8.1.3 SERVOMOTOR AND DC MOTOR FOR SPINDLE (CONT'D)

3. Clearance of ventilation window blockage

   Check the ventilation window of DC spindle motor. If it is clogged with dust or dirt, inspect DC spindle motor removing the machine cover. Refer to the machine tool builder's manual.

Inspection of commutators and brushes is essential for maintaining the excellent performance of the control. Inspection work to be executed is described in the following three items.

Quarterly Inspection of Commutators and Brushes

The carbon dust from brushes, accumulated around the commutator, inside the motor, may cause motor troubles such as the layer short of armature and the flashover of commutator. In the worst case, it may lead to fatal damage. To avoid this, be sure to have an inspection on the commutators and brushes at least every three months.

Be sure to turn off the power supply to the NC before starting to check the brushes and motor interior.

For this, turning the circuit breaker on the power supply unit (DCP UNIT) for the servo control unit (CPCR-MR-K) off is not sufficient. To prevent electric shocks and shorting, be sure to shut off the supply of power to the NC.

4. Carbon brushes

   A. Under normal operating conditions, brush wears by 2 to 4 mm per 1000 operating hours. If wear is excessive, check to see if oil has contaminated commutator surface, or if abnormal overcurrent flow through motor circuit.

   B. When brush length becomes shorter than those shown below, replace the brush with a new one.

      Minertia motor junior series: 6 mm or below

      DC motor for spindle: 17 mm or below

   C. If either of brush, or pigtail is broken, brush assembly must be replaced as a whole unit.

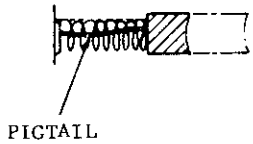

Fig. 8.3

NOTE: When replacing the brush assembly, consult the company.

5. Commutator surface

   A. Visually check surface roughness of the commutator through inspection window.

      After 100 to 200 operating hours, the commutator should take on a polished light brown or chocolate color. The motor has developed an ideal commutator film and needs no attention other than to be kept clean.

   B. See if a blackened bar, threading (or grooving) is on the commutator. If any of the above is observed, investigate the cause of trouble.

      Threading or grooving on the commutator surface may be due to too small motor load. Blackened bar is a result of carbon dust in commutator slots, or accidentally produced sparkings. If the carbon dust is a cause of blackened bar, wipe the commutator with a clean dry cloth to smooth the surface. If sparking occurs, contact the maintenance representative.

6. Motor inside (dirty)

   A. Visually check the motor interior through inspection window.

      The dried carbon dust will not affect motor running, but it is recommended that the inner parts such as commutator, brushholders and brushes be cleaned with a dry compressed air (air pressure: 2-4 kg/cm^2).

   B. Where oily carbon dust exists inside the motor due to poor oil seal or defective enclosure, contact Yaskawa.

7. Servomotor with oil seal

   As the life expectancy of oil seal and brush is 5000 hours (about five years), the inspection and maintenance by the company should be done every 5 years. If possible, yearly inspection taking less than 8 hours is recommended.

8.1.4 BATTERY

Make sure that "BAT" or "A/B" on the right-low position of CRT screen is not displayed. If it is displayed, inform maintenance personnel. The battery must be replaced with a new one within a month.

The control with a bubble memory board (optional) does not require a battery.