

REFERENCE:	Nova Bus Manuals	APPLICATION DEADLINE: N/A		
SECTION:	16: Electrical System			
RS N°:	MQR 7621-1142			
EFFECTIVE IN PROD.:	N/A			
SUBJECT:	Engine compartment junction block scheduled maintenance.			
JUSTIFICATION:	This document is an addendum to Nova Bus Maintenance Manual section 19-401, outlining the need to monitor the condition of junction blocks and correct when required.			
LEVEL	DESCRIPTION	DIRECT CHARGES		TIME
		LABOUR	MATERIAL	
1	Inspection of junction block assemblies for corrosion and salt bridging.	Client	Client	0.3 h
2	Junction block surface cleaning and re-application of corrosion preventative product. Or Replacement of junction block assemblies and application of corrosion preventative product.	Client	Client	1.0 h or 2.5 h

MATERIAL

QTY	PART N°	REV.	DESCRIPTION	REPLACES PART N°
LEVEL 1				
–	–	–	–	–
LEVEL 2				
3	N86271-01	A	STUD JNCTN BLOCK TIN-PLATED RD	–
1	N86271-02	A	STUD JNCTN BLOCK TIN-PLATEDBLK	–
8	N86420	A	NUT STD 1/2" TIN-PLATED BRASS	–
8	N86419	A	WASHER FLAT 1/2" TIN-PL BRASS	–
16	N27837	B	NUT LOCKNYL M5 SSA2 DIN985	–
16	N20504	X	WASHER FLAT M5 SS DIN125A	–
16	N31985	–	SCREW M5 X 20 MACH PAN CR SS	–
5	G5007996	–	TIE WRAP	–
1	N55828-06	U	TERMINAL BOOT RED 4/0 AWG	–
1	N55828-04	U	TERMINAL BOOT RED 3/0 - 4/0 AWG	–
1	N55828-34	U	TERMINAL BOOT RED 2x 4/0 AWG	–
2	N55828-10	U	TERMINAL BOOT RED 0 - 2/0 AWG	–

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. 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	2021JA22	Initial release	Devanand

APPROVED BY:**PAGE 1 OF 14**

MATERIAL

QTY	PART N°	REV.	DESCRIPTION	REPLACES PART N°
SHOP SUPPLIES				
1.2 g / bus	N91901	–	THREADLOCKER BLUE 248 (9 GRAM STICK)	–
102.6 g / bus	N86800	A	DOLPH ER-41 RED INSULATING VARNISH	–
34.22 g / bus	N86801	A	DOLPH EB-41 BLACK INSULATING VARNISH	–
80.4 g / bus	N67314	A	NOCO NCP-2 CORROSION PREVENTATIVE	–
20 ml	NPCHM00023	–	BRAKE & PARTS CLEANER	–



NOTE

Nova bus recommends to use the Dolph's insulating varnish product, but the NOCO NCP-2 or a similar product are suitable alternatives with the appropriate maintenance.

CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
		FROM	TO	FROM	TO	
New York City Transit - New York	L621	8075	8089	L82U9B4000124	L82U9B4000138	15
New York City Transit - New York	L681	5896	5283	S92U2C4500023	S92U9C4500195	122
New York City Transit - New York	L692	5284	5363	S92U3C4500158	S92U3D4500274	80
New York City Transit - New York	L841	8094	8134	L82J2F4500959	L82JXF4501034	41
New York City Transit - New York	L841	8184	8206	L82J1F4501035	L82J0F4501057	23
New York City Transit - New York	L841	8252	8269	L82J2F4501058	L82J2F4501075	18
New York City Transit - New York	L842	8090	8093	L82J4F4501076	L82JXF4501079	4
New York City Transit - New York	L842	8207	8213	L82J6F4501161	L82J7F4501170	7
New York City Transit - New York	L842	8399	8408	L82J6F4501080	L82J2F4501089	10
New York City Transit - New York	L842	8318	8332	L82J9F4501090	L82J7F4501105	15
New York City Transit - New York	L842	8359	8373	L82J9F4501106	L82J3F4501120	15
New York City Transit - New York	L842	8409	8432	L82J5F4501121	L82JXF4501146	24
New York City Transit - New York	L842	8481	8491	L82J1F4501147	L82J8F4501159	11
New York City Transit - New York	L843	8135	8153	L82J5F4501197	L82J9F4501221	19
New York City Transit - New York	L843	8214	8230	L82J9F4501171	L82J1F4501195	17
New York City Transit - New York	L843	8270	8293	L82J0F4501222	L82J7F4501251	24
New York City Transit - New York	L843	8333	8347	L82J9F4501252	L82J1G9775016	15
New York City Transit - New York	L843	8374	8380	L82J3G9775017	L82J9G9775023	7
New York Demo	L940	—	—	S92J7F4501257	S92J7F4501257	1
New York City Transit - New York	L844	8381	8170	L82J0G9775024	L82J0G9775105	82
New York City Transit - New York	L845	8171	8480	L82J2G9775106	L82J6G9775187	82
New York City Transit - New York	L958	5439	5442	S92J9G9775533	S92J9G9775631	4
New York City Transit - New York	L959	5443	5443	S92J0H9776118	S92J0H9776118	1
New York City Transit - New York	LB59	5444	5484	S92J7H9776195	S92J6H9776379	41
New York City Transit - New York	LA23	5485	5530	S92J5J9776380	S92J6J9776517	46
New York City Transit - New York	LA73	8504	8507	L82J8J9776445	L82J8J9776476	4
New York City Transit - New York	LB29	5531	5566	S92J9J9776687	S92J6J9776873	36

**WARNING**

Follow your internal safety procedures.

PROCEDURE

This document is done as full. Level 2 procedure is to be carried out post inspection, if necessary.

The procedure is not intended as an additional maintenance requirement but rather as a clarification of the Nova Bus maintenance manual section 19-401.

It is recommended to inspect the specified junction blocks every 6 months, preferably before and after the winter season.

LEVEL 1

INSPECTION OF JUNCTION BLOCK ASSEMBLIES AND MAINTENANCE CRITERIA

PREPARATION

- 1.1. Park the vehicle on an even surface with transmission in the neutral (N) position and apply the parking brake.
- 1.2. Set the Master Control Switch in the STOP position (see Figure 1).

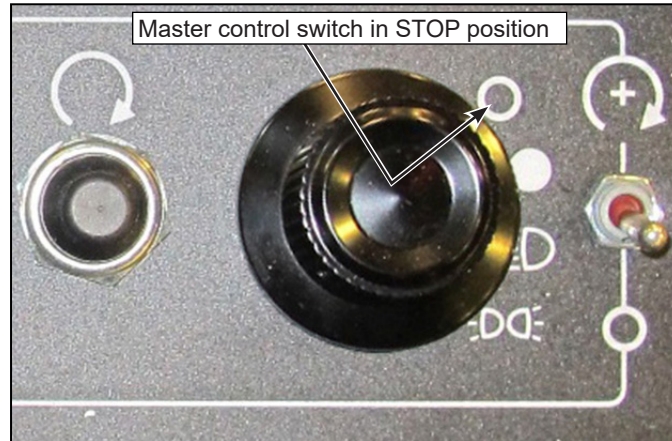


Figure 1 - Master Control Switch in STOP Position

- 1.3. Set the Battery Disconnect Switch in the OFF position (see Figure 2) and properly lock out the switch with a padlock for personnel safety (see Figure 3).

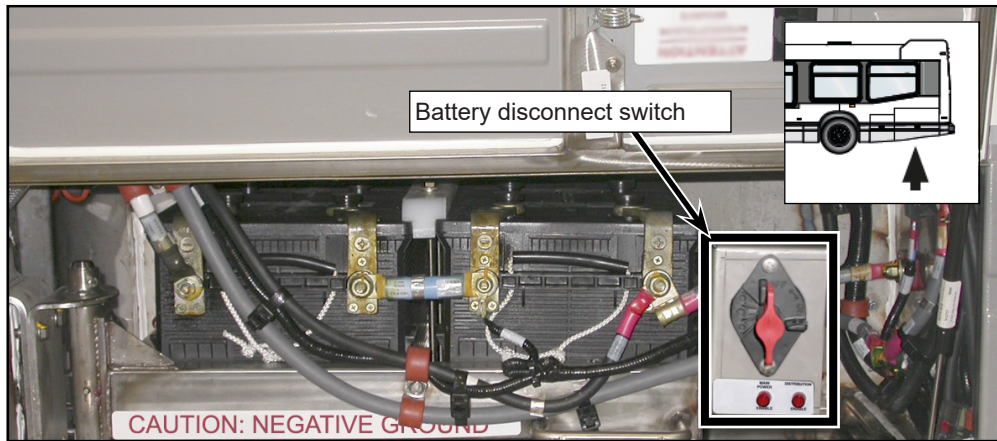


Figure 2 - Battery Disconnect Switch Location



Figure 3 - Battery Disconnect Switch Locked Out in OFF Position



WARNING

Before starting any work on the vehicle, make sure the vehicle is completely and securely stationary. Disconnect the starting circuit on the control box at the rear of the vehicle and place the battery disconnect switch in the OFF position.



CAUTION

VEHICLE HOISTING. Follow your internal safety procedures. Use appropriate safety equipment for your protection. See section 18 : HOISTING AND TOWING in the Nova LFS Maintenance manual for more information.

- 1.4. Raise the vehicle.
- 1.5. Locate the four junction blocks in the engine compartment at rear of the vehicle (see Figure 4).

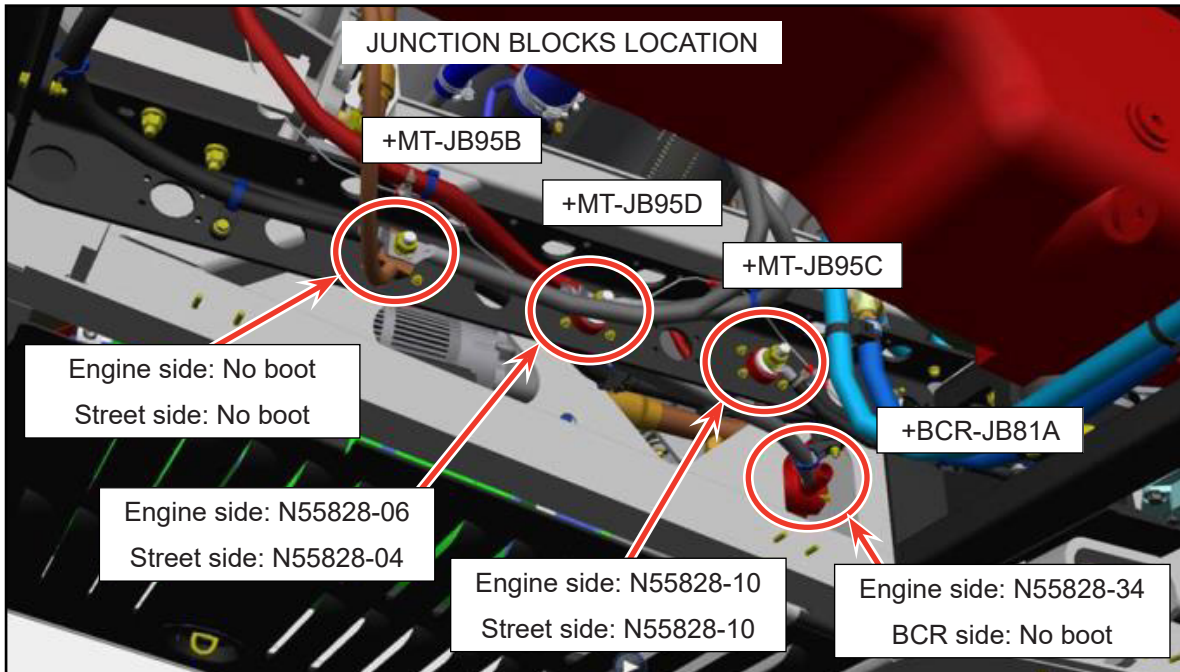


Figure 4 - Junction Blocks Location and Boot Part Numbers

- 1.6. Open the cap of the protective boot (if present) to have access to the stud and mounting hardware on the junction block.
- 1.7. Inspect the four junction blocks and the corresponding hardware (one at a time) for corrosion and salt bridging.



NOTE

Confirm the presence of the junction block protective boots and inspect each one for any significant damage that might compromise electrical safety (risk of short circuit between each positive junction block and chassis ground). If any protective boot is missing or replacement is required, please refer to the Level 2 "Replacement of Damaged or Missing Protective Boots" section. See Figure 4 for the protective boot part numbers.

- 1.8. Refer to following instructions for the maintenance criteria.
- a. **No maintenance recommended:** No maintenance is required, if the junction block is found with minimal build-up of road dirt, salt and particles and with corrosion preventative product intact (see Figure 5 & Figure 6).

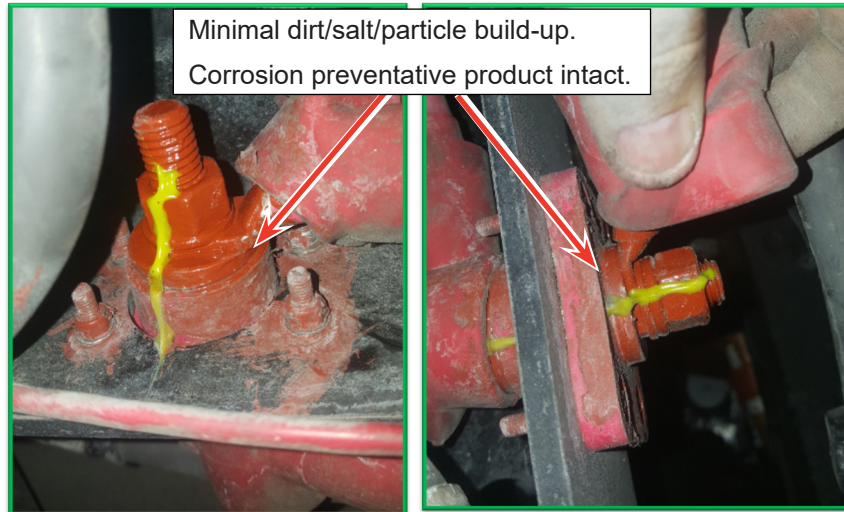


Figure 5 - No Maintenance for Junction Blocks with **DOLPH ER-41/EB-41** Corrosion Preventative Product

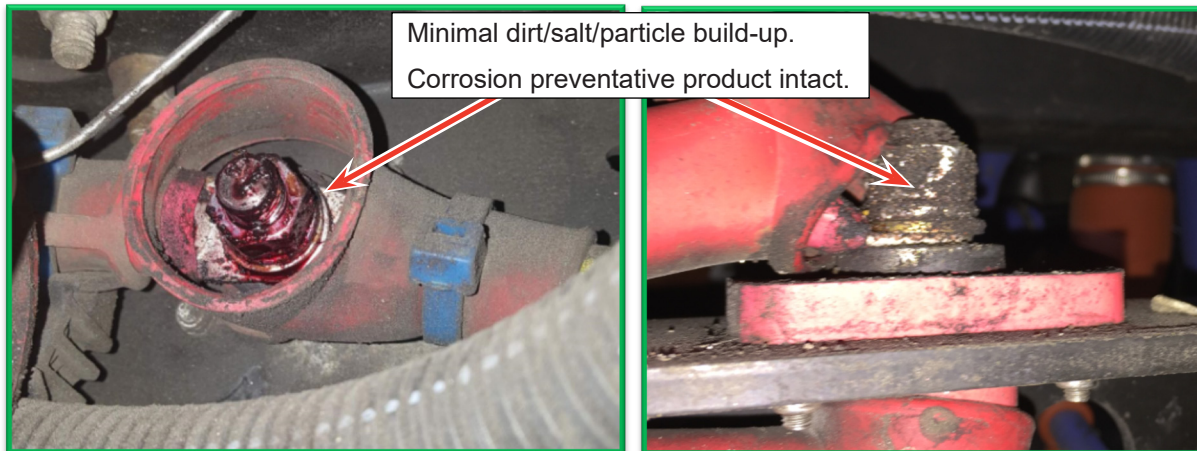


Figure 6 - No Maintenance for Junction Blocks with **NOCO NCP-2** Corrosion Preventative Product

b. Maintenance recommended:

1. If the junction block is found with moderate build-up of road dirt, salt and particles, clean the build-up and re-apply the corrosion preventative product (see Figure 7 and Figure 8).

Please refer to the Level 2 "**Surface Cleaning and Re-application of Corrosion Preventative Product**" for detailed instructions.



Figure 7 - Need of Maintenance for Junction Blocks with **DOLPH ER-41/EB-41** Corrosion Preventative Product

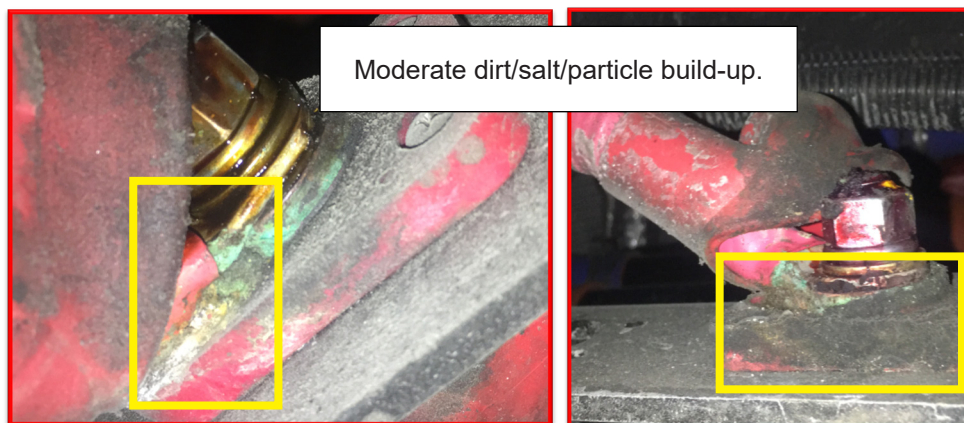


Figure 8 - Need of Maintenance for Junction Blocks with **NOCO NCP-2** Corrosion Preventative Product

2. If the junction block is found with excessive corrosion and/or evidence of salt bridging damage, remove and discard the old junction block and the corresponding hardware and replace with a new junction block assembly (see Figure 9).

Please refer to the Level 2 "**Replacement of a Junction Block Assembly**" for detailed instructions.

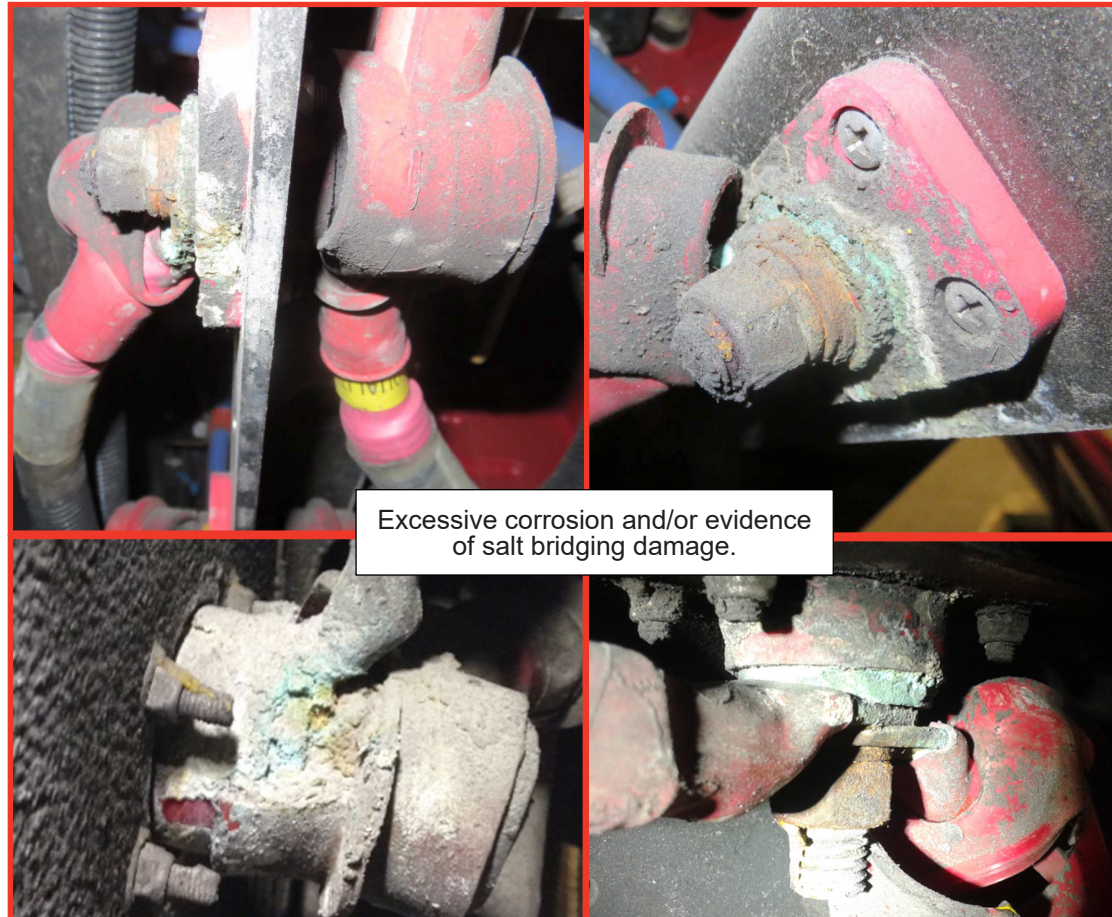


Figure 9 - Need of Maintenance for Junction Blocks with *DOLPH ER-41/EB-41/NOCO NCP-2* Corrosion Preventative Product

- 1.9. Repeat the steps 1.7 and 1.8 for all the remaining junction block locations.
- 1.10. Lower the vehicle.
- 1.11. Set the Battery Disconnect Switch in the ON position.
- 1.12. Set the Master Control Switch in the ON position.
- 1.13. The vehicle may be returned to service.

LEVEL 2**SURFACE CLEANING AND RE-APPLICATION OF CORROSION PREVENTATIVE PRODUCT**

- 2.1. Move and secure back the cap of the protective boot (if present) with a G5007996 tie-wrap to have access to the stud and mounting hardware on the junction block.
- 2.2. Clean the surface of the junction blocks using a pressure washer on a lower setting to remove the build-up of road dirt, salt and particles. Use a higher setting if removal of particles is not adequate.
- 2.3. Vaporize/apply the NPCHM00023 cleaner or similar product (CRC Citrus Degreaser or QD Contact Cleaner) on the surfaces to be covered (see Figure 10), and with a dry cloth clean the surface to remove any unwanted particle and/or grease deposits. Allow the product to evaporate completely. The use of a nylon brush is permitted to clean the surfaces.

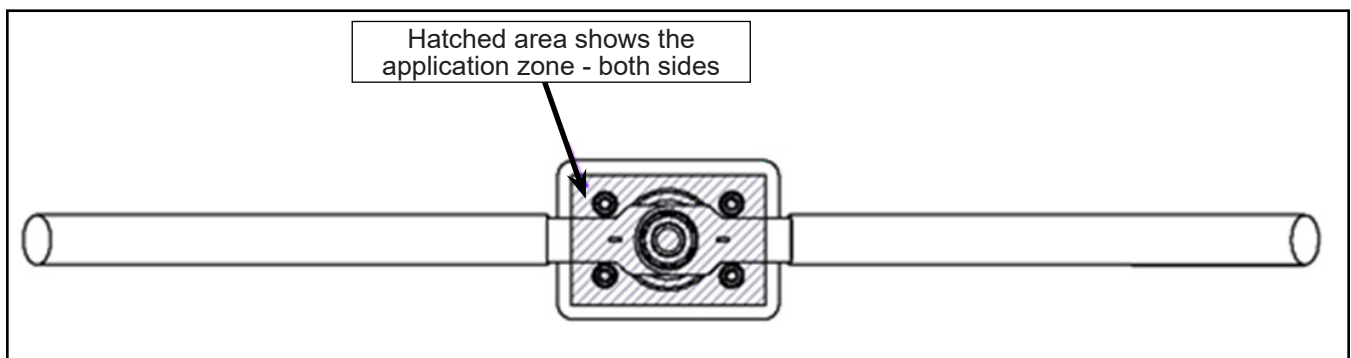


Figure 10 - Junction Block Assembly Showing Corrosion Preventative Product Application Area on Both Sides

- 2.4. After the surface cleaning, corrosion preventative product **MUST** be re-applied on both sides of the junction block (see Figure 10).
- 2.5. Follow the instructions from step 2.20 to 2.22 for application of the corrosion preventative product.

**NOTE**

It should not be necessary to re-apply the DOLPH ER-41 and EB-41 insulating varnish products before a minimum lifetime of 6 years. However, the NOCO NCP-2 corrosion preventative product must be re-applied as needed.

- 2.6. Repeat steps 2.1 to 2.5 for each affected junction block locations.

REPLACEMENT OF A JUNCTION BLOCK ASSEMBLY

REMOVAL OF THE OLD JUNCTION BLOCK ASSEMBLY

- 2.7. Remove and discard only the junction block with excessive corrosion and/or evidence of salt bridging damage (one at a time) and the corresponding hardware.
- 2.8. Remove and retain electrical cable(s) attached to the respective junction block.



CAUTION

Avoid removing the tin plating protecting the copper base metal while cleaning the cable terminals.

- 2.9. Remove and retain the protective boot if present.
- 2.10. Clean each cable terminal carefully.
- 2.11. Insert the protective boot into the cable, if it was present and removed previously.

INSTALLATION OF THE NEW JUNCTION BLOCK ASSEMBLY



CAUTION

Always torque all hardware to specified torque values BEFORE applying the corrosion preventative products. Applying these products prior to torque operations can yield unwanted high-resistivity connections.

- 2.12. Install the new junction block N86271-01 (red) or N86271-02 (black) (see Figure 4 for junction block locations) with their four mounting screws and torque to the specified values (see Figure 12).
- 2.13. Put the cable terminals back in place on the junction block stud seating.
- 2.14. Insert the N86419 - washer flat 1/2" tin-plated brass (one side at a time) as shown in Figure 12.

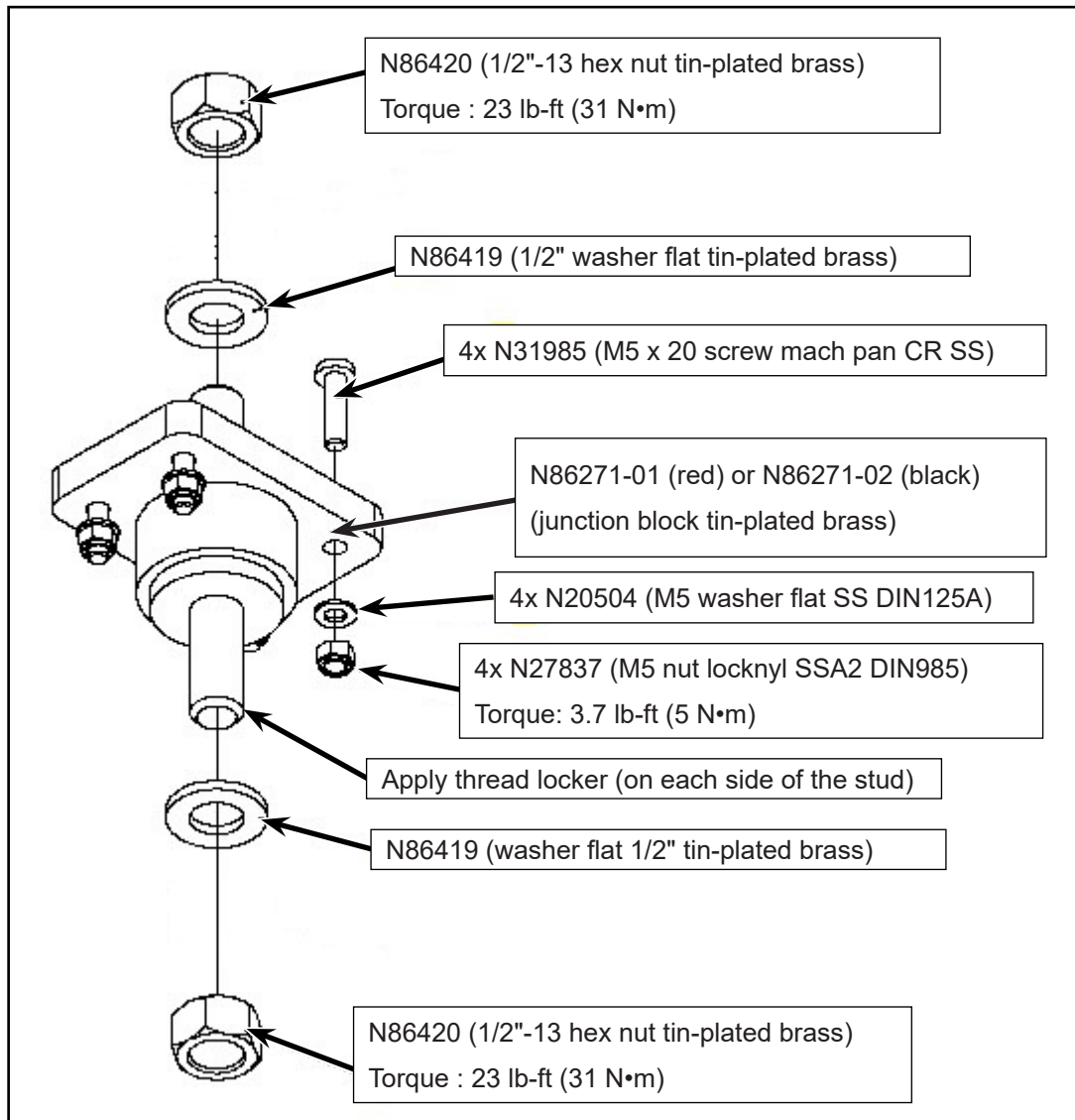


Figure 11 - Exploded View of the New Junction Block Assembly

- 2.15. Apply N91901 thread locker blue in solid form (9g stick) or equivalent on the junction block stud threads ONLY (both sides, one side at a time) and then insert the N86420 1/2"-13 tin-plated brass hex nut (see Figure 12). To avoid contaminating / degrading the high-current cable terminals and junction block electrical contacts, do NOT use thread locker blue in LIQUID form as this product variant could wick or drip on the contacts surface.
- 2.16. Torque the N86420 - nut 1/2"-13 tin-plated brass to the specified values, one side at a time (see Figure 12).

APPLICATION OF THE CORROSION PREVENTATIVE PRODUCT

- 2.17. **Surface preparation:** This is to ensure the proper application of the corrosion preventative product. Use NPCHM00023 brake & part cleaner or similar product (CRC Citrus Degreaser or QD Contact Cleaner).
 - a. Move and secure back the cap of the protective boots with G5007996 tie-wraps to have access to the mounting and stud hardware on the junction blocks.
 - b. Vaporize/apply the NPCHM00023 cleaner or similar product (CRC Citrus Degreaser or QD Contact Cleaner) on the surfaces to be covered (see Figure 13), and with a dry cloth clean the surface to remove any unwanted particle and/or grease deposits. Allow the product to evaporate completely.
- 2.18. After the surface cleaning, corrosion preventative product MUST be applied on both sides of the junction block (see Figure 13).

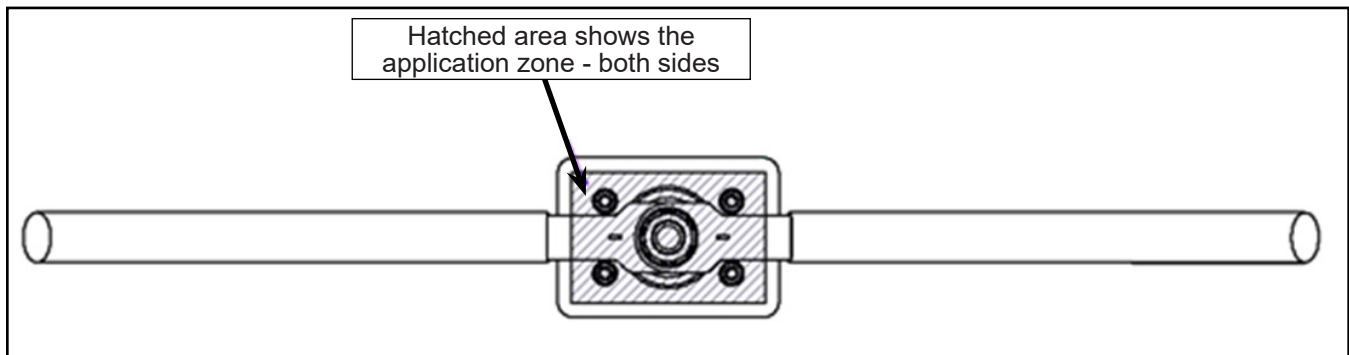


Figure 12 - Junction Block Assembly Showing Corrosion Preventative Product Application Area on Both Sides

- 2.19. Depending on which junction block and on which side, different corrosion preventative products are applied, as indicated in the Shop Supplies material list (see Figure 14).
 - a. Dolph's product (preferred) :
 1. N86801 (DOLPH EB-41) to be used on both sides of the BLACK grounding junction block (+MT-JB95B).
 2. N86800 (DOLPH ER-41) to be used on both sides of the RED positive 24V junction blocks (+MT-JB95C, +MT-JB95D) but ONLY on the engine side of +BCR-JB81A.
 - b. N67314 (NOCO NCP-2 – Suitable alternative for the junction blocks) to be used on both sides of each junction blocks and also to be used on the Battery Compartment (BCR) side of +BCR-JB81A.

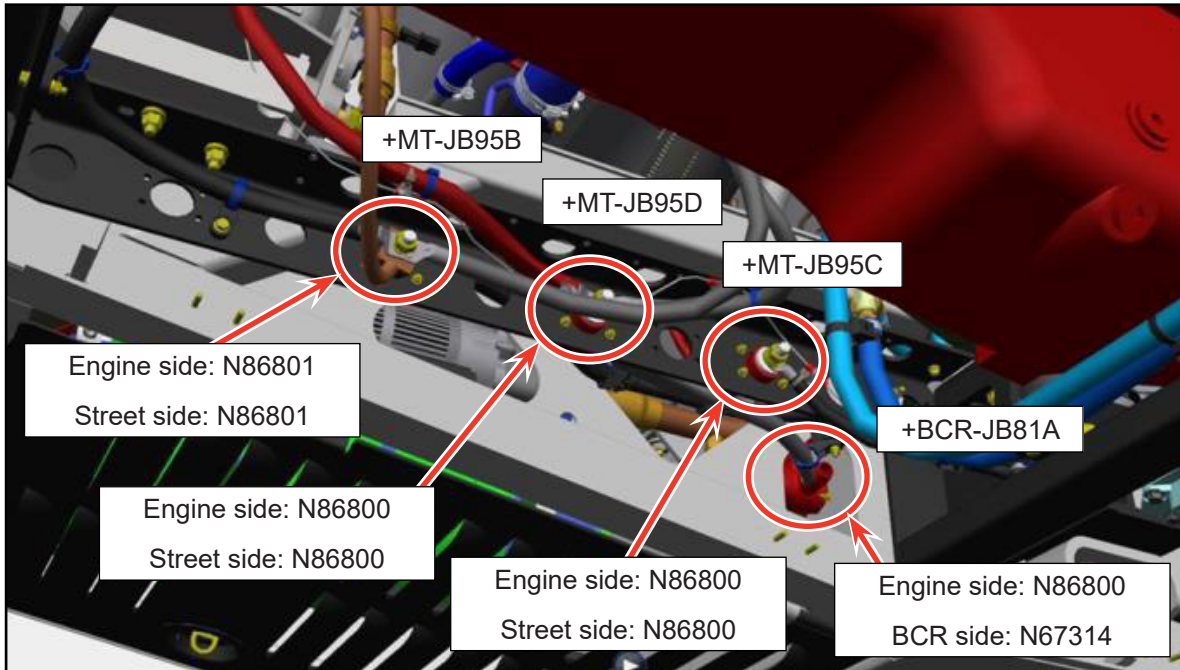


Figure 13 - Corrosion Preventative Products Application Requirements



NOTE

The corrosion protection product cans must be shaken before each use (make sure the lid is properly closed to avoid splashing).



NOTE

Corrosion preventative product **MUST** be applied only on clean and dry surfaces, free of any grease. Make sure to completely cover the exposed metallic surfaces for both the cable terminals and the stud or junction block. Make sure the exposed metal under the terminal is also covered (see Figure 15).

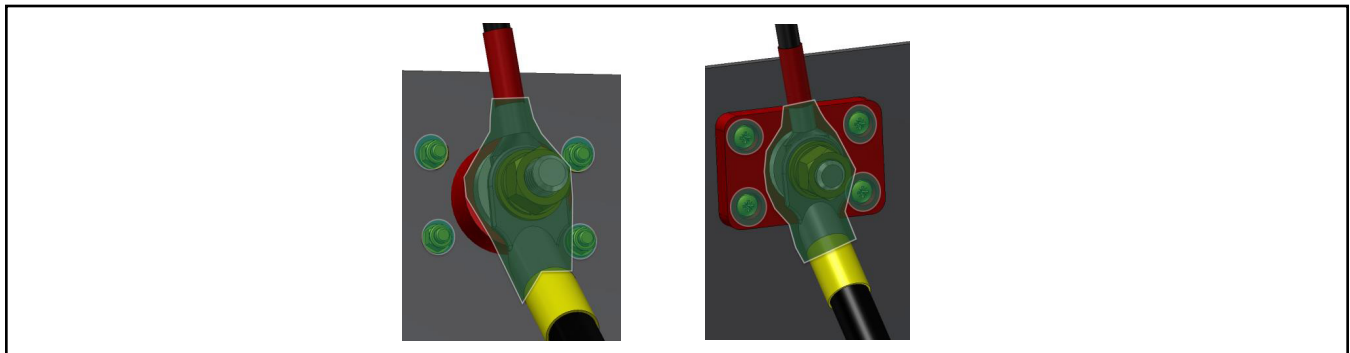


Figure 14 - Figures showing the Application of Corrosion Preventative Product Inside the Marked Perimeters

- 2.20. Application procedure for DOLPH ER-41 and EB-41 (N86800 & N86801 respectively) corrosion preventative products (see Figure 16).
- Dip the brush in the container. Swipe excess product from the brush using the container edges. Apply a thin layer of coating to the exposed metallic surfaces of the electrical connection. Try to avoid creating drips.
 - Apply 2 coats total. Allow 15 mins of drying time between each coat application. Allow another 15 mins of drying time before cutting off the tie-wrap and reinstalling back in place the protective boot to properly cover the junction stud connection.

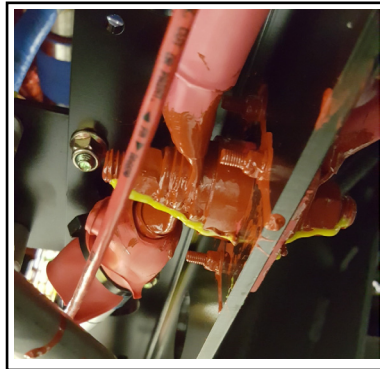


Figure 15 - Application of **DOLPH ER-41 & EB-41** Corrosion Preventative Products

- 2.21. Application procedure for NOCO NCP-2 (N67314) corrosion preventative product.
- Apply a single coat of the NOCO NCP-2 to the exposed metallic surfaces of the electrical connection.
 - No wait time required.
- 2.22. Repeat sequence of steps from from step 2.13 to step step 2.22 for the remaining affected junction block locations.
- 2.23. Ensure all the junction block installations are correct.

REPLACEMENT OF DAMAGED OR MISSING PROTECTIVE BOOTS

- 2.24. Insert a new protective boot into the cable if it was found damaged or missing during inspection (see Figure 17).

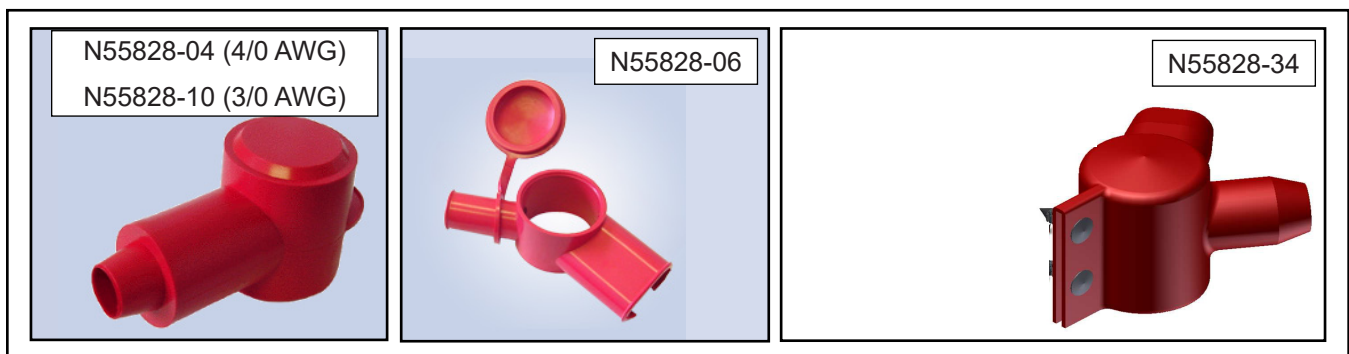


Figure 16 - Typical View of Different Protective Boots

