

REFERENCE:	Nova Bus Manuals
SECTION:	12 Wheelchair access ramp
RS N°:	MQR 7621-277
EFFECTIVE IN PROD.:	NA

APPLICATION DEADLINE:
2013DE06

SUBJECT:	Ramp gear box actuator
JUSTIFICATION:	Possible water infiltration through the gear box covers, causing a functional deterioration of the ramp

LEVEL	DESCRIPTION	DIRECT CHARGES		TIME
		LABOUR	MATERIAL	
1	Visual verification (if required, use a feeler gauge) to determine if there is water infiltration into the gearbox.	Nova Bus	–	15 min
2	Gear box assembly replacement	Nova Bus	Client*	1h 30 min

* The cost of the material will be reimbursed when claiming for this service document.

MATERIAL

QTY	PART N°	REV.	DESCRIPTION	REPLACES PART N°
LEVEL 1				
–	–	–	–	–
LEVEL 2 (only if required*)				
1	N45950R	–	Actuator gear box	–

Materials will be available within 77 days. To order, please contact your Nova Bus service representative.

* The material identified in Level 2 is to be ordered only for vehicles that respect the criteria defined in Level 1.

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	2012AU30	Initial release	Wilder Galiano
R1	2012OC22	Step 1.2 : gap changes to opening	Wilder Galiano

CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
		FROM	TO	FROM	TO	
BC Transit - BCT - British Columbia	L487	9404	9433	L82U094000149	L82U794000178	30
Strathcona County Transit - Alberta	L524	3005	3010	L82X593000604	L82X493000609	6
New York City Transit - New York	L545	1202	1289	S92U5A4000001	S92U0A4000098	88

**WARNING**

Follow your internal safety procedures.

PROCEDURE

LEVEL 1: INSPECT

1.1. Locate the access ramp actuator gear box. See Figure 1.

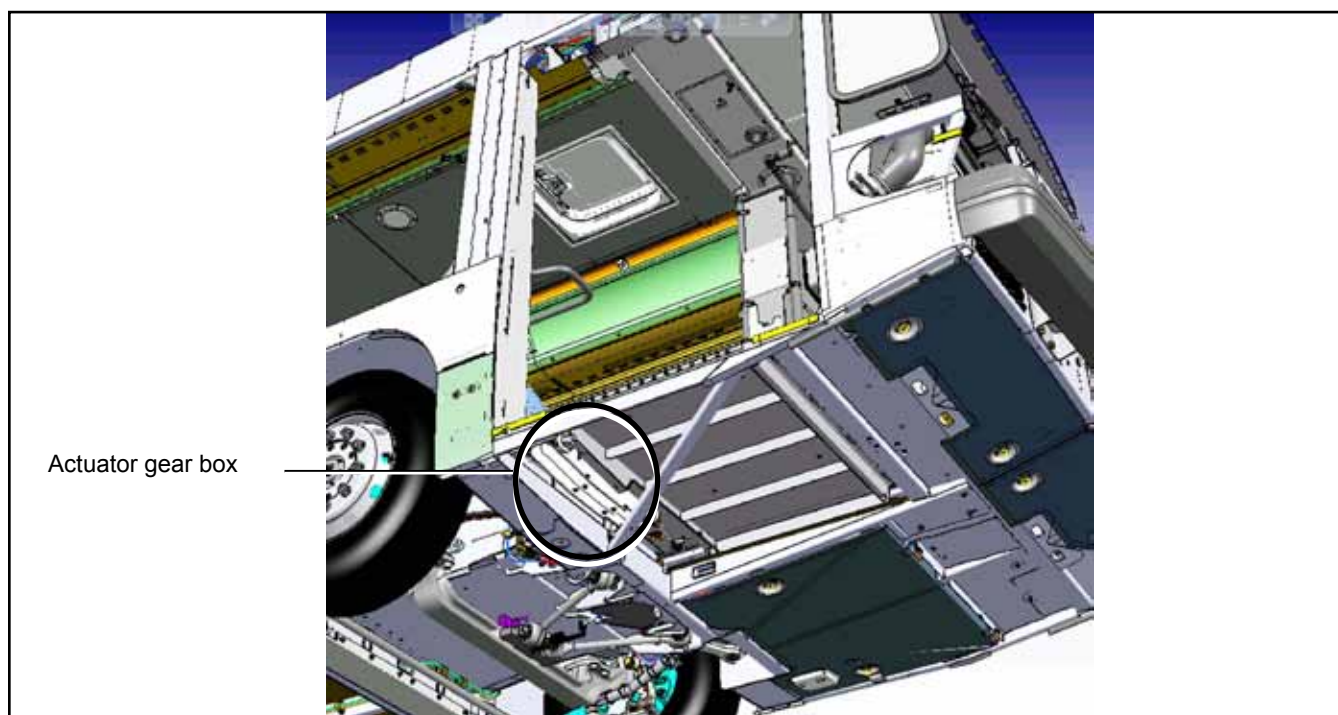


Figure 1 - Actuator Gear Box Location

1.2. Visually verify if there is an opening between the cover and the gear box body. See Figure 2.

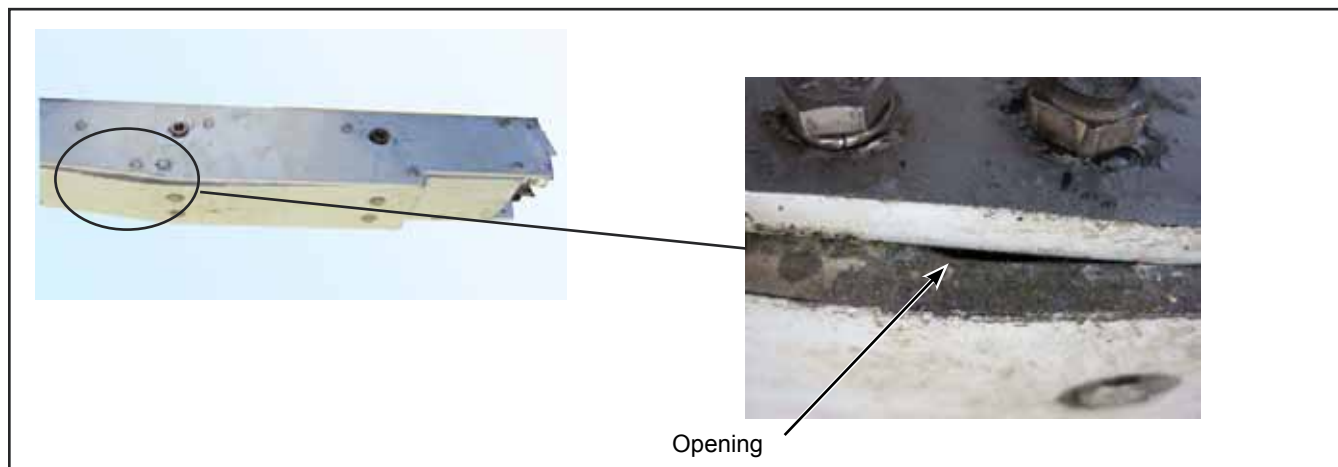


Figure 2 - Gear Box Actuator Typical Opening

- 1.2.1. If the opening is smaller than 0.068 in. (2 mm), use a feeler gauge, the actuator gear box conforms.
- 1.2.3. Clean and apply Sikaflex caulking, or an equivalent into the opening to prevent water infiltration. The vehicle can be returned to service.
- 1.2.4. If the opening is greater than 0.068 in. (2 mm), proceed to **LEVEL 2** of this document.

**WARNING**

Warranty will be void if the gearbox is dismantled or if the connectors were damaged.

LEVEL 2: INSTALL**ACTUATOR GEARBOX REMOVAL**

- 2.1. Raise the vehicle as per section 18: **HOISTING AND TOWING** in the Nova Bus maintenance manual.
- 2.2. Deploy the ramp to the horizontal position. Support the deployed panel.
- 2.3. Dismount the main lever from the intermediate lever. Retain the hardware. See Figure 3.
- 2.4. Disconnect the hydraulic hoses from the actuator gear box. Install plugs onto the hydraulic connectors. A recuperation pan is required for the recovery of the hydraulic oil.

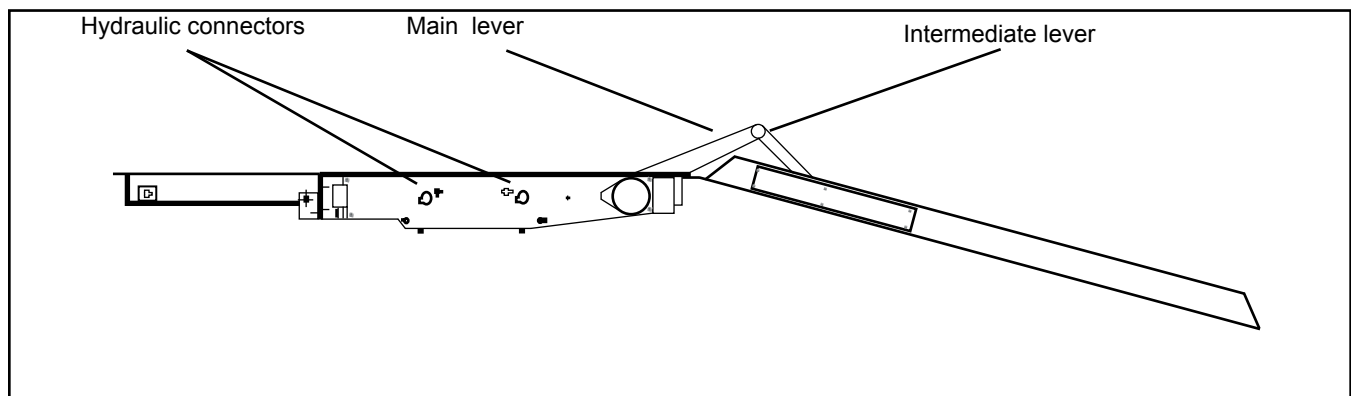


Figure 3 - Ramp Components

- 2.5. Disconnect the electric sensor harness. See Figure 4.



Figure 4 - Ramp Sensor Connector

- 2.6. Place a stand under the actuator gear box to hold it in place.
- 2.7. Loosen the 16 bolts that retain the actuator gear box to the vehicle. See Figures 5 and 6.

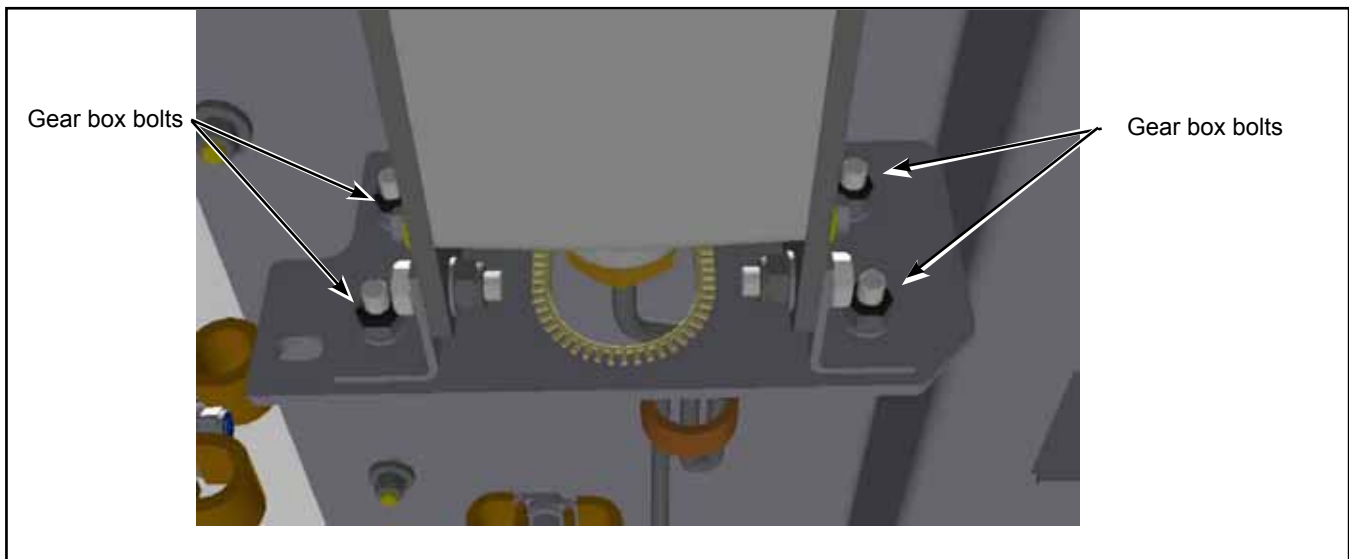


Figure 5 - Gear Box Attachments

- 2.8. Loosen and remove the main lever from the ramp splined shaft. See Figure 6. Retain the main lever and hardware
- 2.9. Remove the 16 bolts that hold the gear box. Retain the hardware.

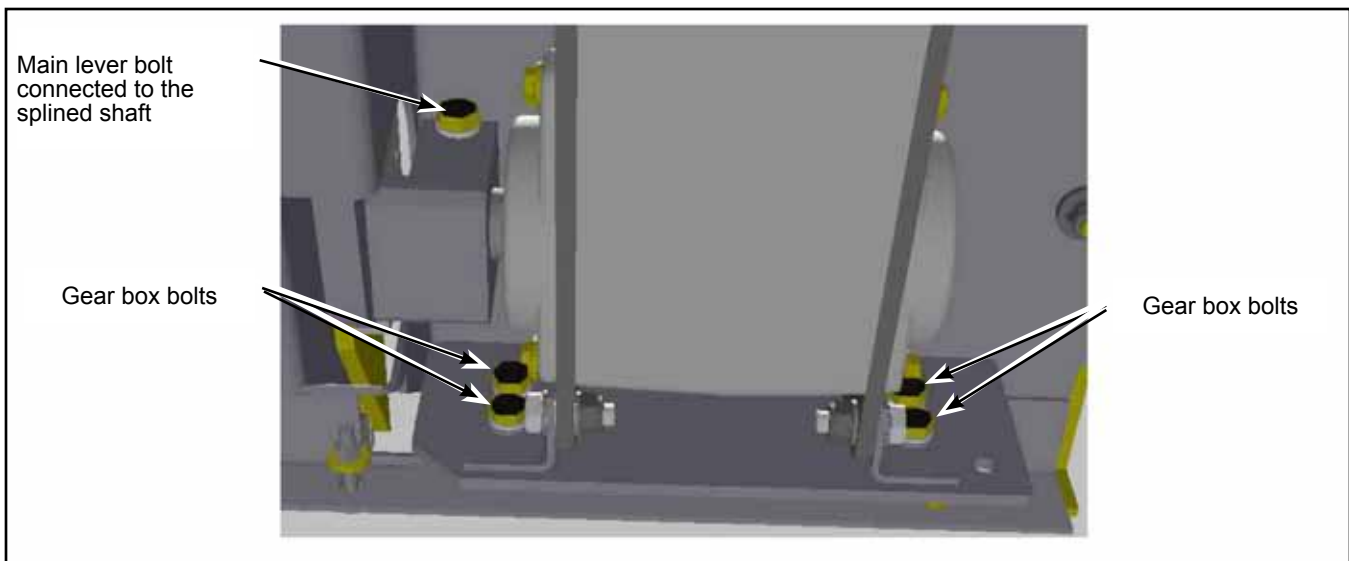


Figure 6 - Gear Box Attachments

- 2.10. Move the gear box toward the rear of the vehicle and remove from the access ramp.

ACTUATOR GEARBOX INSTALLATION

- 2.11. Place a new actuator gear box N45950R under the ramp and move it toward the front of the vehicle.
- 2.12. Install the main lever with the retained hardware onto the splined shaft of the access ramp. Ensure that the timing mark on the splined shaft is at the bottom. Align with the main lever slot when installed. See Figure 7. Do not fasten the hardware.

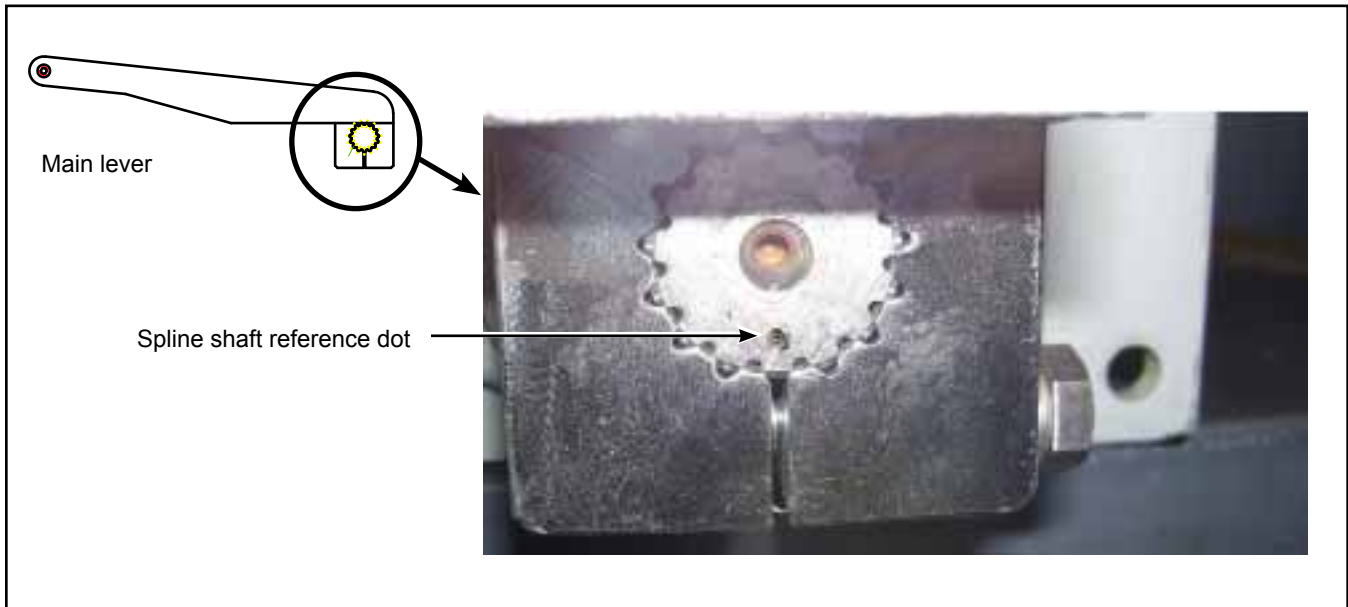


Figure 7 - Main Lever and Splined Shaft Reference Dot

- 2.13. Support the actuator gear box to hold it in place.
- 2.14. Install the four supports with the retained hardware. Do not fasten the hardware.
- 2.15. Tighten the main lever bolt and the 16 bolts holding the gearbox to the vehicle at the torque indicated in Figure 8.



Figure 8 - Bolt Torque

- 2.16. Install the main lever onto the intermediate lever with the retained hardware.
- 2.17. Connect the sensor wiring harness. Attach the harness to the P clamp. If required use a tiewrap to keep the harness together.
- 2.18. Connect the hydraulic hoses to the actuator and tighten at the torque indicated in Figure 9.



Figure 9 - Hydraulic Connector Torque

- 2.19. Remove the actuator gearbox support and ramp support.
- 2.20. Lower the vehicle.
- 2.21. Operate the ramp following **RAMP OPERATION VERIFICATION** in section 12: **WHEELCHAIR ACCESS RAMP** in the Nova bus maintenance manual.
- 2.22. The vehicle can be returned to service. ❖