ISSUE DATE:	3-23-2022
SERVICE BULLETIN SUBJECT:	Steering Gearbox Bolt Torque Stripe and Re-torque Fleet Check
VINs or MODELS AFFECTED:	Service Specified Buses
COMPLETE BY:	Next Service Opportunity
SERVICE BULLETIN #:	FC-22-35
Labor Operation Code:	N/A

NOTICE! It is expected that this process will require one hours per bus. Please schedule appropriately to minimize vehicle downtime.

NOTICE! This fleet check must not be conducted on buses that have Loctite previously applied on the steering gearbox bolts. If SC-22-003 – Steering Gearbox Bolt Loctite Retrofit has been previously performed, do not proceed with this fleet check.

STEERING GEARBOX TORQUE STRIPE AND RE-TORQUE FLEET CHECK

Retrofit Description:

This fleet check is to verify that the Steering Gear mounting bolts have maintained securement. Loss of securement may indicate that the plexus adhesive layer may be insufficient between the torque plate and the chassis. If the vehicle fails this inspection, then further invasive testing can be done to evaluate the adhesive layer. This procedure verifies the Steering Gearbox securement bolt torque. It is the same process used to verify this torque during regular preventative maintenance checks of the suspension.

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Tools/Parts Required

Tools and supplies required:

- Wheel Lifts (4 Each)
- Jack Stands (4 Each)
- Calibrated Torque Wrench
- Ratchet
- 1-5/16 Inch Socket
- Alcohol
- Shop Towels
- Orange Torque Stripe Paint
- Loctite 248

Parts Required:

- None

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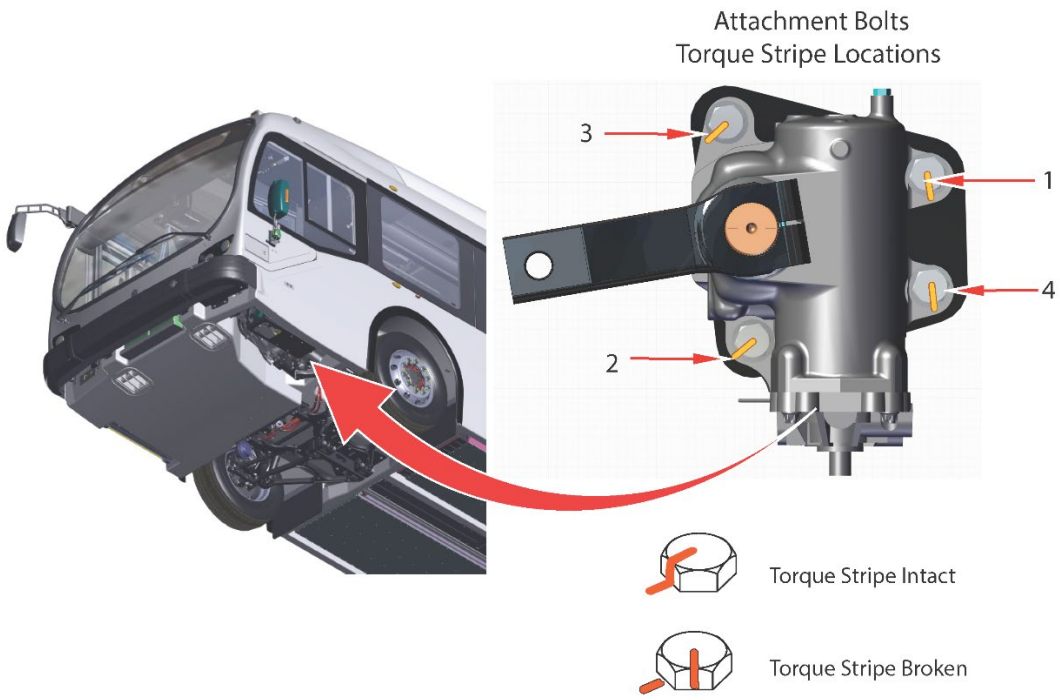
Procedure

1. Complete the Proterra approved Lockout/Tagout procedure to make the bus safe for work.

2. Using four Wheel Lifts, raise the bus into the air. Using four Jack Stands, support the bus for safety.

3. Access the Steering Gearbox underneath the bus.

4. Using the following illustrations and photographs as a guide, inspect the Steering Gearbox Securement Bolts. Visually confirm that each bolt has a good torque stripe and that it is not broken due to counterclockwise rotation of the bolt.



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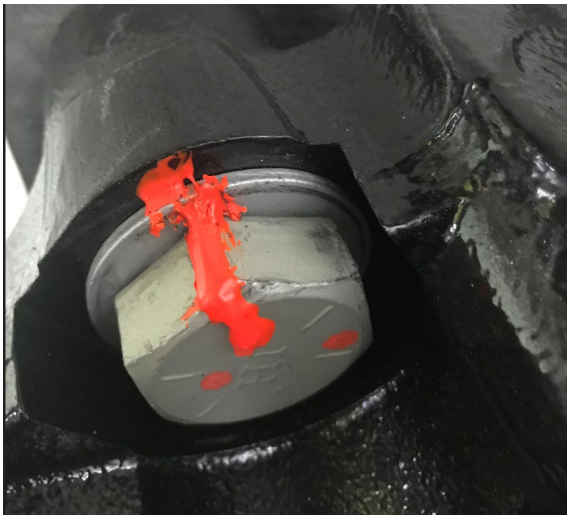
5. The following photograph shows an example of a good unbroken torque stripe.

6. The following photograph shows an example of a bad torque stripe.
Notice the torque stripes are broken due to rotation of the bolt.

7. The following photograph shows an example of a good torque stripe.
Although it is broken, the bolt has rotated clockwise for a small portion of one turn. This can occur when the bolts have been re-torqued prior to shipment during a factory inspection.



8. Record the conditions of each bolt on this linked inspection form:
https://app.smartsheet.com/b/form/43031765275644a2bf05fd941e6e0375.

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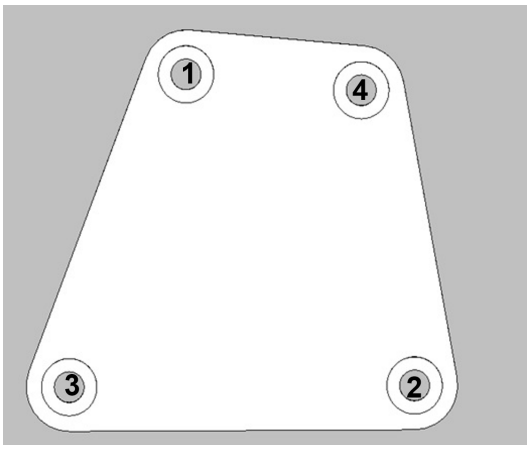
9. Using a Calibrated Torque Wrench with a 1-5/16 Inch Ratchet/Socket, **set the torque wrench to 450 ft-lb**. Slowly tighten the bolt. If the bolt rotates before the wrench clicks, please report that bolt failed the re-torqueing check on the inspection form linked above.

10. Using a 1-5/16 Inch Ratchet/Socket, remove that bolt (018758-031) and add Loctite 248 to the threads. The Loctite 248 should fill the threads on the bolt where it engages the fastener.

11. Using a Calibrated Torque Wrench with a 1-5/16 Inch Socket, **torque the re-installed bolt to 150ft-lb**. Then test the re-application of the torque, remove, and reinstall the other three (3) remaining bolts in the same manner in the sequence shown in the illustration on the right below.



12. Using a Calibrated Torque Wrench with a 1-5/16 Inch Socket, **torque each of the four bolts to 300 Foot Pounds.** Cross-torque the bolts by following the sequence shown above.

7. Using a Calibrated Torque Wrench with a 1-5/16 Inch Socket, **torque each of the four bolts to 500 Foot Pounds.** Cross-torque the bolts by following the sequence shown above.

8. Using Alcohol and Shop Towels, remove any Orange Torque Stripe Paint from previous torqueing operations.

9. Using Orange Torque Stripe Paint, mark the four bolts as shown below.

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10. If the Torque Stripes are in good condition and none of the bolts failed the re-torque test no further inspection is required and this check is complete. The bus may be lowered and returned to service.

11. If bad/broken torque stripes are identified or any of the bolts failed the re-torque test, contact Proterra Customer Service to receive additional instructions after filling out the inspection form linked above. If a Proterra team member performs the inspection the Work Order should be escalated to the Proterra back office in addition to submitting the form.

12. If bad/broken torque stripes were found or any of the bolts failed the re-torque test, the bus may be lowered and Lockout/Tagout devices removed but the bus should not be returned to service until additional inspections are performed.

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