Disconnect all harness retainers that retain harness and feed harness through radiator support.

5. Remove bolts from impulse detector to bumper and carefully remove detector and wiring. Figure 2B-8.

On E Series it will be necessary to remove the bumper and remove the face plate for access.

Installation

1. Before installing detector, carefully lay complete unit in passenger compartment and connect to analyzer J-24628.
2. Reconnect battery negative cable torque to 90 lb. in.
3. Turn ignition to any position but lock.
4. Check to see if system operates correctly. If OK to proceed, if not continue with diagnosis.
5. Turn ignition to "lock" and disconnect battery negative cable and tape cable end.
6. Install detector routing wiring as shown in Figure 2B-6, or 2B-7 and 2B-8. Seal Grommet at cowl. Install detector and torque mounting bolts to 20 lb. ft.
7. Remove analyzer J-24628 from A.C.R.S..
8. Connect battery negative cable. Torque to 90 lb. in.

REMOVAL AND INSTALLATION OF BUMPERS

Refer to the following art for removal and installation of the bumpers and related parts.

Flatten areas of brackets and frame where fluted bolts are used to allow proper alignment.

Bumper must be correctly aligned to allow proper operation of E. A. Units.

If the vehicle is equipped with air cushion restraint, the system must be disconnected by:

1. Turn the ignition switch to "LOCK" position. Disconnect the negative battery cable and tape cable end to insulate it.
2. When removing the front bumper, remove the bolts from bumper impulse detector to bracket and tape detector to radiator support until bumper work is completed.

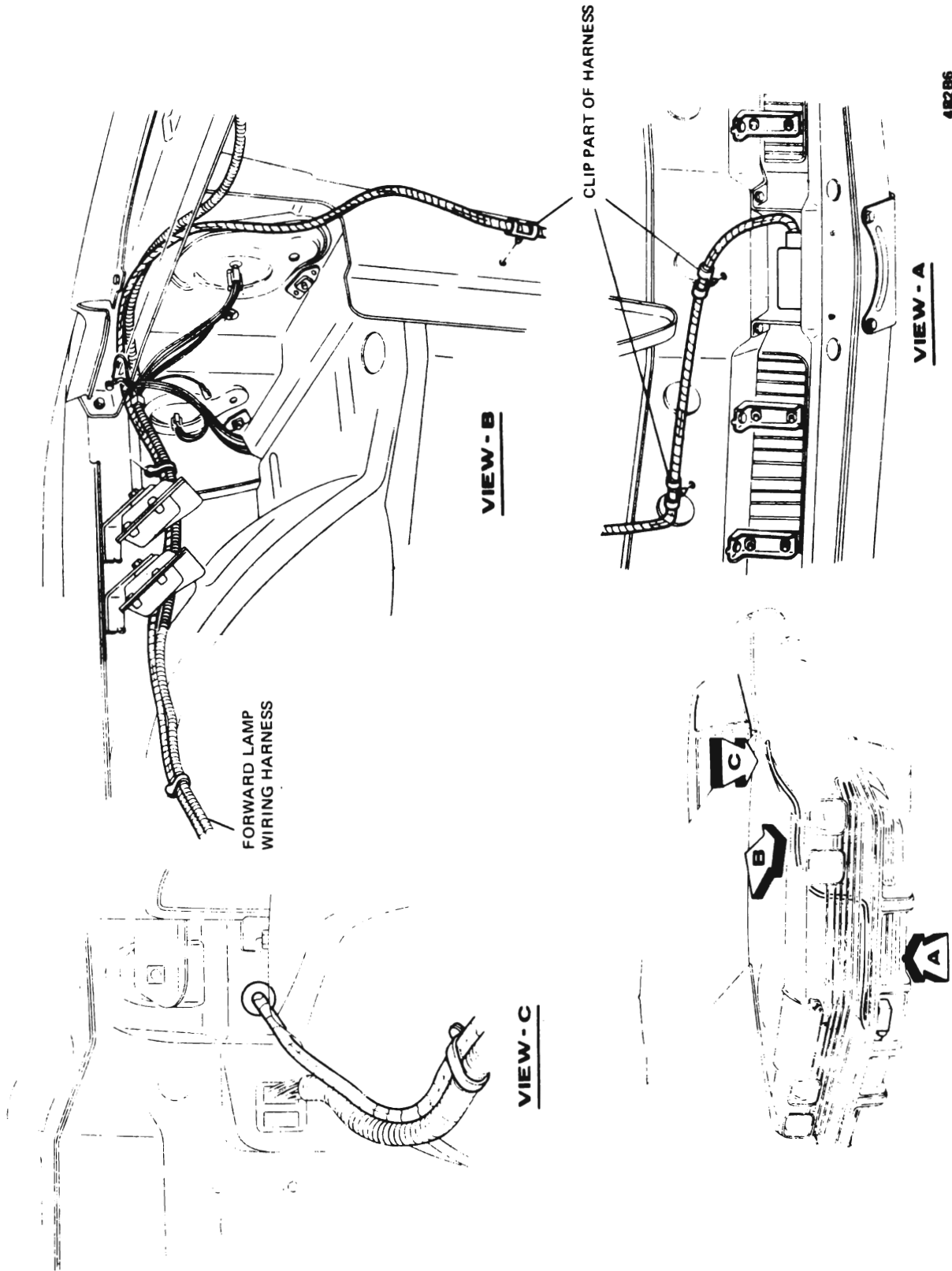


Figure 2B-6 B-C Series A.C.R.S. Bumper Impulse Detector Wiring

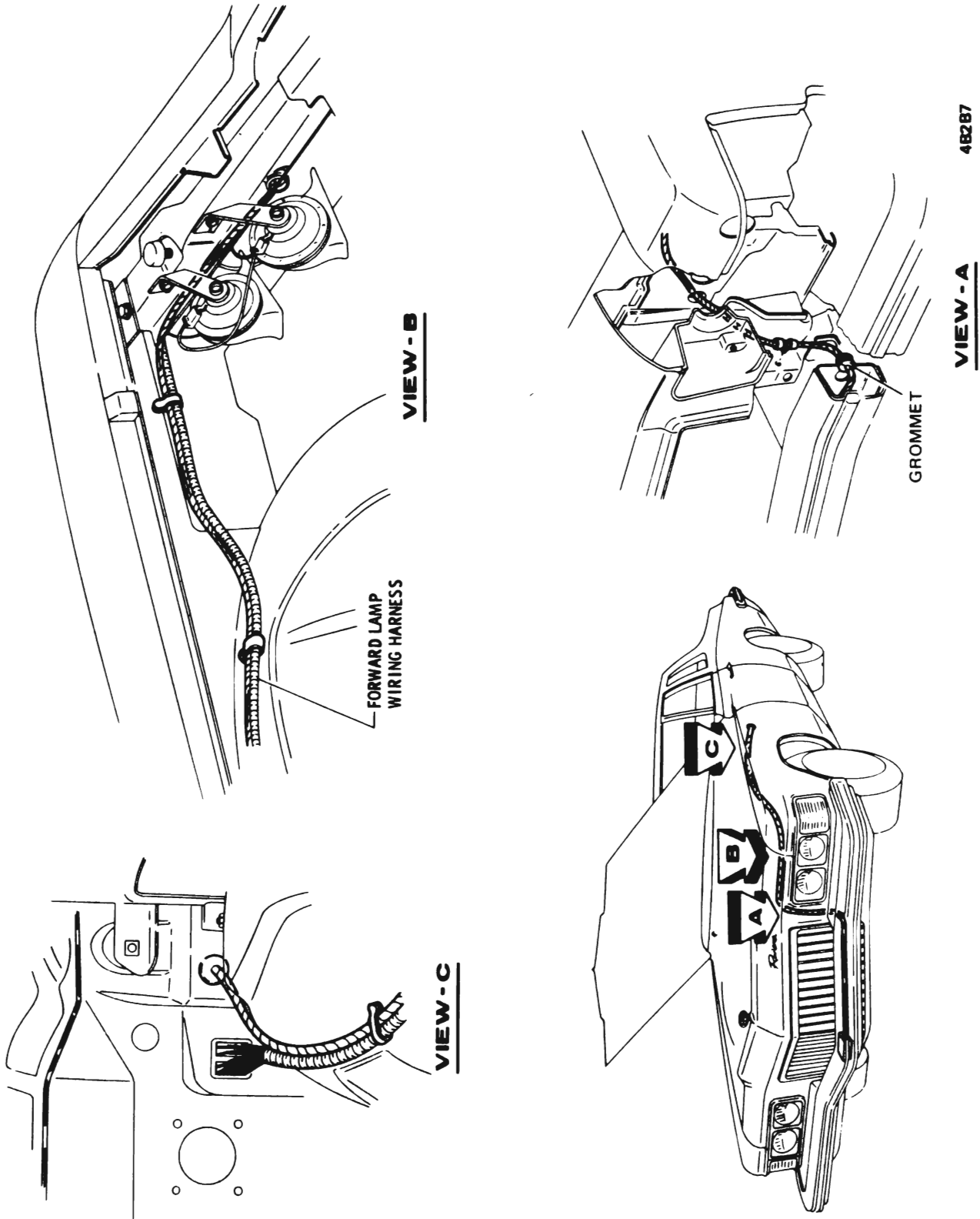


Figure 2B-7 E Series A.C.R.S. Bumper Impulse Detector Wiring

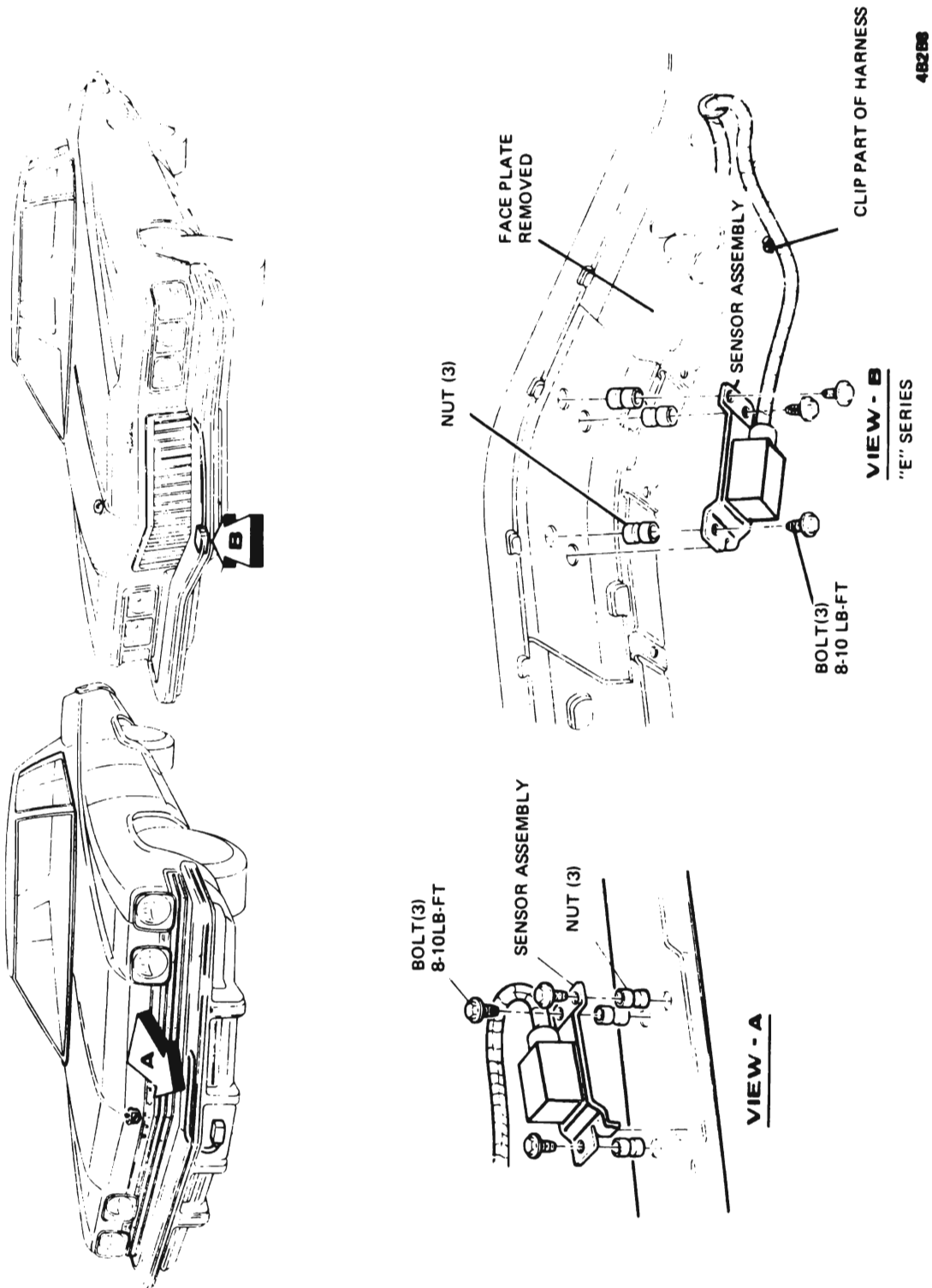


Figure 2B-8 B-C-E Series A.C.R.S. Bumper Impulse Detector Mounting

1974 BUMPER HEIGHT SPECIFICATIONS

SERIES	MODEL	FRONT DIMENSION "A"				FRONT CENTER DIMENSION "C"				REAR DIMENSION "B"			
		CURB				CURB				CURB			
		MIN	IDEAL	MAX		MIN	IDEAL	MAX		MIN	IDEAL	MAX	
X	ALL	19.75	21.00	22.47		20.00	21.25	22.72		21.68	23.30	24.58	
	LESS WAGON	20.21	21.46	22.71		20.33	21.58	22.83		21.27	22.72	24.17	
A	WAGON	20.21	21.46	22.71		20.33	21.58	22.83		22.51	23.96	25.41	
	LESS WAGON	20.67	21.87	23.07		20.78	21.98	23.18		22.60	24.00	25.40	
B	WAGON	20.67	21.87	23.07		20.78	21.98	23.18		23.92	25.32	26.72	
	ALL	20.67	21.87	23.07		20.78	21.98	23.18		23.65	25.05	26.45	
E	ALL	20.60	21.80	23.00		20.74	21.94	23.14		21.64	23.04	24.44	

NOTE: DIMENSIONS "A", "B" & "C" ARE MEASURED FROM EXTREME TOP SURFACE OF BUMPER FACE BAR TO GROUND LINE USING THE FRONT & REAR LOCATING POINTS SHOWN.

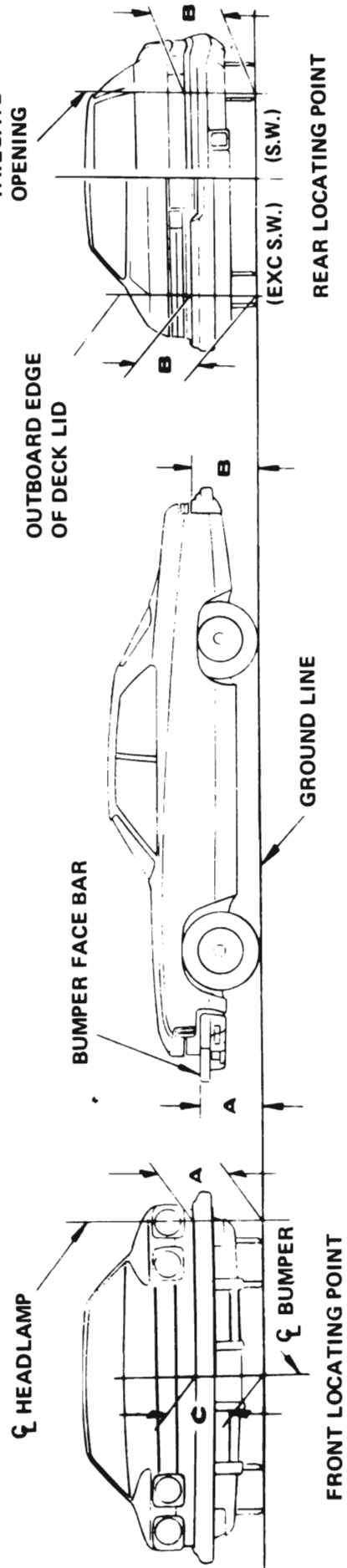


Figure 2B-9 All Series Bumper Height Specifications

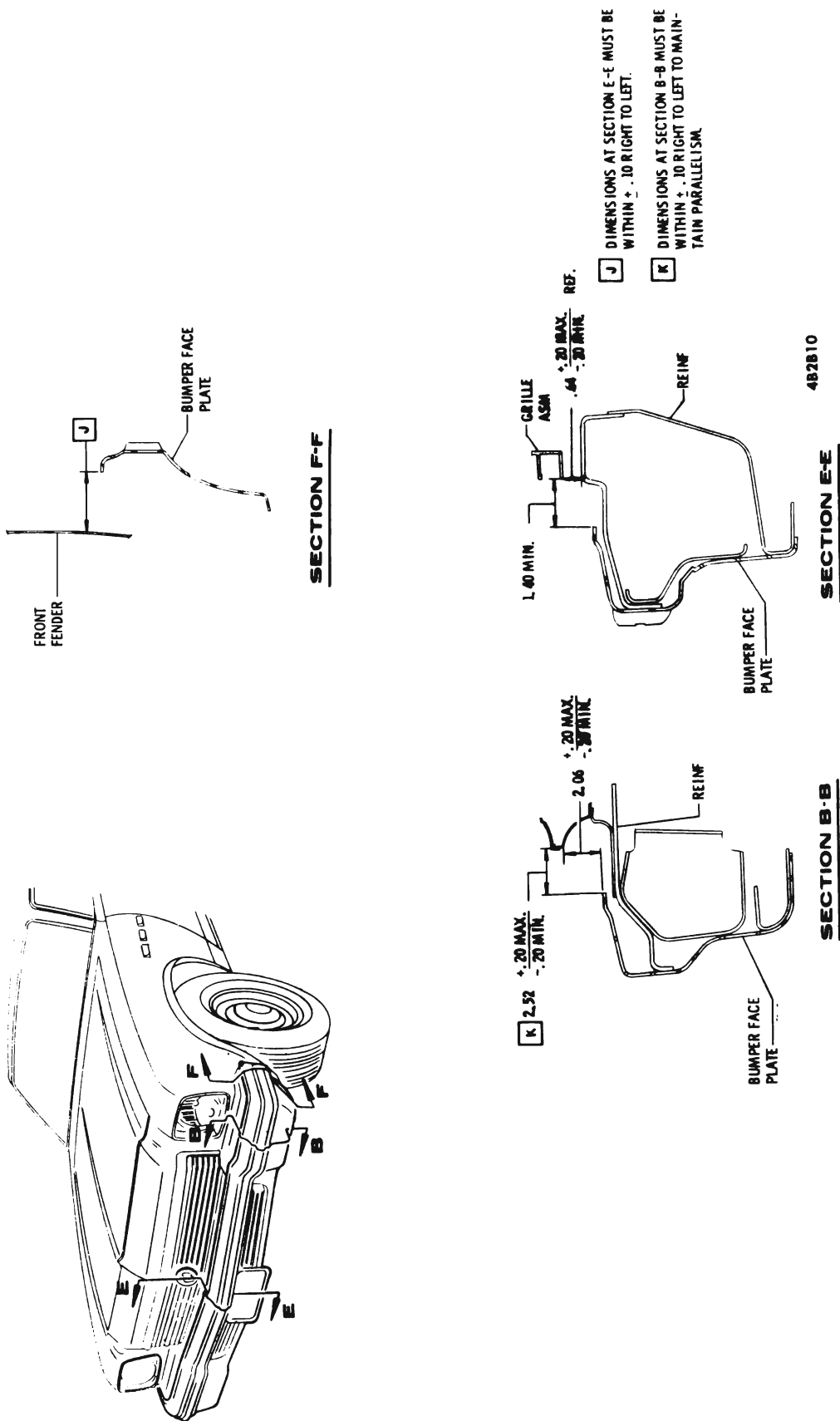
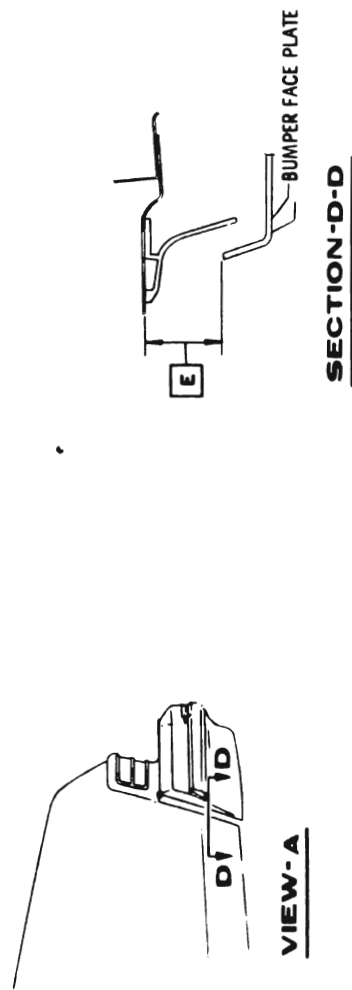
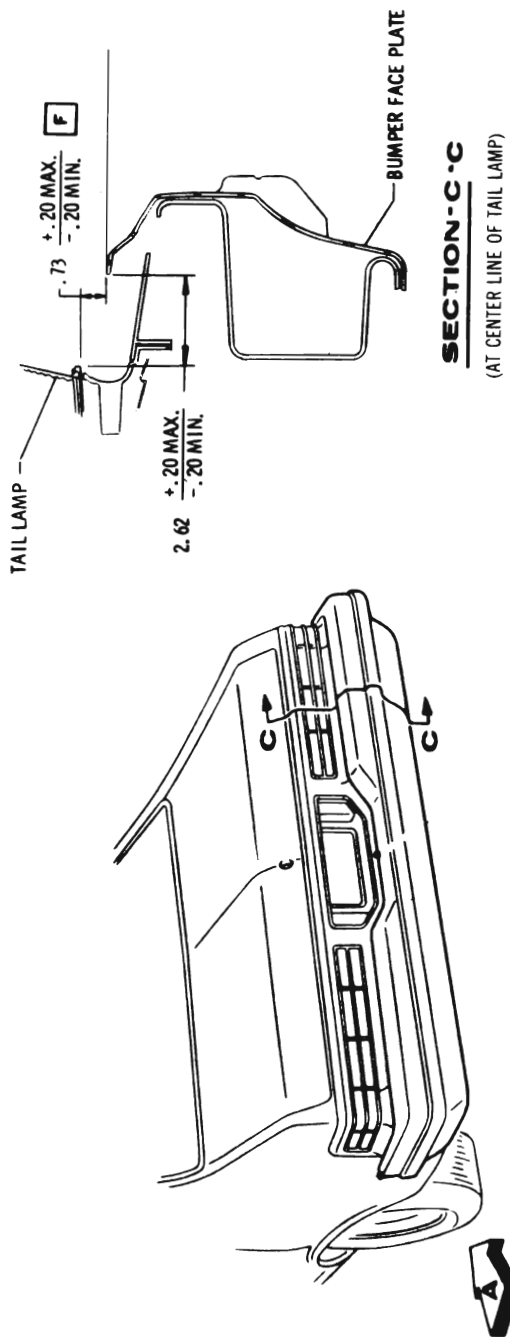


Figure 2B-10 X Series Front Bumper Clearance



E DIMENSION AT SECTION D-D MUST BE WITHIN $\begin{matrix} +.10 \\ -.10 \end{matrix}$ RIGHT TO LEFT.

F DIMENSION AT SECTION C-C MUST BE WITHIN $\begin{matrix} +.10 \\ -.10 \end{matrix}$ RIGHT TO LEFT TO MAINTAIN PARALLELISM.

Figure 2B-11 X Series Rear Bumper Clearance

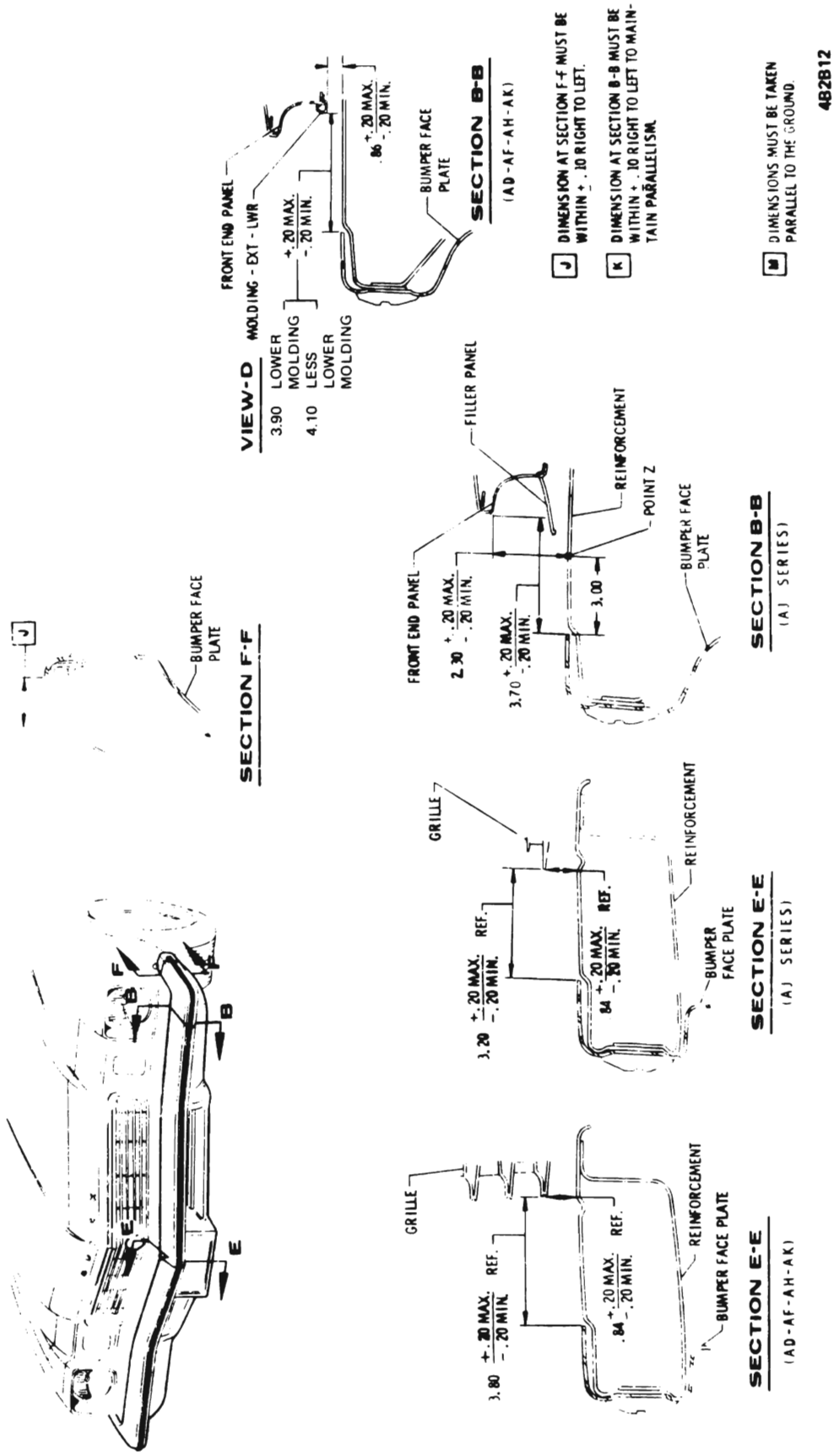
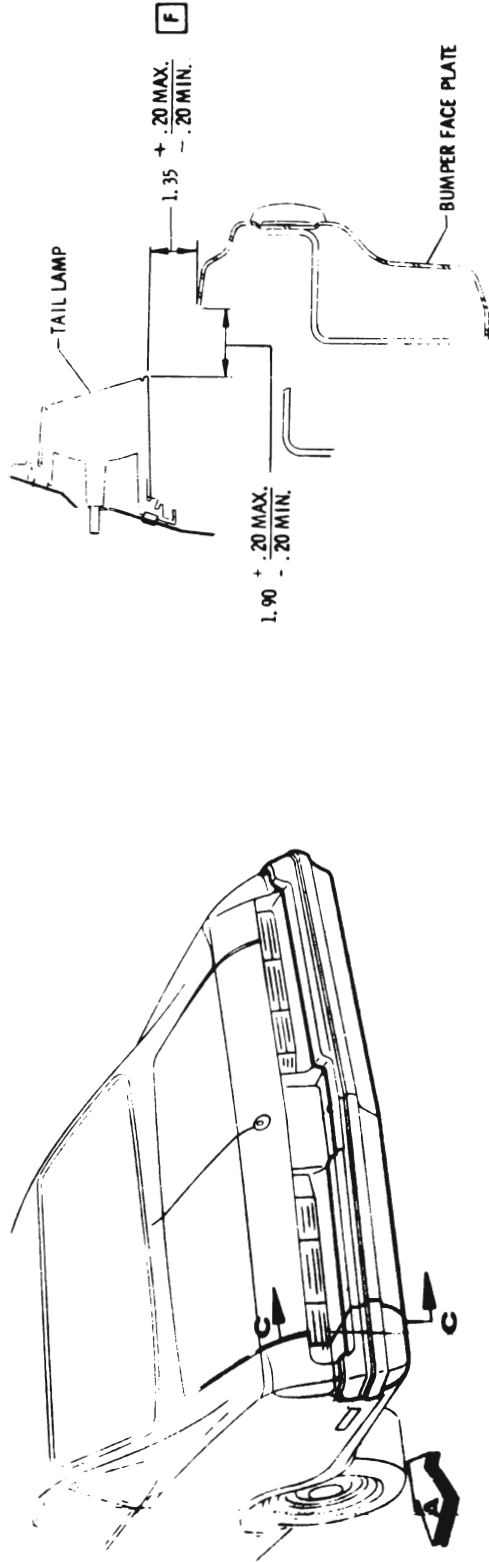
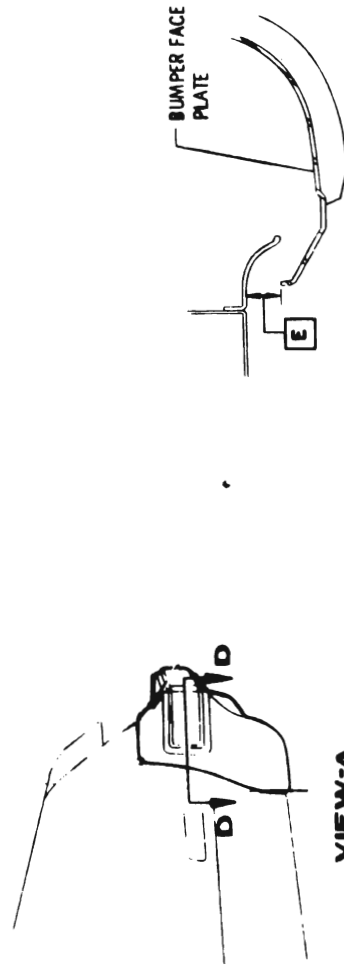


Figure 2B-12 A Series Front Bumper Clearance



SECTION C-C

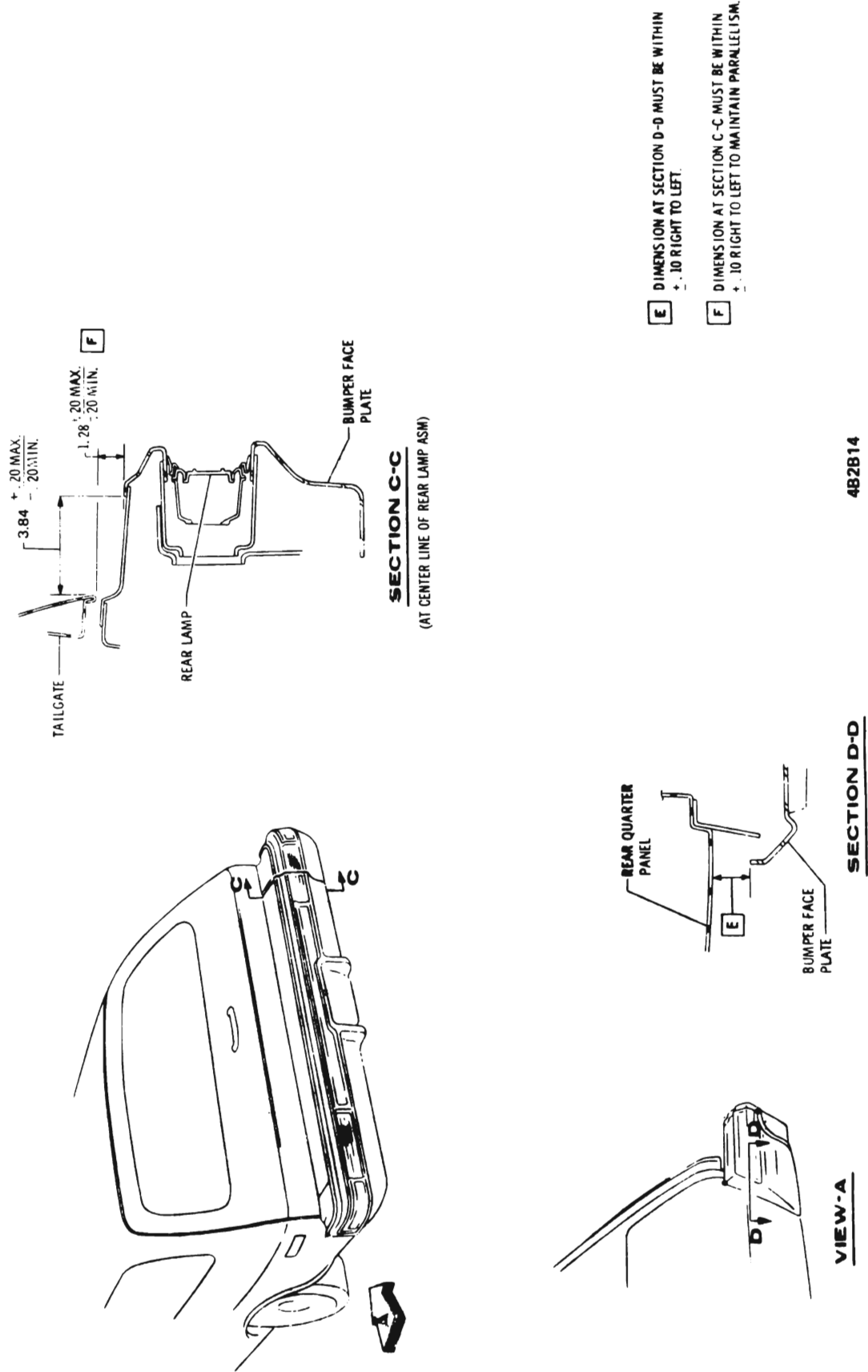


E DIMENSION AT SECTION D-D MUST BE WITHIN \pm .10 RIGHT TO LEFT.

F DIMENSION AT SECTION C-C MUST BE WITHIN \pm .10 RIGHT TO LEFT TO MAINTAIN PARALLELISM.

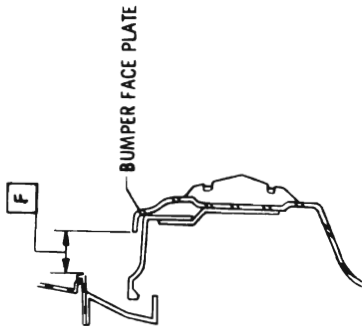
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Figure 2B-13 A Series Rear Bumper Clearance

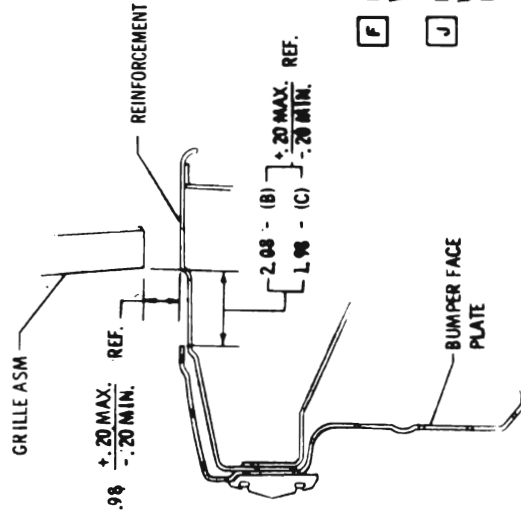
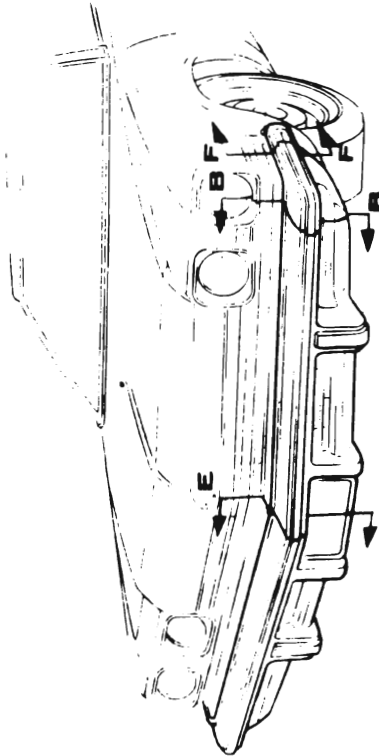


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Figure 2B-14 A Series Wagon Rear Bumper Clearance



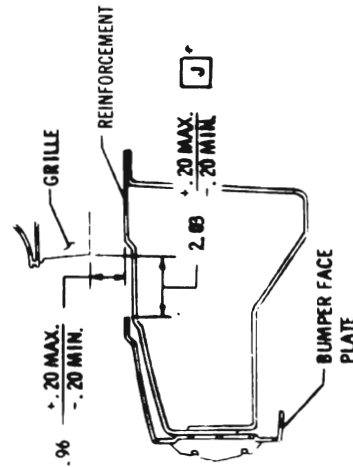
SECTION F-F



F DIMENSION AT SECTION B-B MUST BE WITHIN $+.10$ RIGHT TO LEFT.

J DIMENSION AT SECTION D-D MUST BE WITHIN $+.10$ RIGHT TO LEFT TO MAINTAIN PARALLELISM.

SECTION E-E



SECTION B-B

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Figure 2B-15 B-C Series Front Bumper Clearance

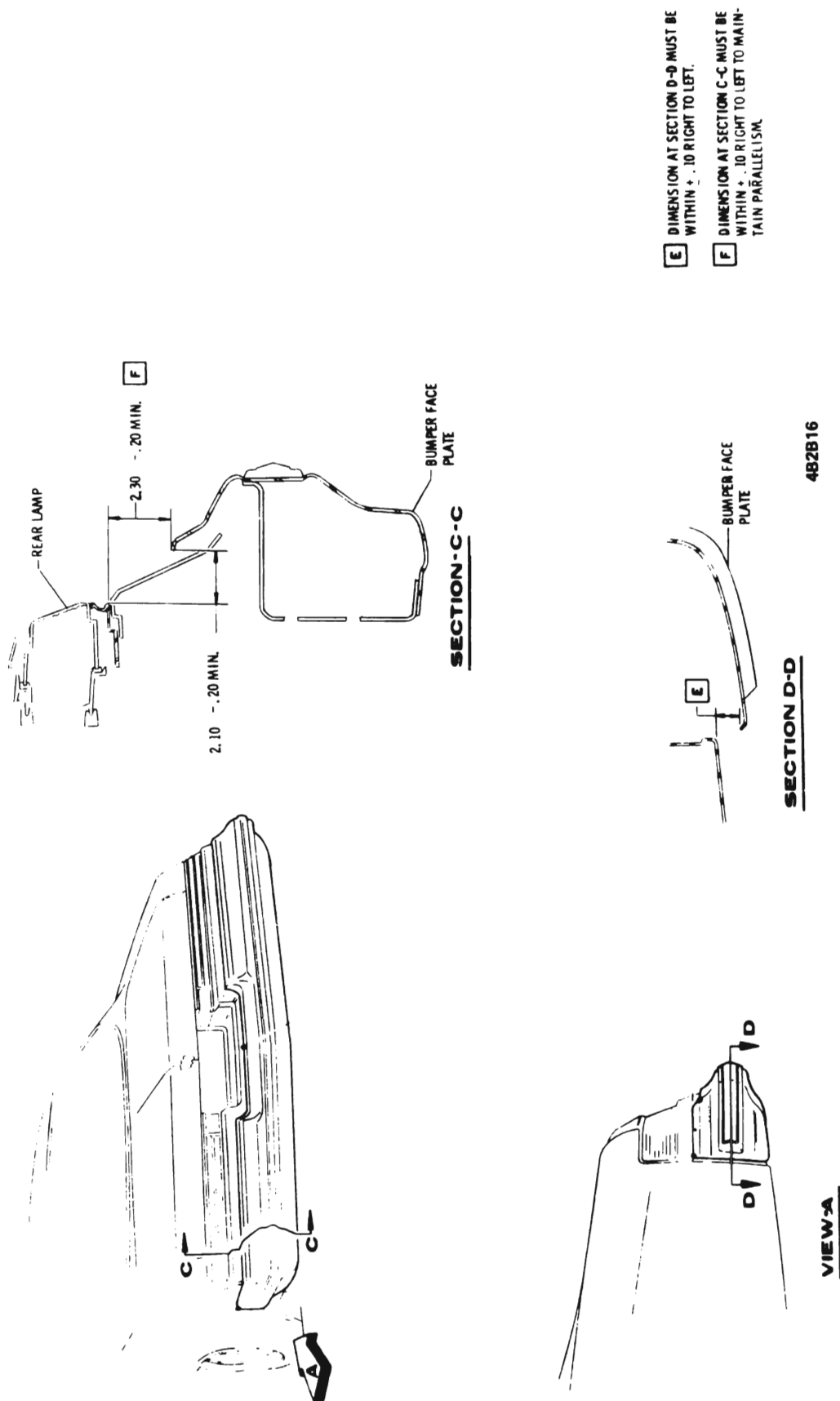


Figure 2B-16 B Series Rear Bumper Clearance

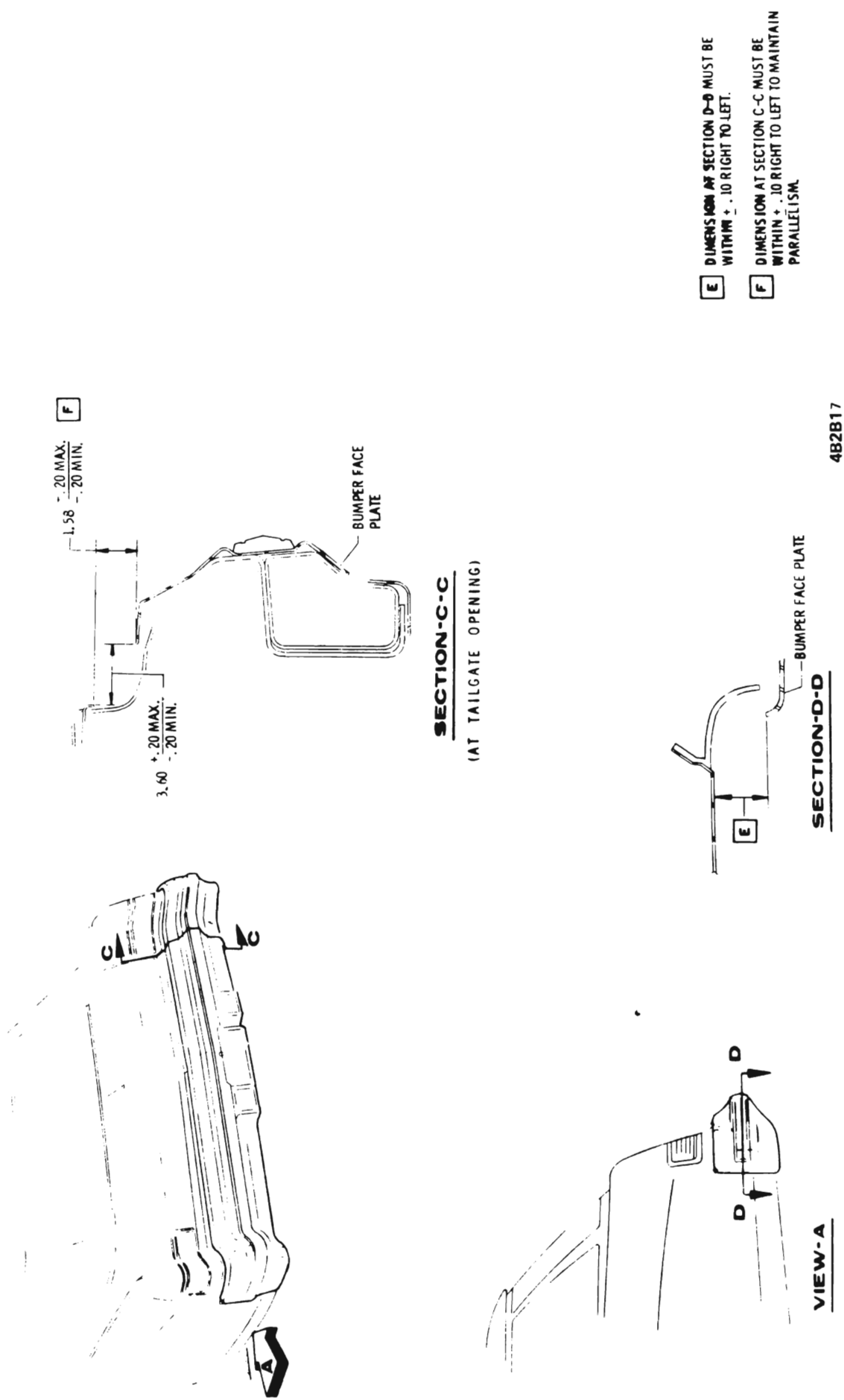


Figure 2B-17 B Series Wagon Rear Bumper Clearance

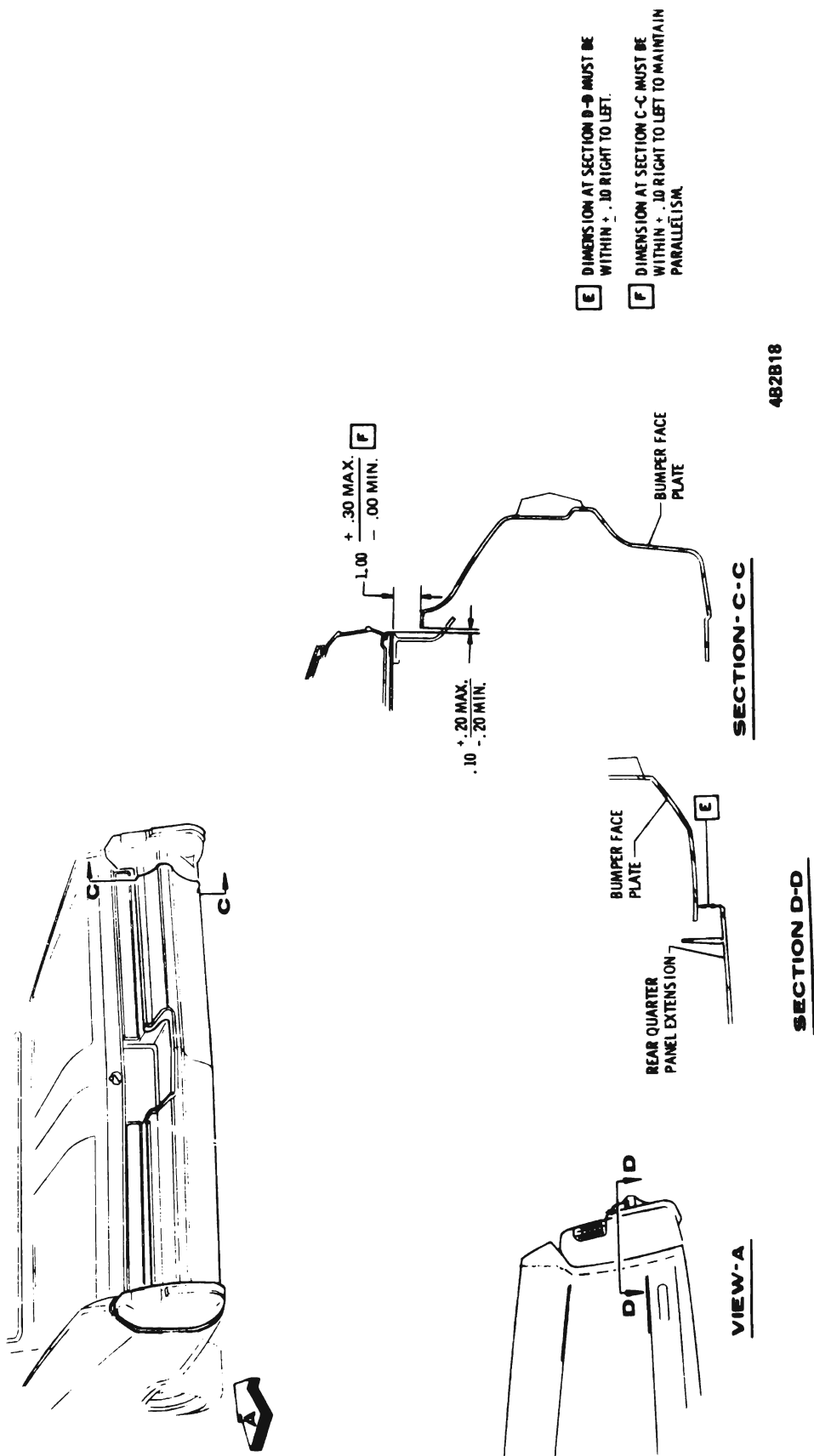
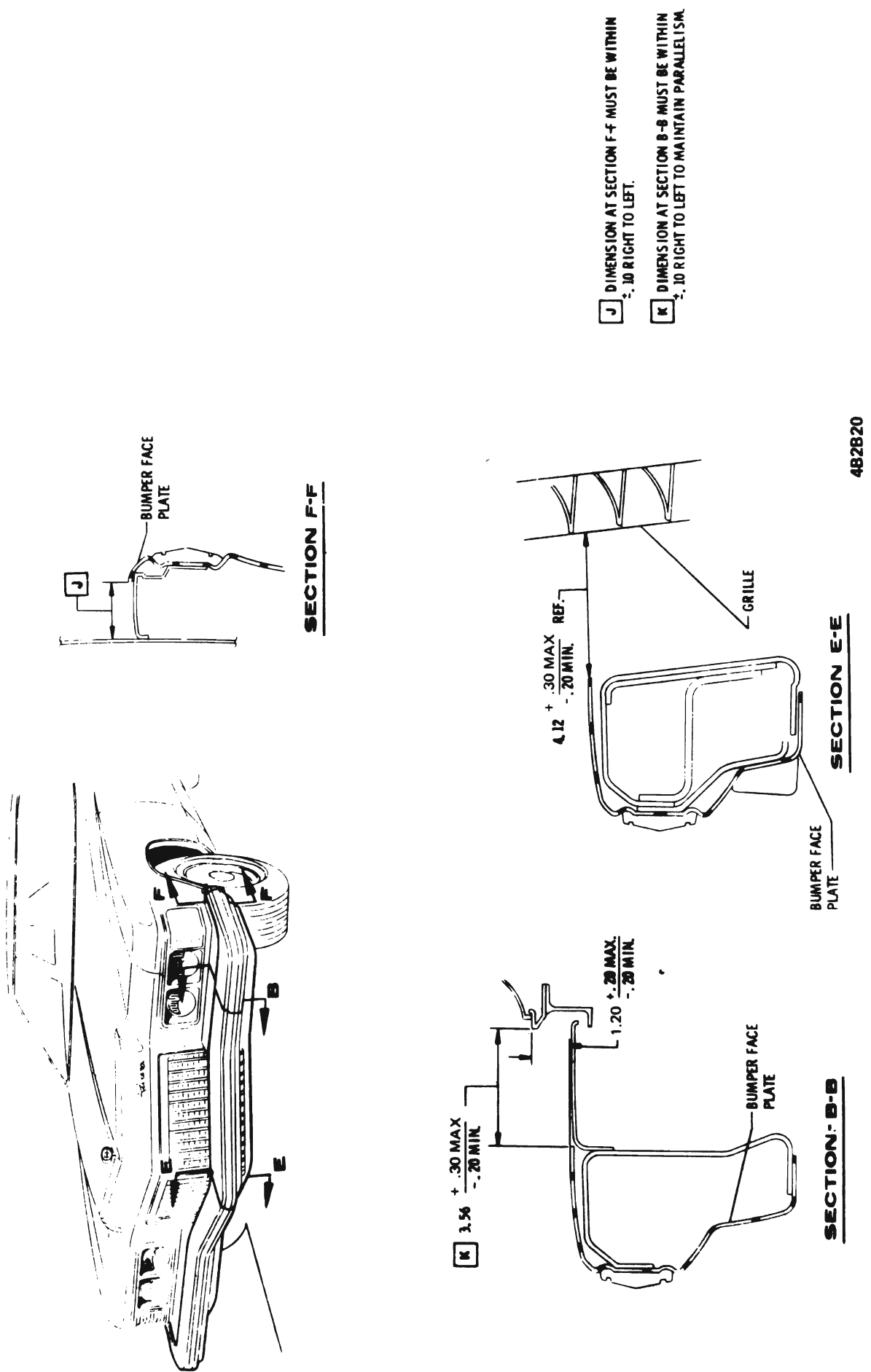
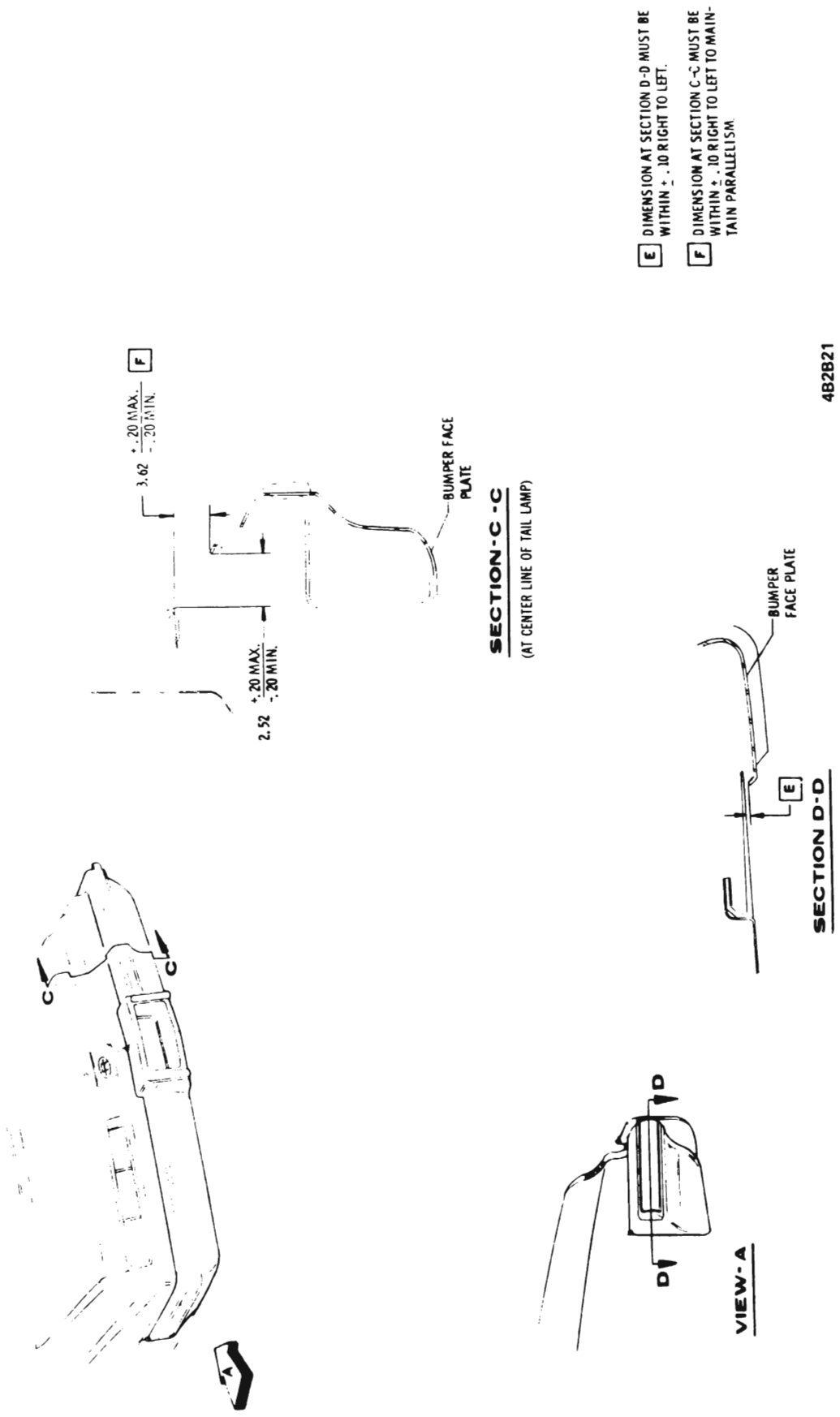


Figure 2B-18 C Series Rear Bumper Clearance



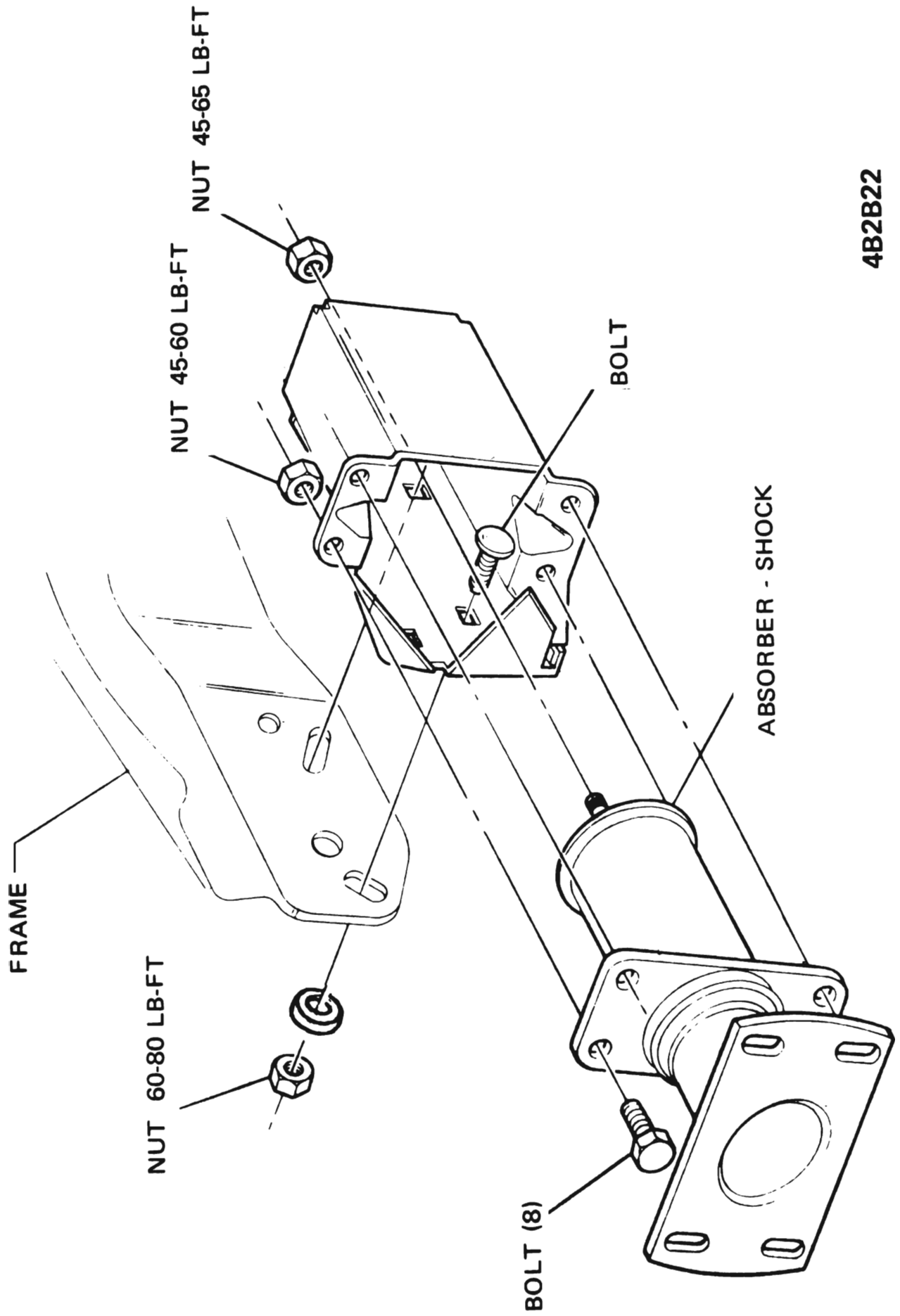
- J** DIMENSION AT SECTION F-F MUST BE WITHIN $\pm .10$ RIGHT TO LEFT.
- K** DIMENSION AT SECTION B-B MUST BE WITHIN $\pm .10$ RIGHT TO LEFT TO MAINTAIN PARALLELISM.

Figure 2B-20 E Series Front Bumper Clearance



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Figure 2B-21 E Series Rear Bumper Clearance



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Figure 2B-22 X Series Front Bumper E-A-Unit

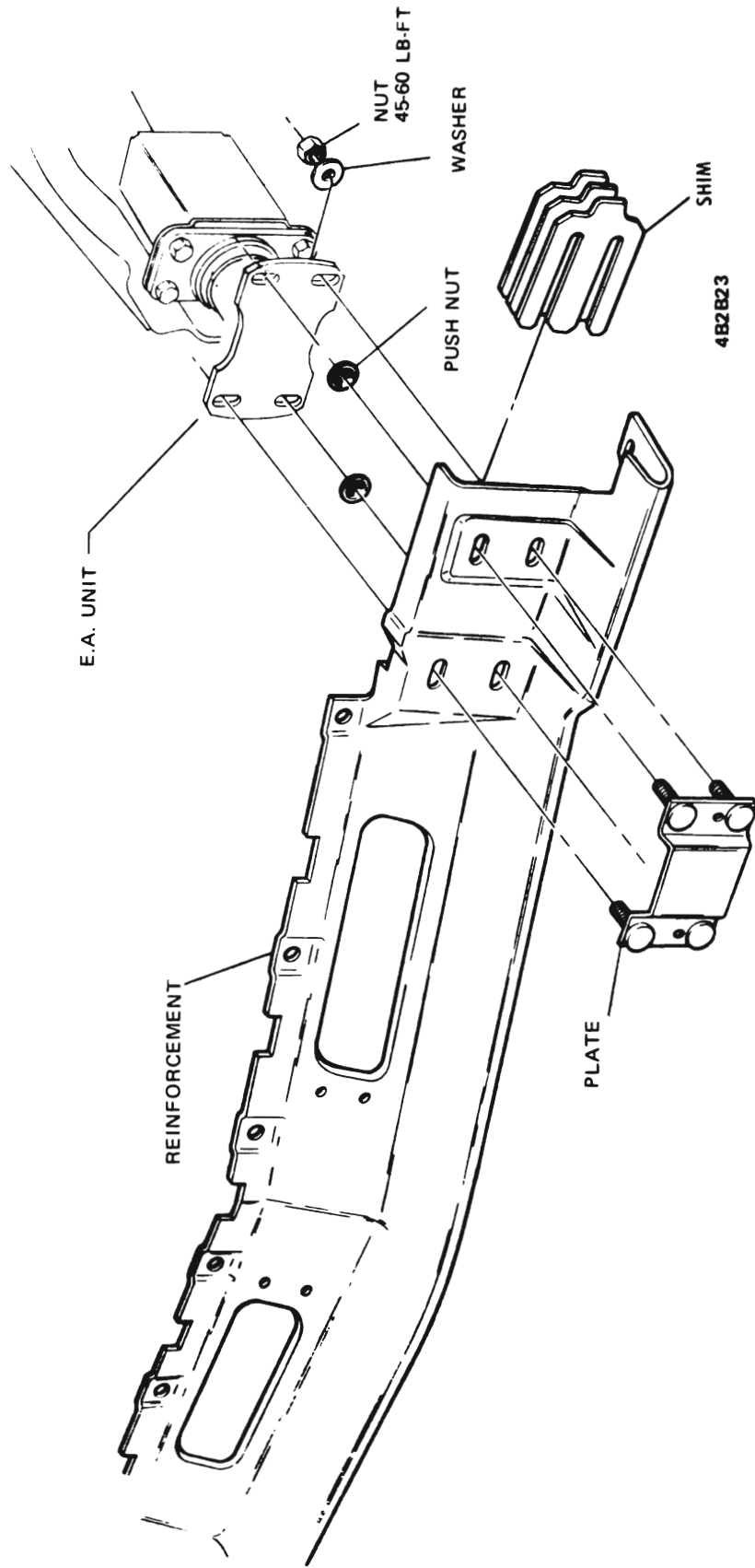
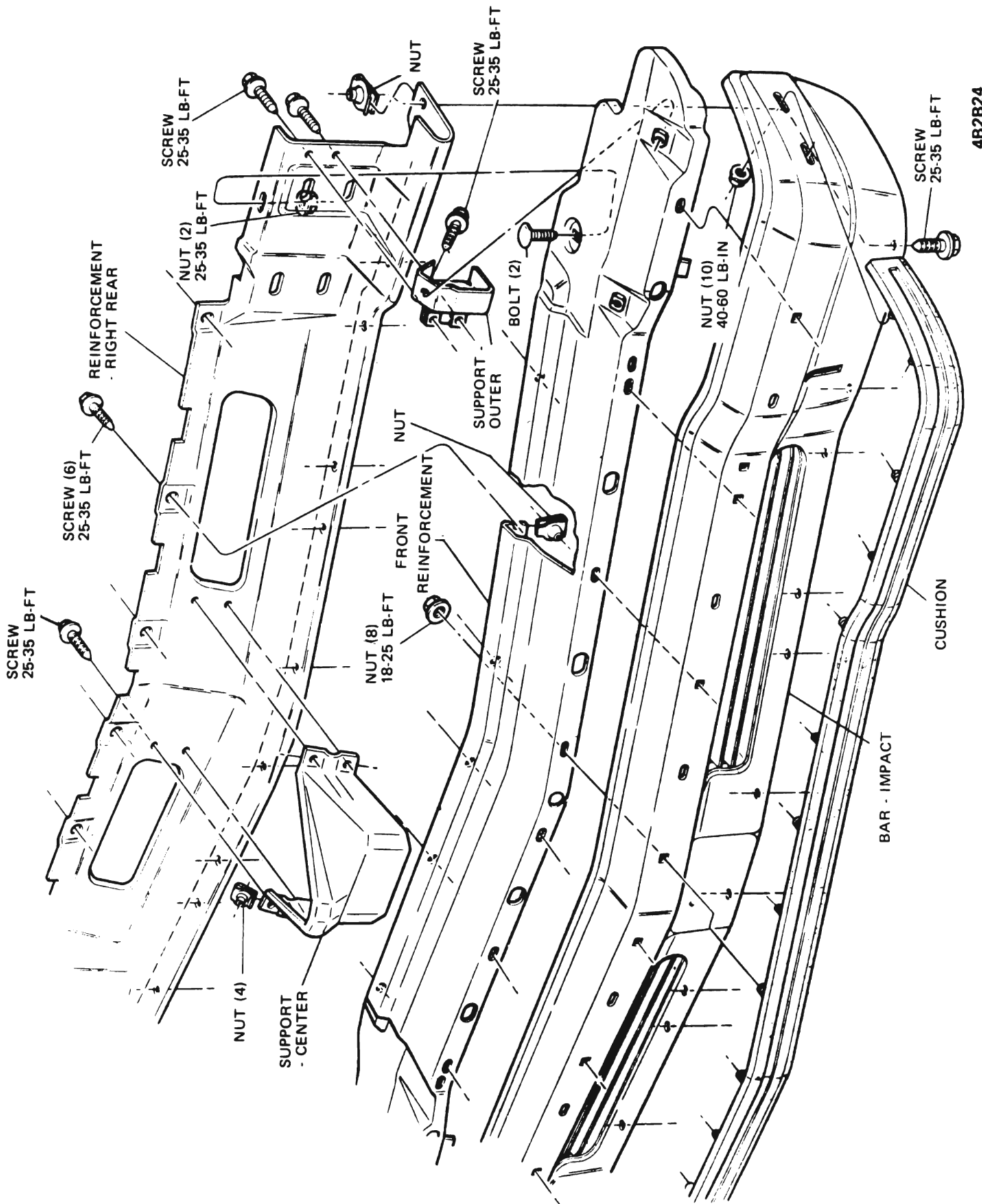


Figure 2B-23 X Series Front Bumper Reinforcements



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Figure 2B-24 X Series Front Bumper Face Plate

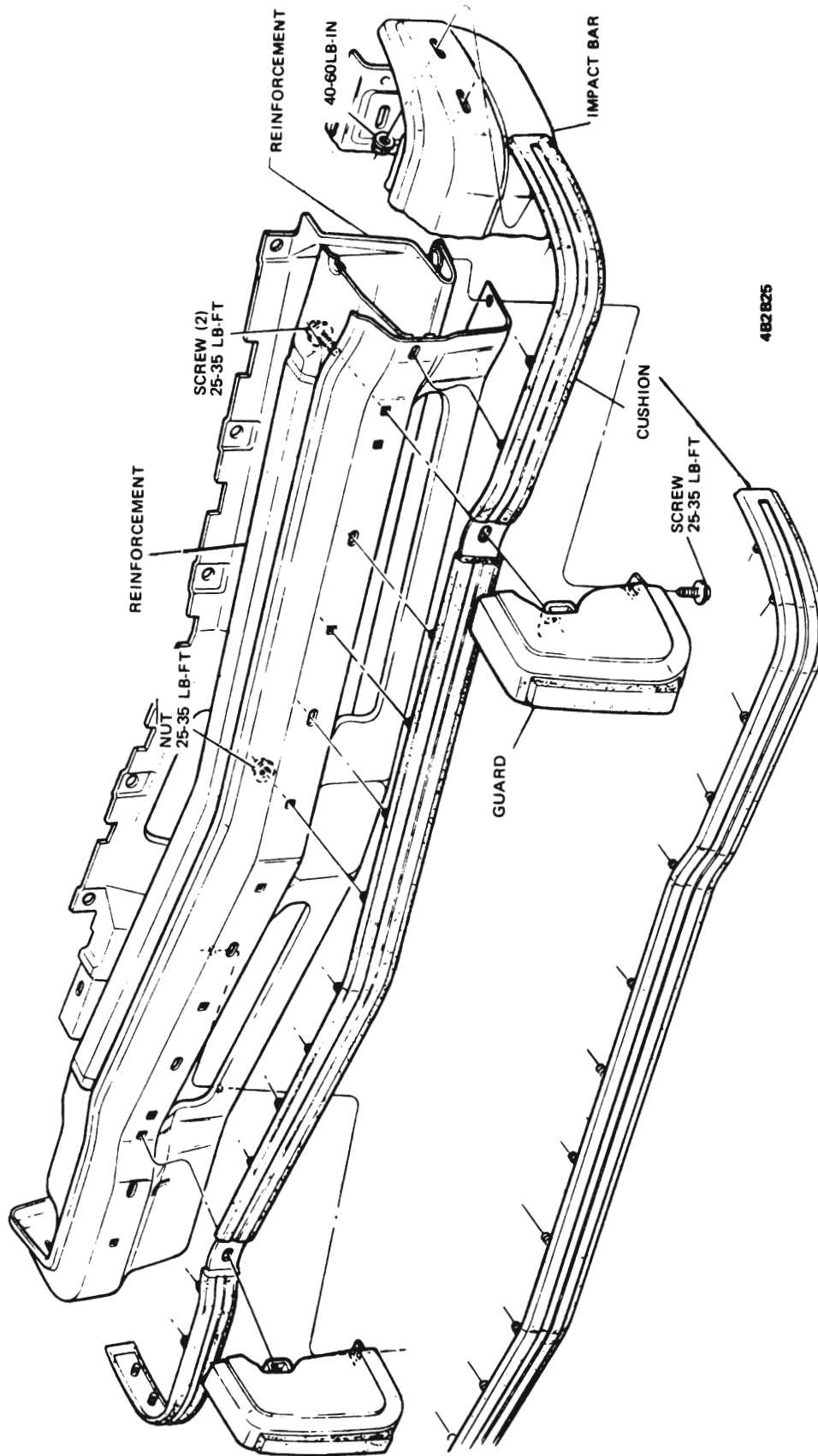
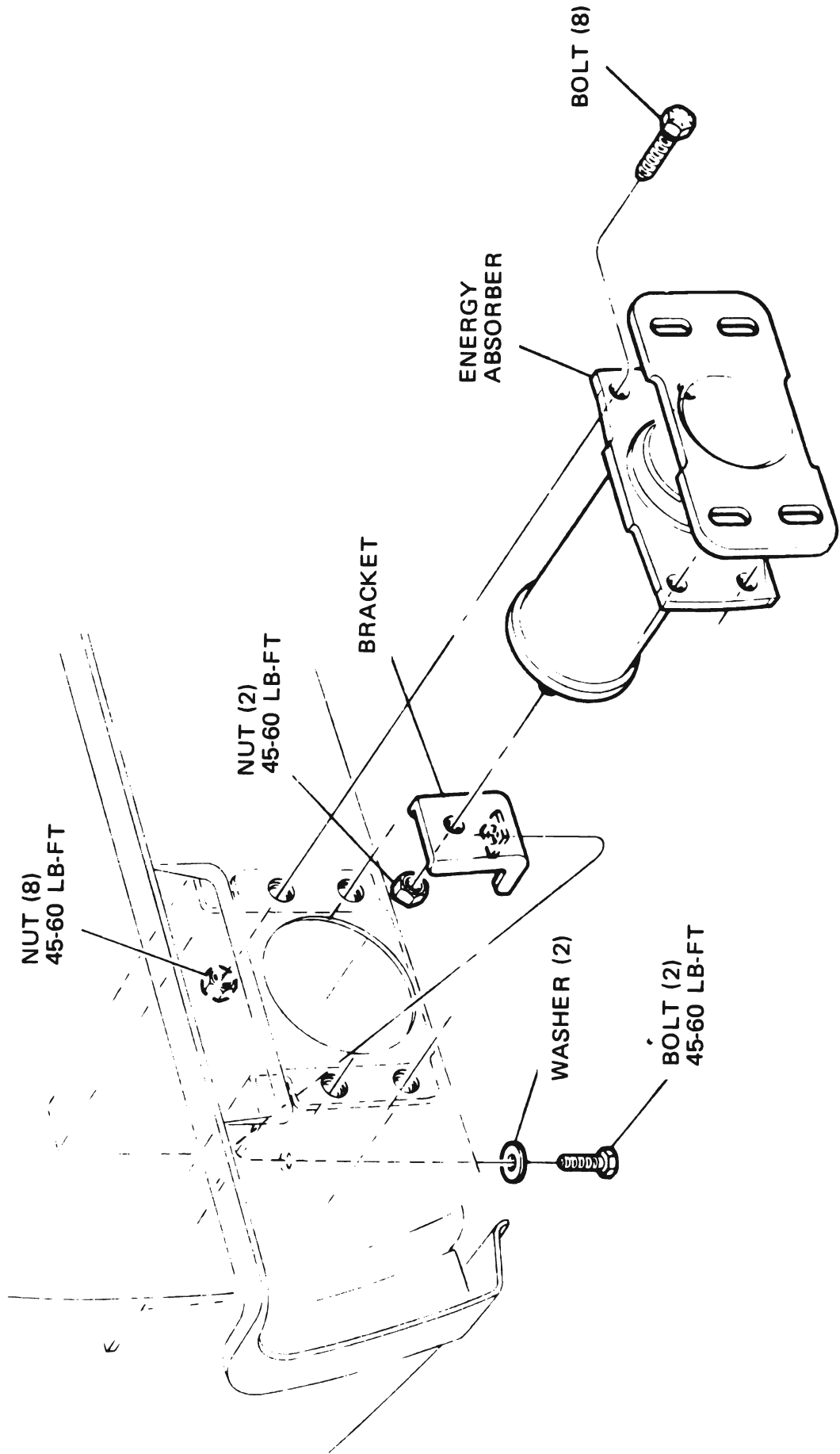
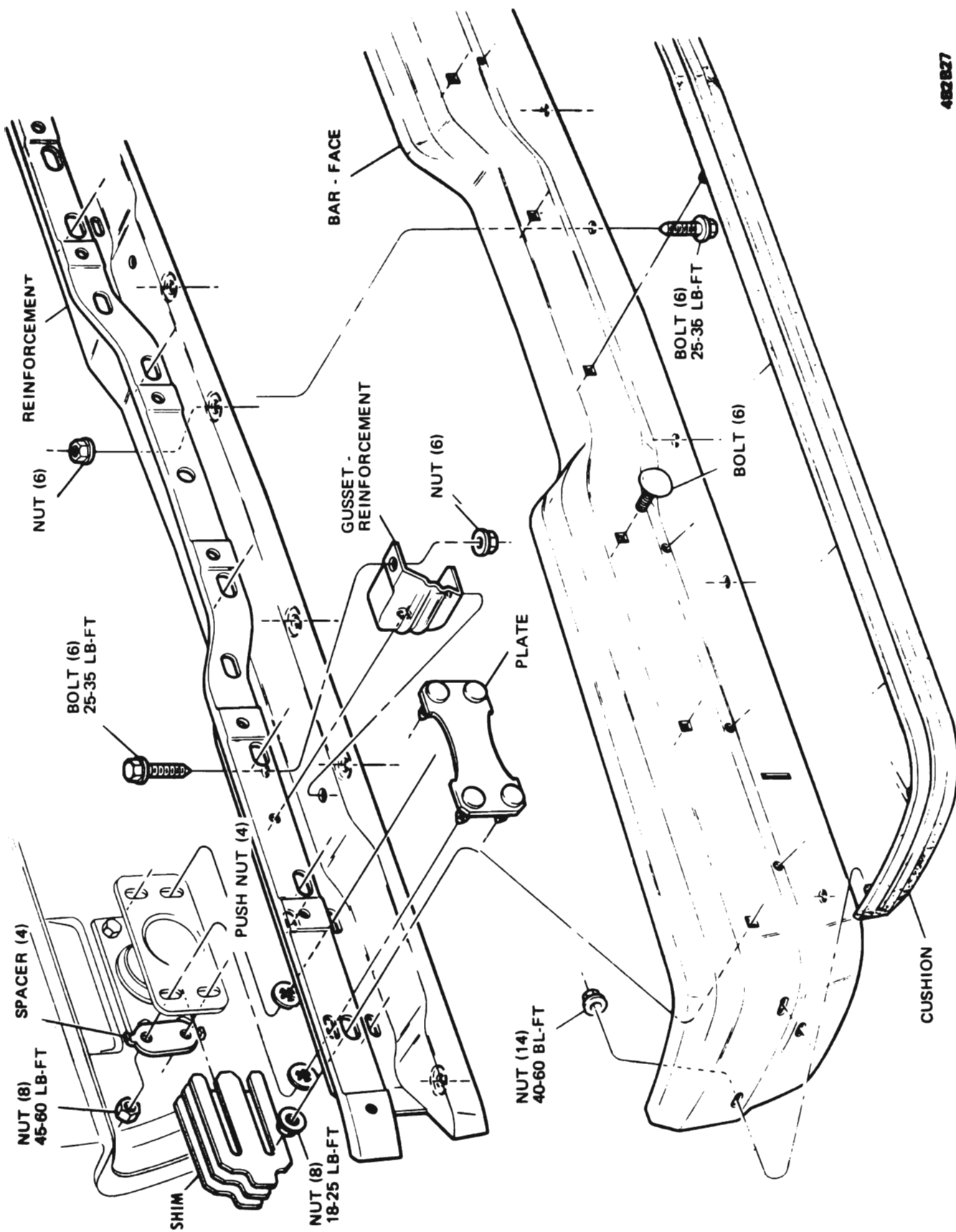


Figure 2B-25 X Series Front Bumper Cushion and Guards



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Figure 2B-26 X Series Rear Bumper E. A. Unit



482B27

Figure 2B-27 X Series Rear Bumper Reinforcement

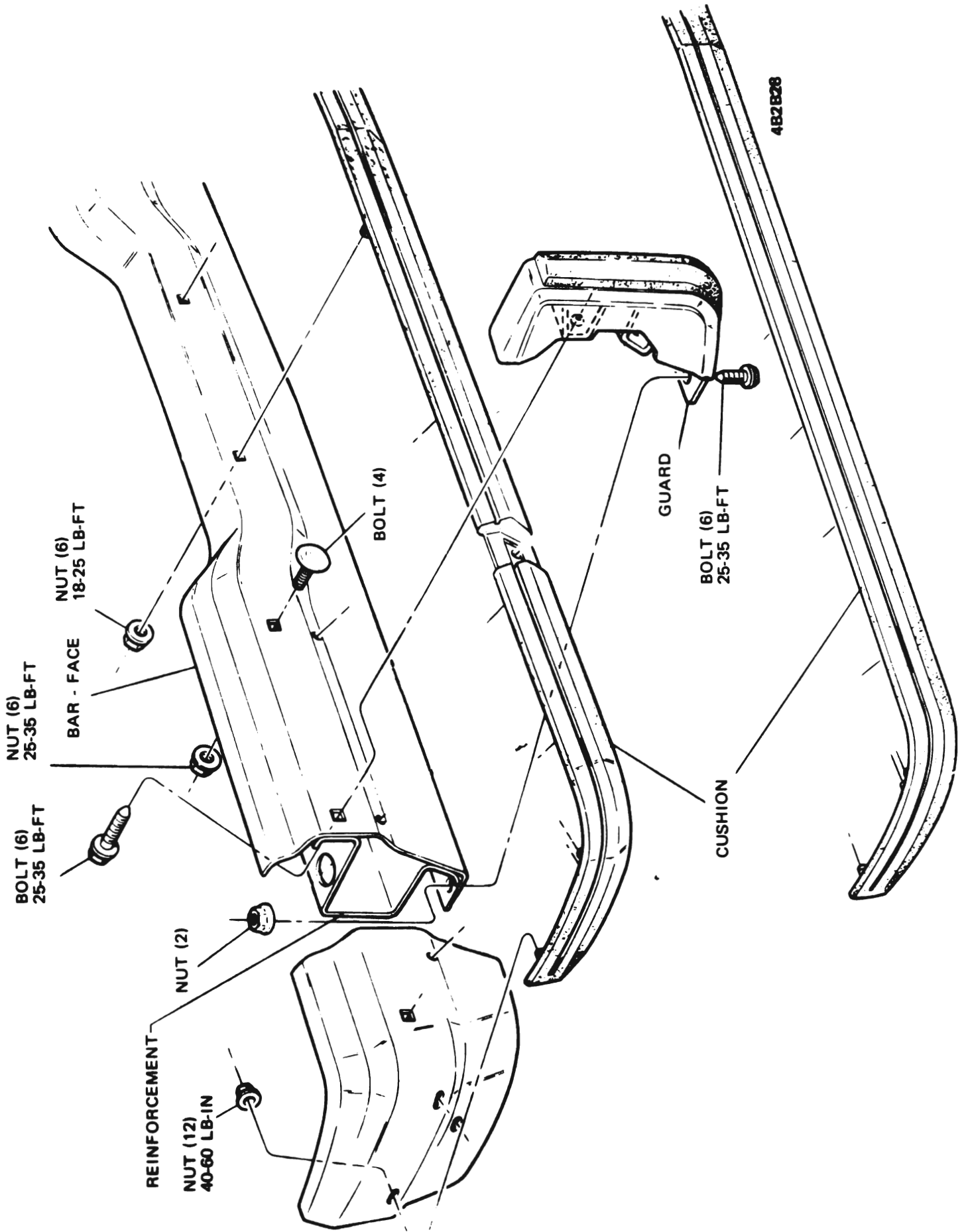
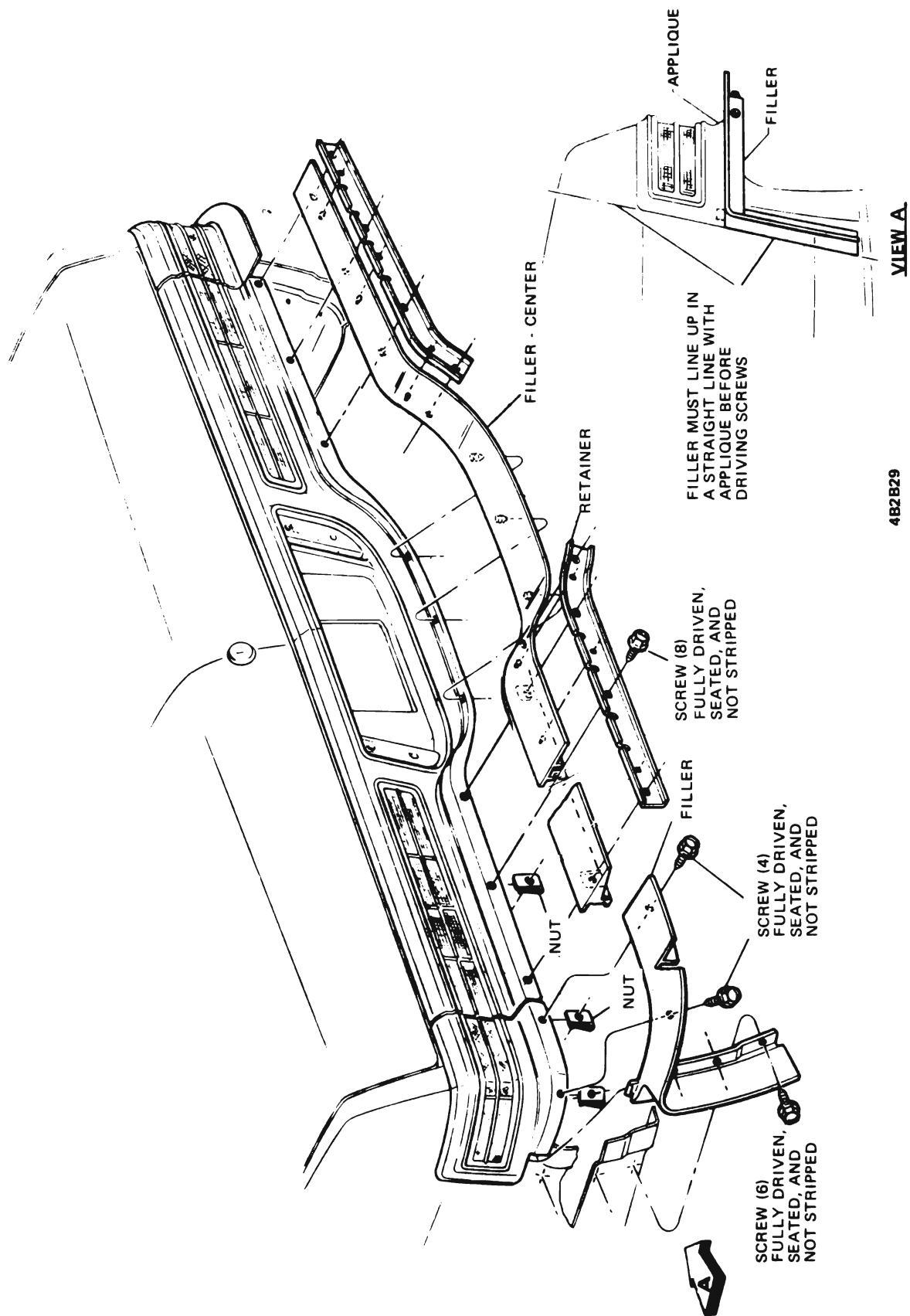


Figure 2B-28 X Series Rear Bumper Cushion and Guards



482B29

Figure 2B-29 X Series Rear Bumper Applique Filler

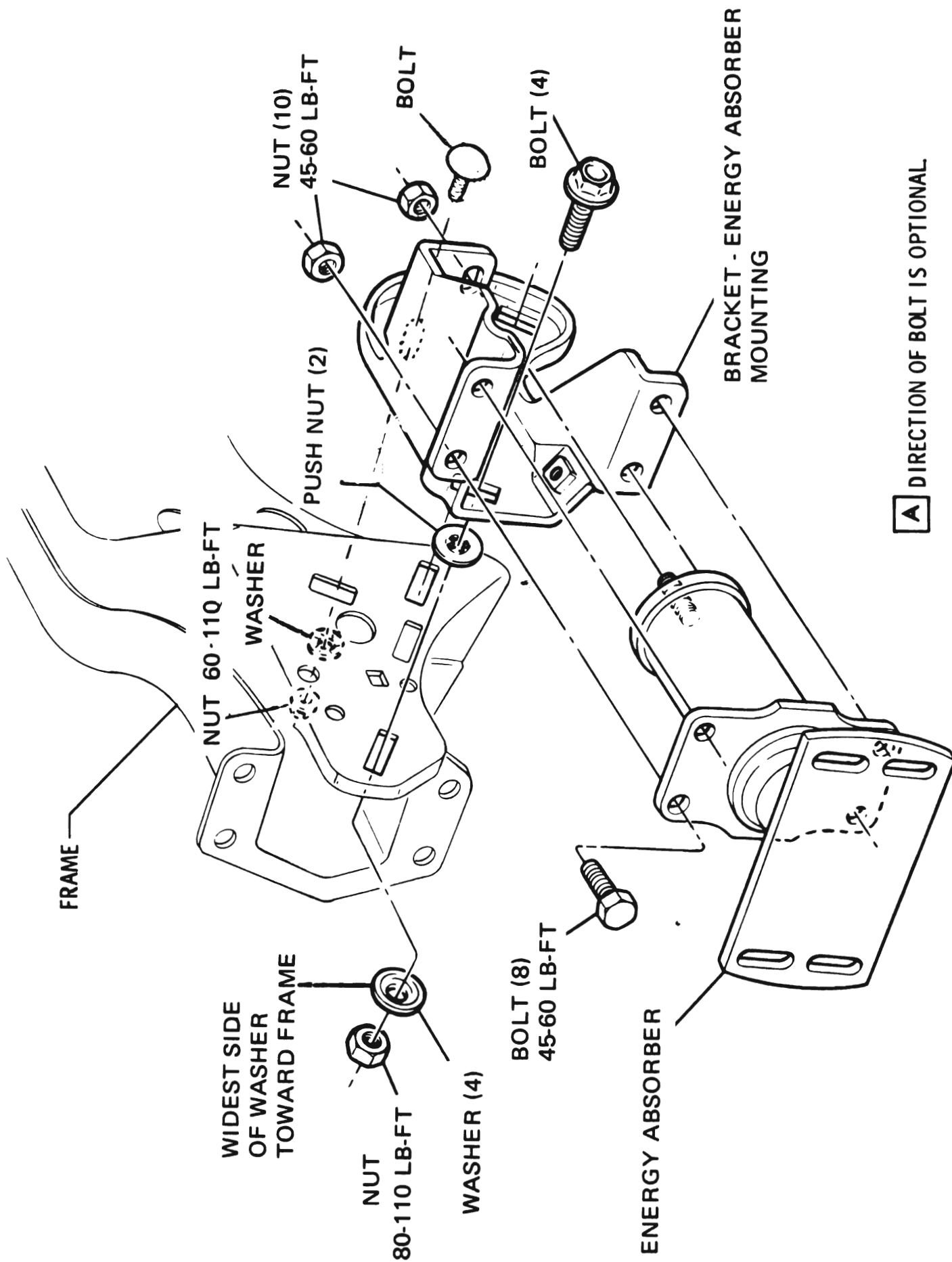
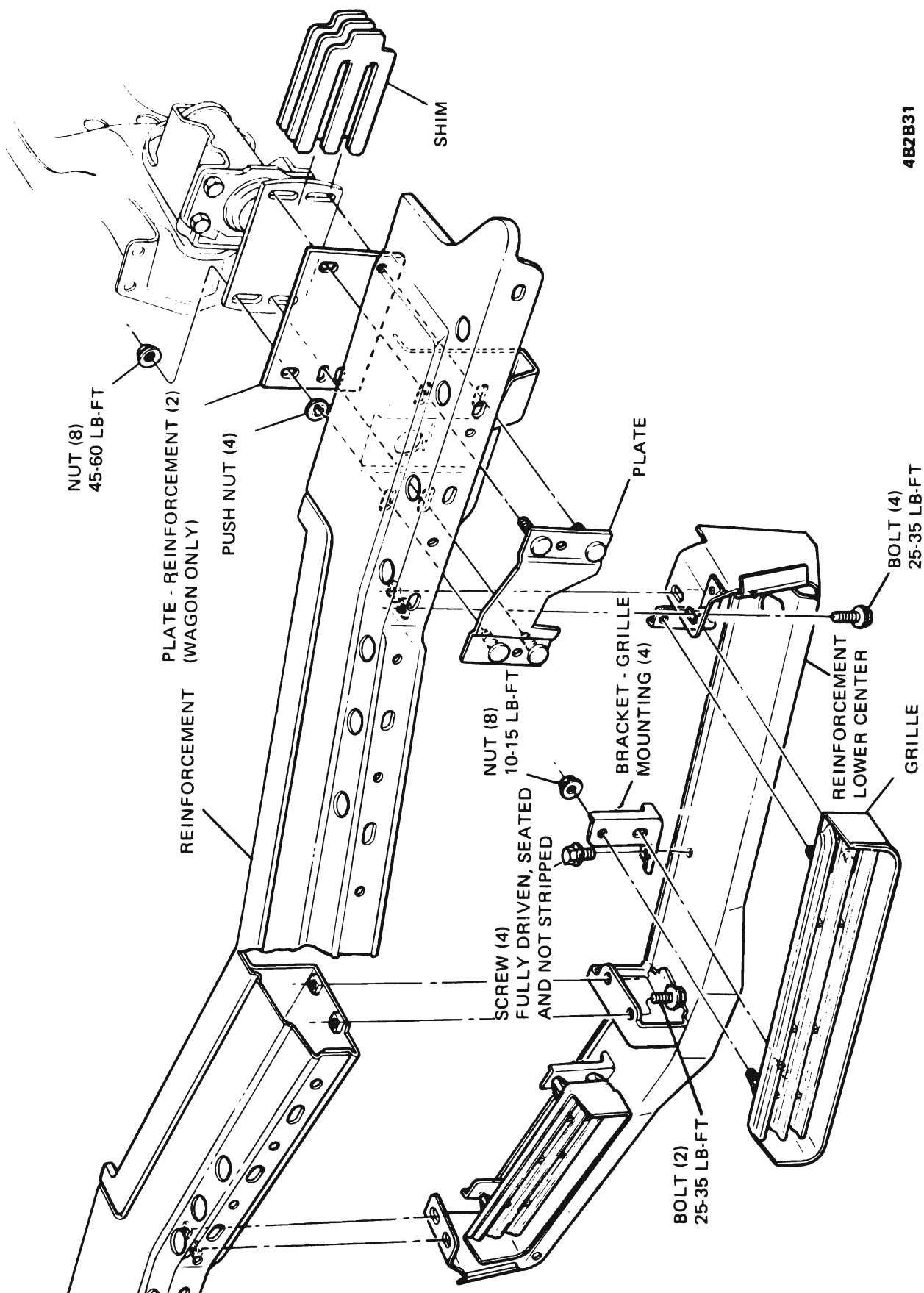


Figure 2B-30 A Series Front Bumper E. A. Unit



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Figure 2B-31 A Series Front Bumper Reinforcement

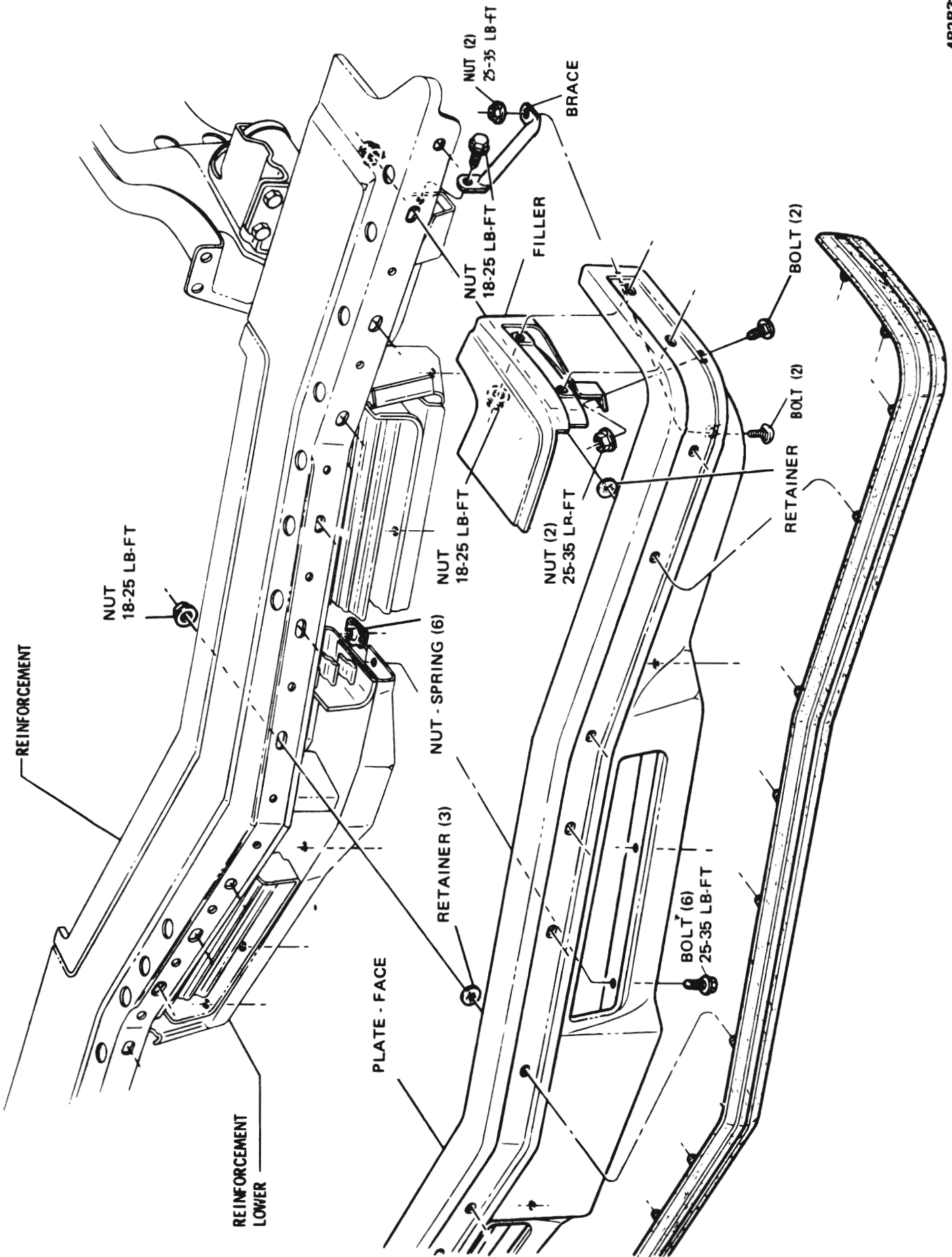


Figure 2B-32 A Series Front Bumper Face Plate

482B33

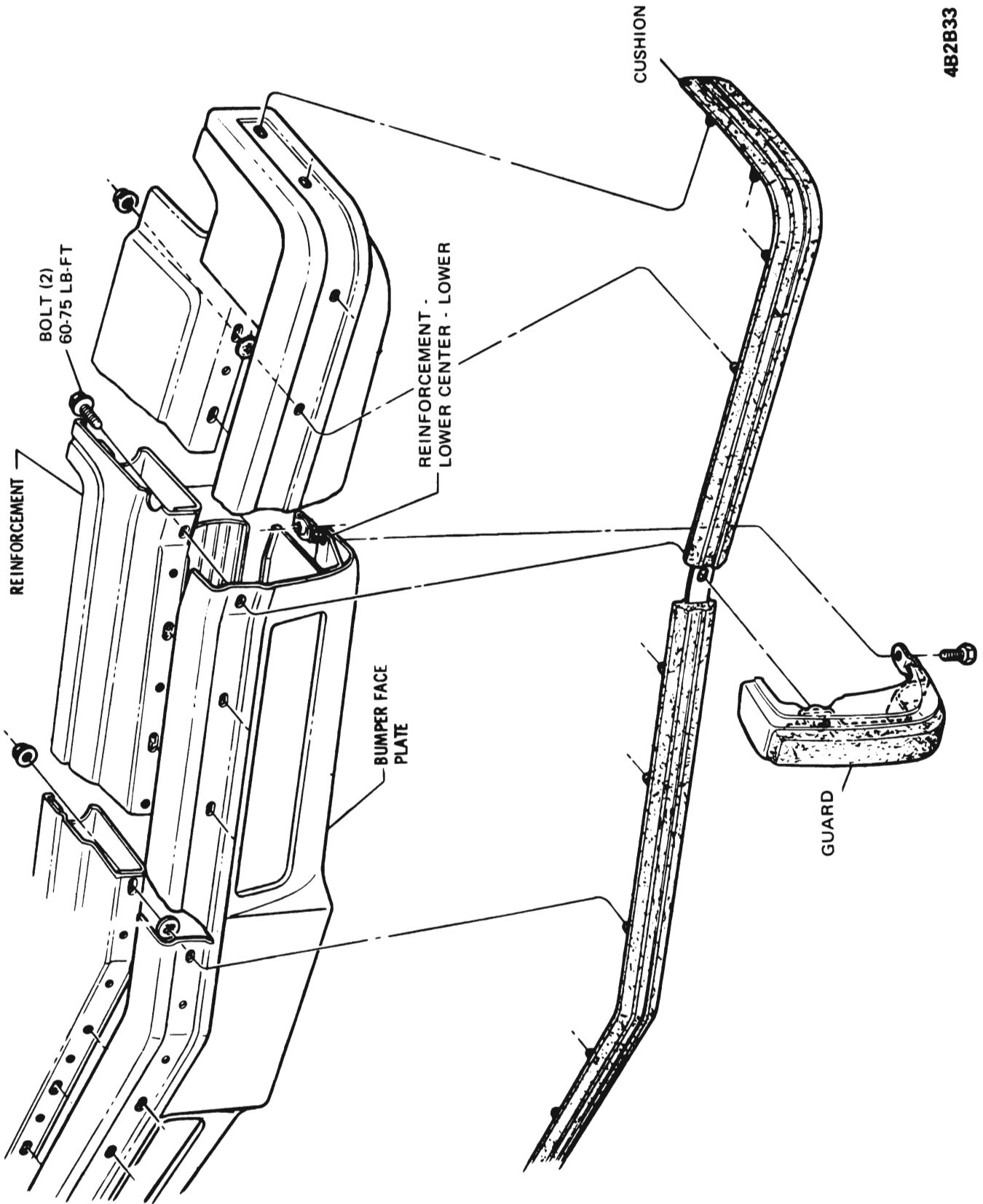


Figure 2B-33 A Series Front Bumper Cushion and Guards

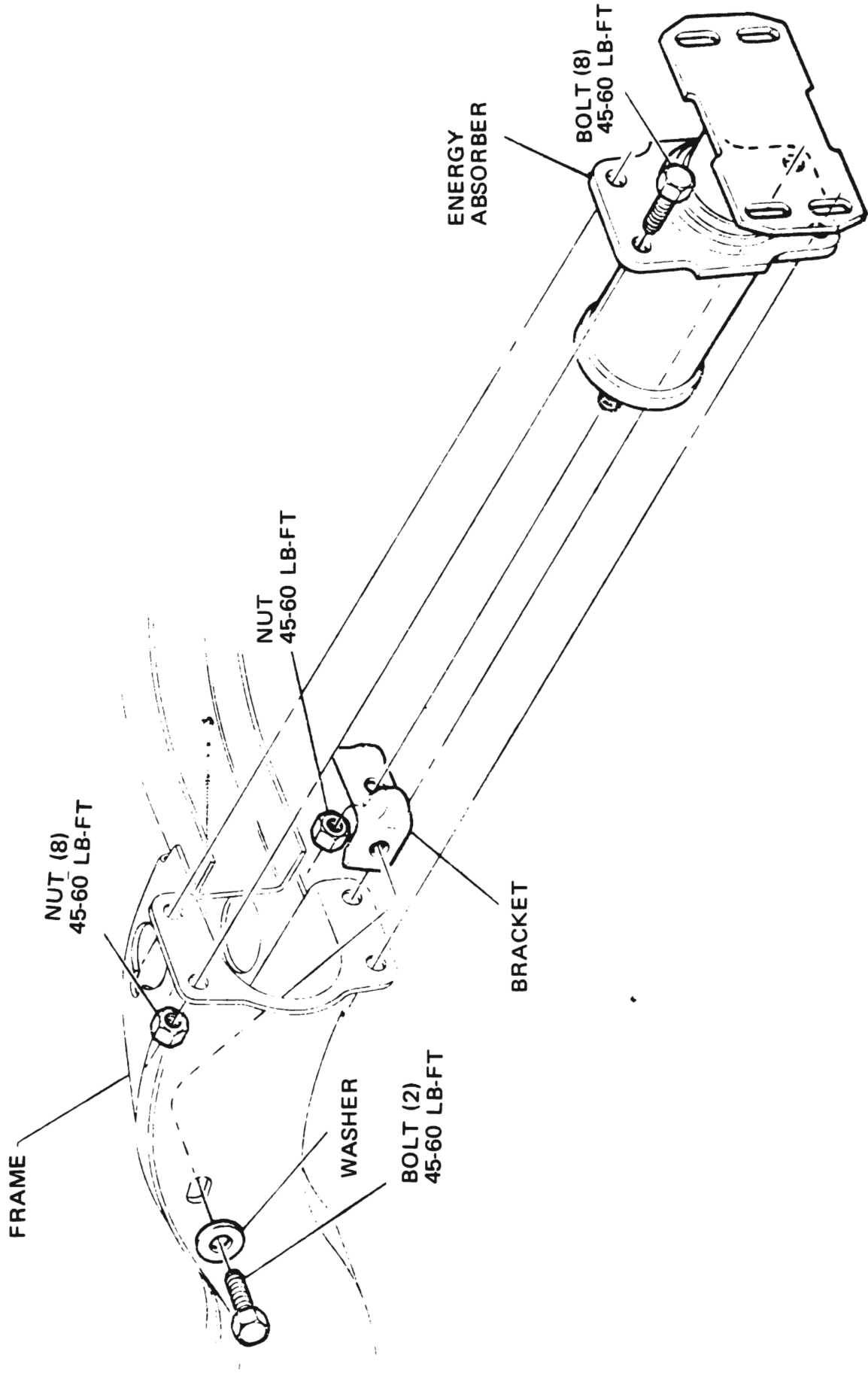


Figure 2B-34 A Series less Wagon Rear Bumper E. A. Unit

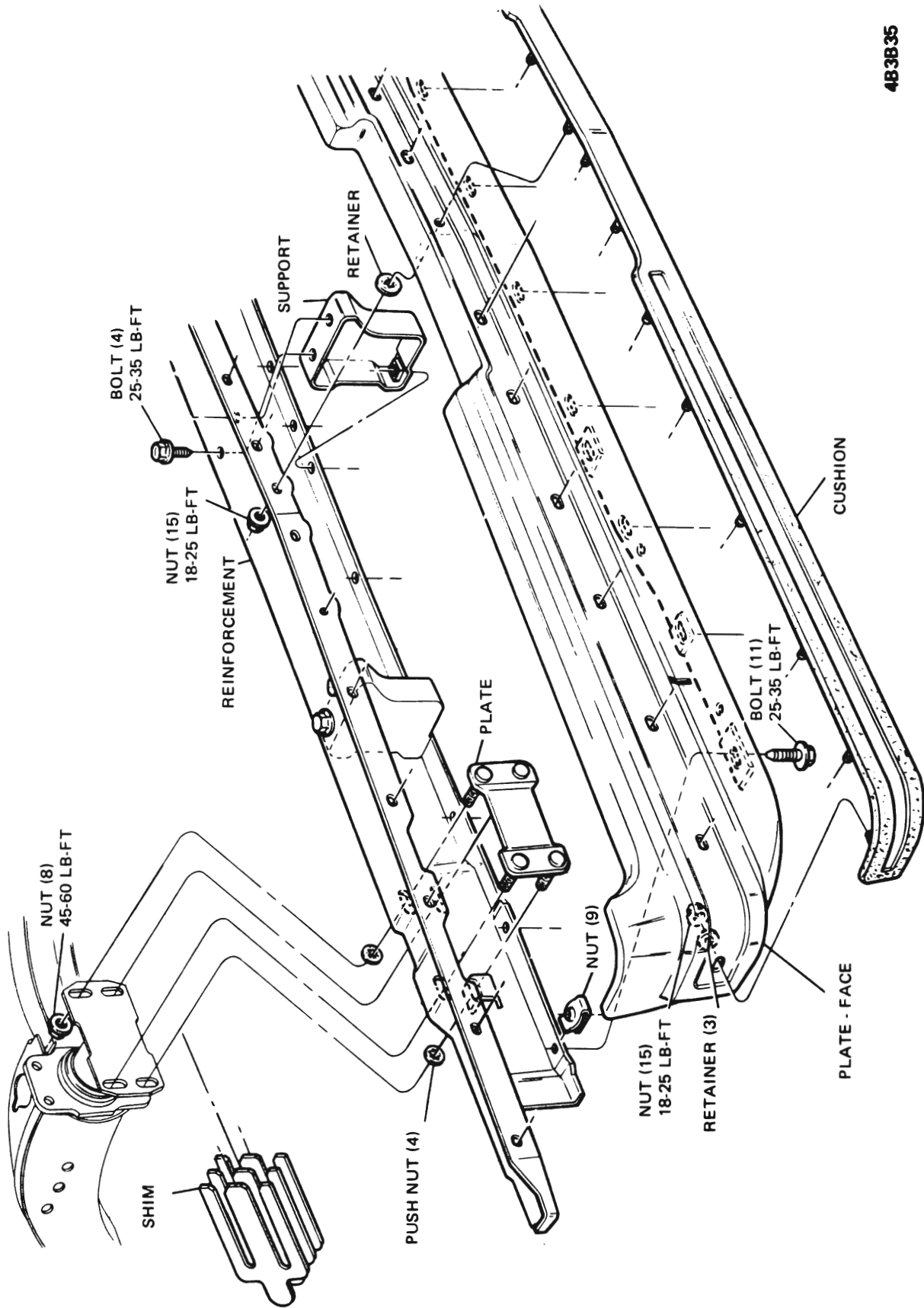


Figure 2B-35 A Series less Wagon Rear Bumper Reinforcement

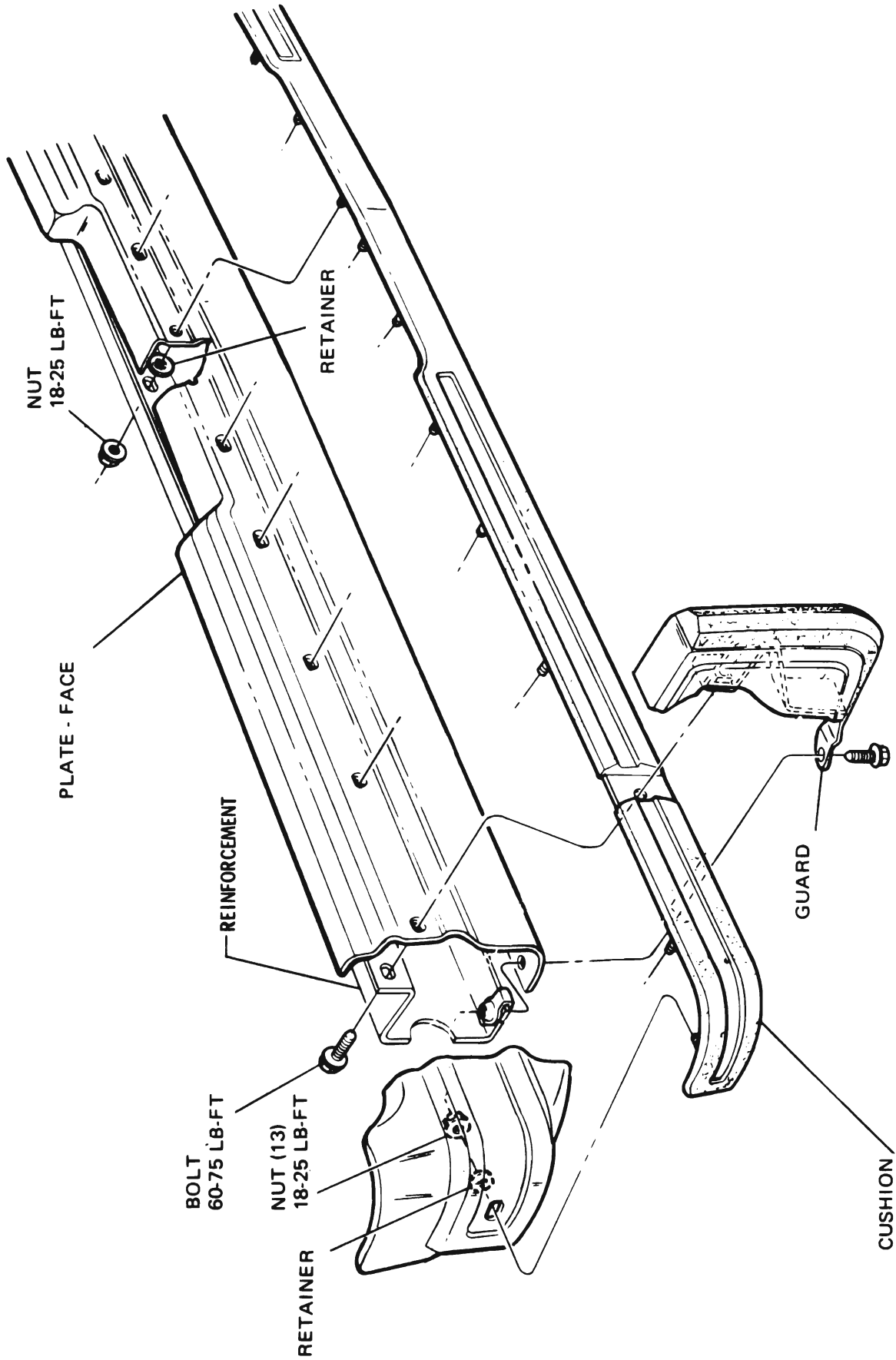


Figure 2B-37 A Series less Wagon Rear Bumper Cushion and Guards

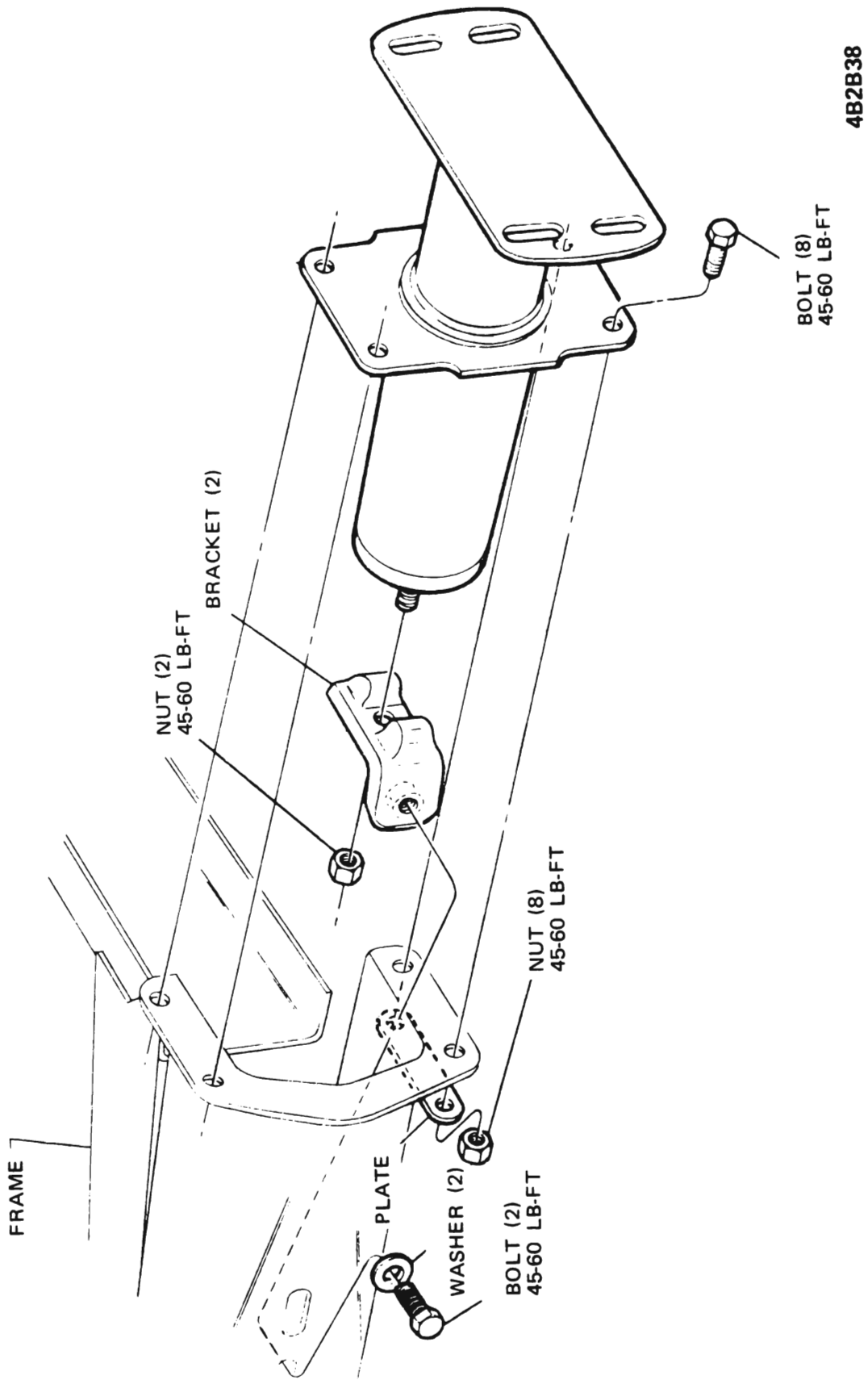


Figure 2B-38 A Series Wagon Rear Bumper E. A. Units

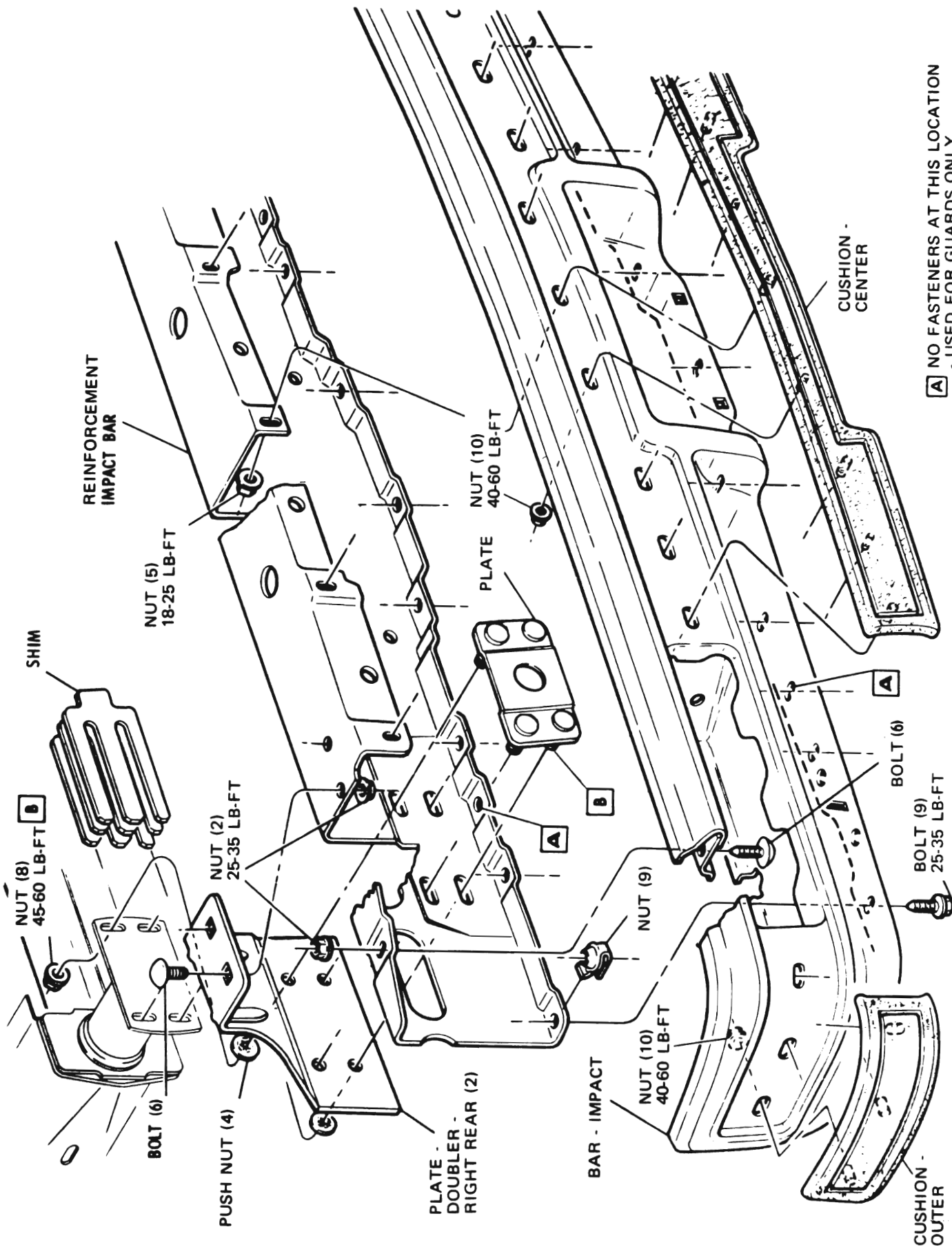
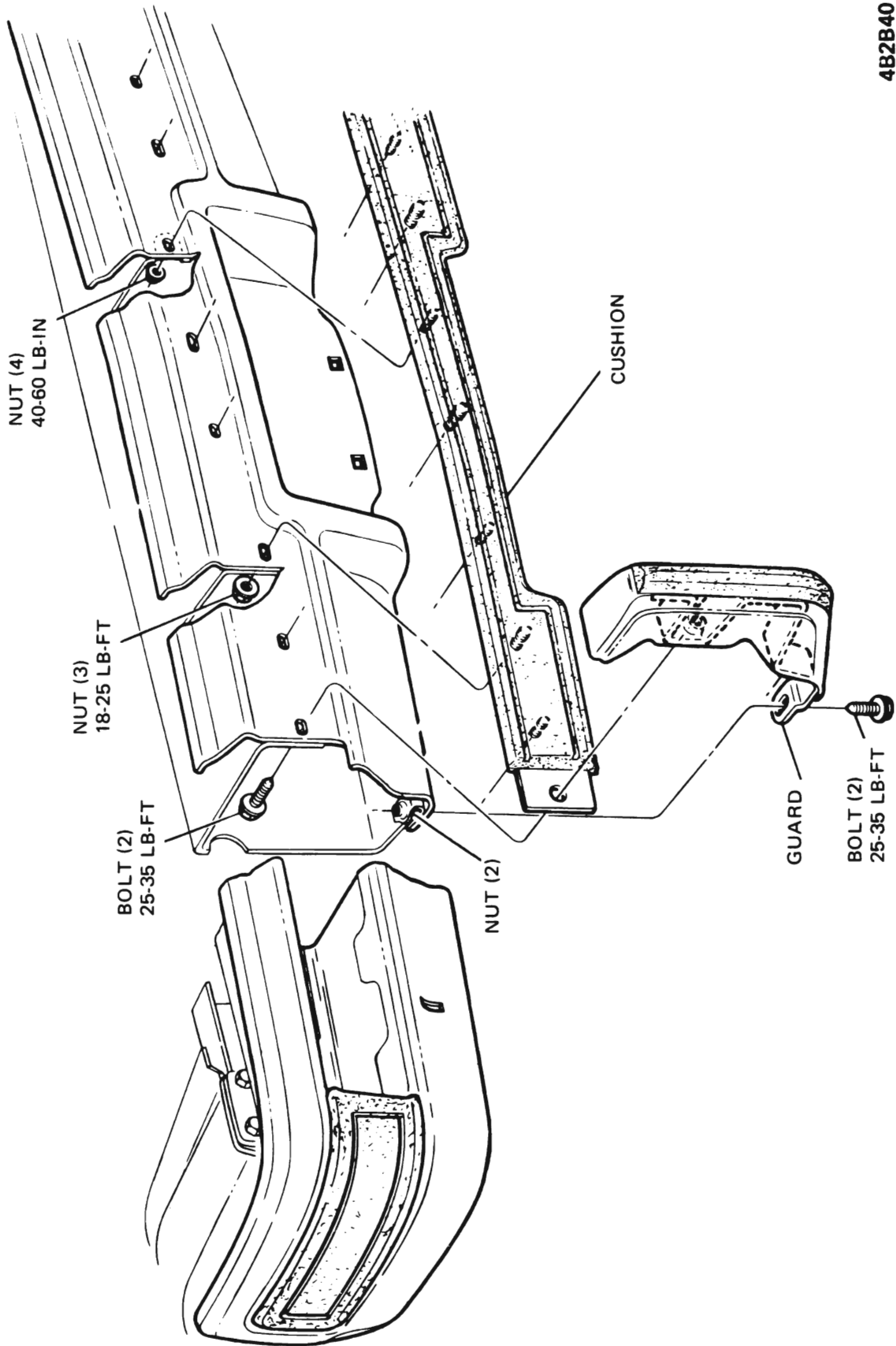


Figure 2B-39 A Series Wagon Rear Bumper Reinforcement



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Figure 2B-40 A Series Wagon Rear Bumper Cushion and Guards

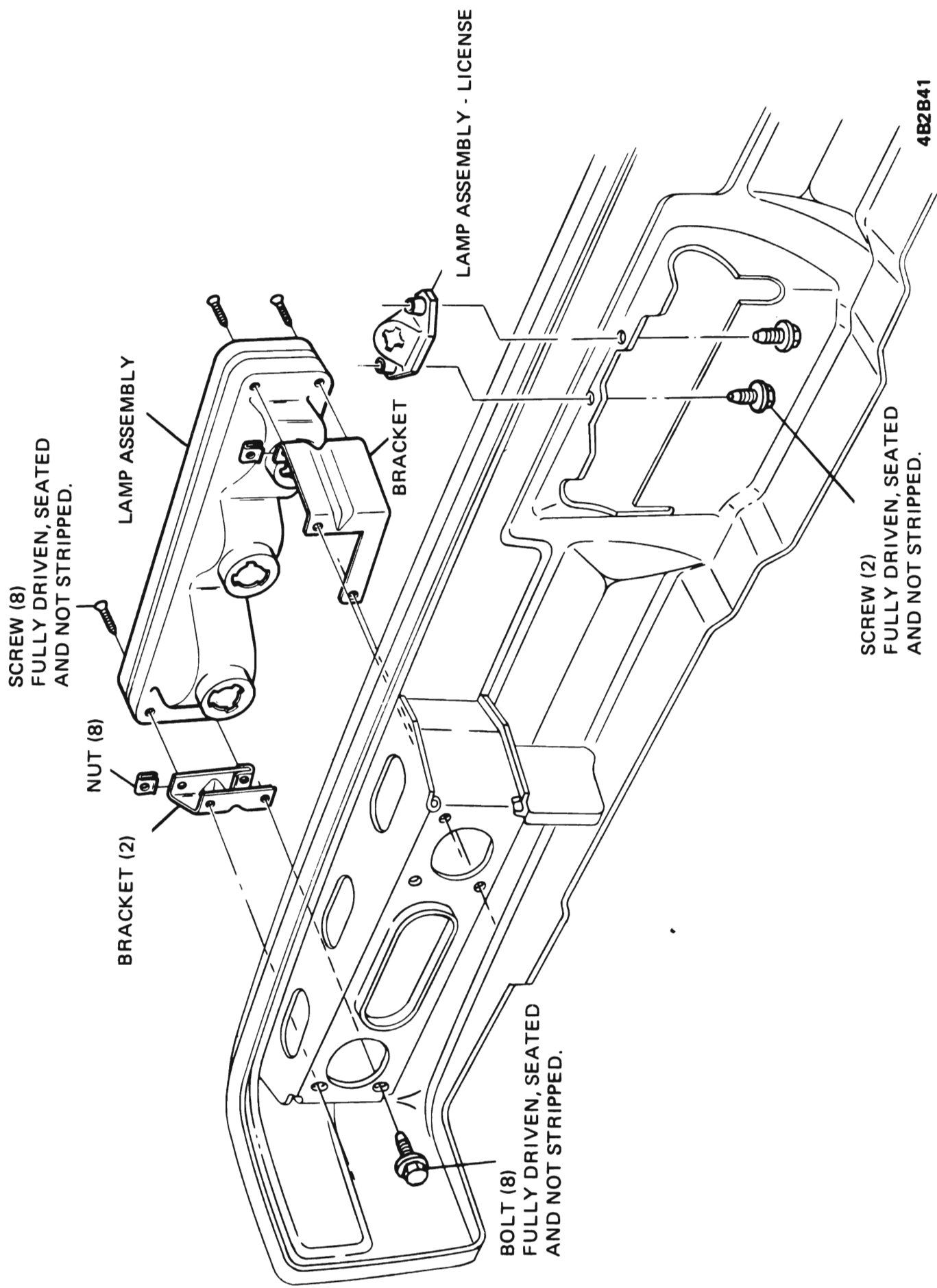
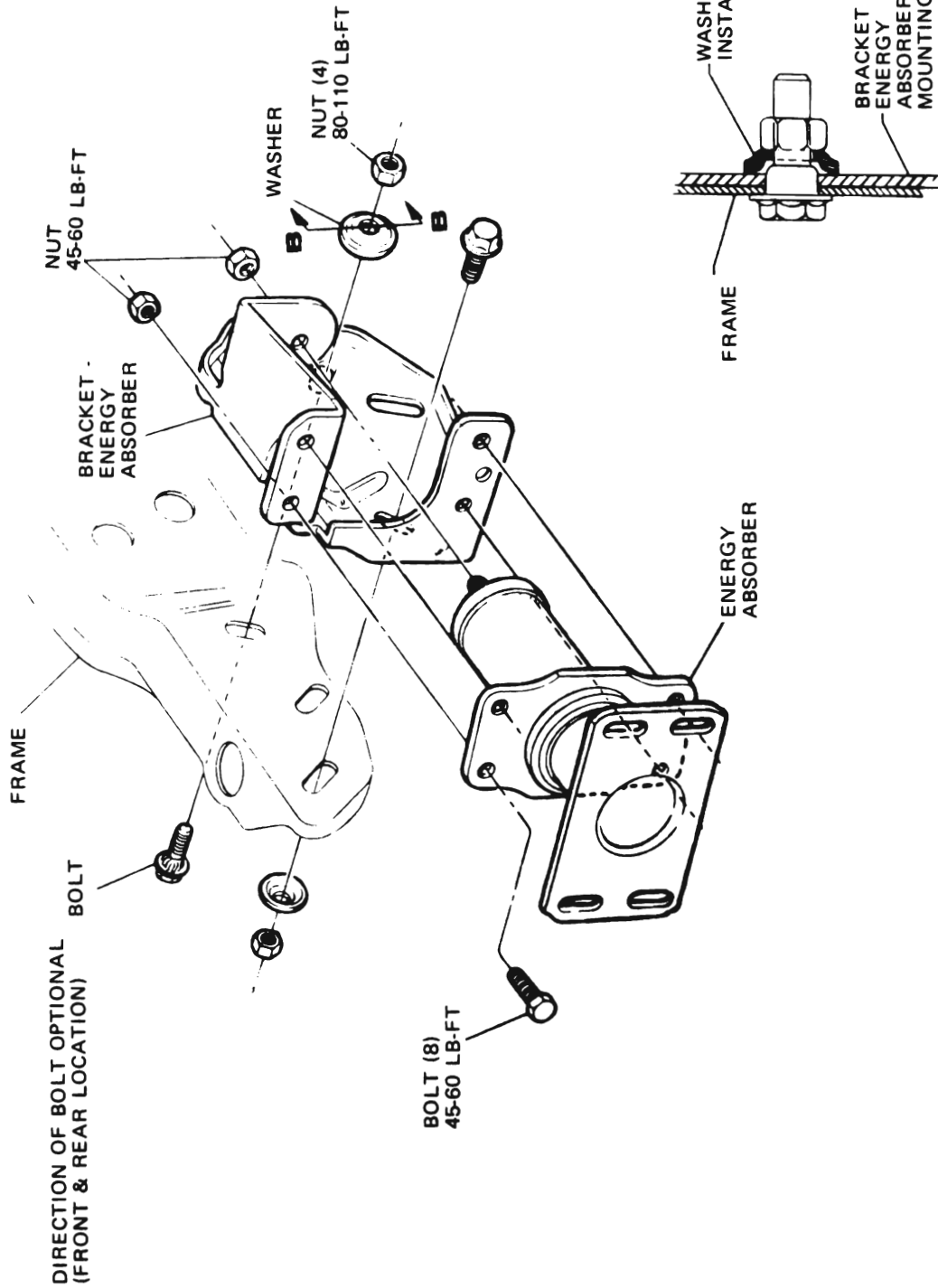


Figure 2B-41 A Series Wagon Back-Up Lamp



SECTION B-B

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Figure 2B-42 B-C Series Front Bumper E. A. Unit

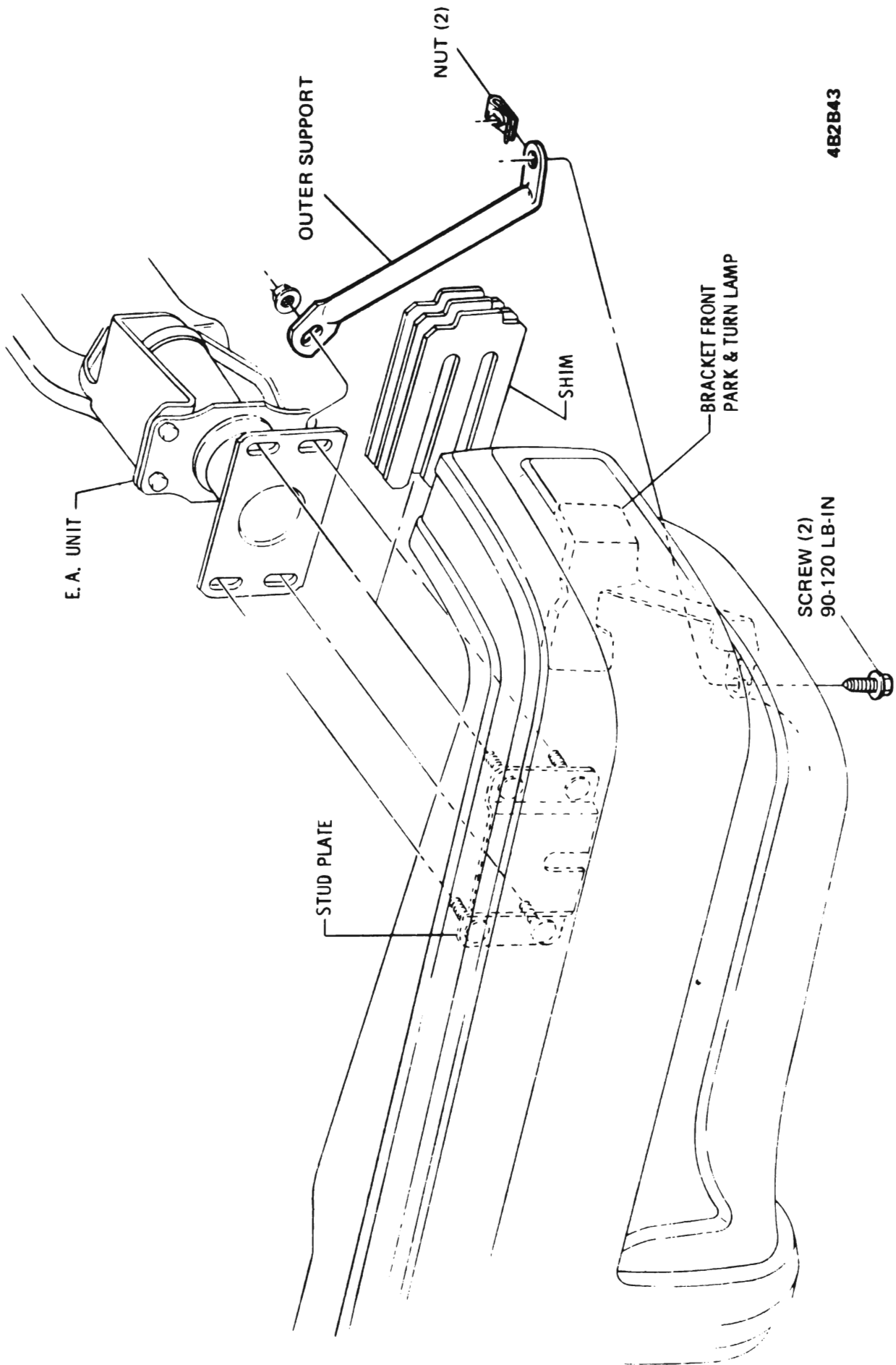


Figure 2B-43 B-C Series Front Bumper Outer Support

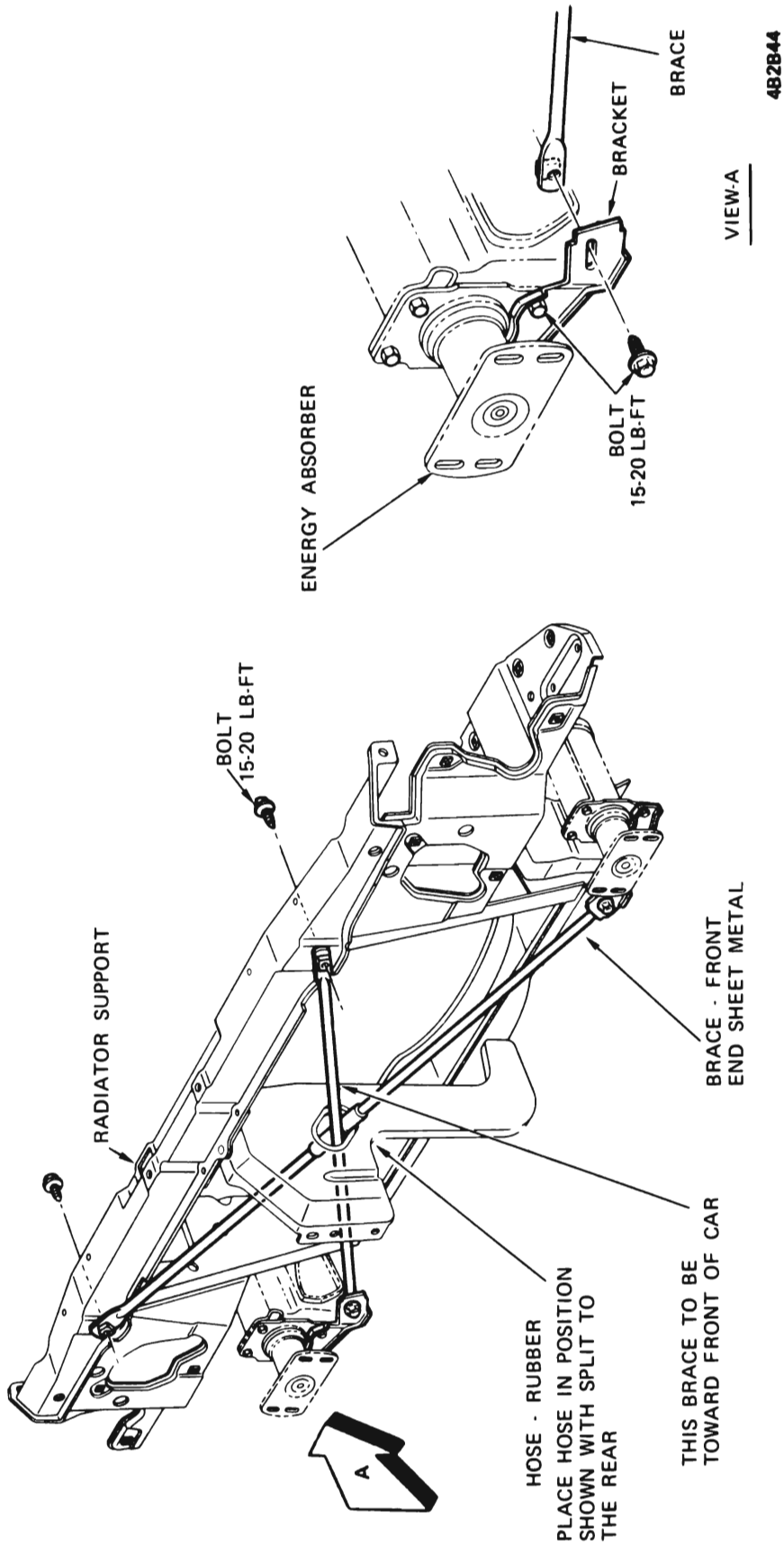
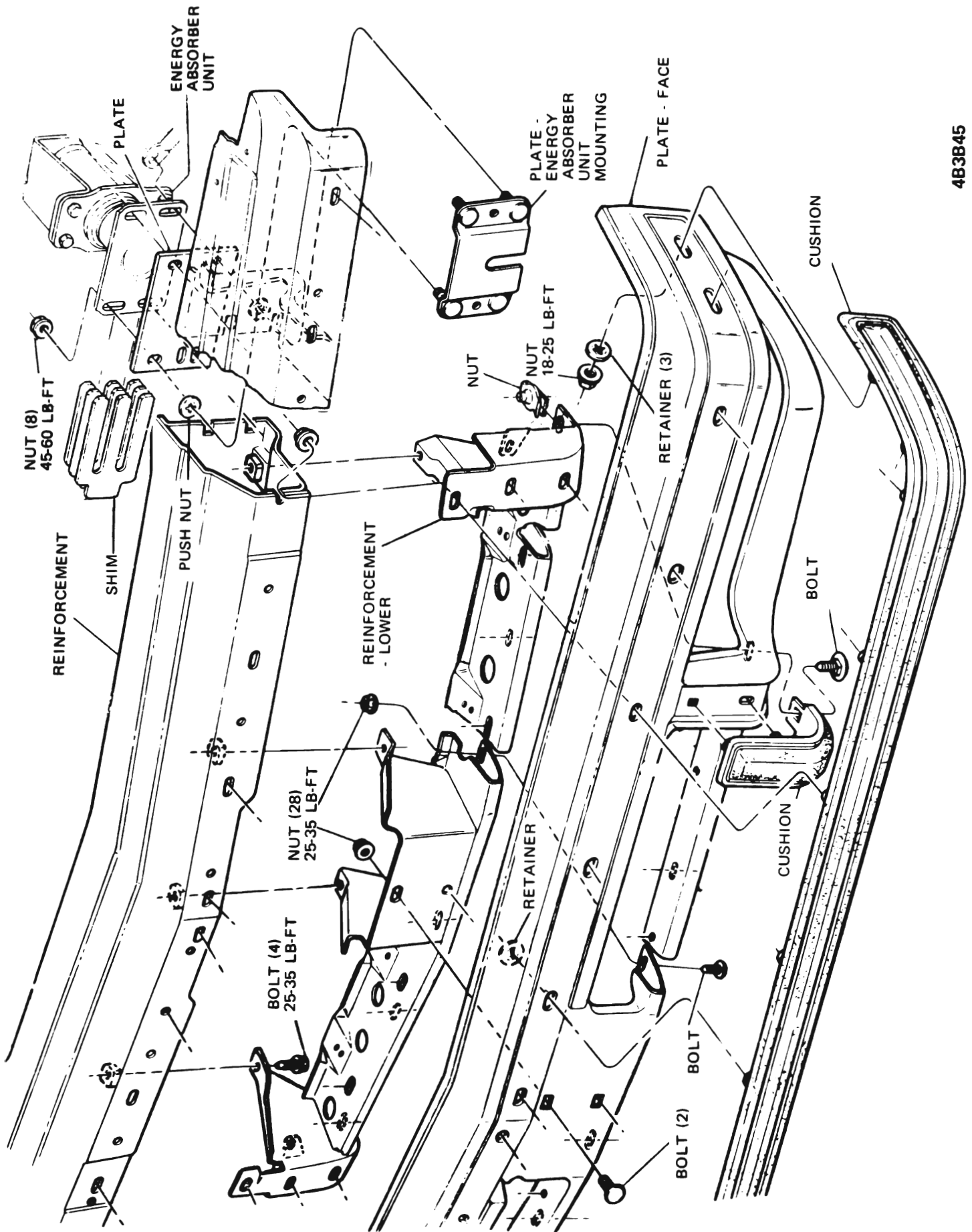
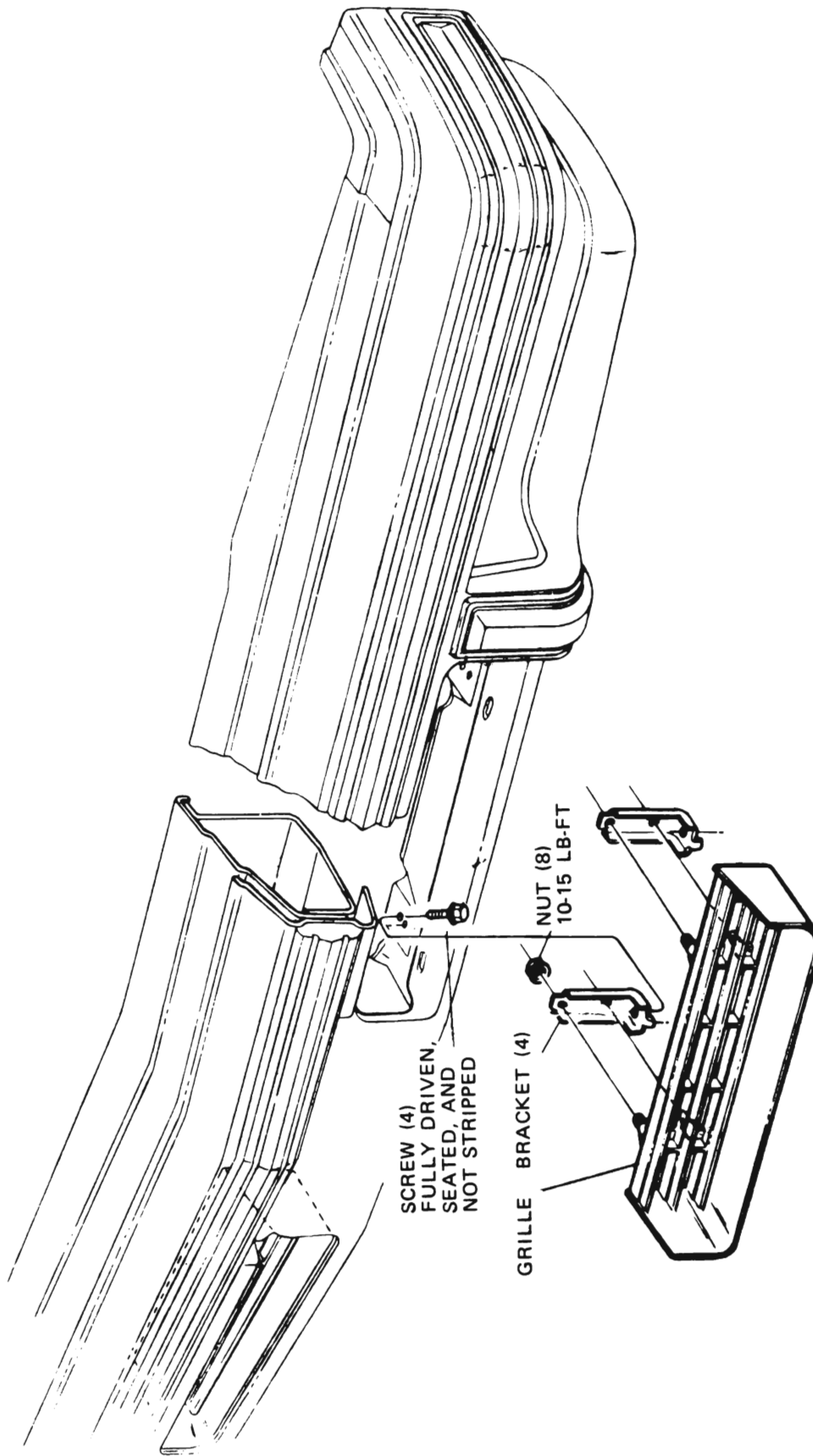


Figure 2B-44 B-C Series Front Sheet Metal Braces



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Figure 2B-45 B-C Series Front Bumper Reinforcement



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Figure 2B-46 B-C Series Front Bumper Grille

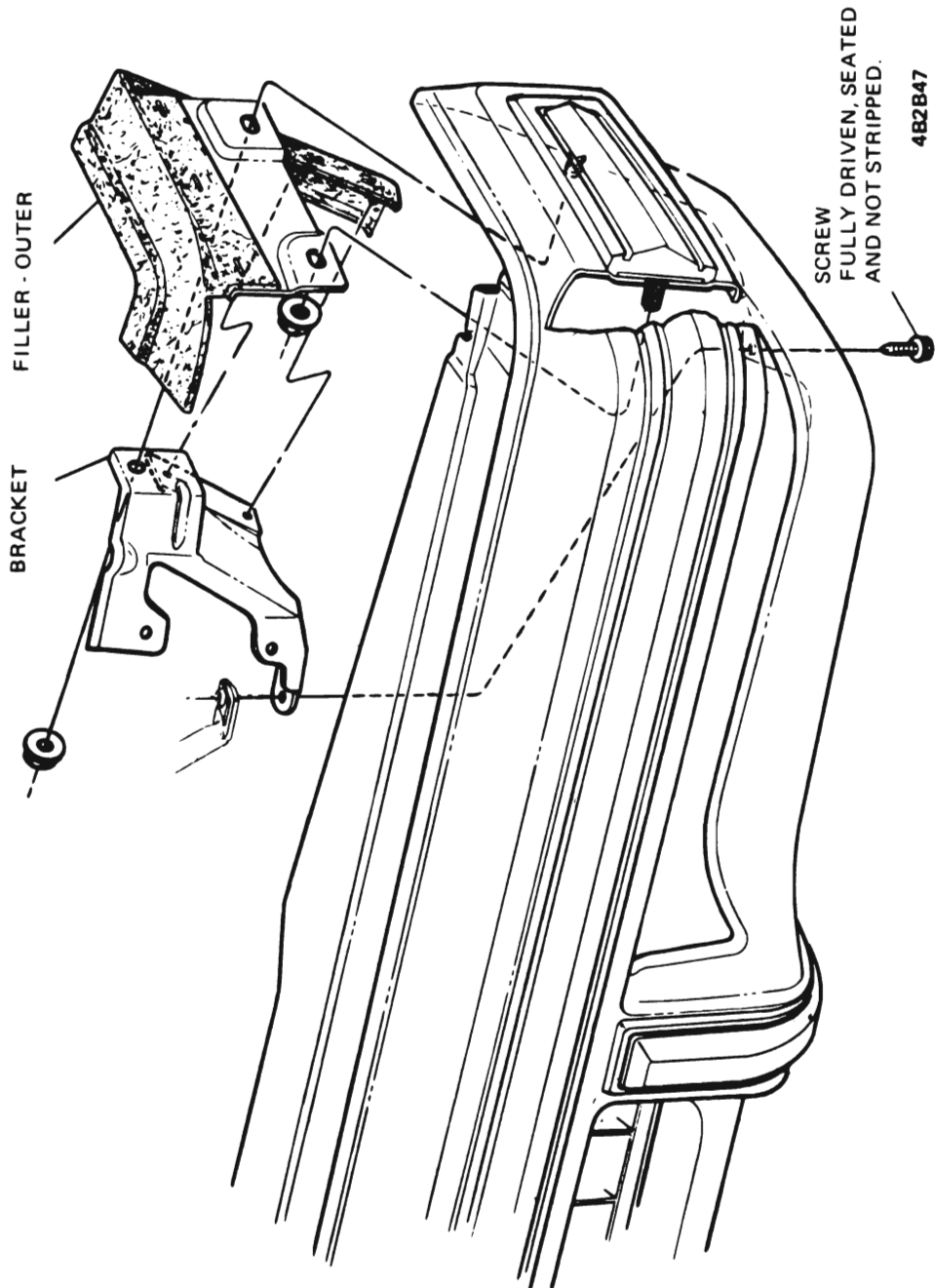
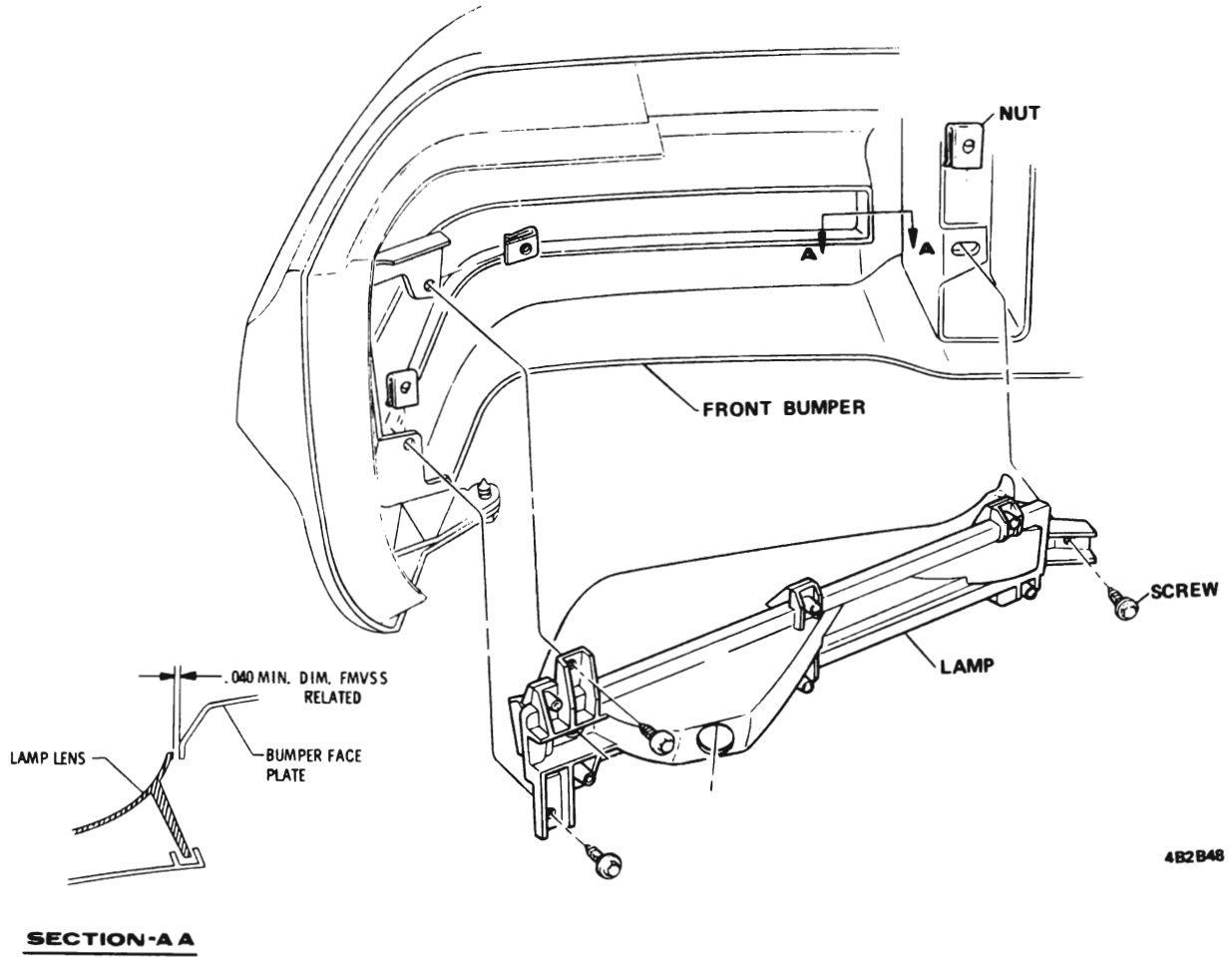
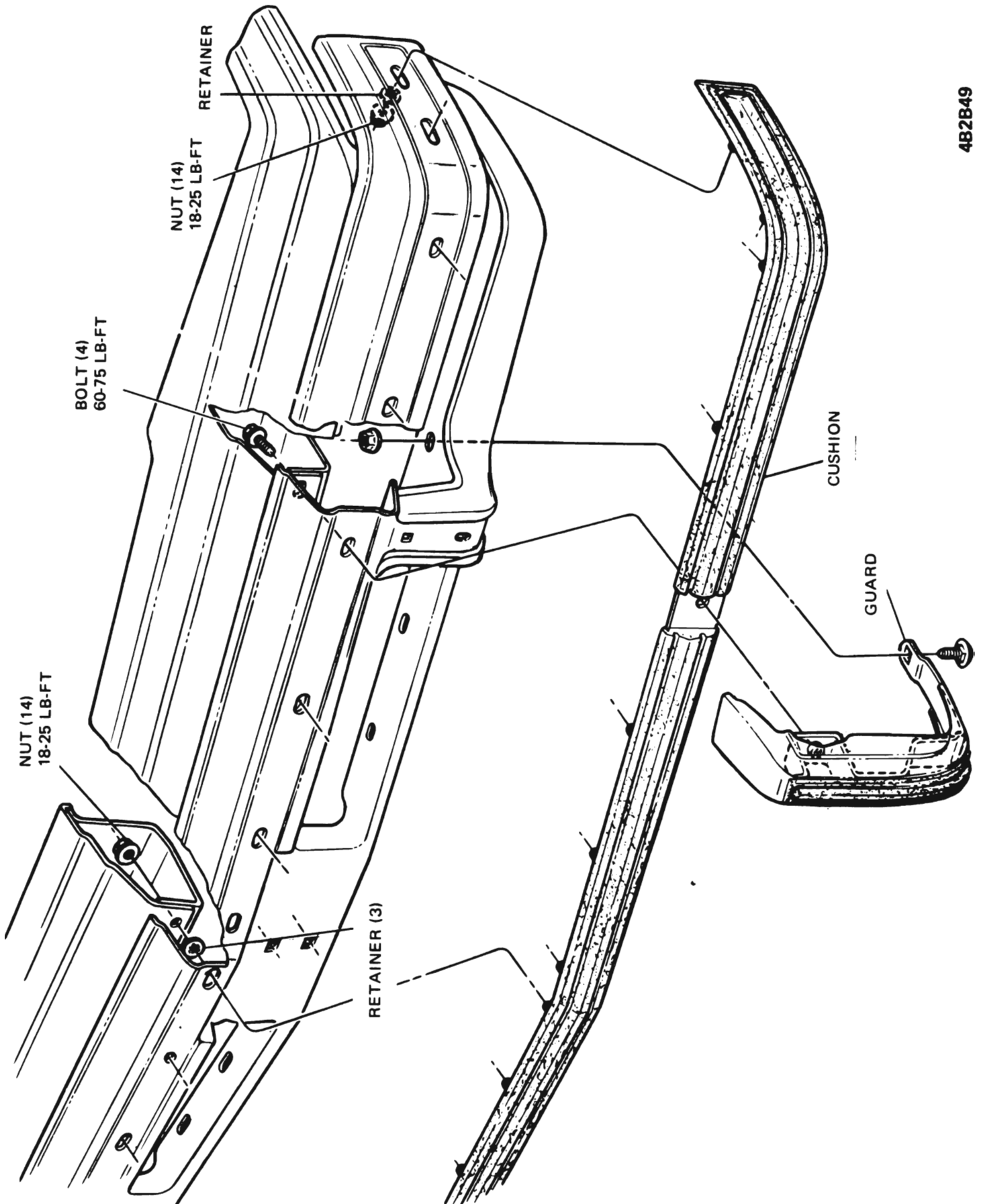


Figure 2B-47 B-C Series Front Bumper Outer Filler



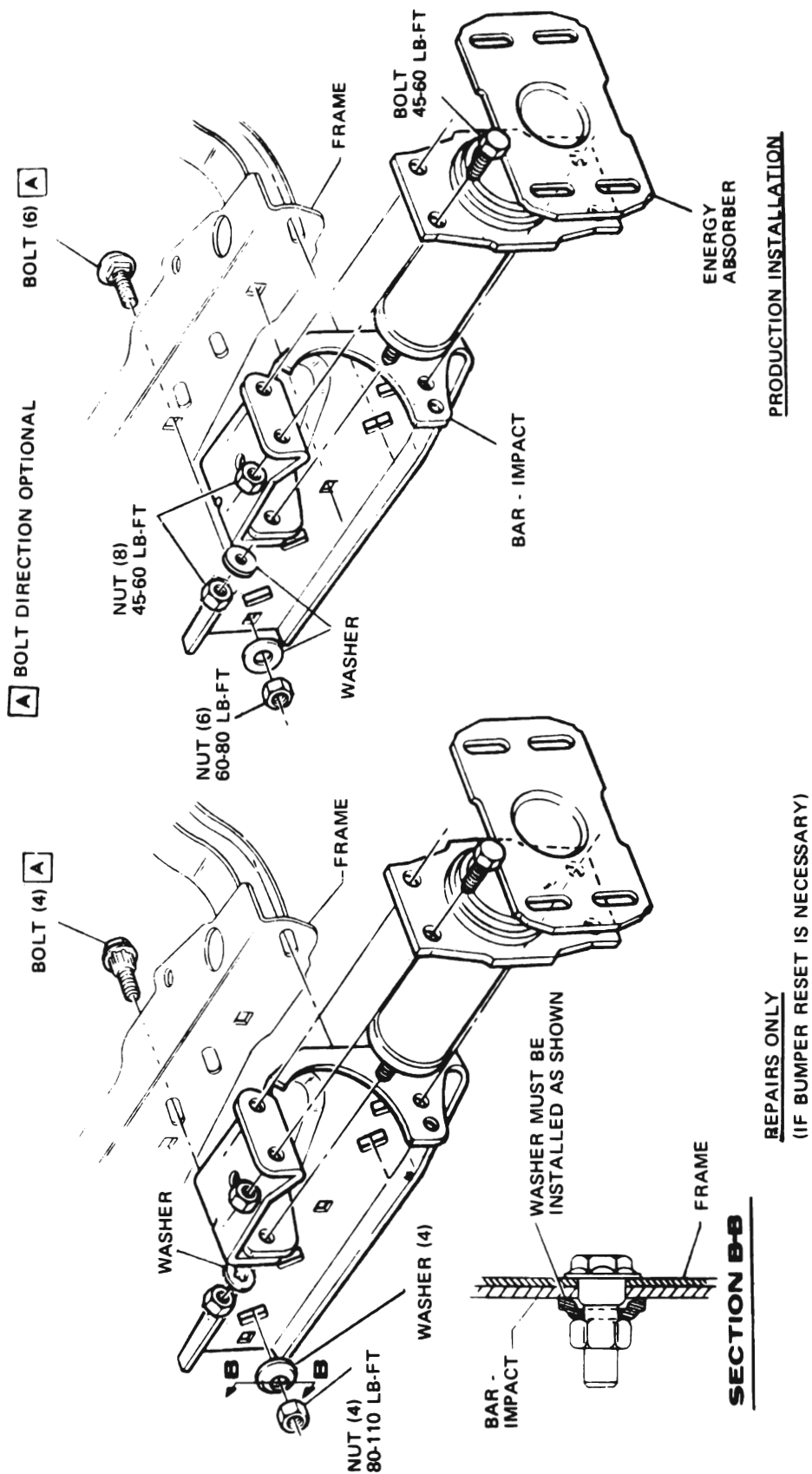
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Figure 2B-48 B-C Series Front Bumper Turn Signal Lamp



4B2B49

Figure 2B-49 B-C Series Front Bumper Cushion and Guards



482850

Figure 2B-50 B Series less Wagon Rear Bumper E. A. Units

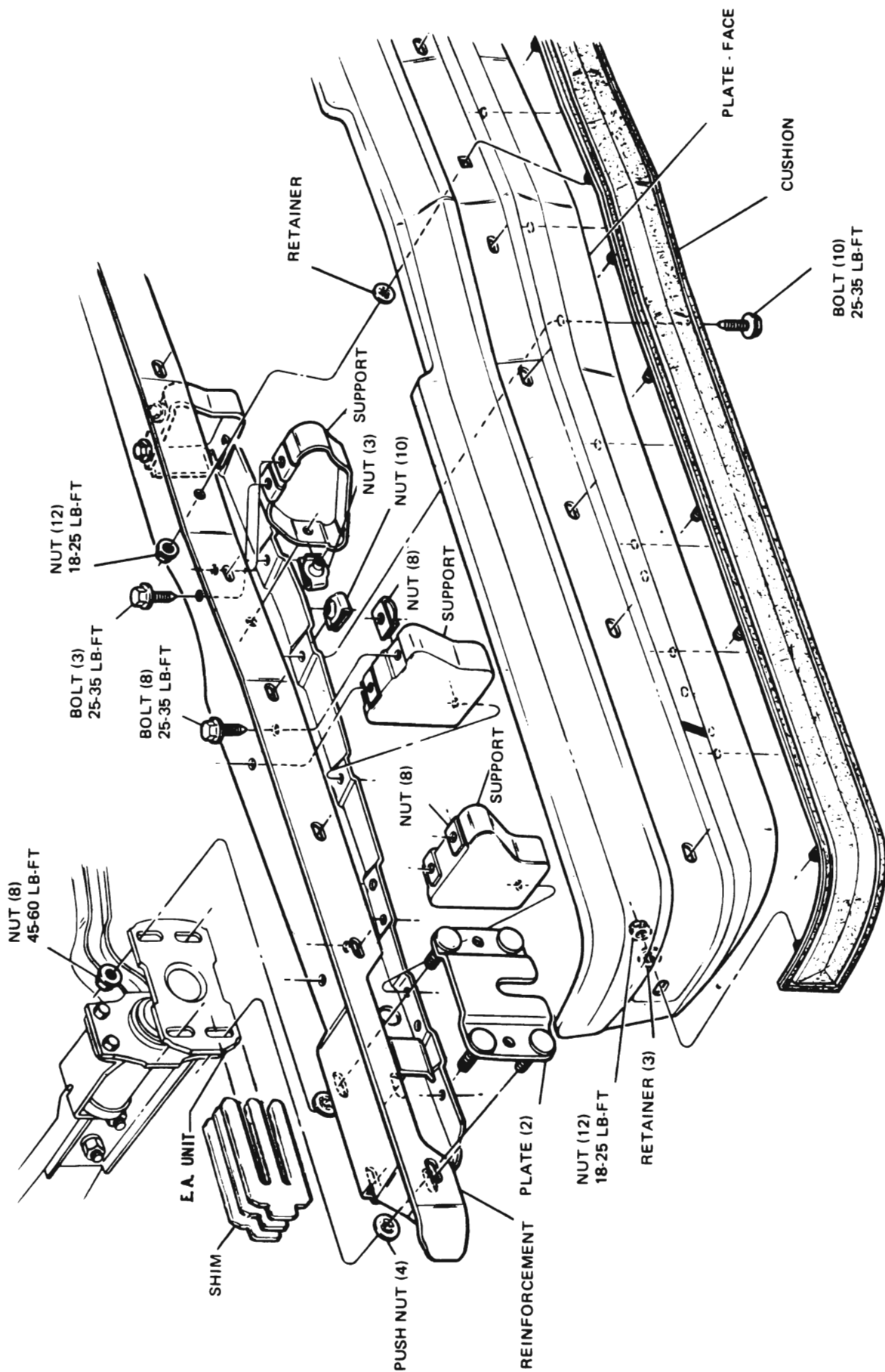


Figure 2B-51 B Series less Wagon Rear Bumper Reinforcement

482B52

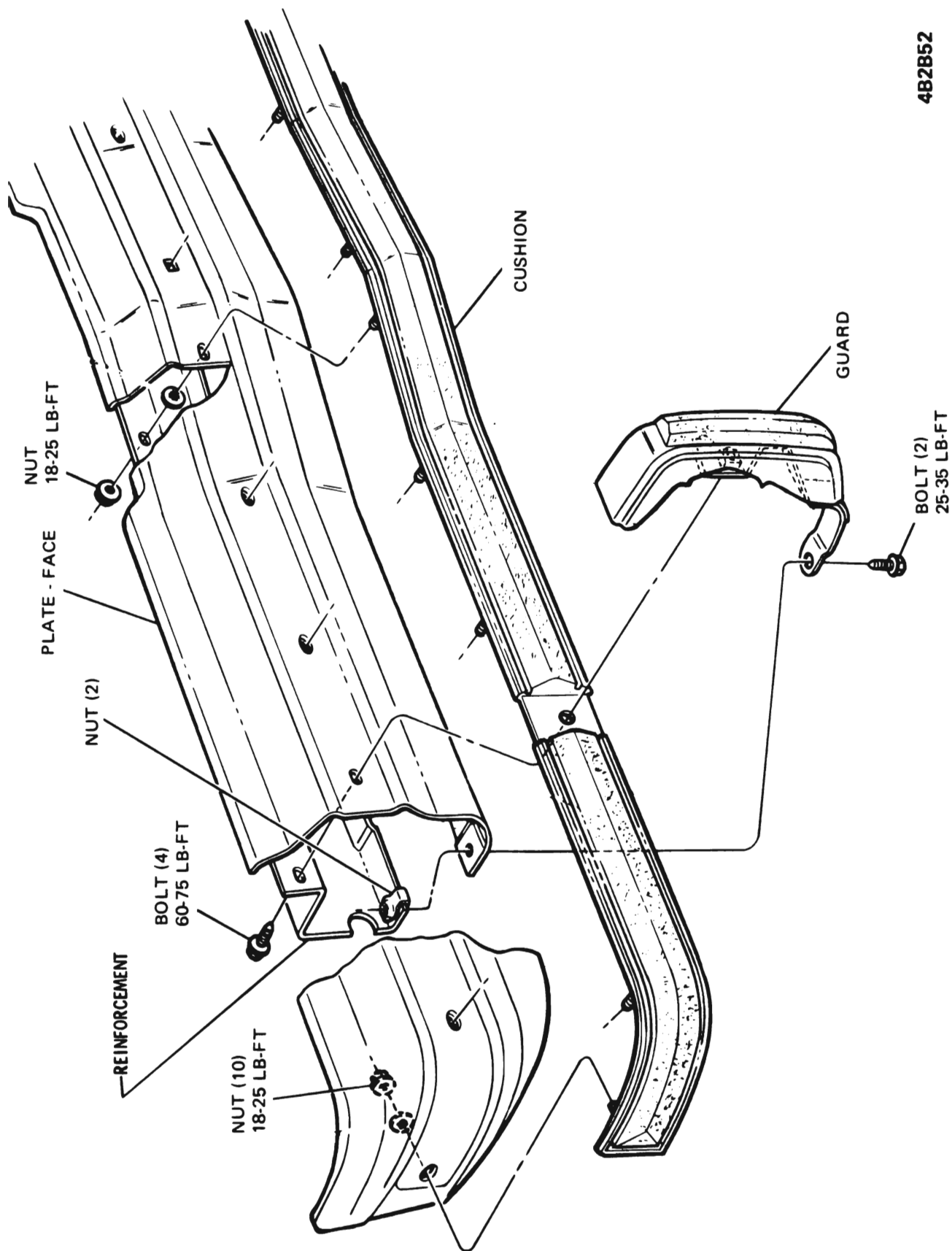


Figure 2B-52 B Series less Wagon Rear Bumper Cushion and Guards

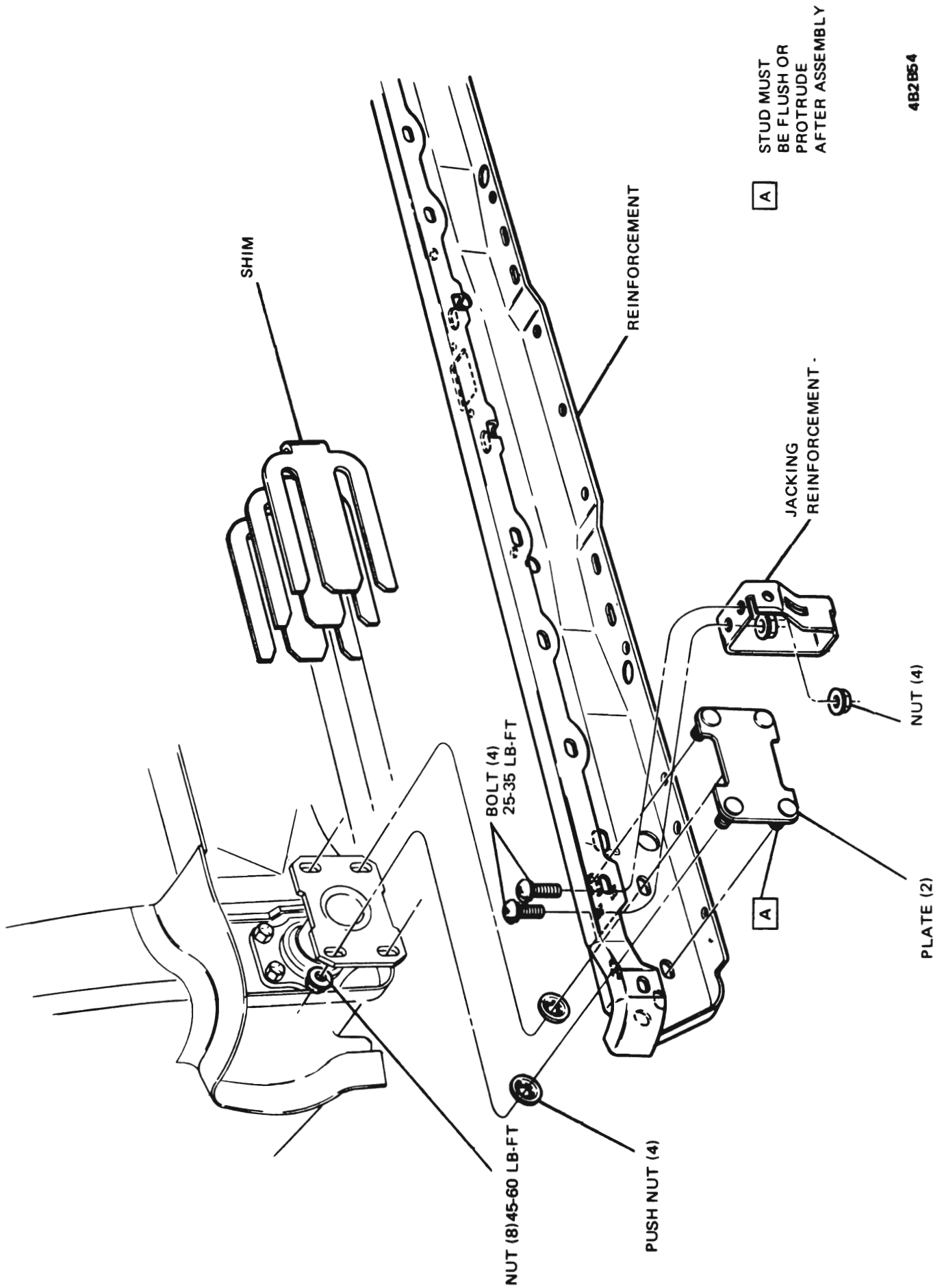


Figure 2B-54 B Series Wagon Rear Bumper E. A. Units

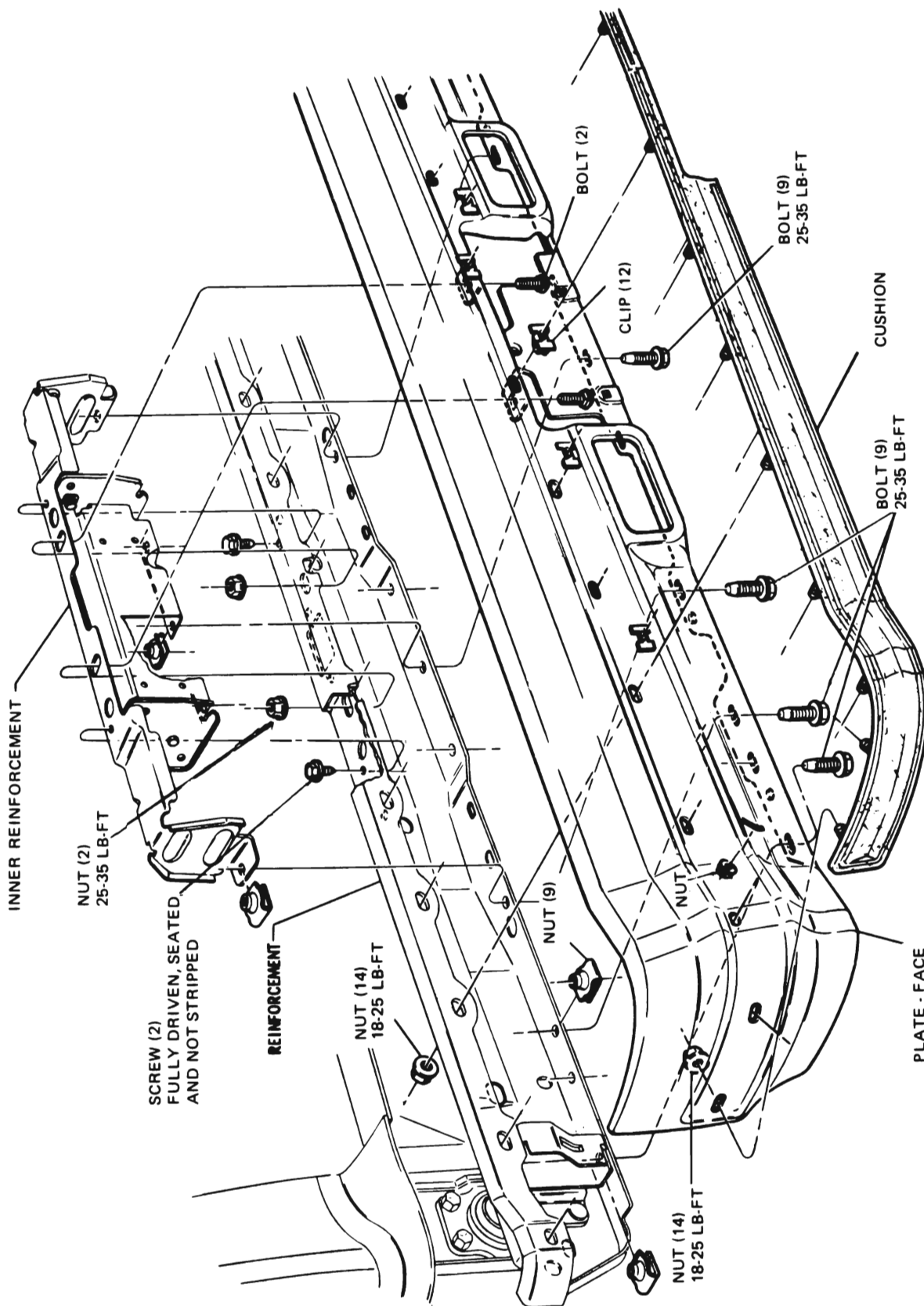


Figure 2B-55 B Series Wagon Rear Bumper Reinforcement

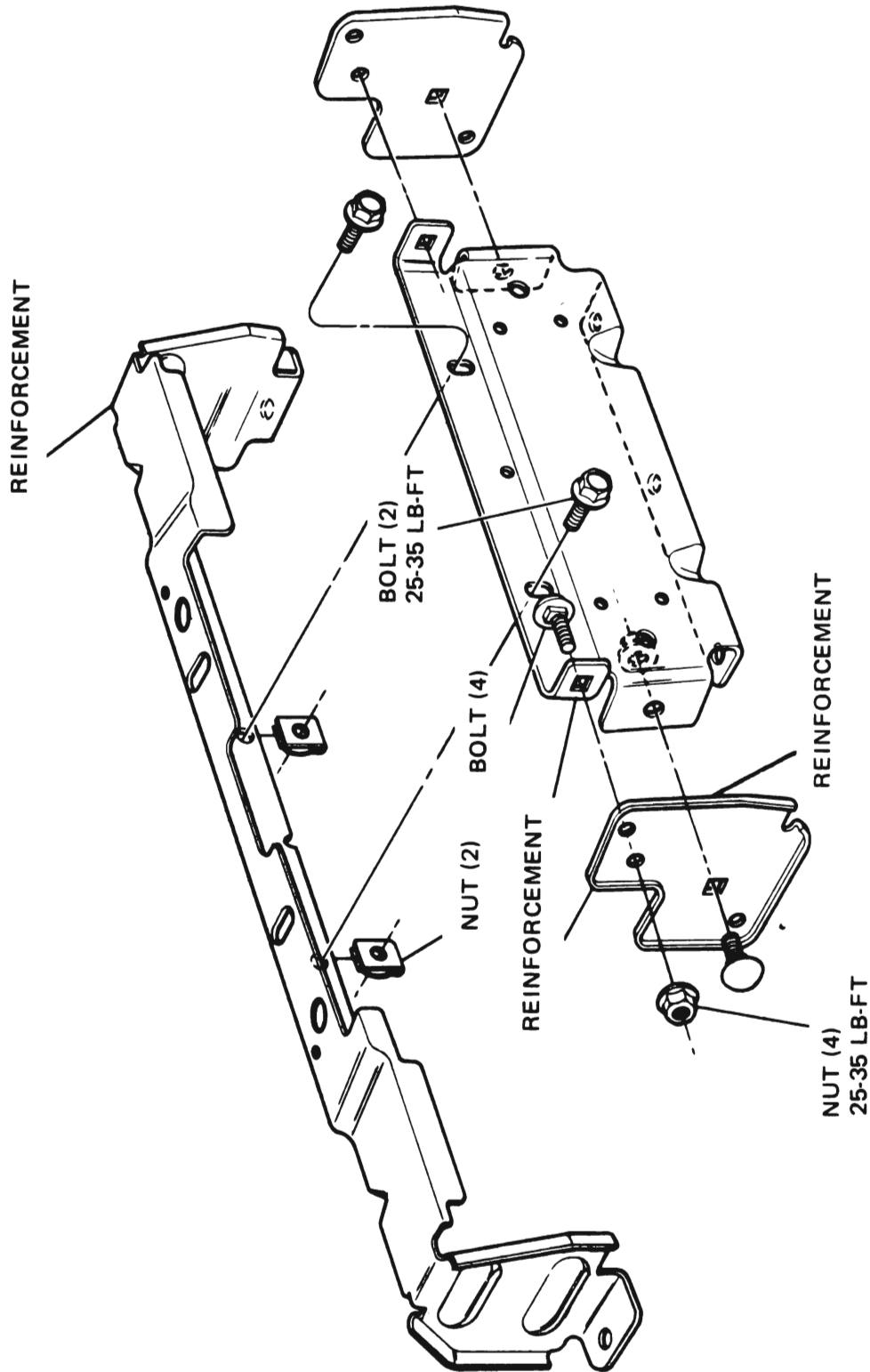
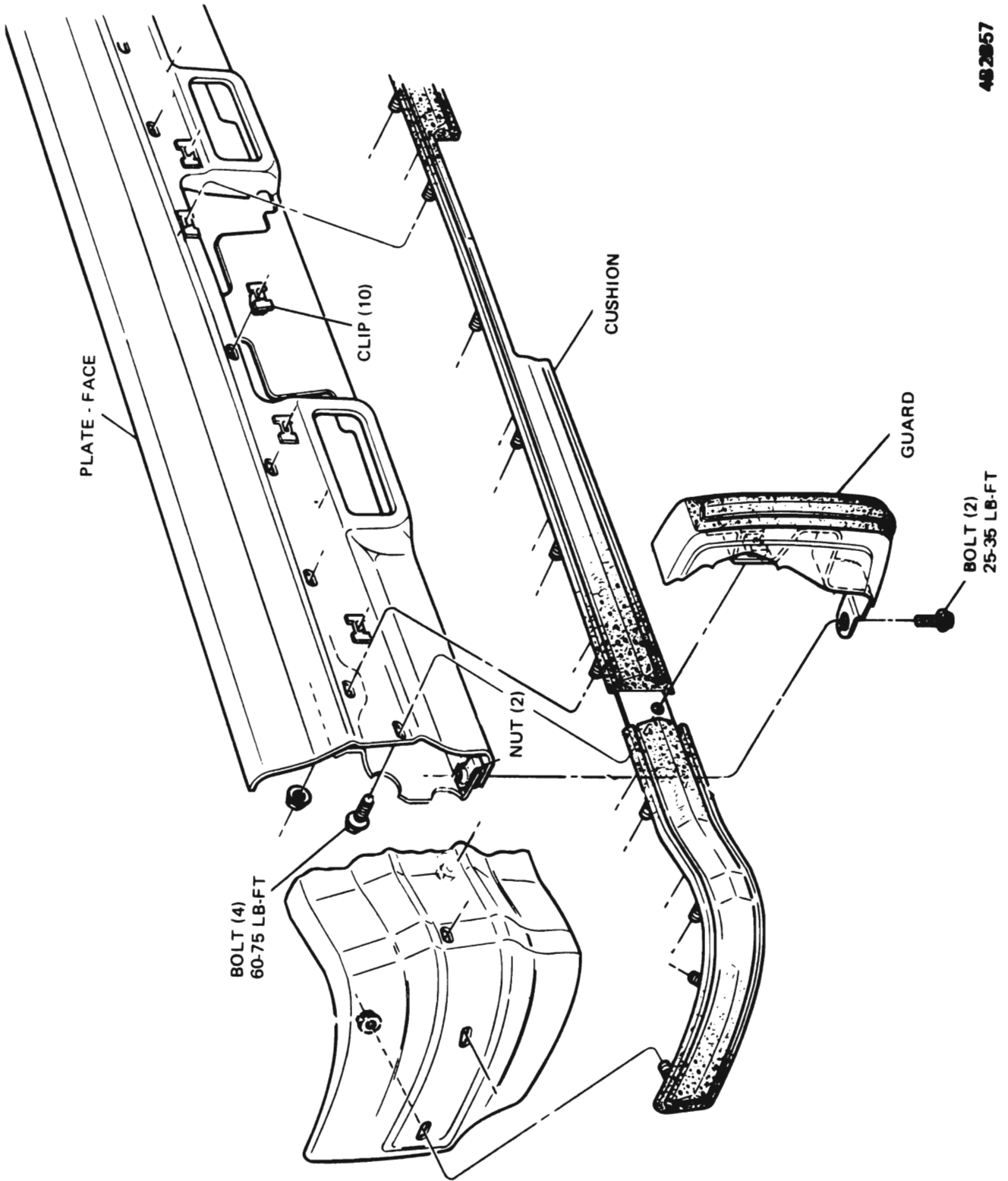


Figure 2B-56 B Series Wagon Rear Bumper Top Reinforcement



482857

Figure 2B-57 B Series Wagon Rear Bumper Cushion and Guards

4B2B58

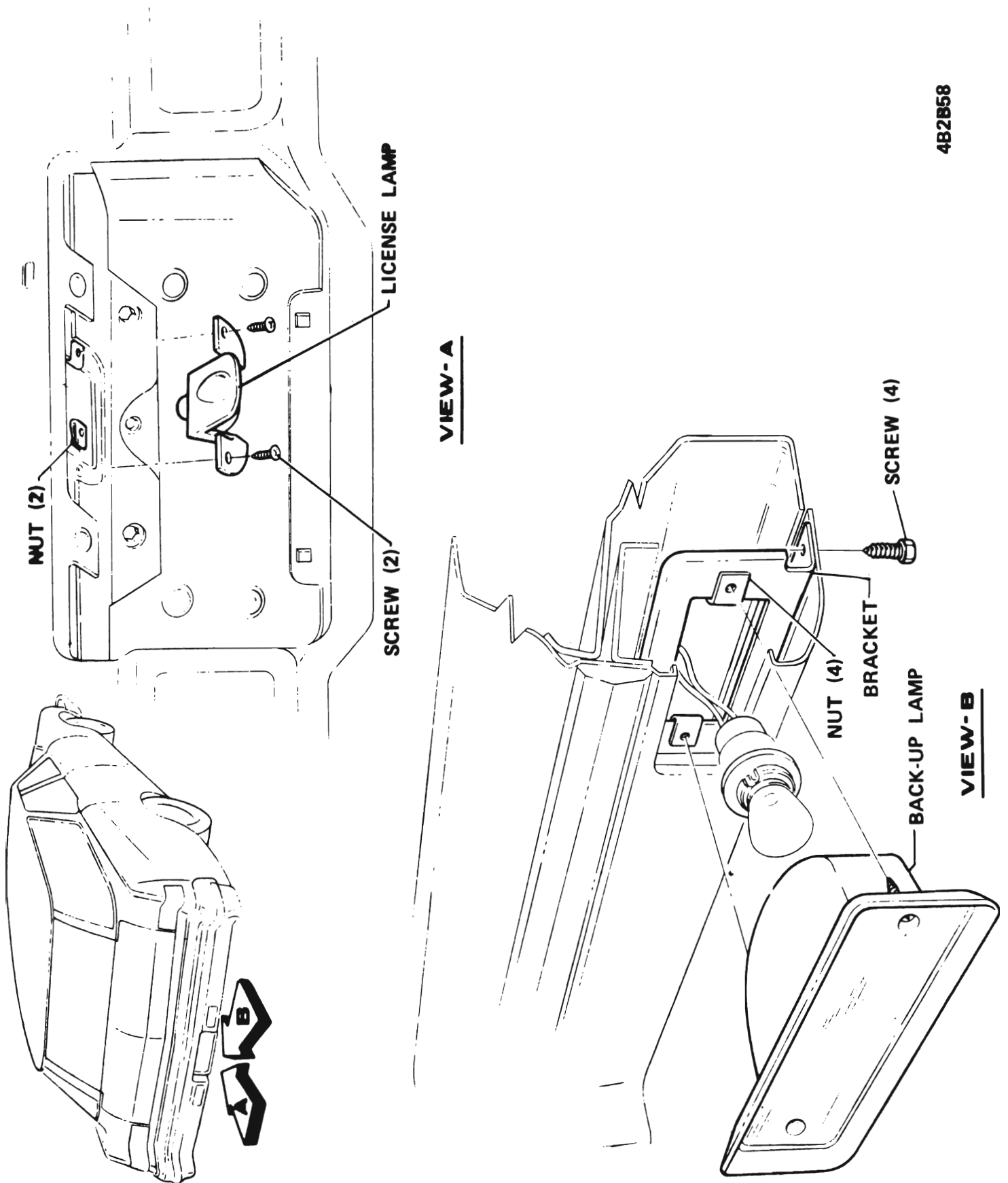


Figure 2B-58 B Series Wagon Back-Up Lamp

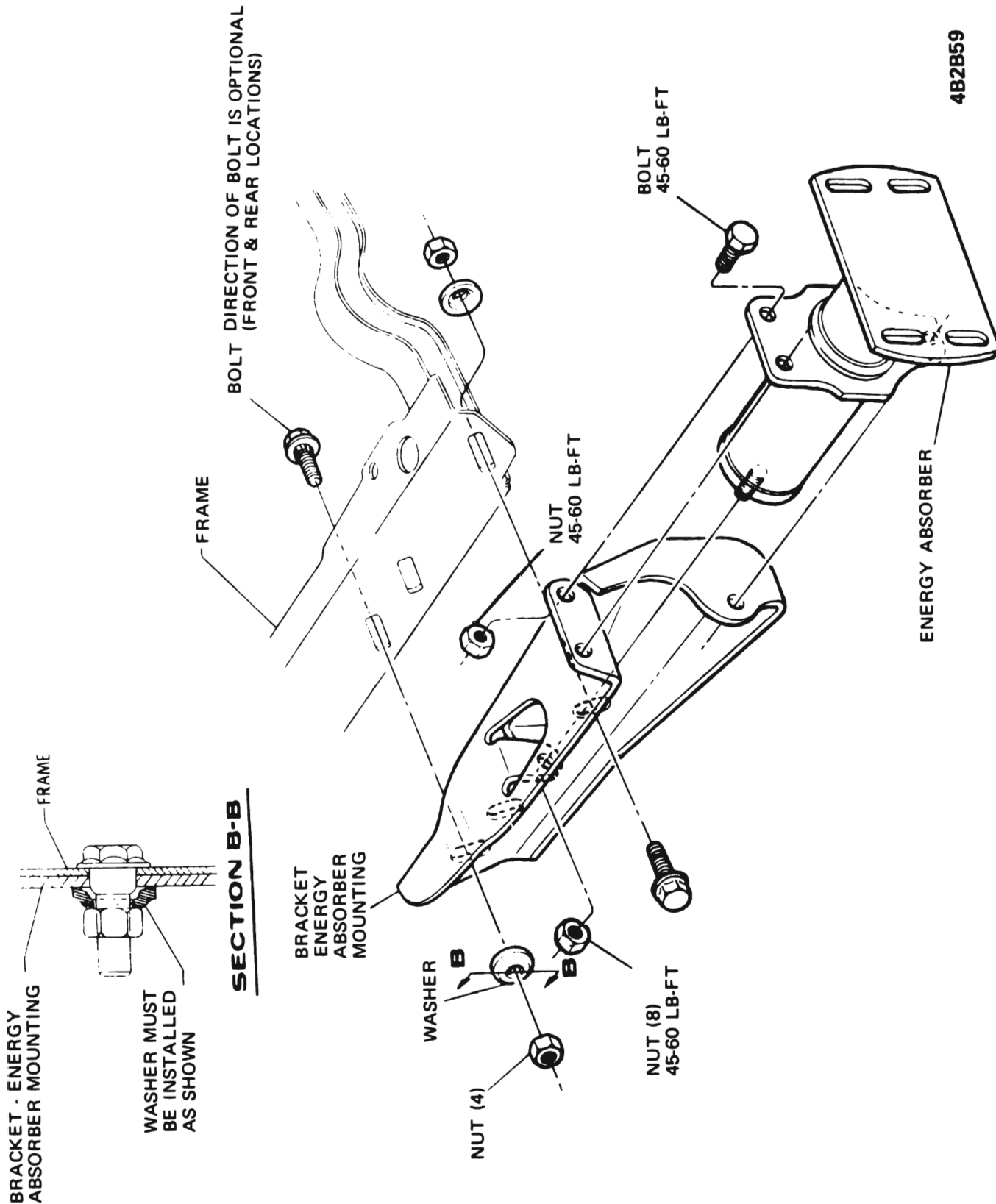


Figure 2B-59 C Series Rear Bumper E. A. Unit

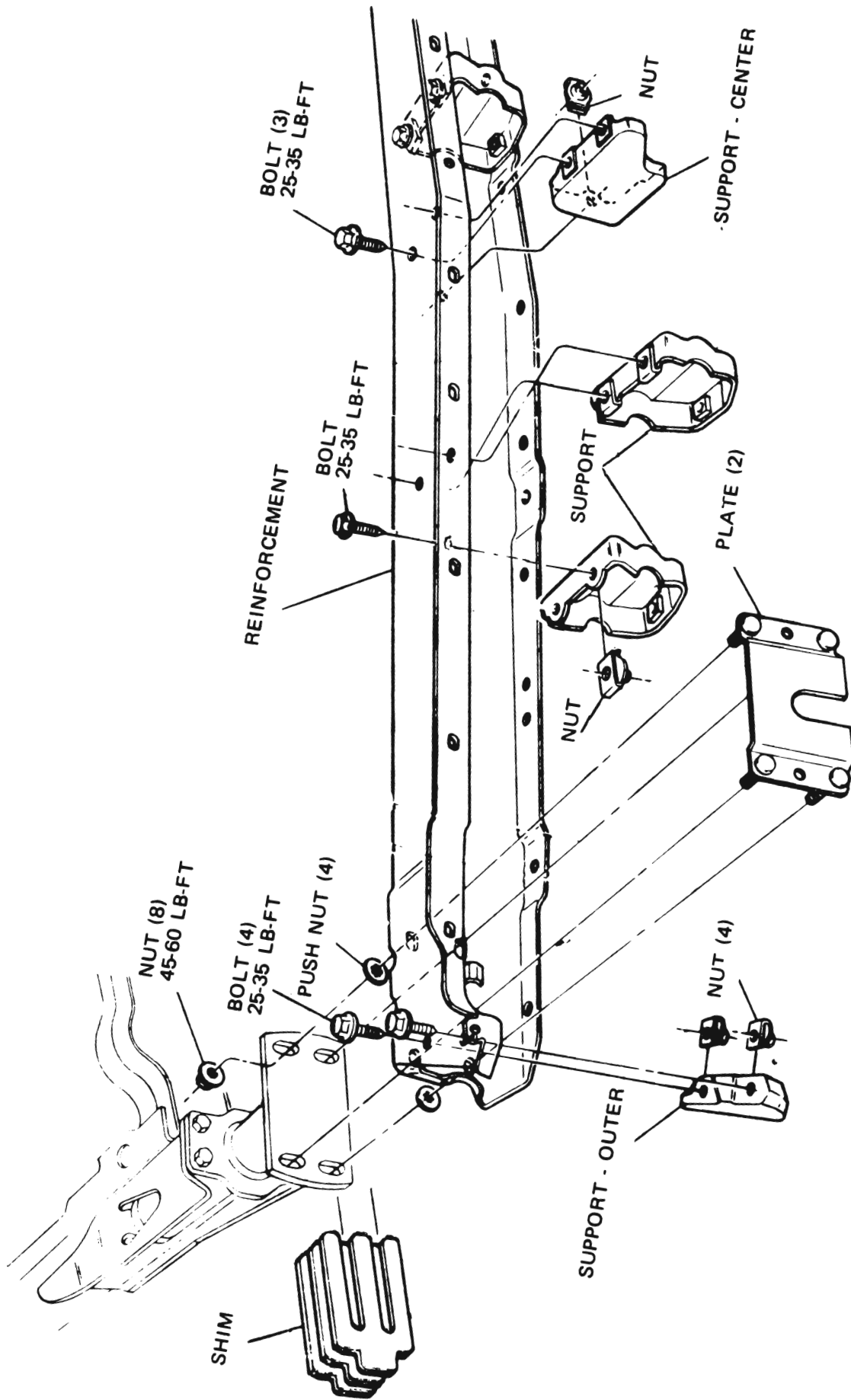
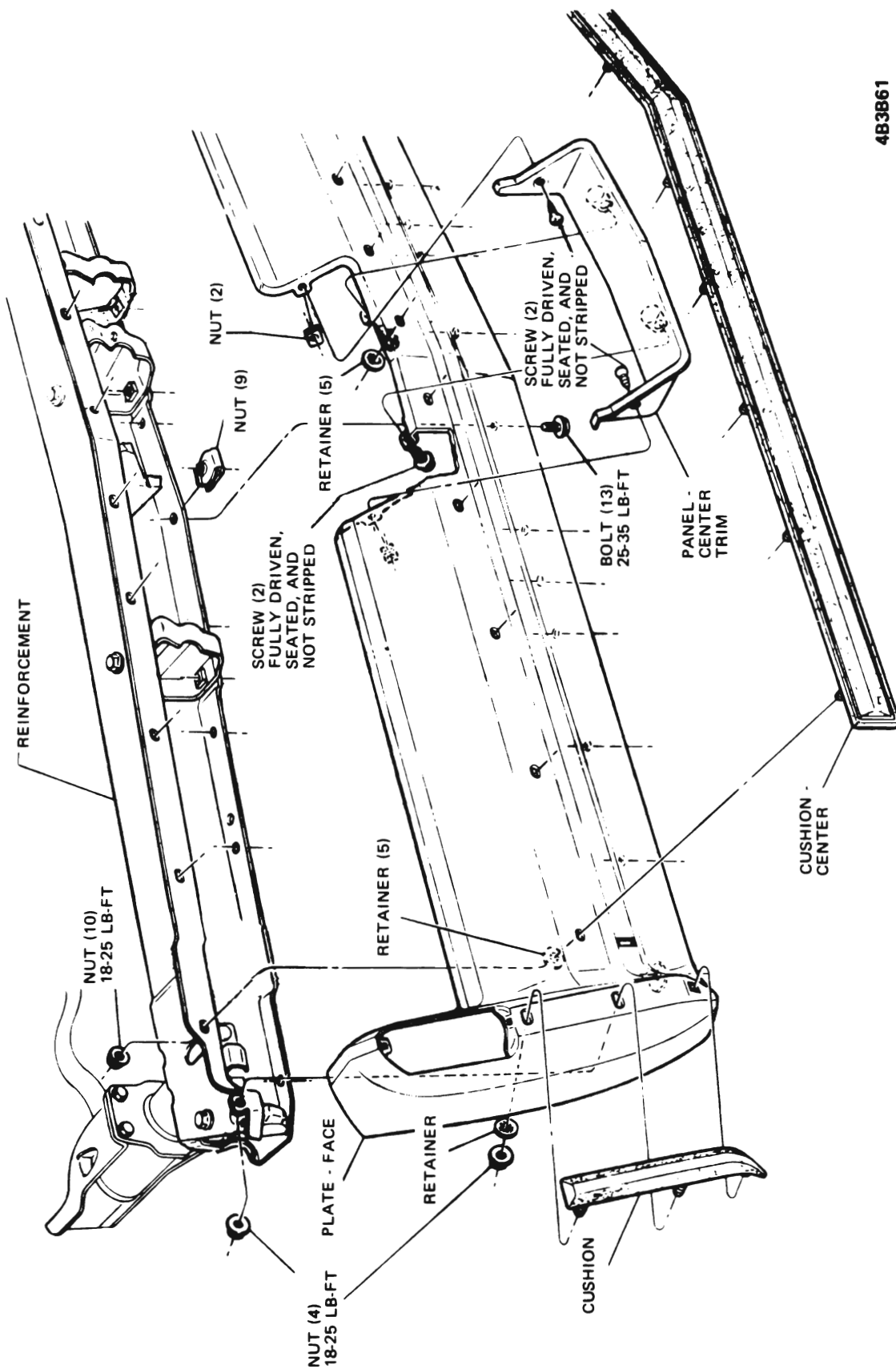


Figure 2B60 C Series Rear Bumper Reinforcement



4B3B61

Figure 2B-61 C Series Rear Bumper Face Plate and Cushions

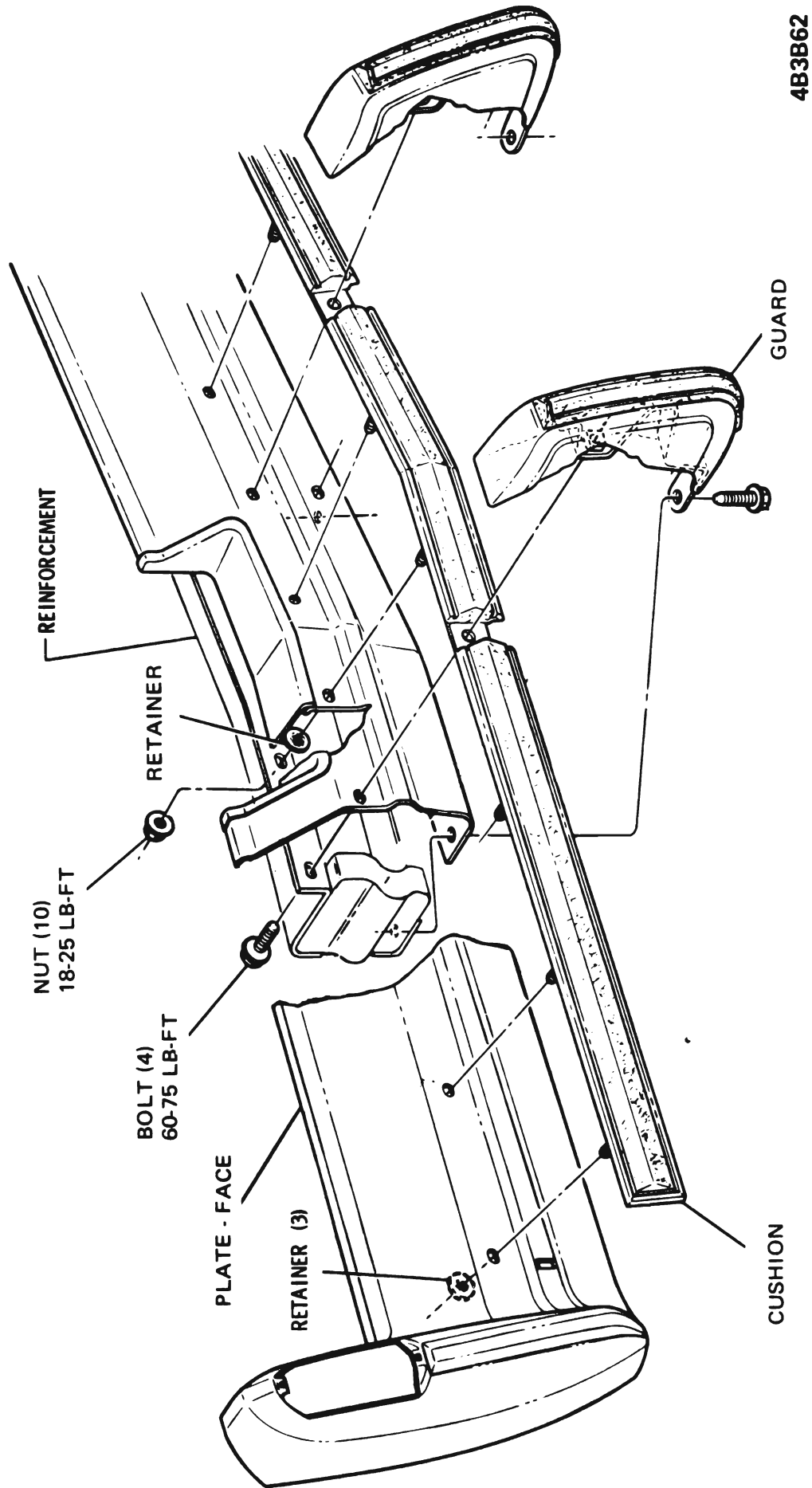


Figure 2B-62 C Series Rear Bumper Cushions and Guards

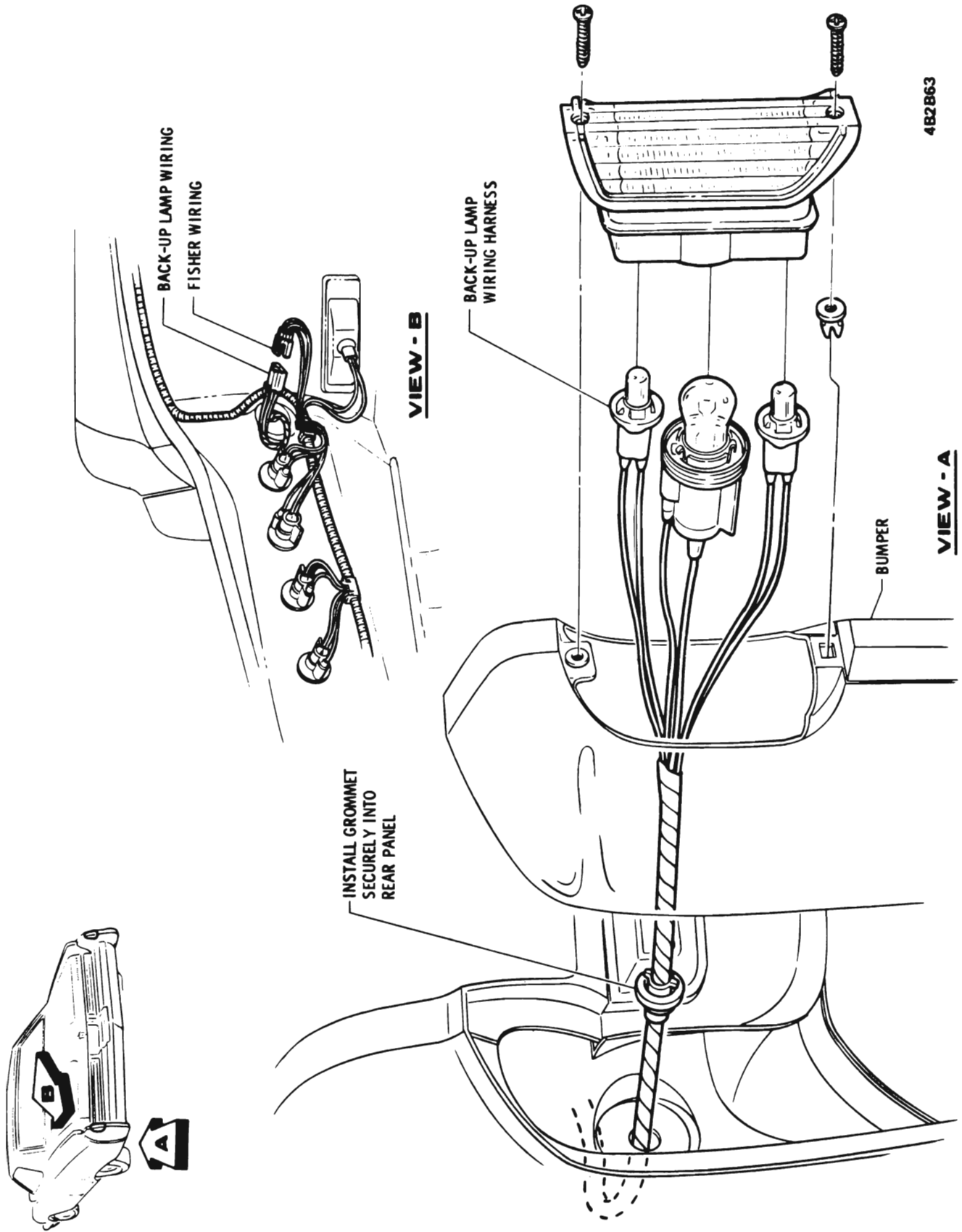


Figure 2B-63 C Series Rear Bumper Back-Up Lamp

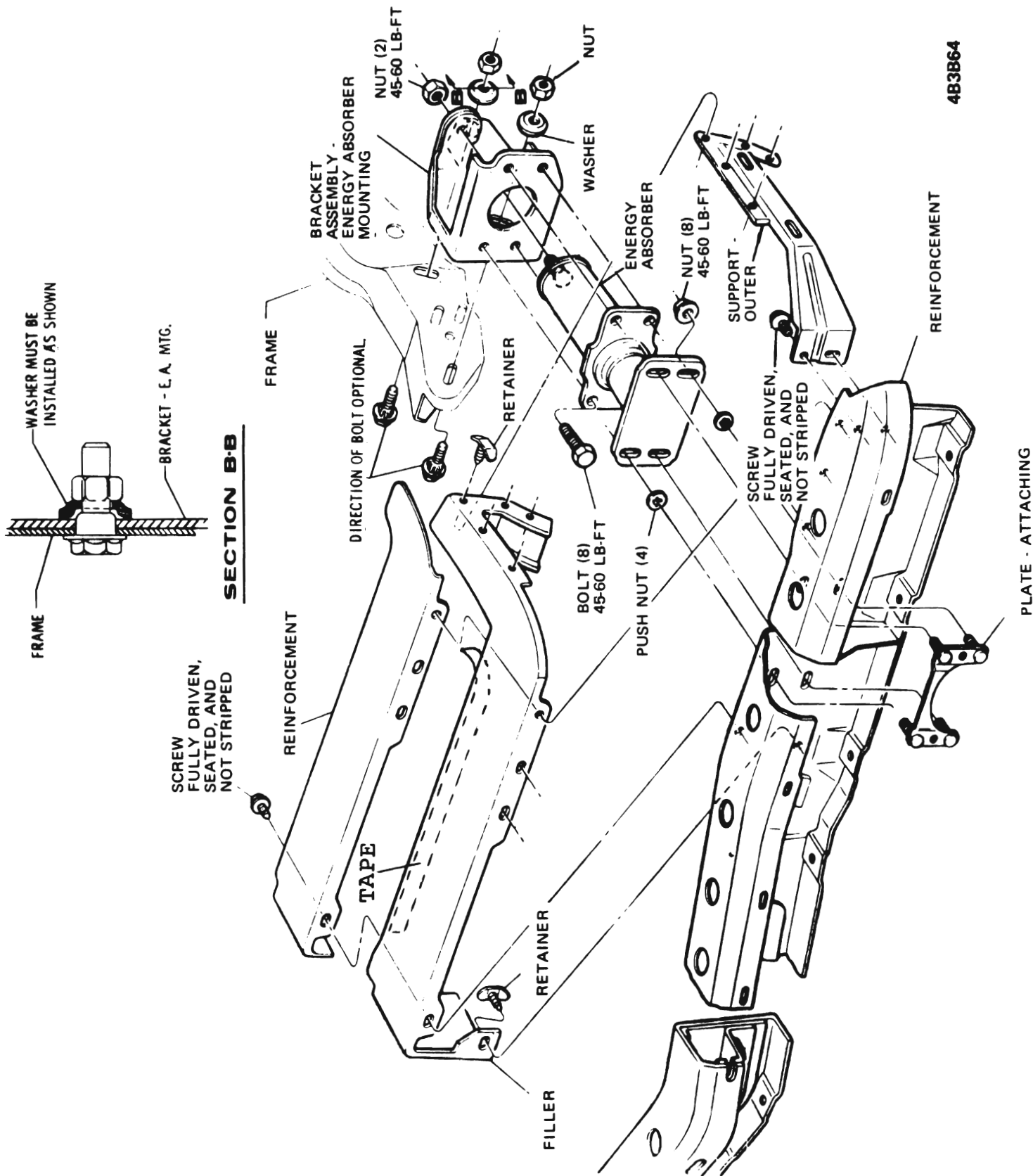


Figure 2B-64 E Series Front Bumper E. A. Unit

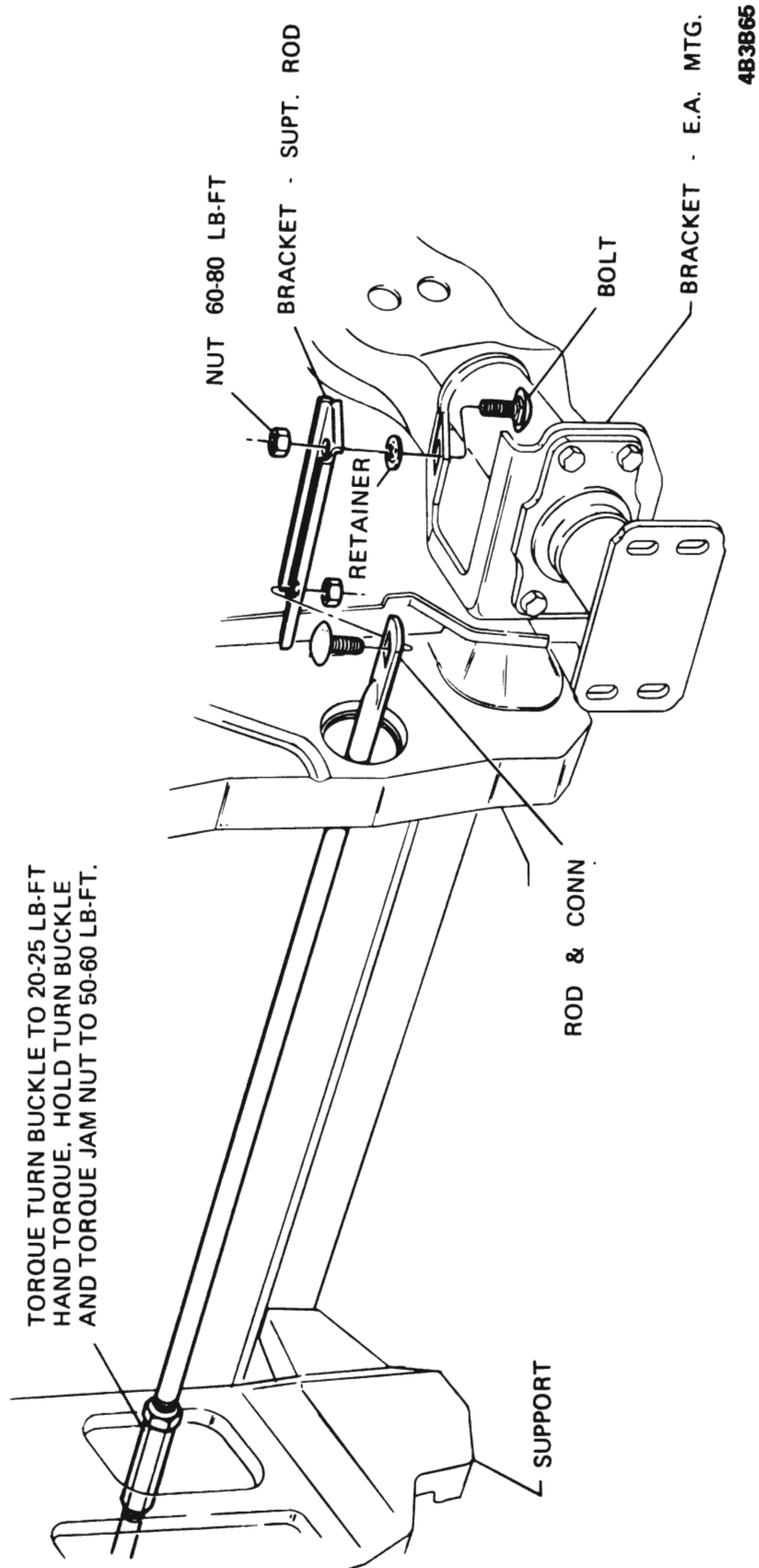
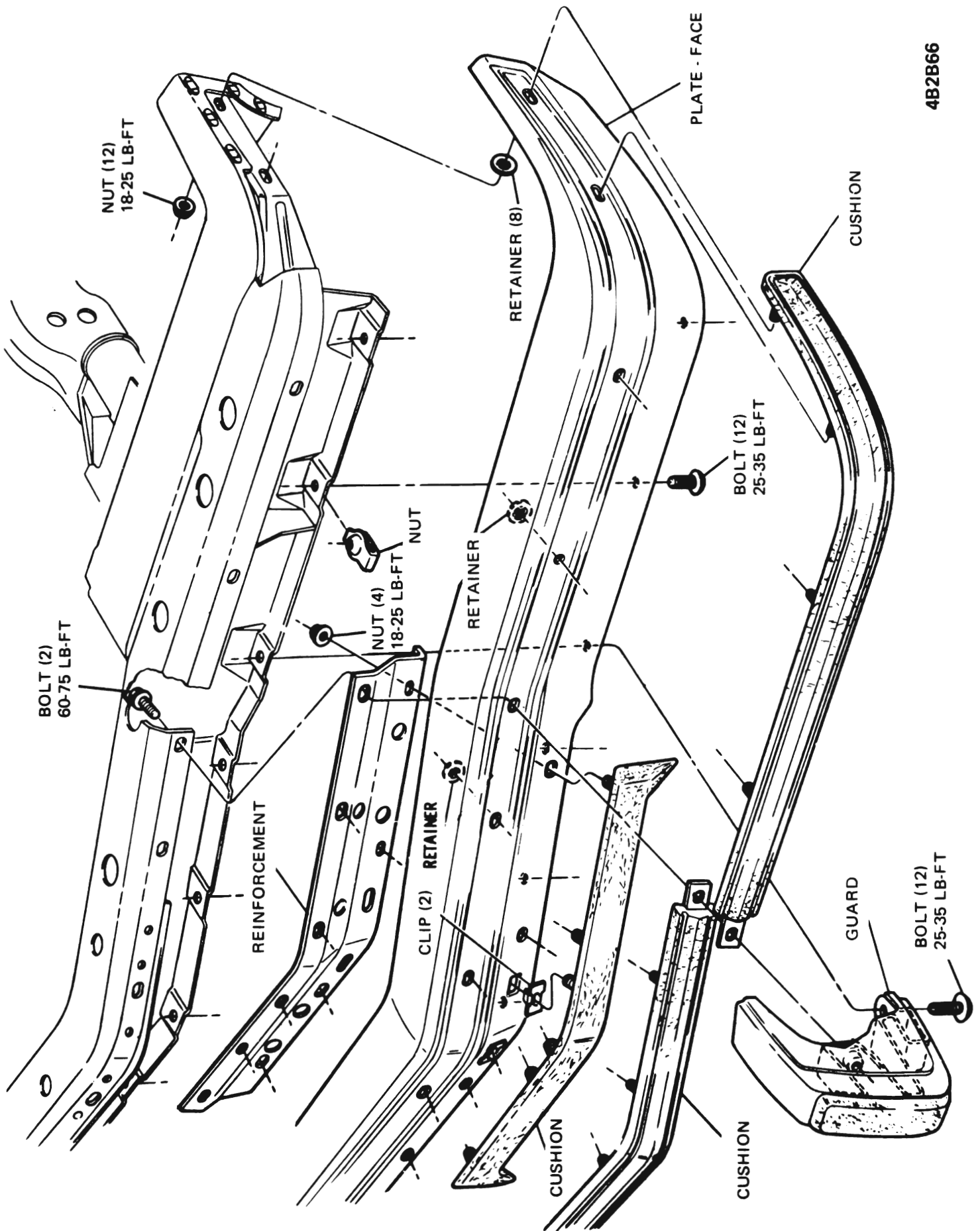
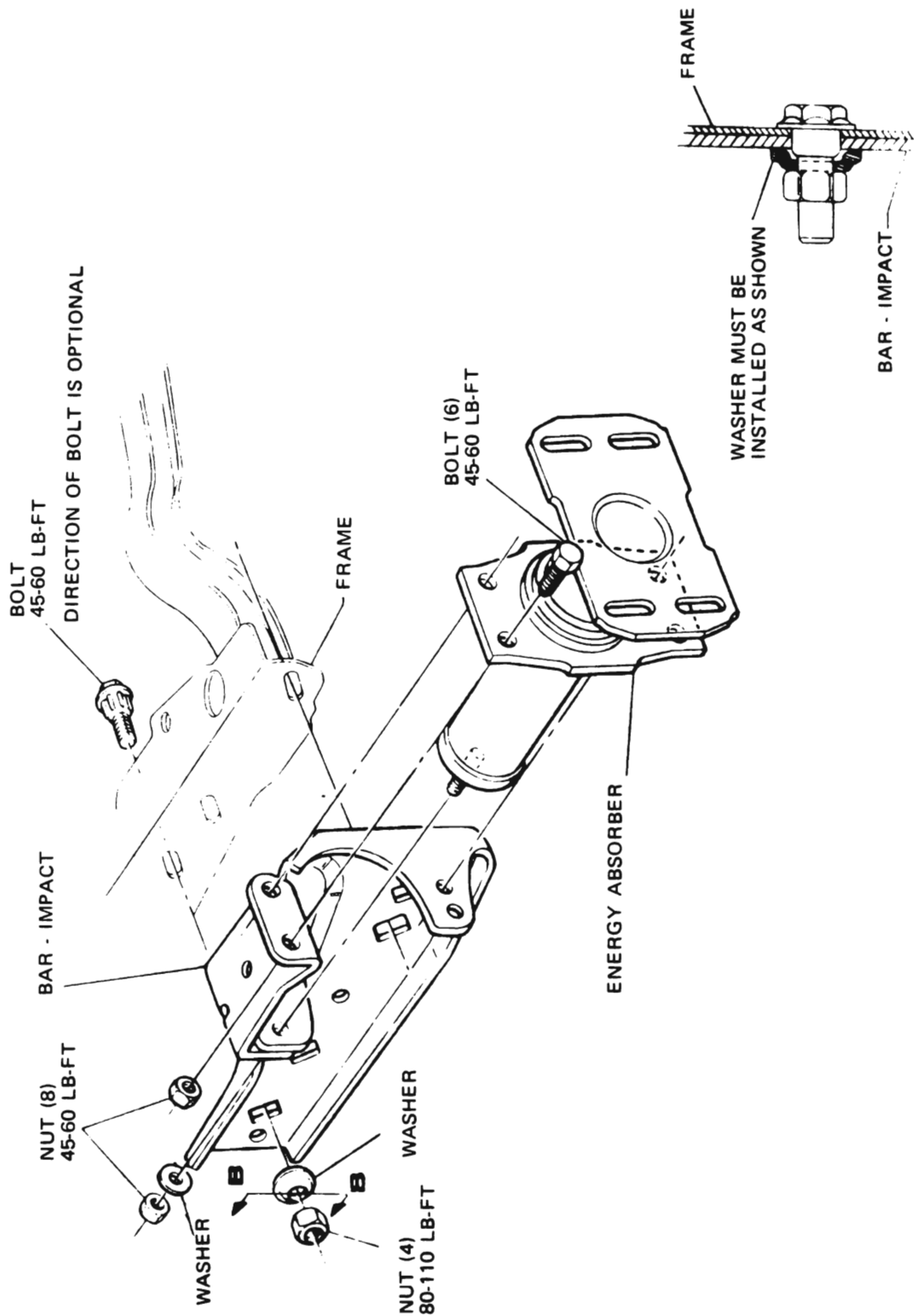


Figure 2B-65 E Series Front Bumper Support Rod



4B2B66

Figure 2B-66 E Series Front Bumper Reinforcement



SECTION B·B

Figure 2B-67 E Series Rear Bumper E. A. Unit

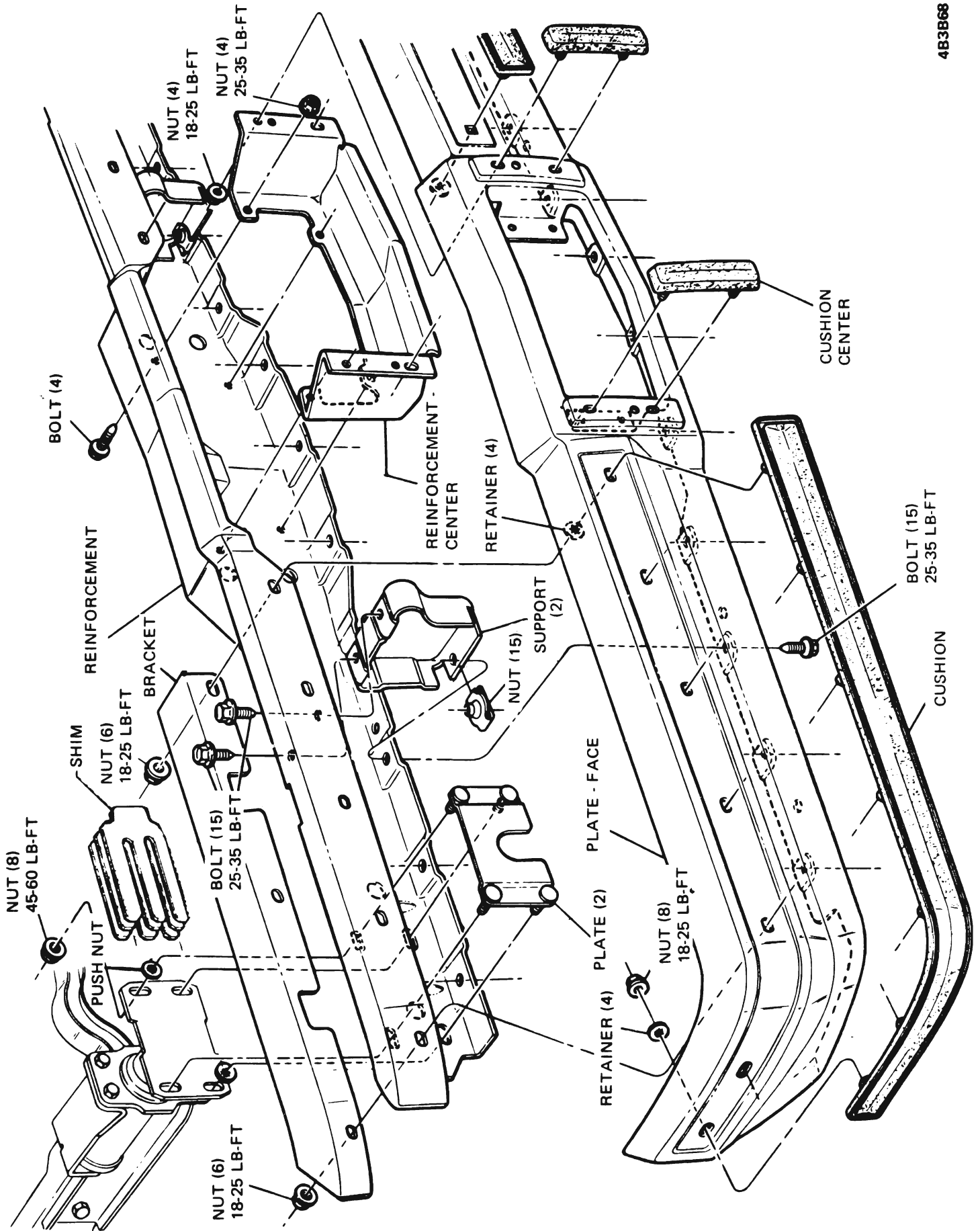


Figure 2B-68 E Series Rear Bumper Reinforcement and Cushions

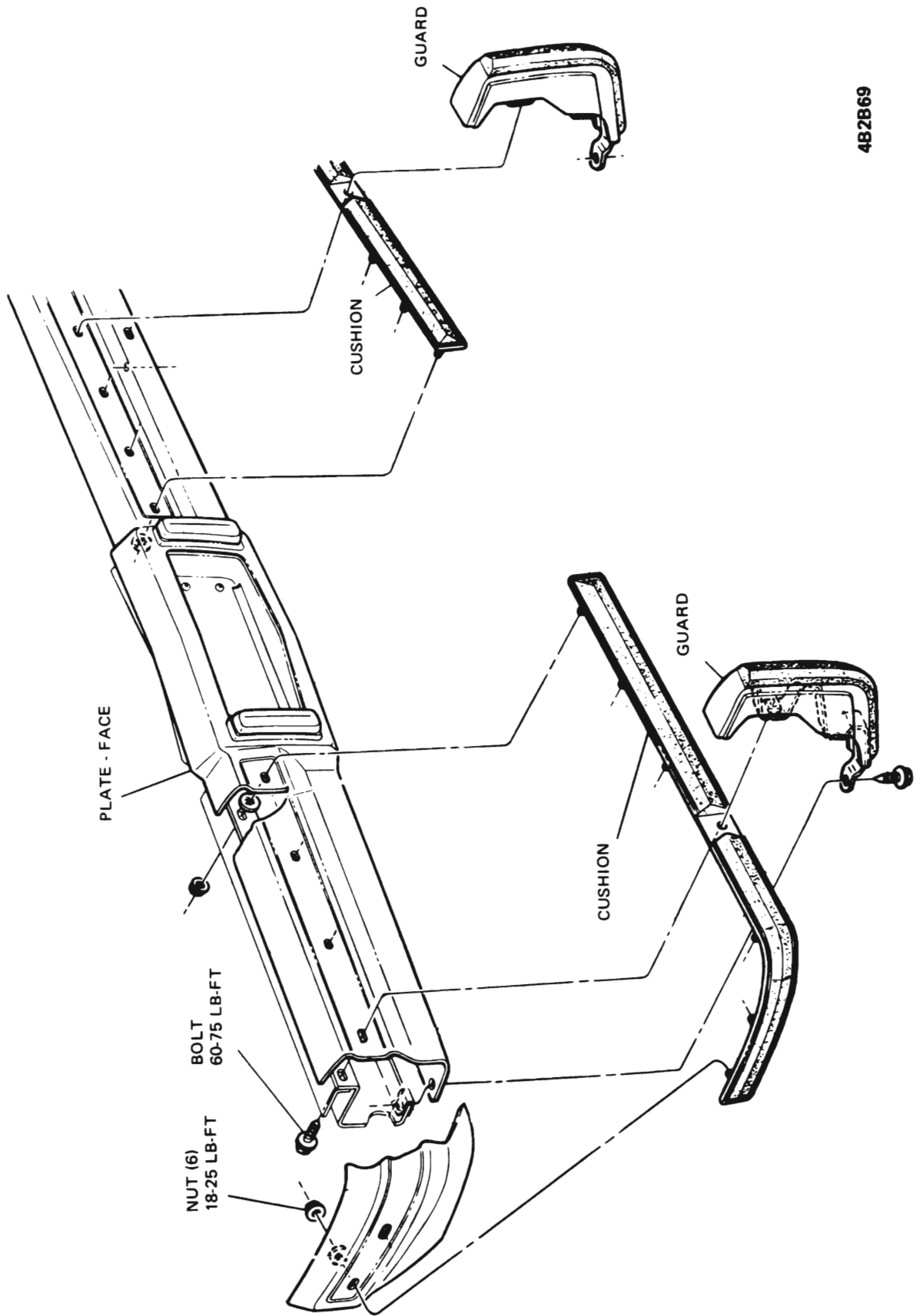
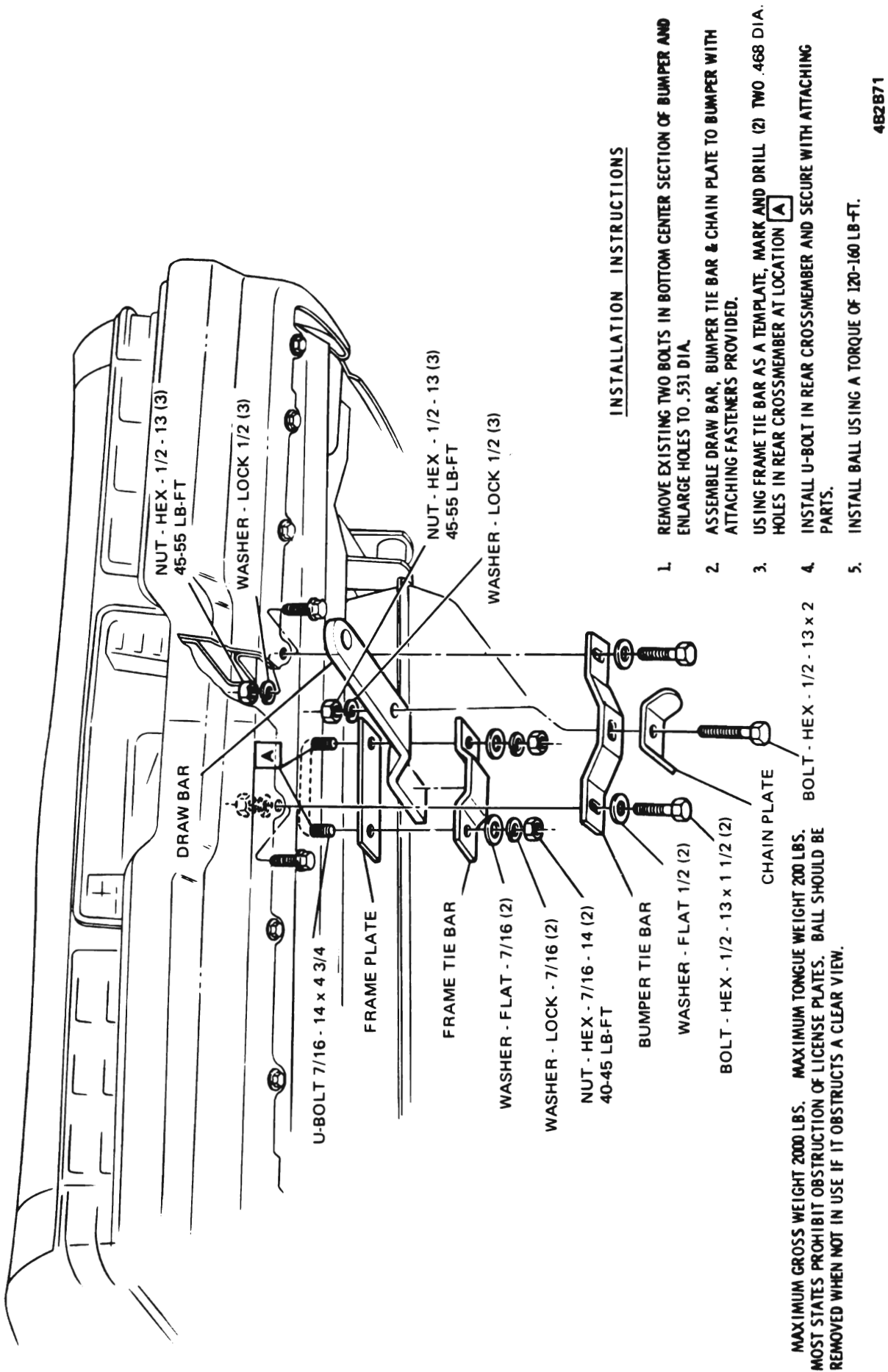


Figure 2B-69 E Series Rear Bumper Cushion and Guards



INSTALLATION INSTRUCTIONS

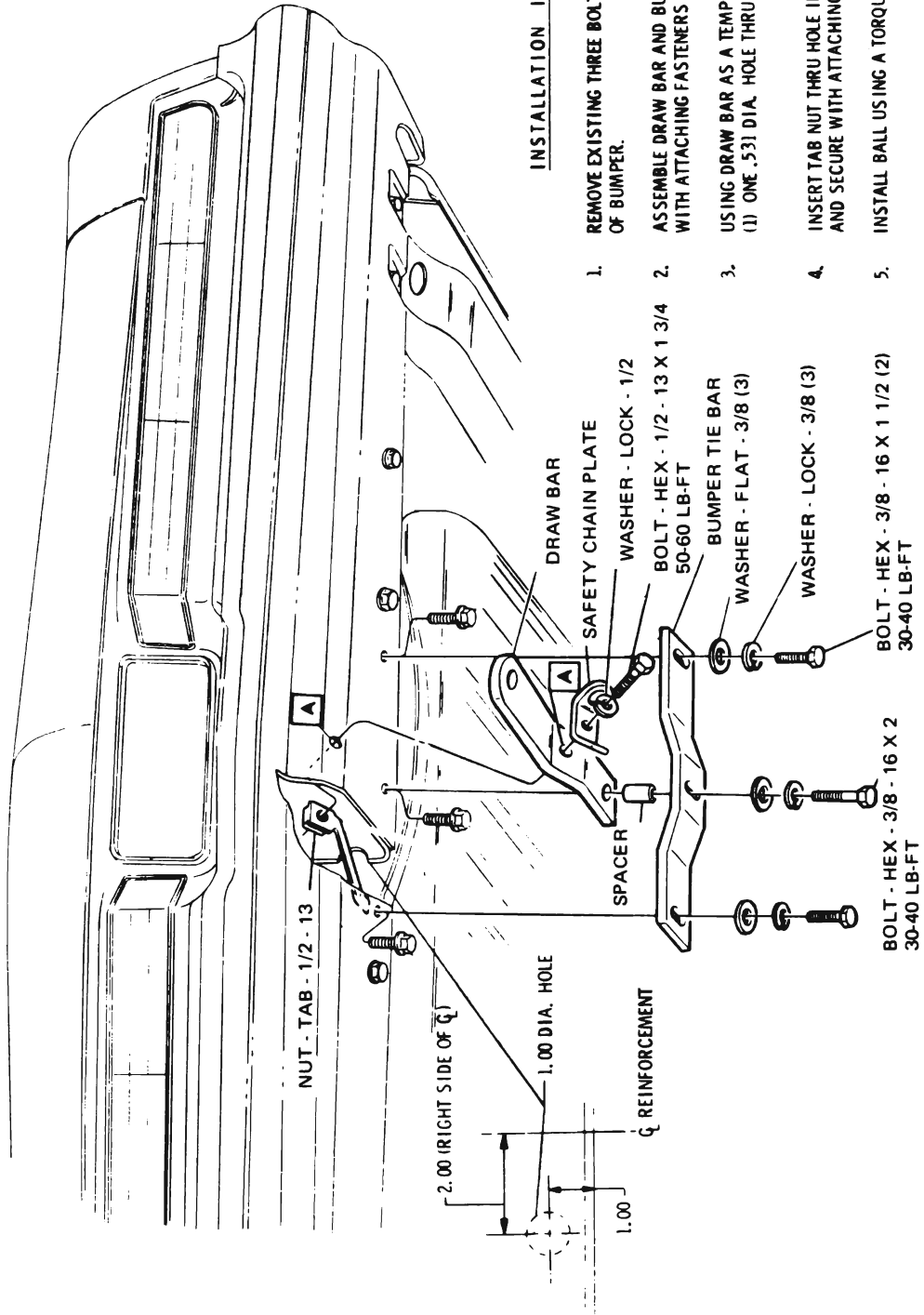
1. REMOVE EXISTING TWO BOLTS IN BOTTOM CENTER SECTION OF BUMPER AND ENLARGE HOLES TO .531 DIA.
2. ASSEMBLE DRAW BAR, BUMPER TIE BAR & CHAIN PLATE TO BUMPER WITH ATTACHING FASTENERS PROVIDED.
3. USING FRAME TIE BAR AS A TEMPLATE, MARK AND DRILL (2) TWO .468 DIA. HOLES IN REAR CROSSMEMBER AT LOCATION **A**
4. INSTALL U-BOLT IN REAR CROSSMEMBER AND SECURE WITH ATTACHING PARTS.
5. INSTALL BALL USING A TORQUE OF 120-160 LB-FT.

MAXIMUM GROSS WEIGHT 2000 LBS. MAXIMUM TONGUE WEIGHT 200 LBS.
 MOST STATES PROHIBIT OBSTRUCTION OF LICENSE PLATES. BALL SHOULD BE
 REMOVED WHEN NOT IN USE IF IT OBSTRUCTS A CLEAR VIEW.

482871

Figure 2B-71 X Series Trailer Hitch

MAXIMUM GROSS WEIGHT 2000 LBS. MAXIMUM TONGUE WEIGHT 200 LBS.
 MOST STATES PROHIBIT OBSTRUCTION OF THE LICENSE PLATES. BALL SHOULD BE REMOVED
 WHEN NOT IN USE IF IT OBSTRUCTS A CLEAR VIEW.
 THIS PRODUCT COMPLIES WITH SAFETY SPECIFICATIONS AND REQUIREMENTS FOR CONNECTING
 DEVICES AND TOWING SYSTEMS OF THE STATE OF NEW YORK.



INSTALLATION INSTRUCTIONS

1. REMOVE EXISTING THREE BOLTS IN BOTTOM CENTER SECTION OF BUMPER.
2. ASSEMBLE DRAW BAR AND BUMPER TIE BAR TO BUMPER WITH ATTACHING FASTENERS PROVIDED.
3. USING DRAW BAR AS A TEMPLATE, MARK AND DRILL (1) ONE .531 DIA. HOLE THRU BUMPER AT LOCATION **A**
4. INSERT TAB NUT THRU HOLE IN REINFORCEMENT AND SECURE WITH ATTACHING PARTS.
5. INSTALL BALL USING A TORQUE OF 120-160 LB-FT.

Figure 2B-72 A Series less Wagon Trailer Hitch

INSTALLATION INSTRUCTIONS

1. REMOVE EXISTING THREE BOLTS IN BOTTOM CENTER SECTION OF BUMPER.
2. ASSEMBLE DRAW BAR, BUMPER TIE BAR, AND CHAIN PLATE TO BUMPER WITH ATTACHING FASTENERS PROVIDED.
3. USING REINFORCEMENT STRAP AS A TEMPLATE, MARK AND DRILL (2) TWO .406 DIAMETER HOLES IN REAR CROSSMEMBER AT LOCATION **A** AND SECURE WITH ATTACHING PARTS.
4. INSTALL BALL USING A TORQUE OF 120-160 LB-FT.

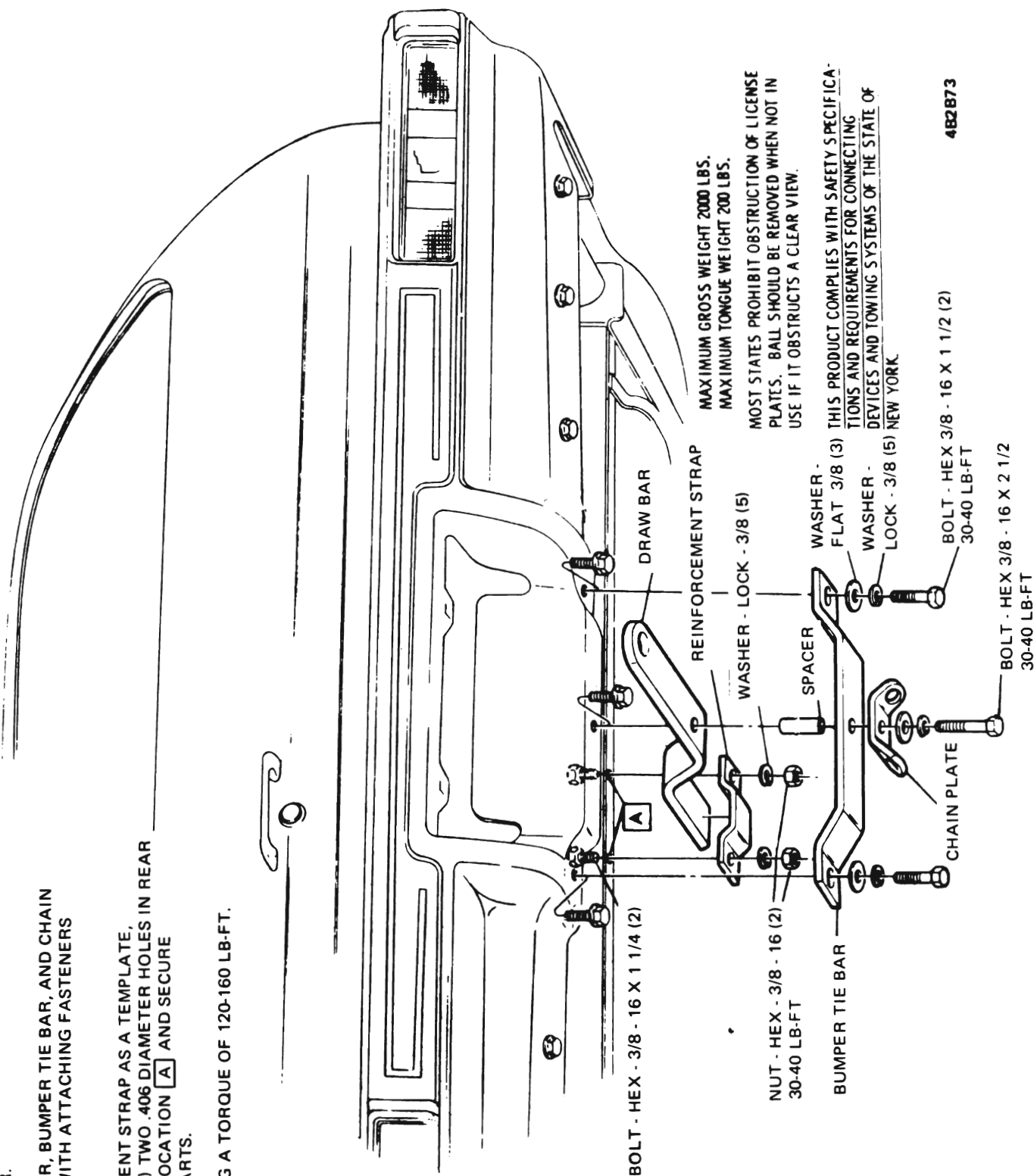
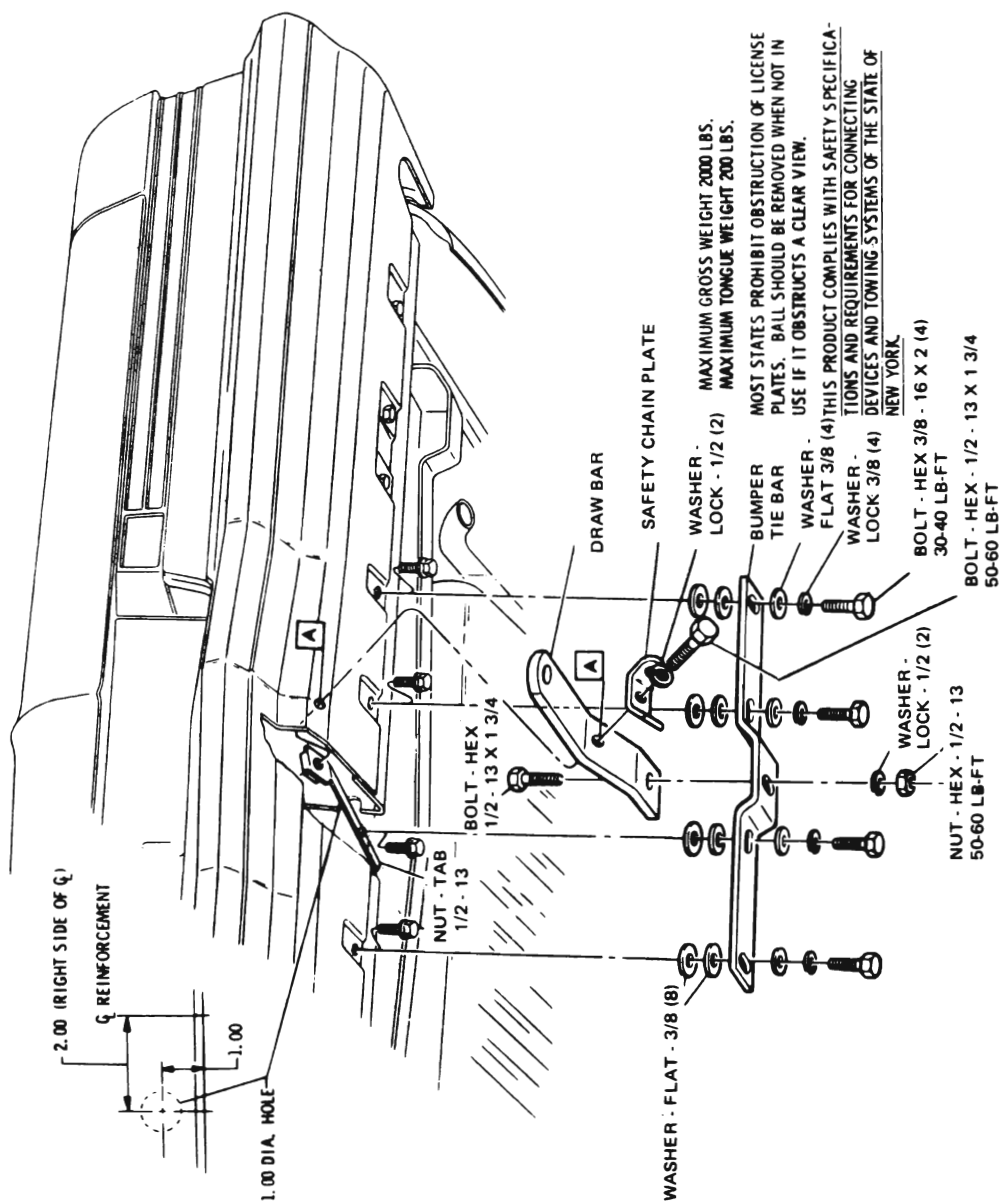


Figure 2B-73 A Series Wagon Trailer Hitch

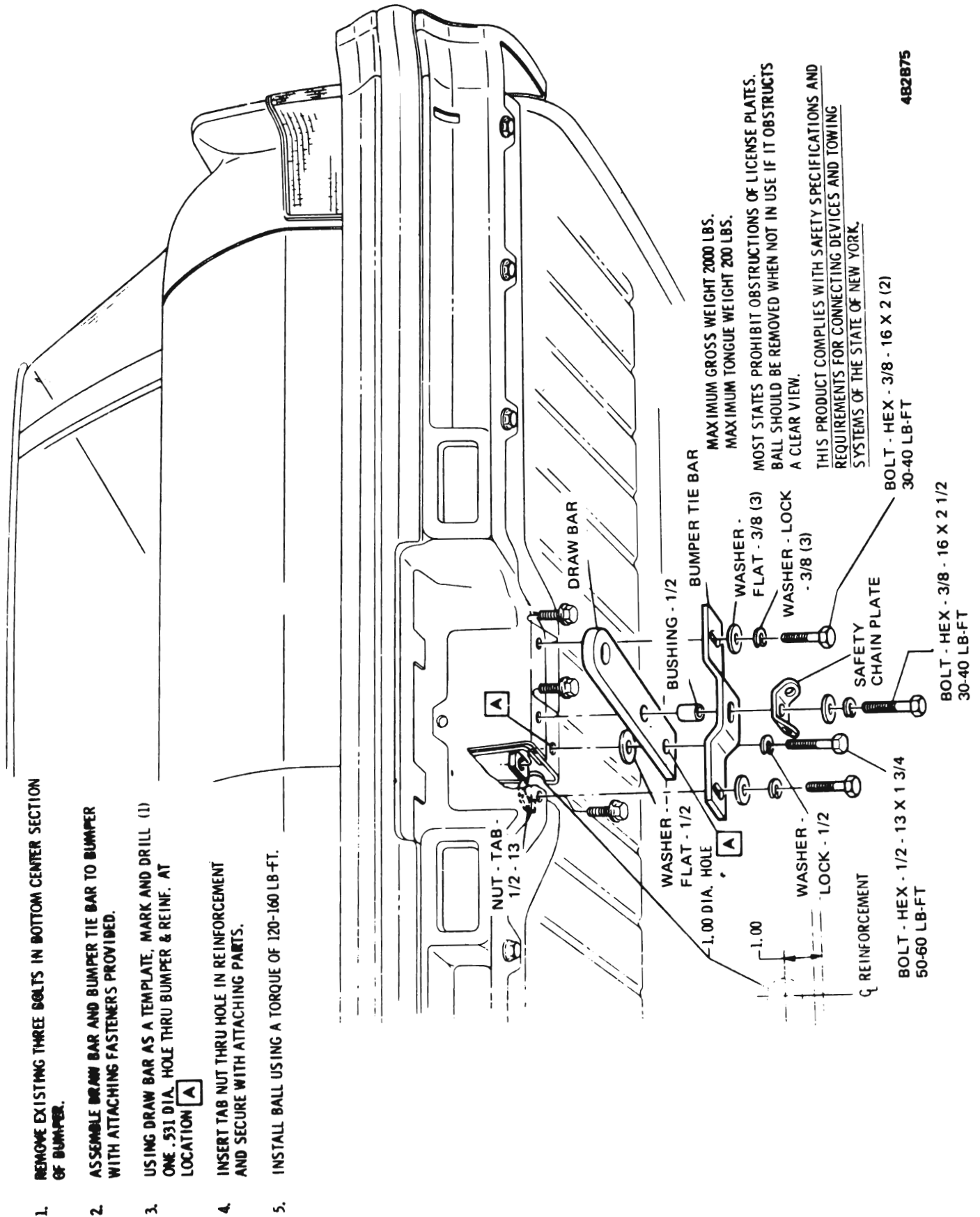


INSTALLATION INSTRUCTIONS

1. REMOVE EXISTING FOUR BOLTS IN BOTTOM CENTER SECTION OF BUMPER.
2. ASSEMBLE DRAW BAR AND BUMPER TIE BAR TO BUMPER WITH ATTACHING FASTENERS PROVIDED.
3. USING DRAW BAR AS A TEMPLATE, MARK AND DRILL (1) ONE .531 DIA. HOLE THRU BUMPER AT LOCATION **A**
4. INSERT TAB NUT THRU HOLE IN REINFORCEMENT AND SECURE WITH ATTACHING PARTS.
5. INSTALL BALL USING A TORQUE OF 120-160 LB.-FT.

482874

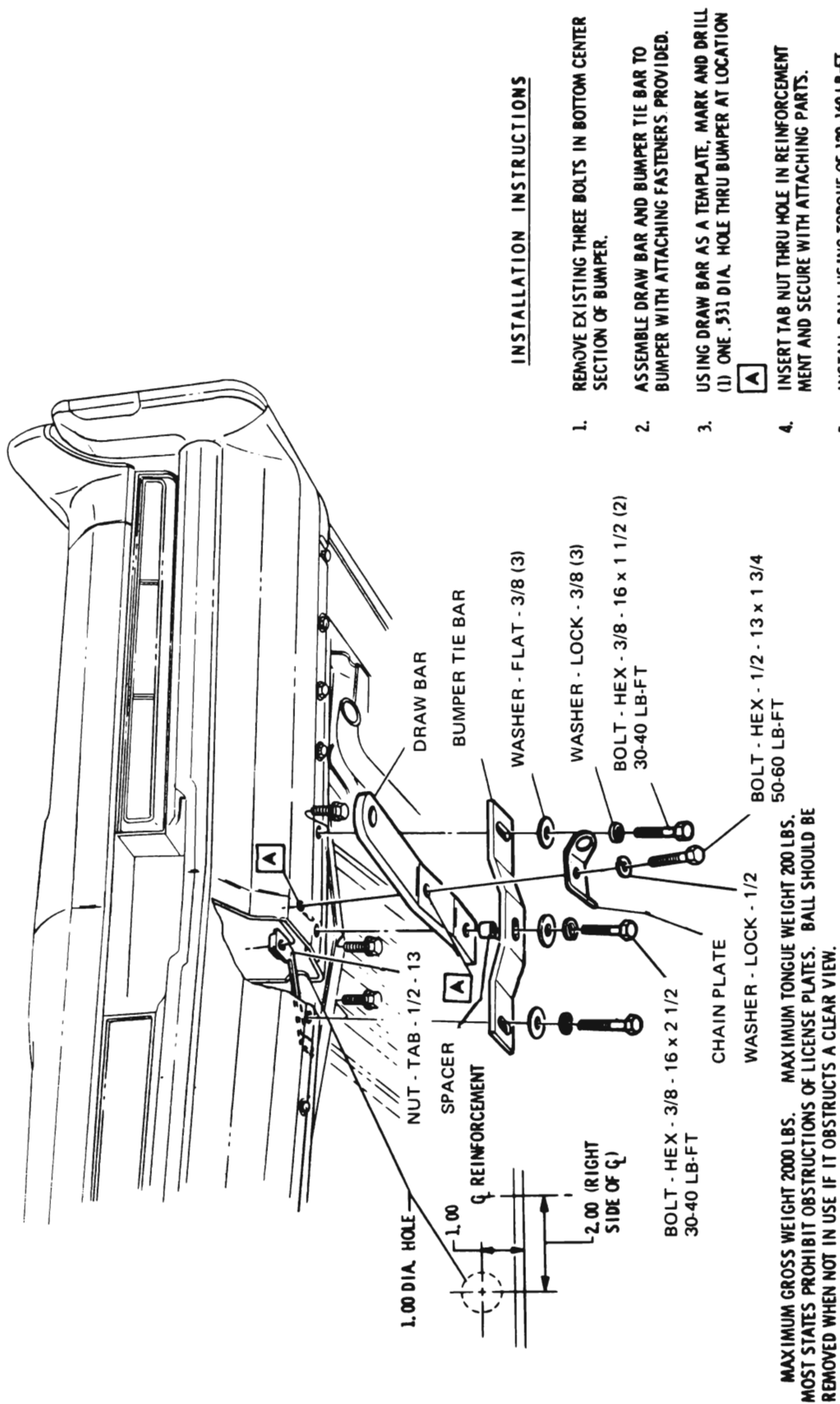
Figure 2B-74 B Series less Wagon Trailer Hitch



482875

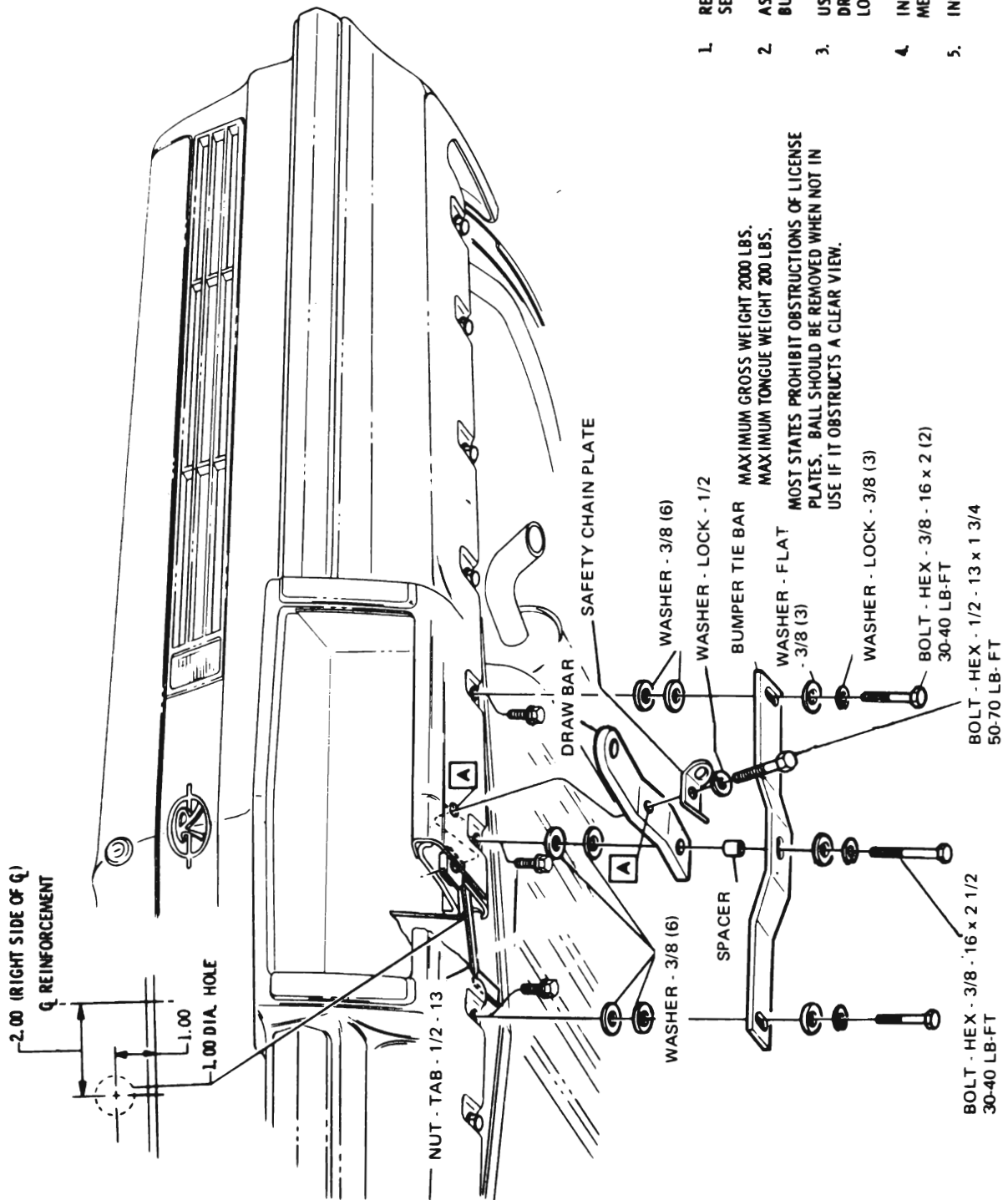
1. REMOVE EXISTING THREE BOLTS IN BOTTOM CENTER SECTION OF BUMPER.
2. ASSEMBLE DRAW BAR AND BUMPER TIE BAR TO BUMPER WITH ATTACHING FASTENERS PROVIDED.
3. USING DRAW BAR AS A TEMPLATE, MARK AND DRILL (1) ONE .531 DIA. HOLE THRU BUMPER & REINF. AT LOCATION **A**
4. INSERT TAB NUT THRU HOLE IN REINFORCEMENT AND SECURE WITH ATTACHING PARTS.
5. INSTALL BALL USING A TORQUE OF 120-160 LB-FT.

Figure 2B-75 B Series Wagon Trailer Hitch



4B2B76

Figure 2B-76 C Series Trailer Hitch



INSTALLATION INSTRUCTIONS

1. REMOVE EXISTING THREE BOLTS IN BOTTOM CENTER SECTION OF BUMPER.
2. ASSEMBLE DRAW BAR AND BUMPER TIE BAR TO BUMPER WITH ATTACHING FASTENERS PROVIDED.
3. USING DRAW BAR AS A TEMPLATE, MARK AND DRILL (1) ONE .531 DIA. HOLE THRU BUMPER AT LOCATION **A**
4. INSERT TAB NUT THRU HOLE IN REINFORCEMENT AND SECURE WITH ATTACHING PARTS.
5. INSTALL BALL USING A TORQUE OF 120-160 LB-FT.

482B77

Figure 2B-77 E Series Trailer Hitch