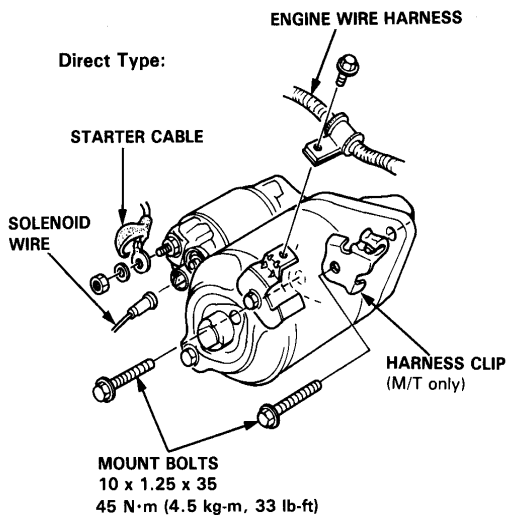


Engine Electrical

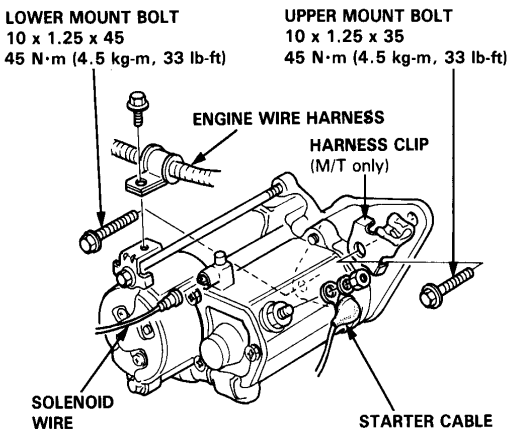
Starter Replacement

1. Disconnect both cables from the battery.
2. Disconnect the starter cable from the terminal on the starter motor.
3. Remove the engine wire harness from the harness clip on the starter motor.
4. Disconnect the solenoid wire from the terminal on the starter solenoid.
5. Remove two bolts holding the starter motor, and remove the starter motor.

Direct Type:

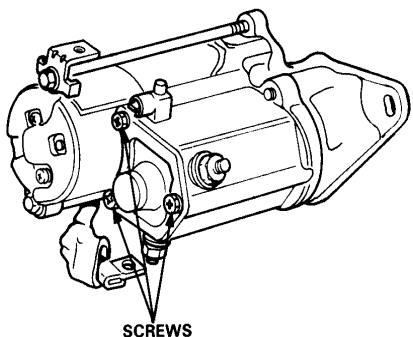


Reduction Type:

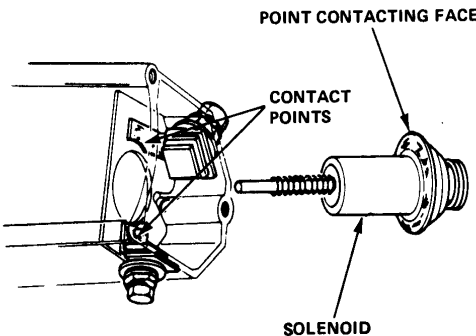


Solenoid Plunger Inspection (ND)

1. Remove three screws from the solenoid end cover.



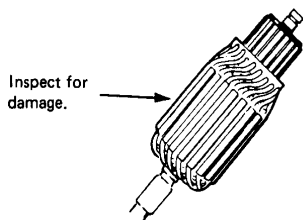
2. Check the contact points, and face of the starter solenoid plunger for burning, pitting or any other defects. If surfaces are rough, recondition with a strip of #500 or #600 sandpaper.





Armature Inspection and Test

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



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

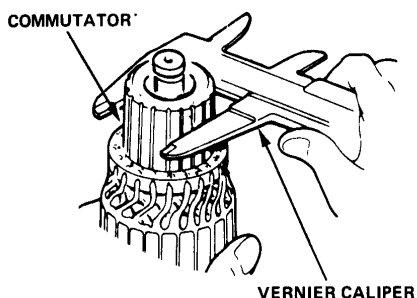
Commutator Service Limits

Runout:

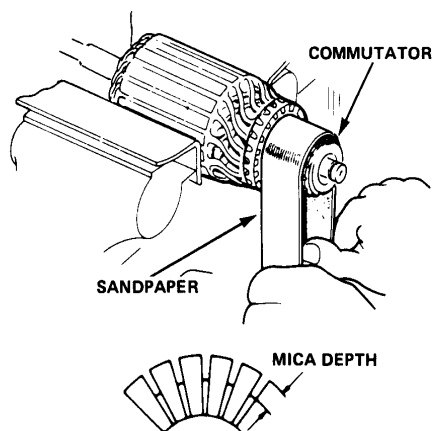
ND (0.8 kw): Less than 0.3 mm (0.012 in.)
Hitachi (0.8 kw): Less than 0.4 mm (0.016 in.)
ND (1.0 kw and 1.4 kw) and Mitsuba (1.0 kw and 1.4 kw): Less than 0.05 mm (0.002 in.)

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 and 1.4 kw): Not less than 29 mm (1.14 in.)
Mitsuba (1.0 kw and 1.4 kw): Not less than 27.5 mm (1.08 in.)



3. If the commutator runout and diameter are within limits, check the commutator for damage or for carbon dust or brass chips between the segments.
4. If surface is dirty, recondition it with a #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 and 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)