

STARTER Article Text

1993 Honda Prelude
For Cadi Centre Nsk CA 95051
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Sunday, July 08, 2001 11:35AM

ARTICLE BEGINNING

1993 ELECTRICAL

Honda Starters - Mitsuba & Nippondenso Reduction Gear

Prelude

DESCRIPTION

Mitsuba and Nippondenso reduction gear starters are a 4-brush, solenoid-actuated type. Starter drive is equipped with an overrunning clutch. The brush holder assembly retains brushes and springs in the starter housing.

TROUBLE SHOOTING

NOTE: See TROUBLE SHOOTING - BASIC PROCEDURES article in the GENERAL INFORMATION section.

ON-VEHICLE TESTING

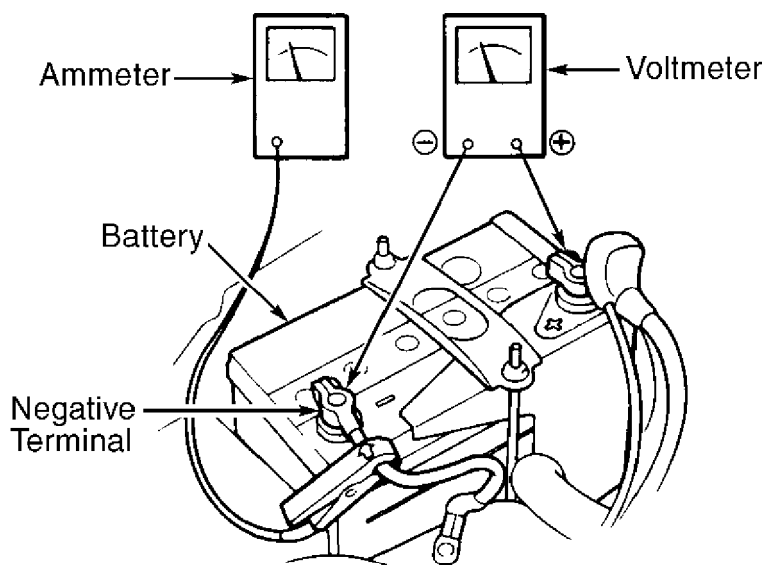
CRANKING TEST

NOTE: On M/T models, engine will not crank unless clutch pedal is fully depressed.

1) Disconnect ignition coil secondary wire from distributor and ground it.

NOTE: Use commercially available starter tester to perform cranking test. Follow manufacturer's instructions. If starter tester is unavailable, perform test as described in steps 2) through 6).

2) Connect voltmeter and ammeter to battery. See Fig. 1. Connect tachometer to engine. Turn ignition switch to START position and crank engine. Check starter cranking voltage and current draw on appropriate meter. See CRANKING TEST SPECIFICATIONS table.



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Fig. 1: Starter Cranking Test
 Courtesy of American Honda Motor Co., Inc.

3) If engine does not crank, check battery and battery cables. Check connections for looseness or corrosion. If engine still does not crank, by-pass ignition switch circuit as follows.

4) Disconnect Black/White wire from starter. Connect jumper wire from battery positive terminal to starter solenoid terminal. Engine should crank. If engine still does not crank, repair or replace starter.

5) If engine cranks, check for open circuit in Black/White wire between starter and ignition switch. Check connections for looseness or corrosion. Check ignition switch.

6) On A/T models, also check neutral/safety switch and connector. On M/T models, check starter relay, clutch interlock switch and connectors. See CLUTCH INTERLOCK SWITCH TEST.

CRANKING TEST SPECIFICATIONS TABLE

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	Cranking Voltage	Current Draw
Application	(Volts)	(Amps)

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CLUTCH INTERLOCK SWITCH TEST - M/T

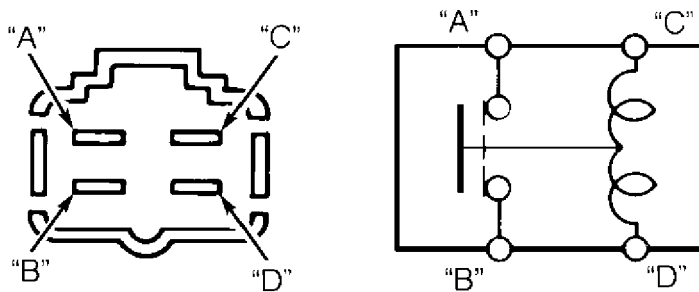
1) If necessary, remove lower instrument panel cover and driver's side knee bolster to gain access to clutch interlock switch connector. Disconnect 2-pin connector from switch.

2) Check continuity between switch terminals. Ensure

continuity exists when clutch pedal is depressed. Continuity should not exist when clutch pedal is not depressed.

STARTER RELAY TEST - A/T

Locate and remove starter relay from vehicle. Connect battery between terminals "C" and "D". See Fig. 2. Ensure continuity exists between terminal "A" and "B". Disconnect battery from terminals "C" and "D". Continuity should no longer exist between terminals "A" and "B".



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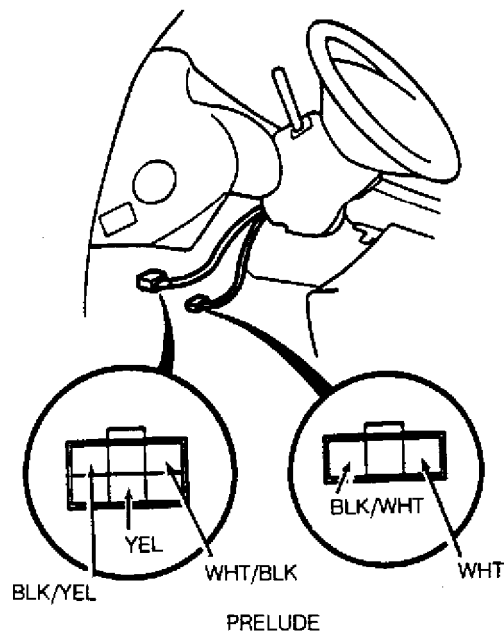
Fig. 2: Testing Starter Relay
Courtesy of American Honda Motor Co., Inc.

IGNITION SWITCH TEST

Remove lower instrument panel cover and driver's side knee bolster. Disconnect 6-pin connector from dash fuse box and 3-pin connector from main wire harness. See Fig. 3. Use an ohmmeter to check continuity at connector terminals with switch in indicated position. If continuity is not as specified, replace ignition switch.

IGNITION SWITCH CONTINUITY

Terminal Position	WHT/ BLK (ACC)	WHT (BAT)	BLK/ YEL (IG1)	YEL (IG2)	BLK/ WHT (ST)
0					
I	○	○			
II	○	○	○	○	
III		○	○		○



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Fig. 3: Testing Ignition Switch Continuity
Courtesy of American Honda Motor Co., Inc.

BENCH TESTING

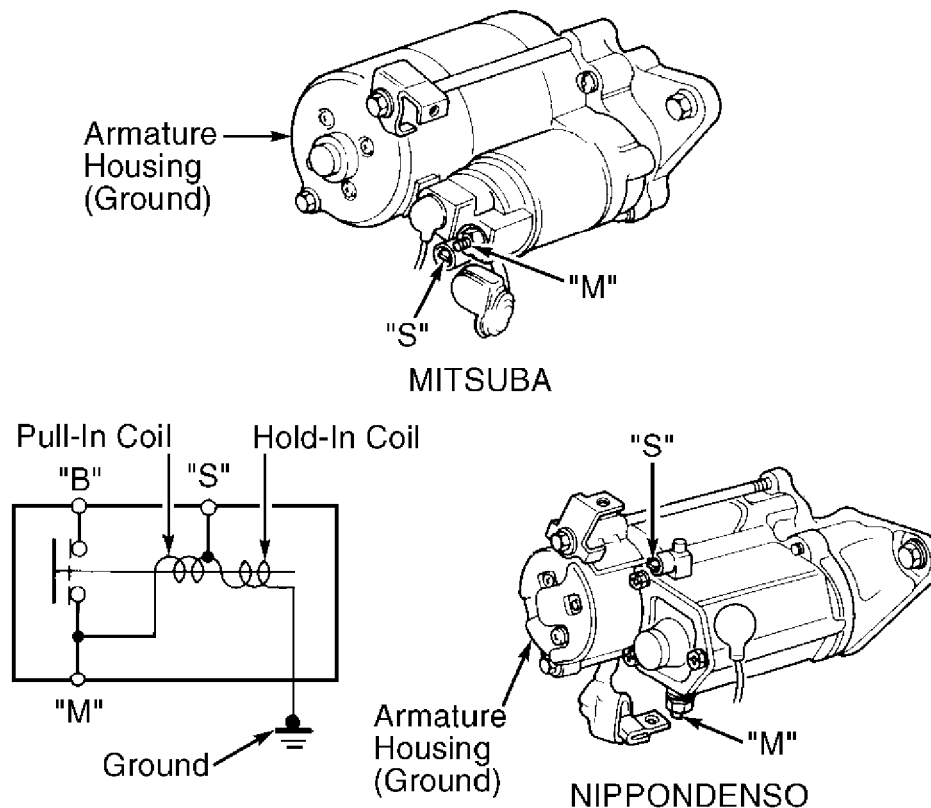
SOLENOID TESTS

Pull-In Test

Check continuity between starter solenoid terminals "S" and "M". See Fig. 4. If continuity exists, pull-in coil is okay. If continuity does not exist, replace starter solenoid.

Hold-In Test

Check continuity between terminal "S" and armature housing (ground). See Fig. 4. If continuity exists, hold-in coil is okay. If continuity does not exist, replace starter solenoid.



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Fig. 4: Testing Starter Solenoid
 Courtesy of American Honda Motor Co., Inc.

ARMATURE TEST

1) Place armature in growler. Turn on growler and hold hacksaw blade over armature. Slowly rotate armature. If armature attracts hacksaw blade or if hacksaw blade vibrates, armature is defective and must be replaced. If blade does not respond as described, go to step 2).

2) Remove armature from growler. Using an ohmmeter, check continuity between commutator and armature, and between commutator and shaft. Continuity should not exist. If continuity exists in either case, replace armature.

3) Check for continuity between each commutator segment. Continuity should exist. If an open circuit exists between any 2 segments, replace armature.

4) Inspect armature for wear or damage due to contact with field coil magnets. Clean commutator surface, and polish with No. 500-600 sandpaper if necessary. If surface is scored, out-of-round or pitted, turn commutator on a lathe.

5) If mica depth is not within specification, undercut with a hacksaw blade to minimum depth. See **STARTER SPECIFICATIONS** and **STARTER Article Text (p. 5)** 199:

BRUSH HOLDERS TEST

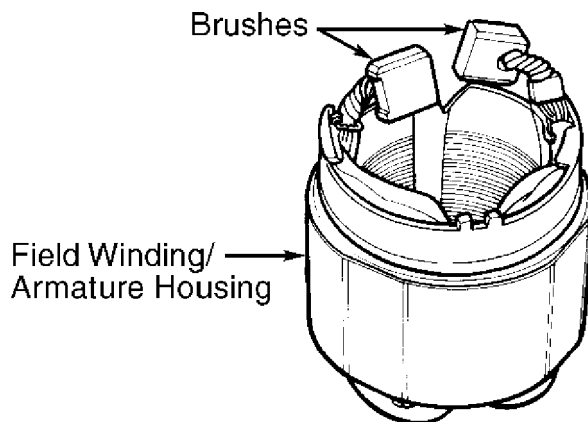
1) Using an ohmmeter, check continuity between the positive and negative brush holders (brackets). Continuity should not exist. If continuity exists, brush holder assembly is shorted and must be replaced.

2) Check brush length and spring tension. If brush length or spring tension is less than specification, replace brushes. See STARTER SPECIFICATIONS table. Ensure brushes move freely in holders.

FIELD WINDINGS TEST

1) Check continuity between brushes of field winding in armature housing. Ensure continuity exists. If continuity does not exist, replace field winding/armature housing assembly. See Fig. 5.

2) Check continuity between each brush and armature housing (ground). Continuity should not exist. If continuity exists, replace field winding/armature housing assembly. See Fig. 5.



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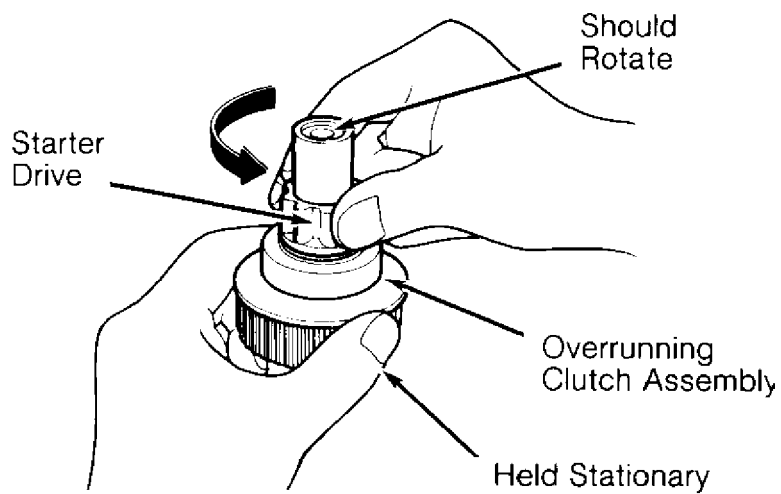
Fig. 5: Testing Starter Field Winding
Courtesy of American Honda Motor Co., Inc.

OVERRUNNING CLUTCH TEST

1) Rotate overrunning clutch on shaft. See Fig. 6. If clutch does not lock when rotated in one direction and rotate smoothly in the other direction, replace overrunning clutch assembly.

2) Inspect starter drive gear for wear or damage. If gear is damaged, replace overrunning clutch assembly. Drive gear is not available separately.

NOTE: If starter drive gear teeth are damaged, check condition of flywheel or torque converter ring gear.

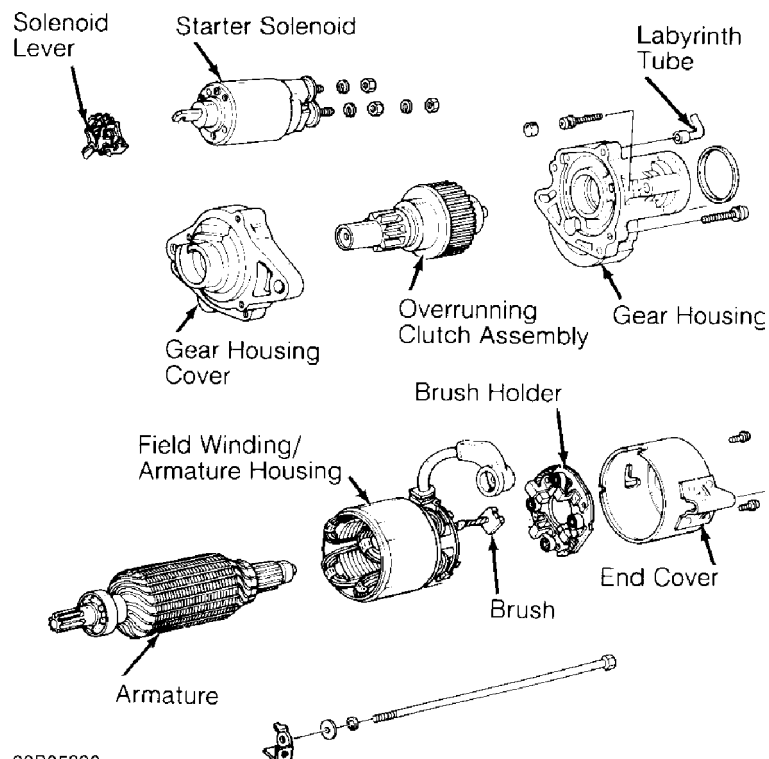


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Fig. 6: Testing Overrunning Clutch
 Courtesy of American Honda Motor Co., Inc.

OVERHAUL

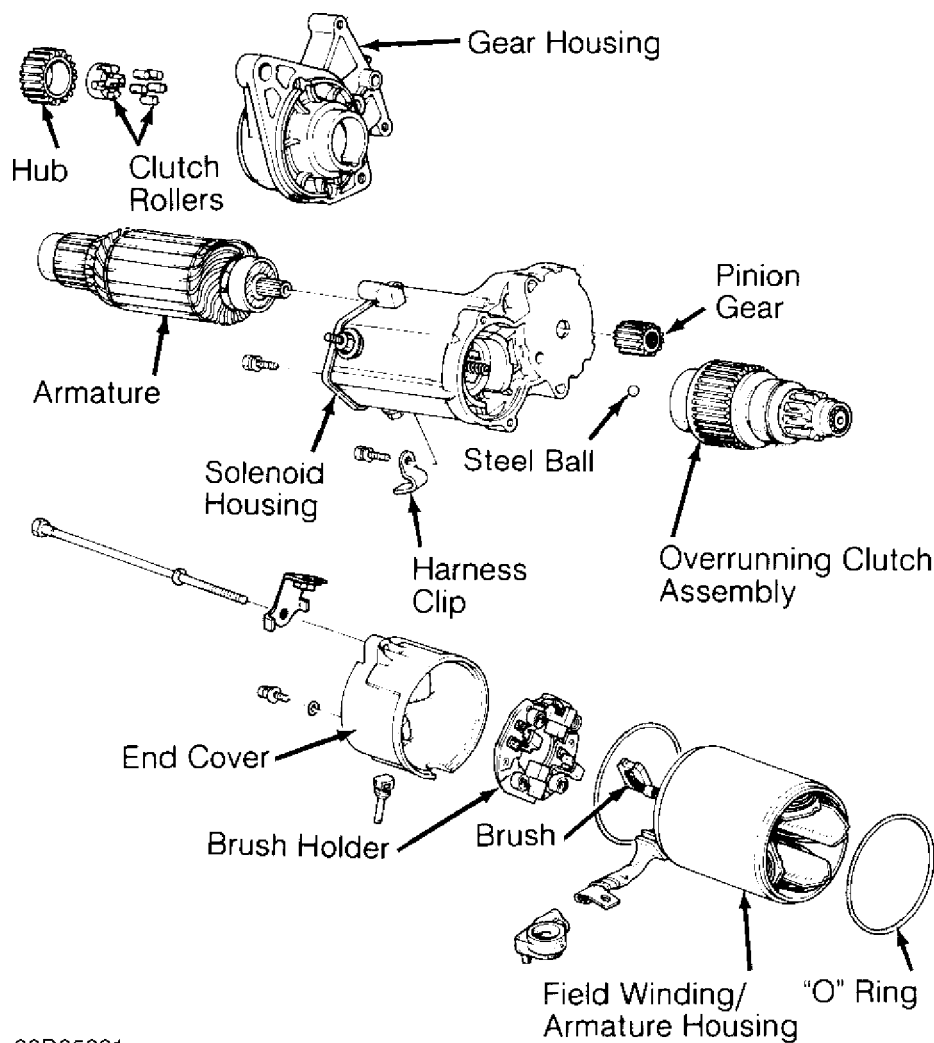
NOTE: For starter overhaul, refer to exploded view of starter. See Fig. 7 or 8.



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Fig. 7: Exploded View Of Starter (Mitsuba)

Courtesy of American Honda Motor Co., Inc.



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Fig. 8: Exploded View Of Starter (Nippondenso)
 Courtesy of American Honda Motor Co., Inc.

STARTER SPECIFICATIONS

STARTER SPECIFICATIONS TABLE

Application		Specification
Brush Length (Minimum)		
		.39" (10.0 mm)
Brush Spring Tension		
	3.5-4.0 Lbs.	(1.6-1.8 kg)
Commutator Diameter (Minimum)		
Mitsuba		1.08" (27.5 mm)
Nippondenso		1.14" (29.0 mm)
Commutator Mica Depth (Minimum)		
Mitsuba		.006" (.15 mm)
Nippondenso		.008" (.20 mm)
Commutator Runout (Maximum)		
		.002" (.05 mm)

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TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

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Application	Ft. Lbs. (N.m)
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Starter Mounting Bolts	33 (45)
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