REFERENCE:	Nova Bus Manuals
SECTION:	08: Pneumatic System
RS Nº:	MQR 7621-2506
EFFECTIVE IN PROD.:	N/A

APPLICATION DEADLINE: 2024FE28
CLAIM REFERENCE NUMBER: WB-5328

SUBJECT:	Leveling valve out of Adjustment.
JUSTIFICATION:	Leveling valve N92260 found out of adjustment.

LEVEL	DESCRIPTION	DIRECT CHARGES		TIME
		LABOUR	MATERIAL	
1	leveling valve re-adjustment.	Novabus	Novabus	1 h
2	–	–	–	–

MATERIAL REQUIRED PER VEHICLE

QTY	PART Nº	REV.	DESCRIPTION
LEVEL 1			
–	–	–	–
LEVEL 2			
2	N30292	D	Suspension Linkage Kit
LEVEL 2 SPECIAL TOOLING			
1	NT1090	NR	Suspension Air Bags Height Gage
1X NT1090 PER DEPOT			

Materials will be available within 44 days once your order has been placed.
To order, please contact novabus.parts@volvo.com
Or by phone for CANADA 1-800-771-6682, for USA 1-877-999-8808
Specify document number, quantity of parts required and shipping address.

DISPOSAL OF PARTS

REMOVED PARTS ARE:	DISCARDED*	RETAINED	* Dispose of the unused parts and the defective parts in accordance with local environmental standards in effect.
	Yes	–	

REVISION HISTORY

REV.	DATE	CHANGE DESCRIPTION	WRITTEN BY
NR	2022DE14	Initial release	Devanand

APPROVED BY: Irina Negoescu
Signature numérique de Irina Negoescu
Date : 2022.12.14 11:23:13 -05'00'

CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
		FROM	TO	FROM	TO	
New York City Transit New York - NYCT	LD08	8762	8763	L82J0M9778159	L82J7M9778160	2
New York City Transit New York - NYCT	LD08	8800	8800	L82J7M9778207	L82J7M9778207	1
New York City Transit New York - NYCT	LD08	8821	8821	L82J8M9778233	L82J8M9778233	1
New York City Transit New York - NYCT	LD08	8826	8826	L82J7M9778238	L82J7M9778238	1
New York City Transit New York - NYCT	LD08	8828	8850	L82J5M9778240	L82J3N9778268	23
New York City Transit New York - NYCT	LD08	8853	8858	L82J3N9778271	L82J6N9778278	6
New York City Transit New York - NYCT	LD08	8860	8860	L82J4N9778280	L82J4N9778280	1
New York City Transit New York - NYCT	LD08	8862	8867	L82J8N9778282	L82J7N9778306	6
New York City Transit New York - NYCT	LD08	8869	8871	L82J0N9778308	L82J9N9778310	3
New York City Transit New York - NYCT	LD08	8873	8874	L82JXN9778316	L82J1N9778317	2
New York City Transit New York - NYCT	LD08	8876	8877	L82J5N9778319	L82J1N9778320	2
New York City Transit New York - NYCT	LD08	8890	8891	L82J4N9778344	L82J2N9778357	2
New York City Transit New York - NYCT	LD23	—	9621	L82LXL9777634	L82L5L9777668	3

TOOLS REQUIRED:

- Jig NT1090
- Measuring Tape
- Flathead screwdriver
- 10mm and 11mm socket wrench
- Torque wrench
- Torque seal
- White sheet or cardboard

WARNING

Before proceeding with any adjustment, ensure that security stands are under the vehicle. Pressure in the system must be a minimum of 120 psi (827 kPa).

NOTE

Make sure that the surface selected for the verification of the system is as level as possible.

1.1. Run the bus.

1.2. Make sure that there is sufficient air in the reservoirs (120 psi minimum at all times.) To do so, wait until the pressure valve is released (engine running) or have continuous air supply.

1.3. Park the vehicle on an even surface with the transmission on neutral.

1.4. Apply the parking brake and set the master control switch to the ***stop*** position.

1.5. Set the battery disconnect switch in the battery compartment to the ***off*** position

1.6. Record the current height using the measuring tape at rear and front doors (See Figure 1).

Figure 1 - Measuring the Height of Front and Rear Doors

1.7. Raise the vehicle

NOTE

For more information on the raising and lowering of the vehicle, refer to section 18: HOISTING AND TOWING of the Nova LFS maintenance manual. Respect your current internal safety procedures. Use the proper hoisting equipment for your safety.

1.8. If the wheels are not level between each other, adjust the lifts to allow the wheels to be level.

REAR LEVELING

1.9. Locate the rear left air bag in front of the rear axle (See Figure 2).

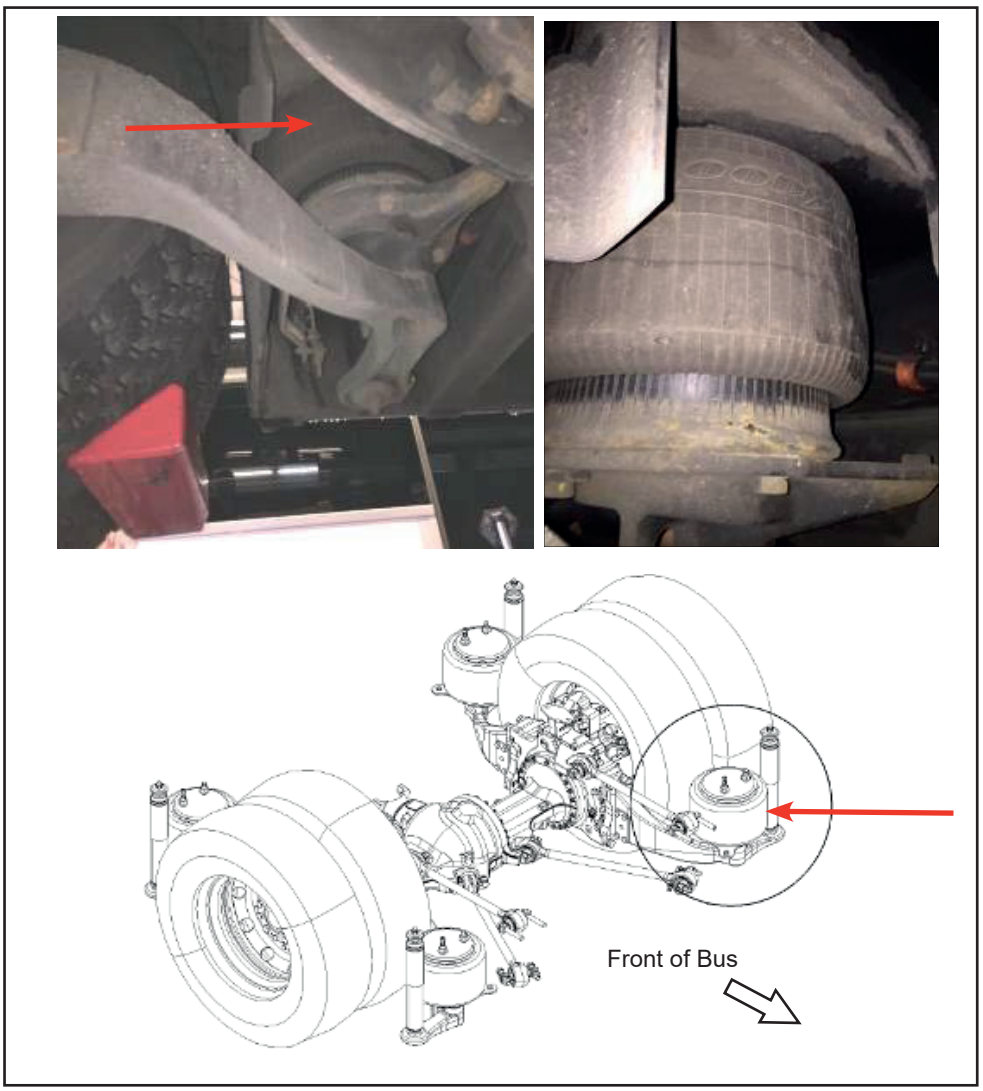


Figure 2 - Location of Rear Airbag

1.10. Using the jig NT1090, measure the distance from the air spring mounting plate and the bottom of the air bag structure to which the air bag is attached (See Figure 3).

1.11. Once the jig is in place, tighten the knob and remove the jig from the location.

NOTE

Make sure the jig is not touching the ridge of the frame and that the jig is flush. See picture of the incorrect condition.

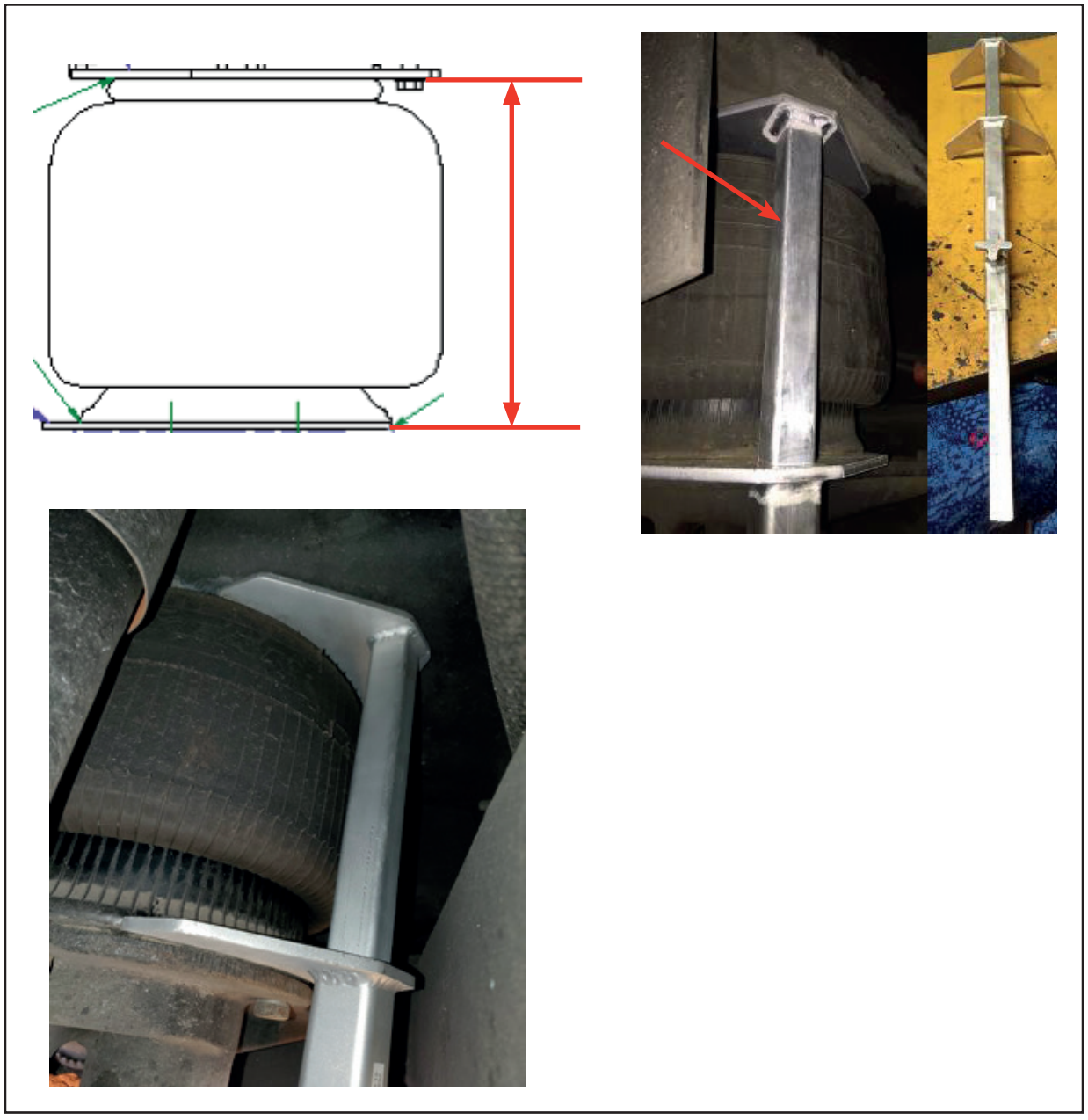


Figure 3 - Measurement of Air Springs - Rear

1.12. After removing the jig, measure the distance from the top of A to the bottom of B at the center of the jig using a measuring tape (See Figure 4). Confirm that the plate x plate distance is within the specification shown on table 1.

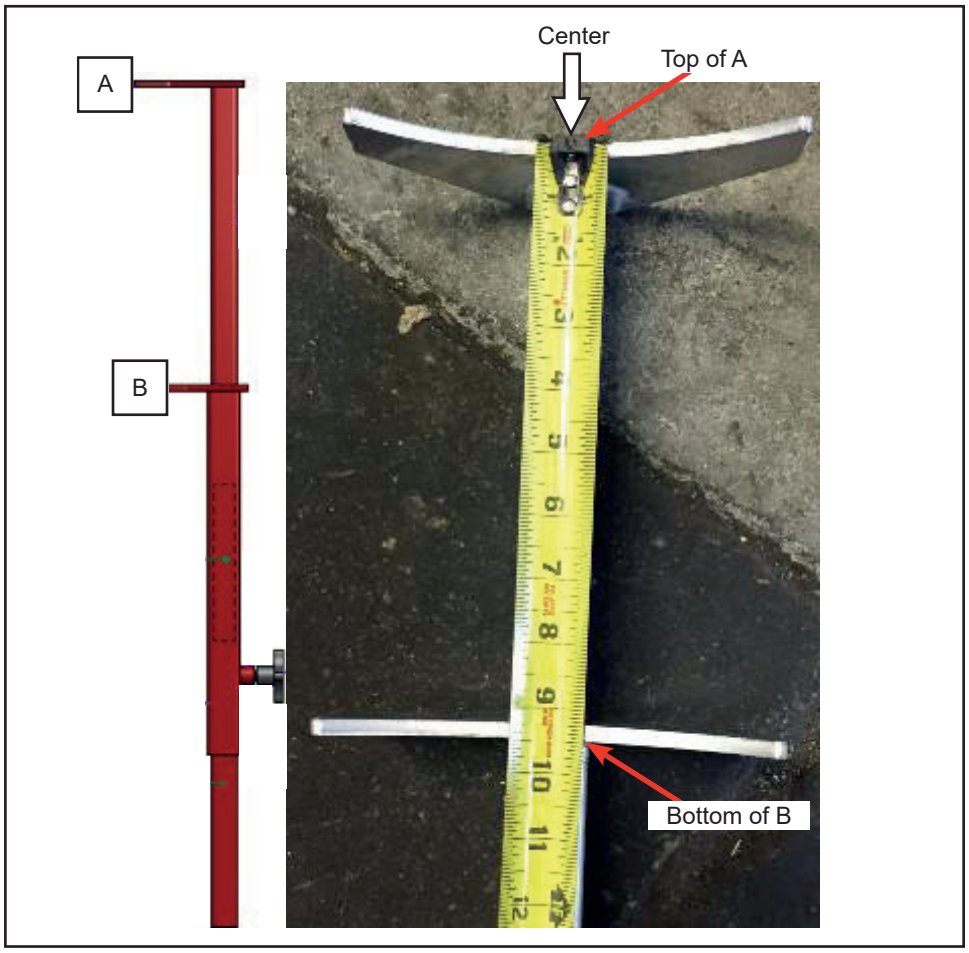


Figure 4 - Measuring the Distance From Top A to Bottom B

Rear ride height Plate x Plate on lift specification	9 1/2" ± 1/4”
Minimum	9 ¼”
Maximum	9 ¾”

Table 1 - Plate Distance

1.13. If the plate x plate measurement is not within specification, move on to the next step to adjust the rear plate x plate height.

1.14. Using a flathead screwdriver, loosen up the clamp attached to the top of the p-mount.

1.15. To increase the distance between the air spring mounting plates, slowly slide the p-mount downwards and the rod upwards.

1.16. To decrease the distance between the air spring mounting plates, slowly slide the p-mount upwards and the rod downwards (See Figure 5).

NOTE

Let the pneumatic system settle roughly 5 minutes before taking measurements between the air spring mounting plates.

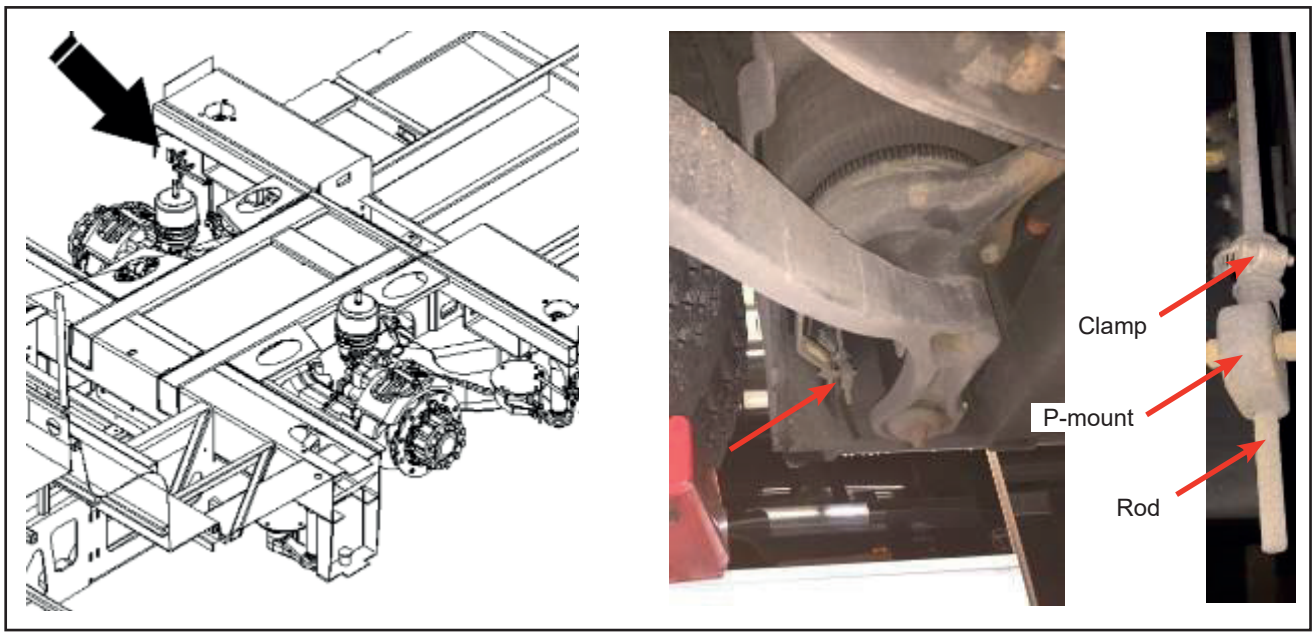


Figure 5 - Location of Airspring Mounting Plates

NOTE

The p-mount arm must be even with the p-mount or protrude slightly. It should never be inside the p-mount.

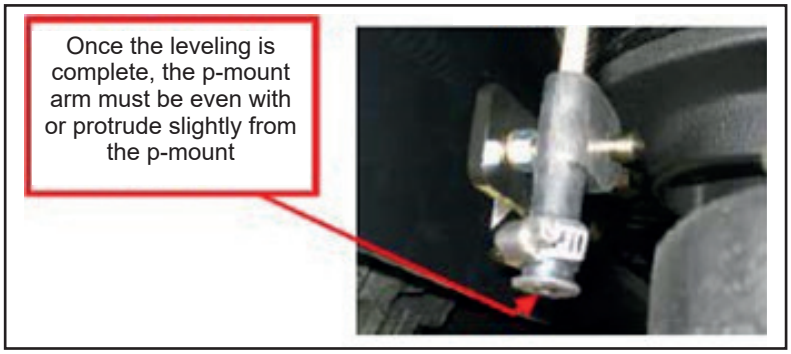


Figure 6 - View of P-mount arm

1.17. Recheck the ride height on the airbag and once the height specification is achieved, tighten the clamp.

NOTE

Do not over-tighten to avoid damaging the p-mount.

NOTE

To get more adjustment, it's possible to invert the position (flip) of the P-mount and tighten the clamps over the knurled area.

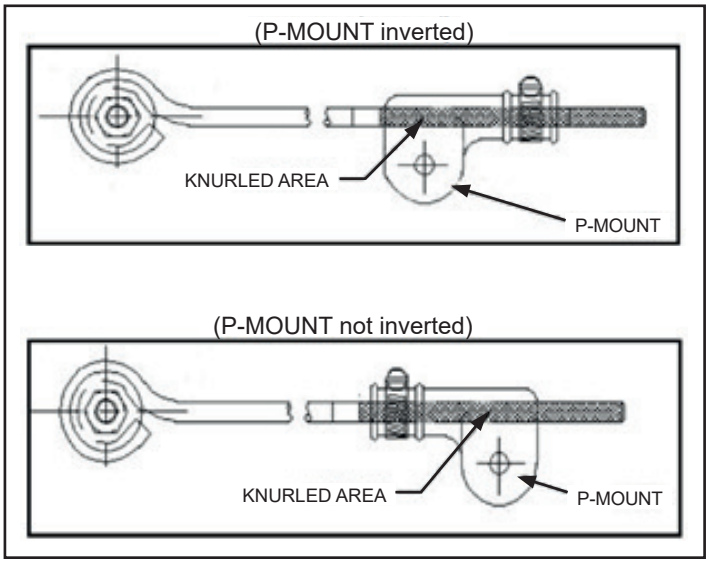


Figure 7 - Knurled Area of P-mount

1.18. Repeat the steps 1.8 to 1.16 for the right rear side.

FRONT LEVELING

1.19. Locate the front left air bag (See Figure 8).

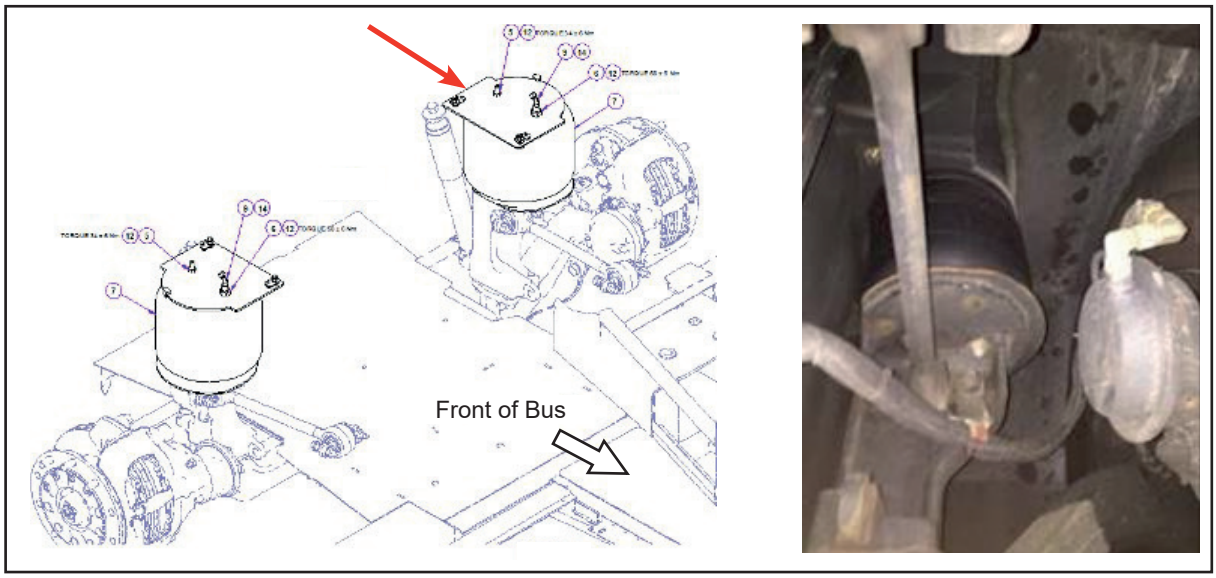
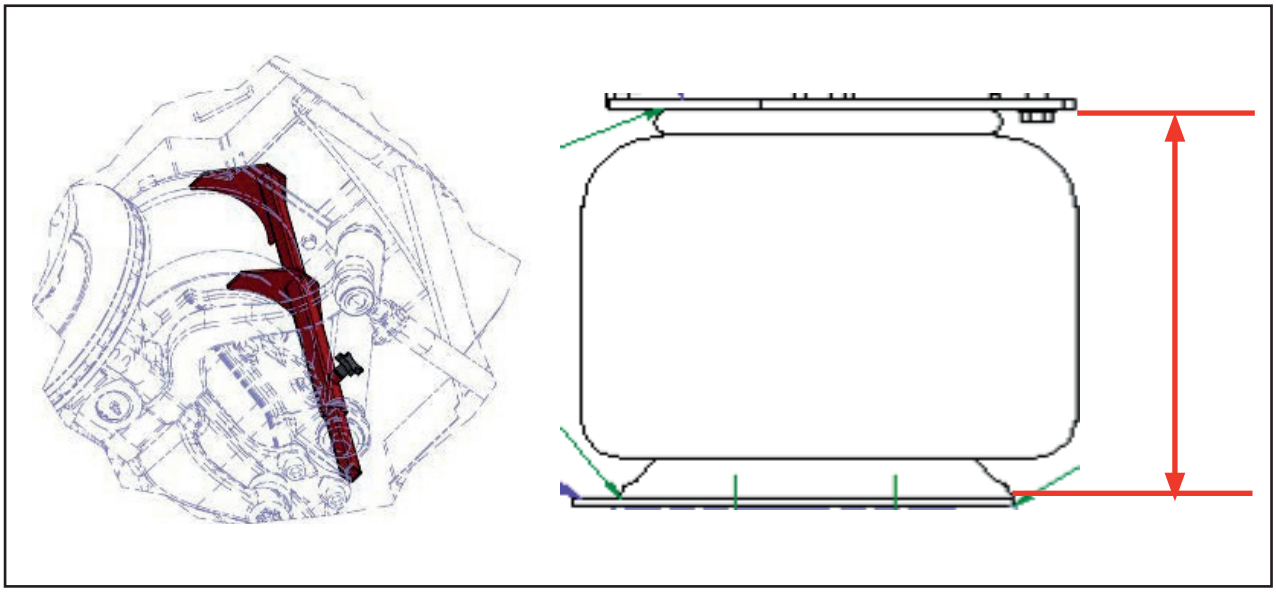


Figure 8 - Location of Front Airbag

1.20. Using the jig NT1090, measure the distance from the air spring mounting plate and the bottom of the air bag structure to which the air bag is attached.

1.21. Once the jig is in place, tighten the knob and remove the jig from the location (See Figure 9).



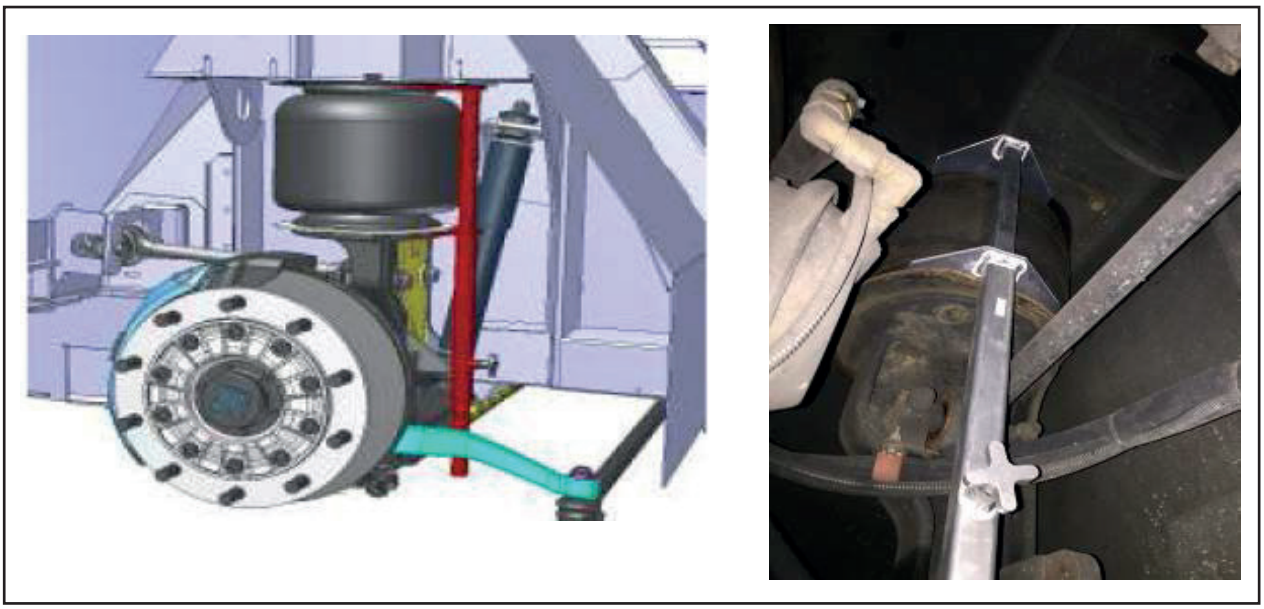


Figure 9 - Measurement of Air Springs - Front

NOTE

Make sure the jig is not touching any plate hardware and confirm that the jig is flush. See picture of potential hardware interference.

Figure 10 - Location of Hardware

1.22. After removing the jig, measure the distance from the top of A to the bottom of B at the center of the jig using a measuring tape. Confirm that the plate x plate distance is within the specification shown on table 2.

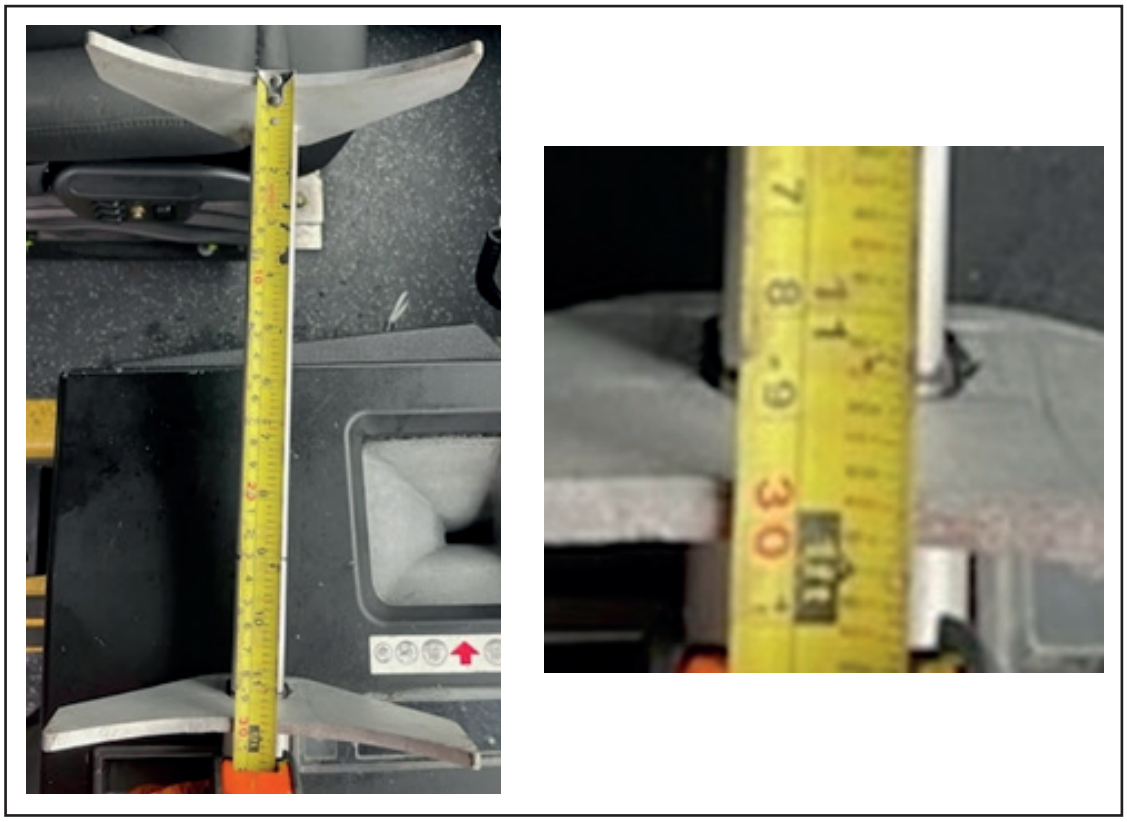


Figure 11 - Measuring the Distance from Top A to Bottom B

NOTE

If the measurement is not within specification, document the measurement.

Front Ride Height Plate x Plate on lift specification	11 7/8" ± 1/8"
Minimum	11 ¾”
Maximum	12”

Table 2 - Plate Distance

1.23. Repeat steps 14-16 for the front right side.

1.24. If the front left and the front right plate x plate measurements are not within specification, move on to the next step to adjust both of the front plate x plate heights.

1.25. Locate the center front leveling valve and remove the dust cover using a 10mm socket wrench (See Figure 12).

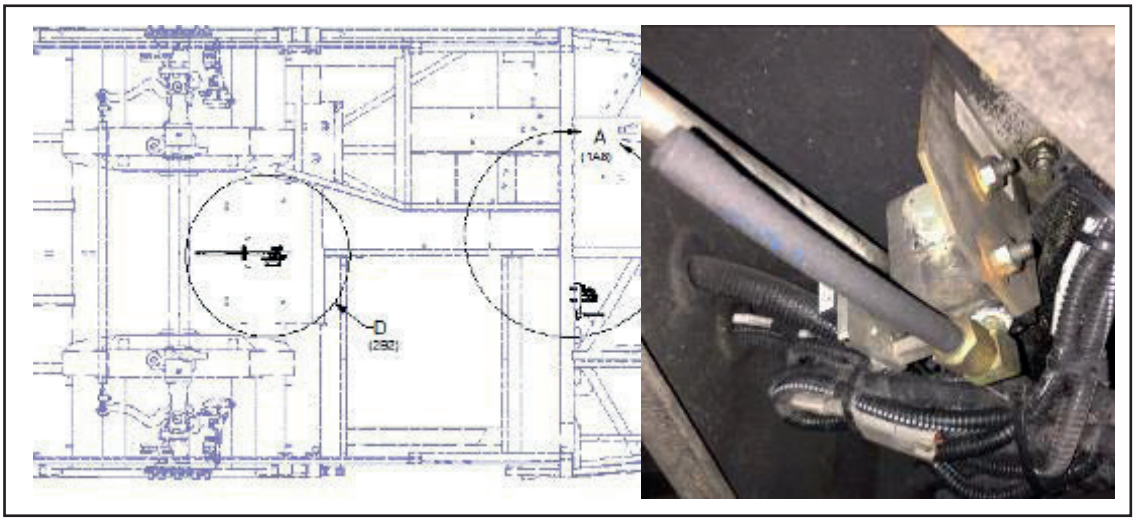


Figure 12 - Location of Center Front Leveling valve

1.26. Confirm that the arm and bracket on the front leveling valve is 90deg and straight. If the arm and bracket are not 90deg and straight (See Figure 13).

- Loosen the M6 bolt using a 10mm socket wrench
- Adjust the arm and bracket to be 90deg and straight
- Tighten the bolt to 8.1 ± 0.75 lb ft (11 ± 1Nm) using a torque wrench and 10mm socket. Apply torque seal.

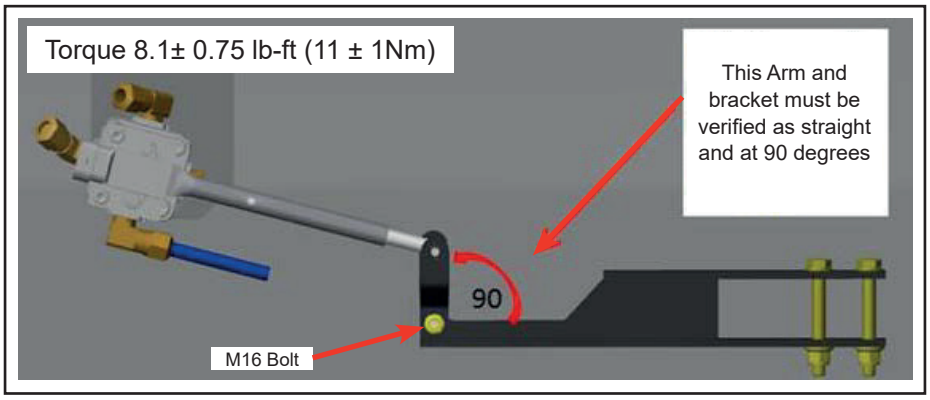


Figure 13 - Angle between the Arm and Bracket

1.27. Using a 11mm socket wrench, loosen up the 2x bolts on the center leveling valve. While facing the streetside of the bus, adjust the front right and left plate x plate height (See Figure 14).

- Push the valve towards the front of the bus along the slot to increase/inflate the air springs.
- Push the valve towards the rear of the bus along the slot to decrease/deflate the air springs.

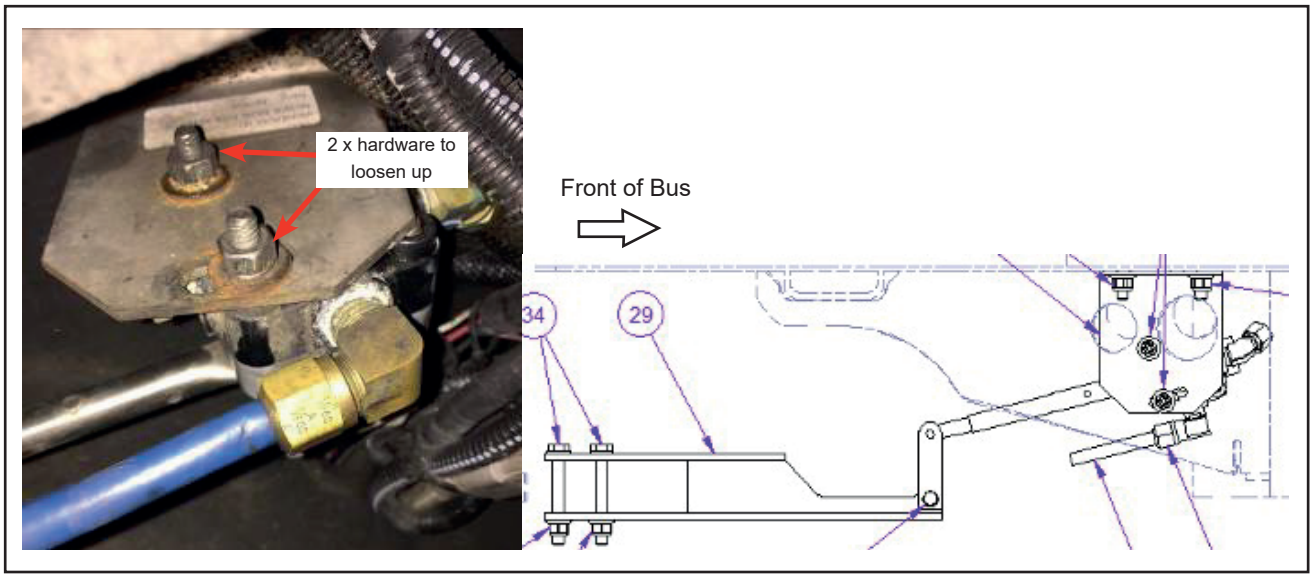


Figure 14 - Loosening the bolts on the Center Leveling Valve

1.28. Re-measure the front left and front right air spring plate x plate measurement using the jig to confirm if the height is within specification.

NOTE

Let the pneumatic system settle roughly 5 minutes before taking measurements between the air spring mounting plates.

1.29. If the FRONT plate x plate heights were adjusted and cannot meet specification with the leveling valve adjusted to max, adjust the REAR plate x plate measurement by returning to step 1.14 to1.18.

NOTE

The rear left and rear right measurements may become out of specification when the front left and front right measurements become in specification. This is acceptable if the front measurements are within specification.

1.30. Re-measure the front left and front right air bag heights using the jig. Once the front right and front left plate x plate measurements are within specification, tighten the 2x bolts on the front leveling valve and torque to 3.7-4.4 lb ft (5-6 N•m) using a torque wrench and 11mm socket. Apply torque seal (See Figure 15).

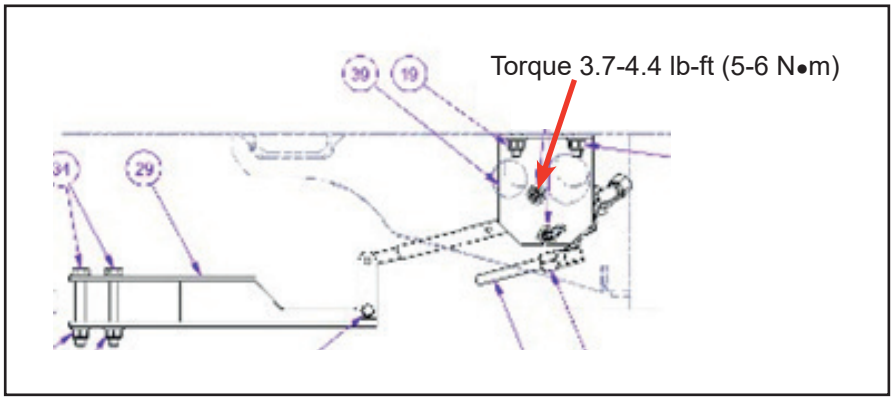


Figure 15 - Tightening the bolts

1.31. Reinstall the dust cover over the front center leveling valve.

1.32. Lower the vehicle.

APPENDIX – REFERENCE MEASUREMENTS

Refer to table 3 for reference vehicle front wheelchair ramp x ground height using a measuring tape.

NOTE

This height is only for reference purposes as the measurement is subjective based on the ground measuring from the table.

Front ride height wheelchair ramp x ground specification	15 1/4" ± 1/4"
Minimum	15"
Maximum	15 ½"

Table 3 - Ground Measuring

APPENDIX - KNEELING SYSTEM

NOTE

Make sure that the surface selected for the verification of the kneeling system is as level as possible.

NOTE

The installation of batteries or the connection of electrical terminals to an external power source is required for the following steps.

NOTE

The following tests are performed with an empty load (excluding the driver).

NOTE

Before performing these tests, make sure that all objects in the way are removed (e.g. safety supports).

NOTE

120 psi minimum in the reservoirs at all times and make sure that the doors have air.

1.33. Place the master control switch in the RUN position and front start the engine.

1.34. Place the kneeling and ramp master switch in the ON position (See Figure 16).

NOTE

Make sure that the ramp is retracted and that the doors are closed.

1.35. Activate the kneeling switch to begin kneeling (See Figure 16).

NOTE

Make sure that the underbody does not rest on the axle. No contact is allowed.

Figure 16 - Kneeling Switch

1.36. The alarm must sound during kneeling and the exterior yellow indicator lights must blink.

1.37. Check that the yellow dashboard tell-tale lights up and remains lit until the command to raise is given.

1.38. Allow the bus to settle.

1.39. Measure the kneeling height with a measuring tape in accordance to table 5 from the top of the wheelchair ramp floor to ground.

NOTE

This height is only for reference purposes as the measurement is subjective based on the ground measuring from the table.

Front kneeling height wheelchair ramp x ground specification	11 1/8” -0” / +1/2”
Minimum	11 1/8”
Maximum	11 5/8”

Table 4 - Ground Measuring

1.40. Activate the kneeling switch to start rising.

NOTE

The cycle ends when the brake interlock releases.

1.41. Turn off the master run switch.

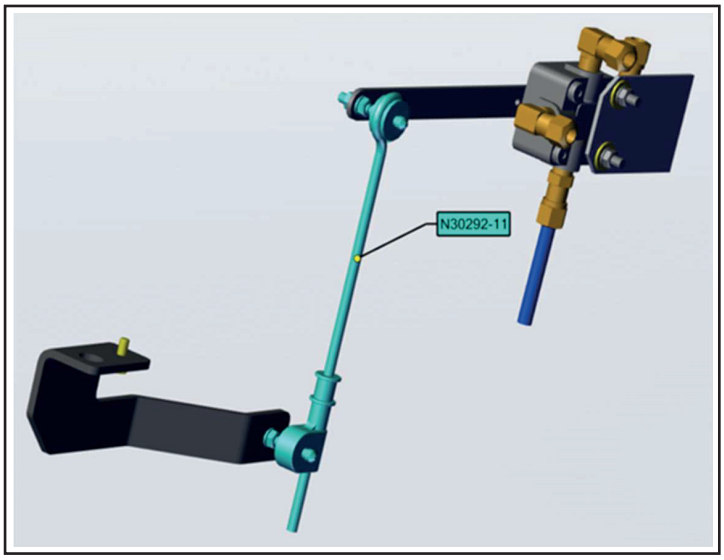
LEVELING VALVE KIT

BOM FOR LEVELING VALVE KIT

- N30292 Linkage Kit 2 per bus if needed
- Kits includes items below
- Link x1
- Grommet x1
- 1/4" Stud x2
- Hose clamp x1
- P-mount x1
- Lock Washer 1/4 x4
- Hex Bolt 1/4 -20NC x4

Linkage Kit being used with the leveling valve

The Kit includes:



Link (P/N 22025-3)	1x
Grommet (P/N 26424)	1x
1/4" Stud	2x
Hose clamp (P/N 25921-6)	1x
P-Mount (P/N 26425-1)	1x
Lock Washer 1/4"	4x
Hex Bolt 1/4-20NC	4x

NOTE

For more information on the raising and lowering of the vehicle, refer to section 18: HOISTING AND TOWING of the Nova LFS maintenance manual. Respect your current internal safety procedures. Use the proper hoisting equipment for your safety.

1.42. Raise the vehicle to locate rear leveling valves, one on each side (See Figure 17).

Figure 17 - Location of Rear Leveling Valve

1.43. Loosen top and bottom nut (See Figure 18).

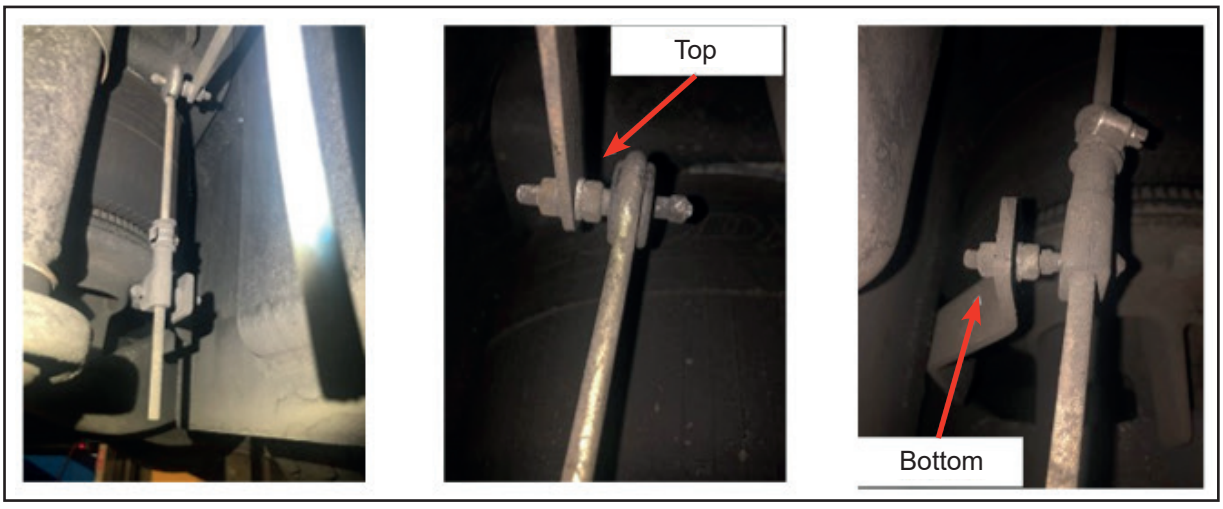


Figure 18 - Loosening the Nuts

1.44. Leveling valve with top and bottom nut loosened (See Figure 19).

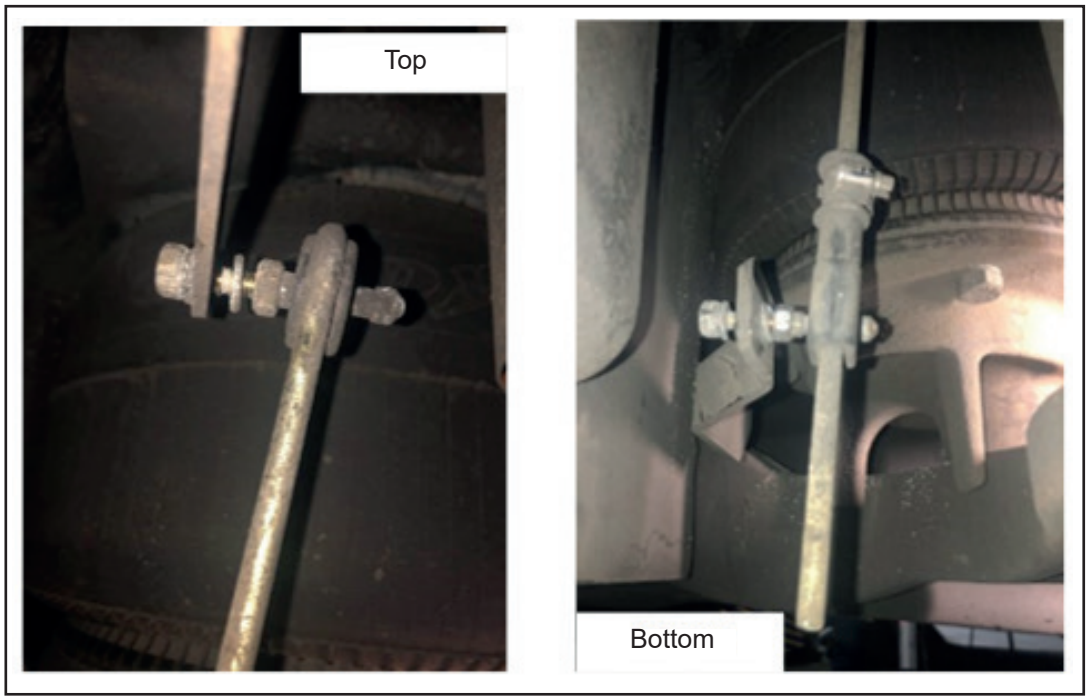


Figure 19 - Leveling the Valve

1.45. Leveling valve removed from the bus (See Figure 20).

Figure 20 - Removal of Leveling Valve

1.46. Pre-assemble new valve, adjustment will be done after installation (See Figure 21).

Figure 21 - Installation of New Valve

1.47. Install the support rod and hardware for top and bottom (See Figure 22).

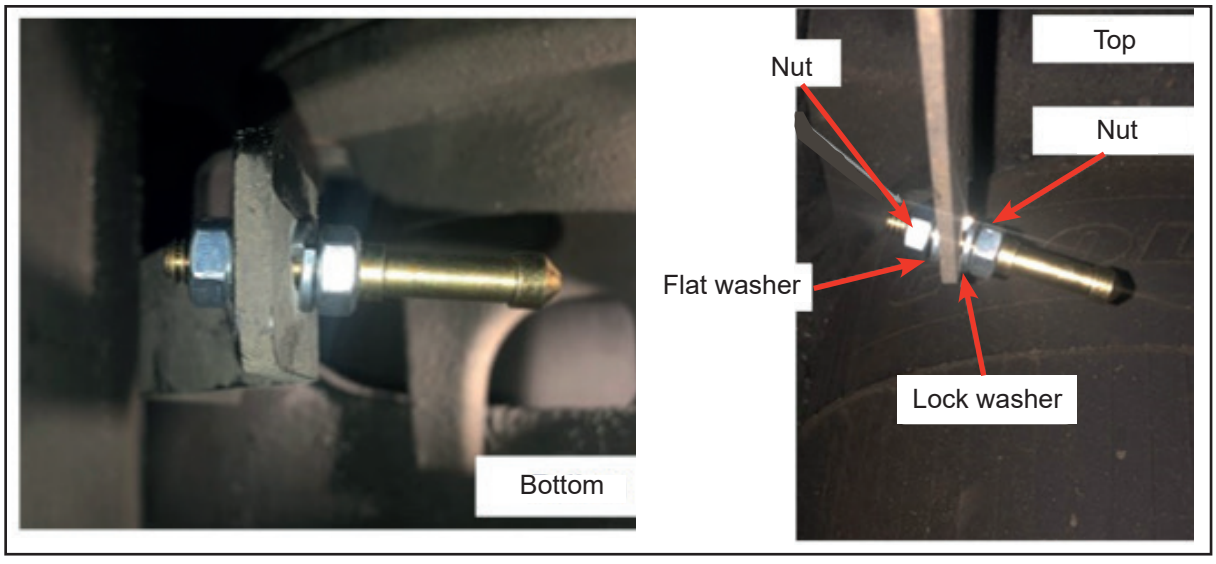


Figure 22 - Installation of Support Rod and Hardware

1.48. Secure top and bottom hardware and torque the nuts to 8.1 ± 0.75 lb ft (11 ± 1N•m) (See Figure 23).

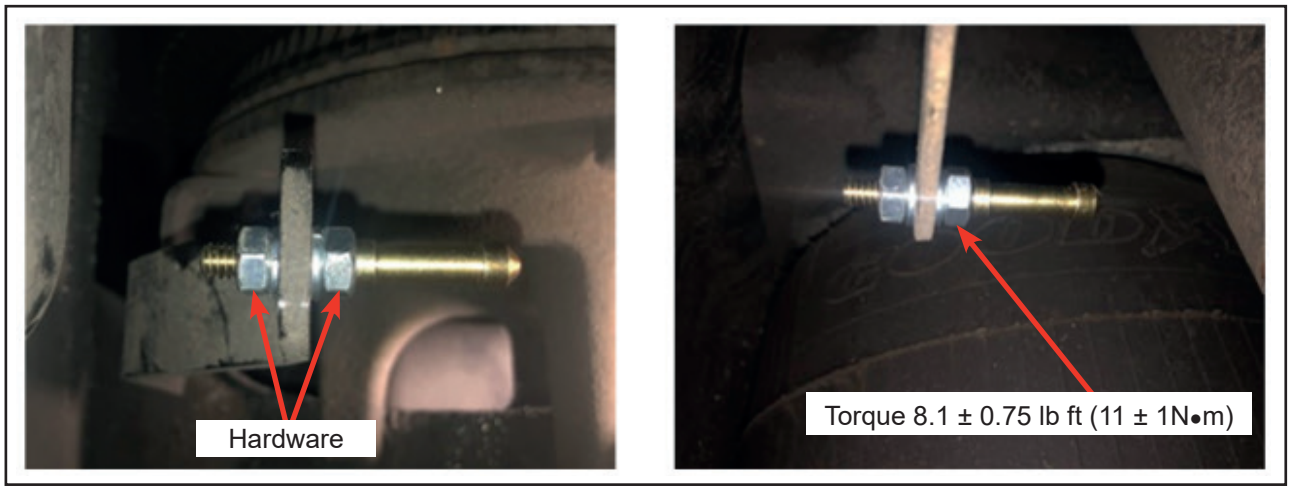


Figure 23 - Tightening the hardware

1.49. Slide the adjustment rods (See Figure 24).

1.50. Adjust leveling valve as per ride height instructions.

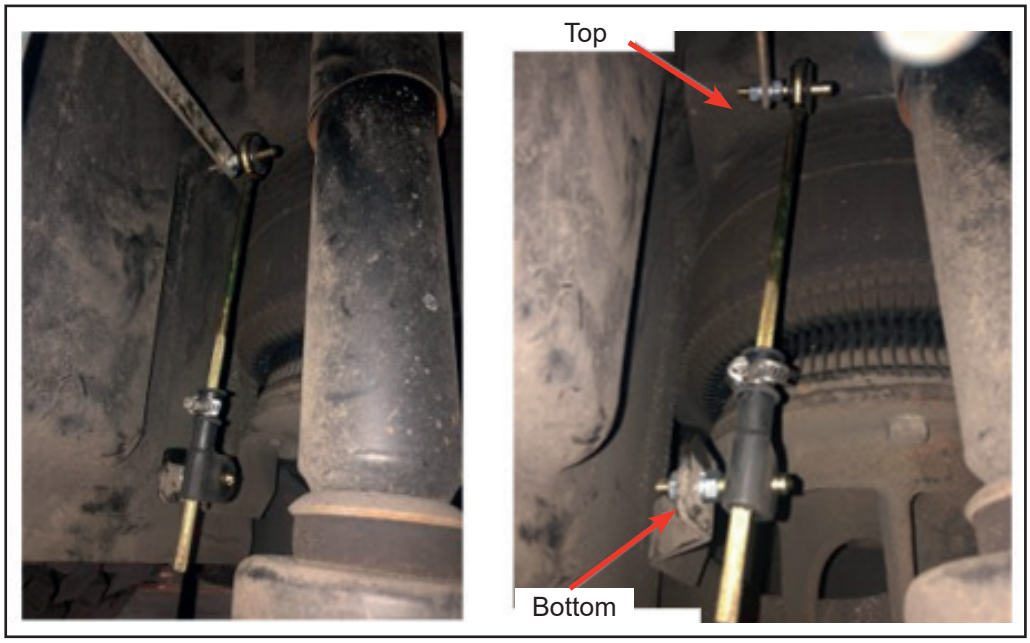


Figure 24 - Adjusting the Leveling valve

1.51. Lower the vehicle.

1.52. Set the battery disconnect switch in the battery compartment to ON position.

1.53. Set the Master control switch in the ON position.

1.54. The vehicle can return in service.❖