

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.

CONTENTS

DESCRIPTION AND OPERATION:

Description and Operation of Energy Absorbing Unit 2B- 1

DIAGNOSIS:

Diagnosis of Energy Absorbing Unit 2B- 2

MAINTENANCE AND ADJUSTMENTS:

Alignment of Bumpers 2B- 3

MAJOR REPAIR:

Air Cushion Restraint Bumper Impulse Detector 2B- 3

"H" Series Front Bumper 2B-12

"H" Series Rear Bumper 2B-13

"X" Series Front Bumper 2B-16

"X" Series Rear Bumper 2B-18

"A" Series Front Bumper 2B-20

"A" Series (Less Wagon) Rear Bumper 2B-22

"A" Series Wagon Rear Bumper 2B-23

"B-C" Series Front Bumper 2B-25

"B" Series (Less Wagon) Rear Bumper 2B-29

"B" Series Wagon Rear Bumper 2B-30

"C" Series Rear Bumper 2B-33

"E" Series Front Bumper 2B-35

"E" Series Rear Bumper 2B-37

SPECIFICATION: (Not Applicable)

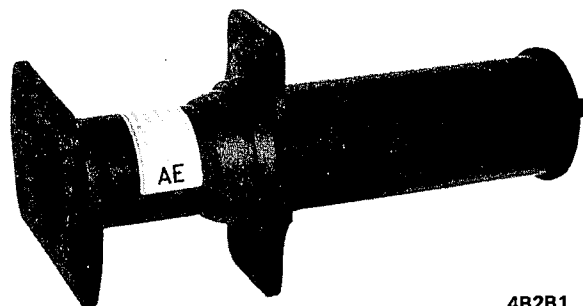
DESCRIPTION AND OPERATION

DESCRIPTION AND OPERATION OF THE ENERGY ABSORBING UNIT

Both the front and rear bumpers on all Buicks will be able to withstand a 5 M.P.H. barrier impact without major damage. This is done with the aid of reinforced bumpers and energy absorbing units.

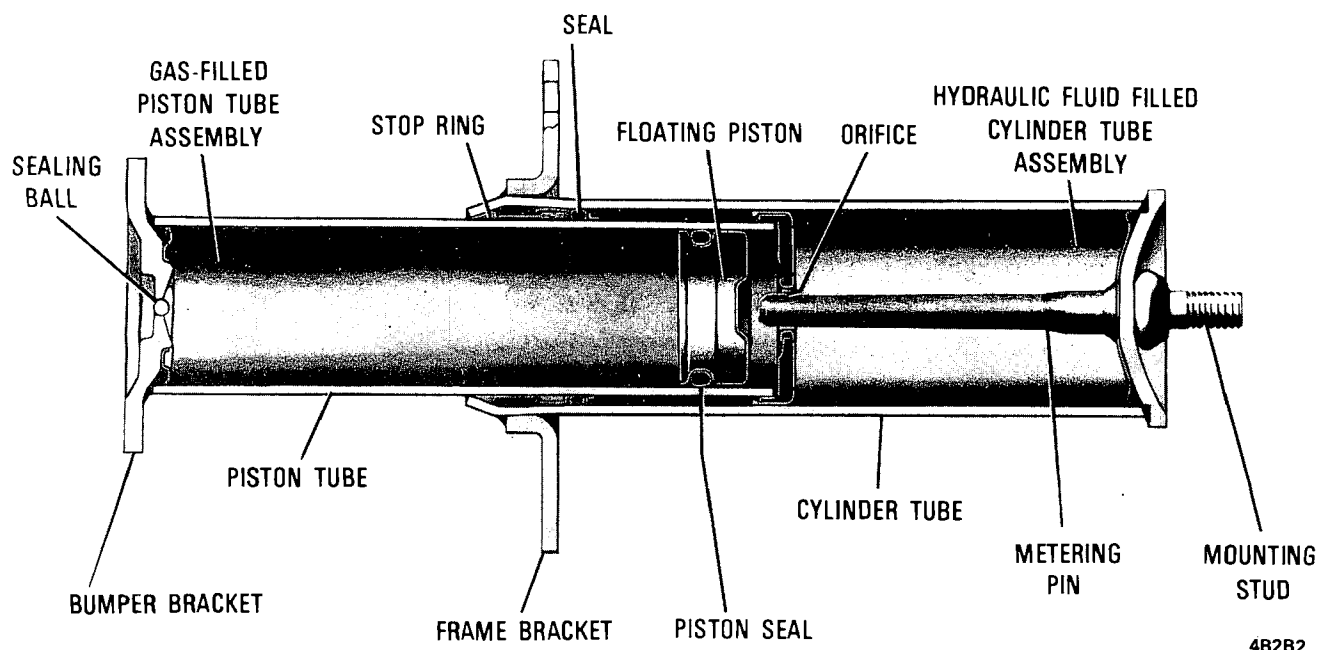
The H series front and rear bumper reinforcements have a flexible urethane covering. Since these covers are flexible, they cannot be painted with acrylic lacquer. Urethane paints and materials are specially made with a flexible conditioner so the cured film will flex without cracking.

The energy absorbing unit (Figure 2B-1) is located between the bumper and frame or body. It provides the



4B2B1

Figure 2B-1 Energy Absorbing Unit



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Figure 2B-2 Cutaway of Energy Absorbing Unit

mounting for the bumper and is designed to absorb low speed impact energy and return the bumper to its original position without major damage.

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.

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

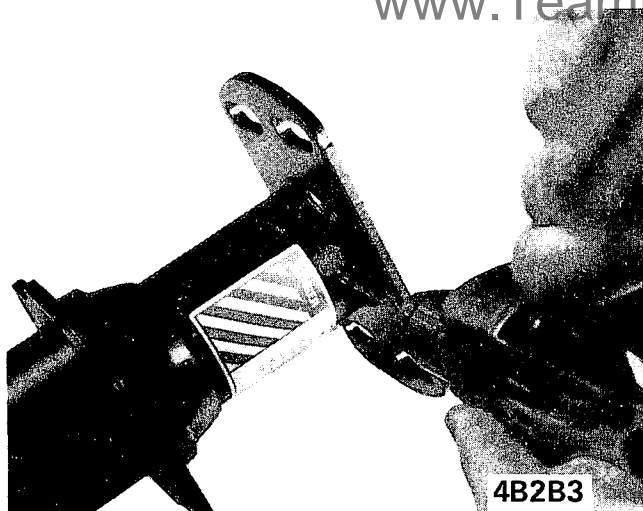


Figure 2B-3 Relieving Pressure Before Scrapping

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.

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.

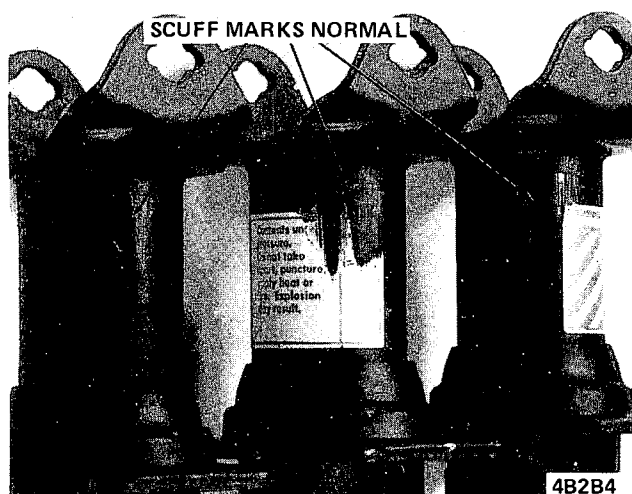


Figure 2B-4 Operated Unit

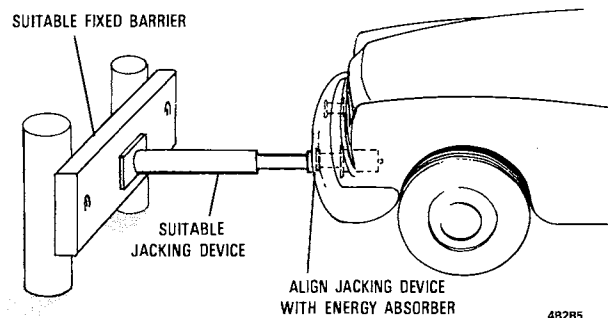


Figure 2B-5 On Car Testing

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.

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. Refer to Figure 2B-9 through 2B-22 for bumper alignment specifications.

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.

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 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, 2B-7 or 2B-8. Seal Grommet at cowl. Install detector and torque mounting bolts to 8-10 lb. ft.
7. Remove analyzer J-24628 from A.C.R.S..
8. Connect battery negative cable. Torque to 90 lb. in.

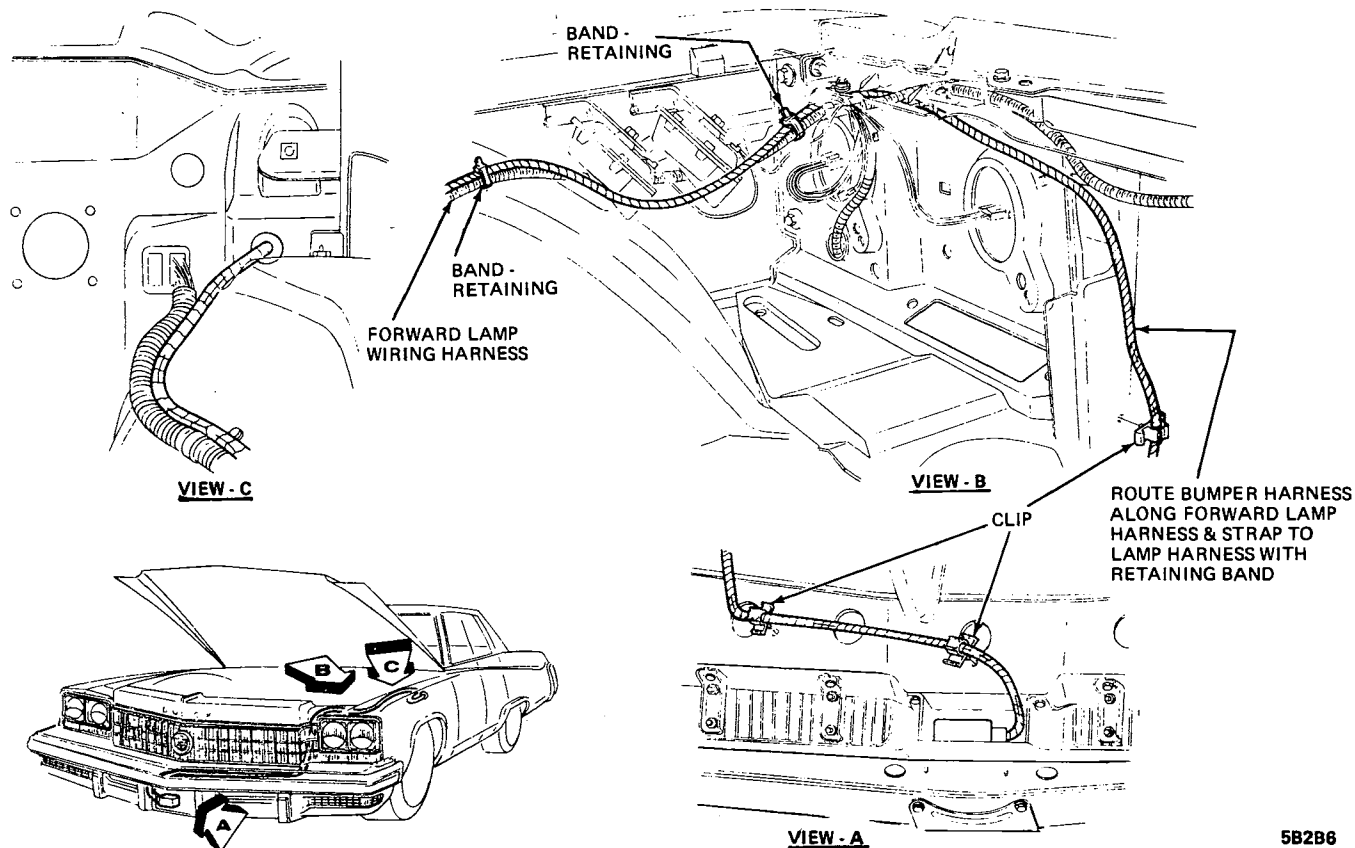
Refer to the following art for removal, installation and alignment of the bumpers and related parts.

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.



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

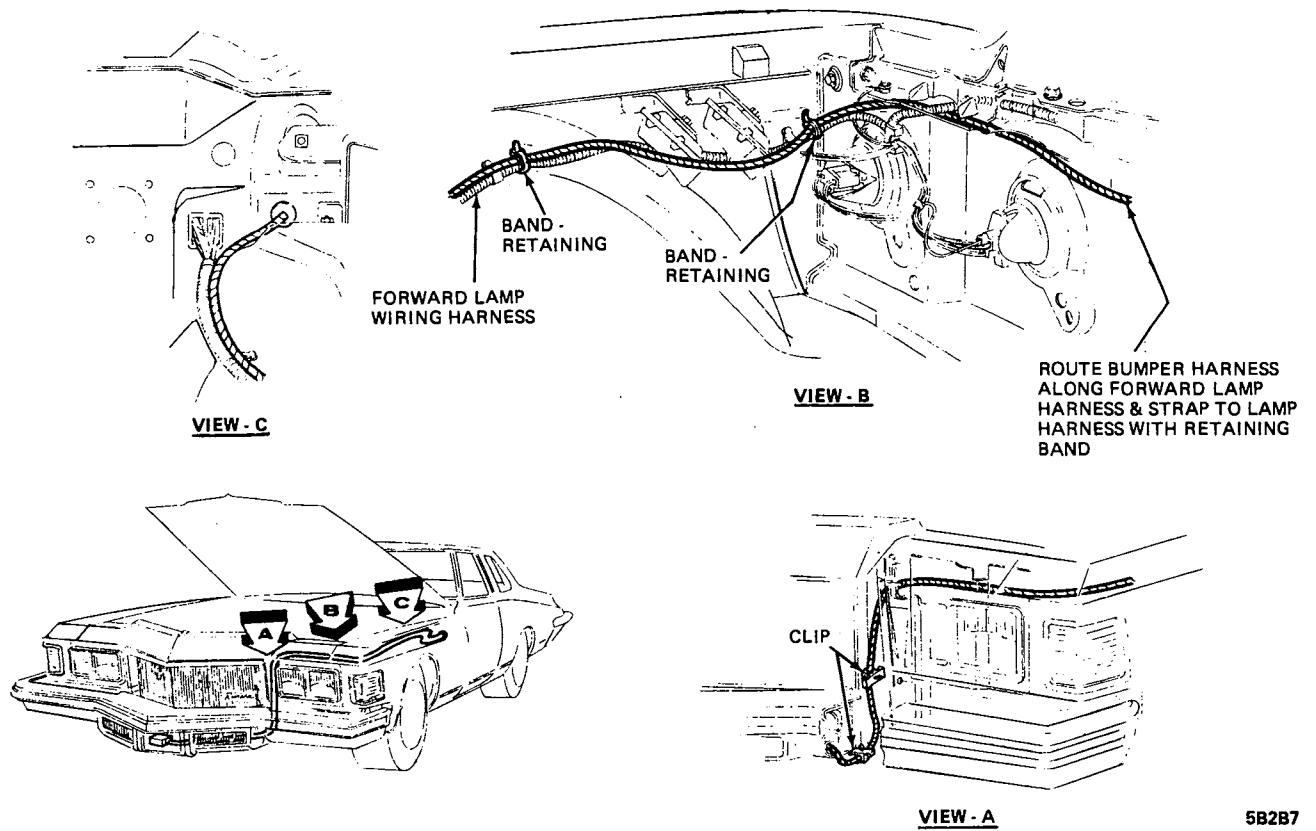


Figure 2B-7 E Series A.C.R.S. Bumper Impulse Detector Wiring

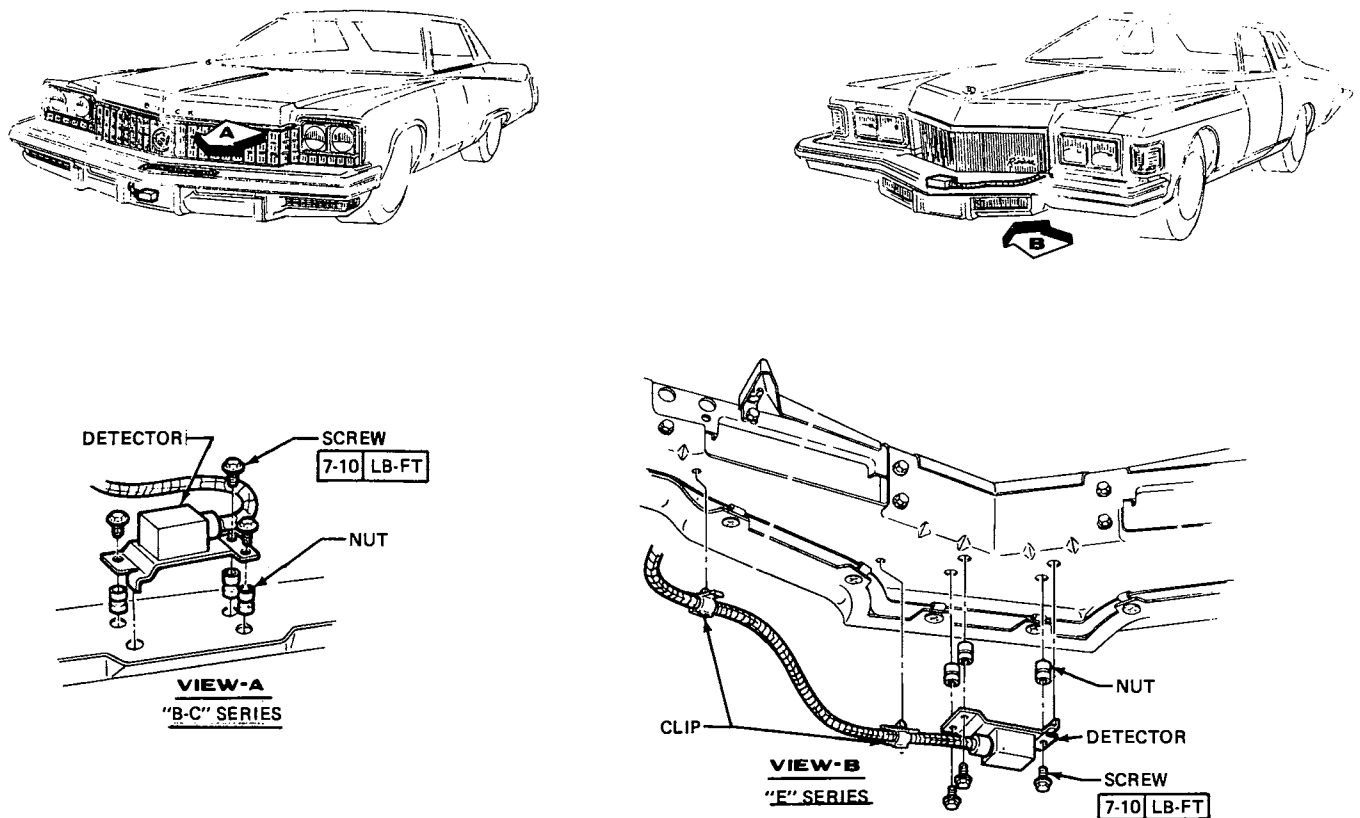
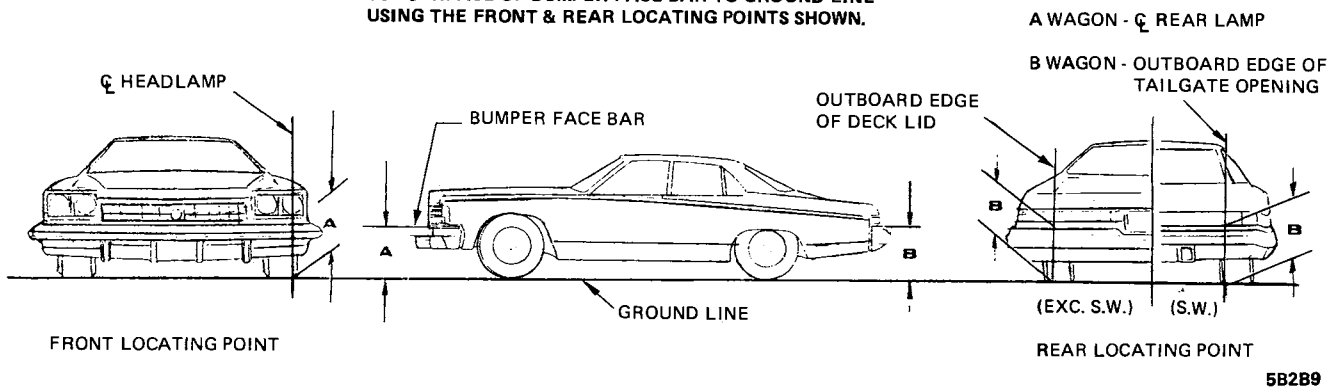


Figure 2B-8 B-C-E Series A.C.R.S. Bumper Impulse Detector Mounting

1975 BUMPER HEIGHT SPECIFICATIONS

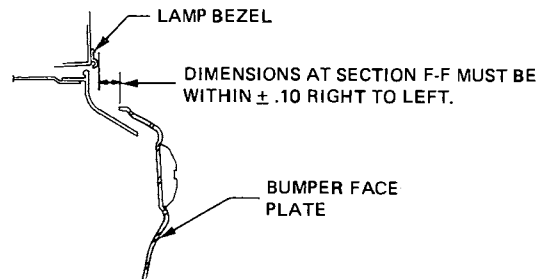
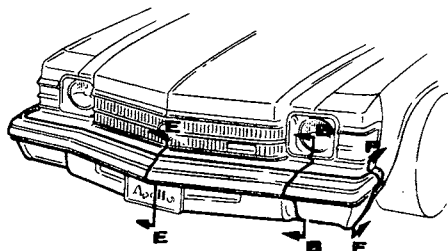
SERIES	MODEL	FRONT DIMENSION 'A'			REAR DIMENSION 'B'		
		CURB			CURB		
		MIN.	IDEAL	MAX.	MIN.	IDEAL	MAX.
H	ALL	21.06	22.04	23.02	22.44	23.52	24.60
X	ALL	20.30	21.77	23.30	20.66	22.21	24.25
A	LESS WAGON	20.21	21.46	22.71	21.27	22.72	24.17
	WAGON	20.21	21.46	22.71	21.27	23.96	25.41
B	LESS WAGON	20.27	21.87	23.32	22.10	24.00	25.65
	WAGON	20.67	21.87	23.07	23.92	25.32	26.72
C	ALL	20.67	21.87	23.07	23.65	25.05	26.45
E	ALL	20.60	21.80	23.00	20.94	23.04	24.44

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



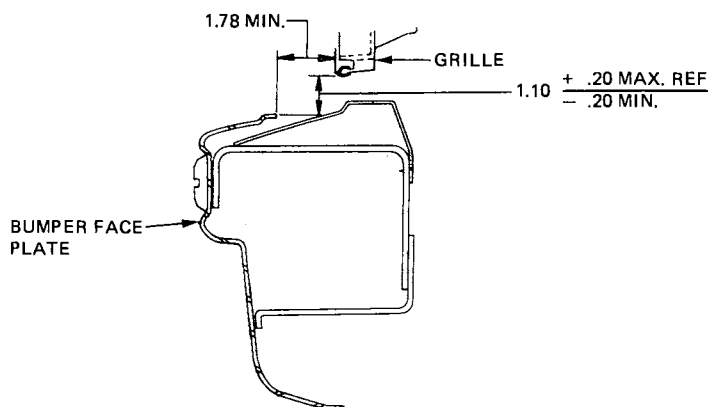
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Figure 2B-9 All Series Bumper Height Specifications

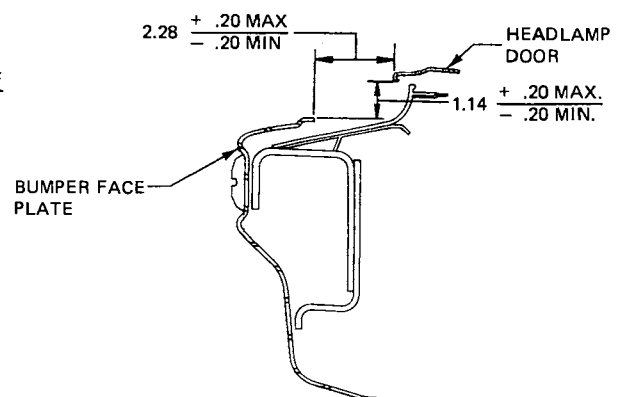


SECTION F-F

DIMENSIONS AT SECTION B-B MUST BE WITHIN ± .10 RIGHT TO LEFT TO MAINTAIN PARALLELISM.



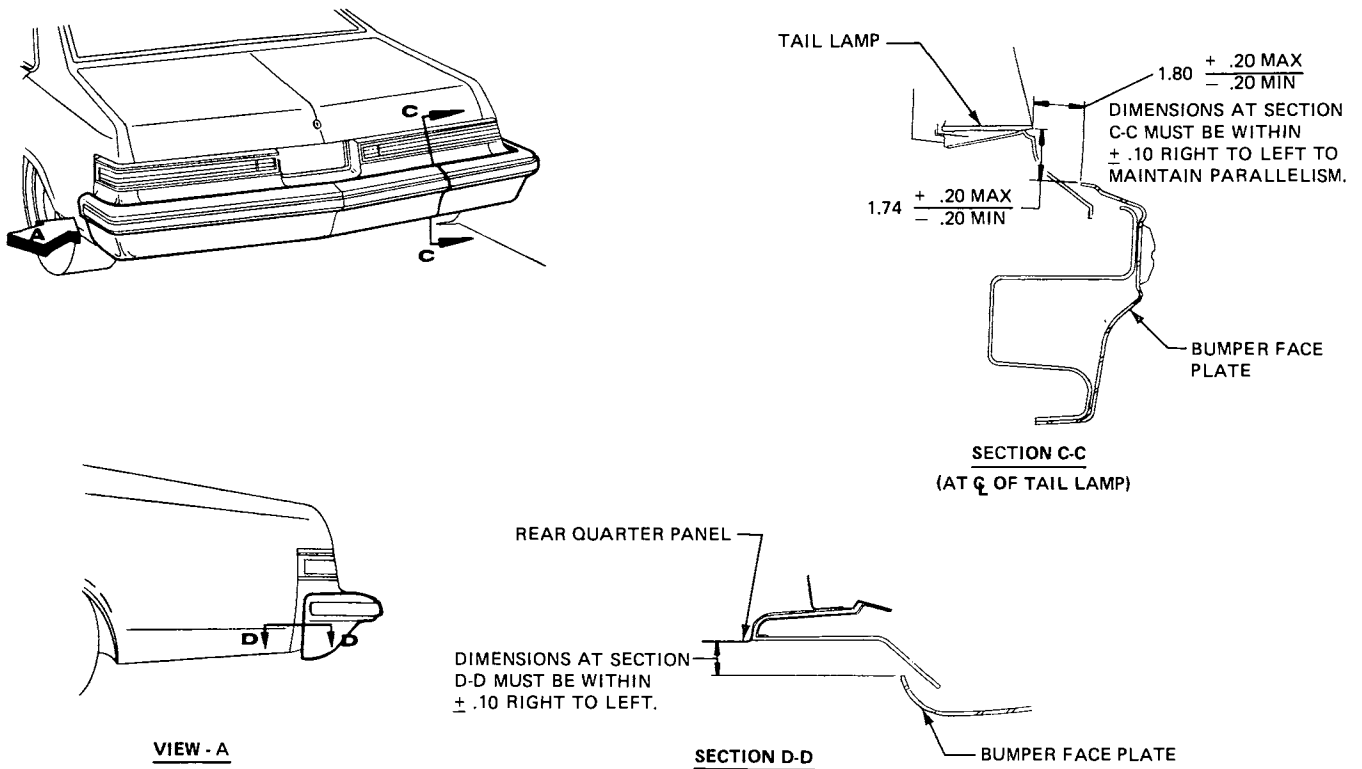
SECTION E-E



SECTION B-B

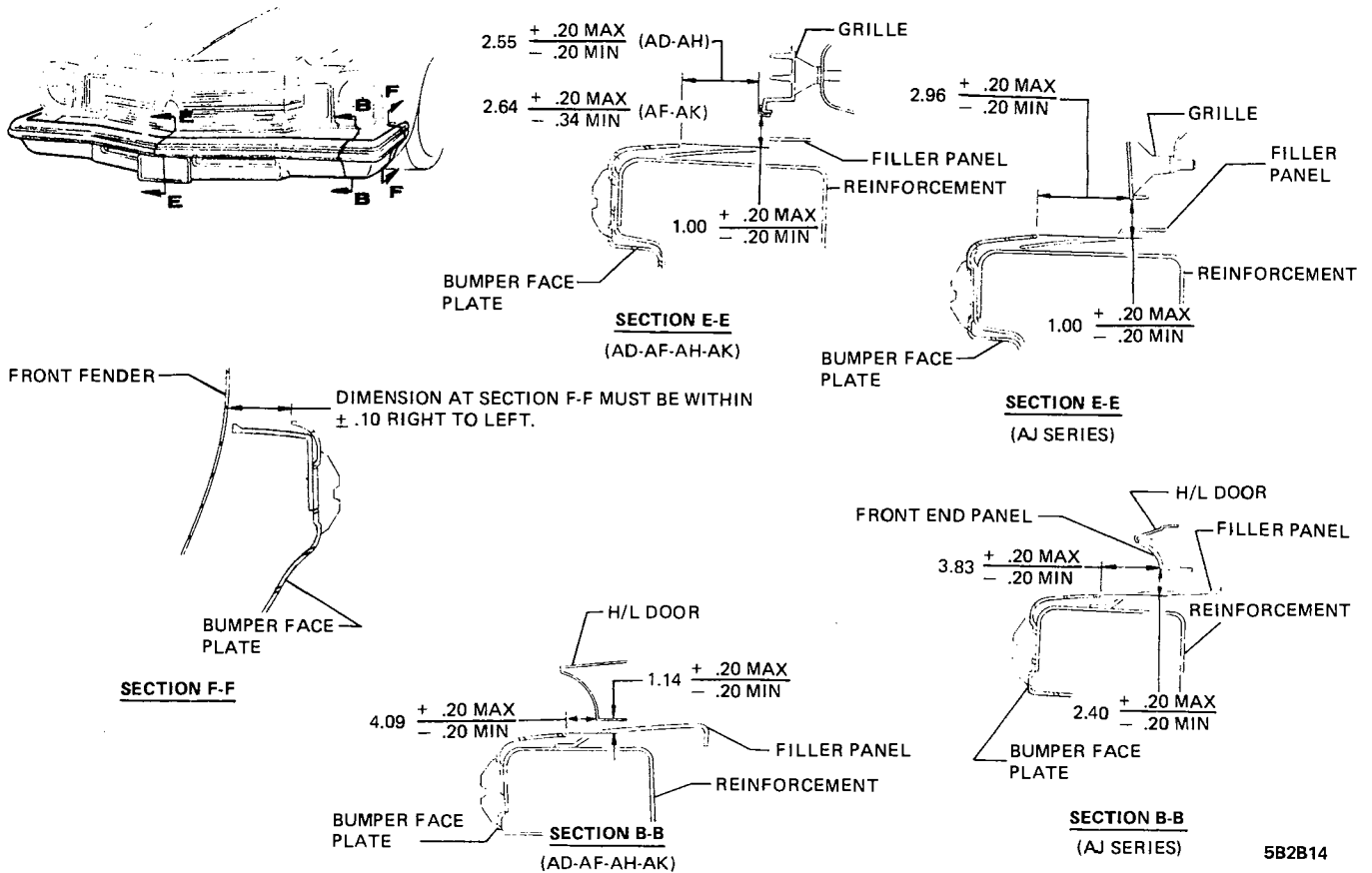
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Figure 2B-12 X Series Front Bumper Clearances



5B2B13

Figure 2B-13 X Series Rear Bumper Clearances



5B2B14

Figure 2B-14 A Series Front Bumper Clearances

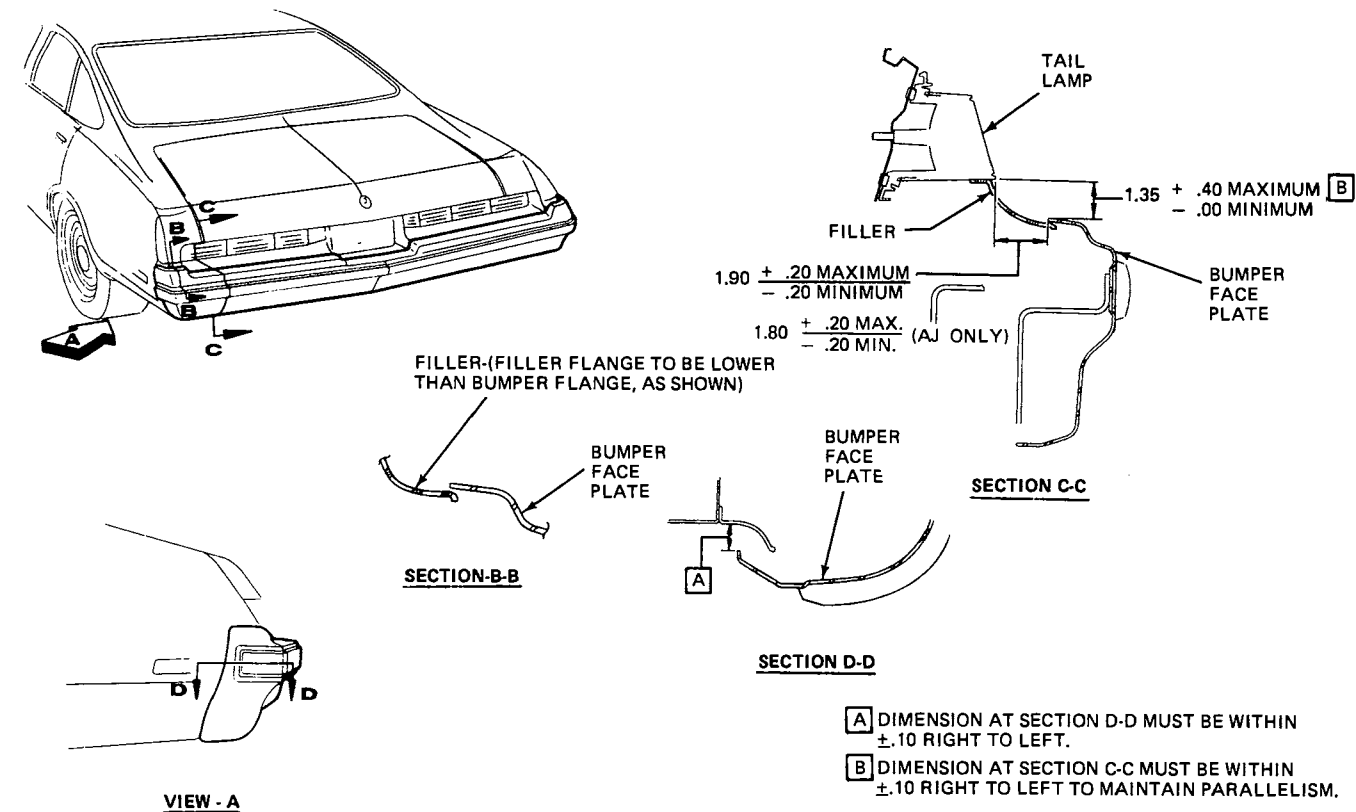


Figure 2B-15 A Series (Less Wagon) Rear Bumper Clearances

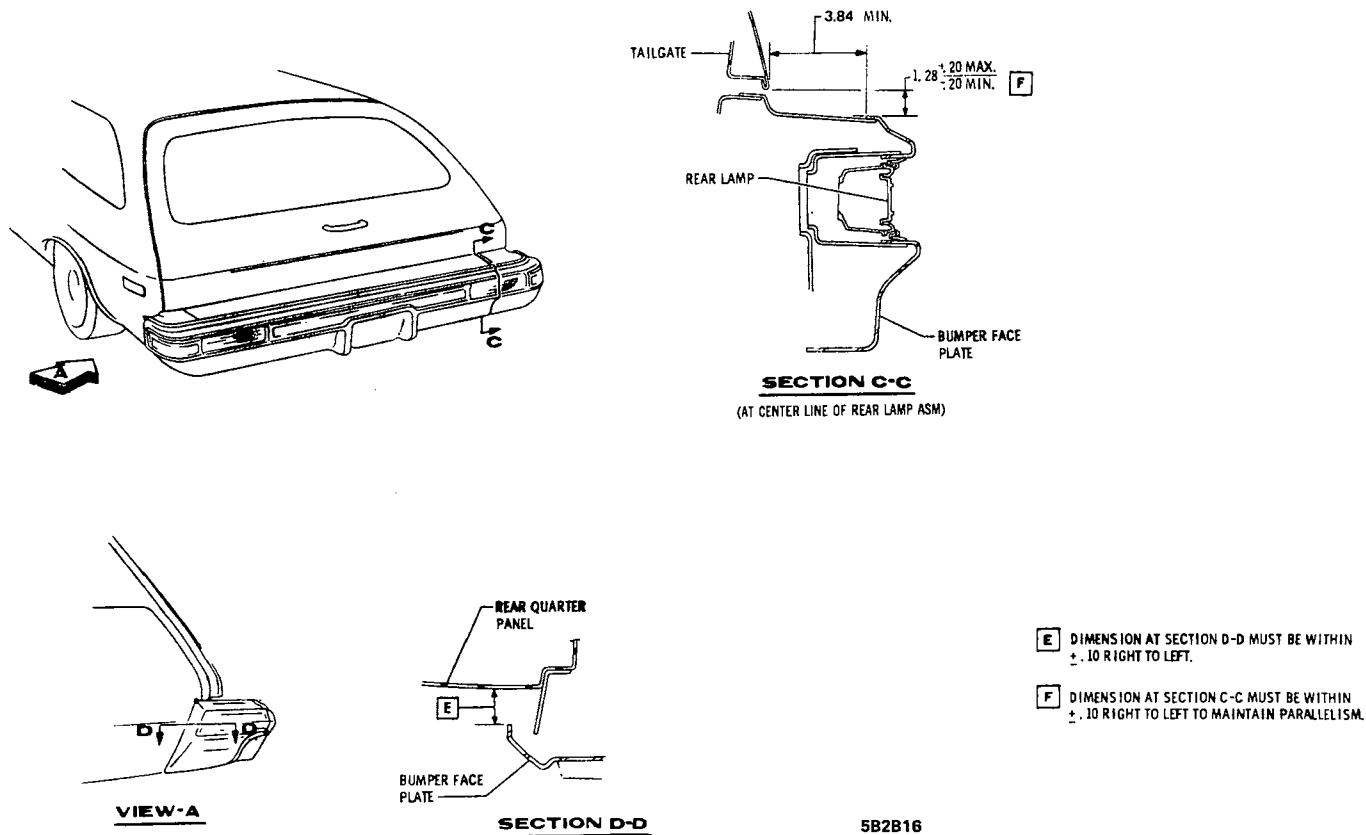
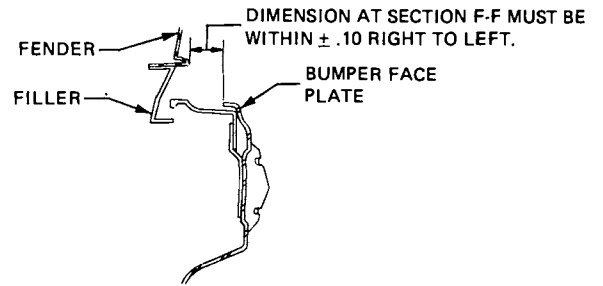
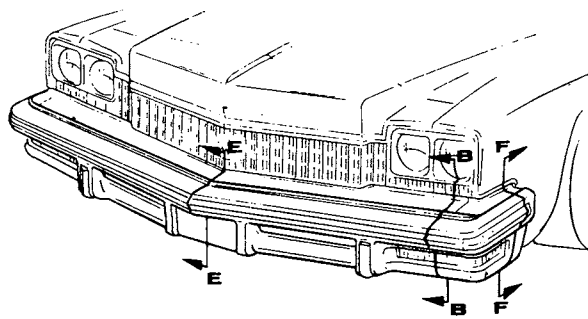
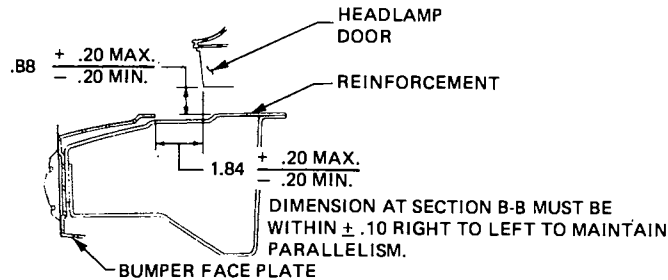


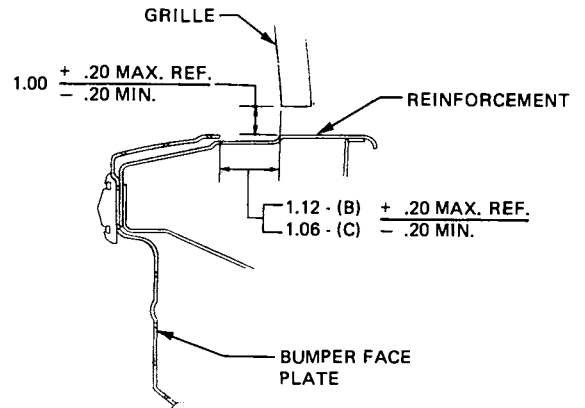
Figure 2B-16 A Series Wagon Rear Bumper Clearances



SECTION F-F



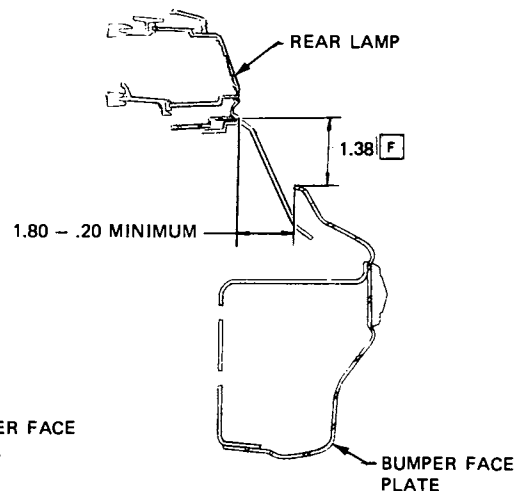
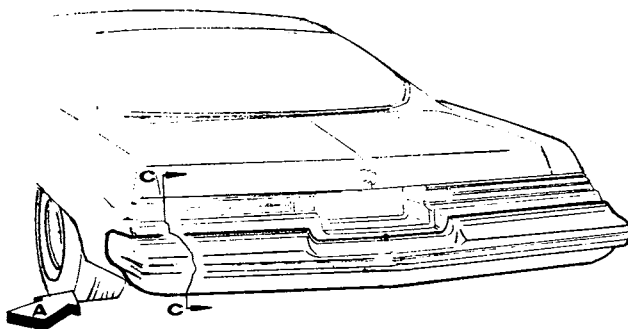
SECTION B-B



SECTION E-E

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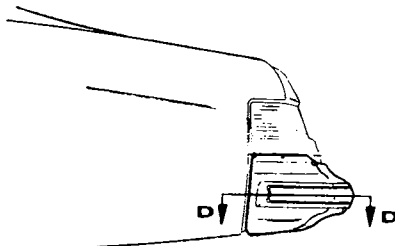
Figure 2B-17 B-C Series Front Bumper Clearances



SECTION C-C



SECTION D-D



VIEW - A

- [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-18 B Series (Less Wagon) Rear Bumper Clearances

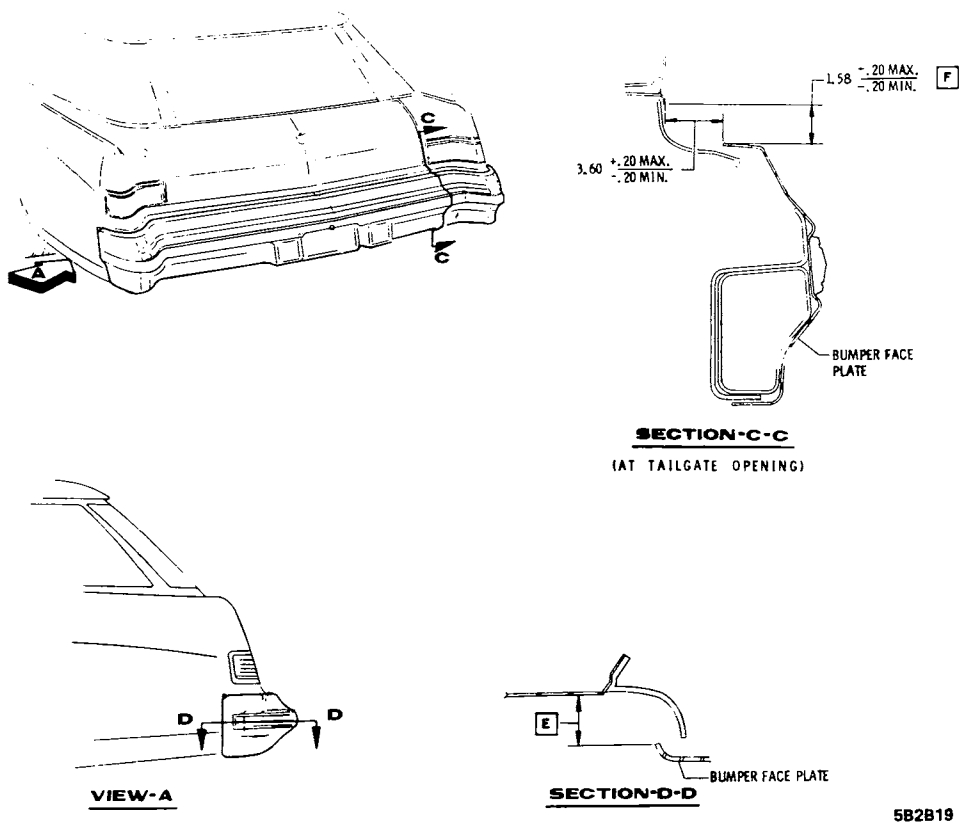


Figure 2B-19 B Series Wagon Rear Bumper Clearances

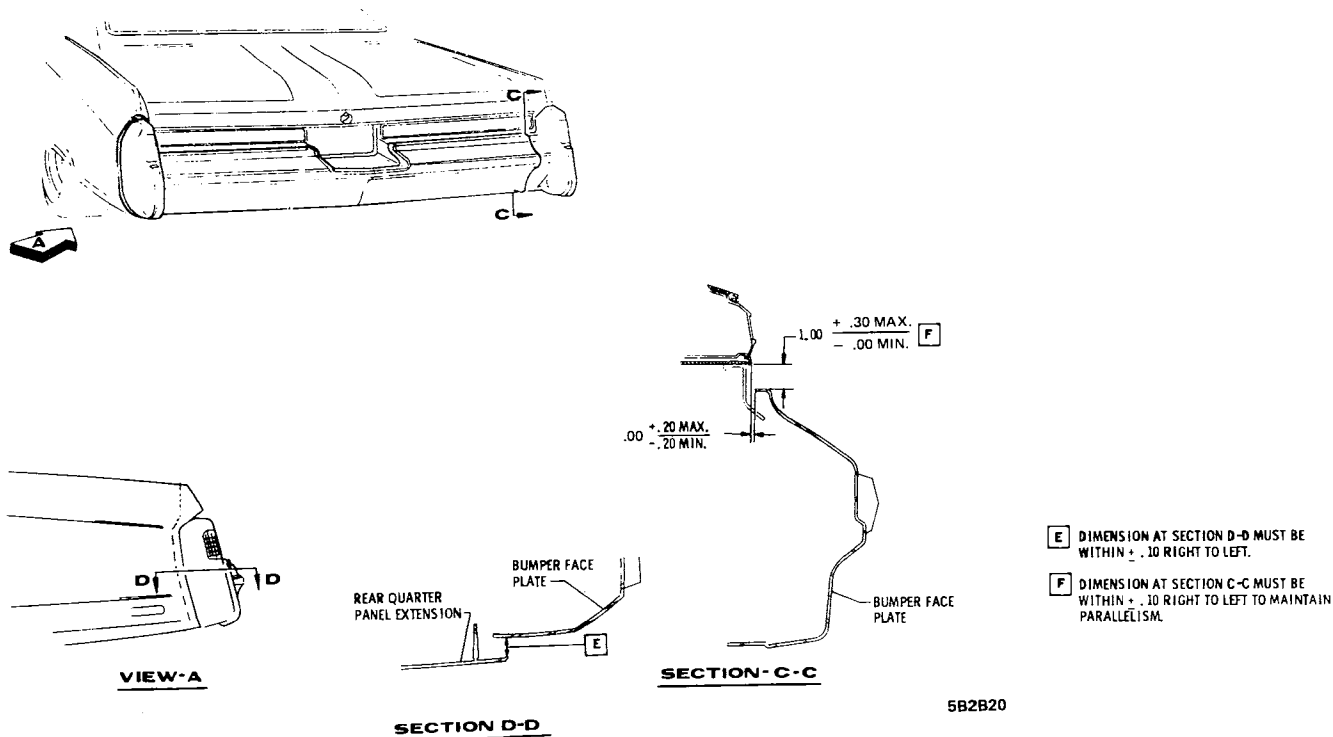


Figure 2B-20 C Series Rear Bumper Clearances

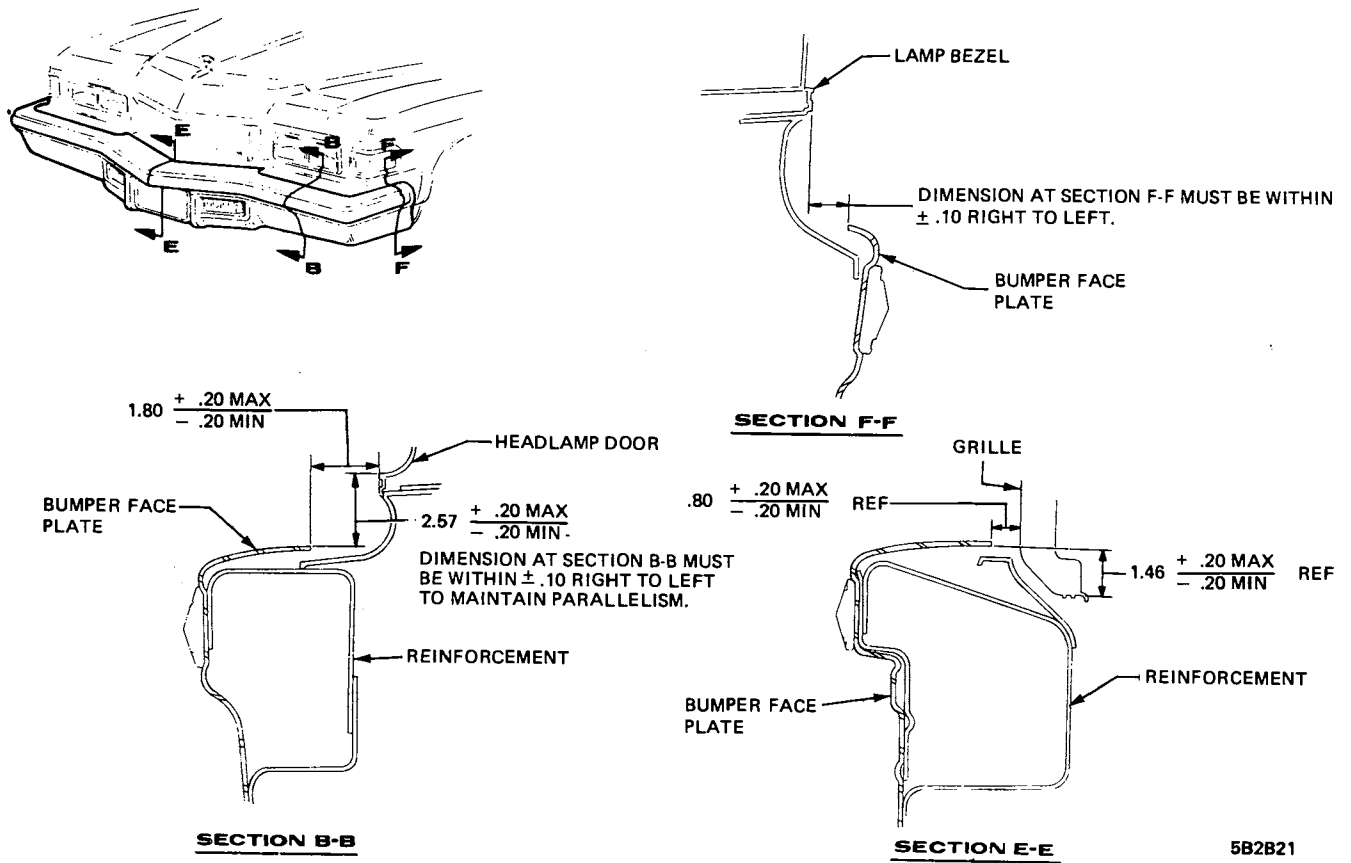


Figure 2B-21 E Series Front Bumper Clearances

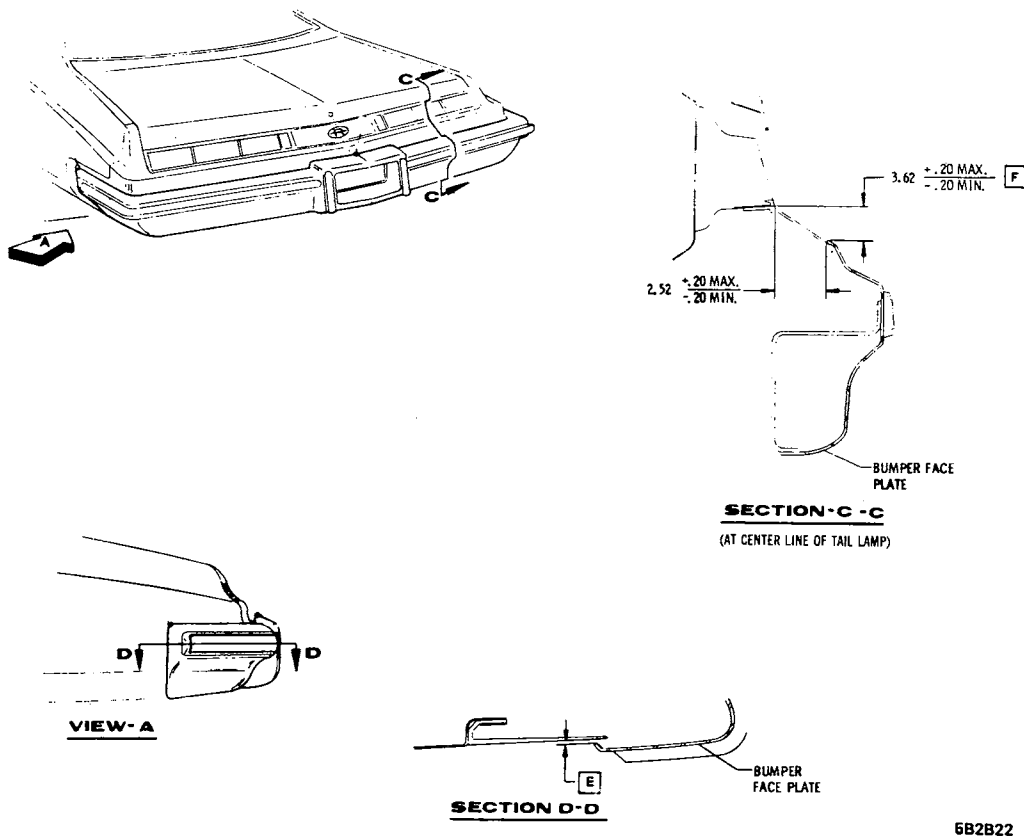
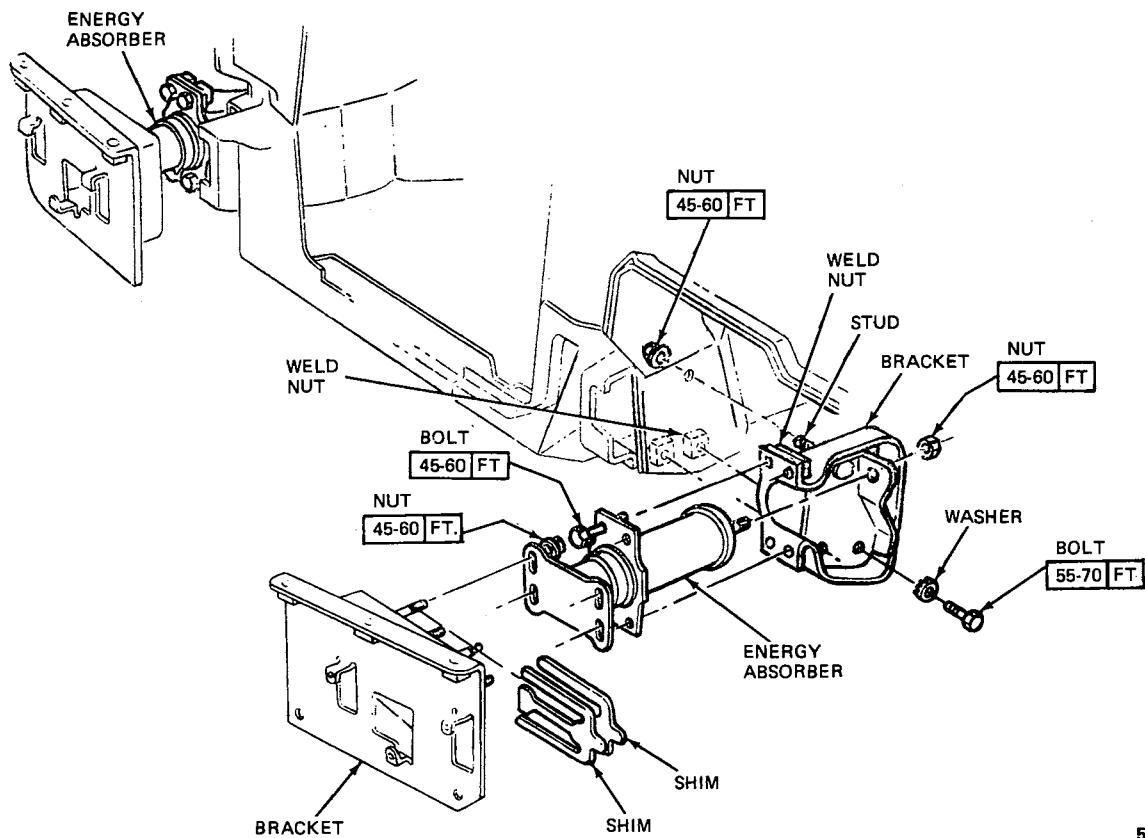
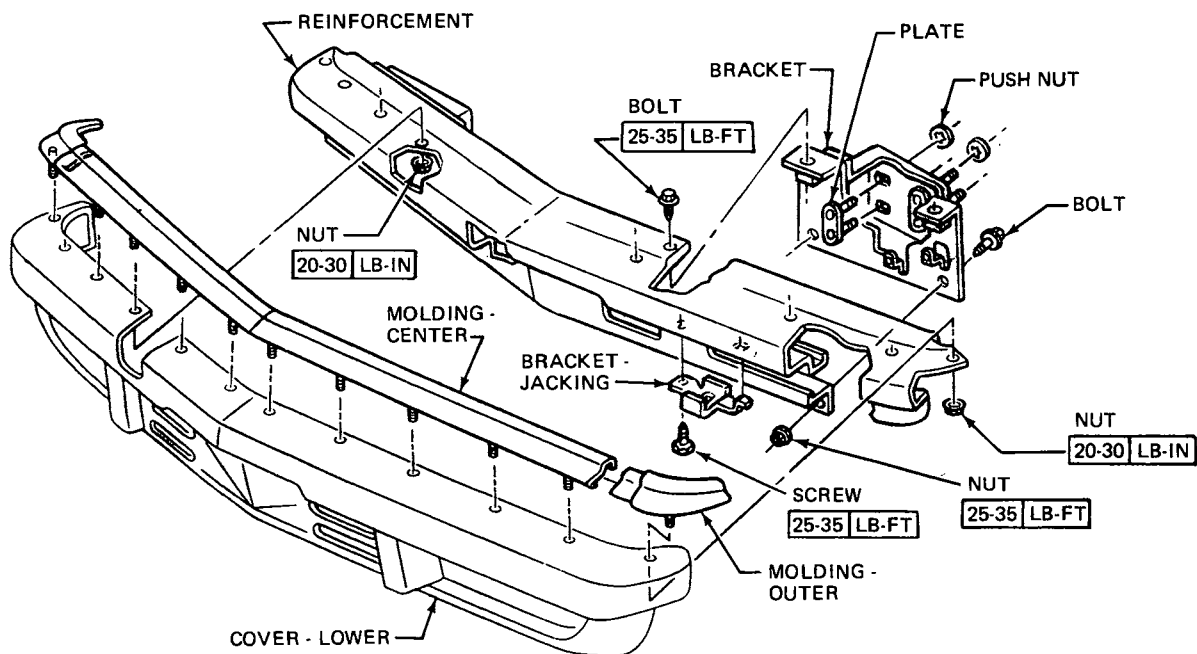


Figure 2B-22 E Series Rear Bumper Clearances



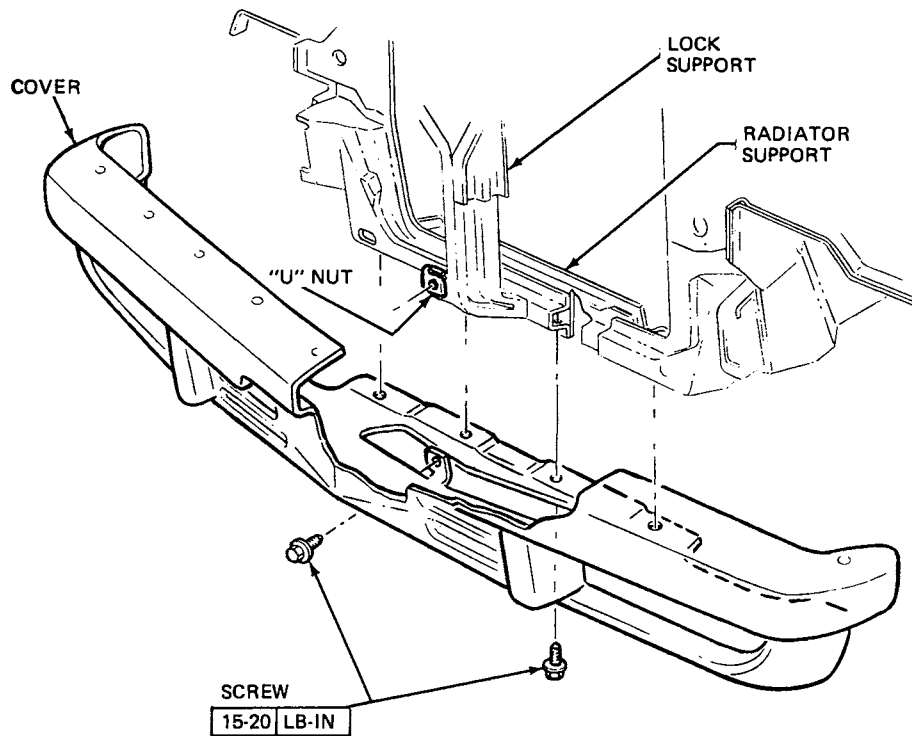
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Figure 2B-23 H Series Front Bumper E. A. Units



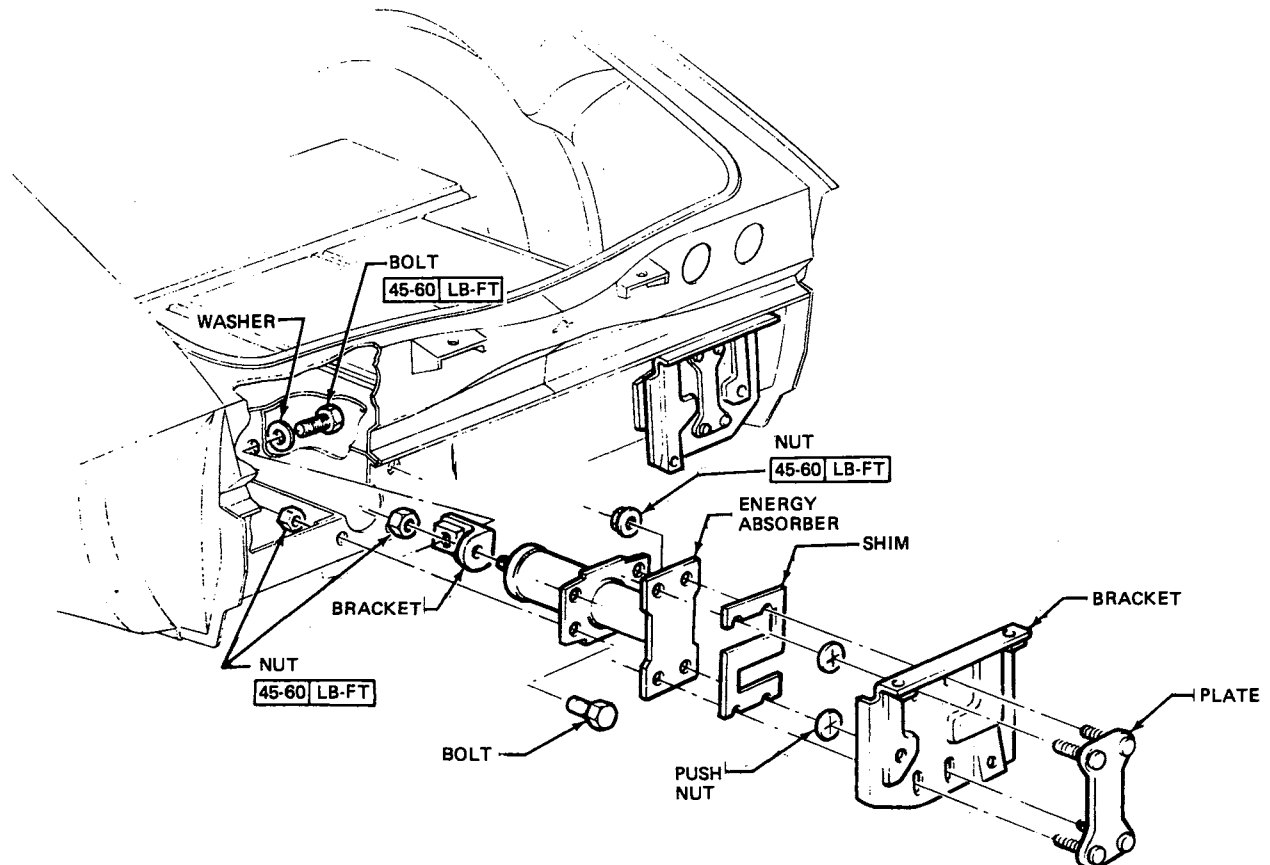
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Figure 2B-24 H Series Front Bumper Reinforcement and Covering



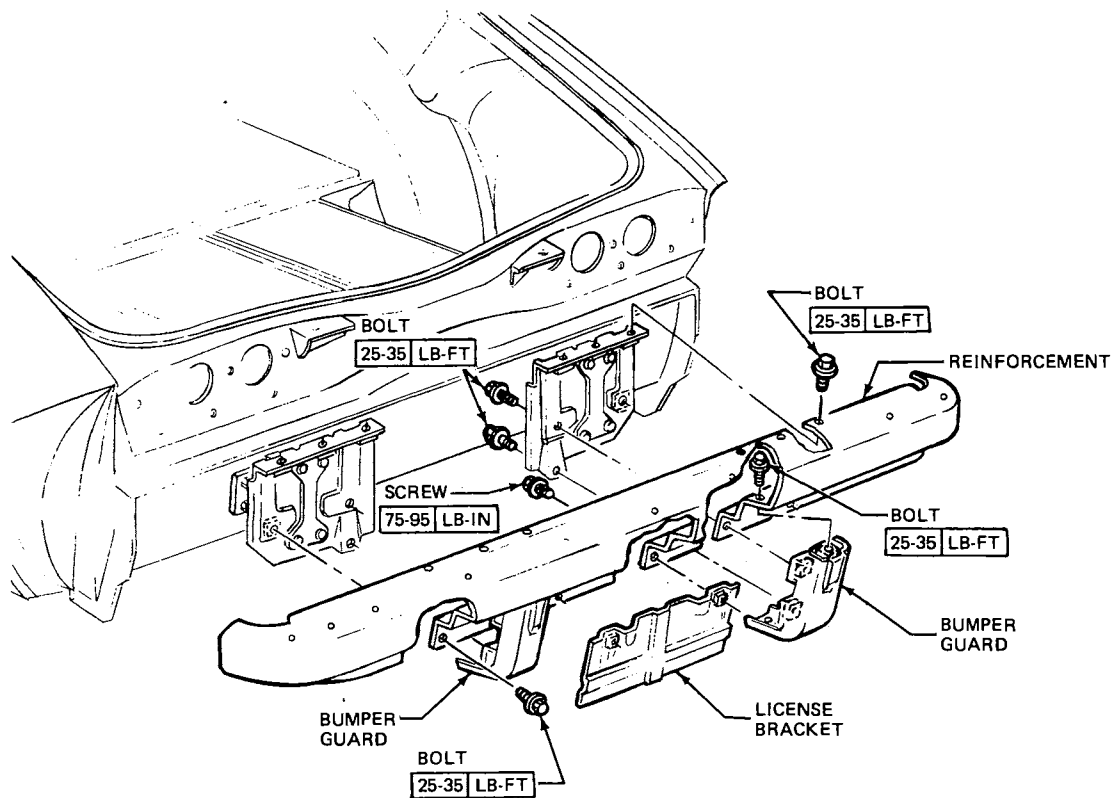
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Figure 2B-25 H Series Front Bumper Lower Covering



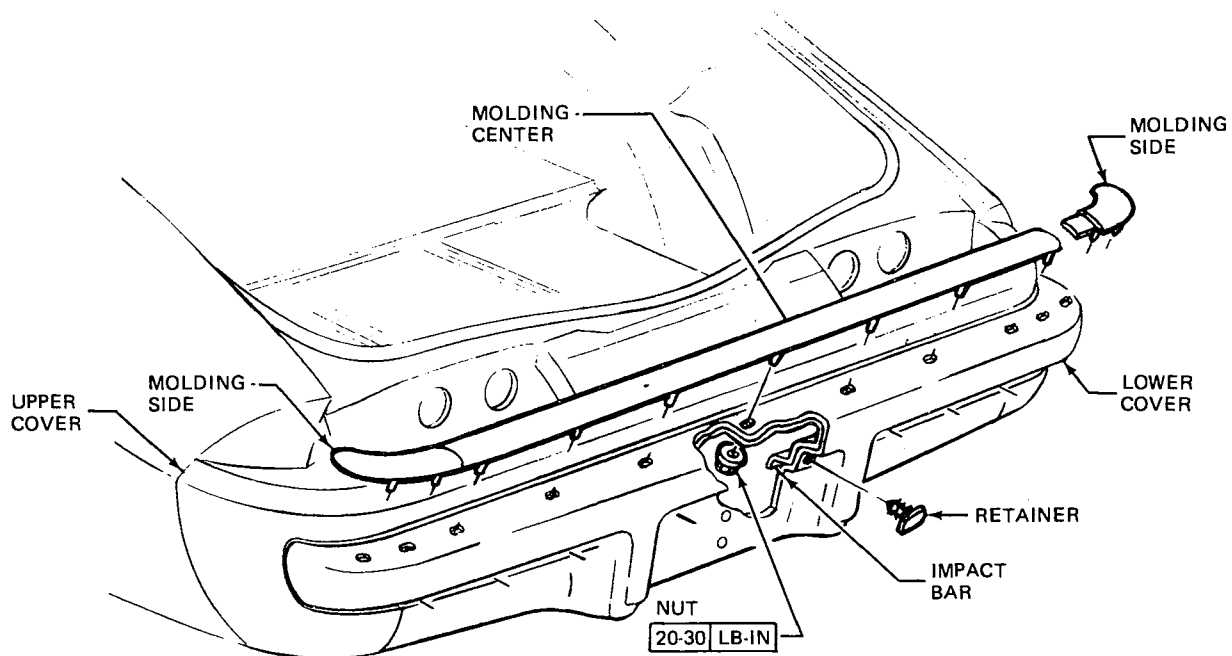
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Figure 2B-26 H Series Rear Bumper E. A. Units



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Figure 2B-27 H Series Rear Bumper Reinforcement



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Figure 2B-28 H Series Rear Bumper Molding

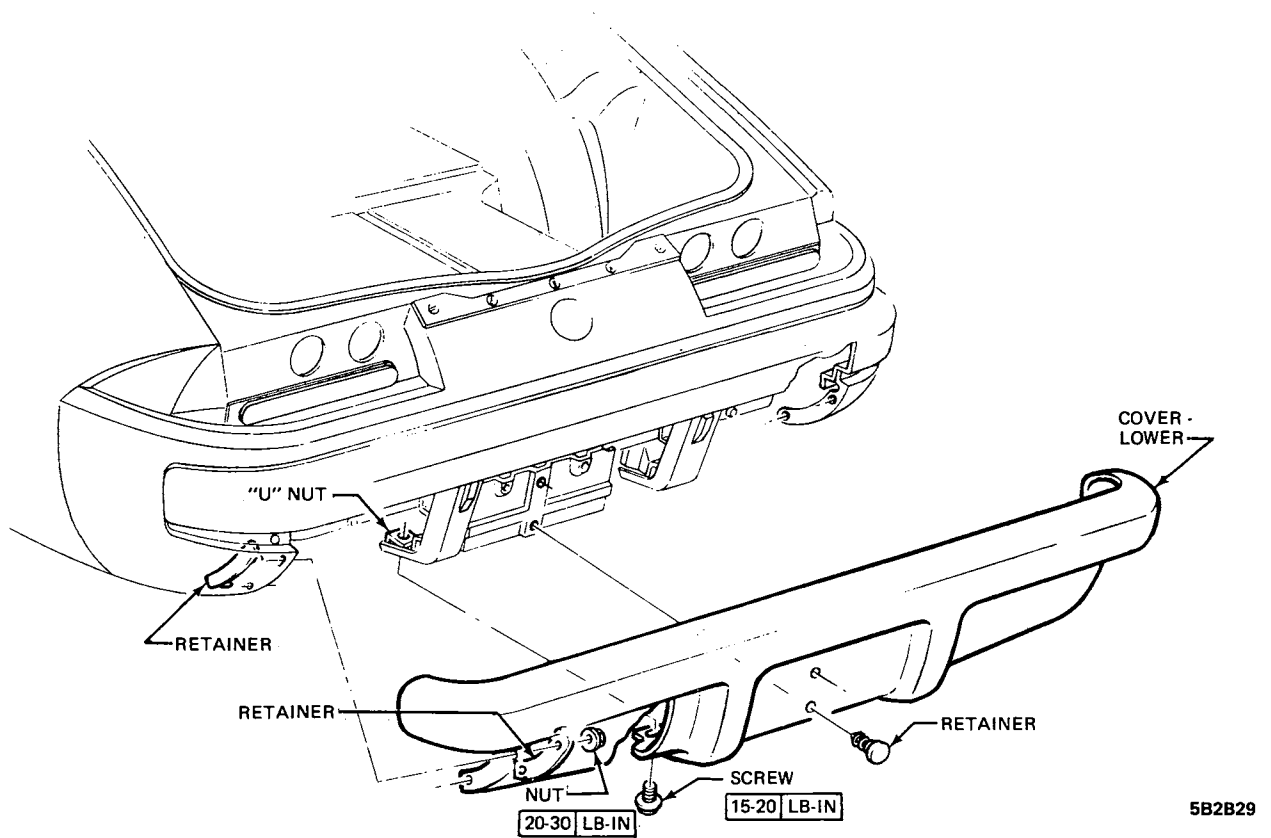


Figure 2B-29 H Series Rear Bumper Lower Covering

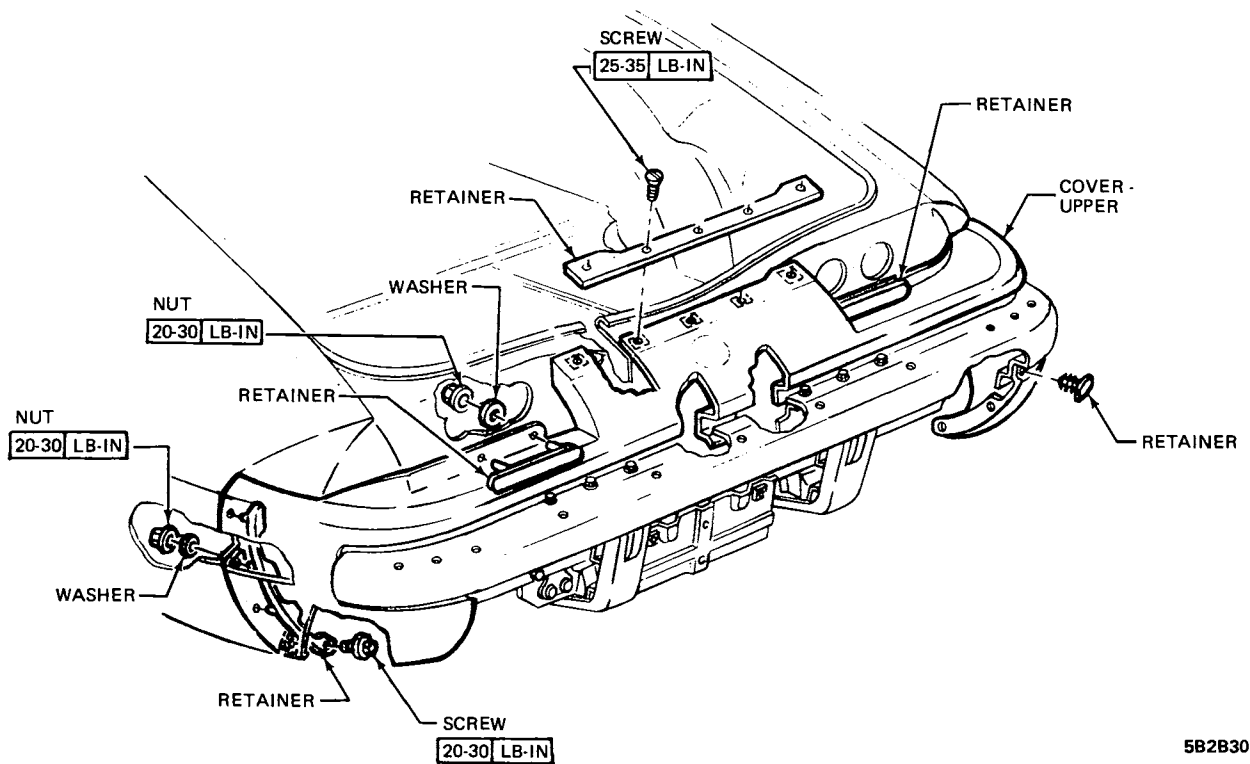


Figure 2B-30 H Series Rear Bumper Upper Covering

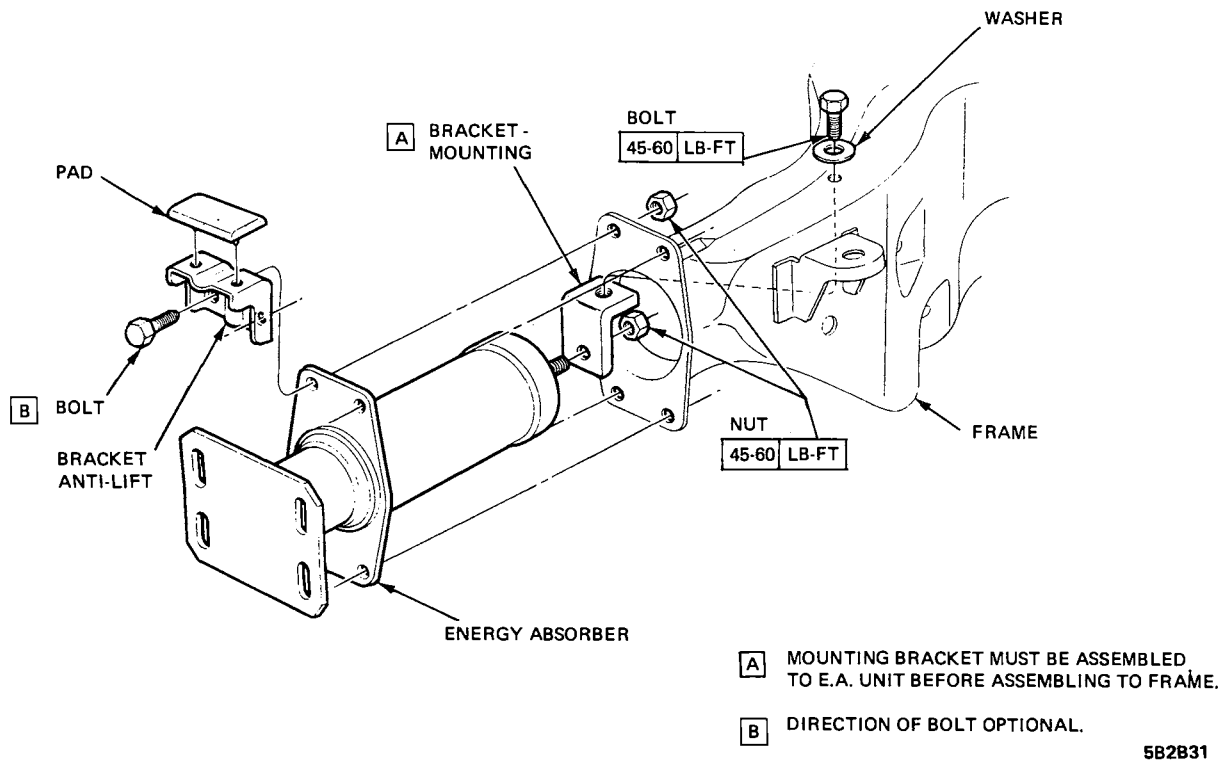


Figure 2B-31 X Series Front Bumper E-A-Unit

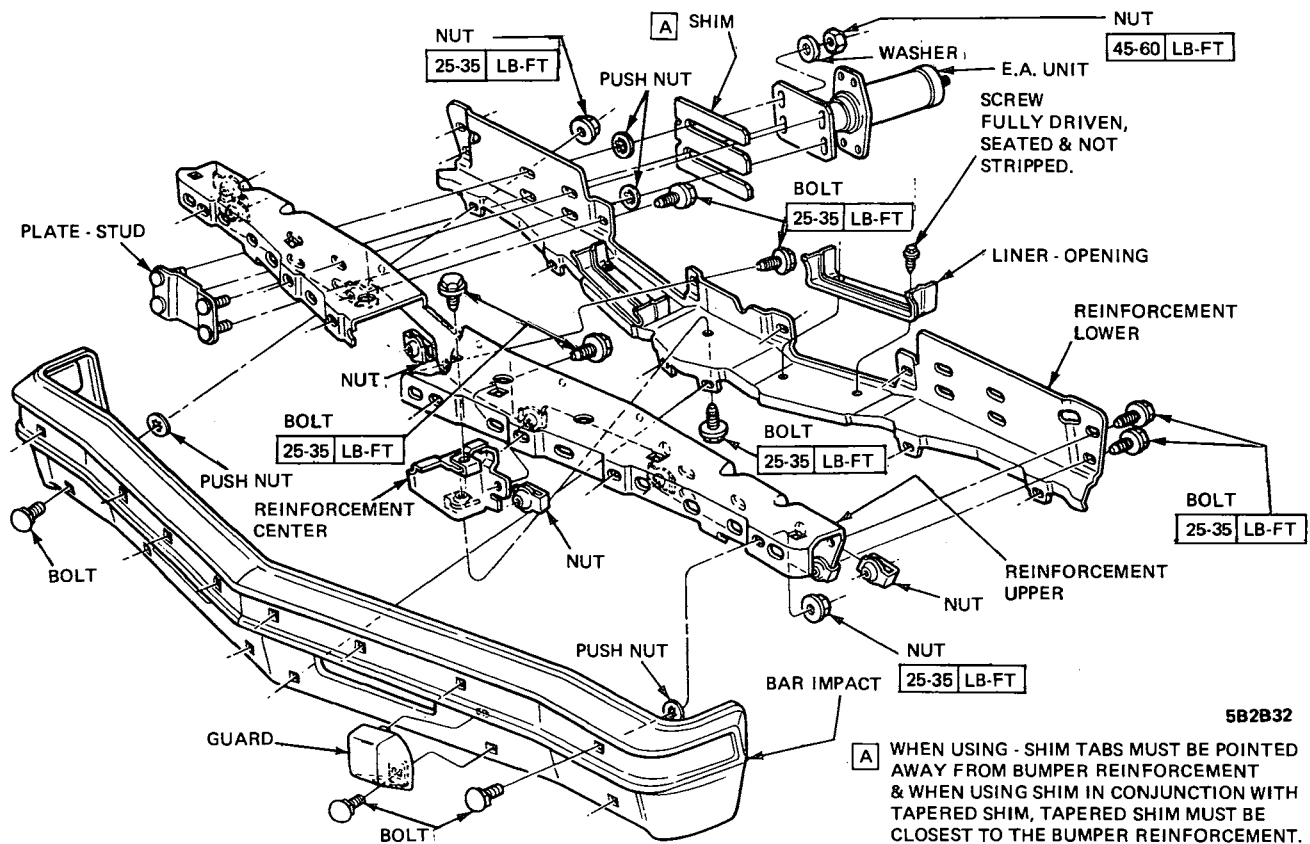


Figure 2B-32 X Series Front Bumper Reinforcements

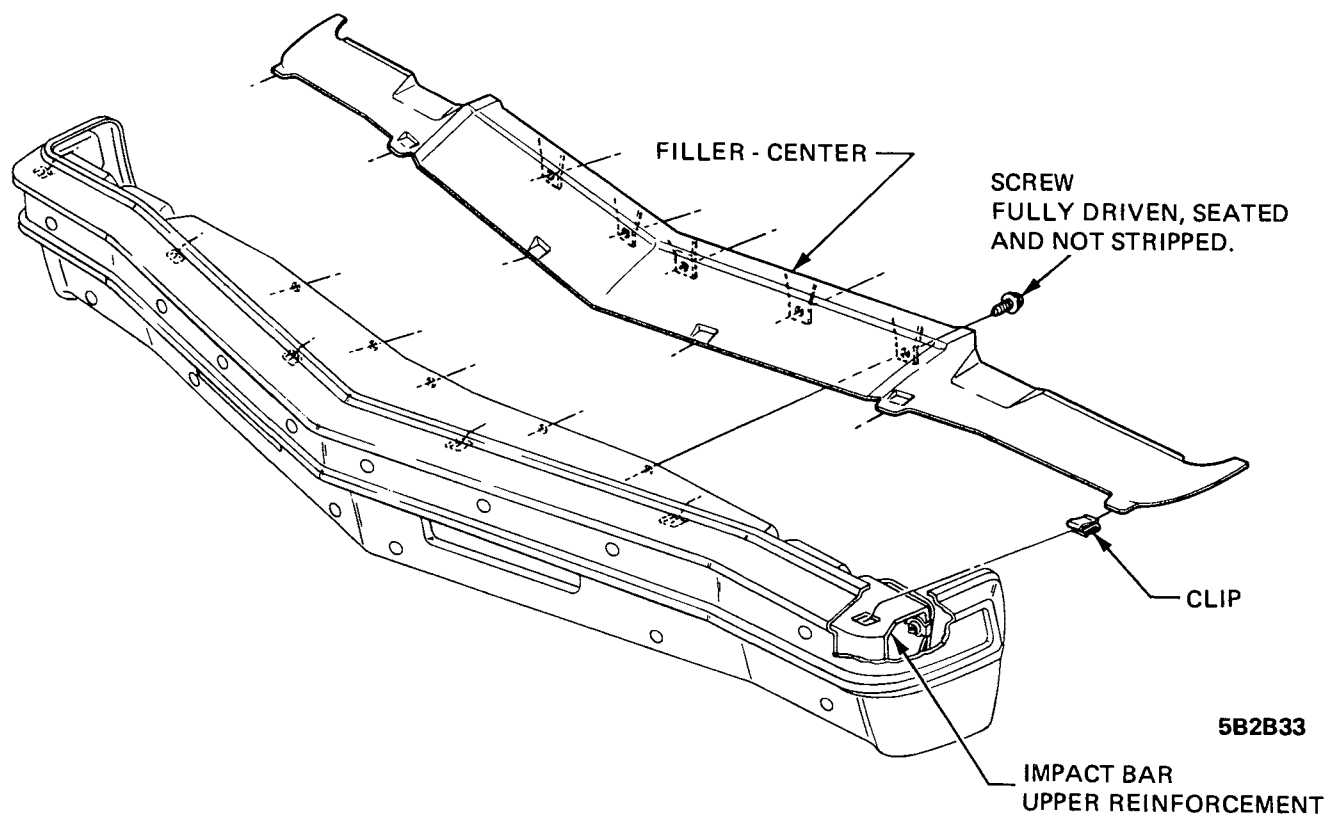


Figure 2B-33 X Series Front Bumper Filler Panel

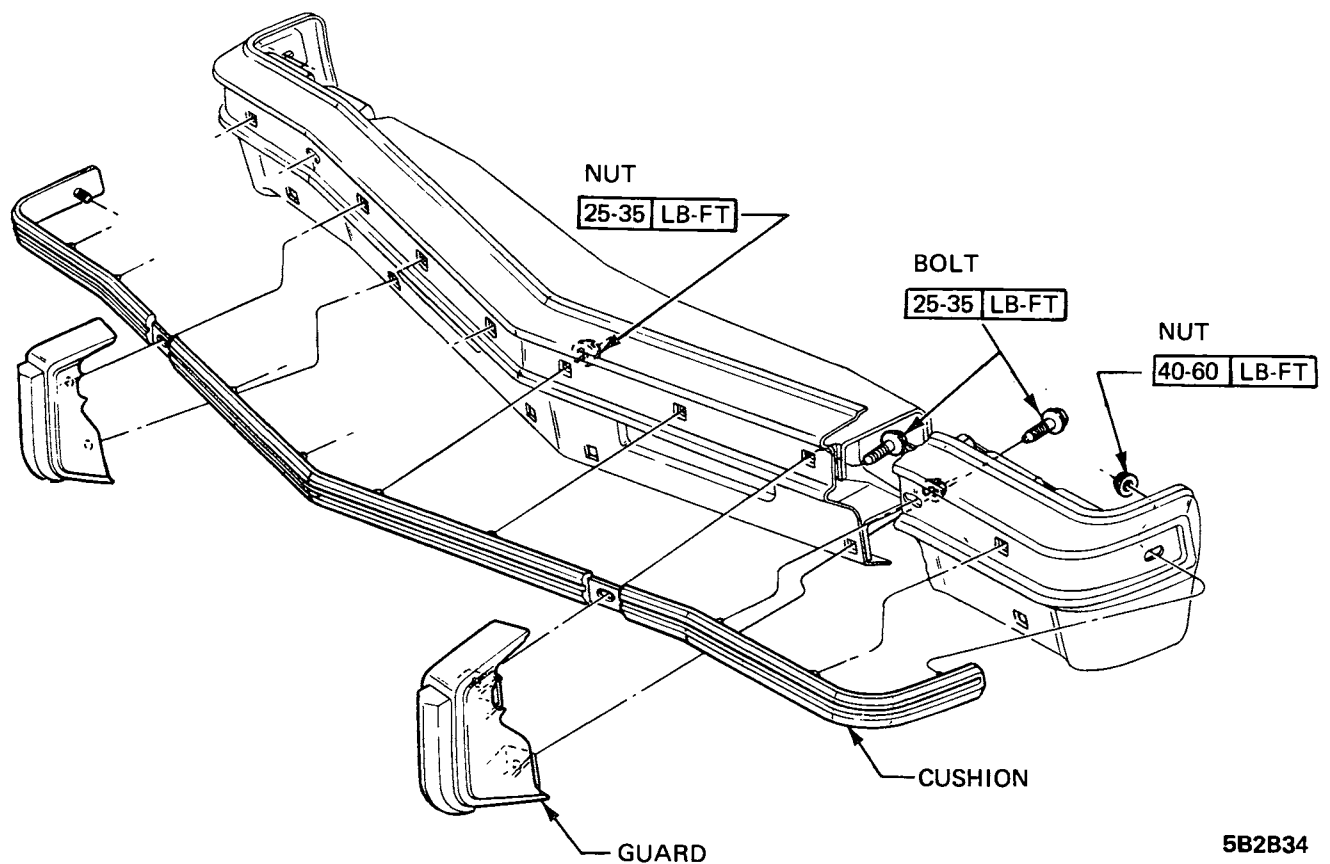
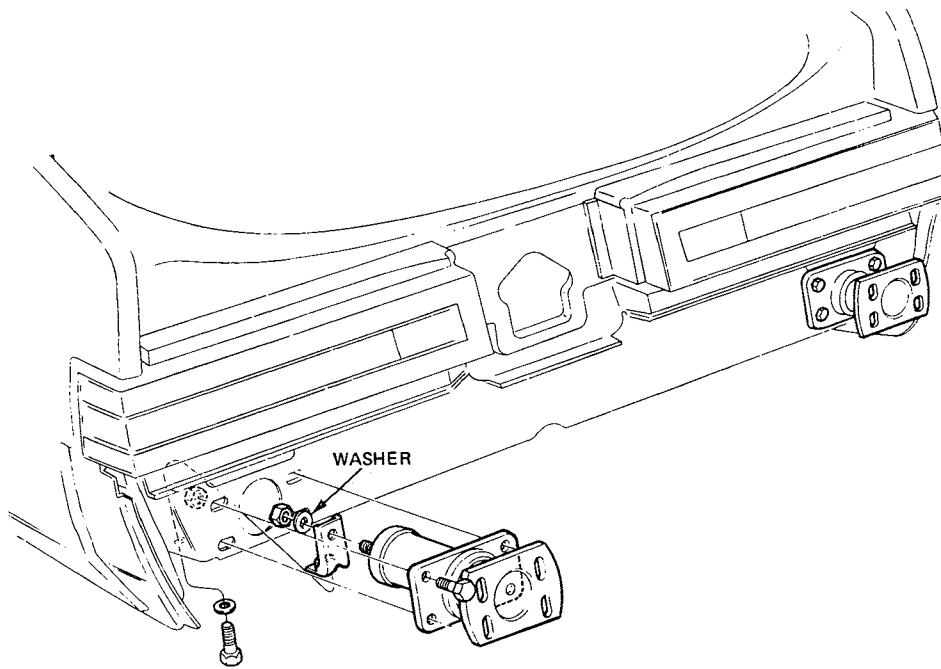
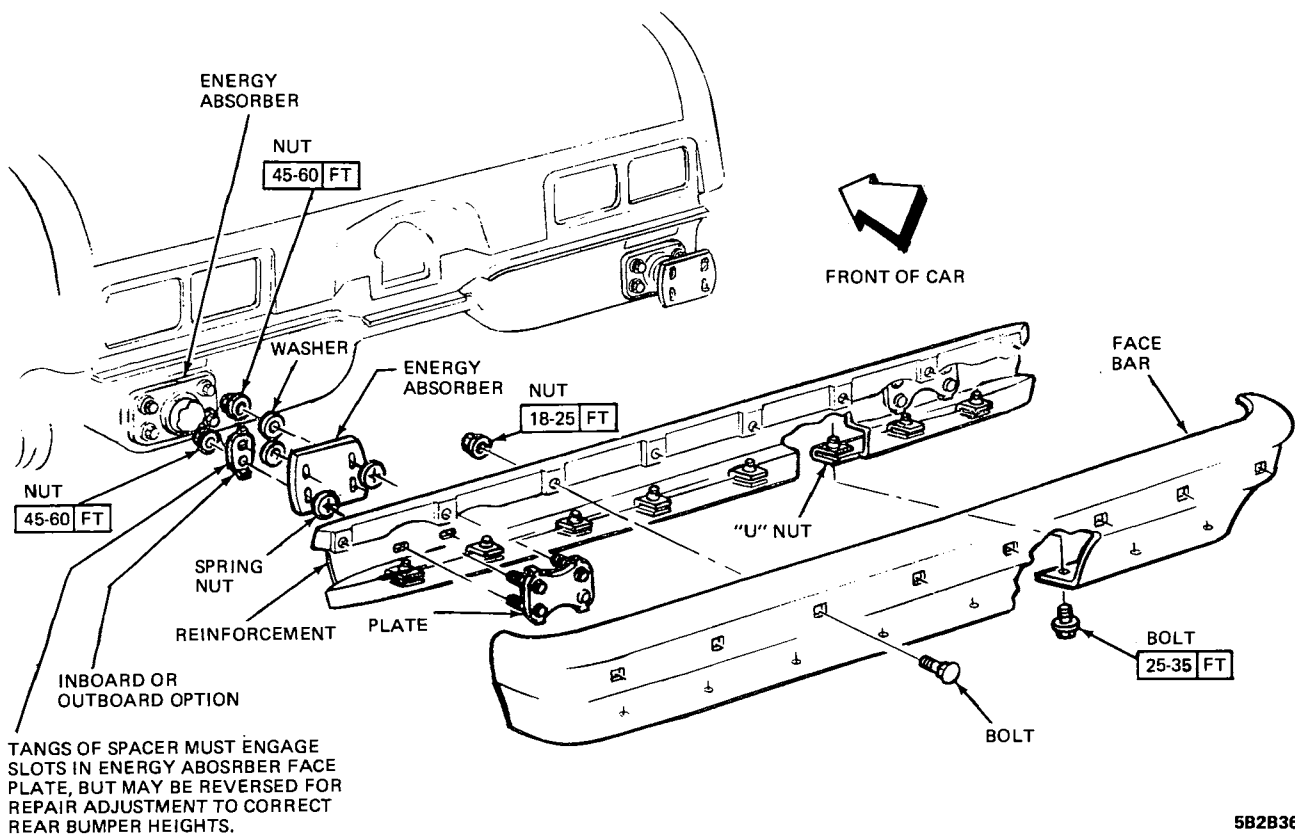


Figure 2B-34 X Series Front Bumper Cushion and Guards



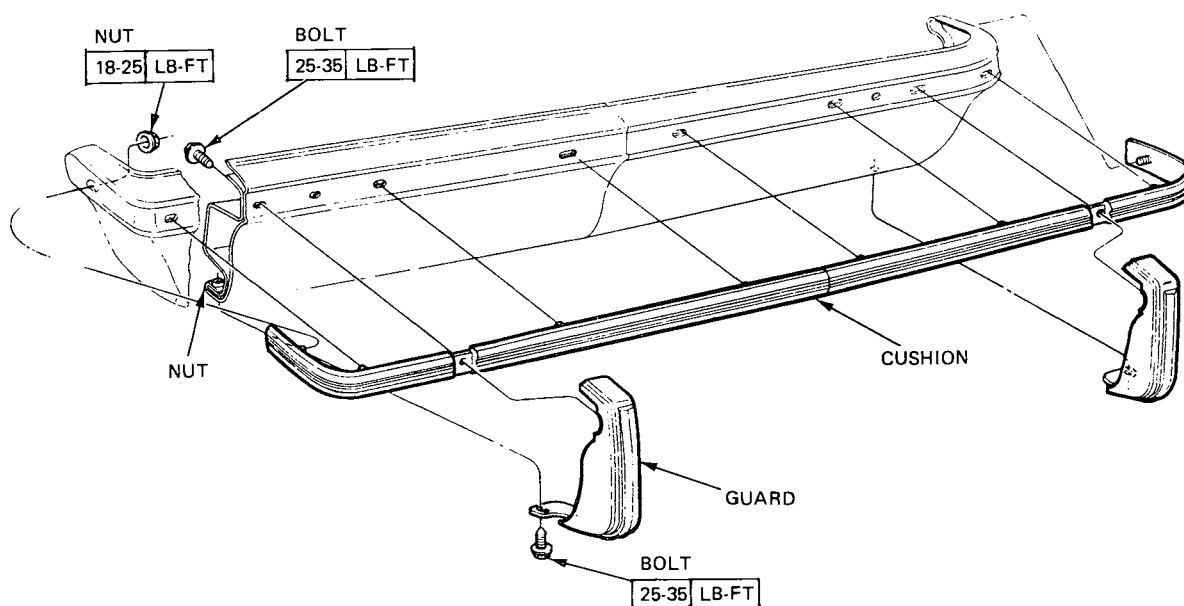
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Figure 2B-35 X Series Rear Bumper E. A. Unit



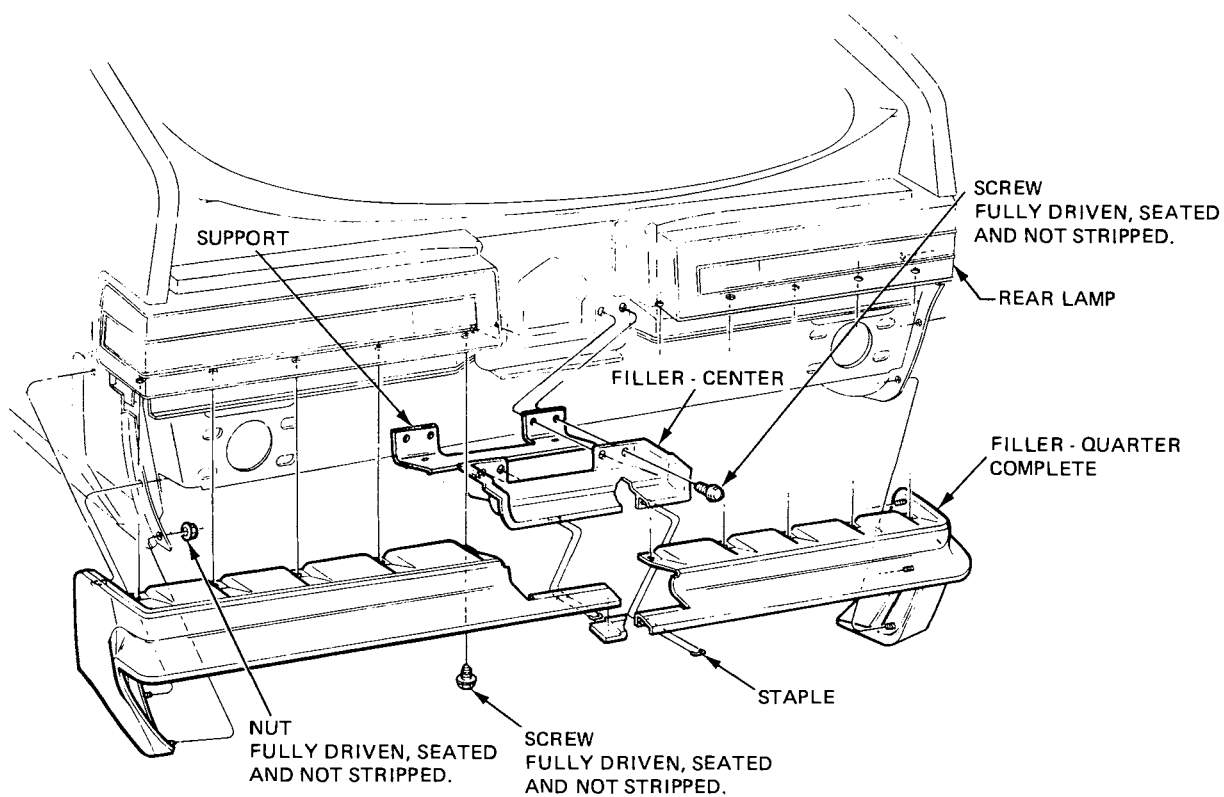
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Figure 2B-36 X Series Rear Bumper Reinforcement



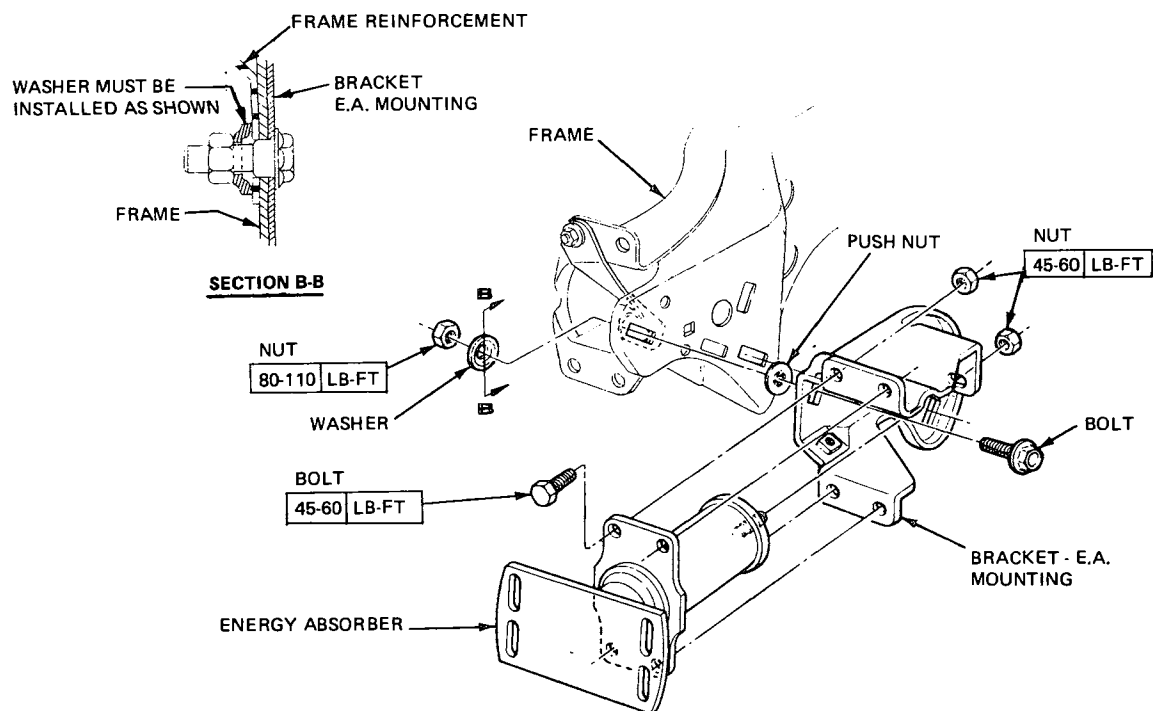
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Figure 2B-37 X Series Rear Bumper Cushion and Guards



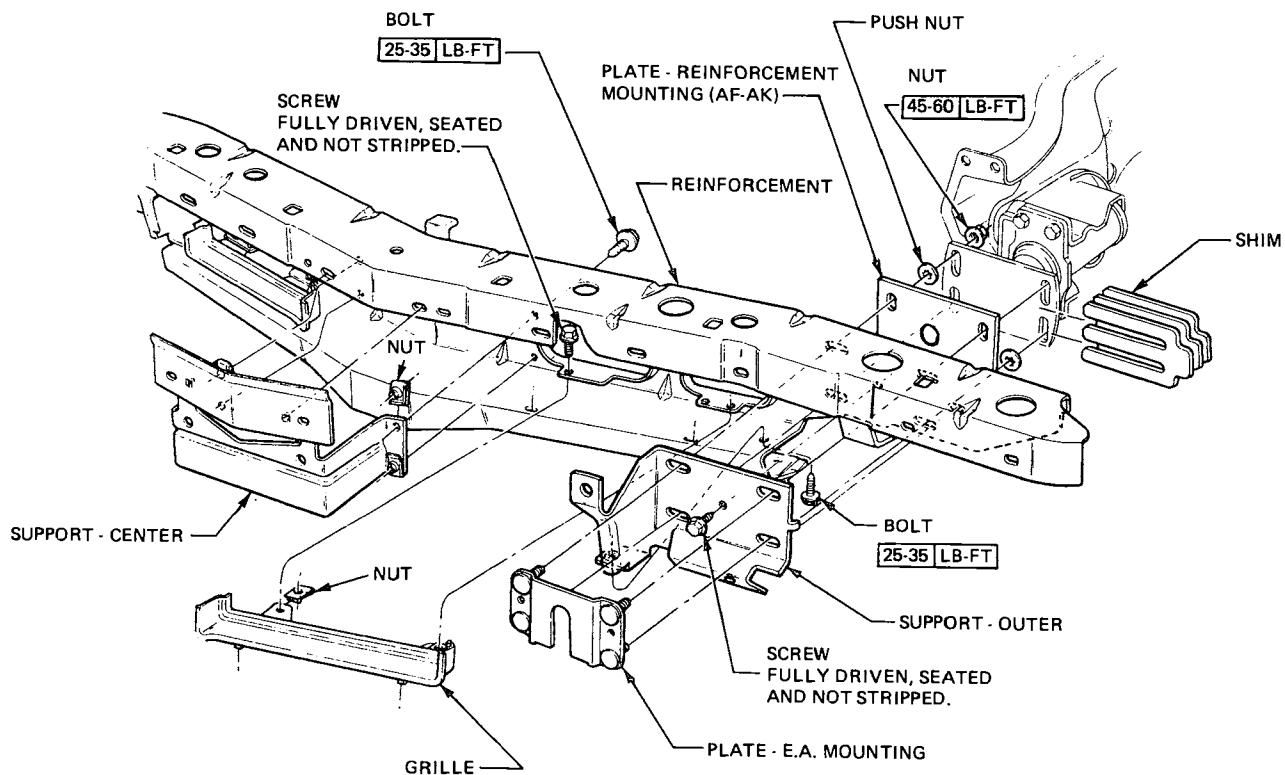
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Figure 2B-38 X Series Rear Bumper Filler Panels



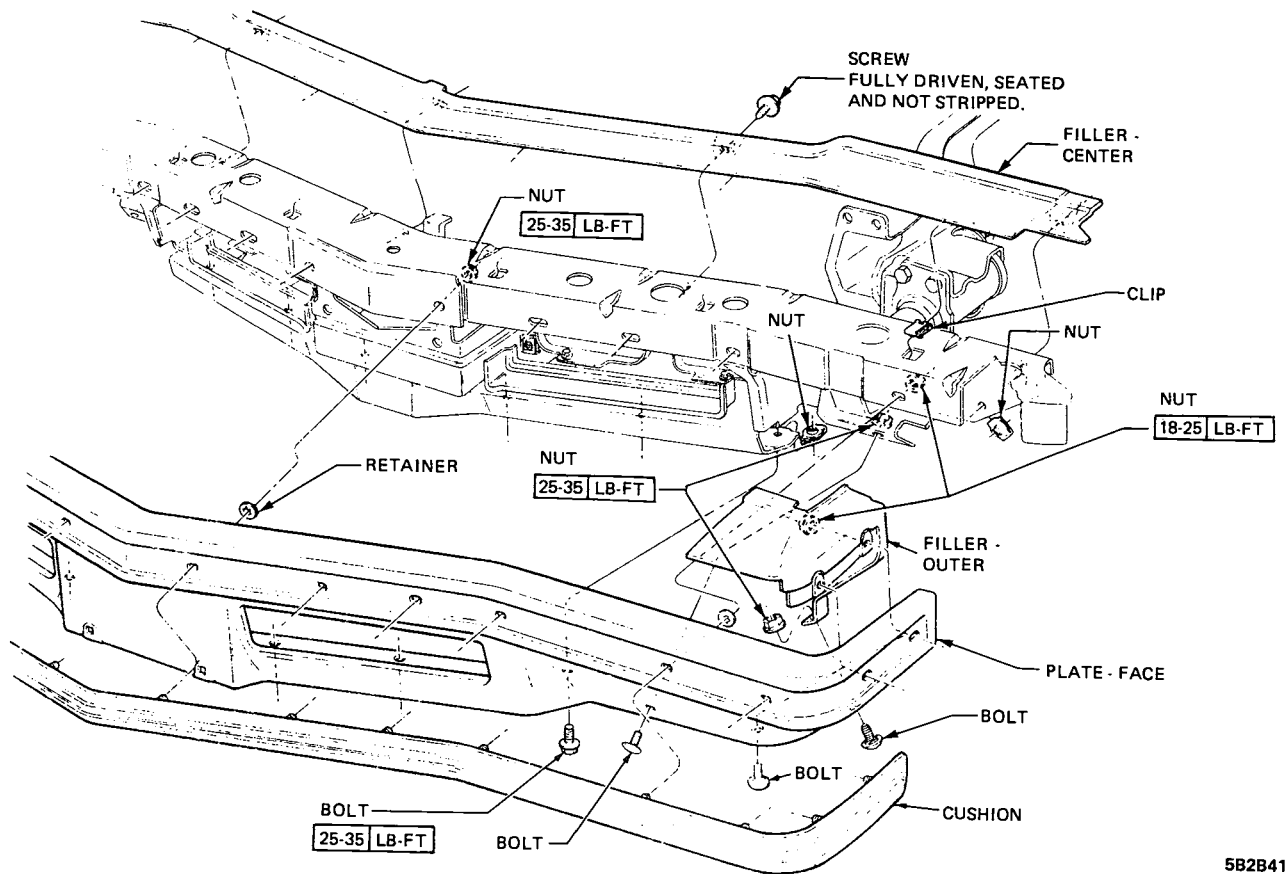
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Figure 2B-39 A Series Front Bumper E. A. Unit



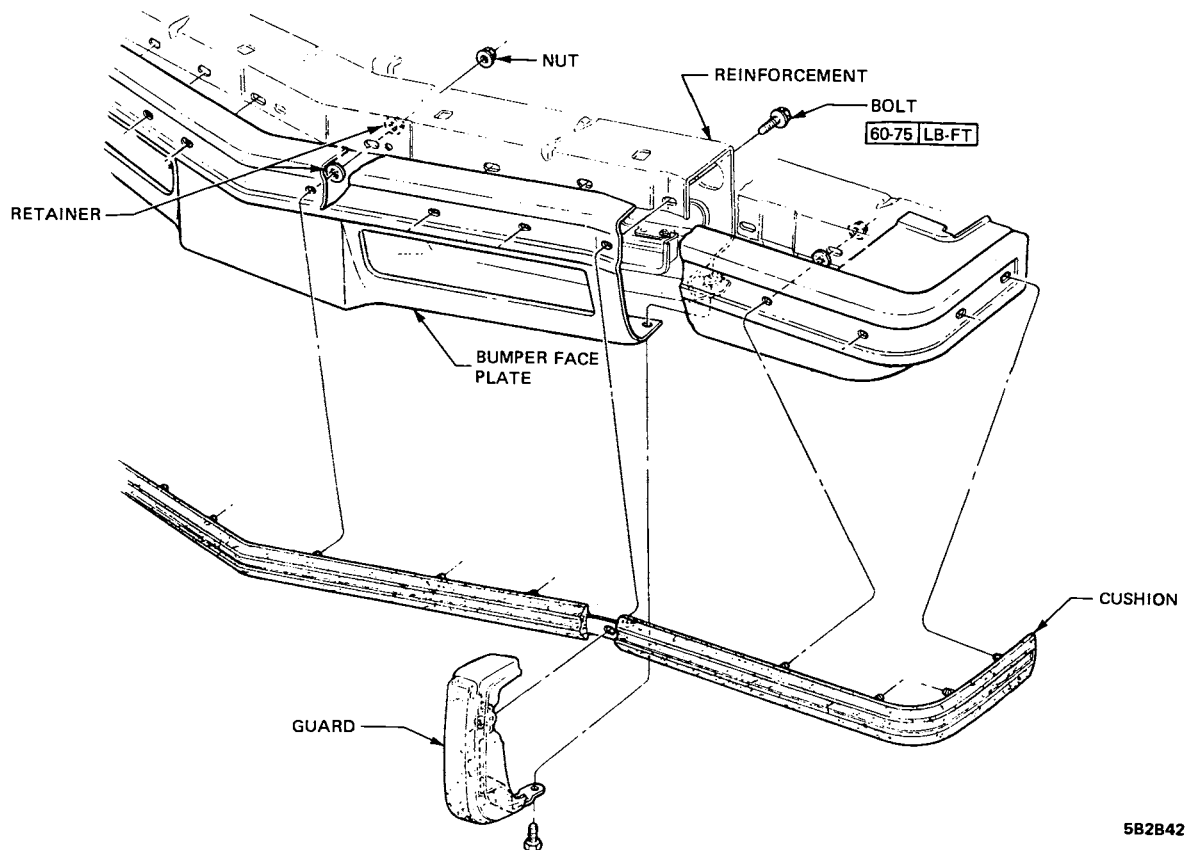
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Figure 2B-40 A Series Front Bumper Reinforcement



5B2B41

Figure 2B-41 A Series Front Bumper Face Plate



5B2B42

Figure 2B-42 A Series Front Bumper Cushion and Guards

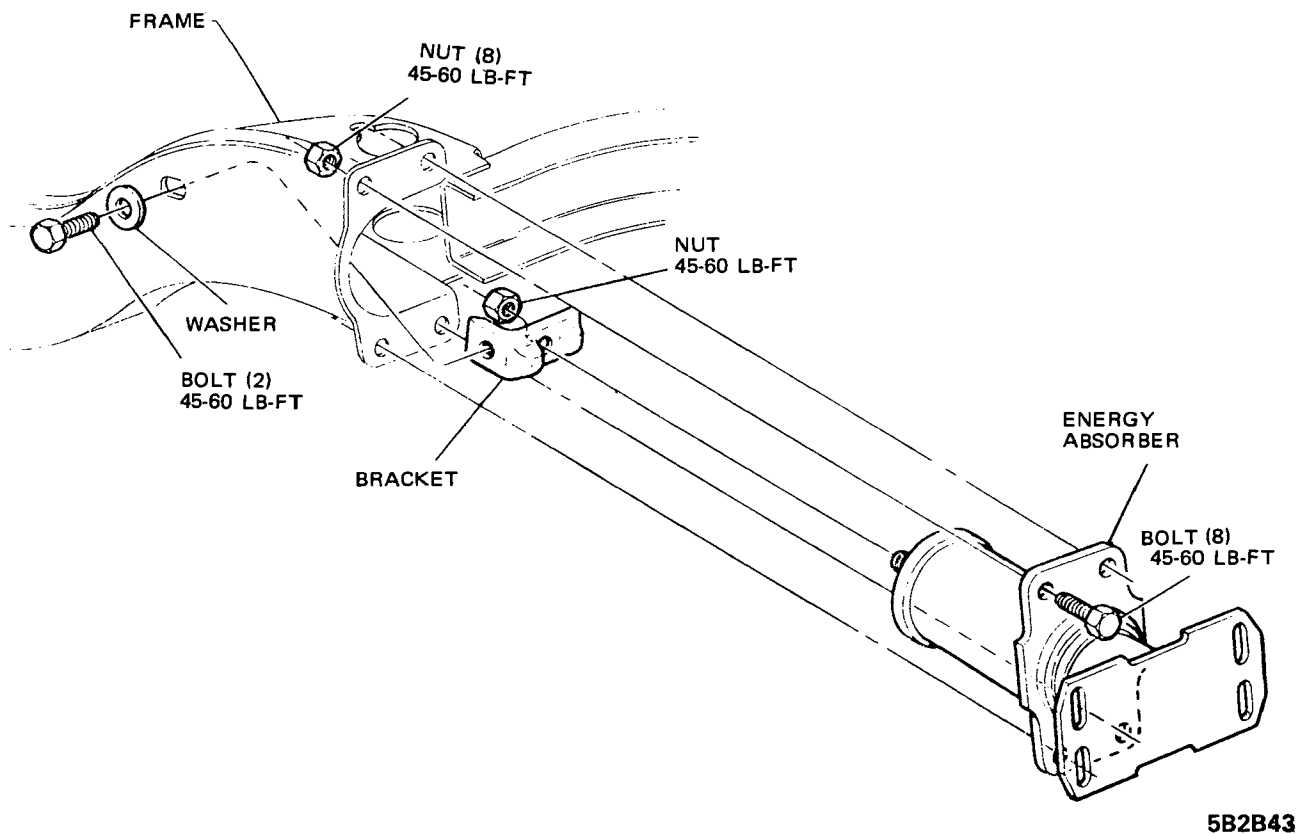


Figure 2B-43 A Series less Wagon Rear Bumper E. A. Unit

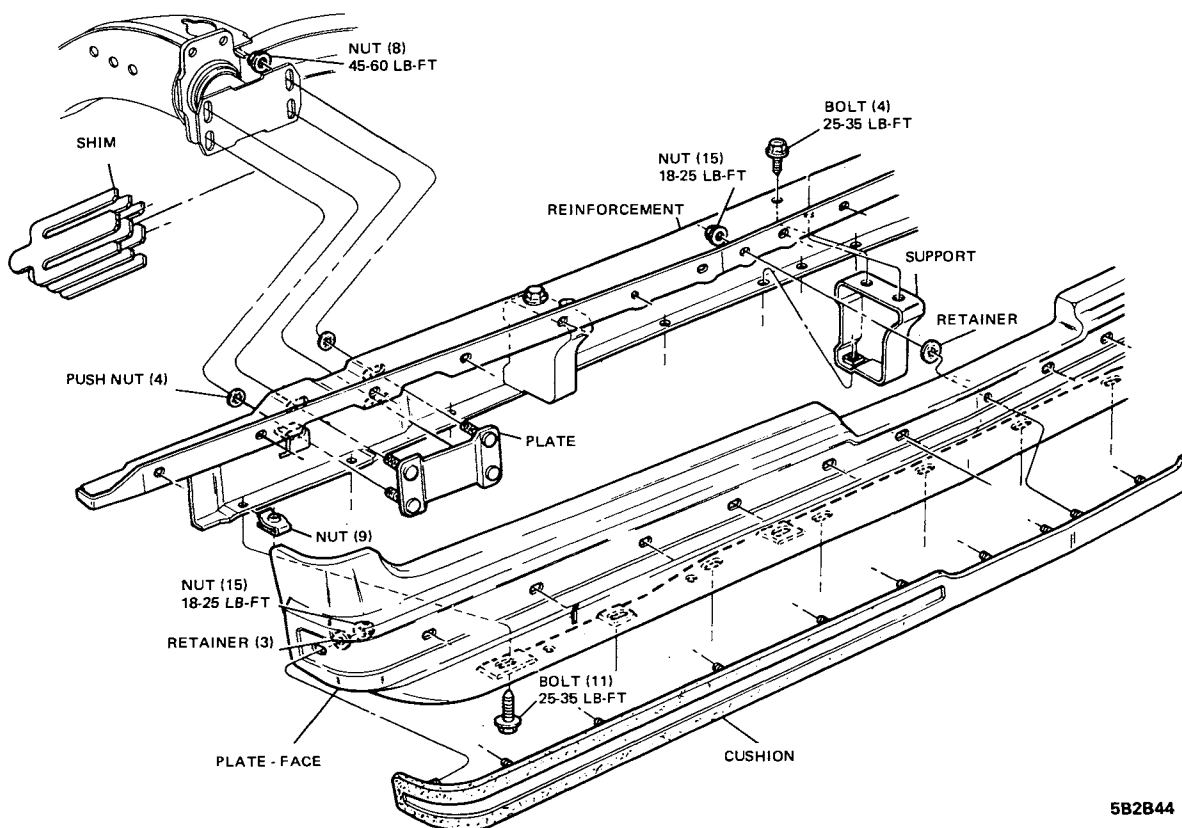
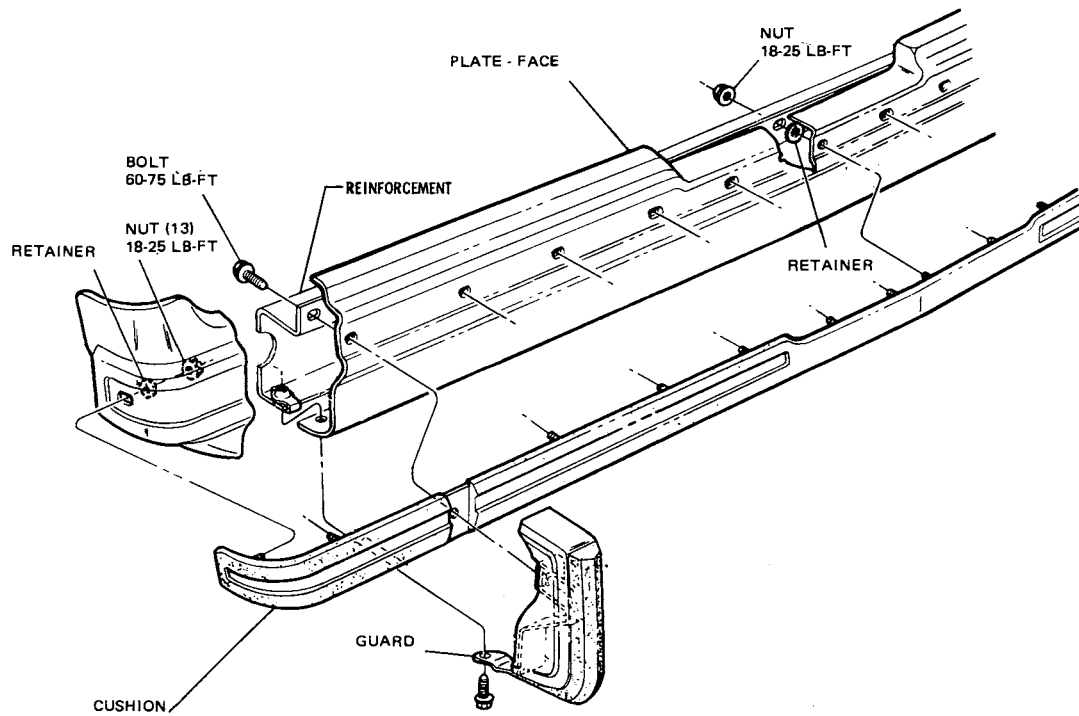
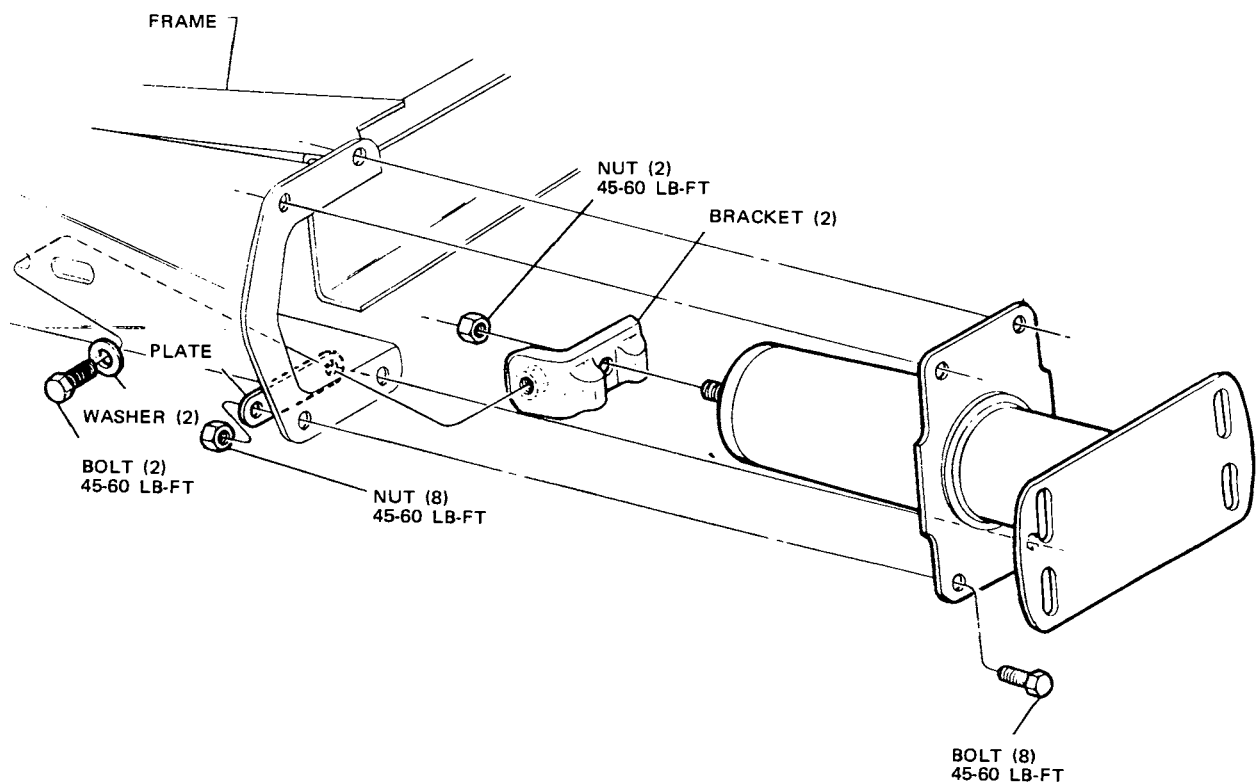


Figure 2B-44 A Series less Wagon Rear Bumper Reinforcement



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Figure 2B-45 A Series less Wagon Rear Bumper Cushion and Guards



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Figure 2B-46 A Series Wagon Rear Bumper E. A. Units

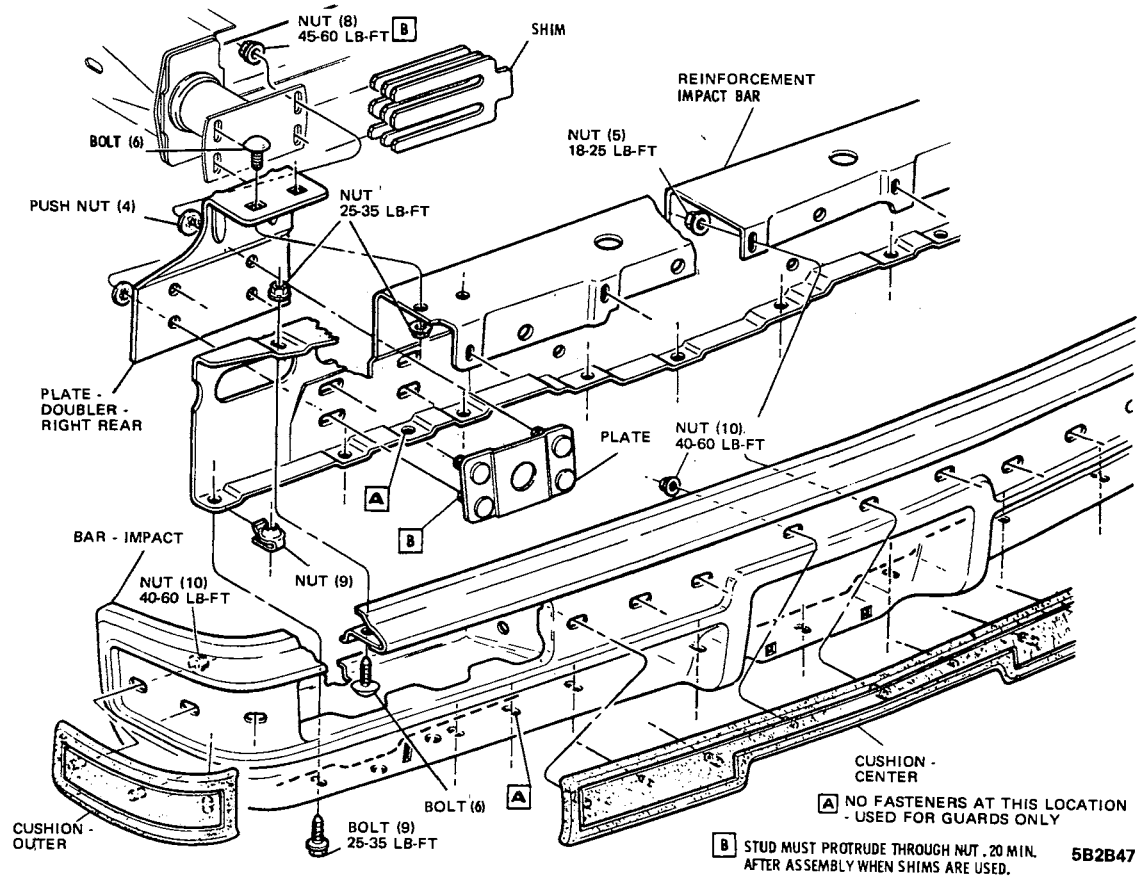
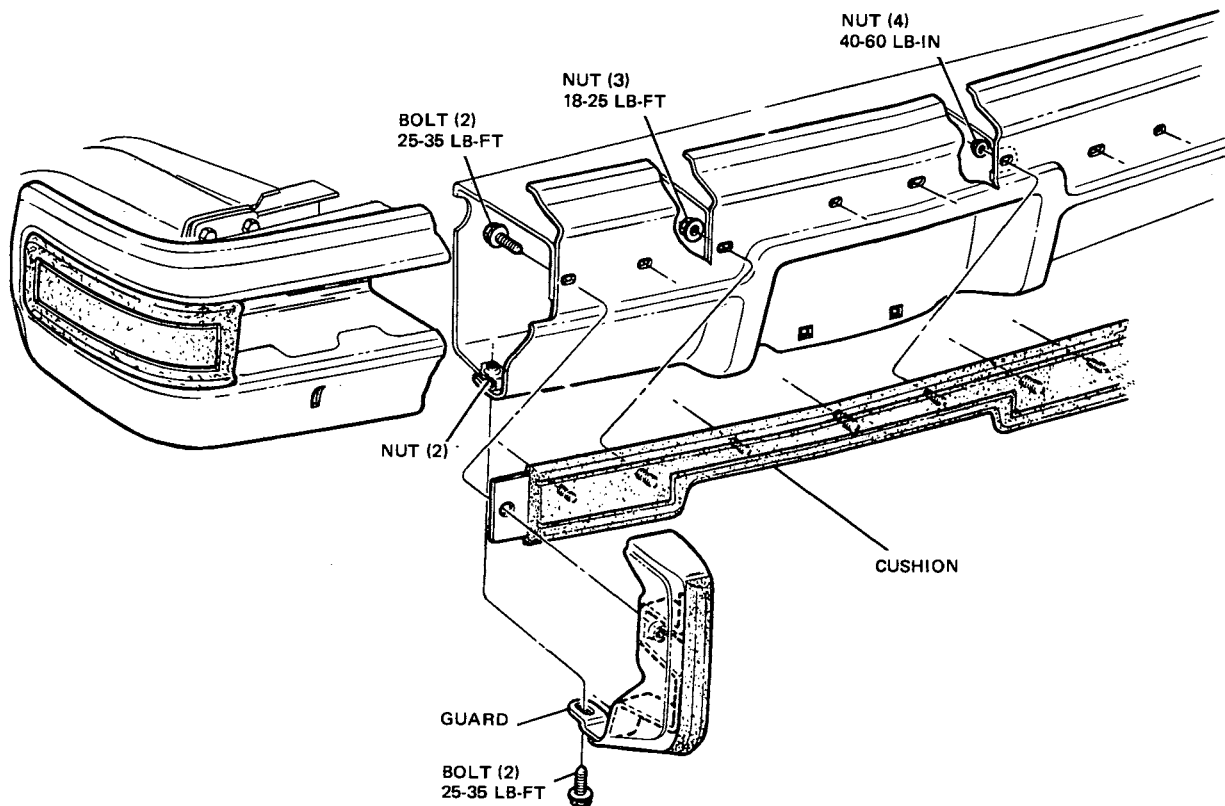


Figure 2B-47 A Series Wagon Rear Bumper Reinforcement



5B2B48

Figure 2B-48 A Series Wagon Rear Bumper Cushion and Guards

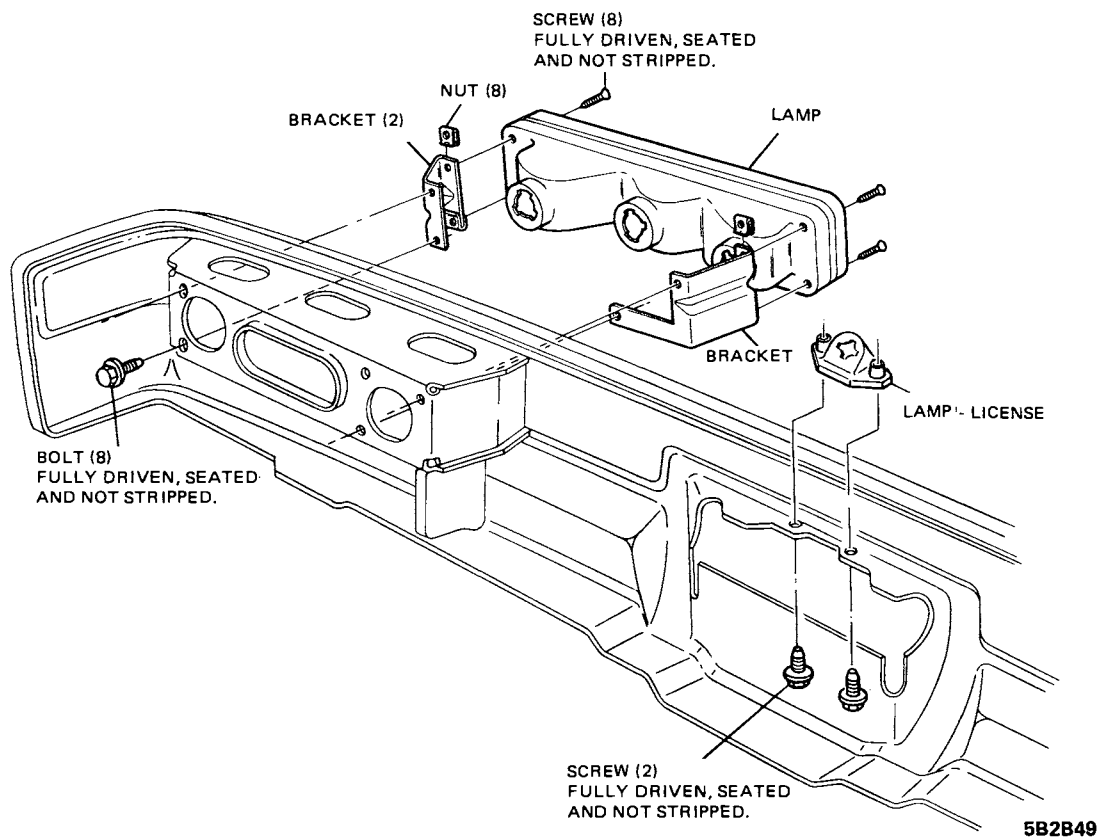
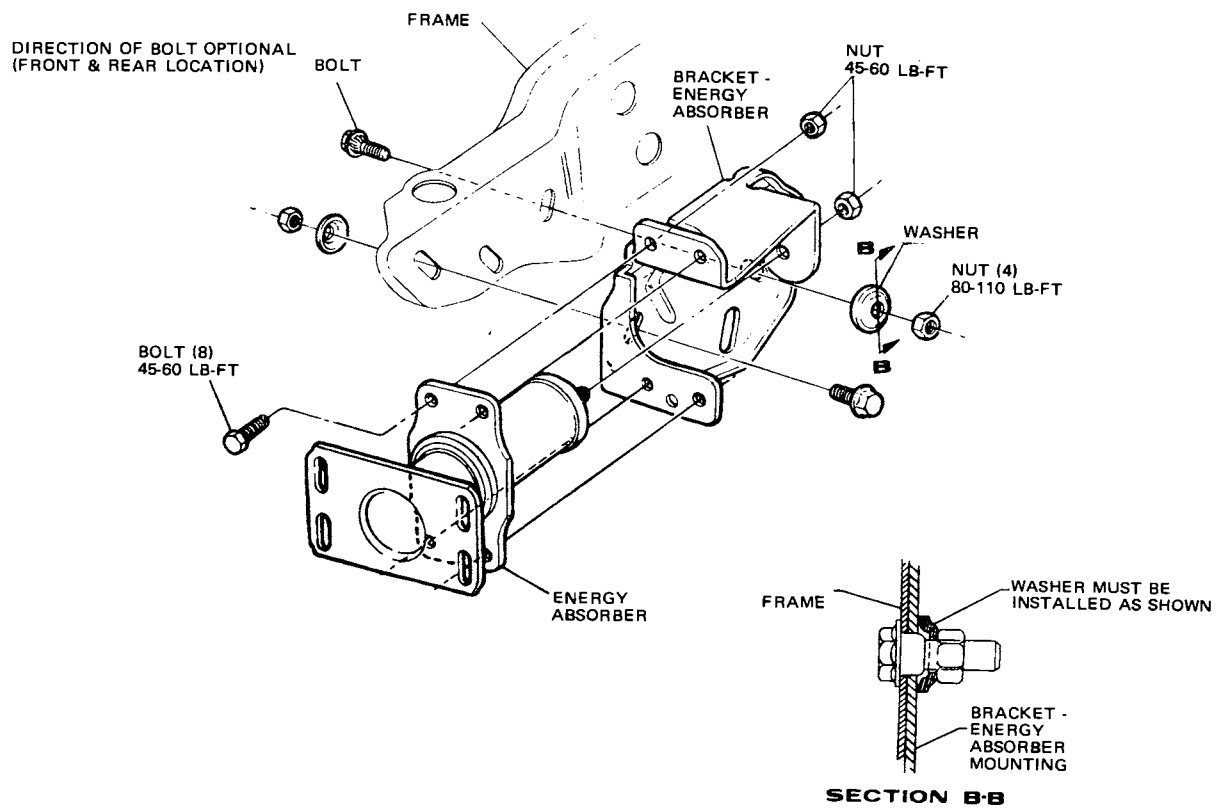


Figure 2B-49 A Series Wagon Back-Up Lamp



5B2B50

Figure 2B-50 B-C Series Front Bumper E. A. Unit

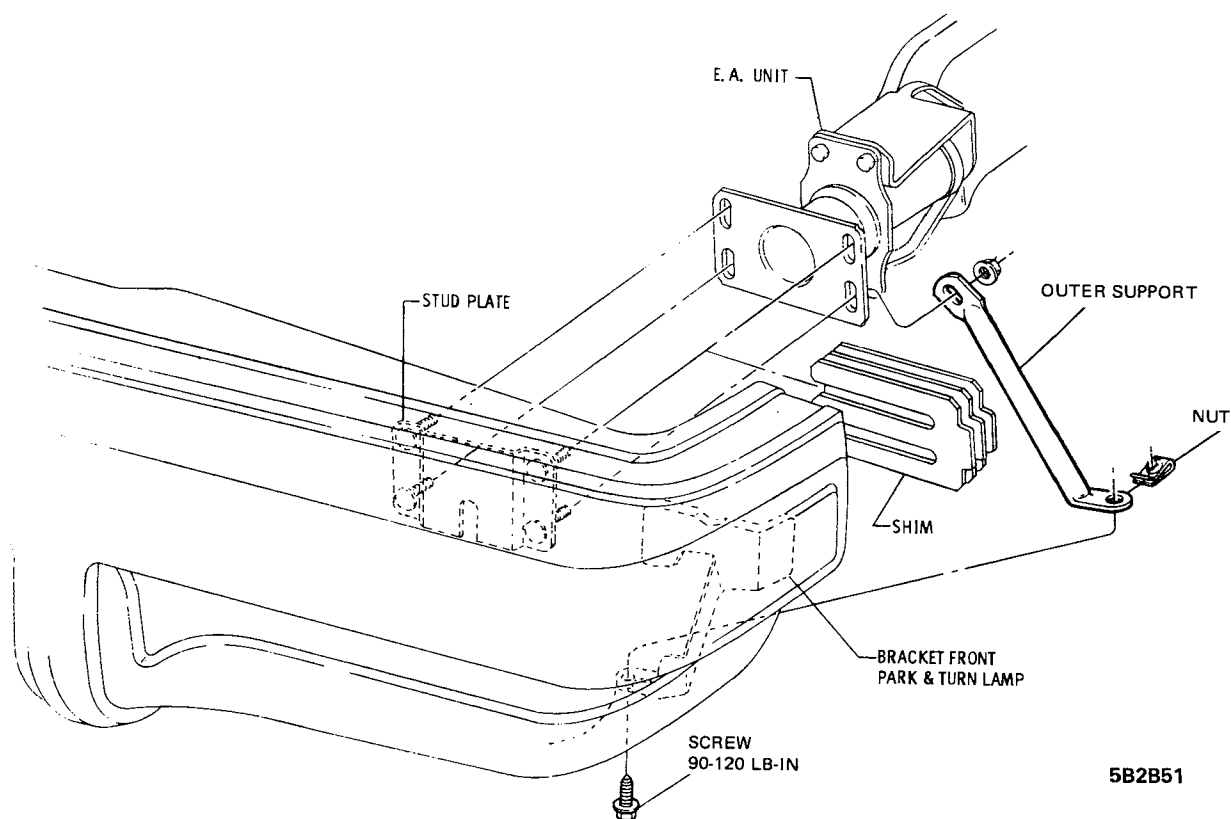


Figure 2B-51 B-C Series Front Bumper Outer Support

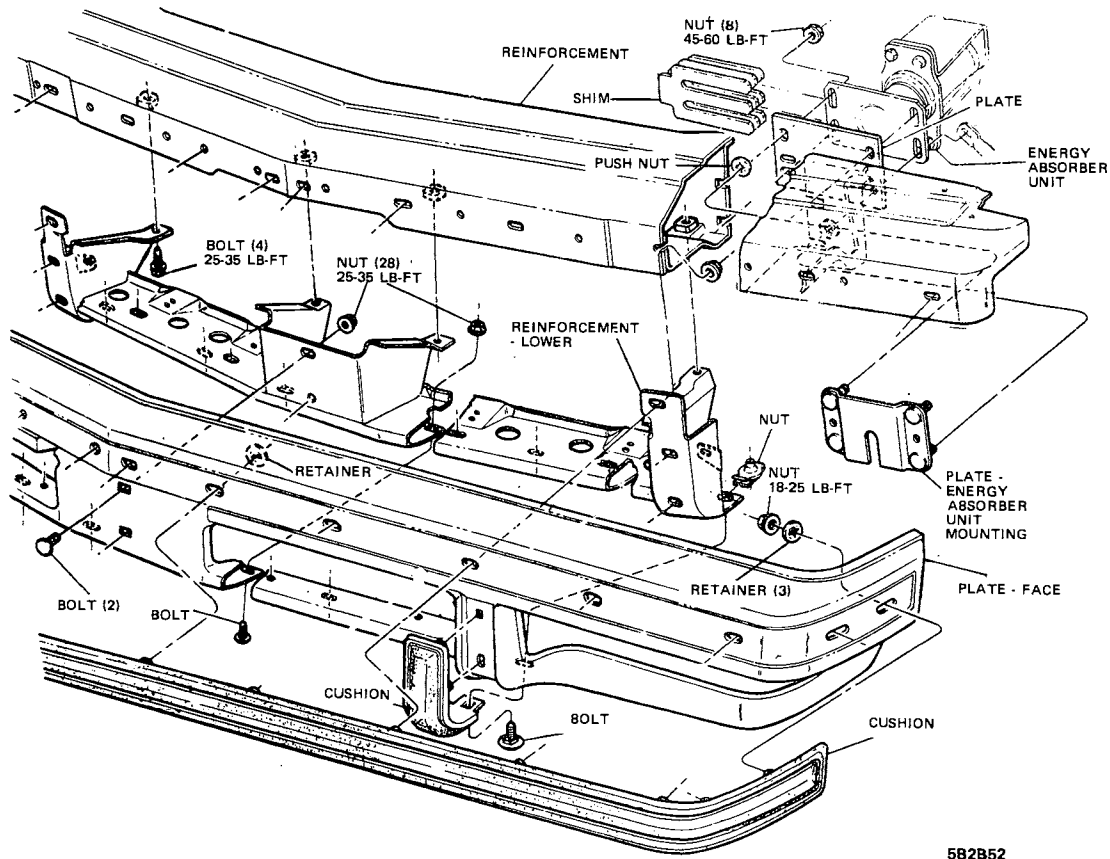
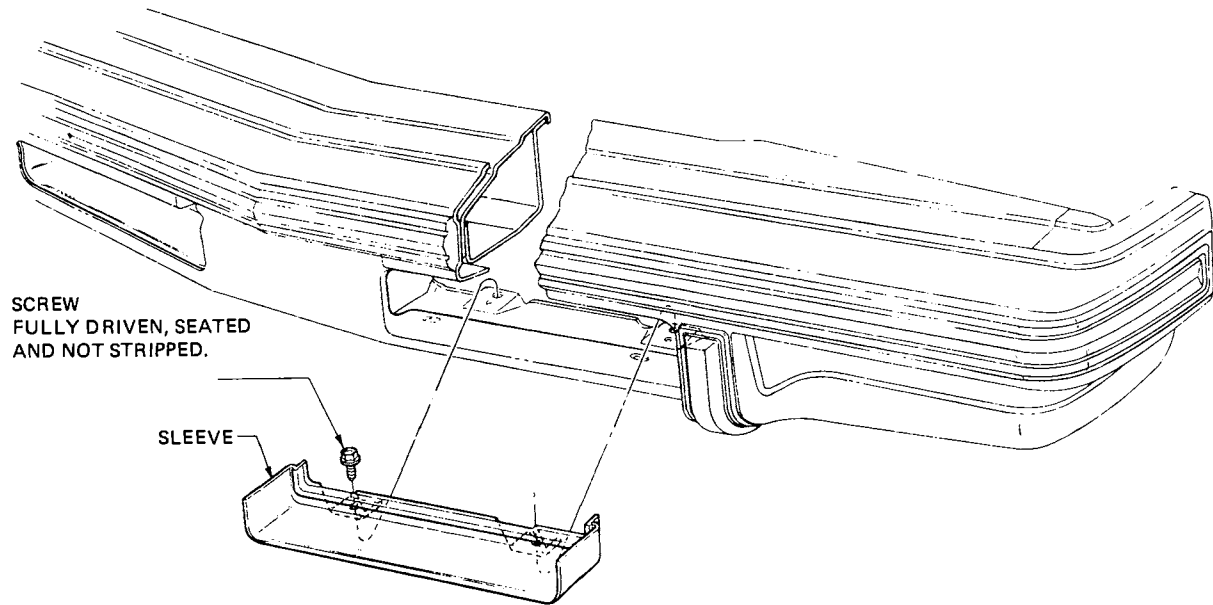
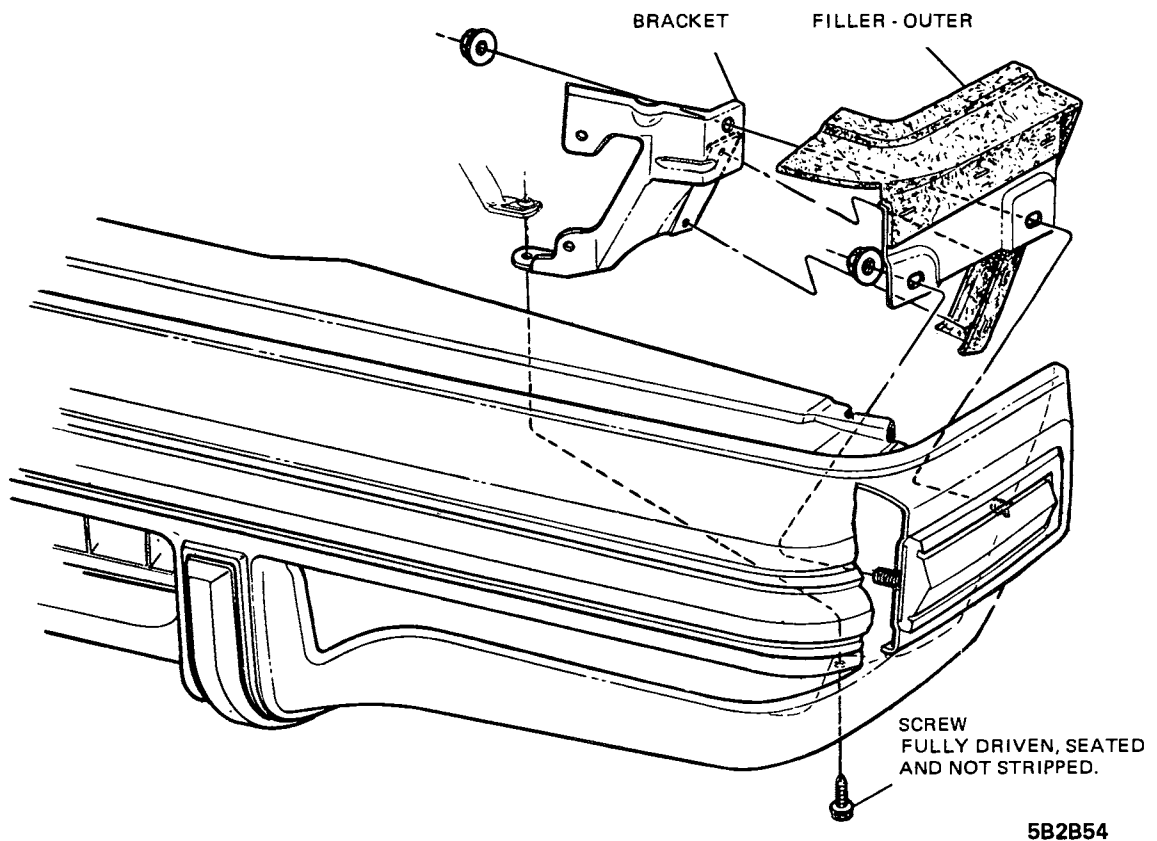


Figure 2B-52 B-C Series Front Bumper Reinforcement



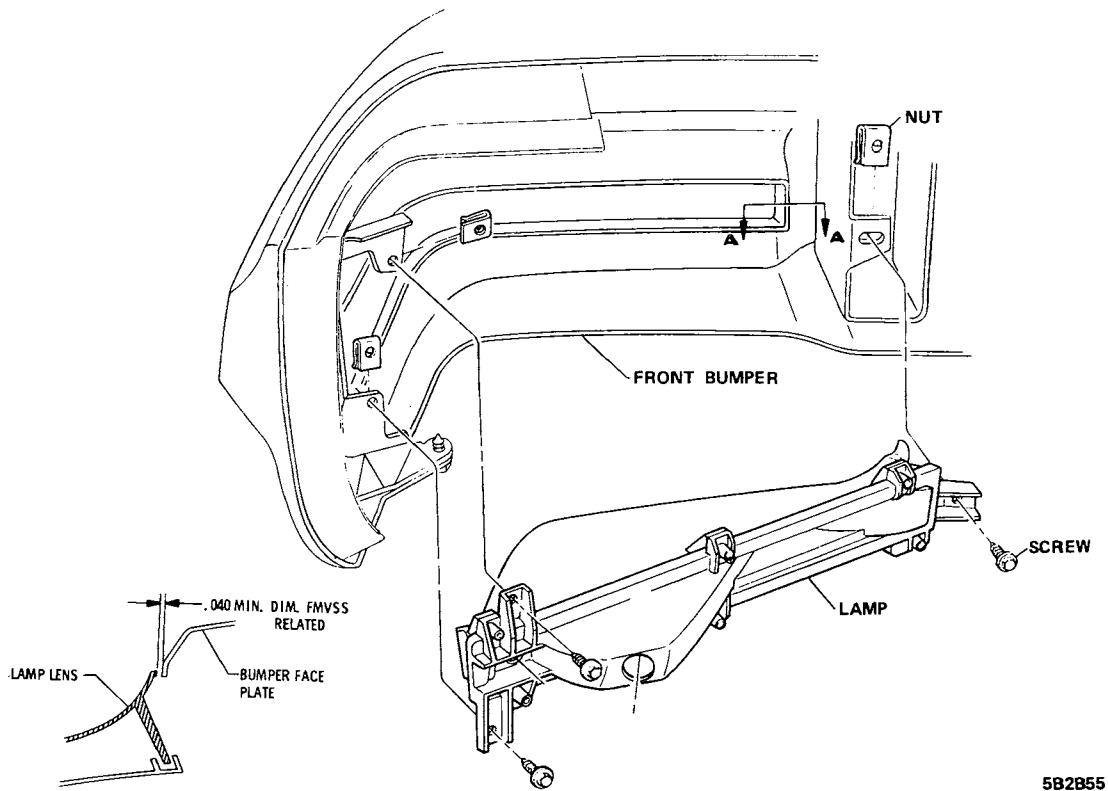
5B8C53

Figure 2B-53 B-C Series Front Bumper Opening Liner



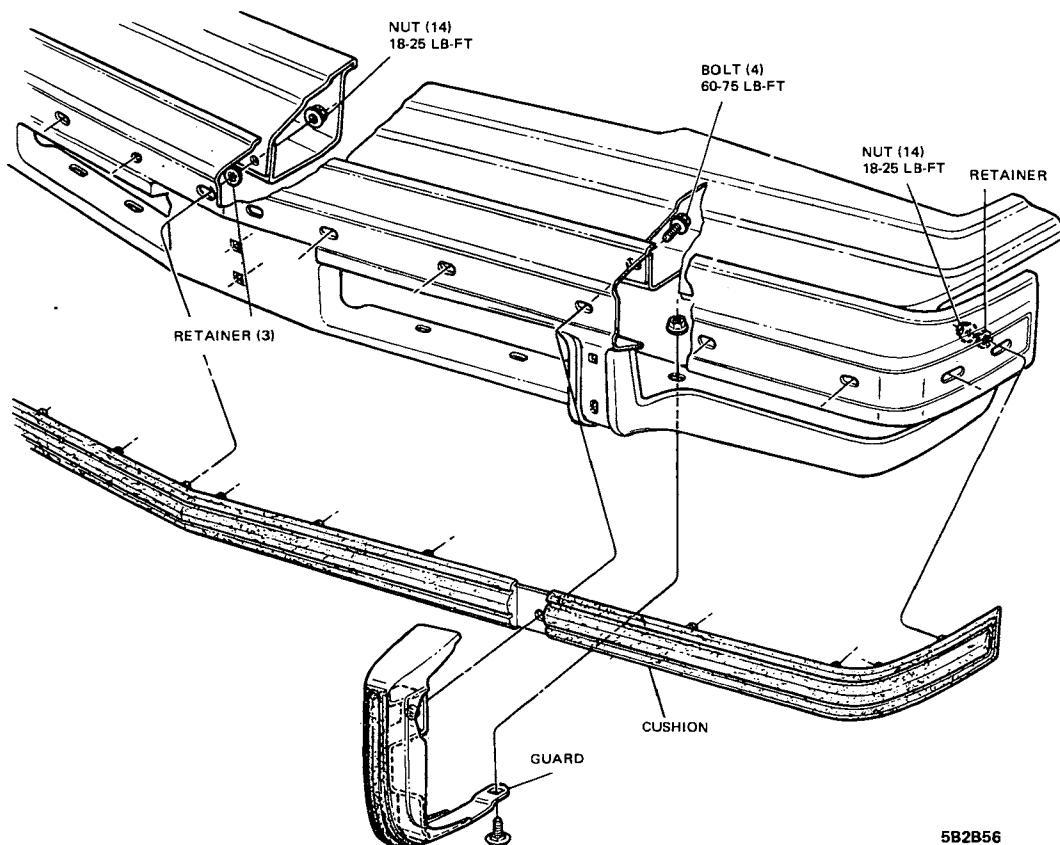
5B2B54

Figure 2B-54 B-C Series Front Bumper Outer Filler



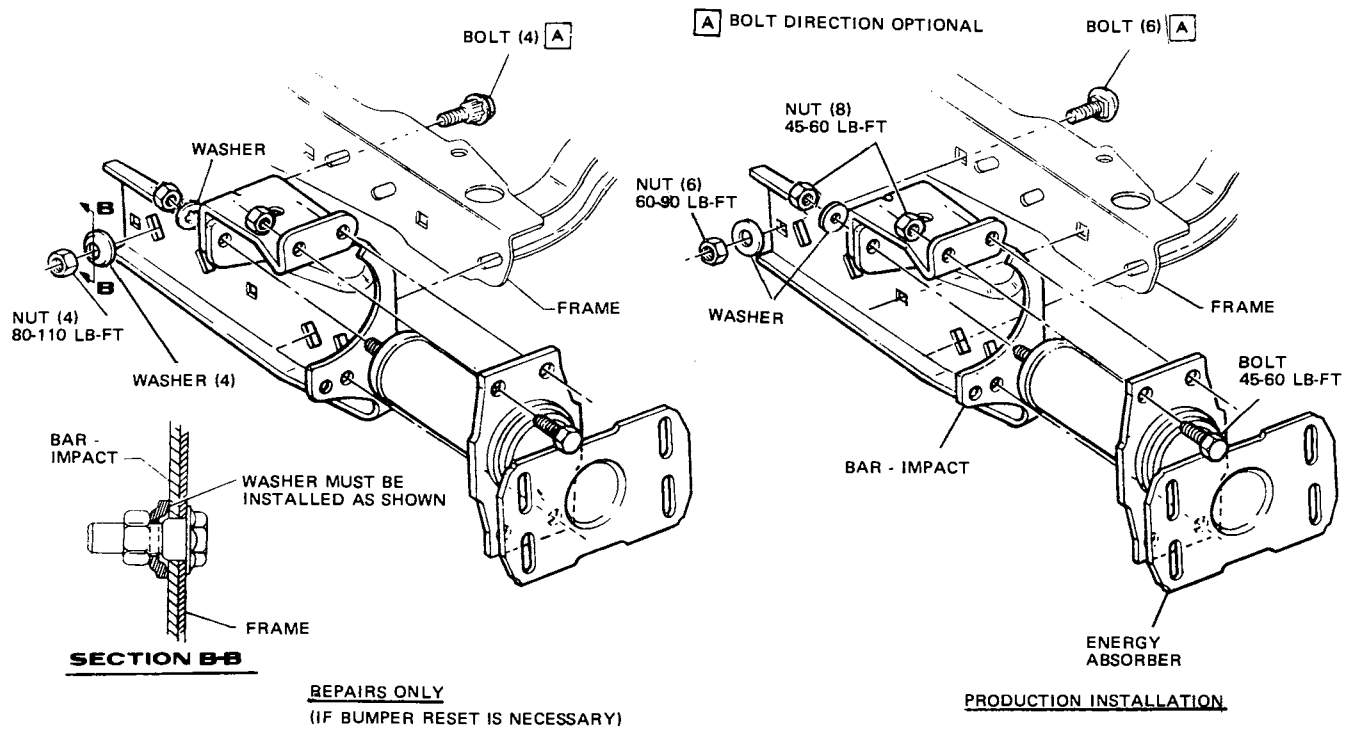
5B2B55

Figure 2B-55 B-C Series Front Bumper Turn Signal Lamp



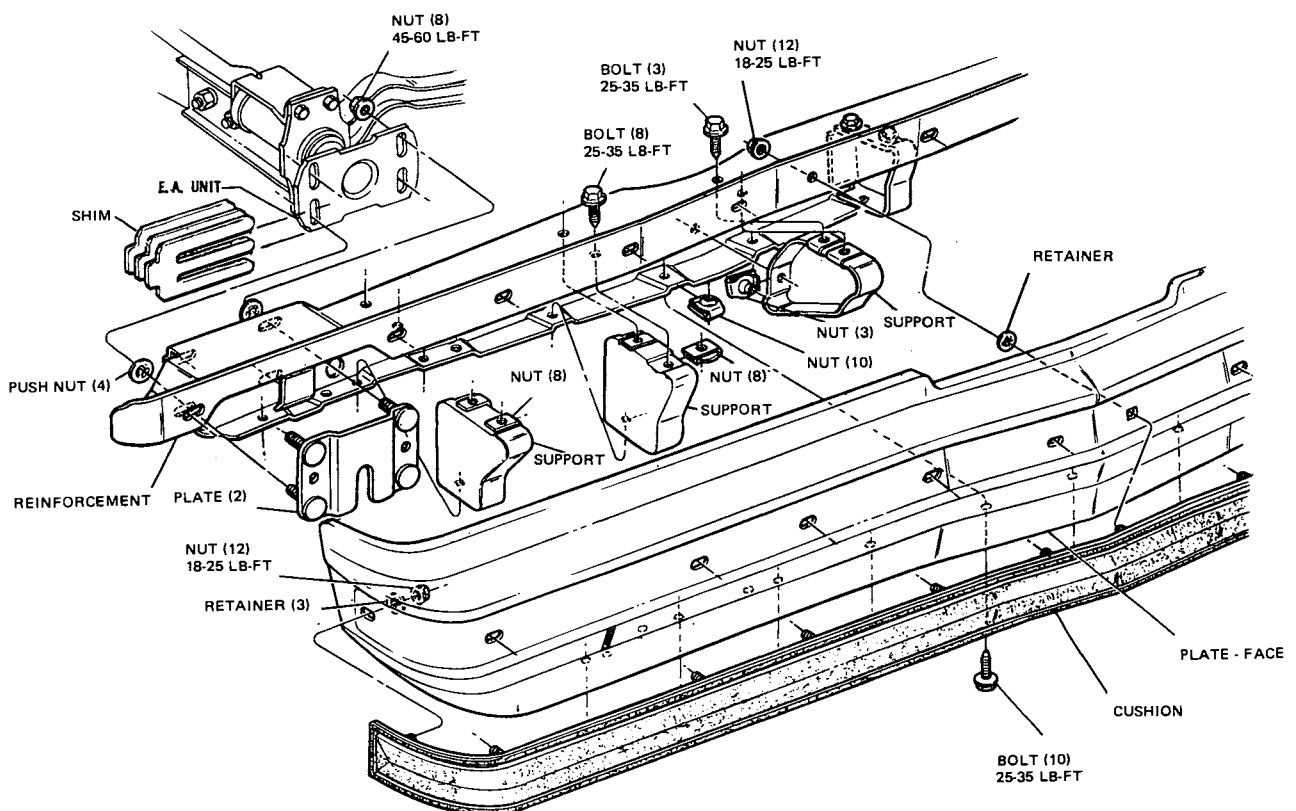
5B2B56

Figure 2B-56 B-C Series Front Bumper Cushion and Guards



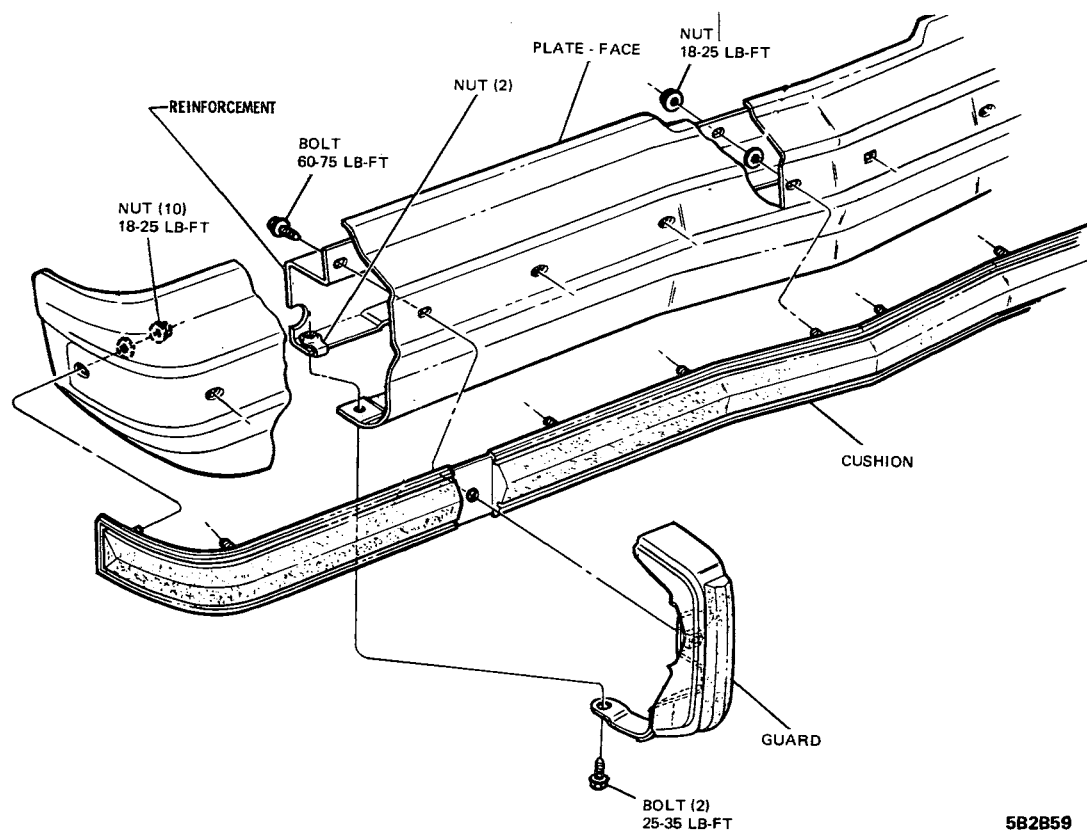
5B2B57

Figure 2B-57 B Series less Wagon Rear Bumper E. A. Units



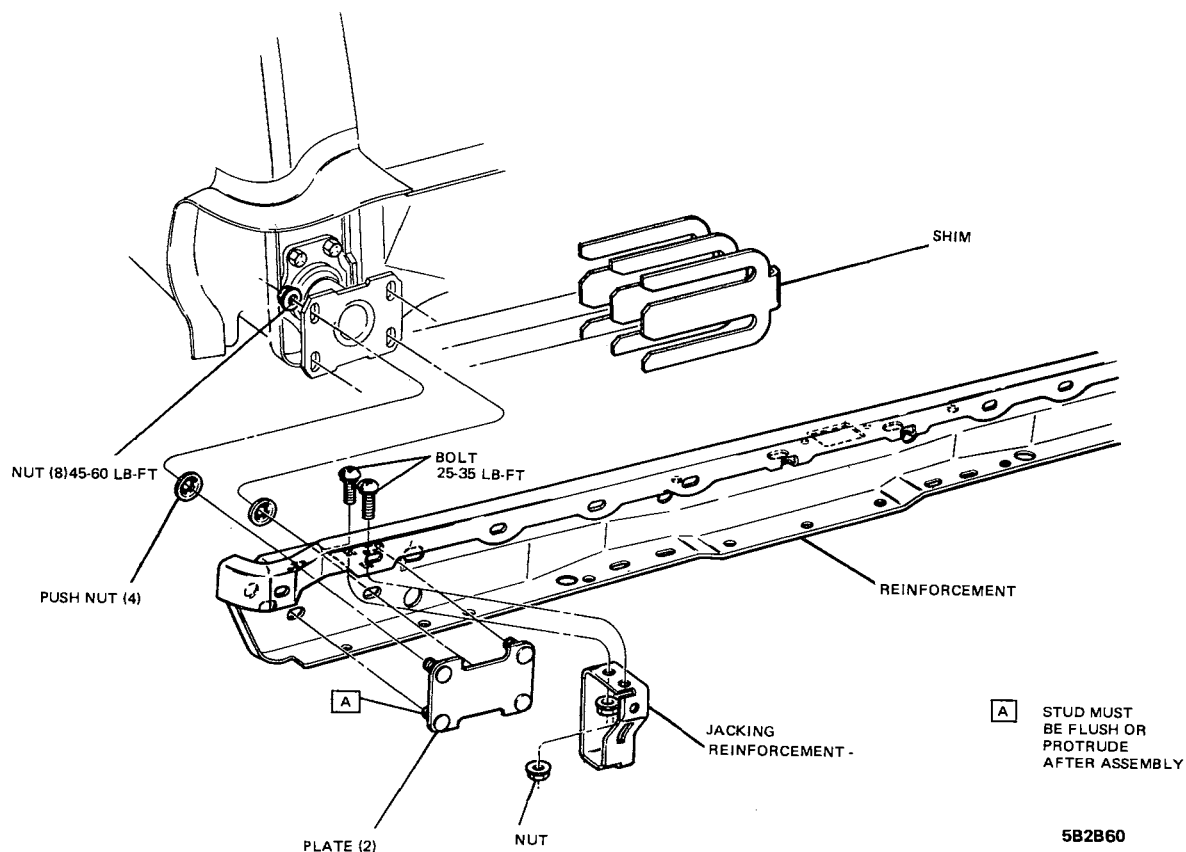
5B2B58

Figure 2B-58 B Series less Wagon Rear Bumper Reinforcement



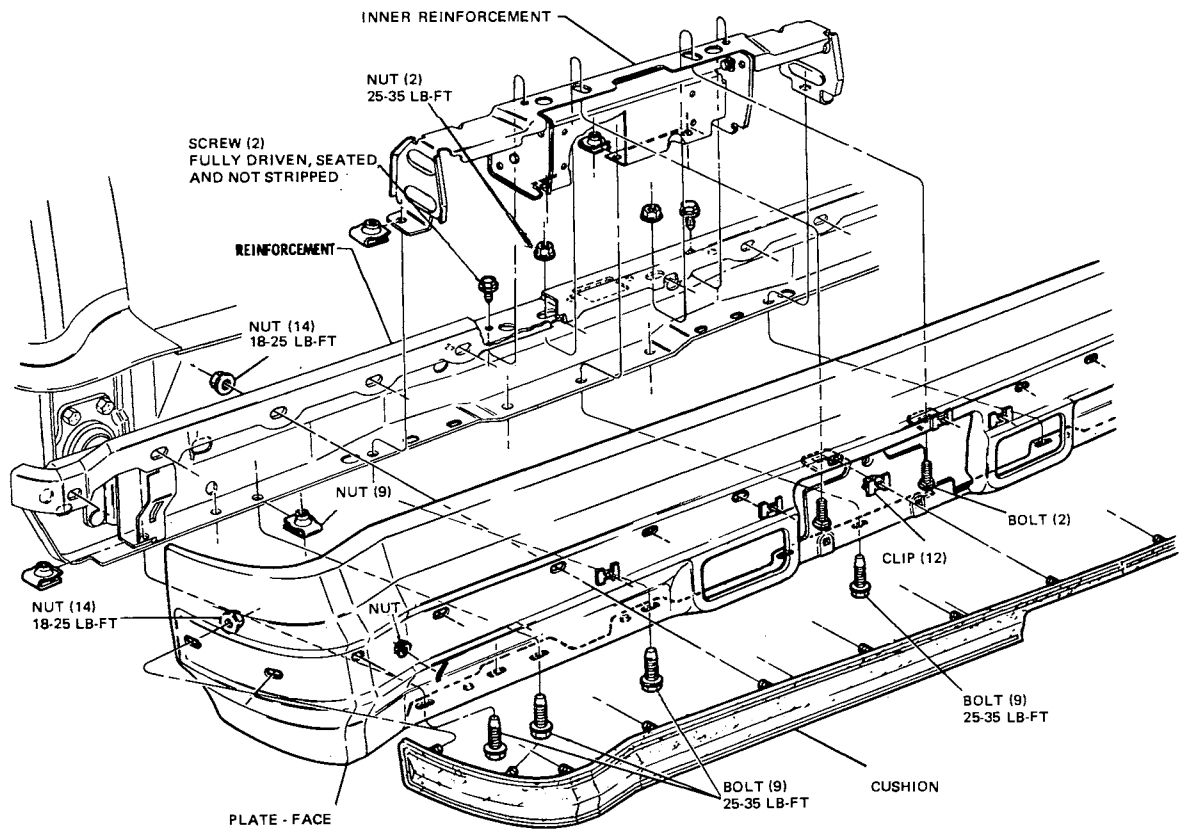
582B59

Figure 2B-59 B Series less Wagon Rear Bumper Cushion and Guards



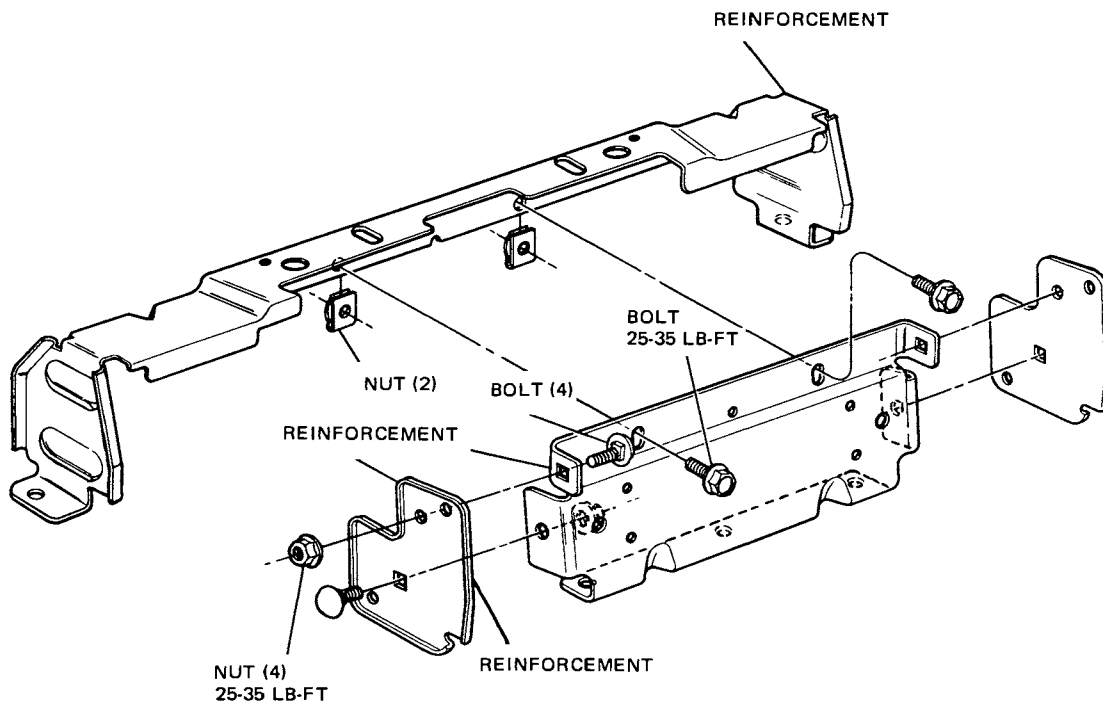
582B60

Figure 2B-60 B Series Wagon Rear Bumper E. A. Units



5B2B61

Figure 2B-61 B Series Wagon Rear Bumper Reinforcement



5B2B62

Figure 2B-62 B Series Wagon Rear Bumper Top Reinforcement

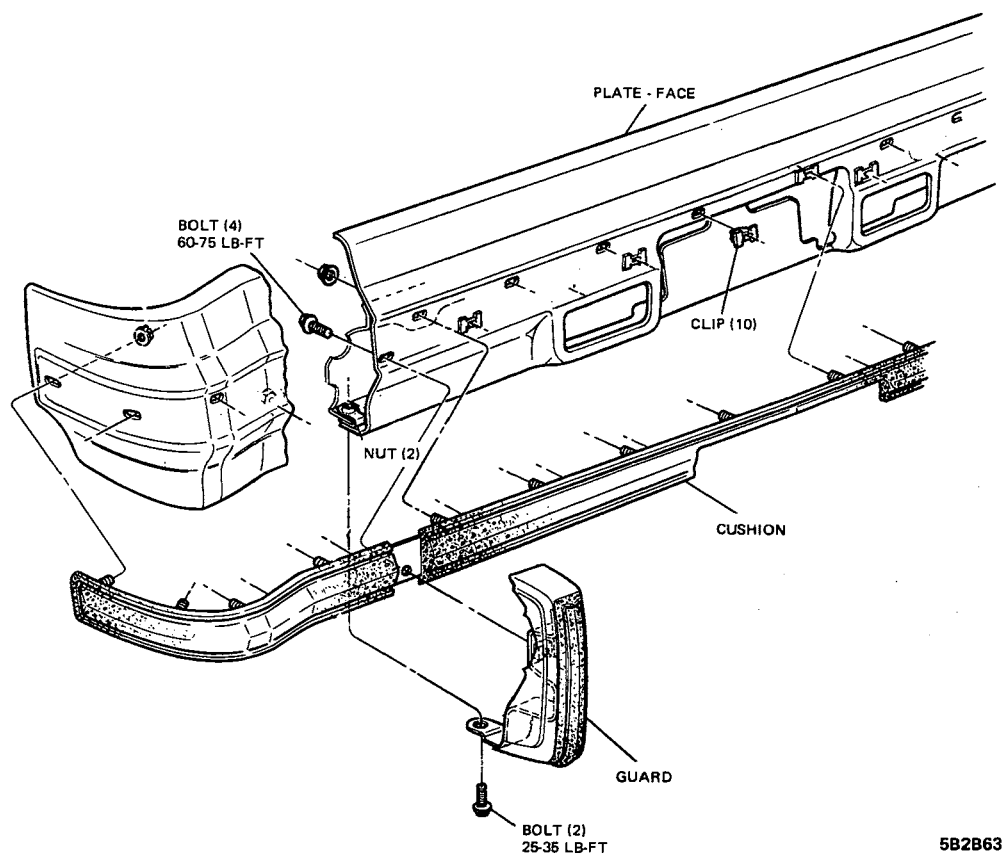


Figure 2B-63 B Series Wagon Rear Bumper Cushion and Guards

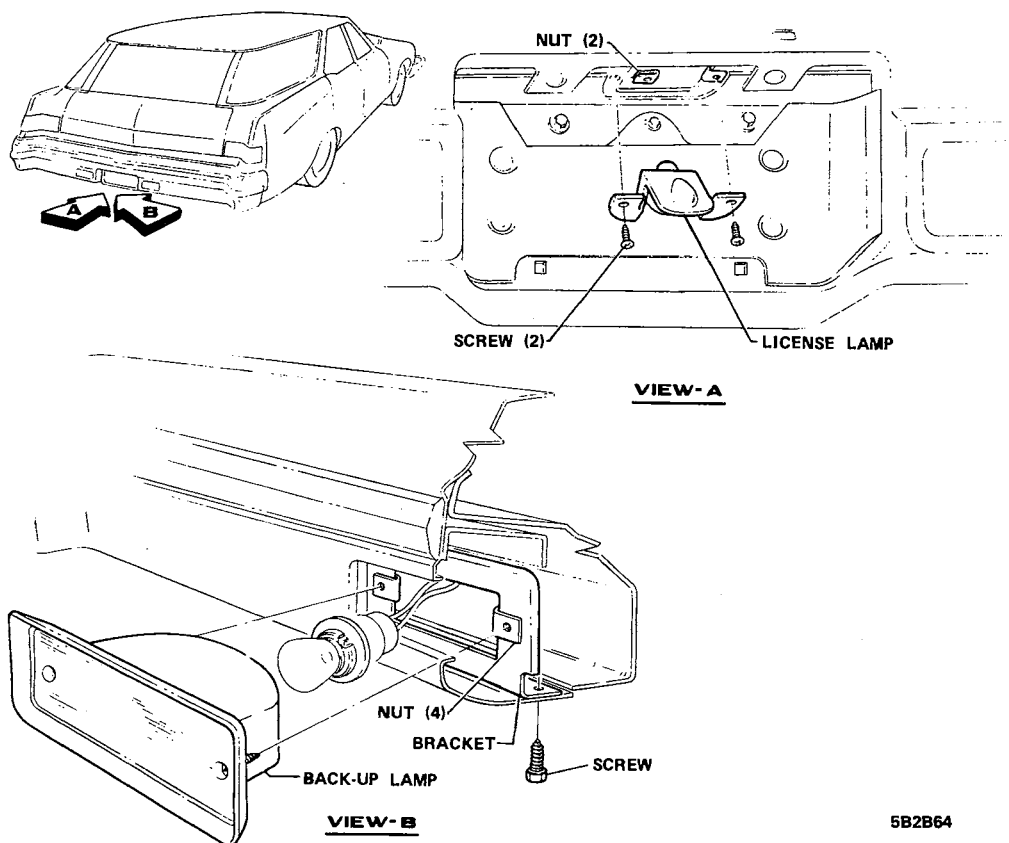


Figure 2B-64 B Series Wagon Back-Up Lamp

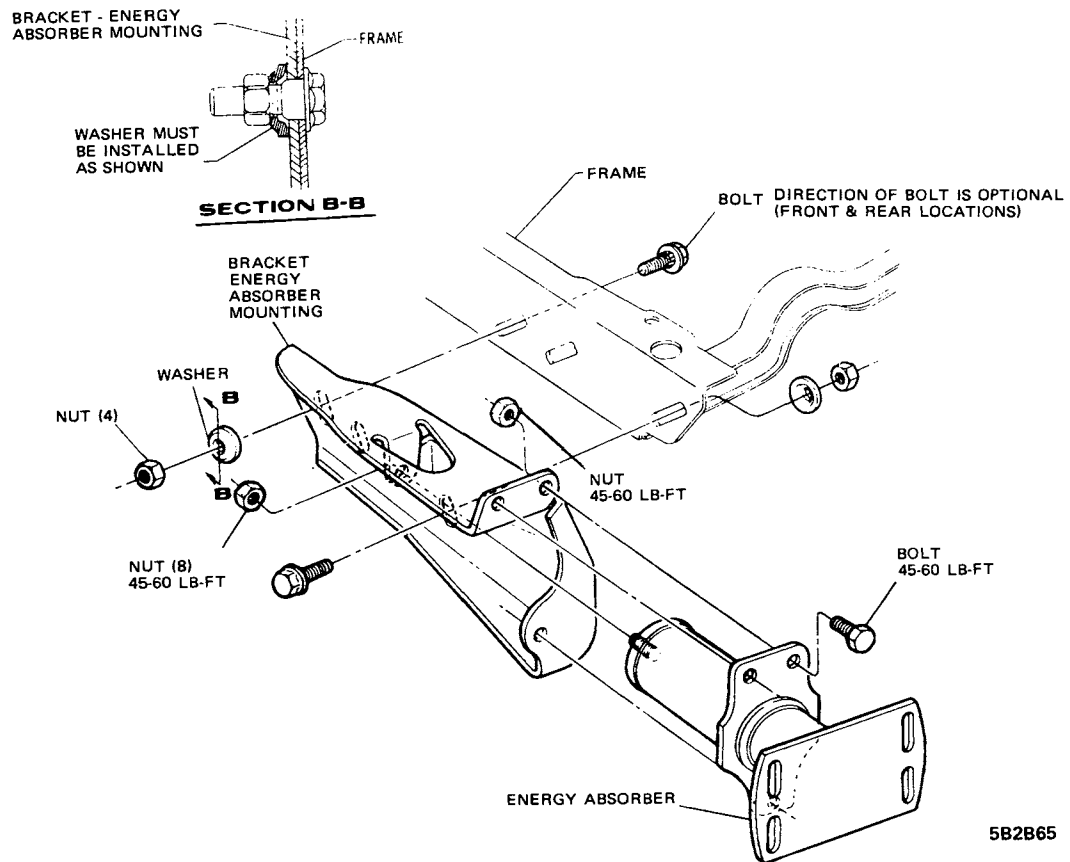


Figure 2B-65 C Series Rear Bumper E. A. Unit

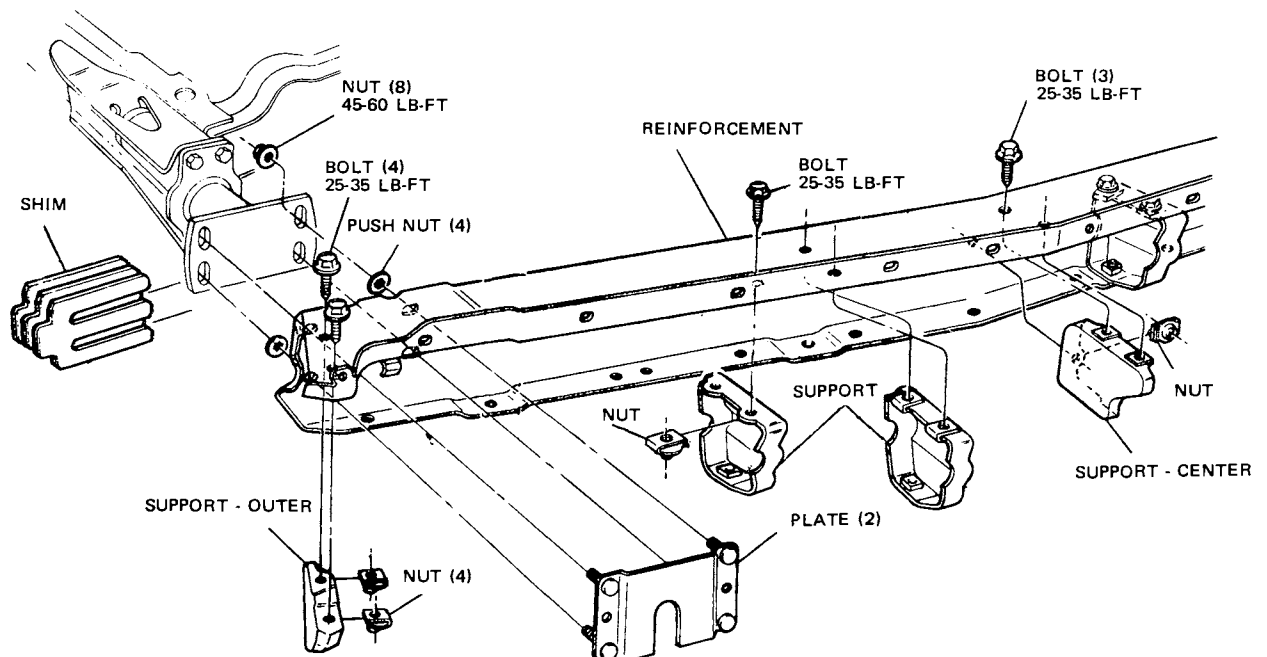


Figure 2B-66 C Series Rear Bumper Reinforcement

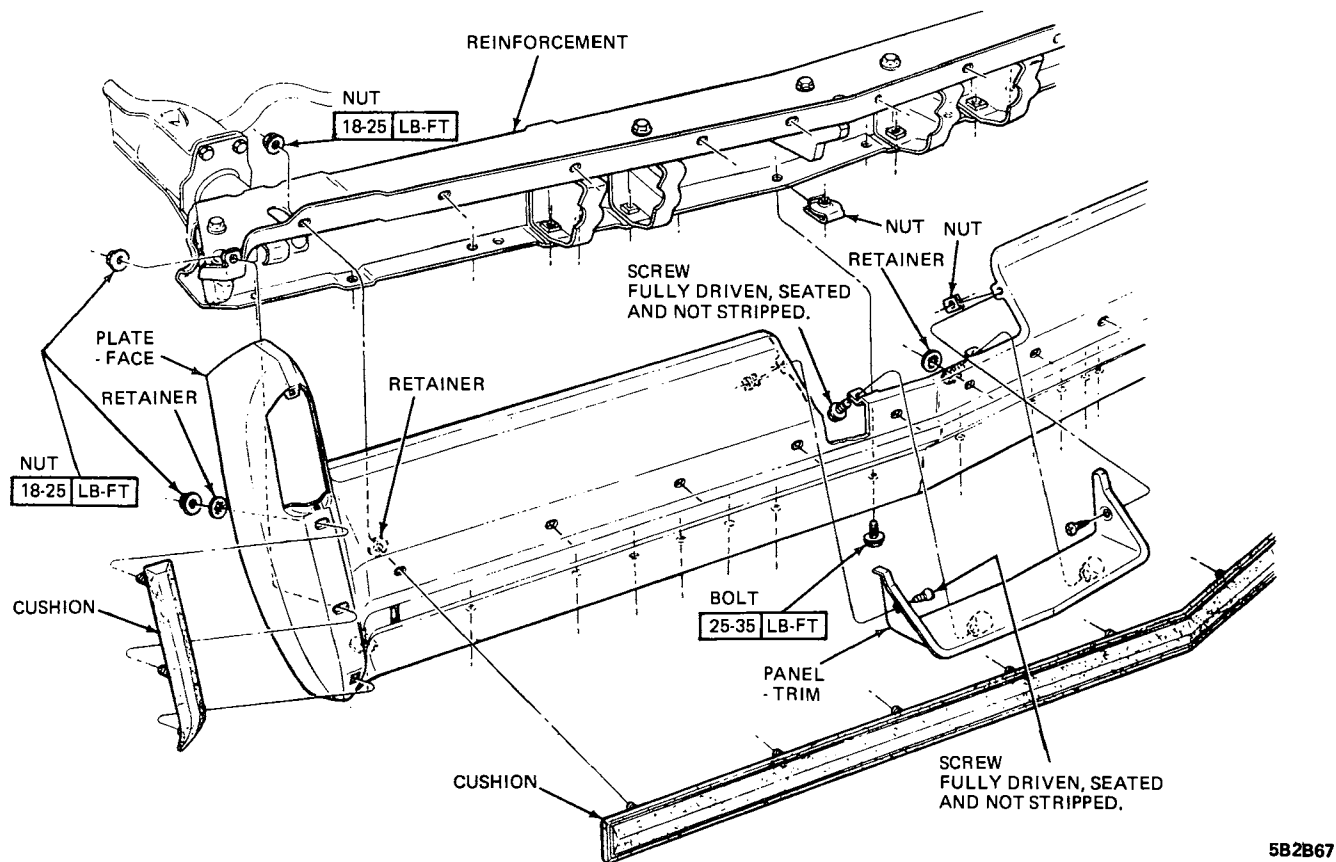


Figure 2B-67 C Series Rear Bumper Face Plate and Cushions

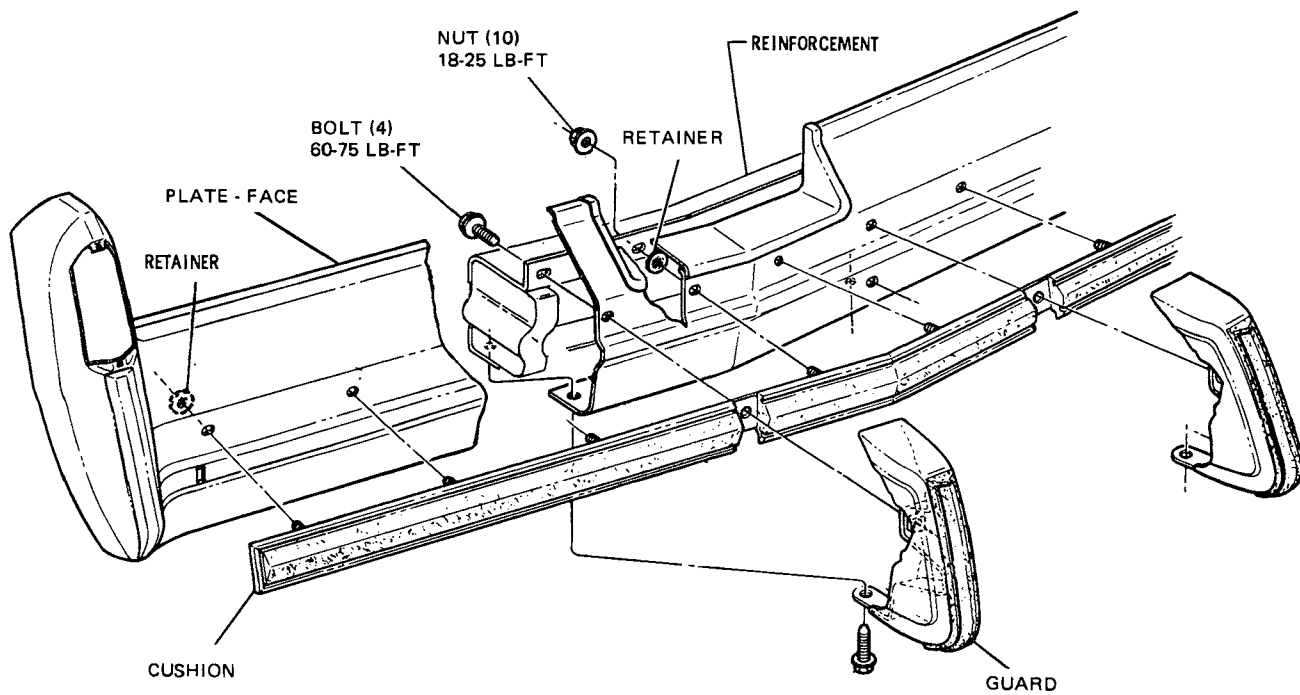


Figure 2B-68 C Series Rear Bumper Cushions and Guards

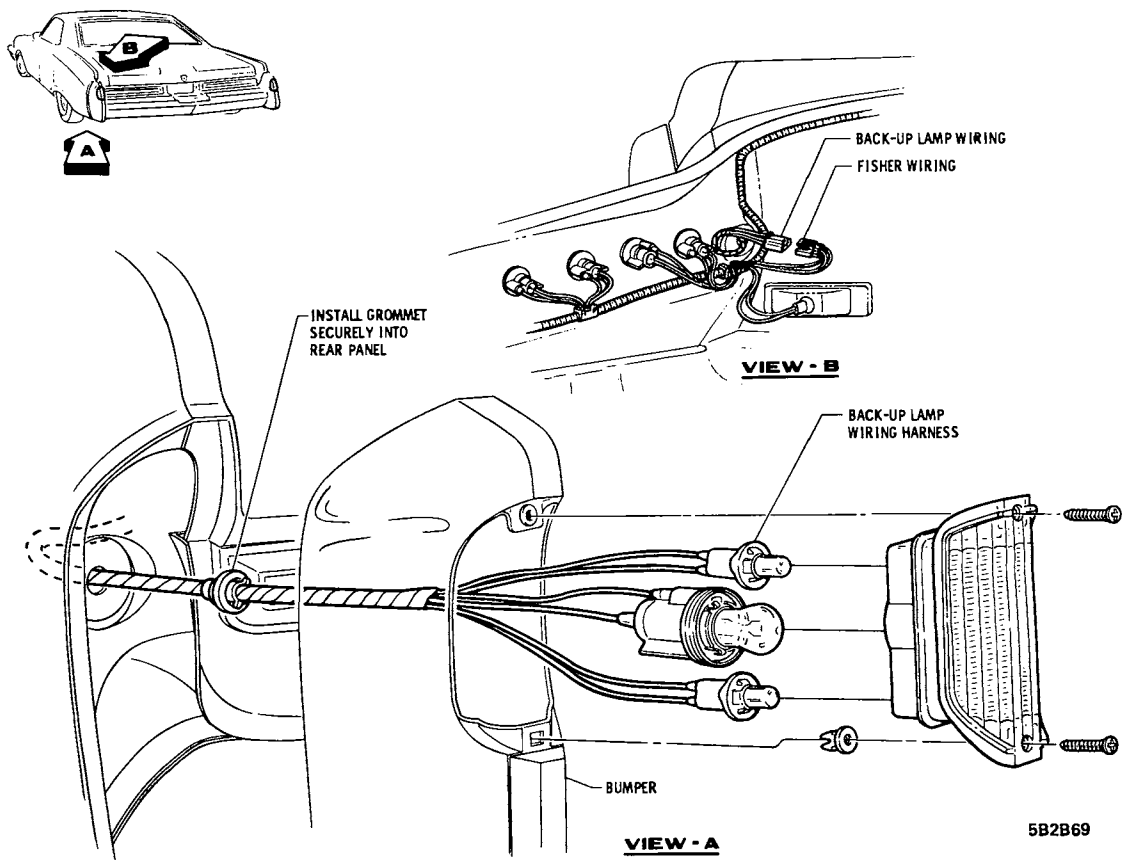


Figure 2B-69 C Series Rear Bumper Back-Up Lamp

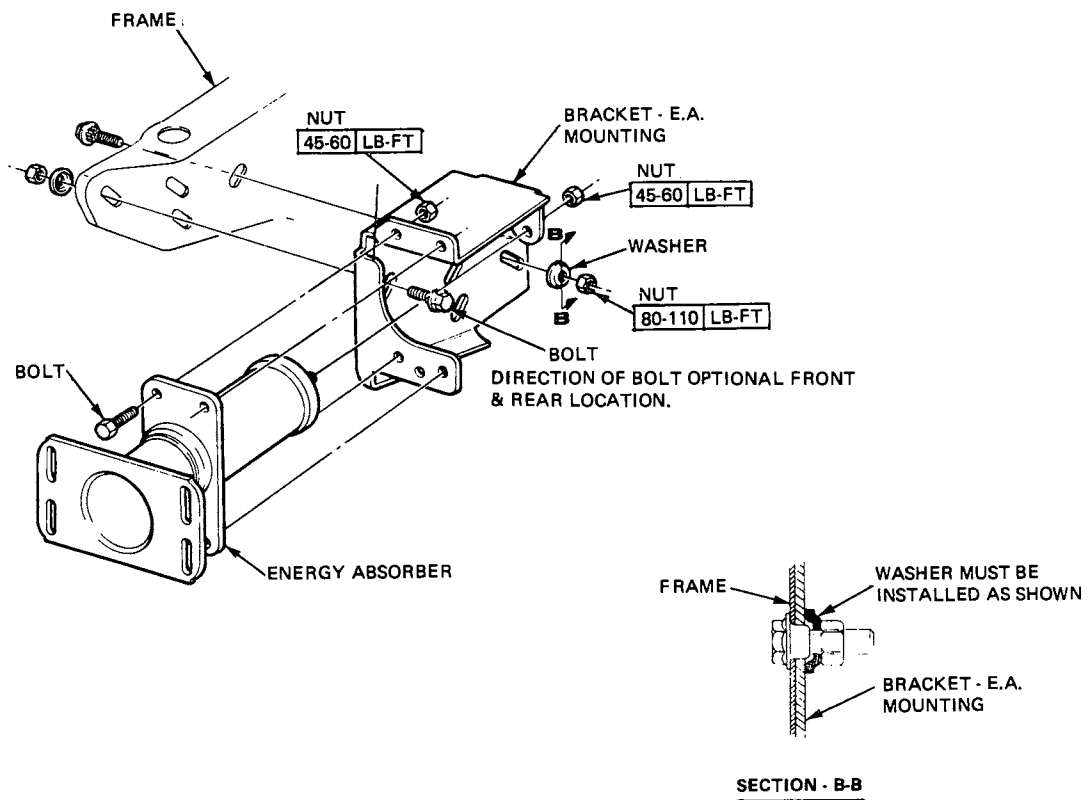
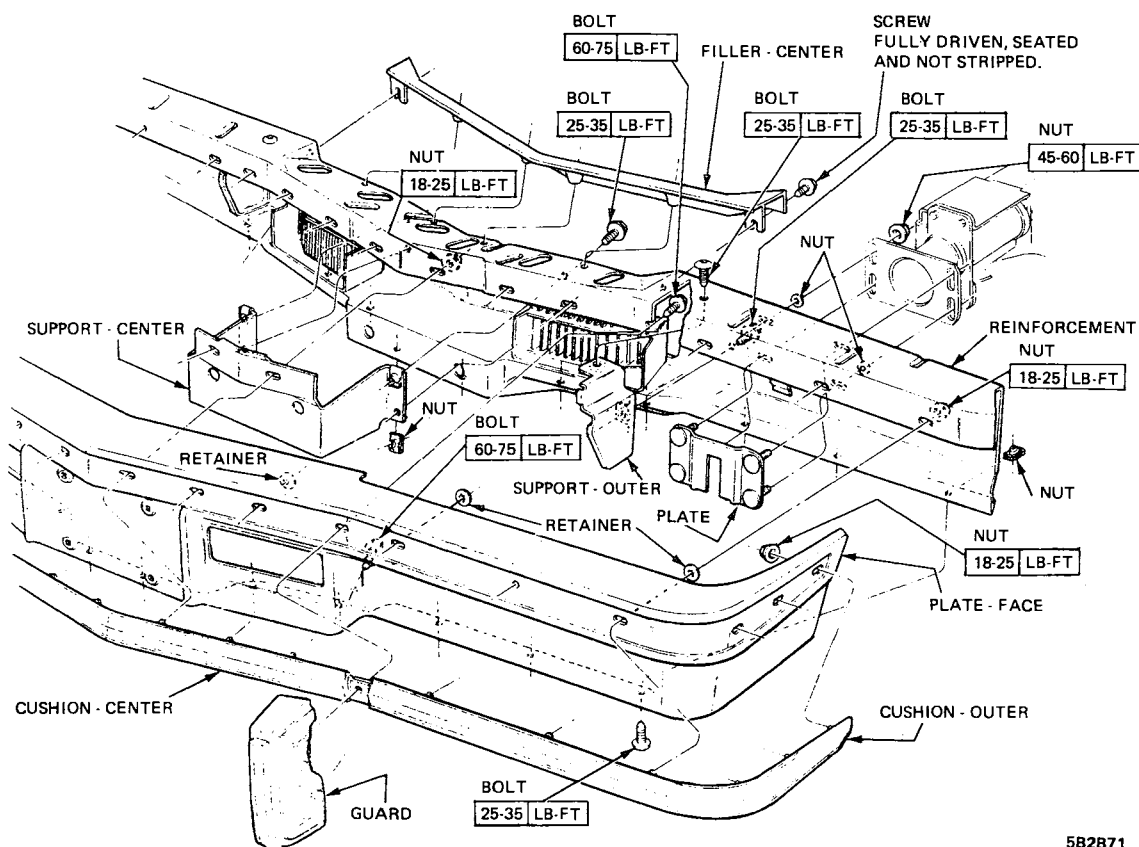
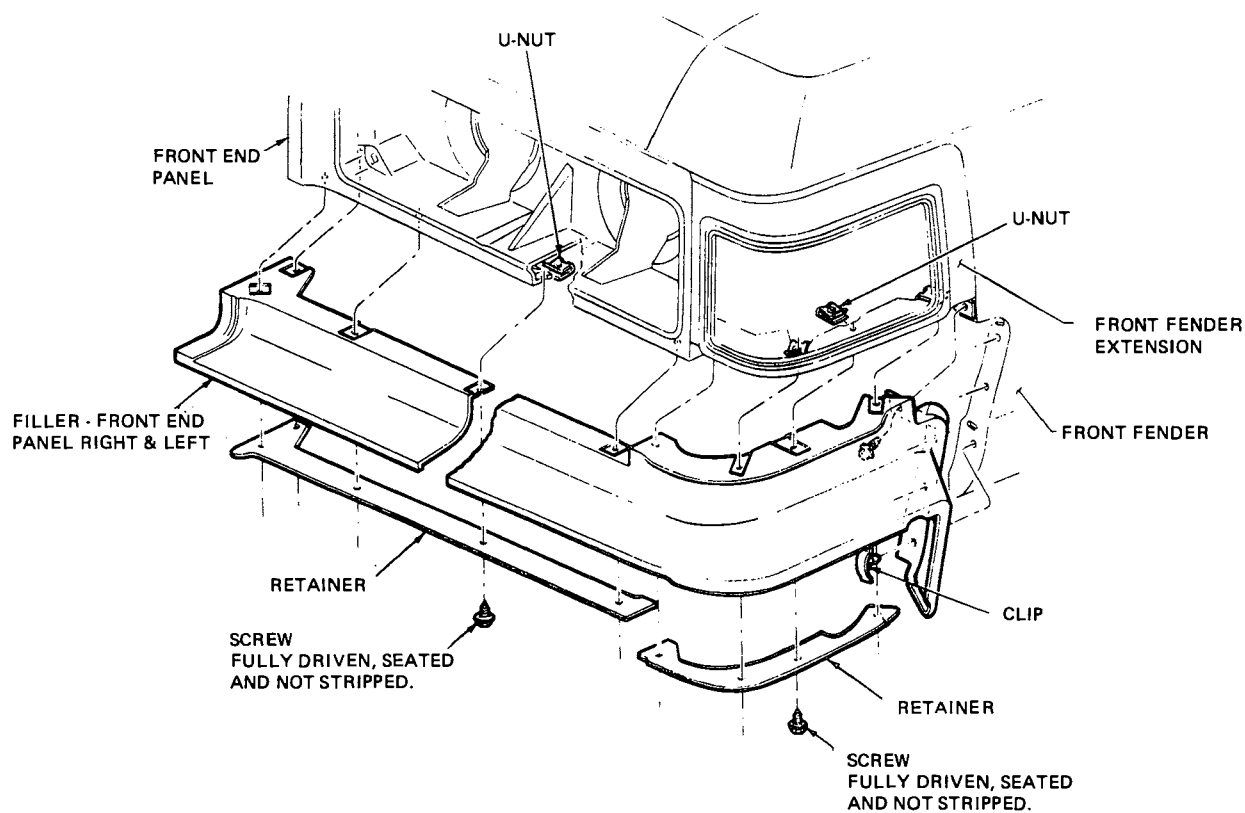


Figure 2B-70 E Series Front Bumper E. A. Unit



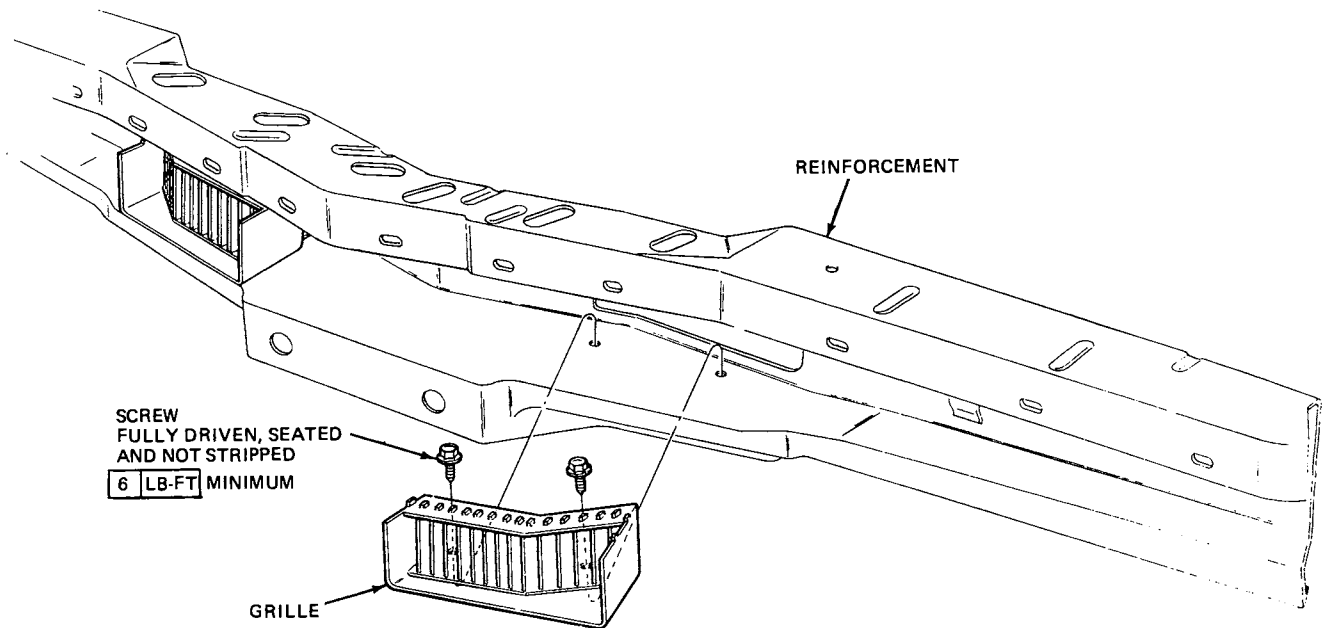
5B2B71

Figure 2B-71 E Series Front Bumper Reinforcement



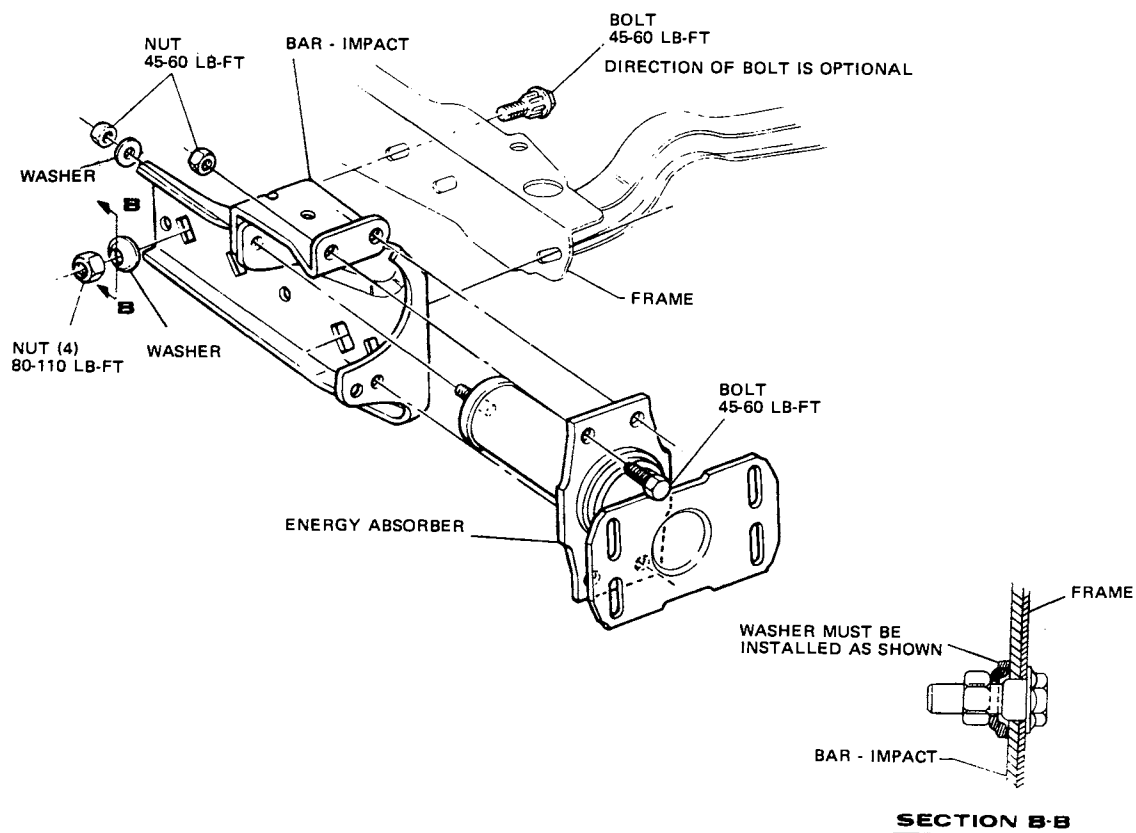
5B2B72

Figure 2B-72 E Series Front Bumper Filler Panel



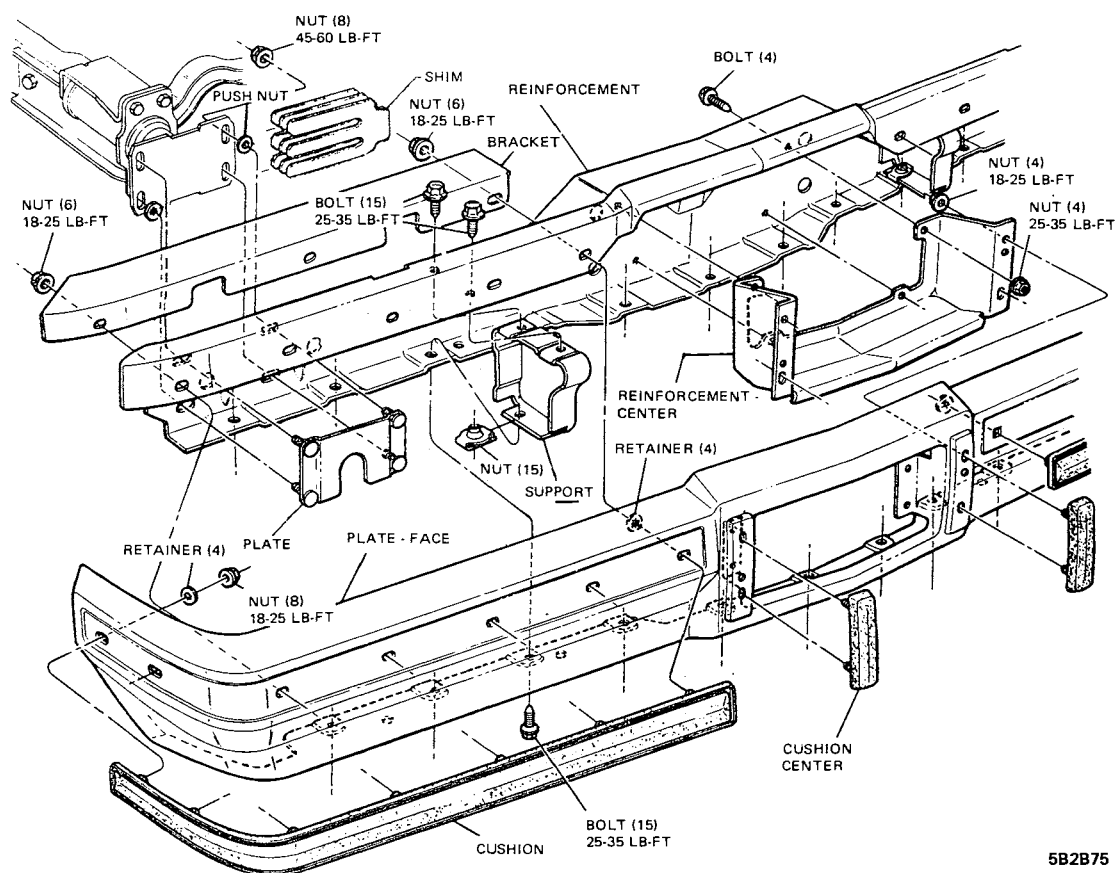
5B2B73

Figure 2B-73 E Series Front Bumper Grille



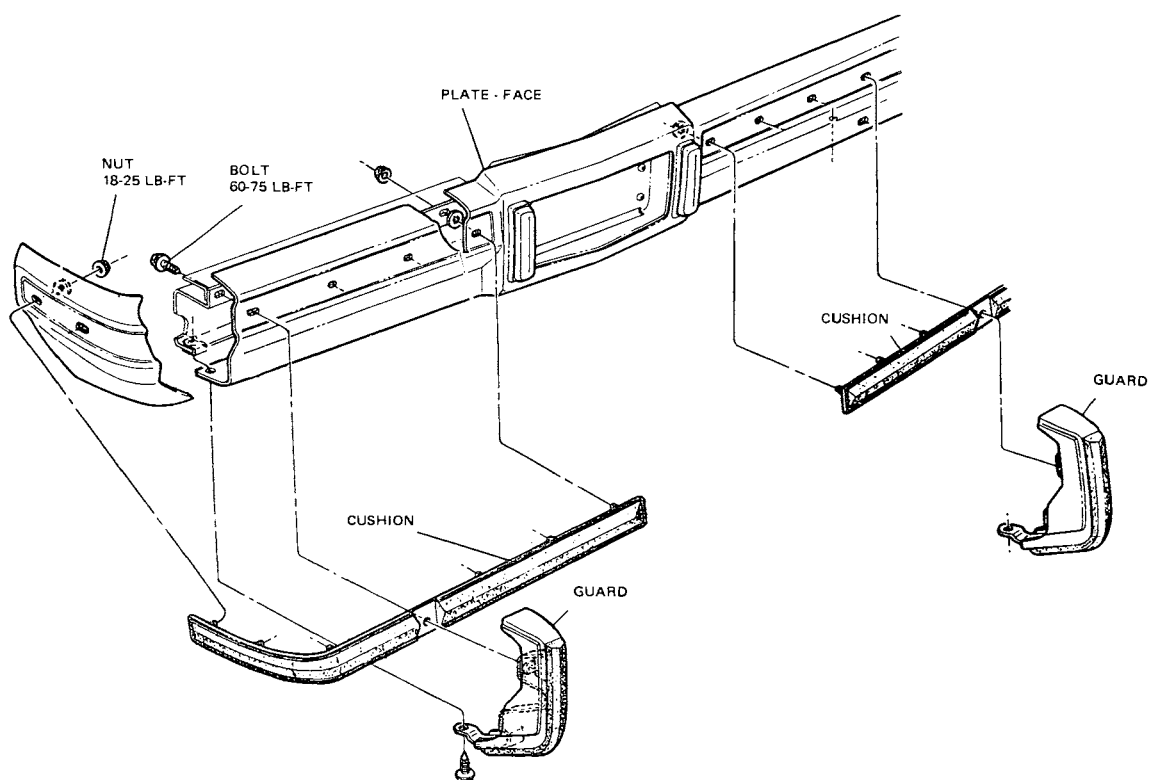
5B2B74

Figure 2B-74 E Series Rear Bumper E. A. Unit



5B2B75

Figure 2B-75 E Series Rear Bumper Reinforcement and Cushions



5B2B76

Figure 2B-76 E Series Rear Bumper Cushion and Guards