



## TECHNICAL SERVICE BULLETIN

**Technical Service Bulletin Number-TSB0009** – Motor Assembly Metric Bolt Conversion

**Date** – 06/20/2019

**Item, Unit or Assembly Affected** – Shift-N-Step

**Unit(s) Affected** – Old Shift-N-Steps being fitted with a new motor assembly.

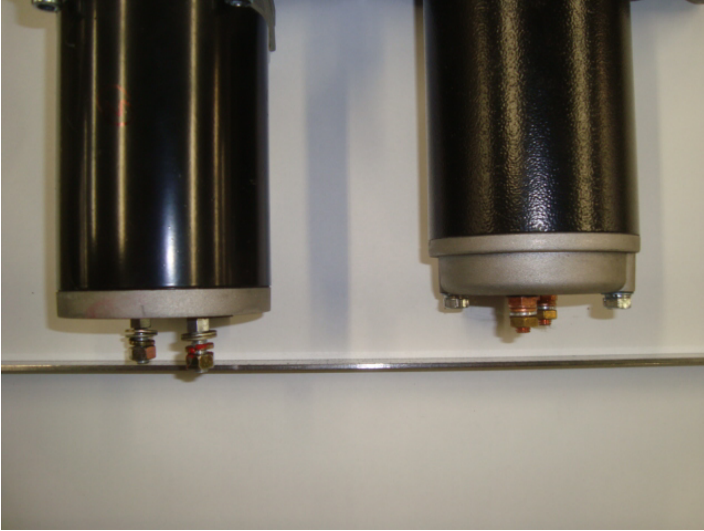
**Reason for Bulletin** – The bolts for the motor's electrical contacts are too long and will make unsafe contact on the wall of the motor bay.

**Parts Needed** –

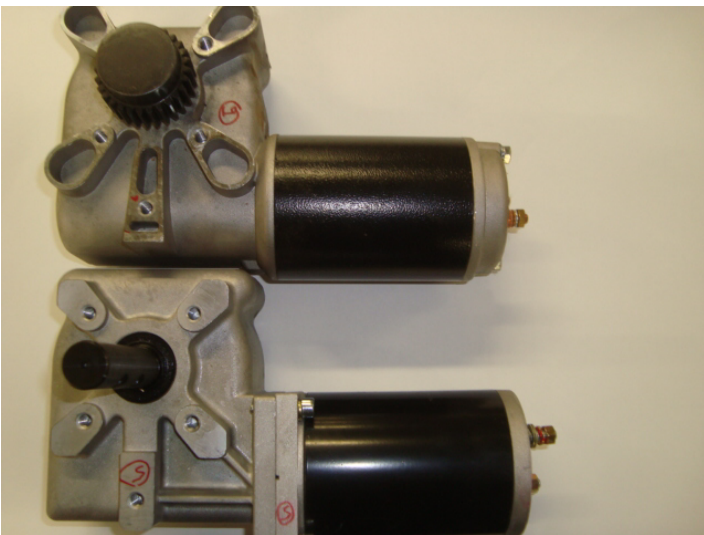
TSB9MMHK:

- Qty. 2 M5 x 25mm Hex Head Bolts
- Qty. 4 M5 Hex Jam Nuts
- Qty. 2 M5 Hex Nylock Nuts
- Qty. 1 M8 1.25 x 25mm Button Head Socket Cap Screw Lg Zinc (BHSSM8125Z)
- Qty. 2 M8-1.25 x 50mm Flat Head Socket Cap Screw Lg Zinc (FHSCM8050Z)
- Qty. 2 M8-1.25 x 18mm Flat Head Socket Cap Screw Lg Zinc (FHSCM8018Z)

**Action Required** – Before trying to fit a new motor assembly into an original Shift-N-Step build, the motor must be disassembled in order to replace the hardware. Specifically, the long bolts must be replaced with shorter bolts in order to ensure they do not make contact with the wall of the motor bay.



New motor with longer contacts shown on left. Old motor with shorter contacts on right.



Old Motor (top) and New Metric Motor with longer contacts (bottom). Note the flat (as opposed to cup-shaped) motor end cap and square flange at motor/gearbox interface.

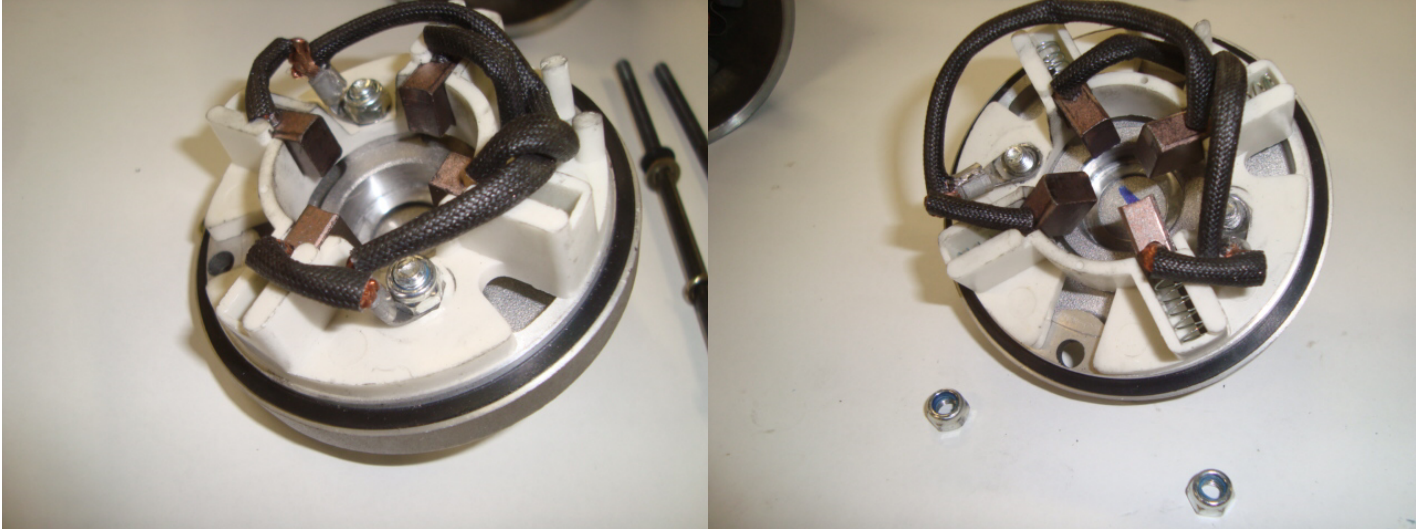


Remove stud hardware.

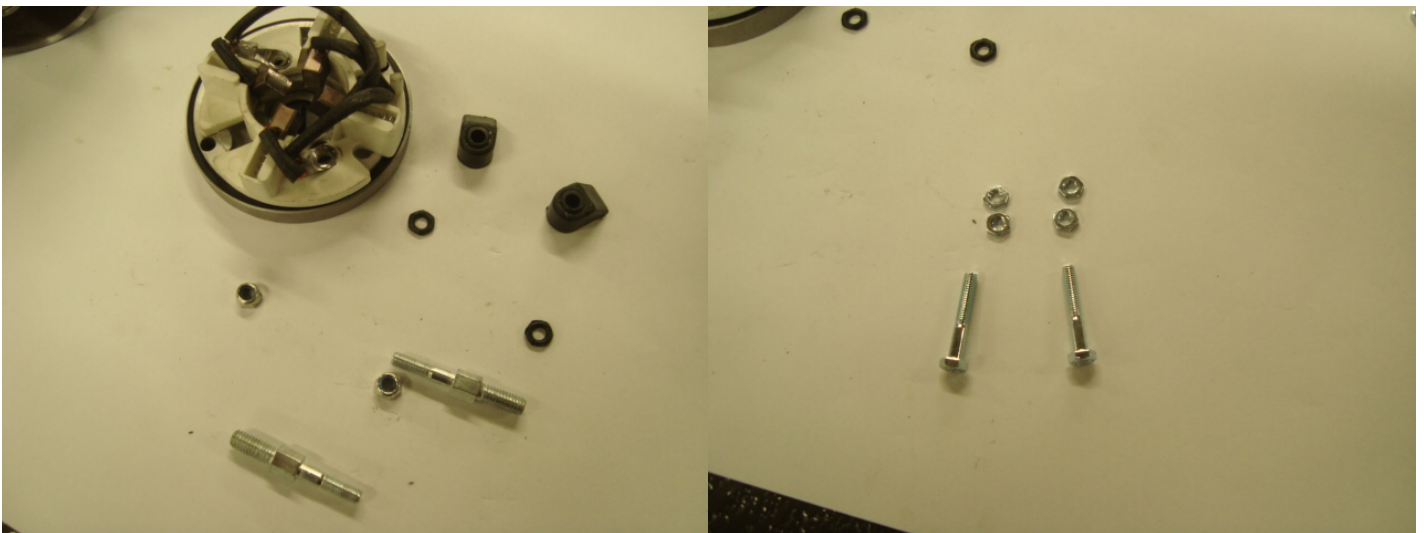
Remove the long motor housing bolts.



Remove the end cap (take care of the brush springs, motor shaft thrust washer, bolt O-rings and washers).



Remove the Nylock Nuts on the brush wire connector, then remove the nuts.



Remove studs (take care of plastic blocks and O-rings).

Prep the new M5 Hardware (Nylock nuts not shown).



Install the new M5 x 25MM Hex Bolts.

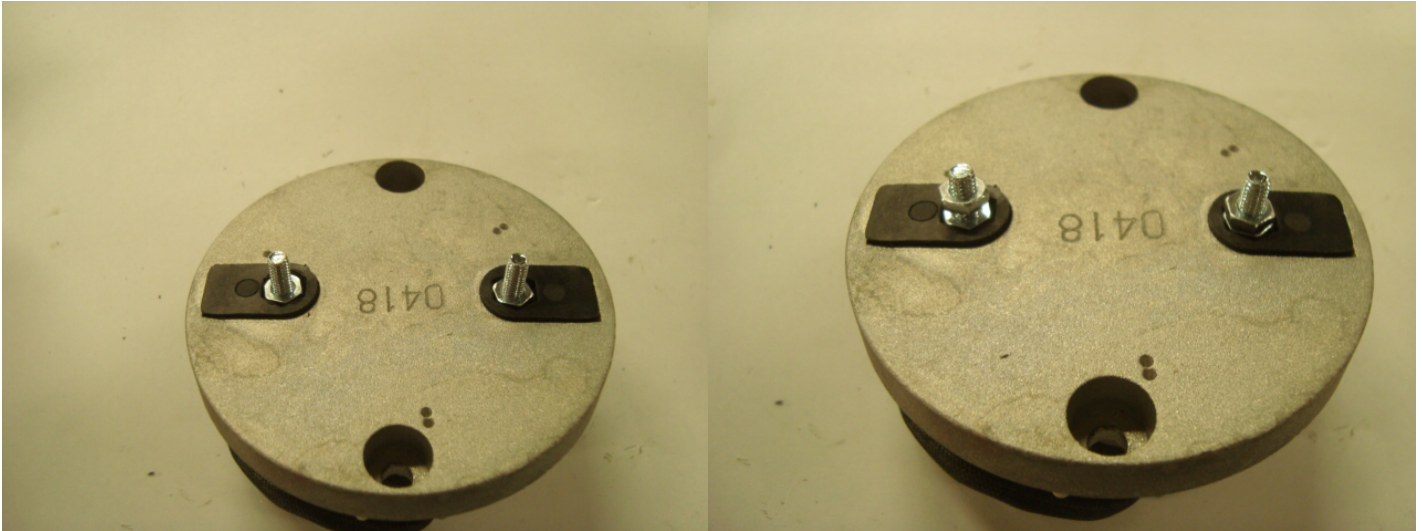
The new M5 Bolts should be protruding through the face of motor end cap



Replace the plastic blocks.

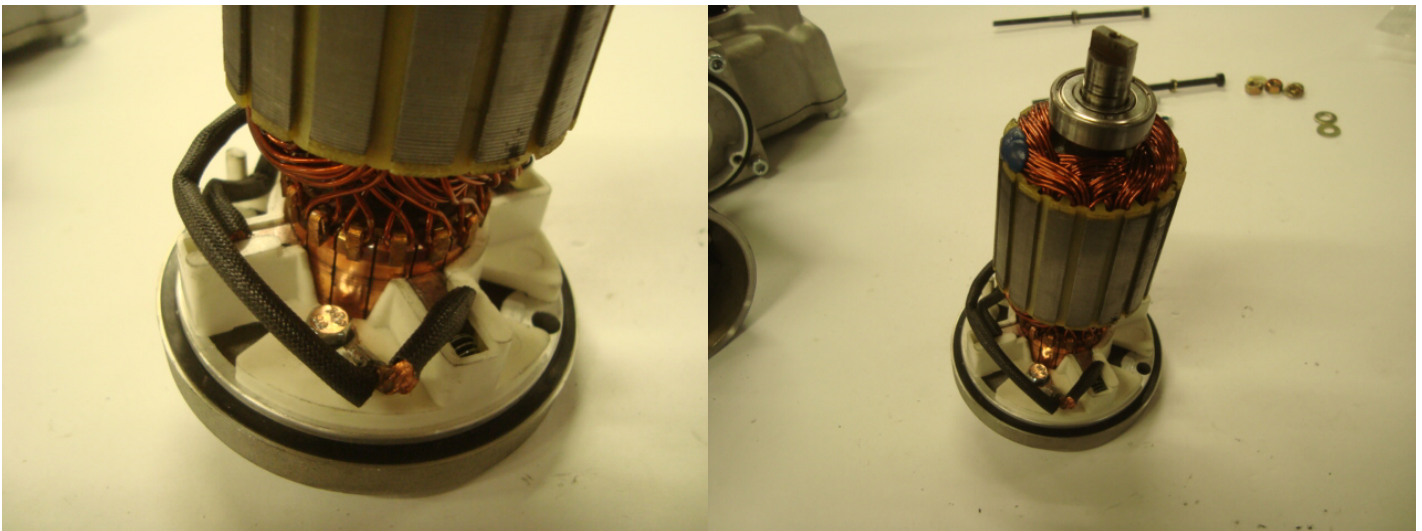


Replace the O-rings.



Install the M5 Jam Nuts and tighten so that the hex goes into hex hole in the plastic blocks. Thoroughly tighten down the bolts.

Install the second M5 Jam Nuts and tighten. These act as spacers so that the wire Loop Connector does not short against motor end cap.

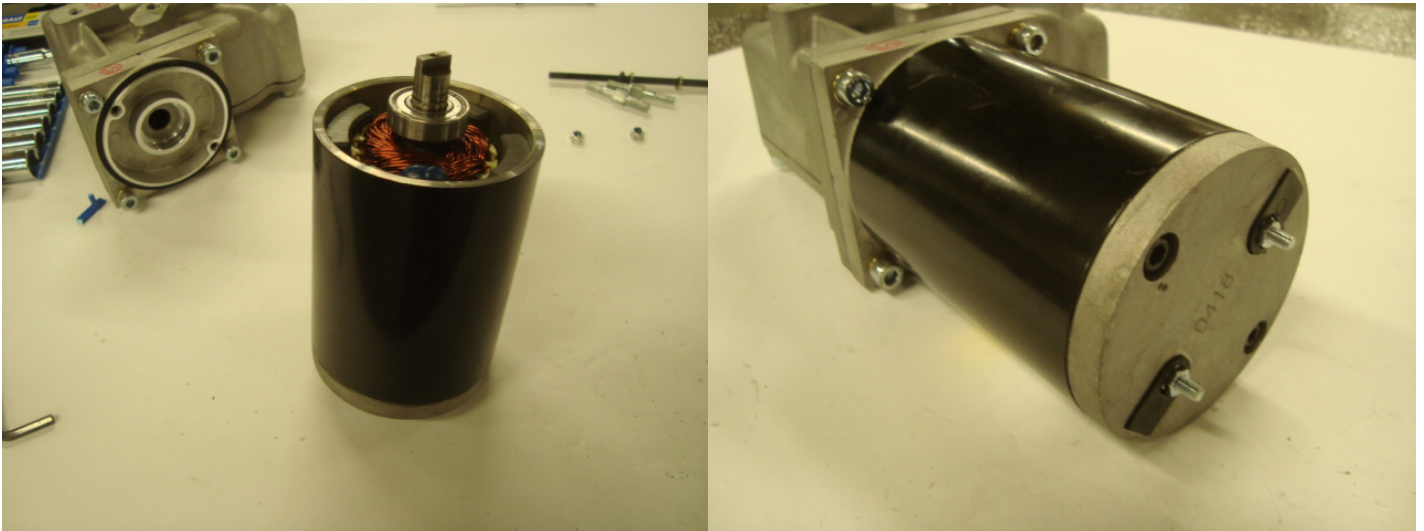


Reinstall Motor Housing / Magnets over armature. Note that the magnets are offset to one end of the housing and that wider distance faces the End Plate.

Hold the shaft firmly into the End Plate while slipping the housing on and use caution as the magnets are very strong.



**Read this entire step before beginning:** Once the end cap, armature, and housing are assembled, make sure that everything is held firmly together or else the end cap may disengage from the armature and the brushes may drop out. If this occurs, restart the process. Note the location of the "tongue" on the gearbox end of the motor shaft versus the corresponding "groove" in the gearbox input shaft. The Tongue must fall fully into the groove when installing the motor housing. It may be necessary to rotate the motor housing and/or end plate until the tongue drops fully into the groove, thus allowing the housing to drop fully onto the gearbox. Also, before placing the housing back on to the gearbox, note/mark the location of the tapped holes that accept the long motor mounting screws. It may be necessary to rotate the housing and/or end cap to allow the long bolts to be threaded in. Hex Nylon Lock Nuts are used to secure the wire loop connectors to the studs



**Safety Issue?** - Yes, if an attempt is made to install the motor as-is, the bolts will touch on the wall of the motor bay, shorting the two contacts together.