

REFERENCE:	Nova Bus Manuals
SECTION:	03 : Wipers/washers, windshield
RS N°:	MQR 7621-1027
EFFECTIVE IN PROD.:	L944 (2016FE)
TC RECALL N°:	2016-104
NHTSA RECALL N°:	16v-135

APPLICATION DEADLINE: N/A  
CLAIM REFERENCE NUMBER: SR-3601

SUBJECT:	Windshield wiper system
JUSTIFICATION:	Windshield wiper idler arm pin might strip.

LEVEL	DESCRIPTION	DIRECT CHARGES		TIME
		LABOUR	MATERIAL	
1	Replace the linkage assembly.	Nova Bus	Nova Bus	3h
2	-	-	-	-

**MATERIAL**

QTY	PART N°	REV.	DESCRIPTION	REPLACES PART N°
<b>LEVEL 1</b>				
1	N8904047	NR	Welded wiper linkage kit	-
<b>LEVEL 2</b>				
-	-	-	-	-

Materials will be available within 112 days. To order, please contact Prevost Parts by phone at 1-800-771-6682, by fax at 1-888-668-2555 or by email at [prevostparts.commandes@volvo.com](mailto:prevostparts.commandes@volvo.com). Specify document number, quantity of parts required and shipping address.

**DISPOSAL OF PARTS**

REMOVED PARTS ARE:	DISCARDED	RETAINED *	* To be reimbursed, the parts must be retained and returned in accordance with the usual warranty procedure.
	-	Yes	

**REVISION HISTORY**

REV.	DATE	CHANGE DESCRIPTION	WRITTEN BY
NR	2016AV18	Initial release	André Pelletier
R1	2016AV22	Page 1: Removed parts must be " <b>RETAINED</b> ". Part under "Replaces part N°" removed. Pages 8-9-12 added conversion for N·m to lb·ft. Shifted texts repositionned.	André Pelletier

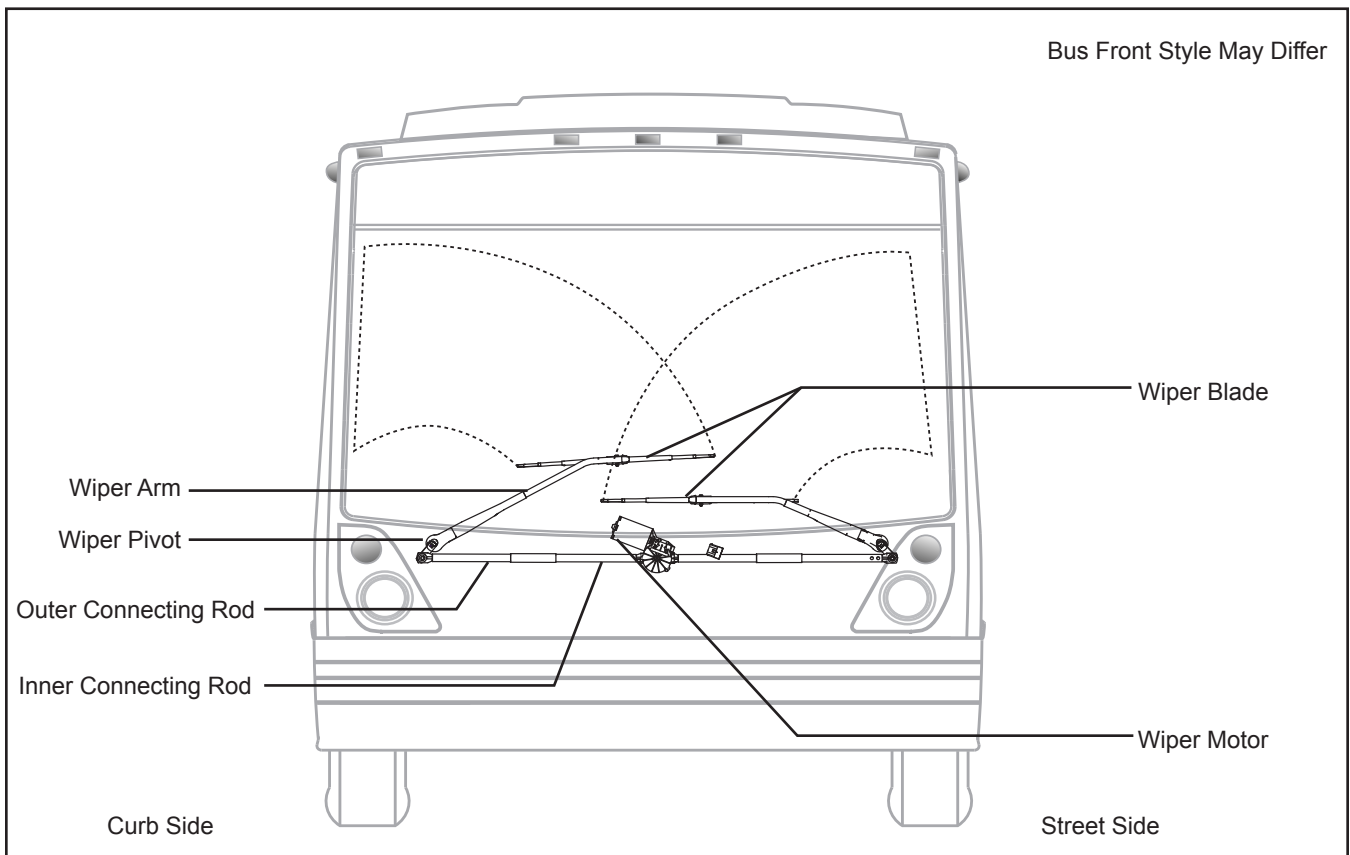
CLIENT	ORDER	ROAD NUMBER		VIN (2NVVY/4RKY...)		QTY
		FROM	TO	FROM	TO	
Austin - CMTA - Texas	L704	5051	5068	L82J7E4500471	L82J2E4500488	18
Brampton - Ontario	L789	1401	1408	L82J4E3001216	L82J1E3001223	8
Brampton - Ontario	L816	1409	1415	L82J3E3001224	L82J9E3001230	7
Chicago Transit Authority - CTA - Illinois	L811	7902	7949	L82J6E4500509	L82J4E4500556	48
Chicago Transit Authority - CTA - Illinois	L837	7950	7999	L82J6E4500655	L82J1E4500708	50
CT Transit - Connecticut	L814	1462	1473	S92LXE4500717	S92L4E4500728	12
CT Transit - Connecticut	L815	1426	1429	S92L0E4500709	S92L0E4500712	4
Fredericton - New Brunswick	L812	—	—	L82J4E3001202	L82J4E3001202	1
LYNX - Florida	L785	—	—	S92L6E4500505	S92L8E4500506	2
MTD - Santa Barbara, California	L730	—	—	S92J8E4500567	S92J1E4500569	3
Red Deer - Alberta	L772	1106	1108	L82J2E3001120	L82J6E3001122	3
Regina - Saskatchewan	L807	671	685	L82J8E3001137	L82J2E3001151	15
Saskatoon - Saskatchewan	L831	1401	1405	L82J7E3001307	L82J9E3001311	5
SEPTA - Pennsylvania	L741	7355	7355	S92L4E4500504	S92L4E4500504	1
SEPTA - Pennsylvania	L743	7356	7370	S92L1E4500489	S92L2E4500503	15
SEPTA - Pennsylvania	L744	8601	8689	L82L7E4500570	L82LXE4500661	89
SEPTA - Pennsylvania	L749	7327	7354	S92LXE4500443	S92L2E4500470	28
St. John's - Newfoundland	L808	1415	1419	L82J4E3001152	L82J1E3001156	5
Thunder Bay - Ontario	L806	—	—	L82J6E3001170	L82J8E3001171	2
Toronto Transit Commission - TTC - Ontario	L738	9022	9026	S92JXD3001115	S92J7D3001119	5
Toronto Transit Commission - TTC - Ontario	L777	9027	9152	S92J7E3001123	S92J6E3001372	126
University of Alabama - Alabama	L787	7028	7029	L82J2E4500507	L82J4E4500508	2



**WARNING**

Follow your internal safety procedures. Before starting any work on the vehicle, make sure the vehicle is completely and securely stationary.

**PROCEDURE FOR LINKAGE REPLACEMENT**



*Figure 1 - Windshield Wiper System*

- 1.1. Ensure the replacement linkage has a green dot. See Figure 2. This is to identify that the linkage is welded on the back side, which is difficult to see after installation.

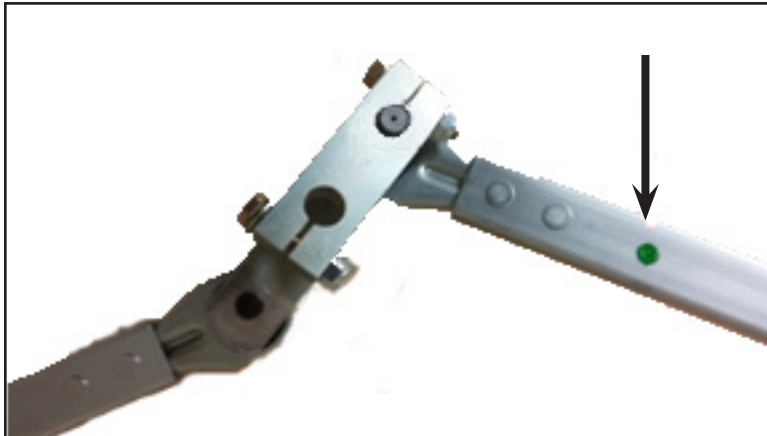


Figure 2 - Confirm Linkage Has a Green Dot

- 1.2. To make sure the wiper system is parked correctly, activate the wipers at low speed and, as soon as they reach maximum position, turn the switch OFF to deactivate the wipers. The system will return the wipers to park position.



#### CAUTION

Place the battery disconnect switch in the OFF position and lock it out. There is a risk of serious injury if the motor is powered and it detects that the system is not in the park position: it can activate automatically to complete a full cycle, even if there is no demand.

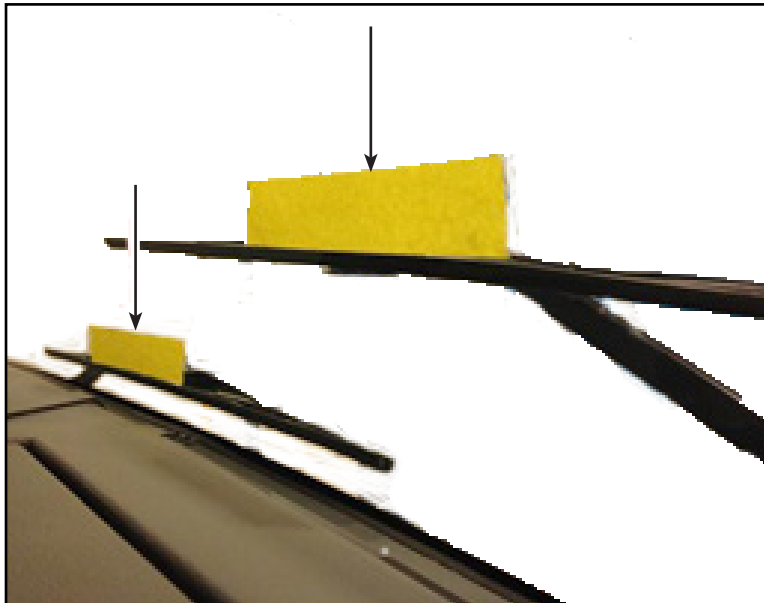


#### NOTE

Retain hardware removed during the procedure for later reinstallation.

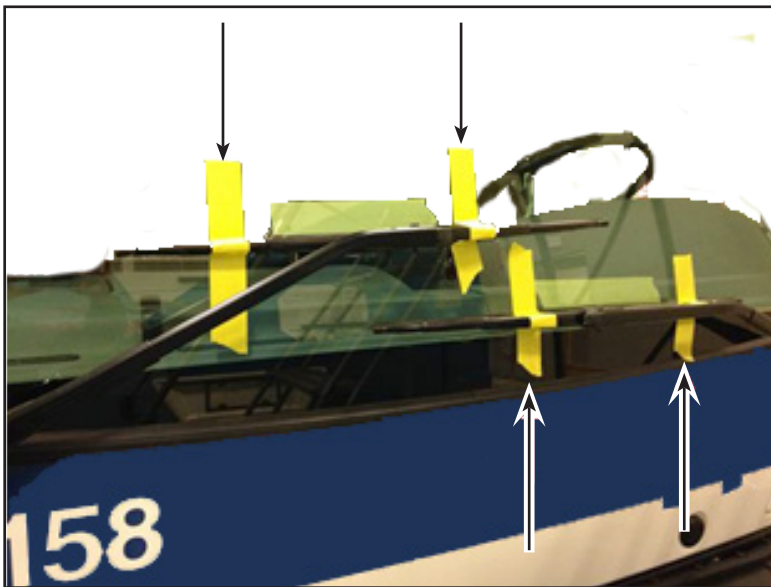
- 1.3. Remove driver handrail.
- 1.4. To access the wiper system on the street side, remove driver foot shields and the farebox (if necessary). For the curb side, remove the access panel under the dash.

1.5. Install tape on the inside face of the windshield to mark the wiper blade positions. See Figure 3.



*Figure 3 - Put Two Pieces of Tape Inside the Vehicle*

1.6. Tape the wiper blades on the windshield to maintain their position. See Figure 4.



*Figure 4 - Tape the Wiper Blades*

- 1.7. Before removing the original linkage assembly, make a mark at the joint on each side of the 4 bolts. In order to facilitate the repositioning of the new linkage assembly. See Figure 5. Typical for curb and street sides.

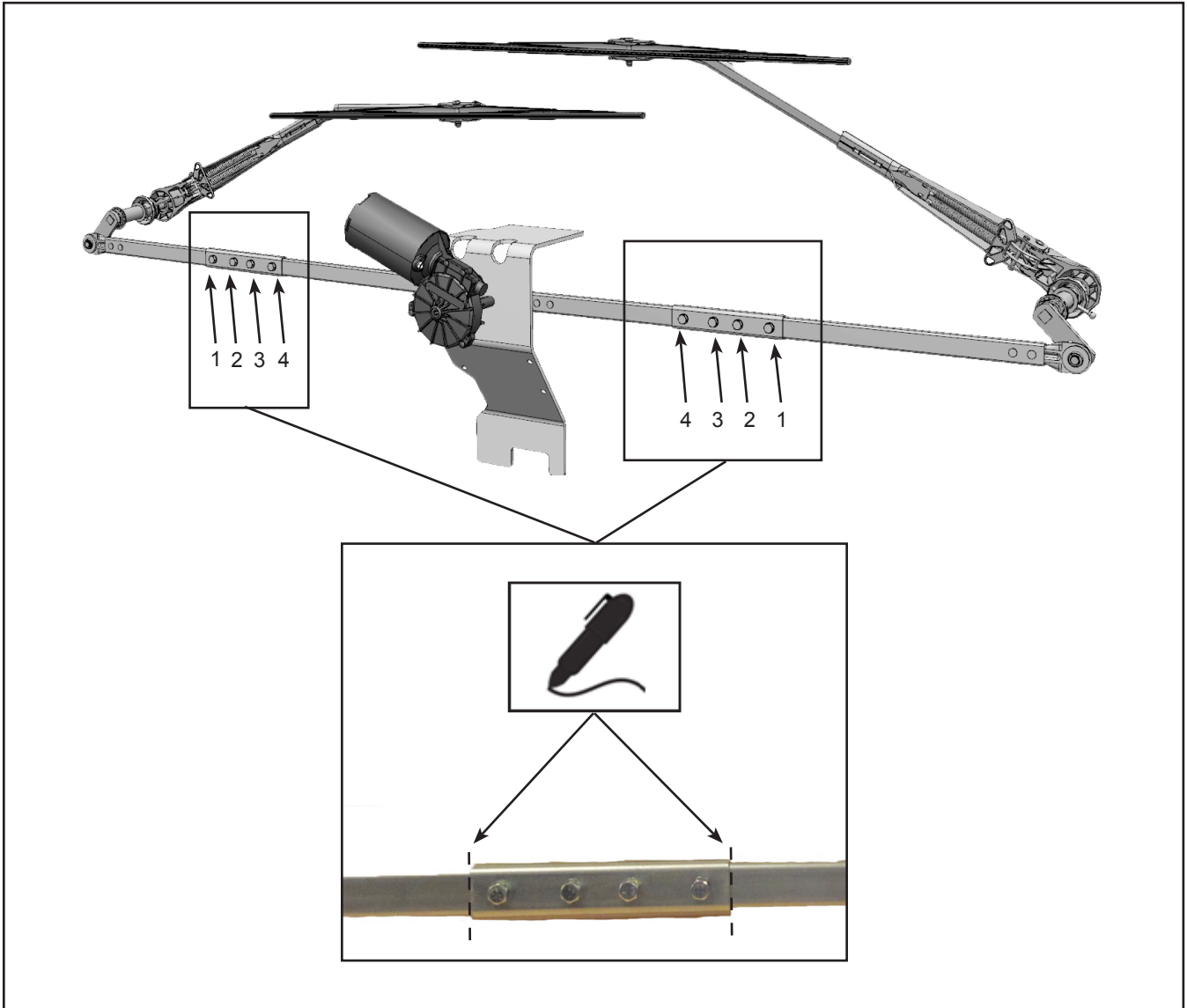


Figure 5 - Make Marks on the Linkage  
(Typical for Curb and Street Sides)

- 1.8. Remove bolts #3 and #4, then loosen bolts #2. Leave bolts #1 tight on both sides. See Figure 5 for the bolt positions.

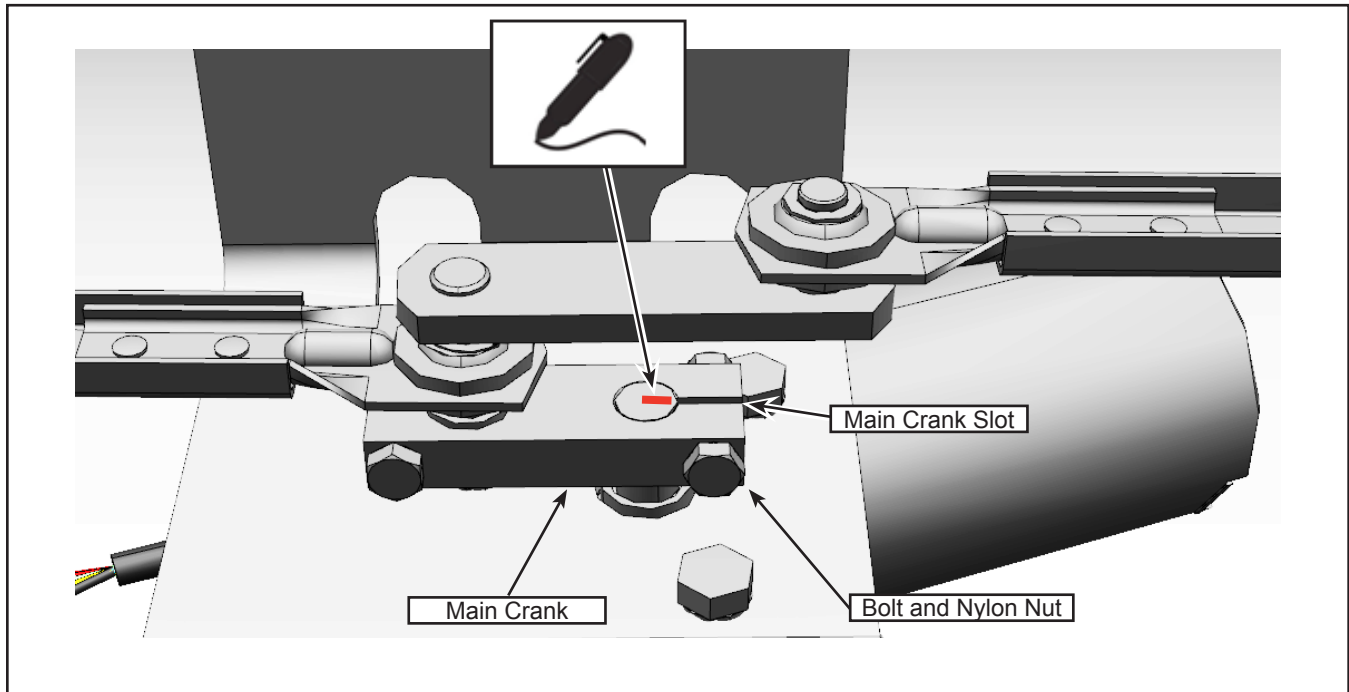


Figure 6 - Mark the Position on the Shaft and Remove the Main Crank

- 1.9. Make a mark on the motor shaft to identify the position of the slot of the main crank. See Figure 6.  
1.10. Remove the bolt and nylon nut from the main crank. See Figure 6.  
1.11. Slide the main crank off the motor shaft and remove the linkage assembly.



**NOTE**

If necessary, insert a flat screwdriver in the main crank slot to open it slightly. Be careful not to rotate the motor shaft.

- 1.12. Measure and record the dimensions according to the marks made at step 1.7: dimension "A" for street side and "B" for curb side. Transfer these dimensions to the new linkage. See Figure 7.

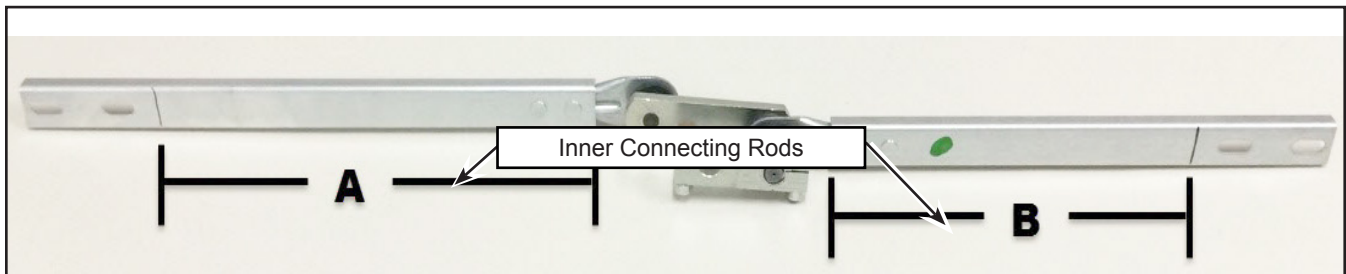


Figure 7 - Transfer Dimensions A and B to the New Linkage Assembly

- 1.13. Install the new linkage by inserting the new inner rods to both sides of the original outer connecting rods.
- 1.14. Place bolts #3 and #4 on both sides with the serrated washers, but leave them loose for now.
- 1.15. Slide the main crank onto the motor shaft splines. The main crank must be horizontal  $\pm 3^\circ$ . Make sure to align the mark made at step 1.9 with the slot on the main crank. See Figure 8.

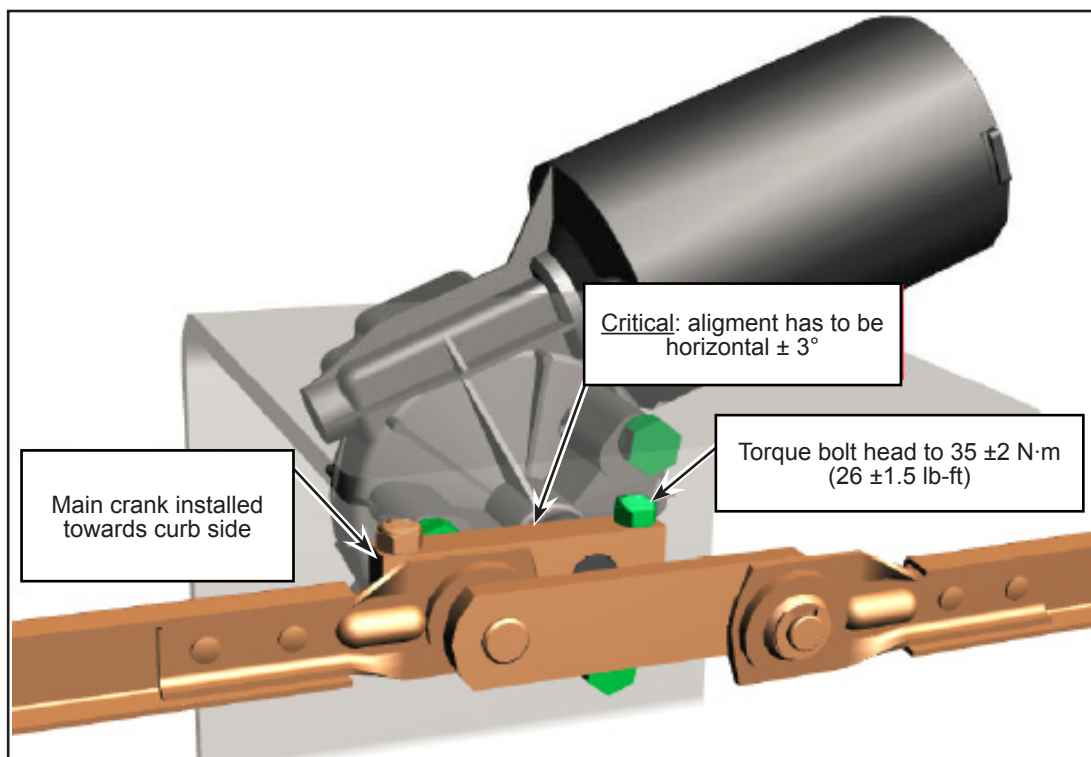


Figure 8 - Install the Main Crank

- 1.16. Reposition as needed to obtain the correct spline fit.
- 1.17. Set the connecting rods on both sides according to the previously made marks and tighten the eight bolts to  $24.5 \pm 2.5$  N·m ( $18 \pm 2$  lb-ft).

**NOTE**

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The rods on both sides should be the same length as the originals. Performing that step before torquing the main crank bolt will prevent the motor from rotating.

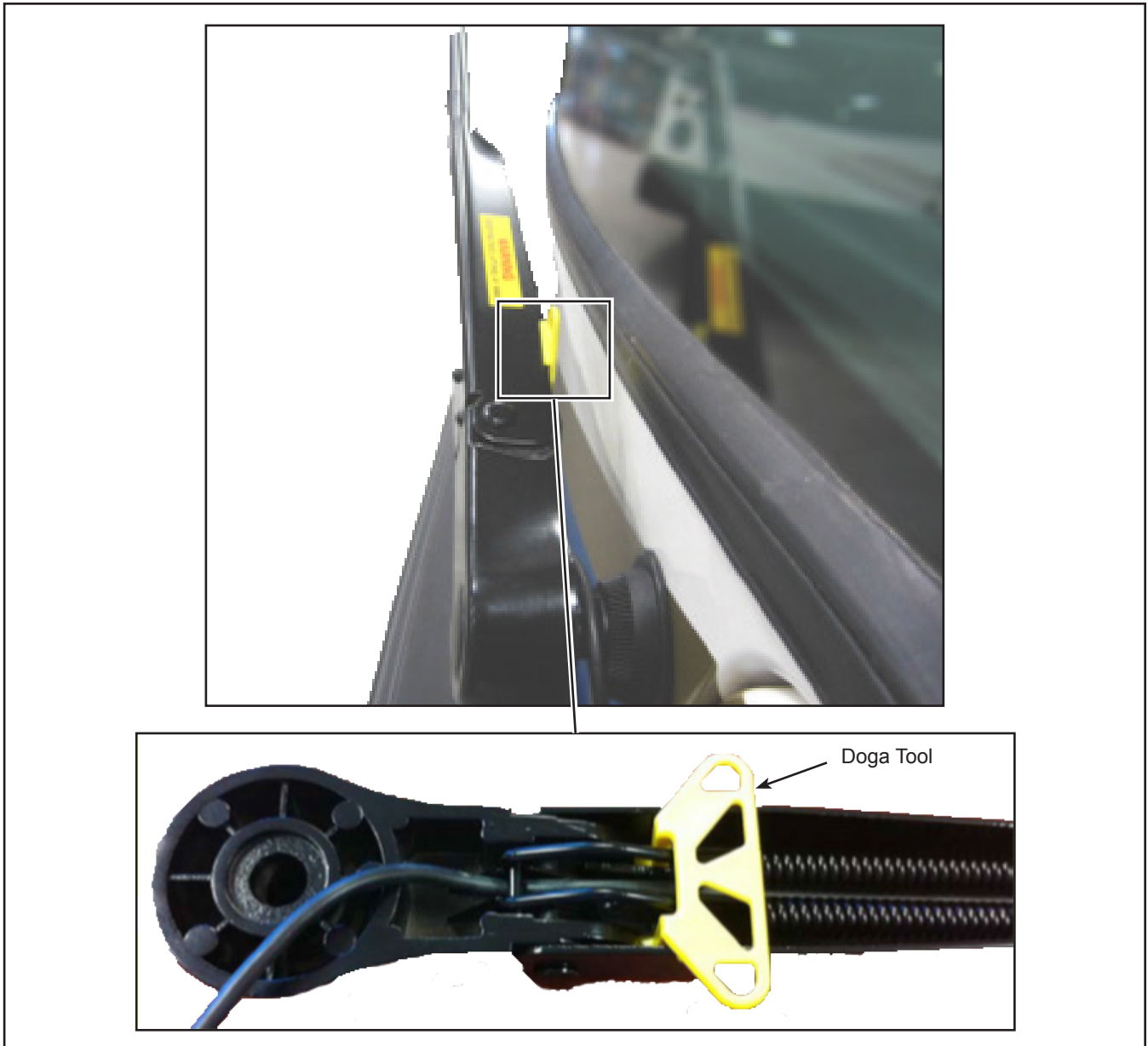
- 1.18. Torque the main crank bolt head on the motor shaft to  $35 \pm 2$  N·m ( $26 \pm 1.5$  lb-ft). Apply anti-tamper seal. See Figure 8.

**WIPER POSITION VALIDATION**

- 1.19. Remove tape on the wiper blades. Refer to Figure 4.
- 1.20. Unlock the battery switch and turn it to the ON position.
- 1.21. Confirm that the entire mechanism is secure and free from any possible interference during movement.
- 1.22. Validate there is no free rotation at the wiper pivots.
- 1.23. Activate the wiper system and let it park as described in step 1.2.
- 1.24. Validate that the wiper blades lines up with the tape put inside the windshield, as seen in Figure 3, step 1.5. The blades should not have a negative angle.
- 1.25. If validation conditions are met, remove tape on the inside of the windshield and reinstall all the parts removed.
- 1.26. If validation conditions are not met, proceed to the **WIPER ADJUSTMENT PROCEDURE**.

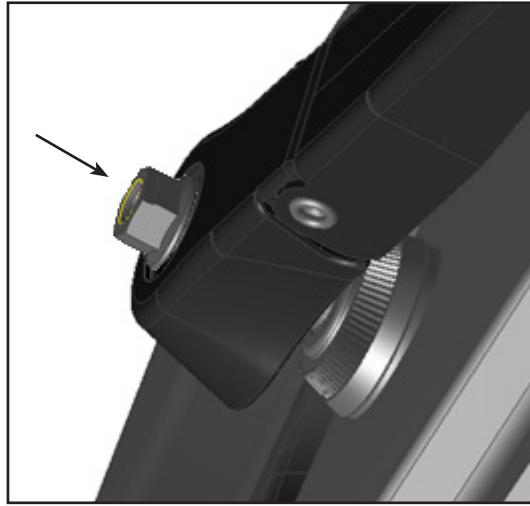
**WIPER ADJUSTMENT PROCEDURE**

1.27. Lift the curb side wiper arm and install the Doga tool (yellow) to keep the arm straight. See Figure 9.



*Figure 9 - Install the Doga Tool*

1.28. Loosen the pivot nut by a few threads. See Figure 10.



*Figure 10 - Loosen the Pivot Nut*

1.29. Use an extractor tool to pull the wiper arm away. See Figure 11.



*Figure 11 - Pull the Wiper Away*

- 1.30. Adjust the curb side wiper arm up or down as required. At installation, the angle should be  $1^\circ$  for the wiper blade on the curb side, see Figure 12, and  $2^\circ$  on the street side.

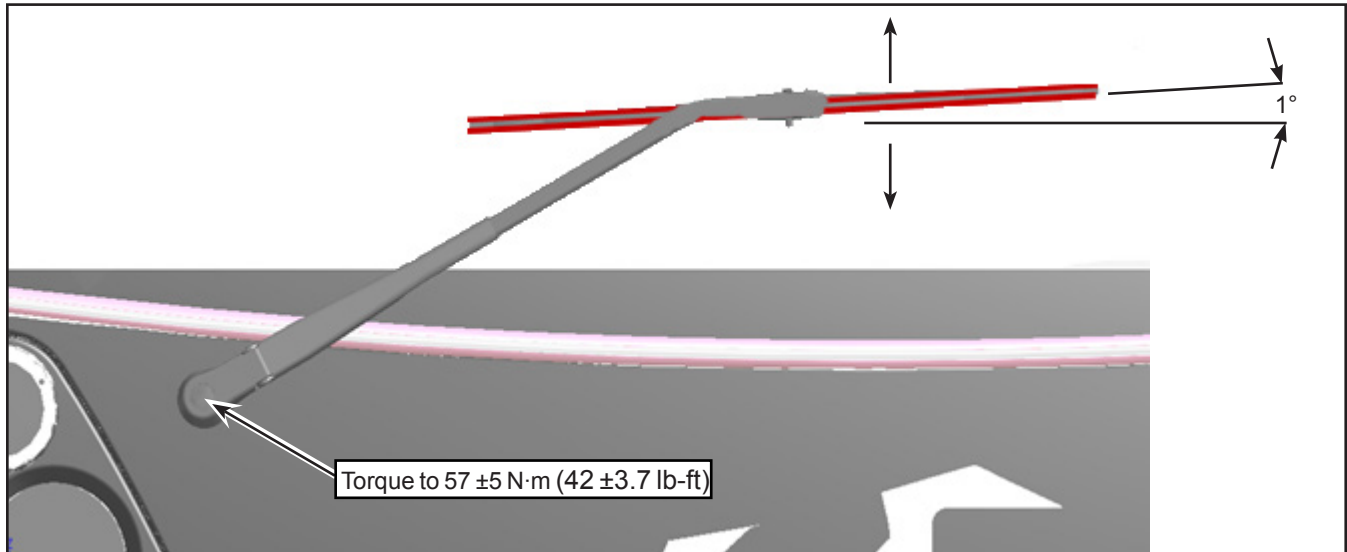


Figure 12 - Adjust the Wiper Arm

- 1.31. Remove the Doga tool.
- 1.32. Maintain the wiper arm in place while torquing at  $57 \pm 5$  N·m ( $42 \pm 3.7$  lb-ft). See Figure 13.
- 1.33. Activate the wiper system and let it park as described in step 1.2.
- 1.34. Validate that the wiper blades lines up with the tape put inside the windshield, as seen in Figure 3, step 1.5.
- 1.35. The wiper on the street side should go back to horizontal,  $0^\circ$ , and the wiper on the curb side should be at  $1^\circ$ . They should not have a negative angle.
- 1.36. Repeat **WIPER ADJUSTMENT PROCEDURE** if necessary.
- 1.37. If validation conditions are met, remove tape on the inside of the windshield and reinstall all the parts removed for access. ❖