



**ZEE Systems, Inc.**  
**SERVICE LETTER 99-800-2**

- 1.0 EFFECTIVITY: All Z99-800-(ALL DASH NOS.) Motors.
- 2.0 PURPOSE: To provide guidance for field brush inspection and replacement procedures.
- 3.0 COMPLIANCE: Required.
- 4.0 APPROVALS: No additional approvals required.
- 5.0 WEIGHT AND BALANCE: Not affected
- 6.0 ELECTRICAL LOAD OR PERFORMANCE DATA: Not affected
- 7.0 SPECIAL TOOLS: From heavy stiff wire approximately 1/8" diameter fabricate a hook to pull the brush spring back. Sample Below FIG 1.

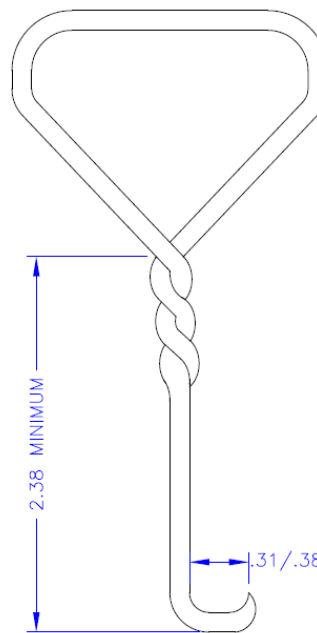


FIG. 1  
Not To Scale

- 8.0 MAN POWER REQUIREMENTS: About 10-15 minutes to fabricate a hook
- 9.0 INSTRUCTIONS:

NOTE: Each brush has two carbon slabs. Each slab has its own spring (eight total springs).



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INSPECTION. Due to the location, the motor should be removed to properly access all of the brushes. A quick way to check the remaining brush life without disturbing the spring is to visually inspect the brush in the holder. If the top of any brush is even or below the top of the brush holder the brush is at the wear limit and all brushes must be replaced. FIG. 2 shows a full new brush in holder. This shows that when the top of the brush is even with the top of the brush holder the wear mark is at the point of contact with the commutator. This indicates the brush needs to be replaced. FIG 3 is another example.

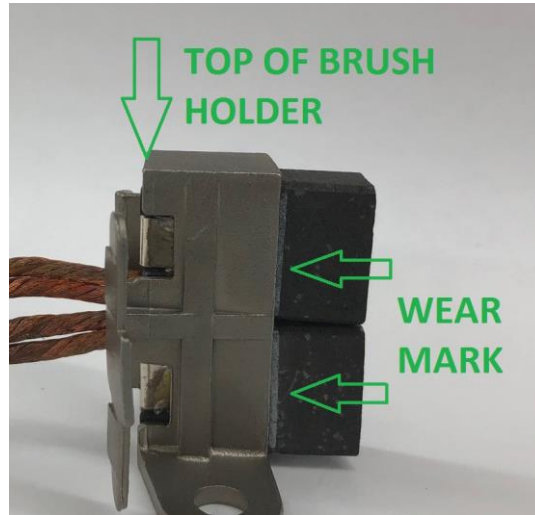


FIG. 2  
Springs removed.

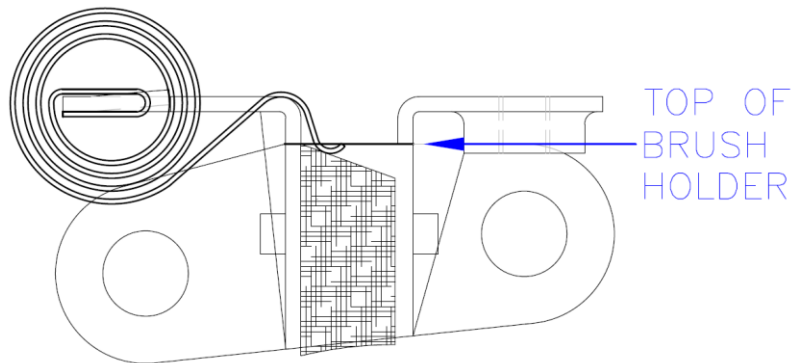


FIG. 3

NOTE: If any brush is at the wear limit all of the brushes must be replaced.

The top of a new run-in brush sits approximately .40 above the top of the holder, FIG. 4 & FIG 5. Therefore, a brush with 100% life is .40 tall. To determine remaining brush life,



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measure the top of the shortest brush to the top of the holder. Divide the distance by .40. This will give a percentage of remaining brush life.

EXAMPLE: Measurement from top of the brush to the top of the holder is .168, .168 divided by .40 = .42 or 42% Brush Life Remaining.

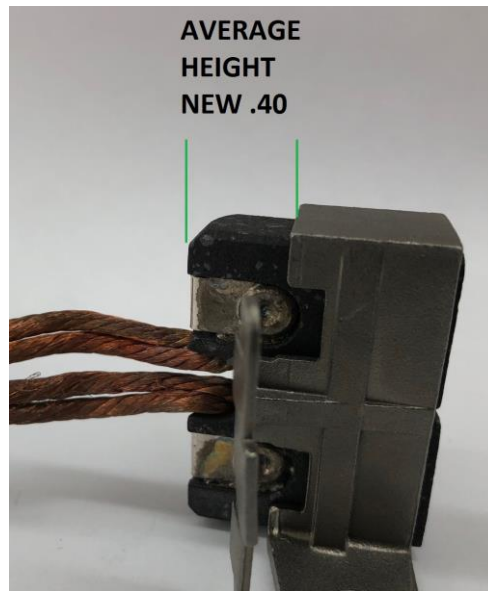


FIG. 4  
Springs removed. View for reference only.

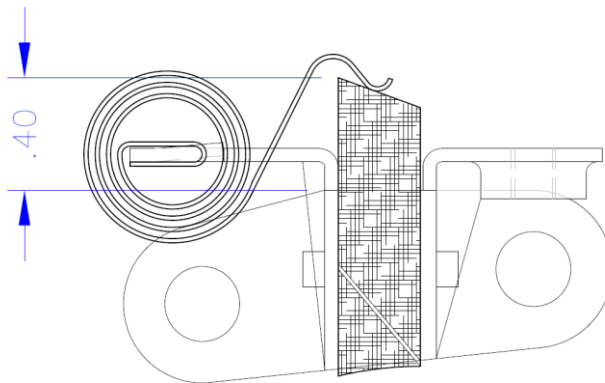


FIG. 5  
View for reference only.

Examine each brush for unusual wear patterns. As shown in FIG. 6. If unusual wear exists the motor should be disassembled for further damage. Repair as necessary in accordance with CMM Z99-800.



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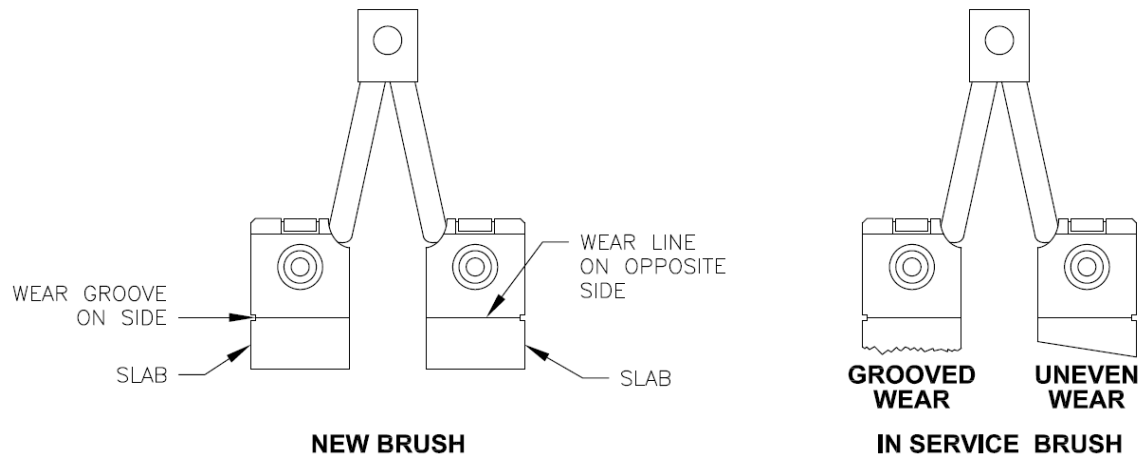


FIG. 6

**BRUSH REMOVAL: DO NOT** lift the spring straight up. (FIG. 7). Over-extending the spring will damage the spring. This damage will cause the spring to lose proper tension and may elongate or stretch the spring. A spring that has lost proper tension or become elongated will cause the brush to arc, create excessive heat, cause the brush to wear at an accelerated pace and damage the armature.

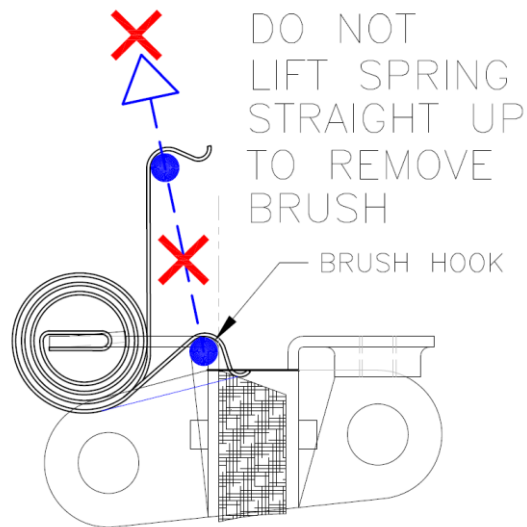


FIG. 7

To remove a brush slip the brush hook (FIG. 1) under the brush spring. Slowly lift the spring only enough to clear the top of the brush, then pull the spring away from the brush just enough to slide the brush from the brush holder. Pull the spring away from the brush



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in a radial movement (an arc). Do this for each (2) carbon slab. When the brush has been removed lightly lower the spring onto the holder. FIG. 8.

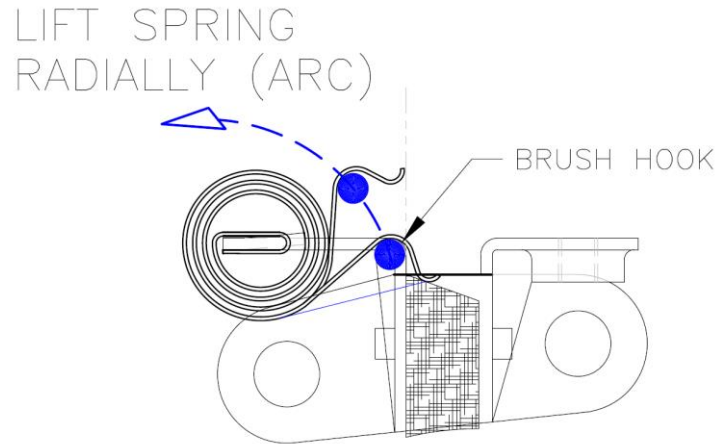


FIG. 8

NOTE: If a brush or brushes are to be removed and reused always replace the same brush into the same holder.

REPLACEMENT: Slip the brush hook (FIG. 1) under the brush spring. Slowly lift the spring only enough to clear the top of the brush holder, then pull the spring away from the brush holder just enough to slide the brush into the brush holder. After the brush is in the holder place the spring lightly on the brush. Do this for each (2) carbon slab. Repeat this for all four brushes.

10.0 REFERENCE MATERIAL: CMM Z99-800, SL 99-800-3.

11.0 TESTING: Not applicable.

12.0 IDENTIFICATION: No re-identification or markings are required.

13.0 RECORDS: Make required logbook maintenance entries.

14.0 MATERIAL COST and AVAILABILITY: Contact

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San Antonio, TX 78216 USA

OR any ZEE Systems, Inc. Distributor.

800-988-2665 x205 Parts

210-342-9761 x205 Parts

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