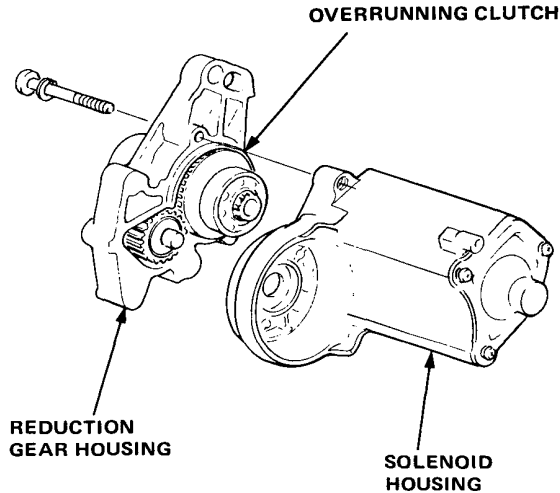


Starting

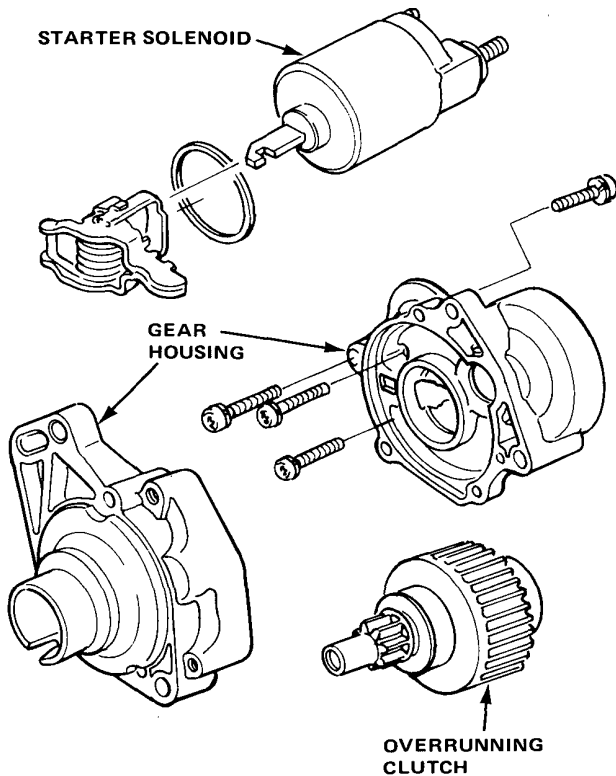
Starter Disassembly (cont'd)

3. Remove the screws from the gear housing, then separate the solenoid and overrunning clutch.

NIPPONDENSO:



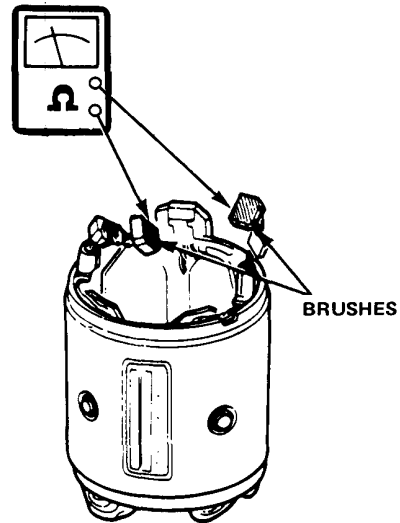
MITSUBA:



Starter Field Winding Test

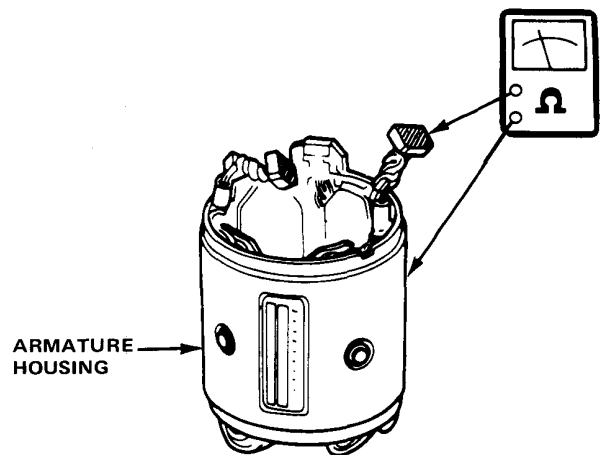
1. Using an ohmmeter, check that continuity exists between brushes.

If no continuity, replace armature housing.



2. With ohmmeter, check that no continuity exists between field coil and armature housing.

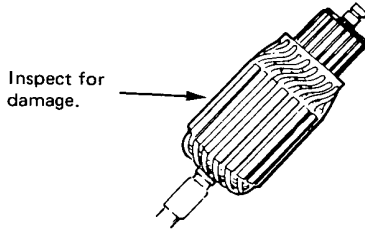
If continuity exists, replace armature housing.





Armature Inspection and Test

1. Inspect armature for wear or damage due to contact with field coil magnets.



2. A dirty or burnt surface may be resurfaced with emery cloth or lathe within the following specifications.

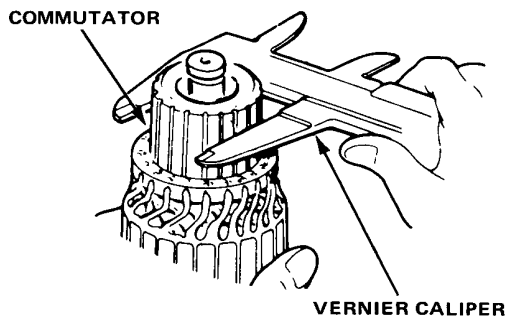
Commutator Service Limits

Runout:

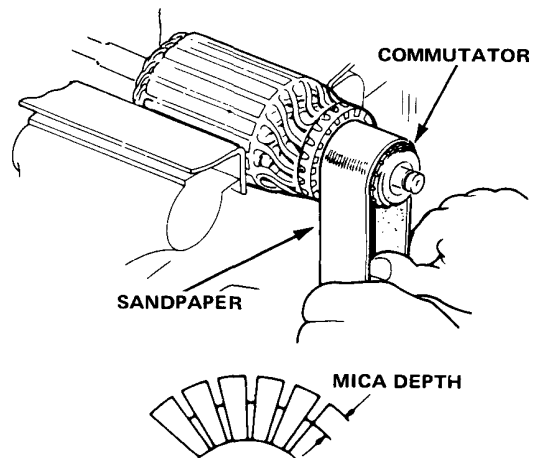
ND (0.8 kw): Less than 0.3 mm (0.012 in.)
HITACHI (0.8 kw): Less than 0.4 mm (0.016 in.)
ND (1.0 kw, 1.4 kw) and MITSUBA (1.0 kw, 1.4 kw): Less than 0.05 mm (0.002 in.)

Diameter:

ND (0.8 kw): Not less than 27.0 mm (1.06 in.)
HITACHI (0.8 kw): Not less than 39 mm (1.54 in.)
ND (1.0 kw, 1.4 kw): Not less than 29 mm (1.14 in.)
MITSUBA (1.0 kw, 1.4 kw): Not less than 27.5 mm (1.08 in.)



3. If commutator runout and diameter are within limits, check commutator for damage or for carbon dust or brass chips between segments.
4. If surface is dirty, recondition it with #500 or #600 sandpaper. Then, check mica depth. If necessary, undercut mica with a hacksaw blade to achieve proper depth as shown.



Commutator Mica Depth

Standard (New):

ND: 0.5–0.8 mm (0.020–0.031 in.)
HITACHI: 0.5–0.8 mm (0.020–0.031 in.)
MITSUBA: 0.4–0.5 mm (0.016–0.020 in.)

Service Limit:

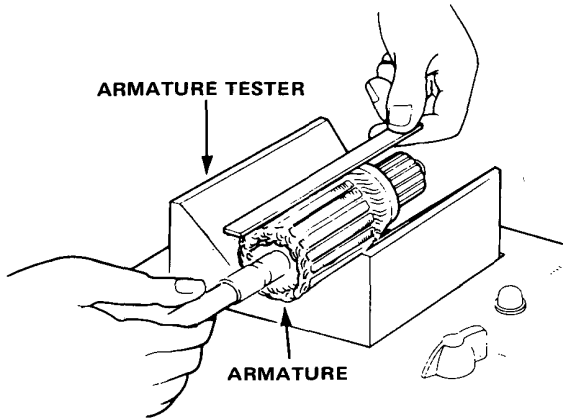
ND and HITACHI: 0.2 mm (0.008 in.)
MITSUBA: 0.15 mm (0.006 in.)

(cont'd)

Starting

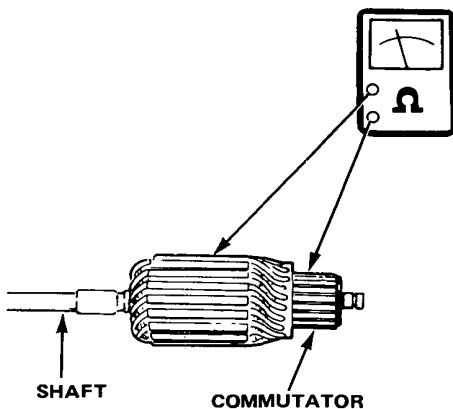
Armature Inspection and Test (cont'd)

5. Place the armature on an armature tester. Hold a hacksaw blade on the armature core.

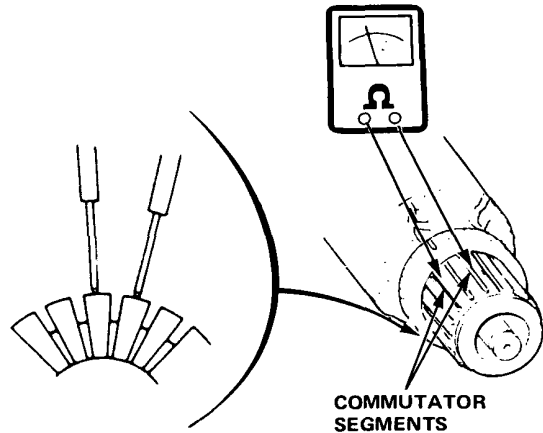


If the blade is attracted to the core or vibrates while core is turned, the armature is shorted. Replace the armature.

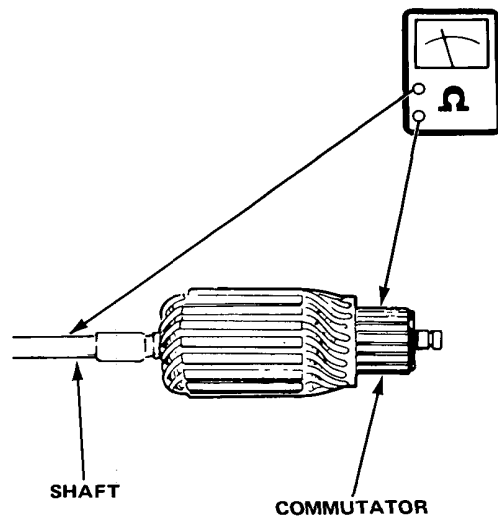
6. With ohmmeter, check that no continuity exists between commutator and armature coil core. If continuity exists, replace armature.



7. Check for continuity between each segment of the commutator. If an open circuit exists between any segment, replace armature.



8. Check to see if there is any continuity between the commutator and armature shaft. If there is continuity, replace the armature.

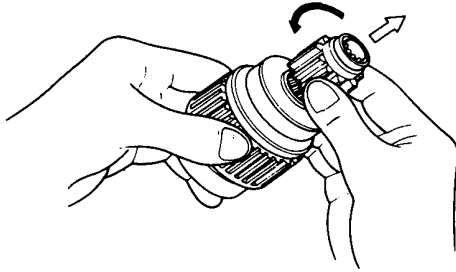




Overrunning Clutch Check

Move overrunning clutch along shaft.

If it doesn't move freely, or if clutch slips when armature is rotated while holding drive gear, replace clutch assembly.



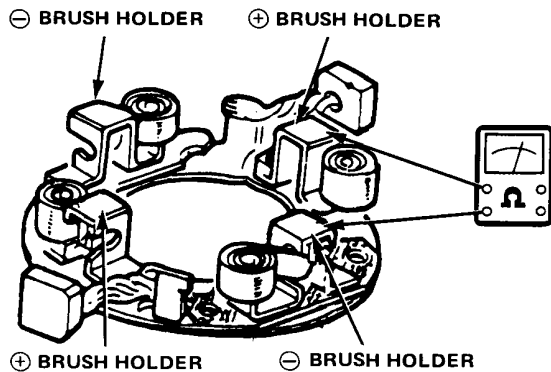
If gear is worn or damaged, replace complete over-running clutch assembly; the gear is not available separately.

NOTE: Check condition of flywheel or drive plate ring gear if starter drive gear teeth are damaged.

Brush Holder Test

With ohmmeter, check that no continuity exists between positive (+) and negative (-) brush holder.

If continuity exists, replace brush holder assy.



Brush Inspection

Measure brush length. If not within service limit, replace armature-housing and brush holder assembly.

Standard (New):

ND (0.8 kw): 15.5–16.5 mm (0.61–0.65 in.)
HITACHI (0.8 kw) and ND (1.4 kw)
: 14.5–15.5 mm (0.57–0.61 in.)
ND (1.0 kw) : 12.5–13.5 mm (0.49–0.53 in.)
MITSUBA (all): 14.3–14.7 mm (0.56–0.58 in.)

Service Limit:

ND (0.8 kw): 10 mm (0.39 in.)
HITACHI (0.8 kw): 11 mm (0.43 in.)
ND (1.0 kw and 1.4 kw): 8.5 mm (0.33 in.)
MITSUBA (all): 9.3 mm (0.37 in.)

NOTE: To seat new brushes after installing them in their holders, slip a strip #500 or #600 sandpaper, with grit side up, over commutator, and smoothly rotate armature. Under-surface of brushes will be sanded to same contour as commutator.

