



(Does not apply to Mack Trucks Australia)
 Replaces instruction dated 9/9/11 and 10/19/11.
 Revisions identified by a vertical line in the left margin.

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Steering Gear Mounting Bolts

MRU

SC0356, Steering Gear Mounting Bolts

(January 2012)

Special Tool Required: Use suitable tool or jaw puller when removing pitman arm.

On certain MACK MRU vehicles manufactured from November 26, 2008 through April 26, 2011, the steering gear mounting fasteners were not torqued to proper specification. As a result, the fasteners may loosen over time and may cause the steering gear to become detached from the steering gear mounting bracket.

This Safety Recall only affects MRUs that were manufactured with Sheppard Steering gear part number 21129326 (20QC552) during the time period shown above.

This repair constitutes replacing the steering gear mounting fasteners.

Parts Requirements:

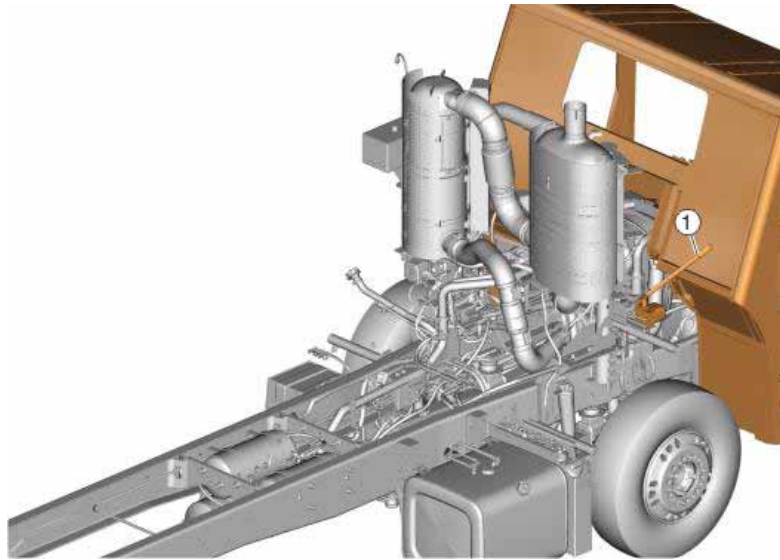
Part Number	Description	Quantity
21140778 (11AM35)	M20*2,5x60	6
25088664 (3AX1695)	Capcrew	1
25109333 (21AX786)	Nuts	4
990954	M16 Flange nut	1
930846	Washer	2
993909	M16x100	1
25098582 (3AX1659)	Capcrew	3
20705040 (3AX1731)	Pinch bolt	1
20705836 (21AX801)	Nut	1

Repair Procedure:

REMOVAL:

You must read and understand the precautions and guidelines in Service Information, Group 6, "General Safety Practices" before performing this procedure. If you are not properly trained and certified in this procedure, ask your supervisor for training before you perform it.

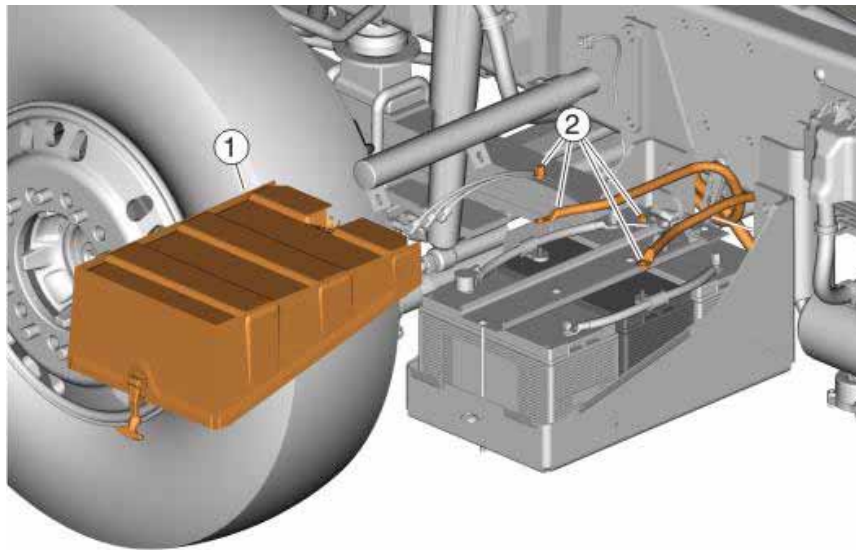
1. Apply parking brake and place shift lever in neutral.
2. Raise the vehicle cab.



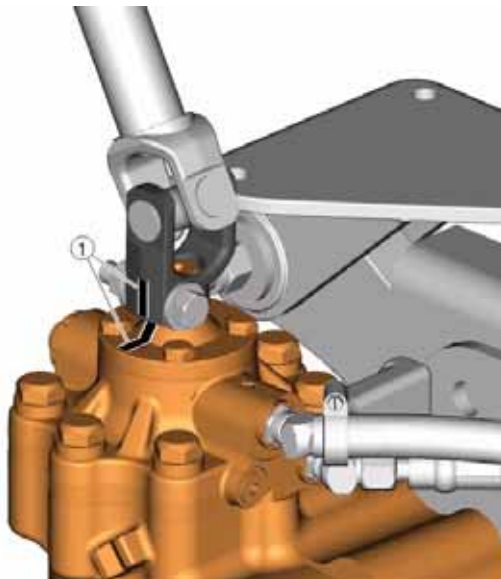
1. Cab tilt pump handle
3. Remove the battery box cover and disconnect all cables from the negative (ground) battery terminals.

⚠ CAUTION

Use electrical safety precautions when handling the battery and/or battery cables to prevent personal injury from electrical shock.



1. Battery Cover
2. Negative battery terminal
4. Use an approved container and drain the power steering system.
5. Mark the position of the steering gear shaft connection at the pinch bolt.

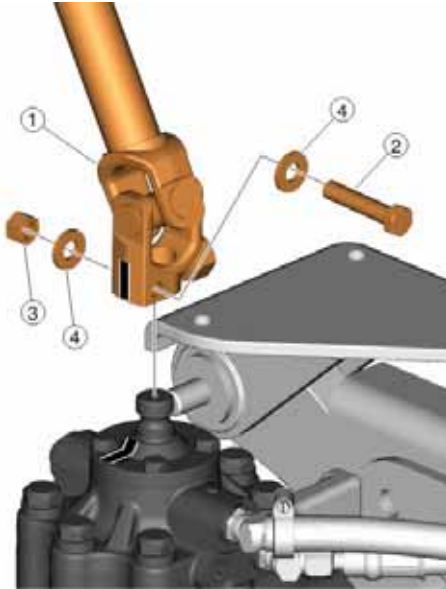


1. Alignment mark

6. Remove the pinch bolt and remove the shaft from steering gear and secure out of the way.

⚠ CAUTION

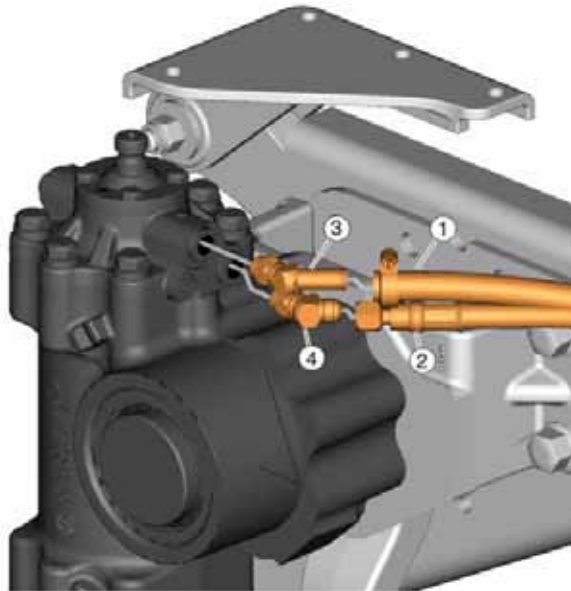
Do not allow the steering gear shaft to rotate a full revolution after removal or damage may occur to other steering components.



1. Steering shaft
2. Pinch bolt
3. Washer
4. Nut

7. Position a suitable container under work area for collecting the excess power steering oil during this procedure.

8. Disconnect the power steering inlet and outlet oil lines from steering gear. Do not remove the fittings from the steering gear.

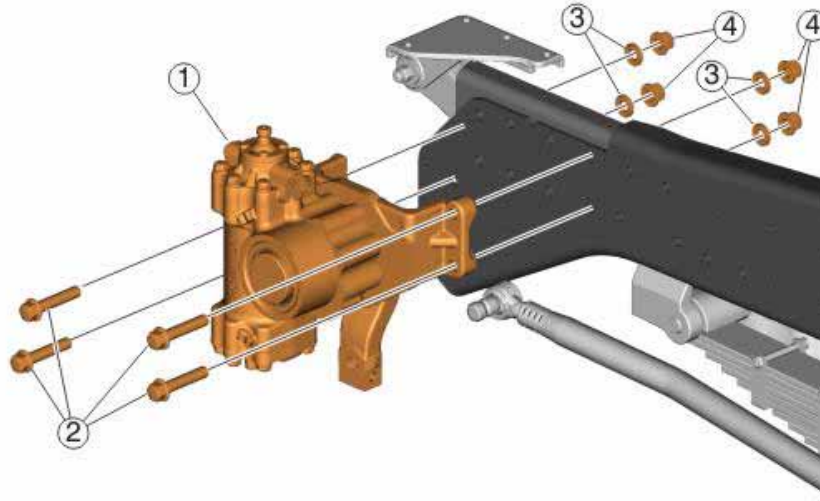


1. Inlet oil line
 2. Outlet oil line
 3. Inlet oil line fitting
 4. Outlet oil line fitting
9. Remove the pinch fastener and remove the drag link ball joint from the pitman arm.
 10. Position and attach a hoist of adequate rating to the steering gear to be able to lift the steering gear away from the chassis.

11. Remove the fasteners and remove the steering gear from the chassis.

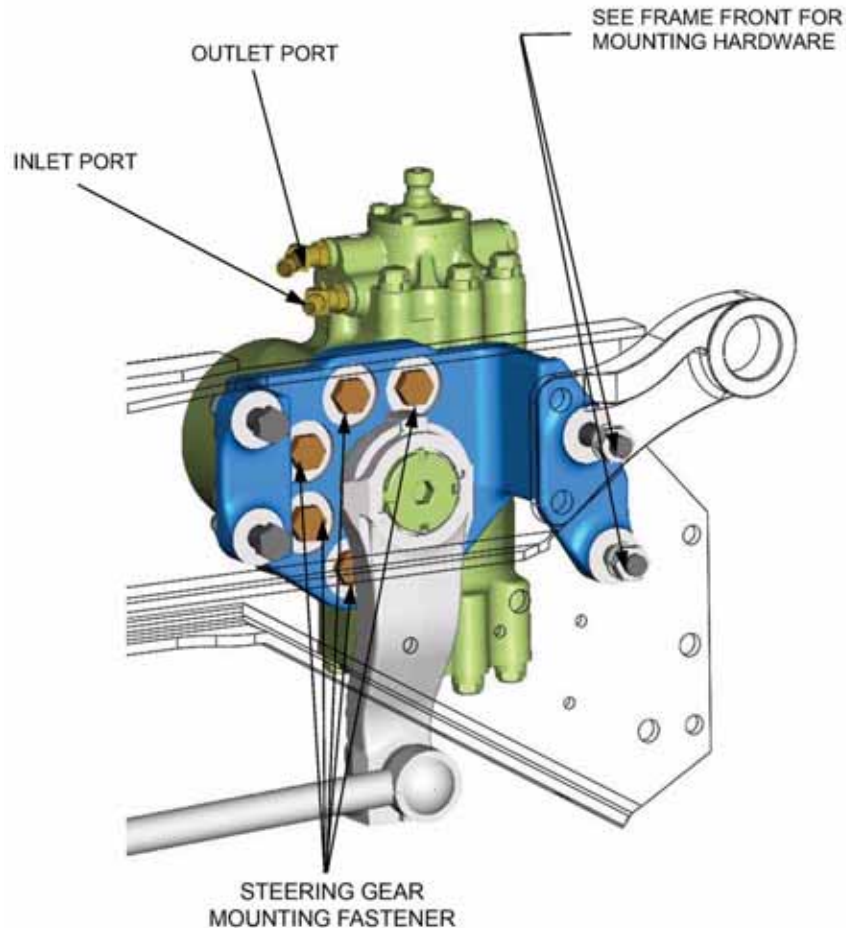
! DANGER

The steering gear is very heavy and extreme caution must be exercised while it is being removed to prevent serious personal injury from occurring.



1. Steering gear
2. Steering gear mounting fastener
3. Washer
4. Nut

12. Install the pitman arm puller and remove pitman arm from steering gear.
13. Place the steering gear in a soft jawed vise and secure. Remove each of the six bolts, one at a time, that attach the steering gear to the steering gear mounting bracket (i.e., steering gear mounting fastener as shown in illustration below). Install six new bolts (21140778) to attach the steering gear mounting bracket. Torque to 600 Nm (443 ft-lb).



INSTALLATION:

NOTE

Refer to Specifications in Gro up 20 for component torque and tightening sequence specifications.

1. Install the pitman arm onto the new steering gear. Tighten the pitman arm fastener to specification and lock the locking tabs.

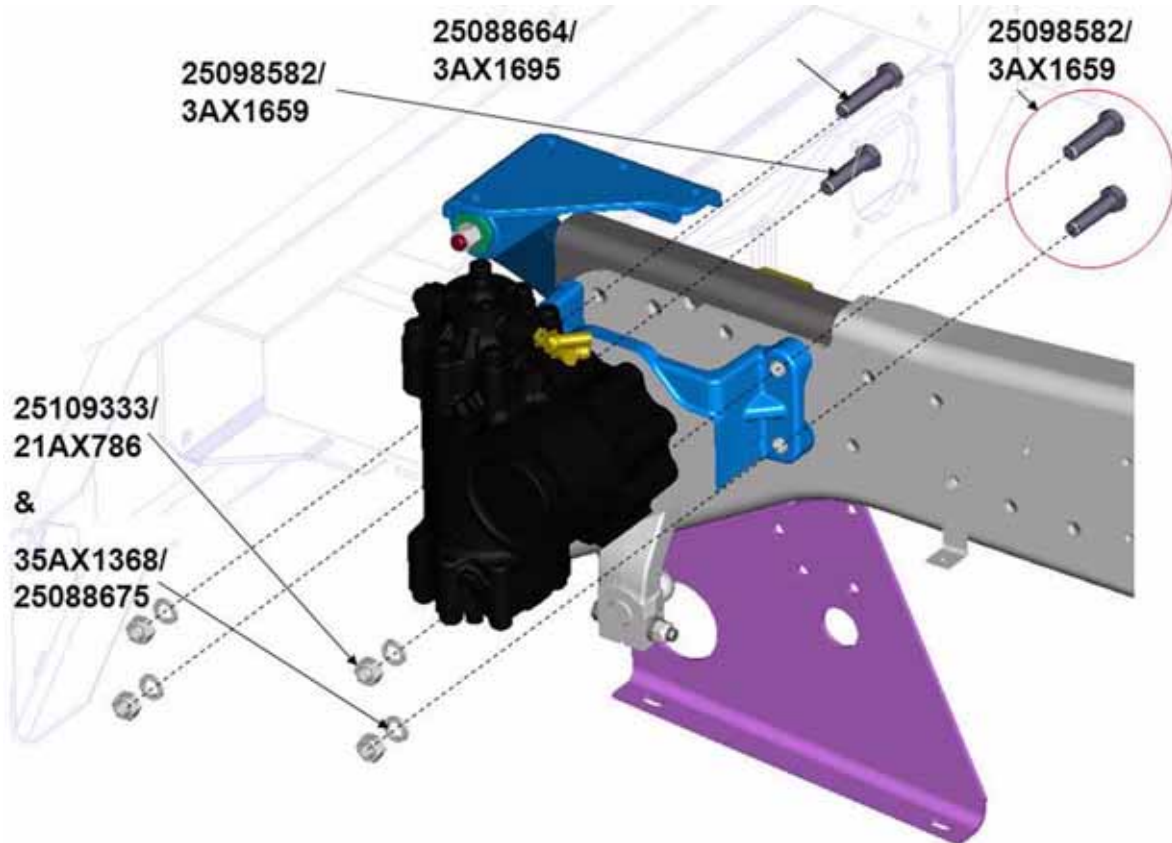
On Sheppard steering gears with a one (1) piece retainer/bolt assembly, friction washer, and washer with LOCKING TABS, the following procedure applies:

- The retainer/bolt shoulder and thread, friction washer and locking washer should be coated with LOK-CEASE or equivalent.
 - Install the retainer/bolt and locking washer assembly aligning the two (2) flat tabs of the locking washer with the slots in the pitman arm.
 - Torque the retainer bolt to the value stamped on the retainer bolt:
Bolt size: 3/4" - 16 UNF; Torque: 746 Nm (550 ft-lb) XD120 Gear
 - Upon reaching the specified torque, continue advancing the retainer/bolt until the notches in the retainer/bolt are aligned with the next tab on the locking washer. Hand torque only. Do not use impact.
 - Bend the two (2) opposing tabs on the locking washer into the notches in the retainer/bolt head.
2. Position and attach a hoist of adequate rating to the steering gear to be able to lift the steering gear into proper position onto the chassis.

3. Install the fasteners mounting the steering gear to the frame and tighten to specifications (1 of 25088664 and 3 of 25098582; Torque to 340 Nm [251 ft-lb]). Use new fasteners to attach gear mounting bracket to frame. (Washers can be reused.)

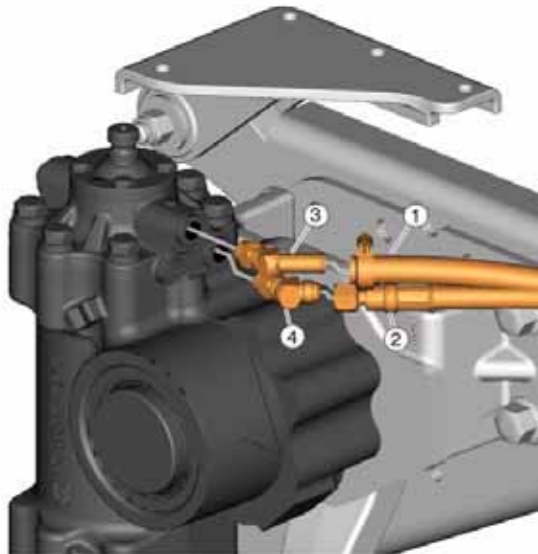
⚠ DANGER

The steering gear is very heavy and caution must be exercised while it is being installed to prevent serious personal injury from occurring.



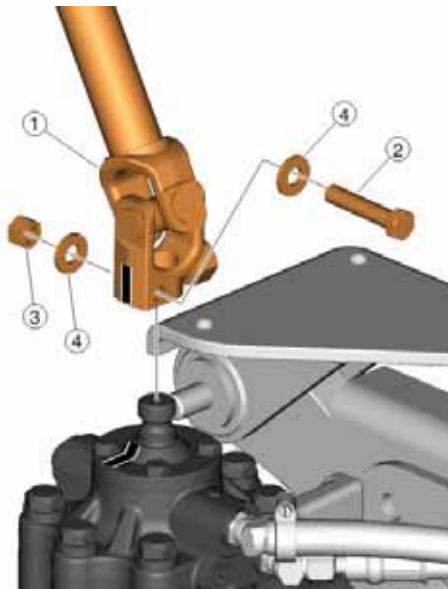
4. Remove hoist from steering gear.
5. Tighten the ball joint that connects the drag link to the pitman arm. Use new hardware: 993909 (1), 994882 (2), and 990954 (1). Torque to 275 Nm (203 ft-lb).

6. Connect the power steering inlet and outlet oil lines to the steering gear.



1. Inlet oil line
2. Outlet oil line
3. Inlet oil line fitting
4. Outlet oil line fitting

7. Align the marks and install the steering shaft to the steering gear by using a new pinch bolt (20705040) and nut (20705836) to the steering gear shaft and tighten to 65 Nm (48 ft-lb). The washers can be reused.

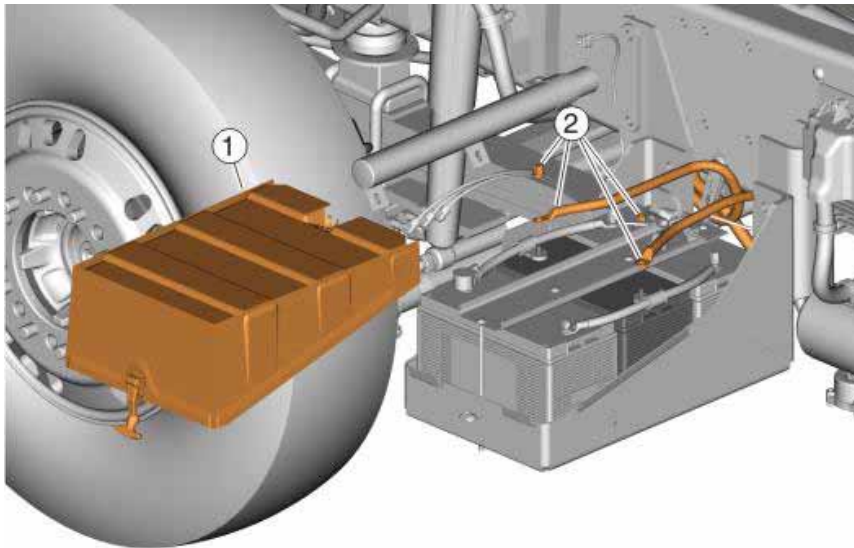


1. Steering shaft
2. Pinch bolt
3. Washer
4. Nut

8. Fill power steering oil reservoir to proper level.
9. Reconnect all previously-removed cables to the negative (ground) battery terminals and install the battery box cover.

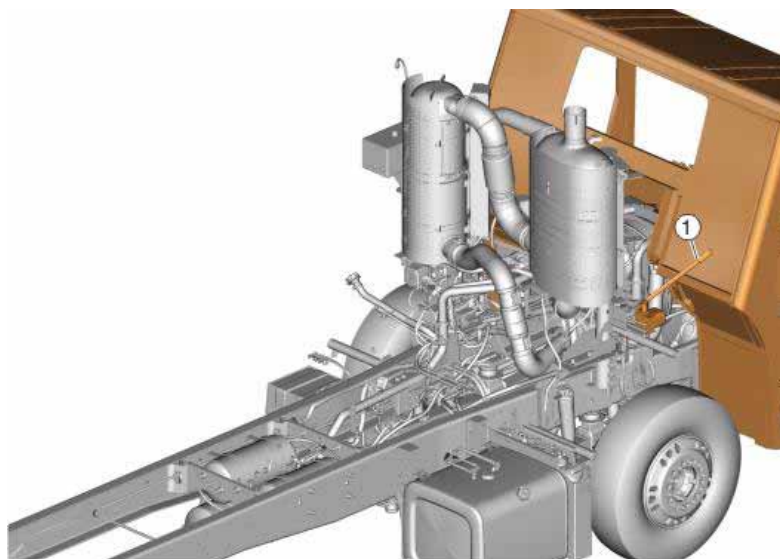
⚠ CAUTION

Use electrical safety precautions when handling the battery and/or battery cables to prevent personal injury from electrical shock.



1. Battery cover
2. Negative battery terminal

10. Lower the cab to the normal operating position.



1. Cab tilt pump handle

11. Start the engine and run at idle for 10 seconds. Turn off the engine and check the power steering fluid level and top off if necessary.
12. Start the engine and turn the steering wheel completely to the right lock and completely to the left lock. Turn the steering wheel “lock to lock” several times.
13. Turn the engine off and check for leaks.

Reimbursement

This repair is covered by an authorized Safety Recall campaign. Reimbursement is obtained through the normal claim handling process.	
Claim Type (used only when uploading from the Dealer Bus. Says.)	40
Recall Status	
Vehicle repaired per instructions	2-Modified per instructions
Labor Code	
Primary Labor Code	4111H-ZU-95 1.9
Time to take charge of vehicle and determine campaign status	101AA 0A 00— 0.3 hr.
Causal Part	21129326
Authorization No.	SC0356

Take-charge time is not included in the labor code for this operation. Take charge may be eligible, but can only be used once per vehicle repair visit. If the vehicle is having other warranty repairs performed, take-charge should be charged to the warranty repair, otherwise take-charge can be charged to this Safety Recall.

NOTE

Dealers are to perform Safety Recall Campaigns on all subject vehicles at no charge to the vehicle owner regardless of mile age, age of vehicle or ownership (original purchaser or subsequent purchasers). Whenever vehicles are subject to a safety recall are brought to your dealership for service, or taken into your dealership vehicle inventory, it is strongly recommended that every effort be made to perform the recall correction before the vehicle is sold or released to the owner.
