New Jersey Transit: Steering Gear Mounting Plate Weld

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Property name and Top bus number: New Jersey Transit - 164200

Issue: Welds on Steering Gear Mounting Plate

Reason/ cause: New Jersey Transit identified manufacturing variability of the welding of the steering gear plate. This work instruction implements an engineering deviation to correct the non-conformance.

Solution:

Group 1: **Need to add 12" weld inside of the mounting plate.**

Group 2: buses have more than 12" but less than 40" exterior welds on the mounting plate**: Need to add 12" weld inside of the mounting plate.**

Group 3: buses have less than 12" weld on the exterior: **need to remove steering gear and weld continuously on the exterior and add 12" inside of the mounting plate.**

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Number of affected buses:

Group 1 buses: **need to add 12" weld inside of the mounting plate*:*** 5202-5211, 5213, 5215-5218, 5221-5225, 5227-5228, 5231-5236, 5237, 5239, 5240

Group 2 buses where need to add weld inside of the mounting plate:
5201, 5212, 5219, 5229, 5238, 5241-5251, 5254-5259, 5261-5264, 5266-5269, 5271-5272, 5274, 5276-5284, 5286, 5288-5295, 5297, 5299, 5301-5304, 5307, 5311, 5313, 5323, 5336, 5366-5369, 5371, 5374, 5376, 5378-5385, 5387-5389, 5391-5396, 5399, 5400, 5402-5305, 5428, 5430-5435, 5437-5438, 5442, 5445-5448, 5450, 5501-5502

Group 3 buses where need to weld continuously outside and add weld inside of the mounting plate:
5214, 5220, 5252, 5260, 5265, 5270, 5273, 5275, 5285, 5287, 5296, 5298, 5300, 5305-5306, 5308-5310, 5312, 5314-5322, 5324-5335, 5337-5345, 5347-5365, 5370, 5372, 5375, 5377, 5386, 5390, 5397-5398, 5401, 5436

Estimated hours/bus: 5.0 Manhours

Engineering Documentation: Engineering Deviation N09-15076 – Underbody Front, Engineering Drawing **10A-6141-000** – Underbody, Front – reference part number **10A-6141-165** - Gearbox Bracket, Weld Specifications: **10A-6000-911** – Welding and Build-Up Instructions, **10A-6000-914** – General Welding Machine Settings, **10A-6000-915** – General Weld Repair Instructions

Necessary parts:

Weld Wire: Size - .035, Type – Carbon to Stainless Steel, Specification – SFA/AWS A5.9 ER309LSi,	NABI P/N:	**660309A**	
Primer:	Cardinal P/N:	**A-4108-E10128-Gloss Gray**	
Undercoating, Sound Dampng, 7779 GY:	NABI P/N:	**700-2603-001-03**	
Bolt, M20x1.5x35, hex head, 10.9:	NABI P/N:	**01503-62035**,	as required,
Washer, 20K-2, Lock,	NABI P/N:	**05020-60020**,	as required

Necessary tools:
Die grinder with wire wheel/deburring bits, air file, MIG welding machine, welding blanket, jacks, jack stands, ladder, various hand tools, torque wrench capable to 450 lb-ft.

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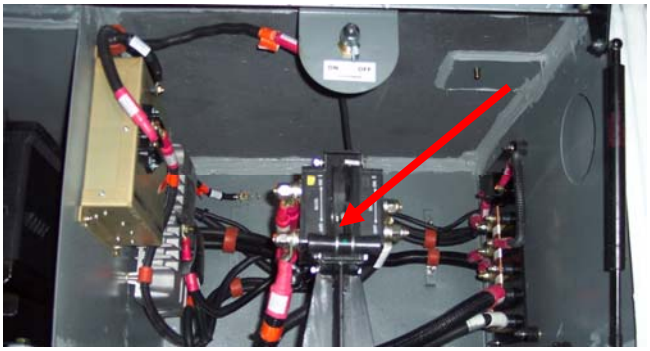
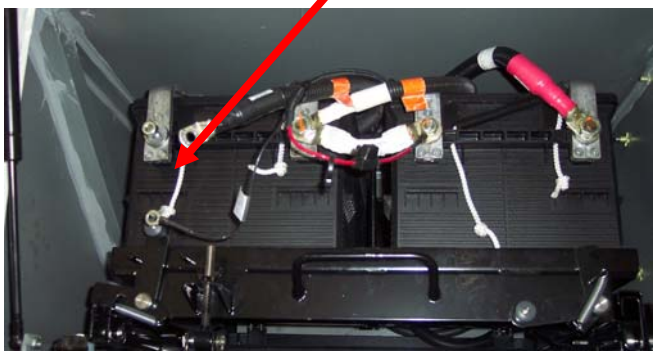
SAFETY PRECAUTIONS MUST BE FOLLOWED ACCORDING TO ACCEPTED INDUSTRY STANDARDS AND LOCAL/PROPERTY REQUIREMENTS.

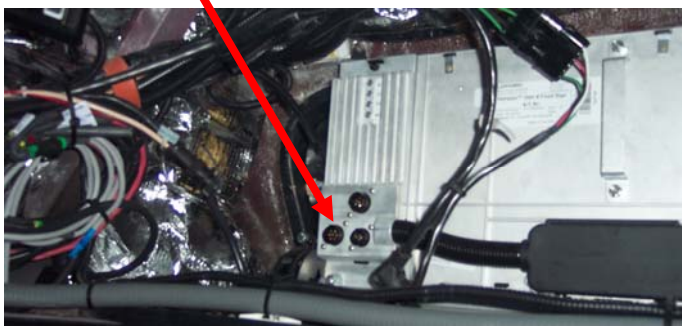
Keep all sparks, flames, and other sources of ignition away from flammable materials. Have a fire extinguisher within hand reach.

1. Deploy wheel chair lift before disconnecting power.
2. Position main battery switch in OFF position. Disconnect negative battery cable.

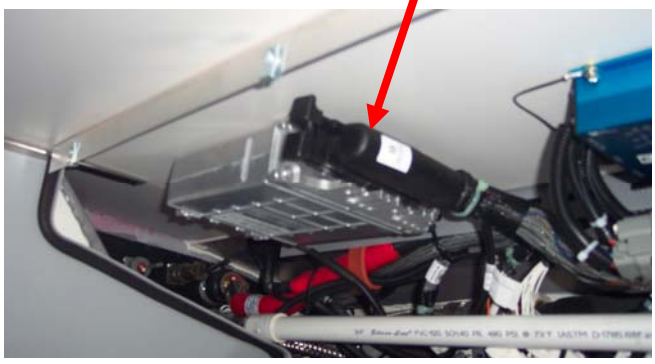


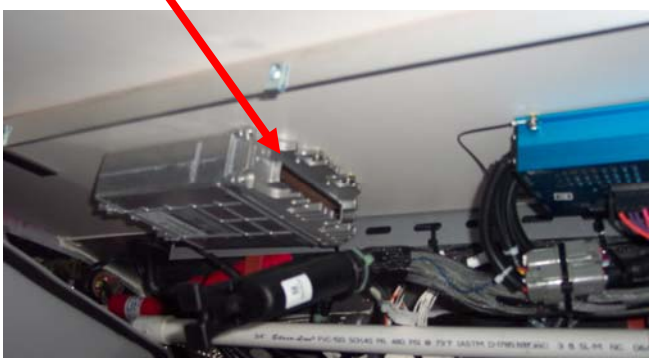


3. Disconnect the following:
   a) Front Destination Sign – 3 connectors inside front destination sign compartment.

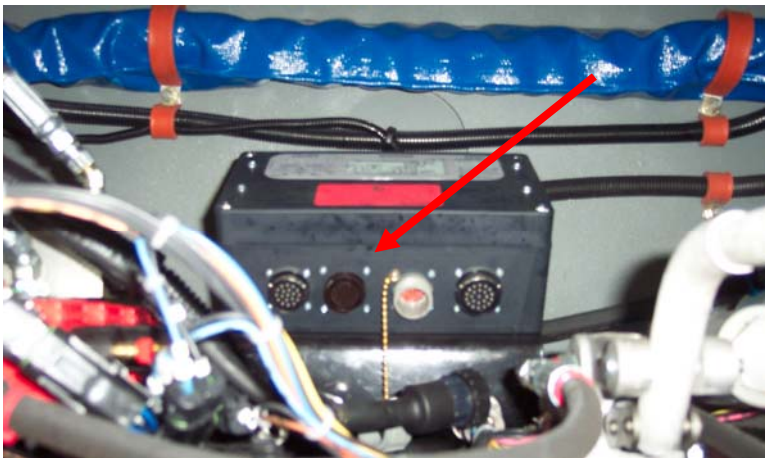


   b) TCM – 1 connector inside street side light compartment at rear of bus.
   NOTE: Use extra care removing and reinstalling connector to prevent damage to pins.

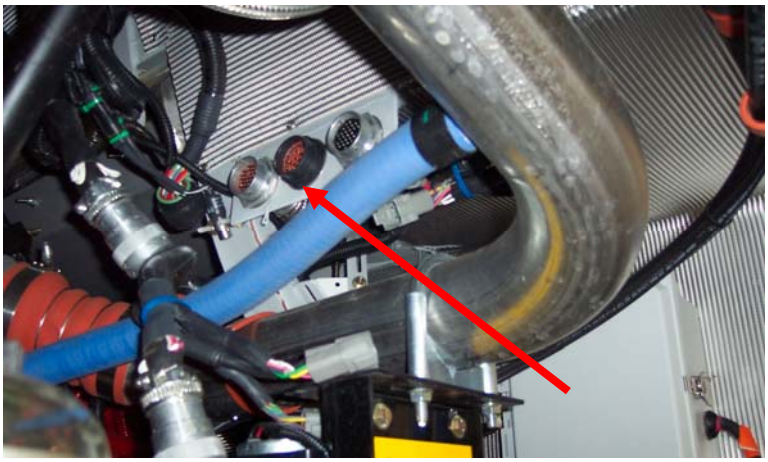




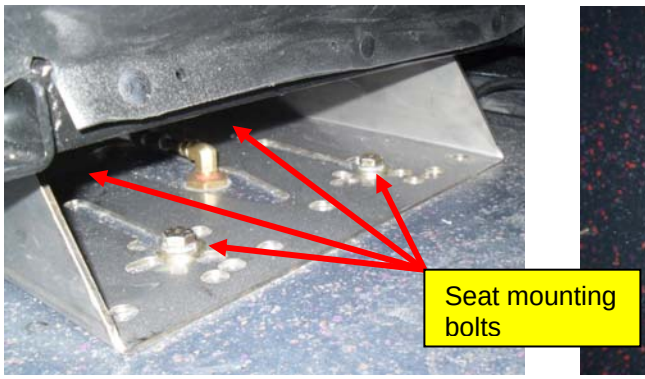
c) Electrical Harnesses – 3 connectors inside wheel chair lift compartment – behind entrance door.

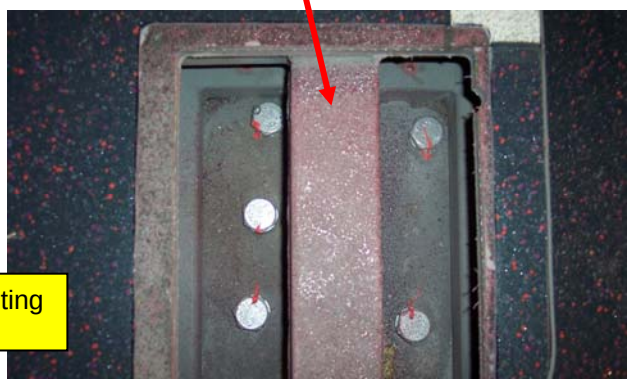


d) Harnesses – 3 connectors inside engine compartment - curb side above coolant fill.



4. On the inside of the bus, remove driver's seat and plate underneath driver's seat for access to the top side of the steering gearbox mounting plate.





On Group 3 buses:

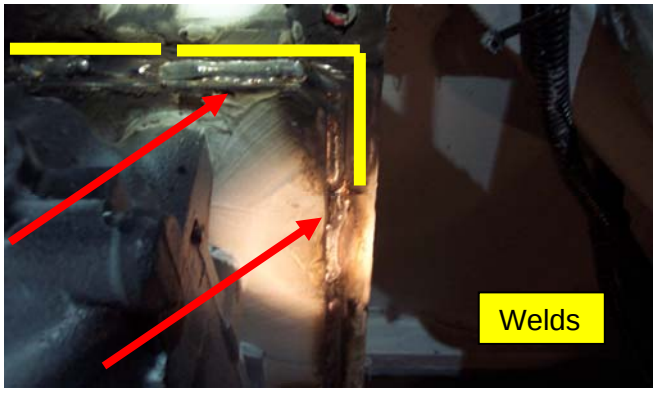
5. Use jacks to lift bus high enough to work under. Position jack stands at jack pads underneath the bus. Lower bus onto jack stands. Remove wheel chair lift cover panels for access to steering gearbox mounting plate.

6. If necessary, remove clamping hardware on air harness and water lines underneath the bus next to the steering gear mounting plate. Move harness and lines over for access to plate. Cover harness and lines with welding blanket to protect from welding sparks and debris.

7. Remove steering gear mounting bolts and lower the steering gear. Do not disconnect hydraulic hoses and draglink.

8. Use die grinder with wire wheel and deburring bits and air file to remove all undercoating and primer from area to be welded. Use same tools to clean and prep top side of plate for area to be welded. Base metal must be exposed at all weld areas.

9. Weld bottom side of steering gear mounting plate by connecting the existing stitch welds together using a ¼" fillet to make a solid weld bead all around the plate.



On Group 1, 2 and 3 buses:

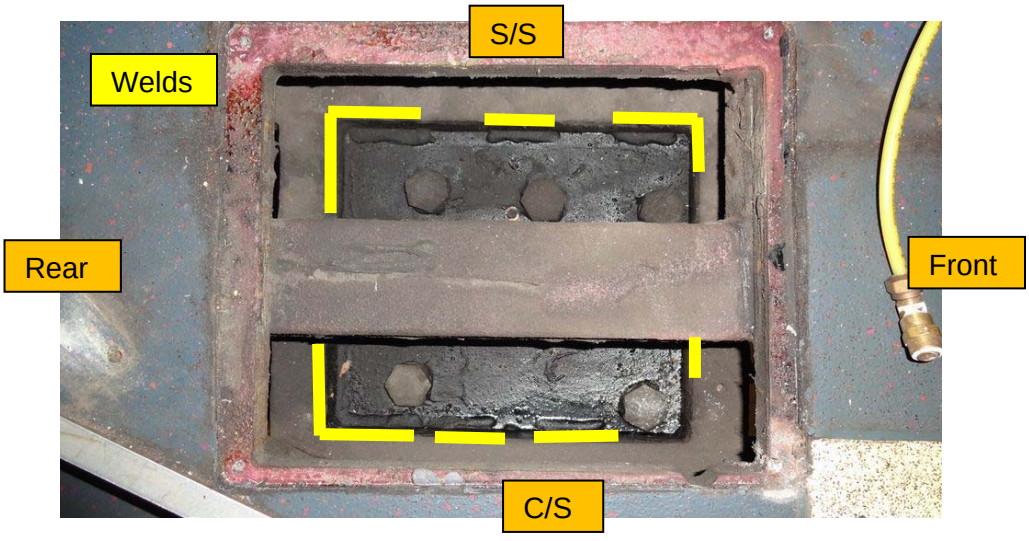
10. Weld top side of steering gear mounting plate as follows:

a) S/S Front Corner - Apply ¼" fillet welds x 1" long on either side and around corner leaving room for removal of bolt.

b) C/S Front Corner – Apply ¼" fillet weld from middle support tube toward curb side stopping at a point to allow for removal of bolt.

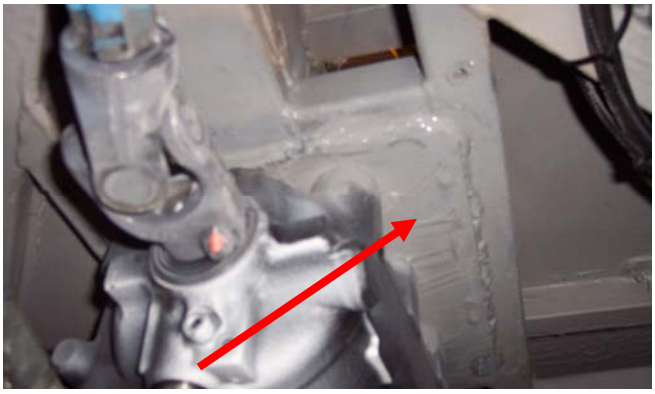
c) S/S and C/S Rear Corners – Apply ¼" fillet welds from middle support tube around corners. End weld at 1" past corners.

d) S/S and C/S Edges – Apply ¼" fillet welds x 1" long on 2" centers along both edges of plate.

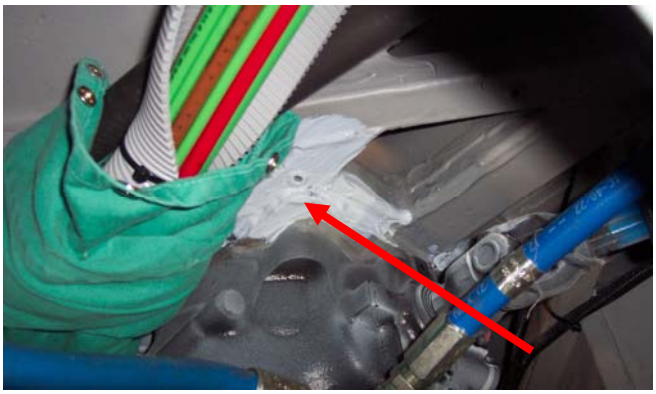


NOTE: On Group 2 buses – steering gear not removed: After welds have cooled and prior to application of primer check the torque value of steering gear mounting bolts. Use torque wrench to ensure bolts are at minimum of 405 ±3% ft-lbs.

11. After welds have cooled, clean welds and adjacent structure around welds and apply primer to areas where it was previously removed – top & bottom of plate.
NOTE: Approved primer is Cardinal part number **A-4108-E10128-Gloss Gray**.



12. Allow primer to dry on bottom side of plate and use a paint brush to apply undercoating to all areas where it was previously removed. Approved undercoating is NABI part number **700-2603-001-03** – Undercoat, Sound Dampng, 7779 GY.



13. Reinstall steering gear. Apply Sikalock and torque bolts to 405 ±3% ft-lbs. Use new bolts if original bolts damaged. Apply torque seal to the head of the bolts. **(Group 3 buses only).**

14. Connect existing clamps and hardware to secure water lines and air harness if previously removed.

15. Install wheel chair lift cover panels using existing hardware.

16. Remove jack stands and lower the bus back to the ground.
17. Install cover plate in driver's floor using existing hardware.
18. Install driver's seat using existing hardware. Tighten the four 3/8-16 bolts to 40 ft-lbs.
19. Reconnect all electrical connectors previously disconnected.
20. Reconnect negative battery cable and position battery switch to ON position.
21. Retract and stow wheel chair lift.
22. Check for completion of all steps.