NIPPONDENSO REDUCTION GEAR

Honda
Accord and Civic
Toyota
Models with 2T-C Engine

DESCRIPTION

Starter is a 12 volt, 4 brush, solenoid actuated, gear reduction type and is equipped with an overrunning clutch. Brush holder assembly retains brushes and springs in starter housing. Starter may be .8, .9 or 1.4 kilowatt rated, however testing and procedures are similar for all models.

NOTE – *Brushes and commutator may be on gear end or end away from reduction gear.*

APPLICATION

Model	Part No.
Honda	
Accord	
Standard	62174-31200-657-671
Optional	65578-31200-676-641
Civic (Federal)	59480-31200-657-671
Toyota	
.9 KW	28100-26070, 26120
1.4 KW	28100-26110

TESTING

PERFORMANCE TESTS

No Load Tests – With starter motor connected to a 12 volt battery, connect an ammeter in series (*Fig. 1*) with starter. Connect voltmeter in parallel with battery. Compare readings with specifications.

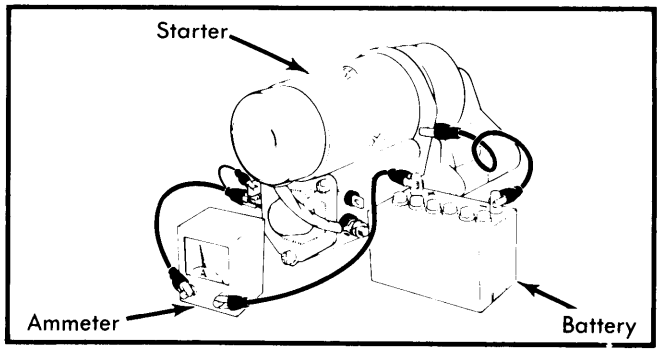

Fig. 1 Ammeter Hook-Up for No Load Test (Toyota Shown)

No Load Specifications

Application	RPM	Amps@Voltage
Honda		
Accord		
Standard	3000	90@11.5
Optional	3500	90@11.5
Civic		
Federal		80@11.5
Toyota		
.9KW	4000	90@11.5
1.4KW	3500	90@11.5

OVERHAUL

DISASSEMBLY

1) With starter removed from vehicle, disconnect wire(s) to magnetic switch. Remove bolts and remove field frame with armature from magnetic switch. Remove "O" ring and felt seal.

2) Remove screws and then remove starter gear housing from magnetic switch. Pull out clutch assembly and gears. Remove ball from clutch shaft hole or from magnetic switch. Remove brushes from brush holder then pull armature out of field frame.

PARTS REPLACEMENT & TESTING

Brushes & Springs – Measure brush length and replace if less than specified. Check brush spring tension with suitable spring scale and replace if tension is less than 2.6 lbs. (1.2 kg) or more than 4.3 lbs. (1.96 kg). Check insulation between the plus and minus brush holders, repair or replace if continuity is shown. Check condition of brush holders and spring clip, repair or replace parts as necessary.

Brush Length

Application	In. (mm)
Honda	.394-.571 (10-14.5)
Toyota	.394-.571 (10-14.5)

Commutator – Inspect commutator for roughness, if surface is pitted or grooved, it should be sanded lightly with a no. 500 emery paper. Also check commutator for being out-of-round. If out-of-round is more than .002" (.05 mm), turn commutator in a lathe until out-of-round is less than .002" (.05 mm). Insulating mica should be undercut to a depth of .024-.035" (.6-.9 mm) if it is less than .008" (.2 mm). Wear or cutting limit of commutator is 1.14" (29 mm).

Armature Coil – Check commutator and armature coil core for continuity, if continuity exists, replace armature. Check armature with an armature tester (growler) for shorts, if shorts exist, replace armature. Check for continuity between segments on commutator, if no continuity exists replace armature.

Field Coil – Check field coil for open circuits. There should be continuity between lead wire and field coil brush lead, if not, replace field coil. Check for no continuity between field coil end and end frame, if continuity exists, replace field coil.

Overrunning Clutch Assembly – Inspect gear teeth for wear and damage. Replace gears if damaged. Also, if gears are damaged, check flywheel ring gear. Rotate pinion. Pinion should rotate freely in a clockwise direction and lock up in a counterclockwise direction.

Bearings – Turn each bearing by hand, replace bearings if they stick or have a high resistance to turning.

NIPPONDENSO REDUCTION GEAR (Cont.)

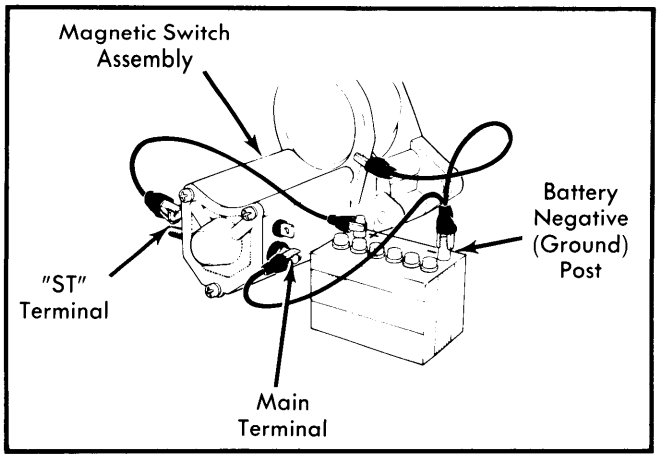

Fig. 2 Magnetic Switch Pull-In Coil Hook-Up

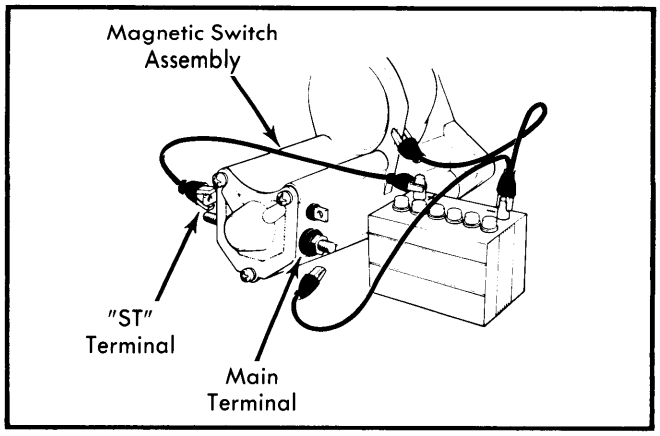

Fig. 3 Magnetic Switch Hold-In Test Hook-Up

Magnetic Switch Assembly – Connect a 12 volt battery to magnetic switch "ST" terminal, main terminal and ground (*Fig. 2*). Plunger should extend firmly, if not, replace magnetic switch. Next disconnect battery from main terminal. (*Fig. 3*) Plunger should remain extended, if not, replace magnetic switch.

REASSEMBLY

To reassemble, reverse disassembly procedures and note the following: Coat all sliding or moving surfaces of shaft splines, bushings and solenoid with multi-purpose grease. Apply grease to clutch assembly cavity to retain steel ball when assembling.

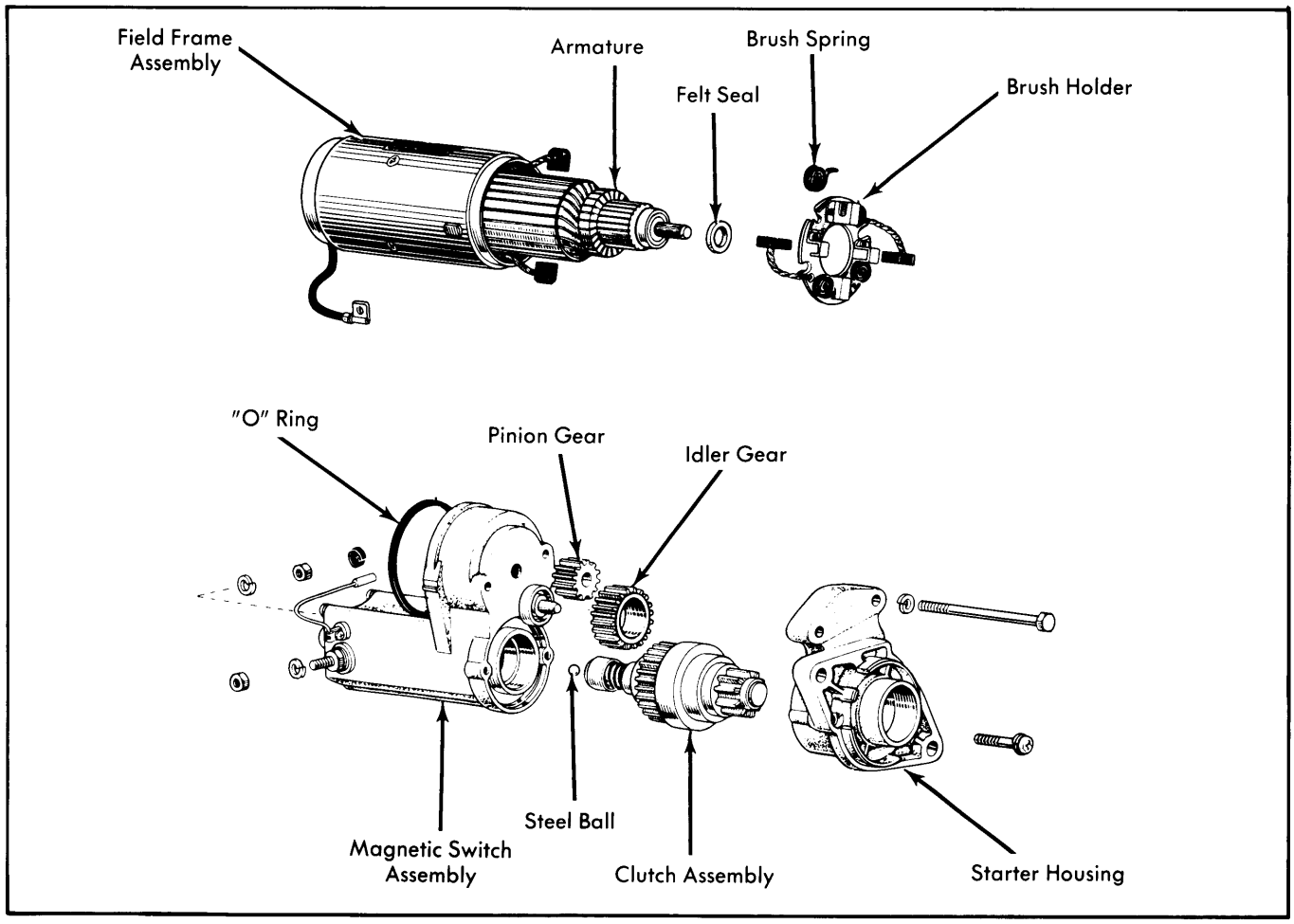

Fig. 4 Exploded View of Nippondenso Reduction Gear Starter