

ATTENTION

Service Managers / Parts Managers

SUBJECT

Replacement of an aluminum Crossmember and the installation of an Underslung Crossmember on certain Autocar ACX® chassis configurations.

CONTINUOUS PRODUCT IMPROVEMENT

Autocar®, LLC is engaged in continuous efforts to evaluate and improve how trucks are performing in the field. While being committed to continuous product improvement, Autocar is not liable for updating existing chassis after they have been accepted into service.

If you have any questions regarding this Assembly Instruction Bulletin, please contact Autocar Customer Care at 888-218-3611.

REQUIRED TOOLS

- Torque Wrench — 0 to 400 lb. ft.

REQUIRED PARTS

Item	Part #	Description	Qty
1	Reserved	—	1
2	S3730002-002	RIGHT SHOCK / CROSSMEMBER MOUNT	1
3	30103-3605	SUPPORT BEARING BRACKET	1
4	A4090050-001	ALUMINUM CROSSMEMBER	1
5	A7471051-001	ABS BRACKET	1
6	S2840020-001	TCU BRACKET	1
7	S3730004-001	LEFT SHOCK / CROSSMEMBER MOUNT	1
8	S4160002-001	UNDERSLUNG CROSSMEMBER	1
9	S4160006-001	FRAME RAIL SPACER	1
10	FE410162AW26	5/8" FLANGE BOLT x 2 3/4"	1
11	FE410162AW29	5/8" FLANGE BOLT x 3 1/4"	1
12	A3010042-001	CENTER BEARING OFFSET SPACER	2
13	FE286243BW01	7/16" LOCKNUT	2
14	FE410143AW16	7/16" FLANGE BOLT x 1 1/2"	2
15	A4090101-002	CROSSMEMBER TIE PLATE	2
16	A4090101-001	CROSSMEMBER TIE PLATE	2
17	FE286275DW01	3/4" LOCKNUT	2
18	FE410162AW32	5/8" FLANGE BOLT x 4"	2
19	FE410175CW44	3/4" FLANGE BOLT x 7"	2
20	S4030064-001	SPRING HANGER FRAME PLATE	2
21	FE410162AW20	5/8" FLANGE BOLT x 2"	3
22	GE410419CB07	#10 BOLT x 1/2"	3
23	GE811619NS01	#10 WASHER	3
24	GZ010002-001	TAPE	3
25	GZ030007-006	#10 x 1 1/2" SCREW	3
26	GE410150AO20	1/2" FLANGE BOLT x 2"	4
27	GE811662WY01	5/8" WIDE WASHER	4
28	FE286250BW01	1/2" LOCKNUT (COARSE)	6
29	FE410150AW16	1/2" FLANGE BOLT x 1 1/2"	6
30	FE410150CW20	1/2" FLANGE BOLT x 2"	8
31	FE410162AW22	5/8" FLANGE BOLT x 2 1/4"	12
32	FE410162AW24	5/8" FLANGE BOLT x 2 1/2"	13
33	FE410150CW22	1/2" FLANGE BOLT x 2 1/4"	16
34	FE286250DW01	1/2" LOCKNUT (FINE)	24
35	FE286262BW01	5/8" LOCKNUT	30
36	3082750	WASHER	48

TO OBTAIN PARTS:

Please email warranty@autocartruck.com

SAFETY DEFINITIONS

The following safety indicators may be used in this document:

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury or damage to equipment or other property.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury or damage to equipment or other property.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury or damage to equipment or other property.

SAFETY INSTRUCTIONS

NOTICE is used to address practices not related to physical injury which, if not complied with, may result in damage to equipment or other property.

SAFETY INSTRUCTIONS

Safety instructions (or equivalent) indicate specific safety-related instructions or procedures.

SAFETY INFORMATION

SAFETY NOTICES

WARNING

Allow the vehicle's engine and cooling system to cool to ambient temperature before performing the repair procedure. A hot engine or cooling assembly may cause burns or other personal injury.

DANGER

To prevent eye injury, always wear eye protection when performing vehicle maintenance, service or inspection.

DANGER

Before working on a vehicle, set the parking brake, place the transmission in NEUTRAL (N) and block the wheels. Failure to do so can result in unexpected vehicle movement and can cause serious personal injury or death.

WORKING ON CNG/LNG TRUCKS

SAFETY INSTRUCTIONS

If you store or dispense Compressed Natural Gas (CNG) or Liquefied Natural Gas (LNG), or if you work on CNG or LNG trucks, your location must be fully compliant with applicable codes, regulations and standards, including National Fire Protection Associate (NFPA) codes, Society of Automotive Engineers (SAE) standards, American National Standards Institute (ANSI) Natural Gas Vehicle (NGV) standards, the United States Code of Federal Regulations (CFR) and your state and local fire and other applicable codes (including, for example, the California Code of Regulations and the Texas Administrative Code).

Contact your local fire department for guidance and additional compliance information.

Technicians working on Autocar® trucks with CNG or LNG engines must be trained in the proper repair of CNG and LNG trucks and engines and the safe storage and dispensing of CNG and LNG.

WORKING ON CNG FUEL SYSTEMS

WARNING

CNG fuel systems include a high-pressure (3600 psi) system for fuel storage and a low-pressure system (125 psi) for consumption by the engine. Understanding the characteristics of CNG and how the fuel system works will prevent injury and damage to persons and property.

Attempting to operate or maintain any CNG fuel system without proper training is dangerous. Complete training and consult instructional bulletins from the CNG system suppliers, such as Agility Fuel Systems' Field Service Bulletin: Safely Working on CNG Fuel Systems.

CNG/LNG SAFETY

WARNING

WELDING AND HOT WORK NEAR CNG AND LNG TRUCKS

Welding, grinding and other “hot work” can be safely performed on or near a CNG or LNG vehicle, but certain precautions must be followed. Understand and perform the necessary precautions provided by the CNG and LNG system suppliers, such as Agility Fuel Systems' Field Service Bulletin: Welding and Hot Work Precautions Near CNG and LNG Vehicles.

Use suitable Huck® cutter for frame bolt removal.

CNG CYLINDERS

WARNING

CNG fuel containers must meet Federal Motor Vehicle Safety Standard (FMVSS) 304 (Compressed Natural Gas Fuel Container Integrity) and/or ANSI/CSA NGV2 (Basic Requirements for Compressed Natural Gas Vehicle Fuel Containers). Both standards specify a detailed visual examination every three years.

Ensure that every truck owner completes the required inspections, in accordance with the applicable standards and other resources, such as the Clean Vehicle Education Foundation and NGVAmerica's Compressed Natural Gas (CNG) Container Visual Inspection Advisory.

FMVSS 304 also requires that cylinders not be used after the end of life (EOL) date provided on the tank label. The EOL date is also displayed in the engine compartment and at the fueling connection of each truck. If there is any question as to proper decommissioning of a cylinder, contact the manufacturer, whose name and address is also required to be on the label.

CNG FUEL CONTAINER PRESSURE RELIEF DEVICES (PRDS) **WARNING**

PRDs must be properly maintained and positioned for safe operation of a CNG fuel system. Missing vent caps can allow moisture into PRDs and vent lines, which can freeze and damage these safety components. Debris which clogs the PRDs and/or vent lines can prevent proper function.

PRDs must be positioned to vent upward, not outward, from a vehicle.

Ensure that every truck owner completes periodic inspections of the PRDs and vent lines and systems, in accordance with guidance provided by the system component suppliers.

ALERT FIRST RESPONDERS TO CNG AND LNG **WARNING**

In the event of a fire or other emergency, alert first responders to the presence and location of CNG fuel systems, tanks and dispensers. Ensure that emergency personnel are aware of proper precautions, such as those provided in Agility's First Responder Guide: CNG and LNG Vehicle Fuel Systems.

LOCKOUT/TAGOUT PROCEDURES

WARNING

Before entering the vehicle or vehicle body, read and follow OSHA regulations concerning entry and working in “CONFINED SPACE” OSHA 1910.146 and “LOCKOUT/TAGOUT” OSHA 1910.147. Follow OSHA regulations while performing any work on the vehicle. The vehicle must be disabled by the following steps before performing any work on the vehicle:

1. Place the transmission in NEUTRAL (N).
2. Set the parking brake.
3. Shut the engine OFF.
4. Lock the cab doors. Keep the key in your pocket. Block the wheels before entering the body or performing any work on the vehicle.
5. Turn the battery disconnect switch OFF, if equipped, and lock it in that position.
6. Completely drain the air from the primary/A system and secondary/B system by opening the drain valves on the air tanks themselves or by using the drain manifold if supplied. When draining the air tanks, do not look into the area where air is draining. Dirt or sludge particles may be expelled in the air stream and can cause eye injury.
7. Place magnetic “DANGER” signs on both cab doors before entering the body or performing any work on the vehicle.
8. Take proper precautions before working under the vehicle. Use ramps approved for the weight of your vehicle, or use floor jacks and stands. Never work under a vehicle or auxiliary, tag or pusher axle supported by jacks alone. Always use jack stands to support the vehicle and auxiliary, tag or pusher axles.

UNDERSLUNG CROSSMEMBER S4162003K001 INSTALLATION INSTRUCTIONS

Step 1

Complete the Lockout/Tagout procedure.

Step 2

Disconnect all battery terminals beginning with the negative connections, then the positive connections.

Step 3

Use an overhead crane or similar lifting apparatus to lift the Back of Cab (BOC) Structure, facilitating fastener removal.

WARNING

Safely support the BOC Structure before loosening or removing any mounting bolts. Do not rely on the lifting apparatus alone to secure the load.

Crossmember Location

Refer to Figure 1 for the Crossmember location.

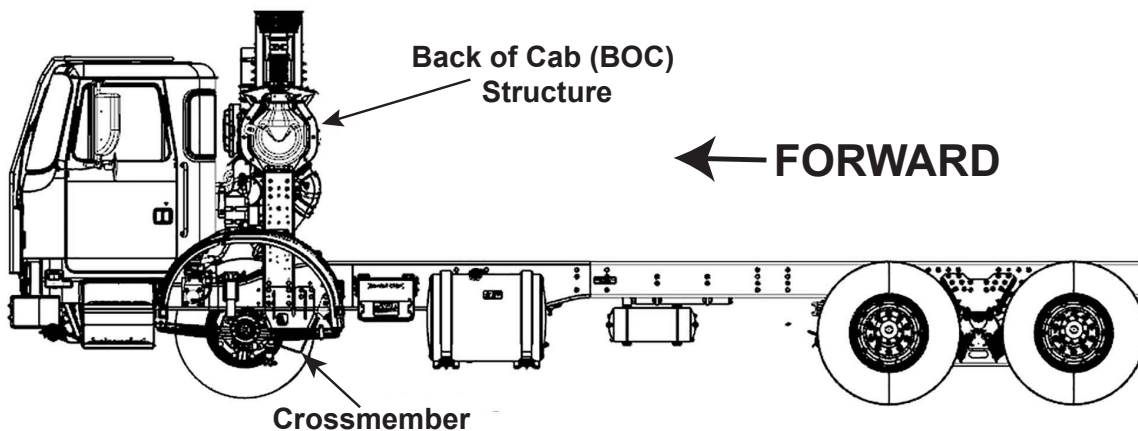


Figure 1

Step 4

Refer to Figure 2 for this step.

- Remove two bolts (both sides).
- Remove all four bolts (both sides).

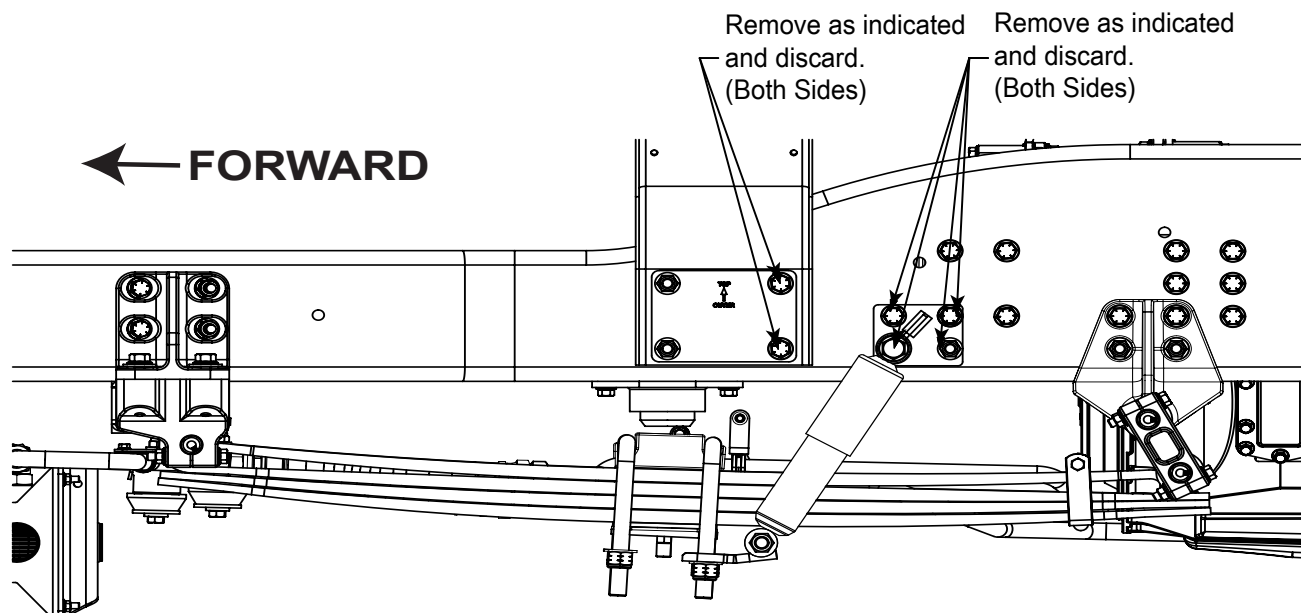


Figure 2

Step 5a - Frame Rail Engine Support

Refer to Figure 3 for this step.

With Engine Support Bracket - Inside View - Engine Hidden for Clarity

- Remove and discard bolts shown.
- Remove and discard Square Hollow Section Spacer (SHS) (right side).

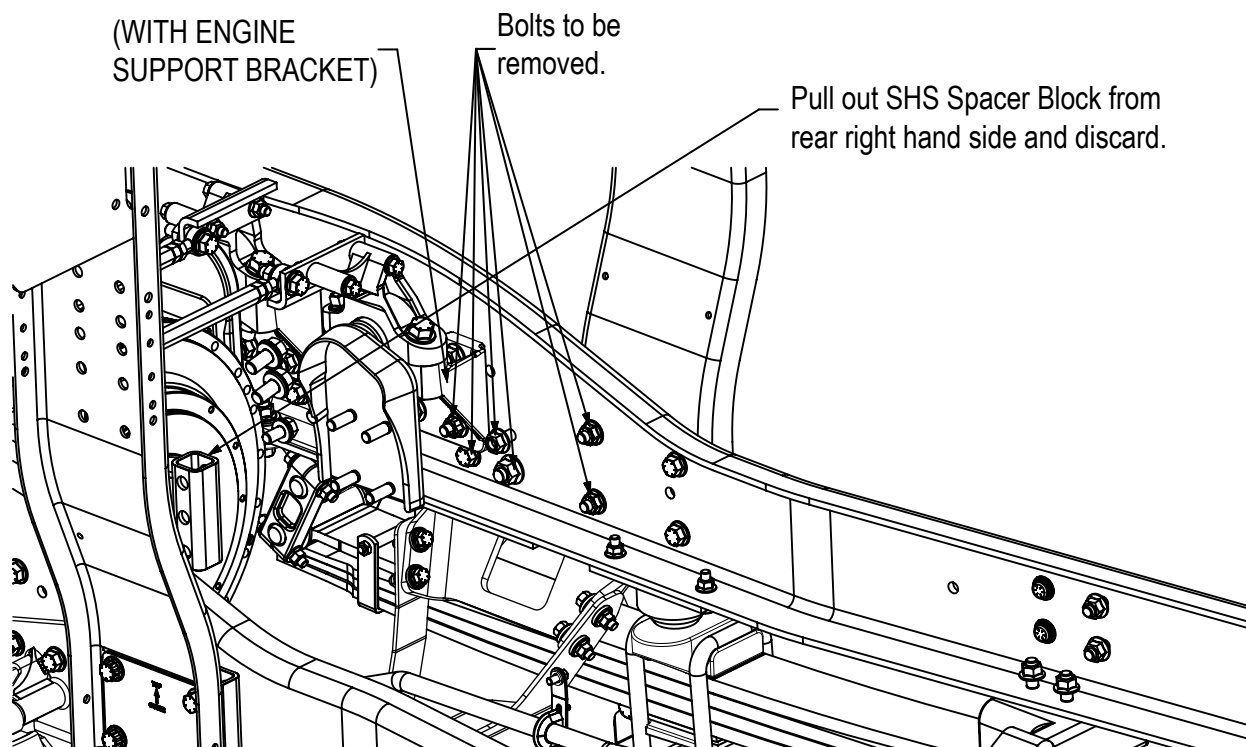


Figure 3

Step 5b - Frame Rail without Engine Support Brackets

Refer to Figure 4 for this step.

No Engine Support Bracket - Engine Hidden for Clarity

- Remove and discard bolts shown.
- Remove and discard Square Hollow Section Spacer (SHS) (right side).

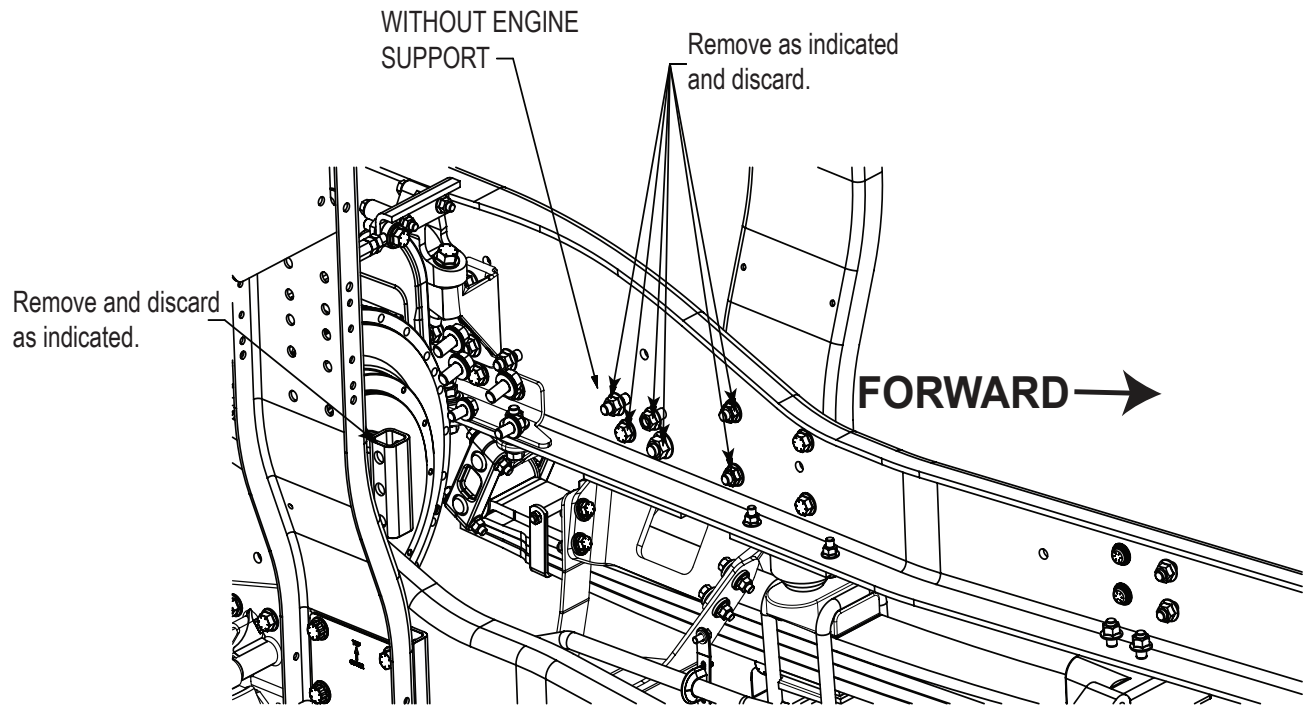
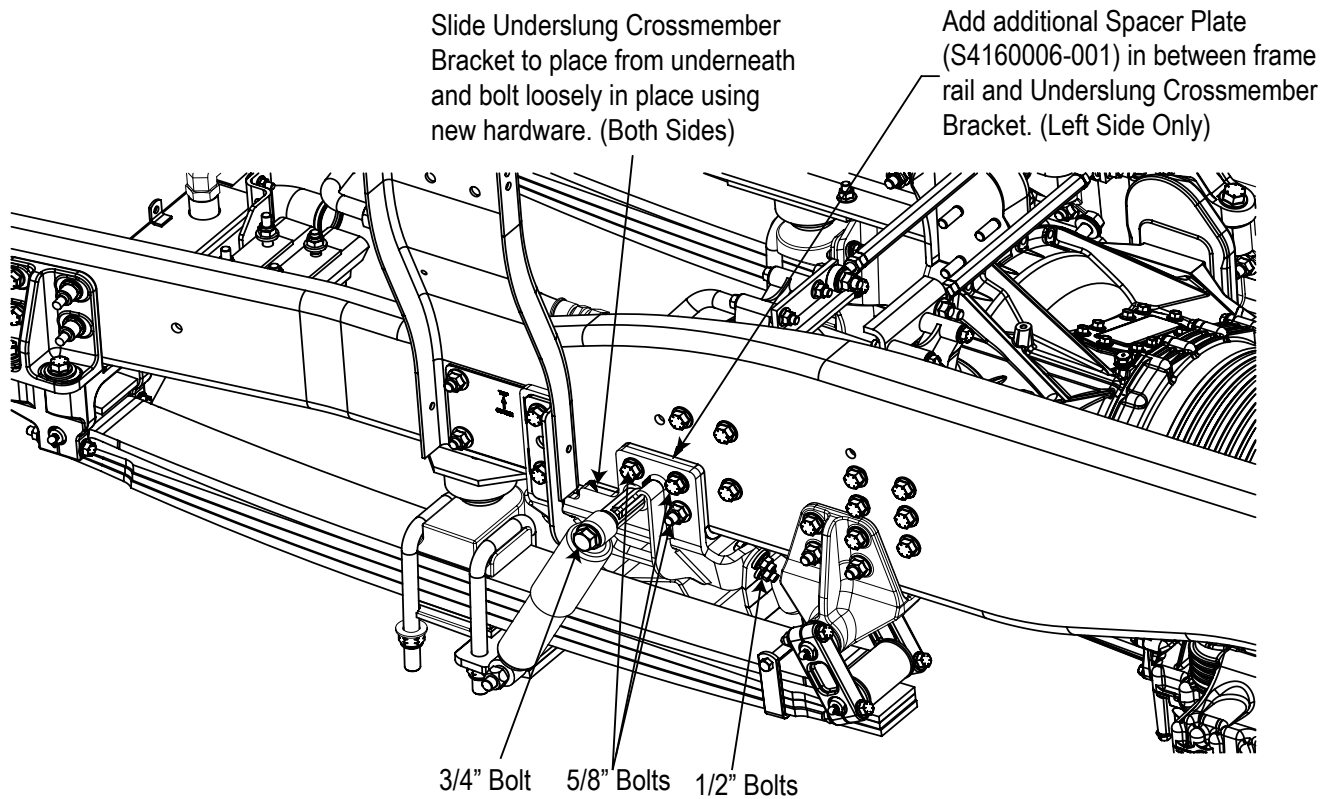


Figure 4

Step 6

- Install the Shock / Crossmember Mounts (left hand S3730004-001 and right hand S3730002-002). Install the new Underslung Crossmember (S4160002-001) from underneath and bolt loosely in place using new hardware (both sides). Tighten to 3/4" bolts to 300 lb. ft., 5/8" bolts to 200 lb. ft. of torque and 1/2" bolts to 90 lb. ft. of torque (Figure 5).

**Figure 5**

Step 7a - When Engine Support Bracket Is At This Location

- Use 5/8" Flange Bolt X 3.25" (FE410162AW29) when the engine support bracket is at this location (both sides). Install Shock / Crossmember Mounts (left hand S3730004-001 and right hand S3730002-002). Tighten to 200 lb. ft. of torque (Figure 6).

Note: Use 5/8" Flange Bolt X 3.25" (FE410162AW29) when Engine Support Bracket is at this location. (Left Side)

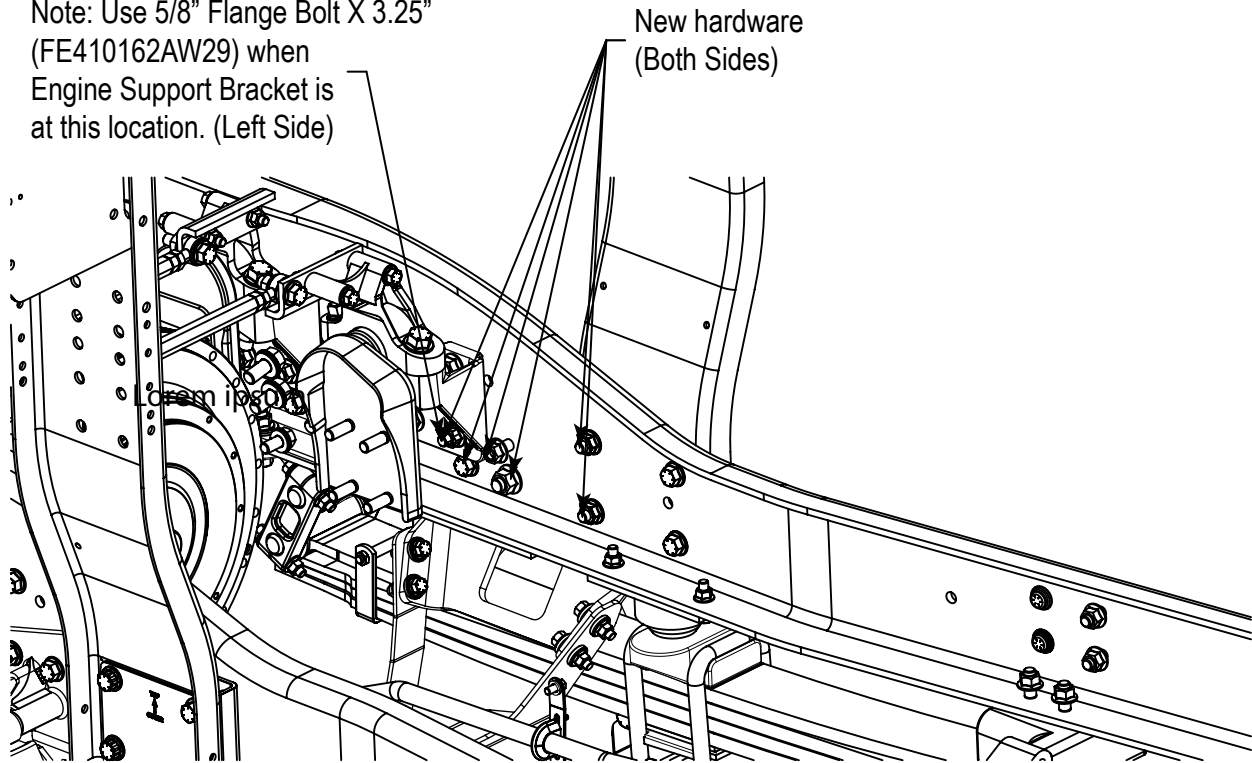


Figure 6

Step 7b - When Engine Support Bracket Is Not At This Location

- Use 5/8" Flange Bolt X 2.50" (FE410162AW24) when the engine support bracket is not at this location (both sides). Install Shock / Crossmember Mounts (left hand S3730004-001 and right hand S3730002-002). Tighten to 200 lb. ft. of torque (Figure 7).

Note: Use 5/8" Flange Bolt X 2.50"
(FE410162AW24) if Engine
Support Bracket is not at this
location. (Left Side)

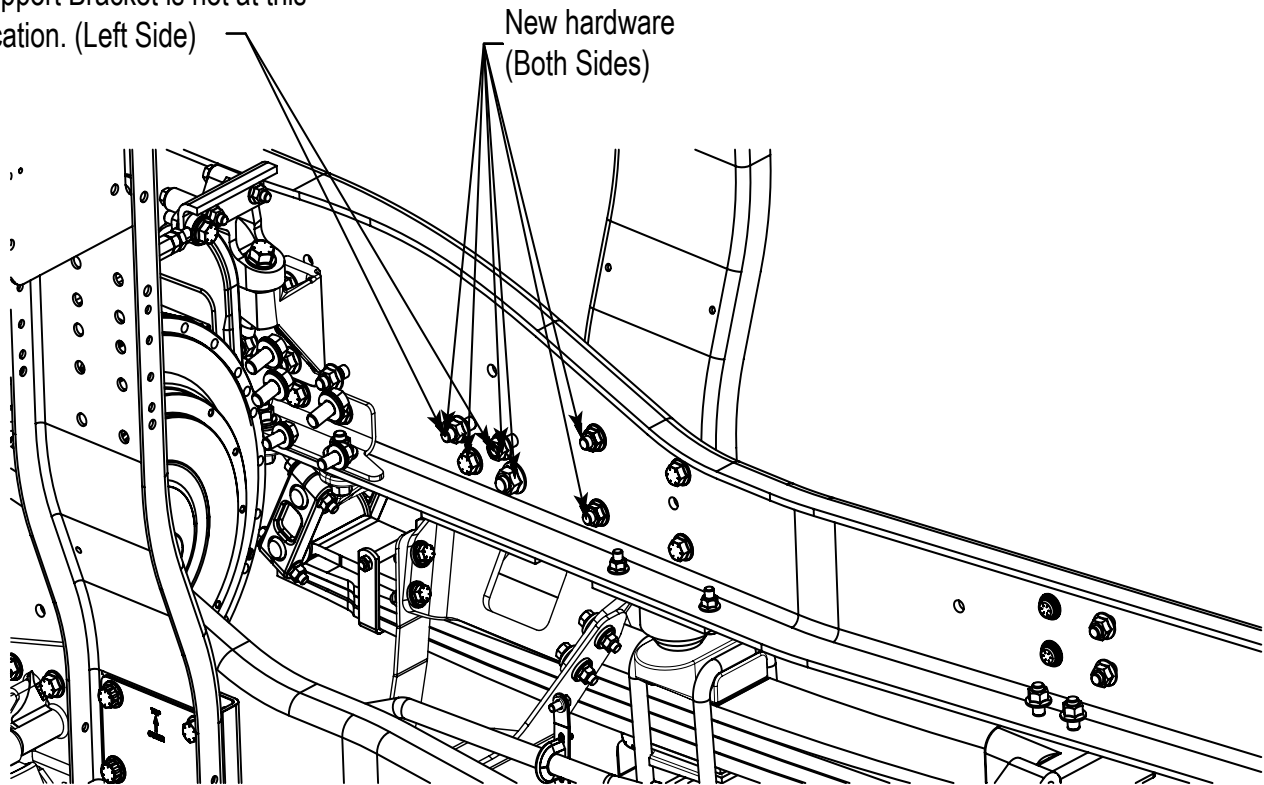


Figure 7

Step 8

- From underneath the vehicle, install the Underslung Crossmember (S4160002-001) and bolt loosely using new Flange Bolts (FE410150CW20), Locknuts (fine) (FE286250DW01), and Washers (3082750) (both sides). Torque bolts to 90 lb. ft. (Figure 8 and Figure 9).

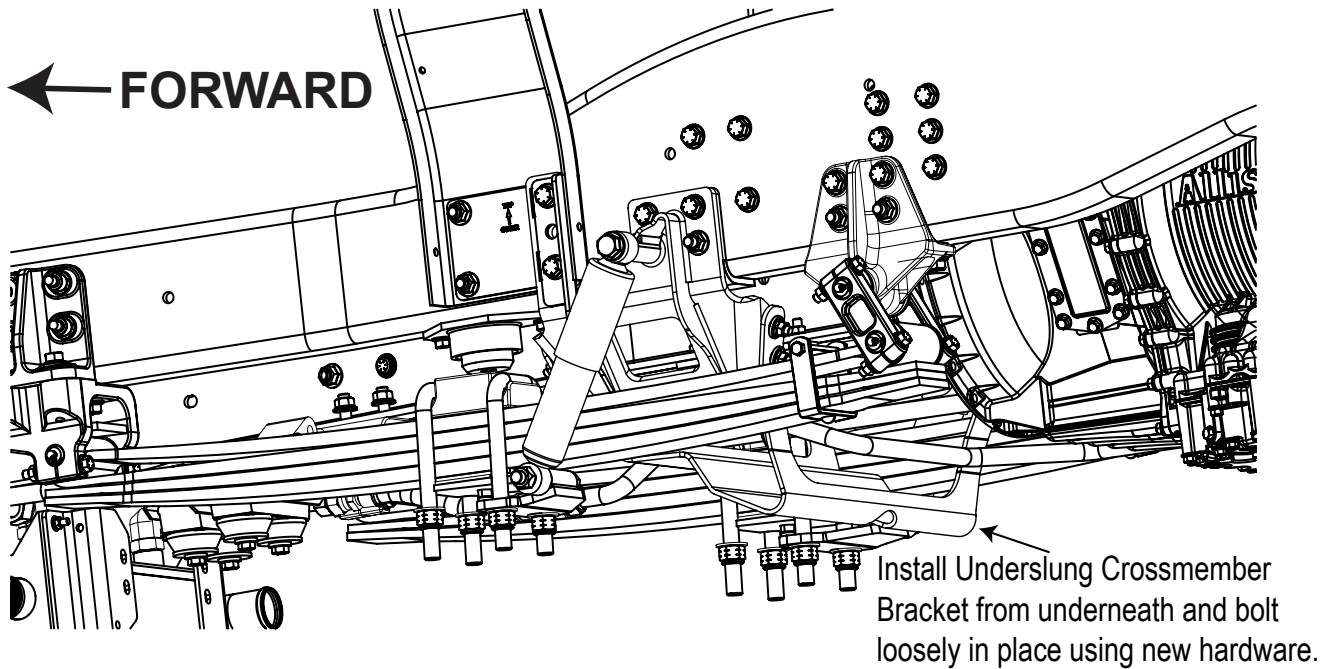


Figure 8

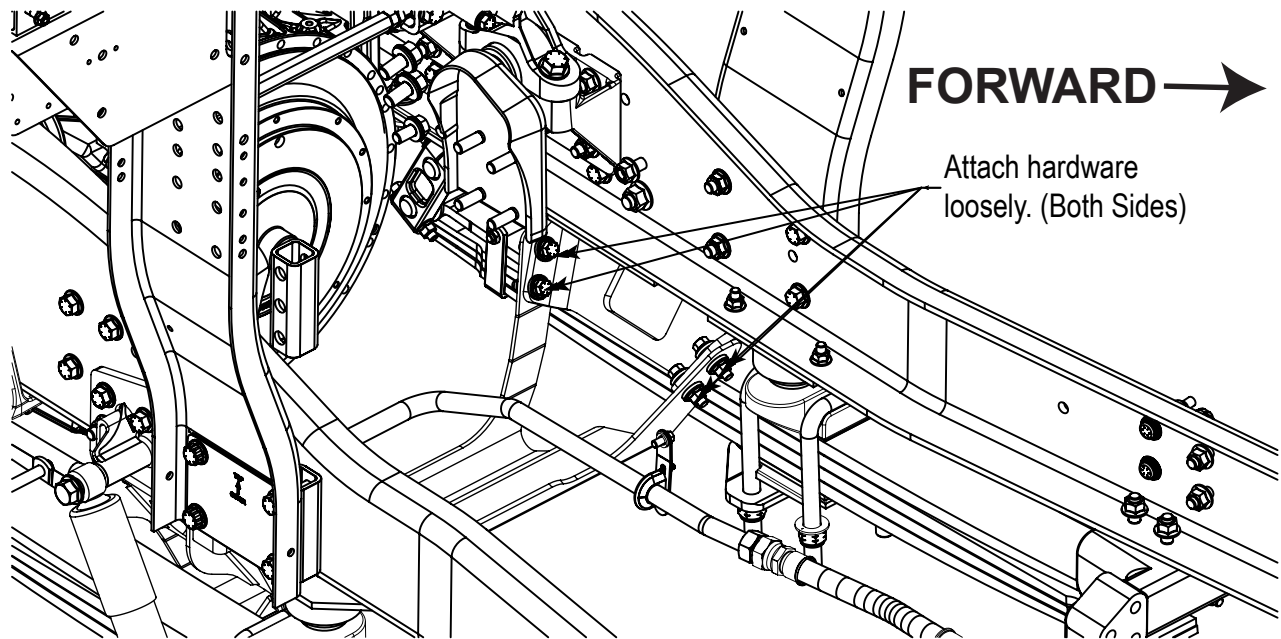


Figure 9

Step 9

- Remove spring hanger bolts from frame rail bottom flange and discard, remove two bottom bolts from frame rail web section and discard (both sides) (Figure 10).

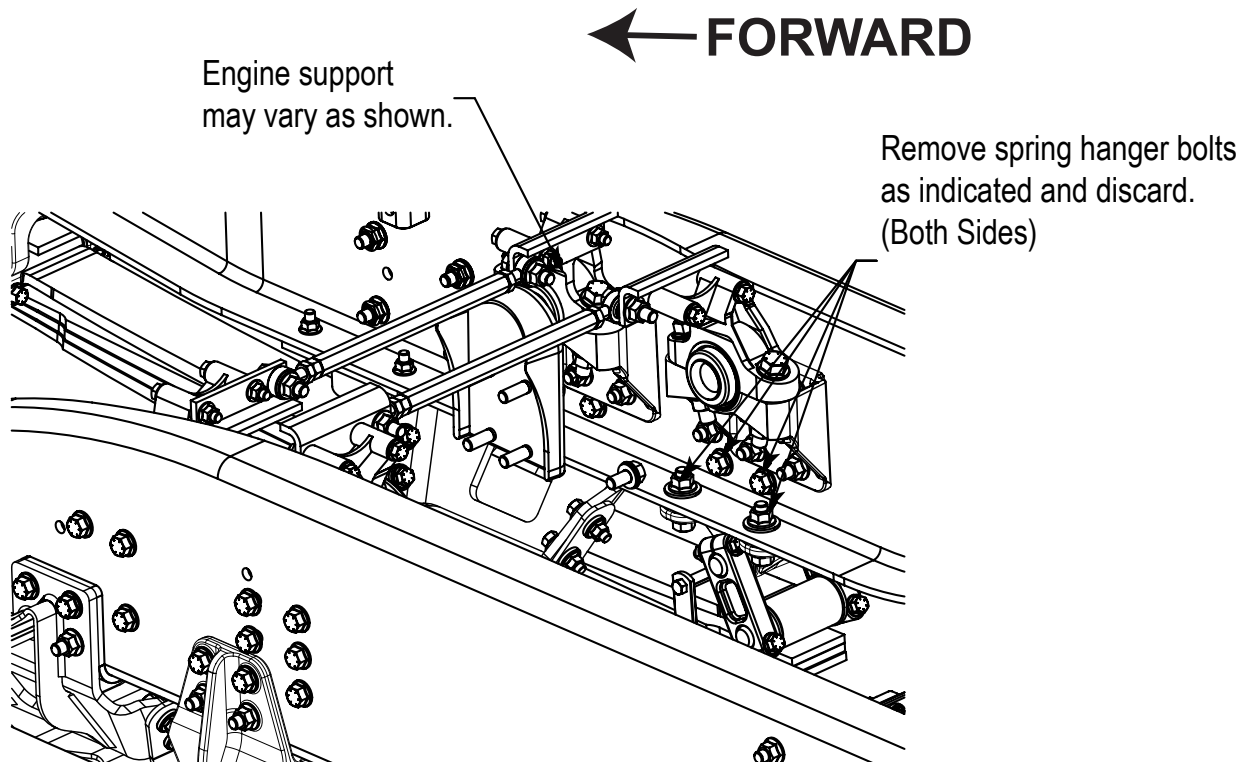


Figure 10

Step 10

- Install Spring Hanger Frame Plate (S4030064-001) using new Flange Bolts (FE410162AW24), Locknuts (FE286262BW01), and Washers (GE811662WY01) (both sides) (Figure 11 and Figure 12).

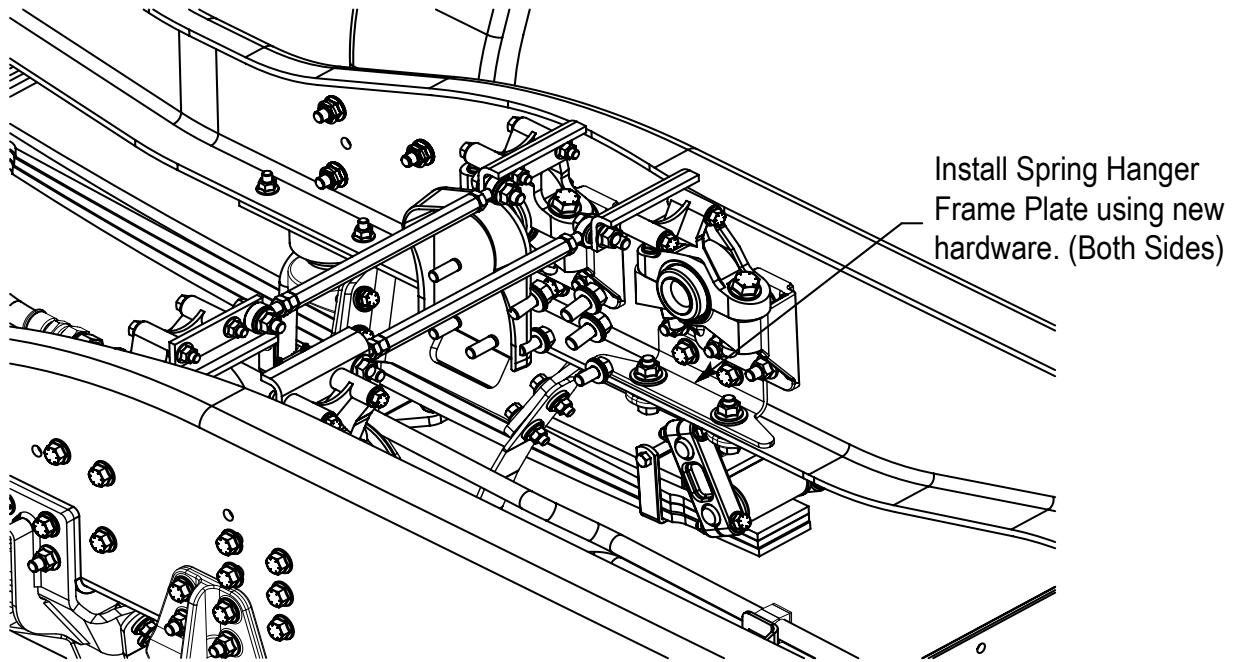


Figure 11

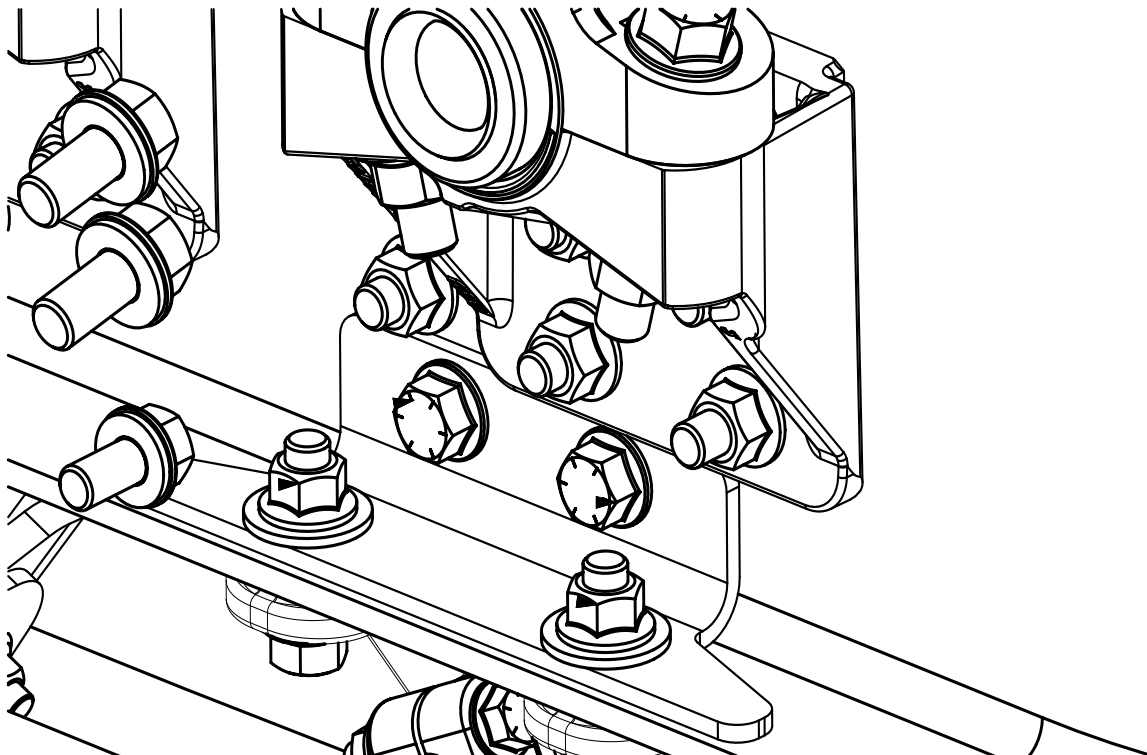


Figure 12

Step 11

Refer to Figure 13 for the following steps.

- Place a suitable drain pan under the transmission retarder accumulator, if equipped.
- Loosen the fittings at each end of the accumulator to allow it to be rotated.
- Support the accumulator and remove the four fasteners securing the accumulator to the mounting bracket.
- Remove the accumulator bracket from the crossmember and set aside for further reuse.

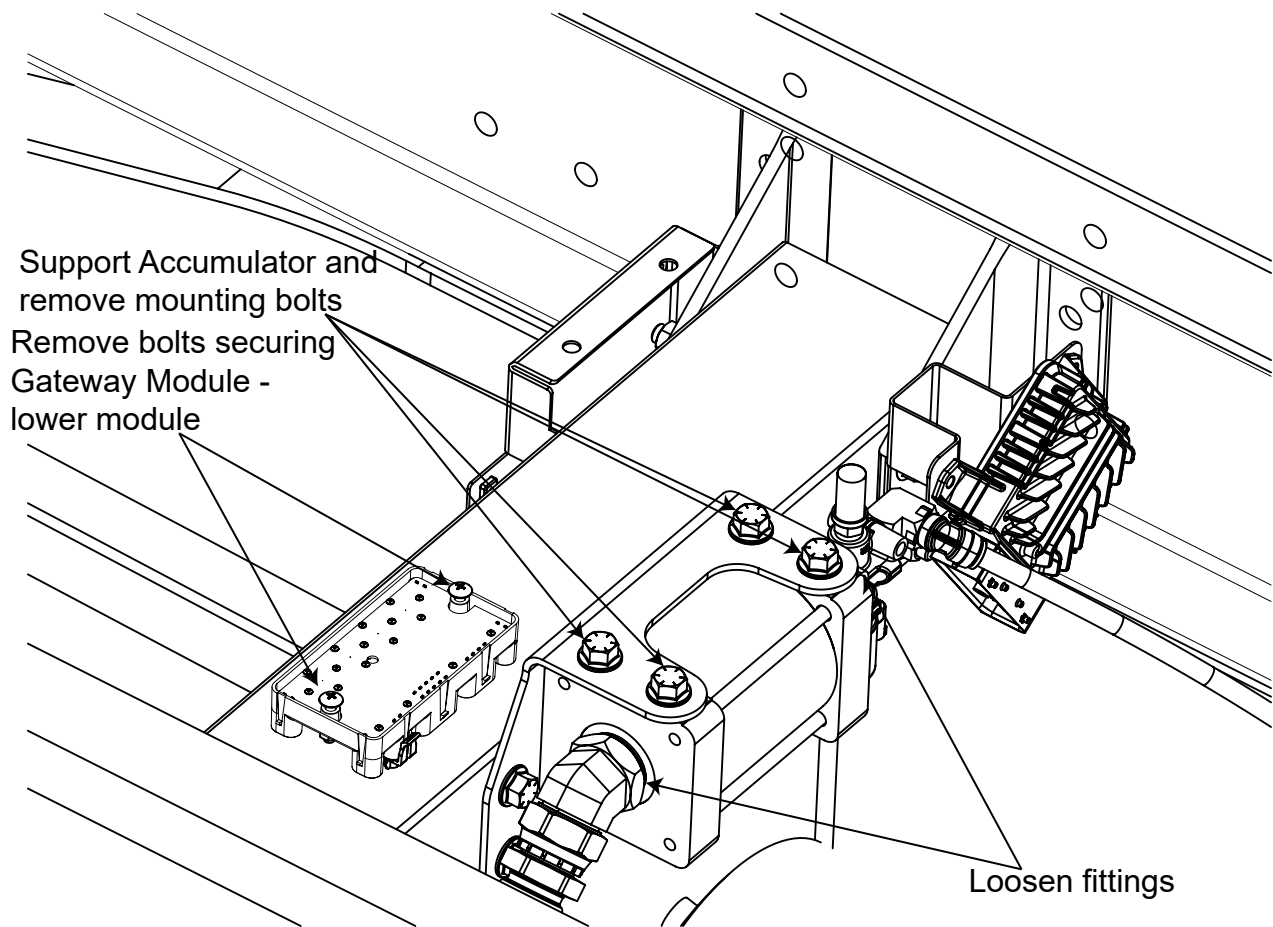
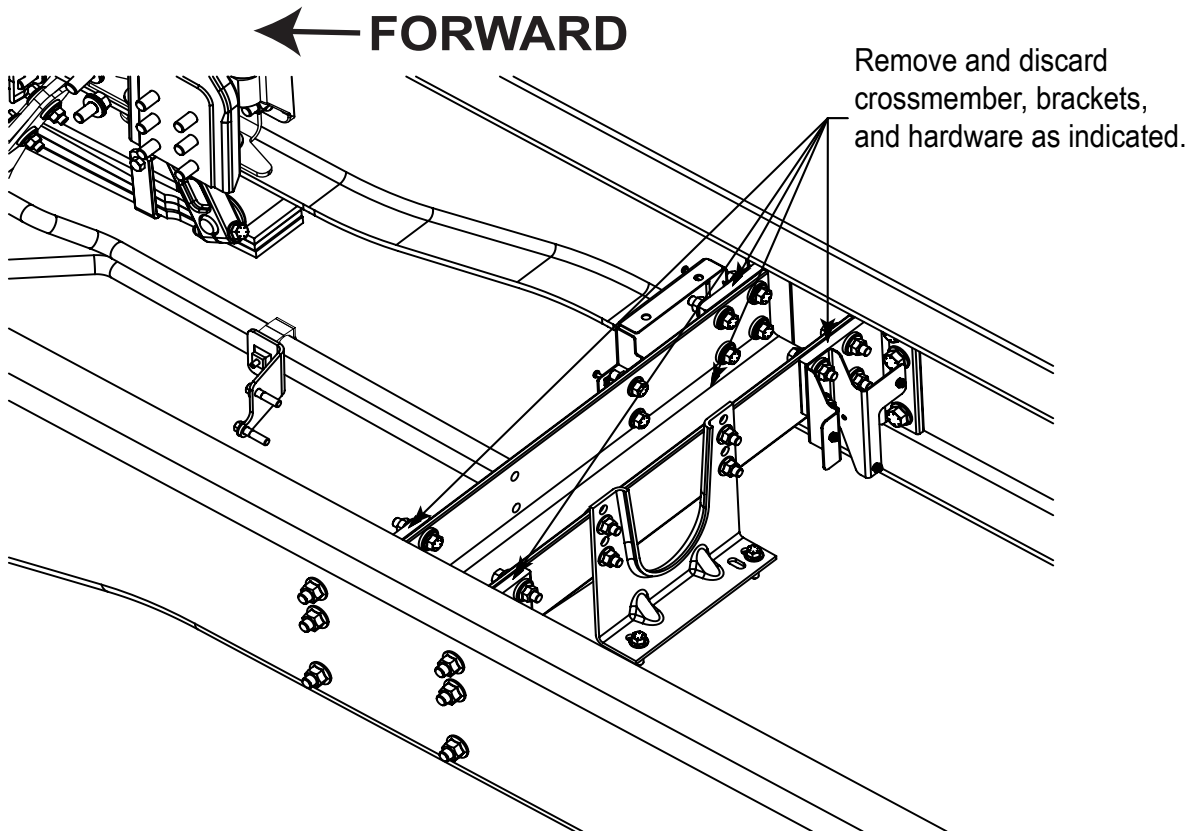


Figure 13

Step 12

- Support the driveshaft with a suitable jack and remove the two bolts securing the center bearing to the crossmember. Lower the driveshaft.
- Remove and discard forward most crossmember from transmission including brackets and hardware (Figure 14).
- Crossmember orientation may vary from what is shown here.

*Figure 14*

Step 13

- Install new Crossmember Tie Plates (A4090101-001 and A4090101-002) (both sides). Install bolts loosely (Figure 15).

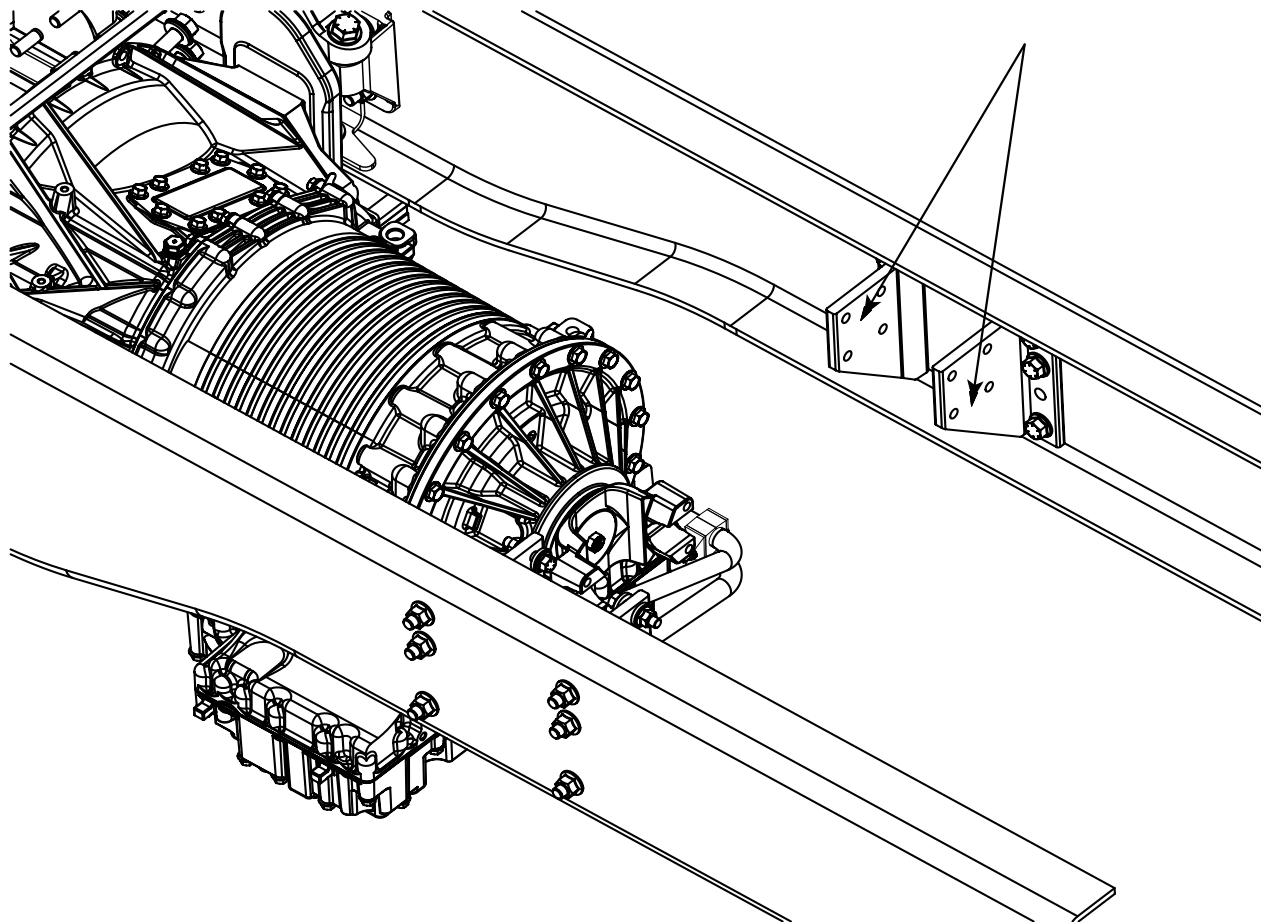
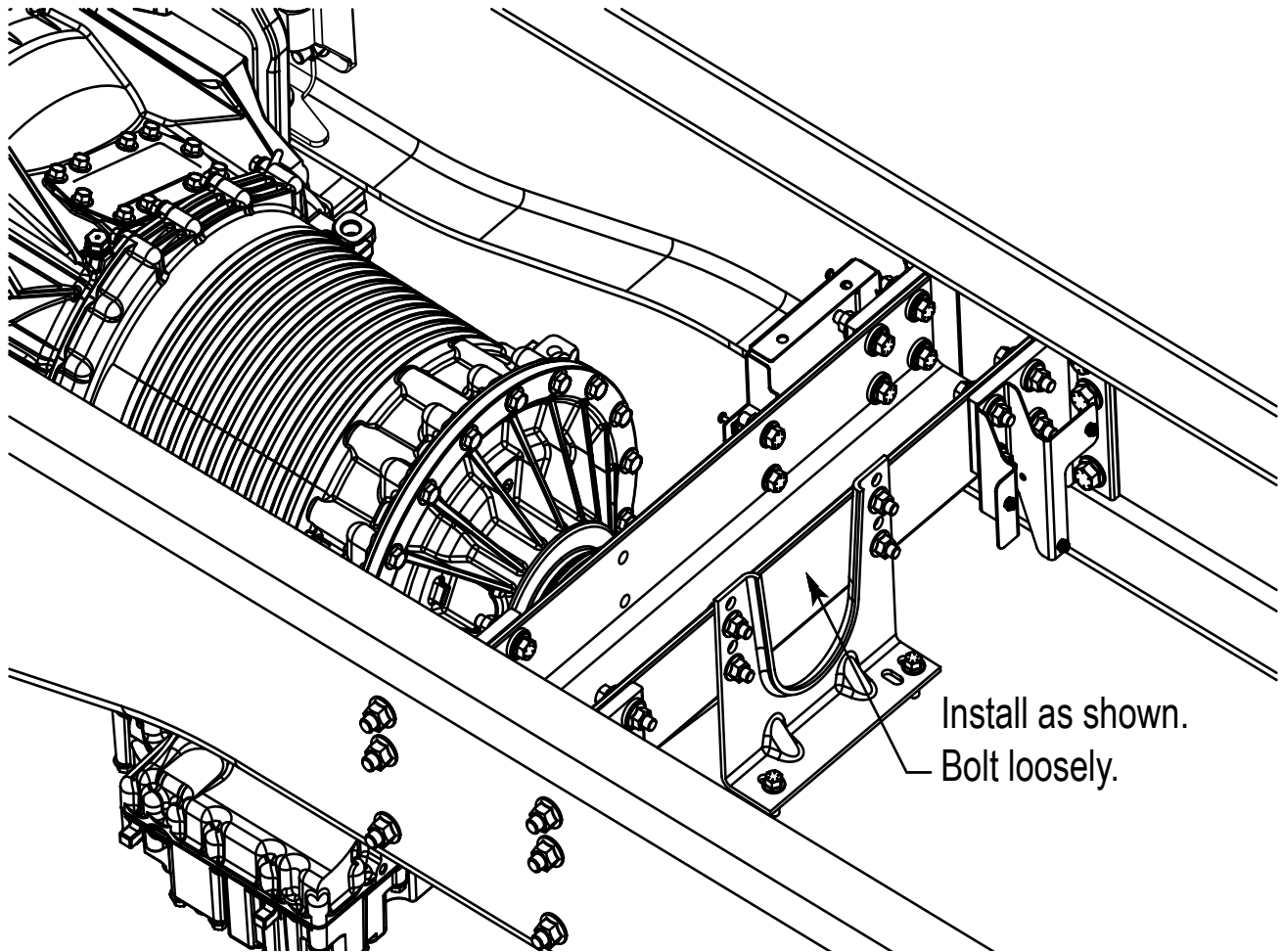


Figure 15

Step 14

- Install the new Aluminum Crossmember (A4090050-001) using Flange Bolts (FE410150CW22), Washers (3082750), and Locknuts (fine) (FE286250DW01) (both sides) (Figure 16). Do not tighten at this time.

*Figure 16*

Step 15

- Install ABS Control Module Mounting Bracket (A7471051-001) using Screws (GZ030007-006) (Figure 17).

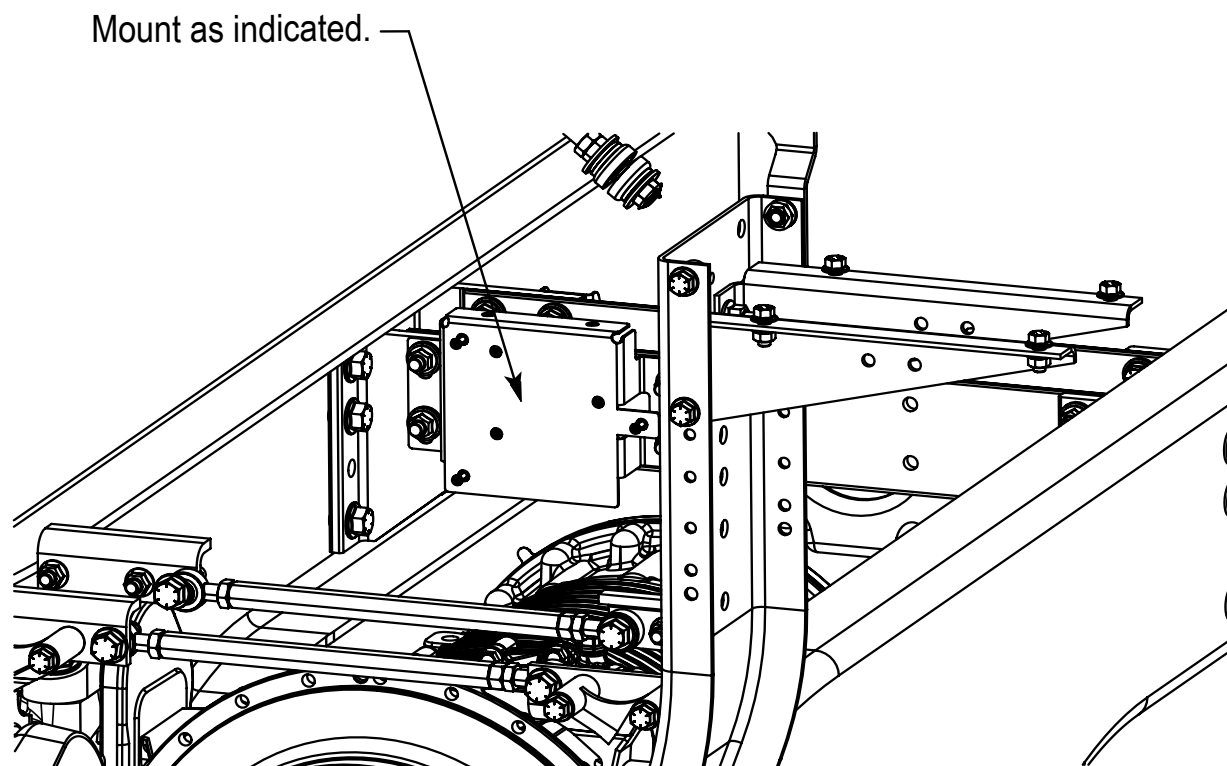


Figure 17

Step 16

Refer to Figure 18 for this step.

- Remove the bolts attaching the Accumulator to the bracket. Retain the bolts.
- Install Center Bearing Offset Spacers (A3010042-001) in between Support Bearing Bracket (30103-3605) and the Accumulator Bracket.
- Invert the Accumulator Bracket to the position shown and install the bolts. Torque to 90 lb. ft.
- Loosen fluid and air connections enough to rotate the Accumulator into position as shown.
- Rotate the Accumulator 180° to the position shown.
- Reinstall the Accumulator mounting bolts and torque to 55 lb. ft. Apply thread lock medium blue. Obtain locally.
- Tighten fluid and air connections as shown.

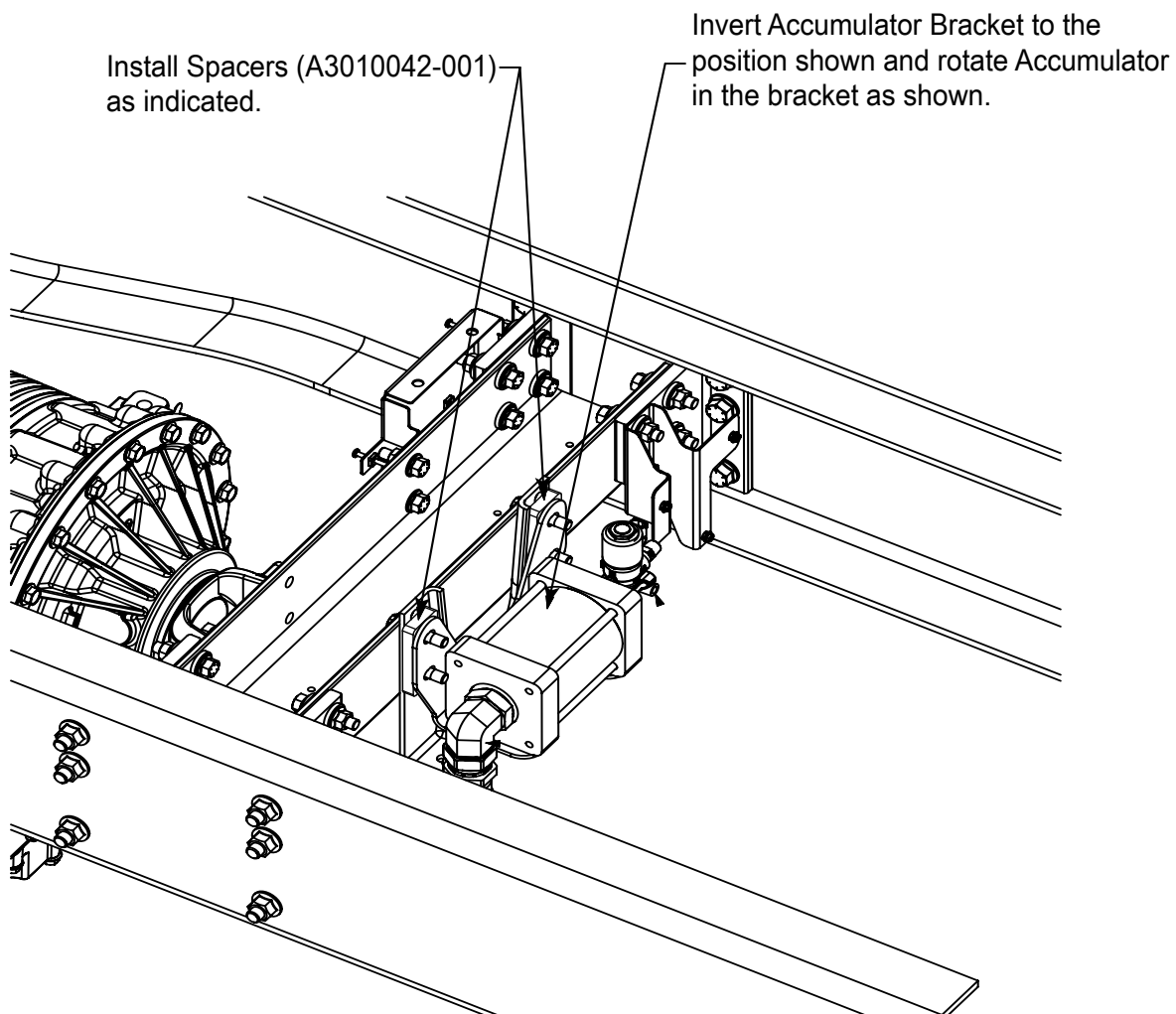


Figure 18

Step 17

Refer to Figures 19, 20 and 21 for this step (below and on the following pages).

Torque Reference

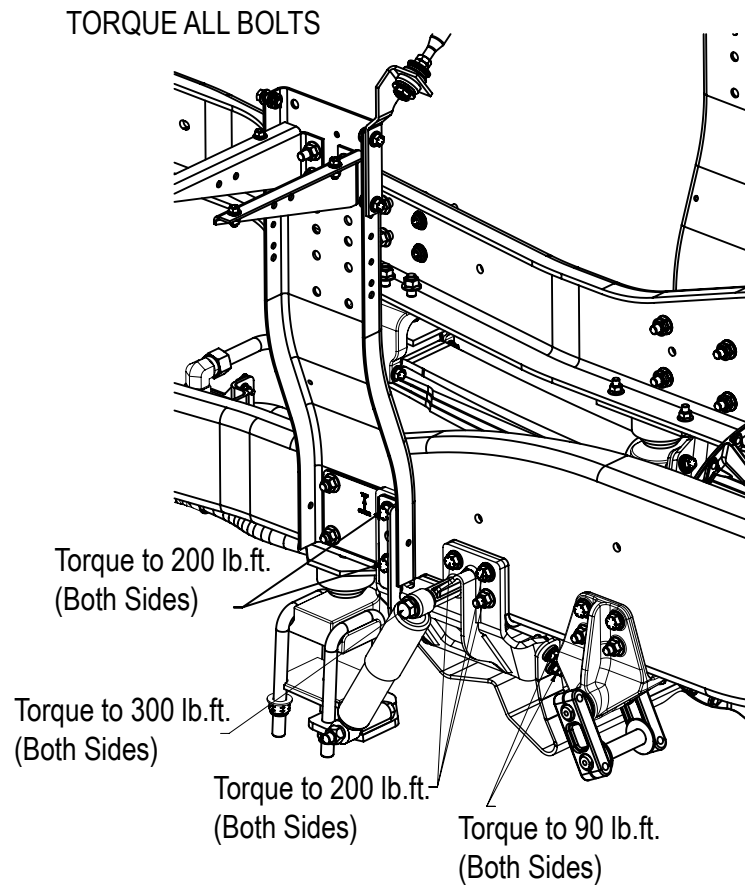


Figure 19

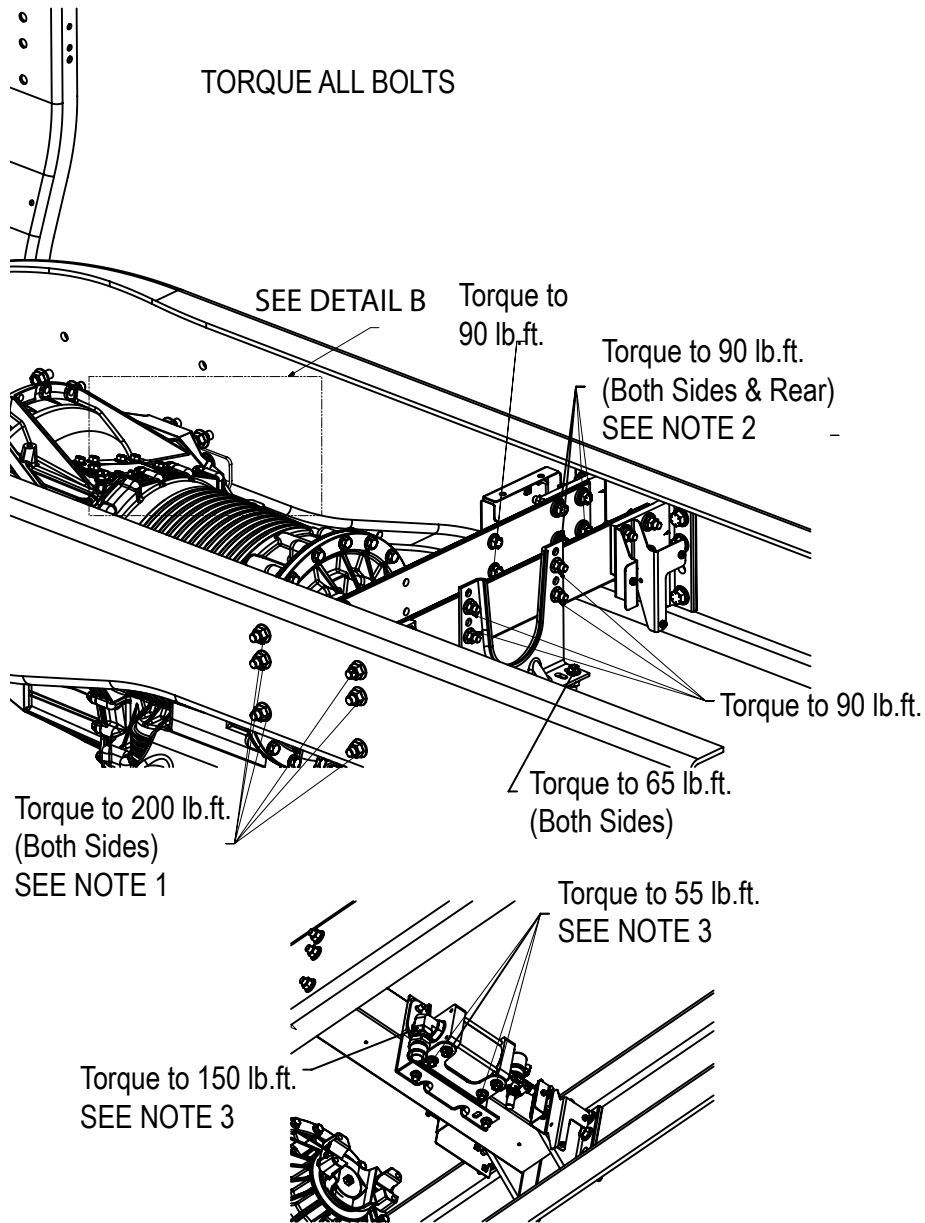


Figure 20

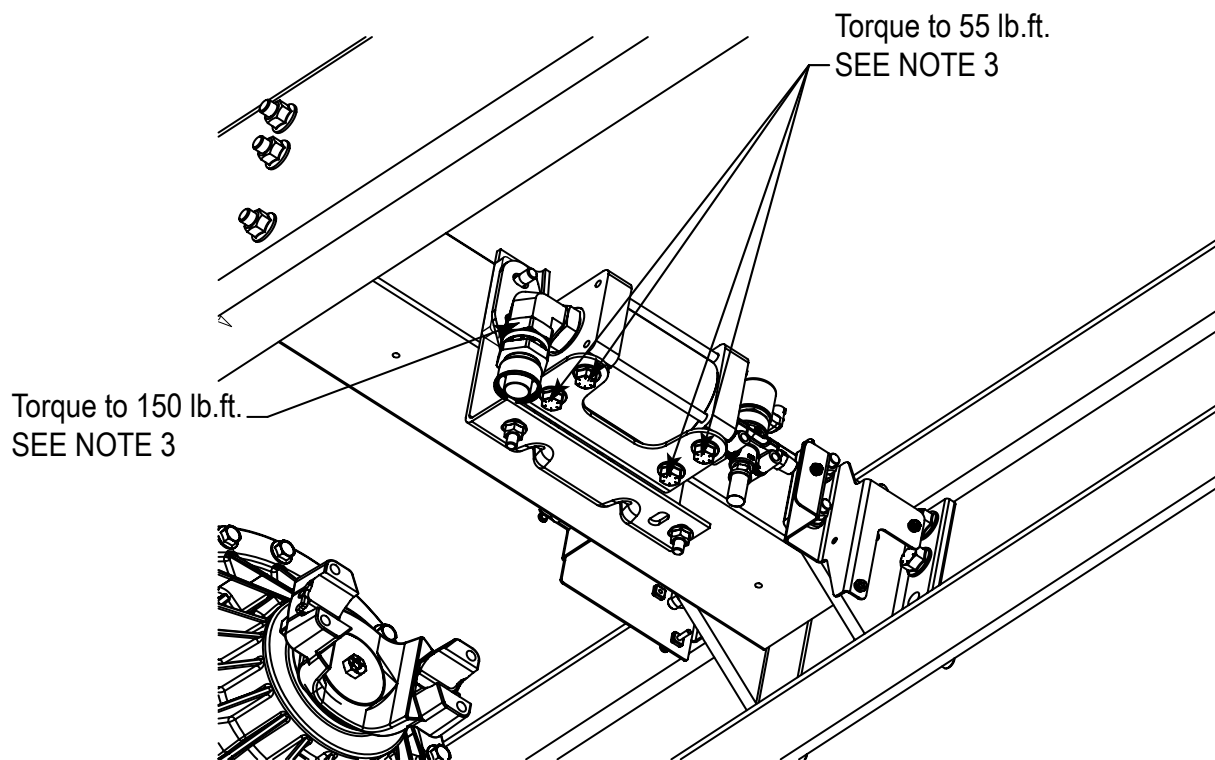


Figure 21

Step 18

- Re-connect all battery terminals.
- Remove all support fixtures and stands that were used to support components during this procedure.

Notes:

1. Apply Tape 10MILX3" (GZ010002-001) to Crossmember Tie Plates (A4090101-001 and A4090101-002) to form an insulative boundary between aluminum tie plate and frame rail.
2. Torque $\frac{1}{2}$ " fasteners to 90 lb.ft.
3. Torque $\frac{5}{8}$ " fasteners to 200 lb.ft.
4. Torque $\frac{3}{4}$ " shock fasteners to 300 lb.ft.
5. Use Center Bearing Offset Spacer (A3010042-001) and $\frac{1}{2}$ " Flange Bolt X 2" (GE410150AO20) if transmission retarder accumulator is at this location. Otherwise, use $\frac{1}{2}$ " Flange Bolt X 1.5" (FE410150AW16). Refer to Step 15 for installation details.
5. Apply Tape 10MILX3" (GZ010002-001) to Support Bearing Bracket (30103-3605) to form insulative boundary between steel bracket and aluminum crossmember.

Step 19

- This concludes the installation of Service Kit, A Position Underslung Crossmember (S4162003K001).

If you have any questions contact Autocar® at 888-218-3611 for assistance.