HITACHI & MITSUBISHI

Datsun
Dodge Colt
Chevrolet LUV
Honda
Mazda

DESCRIPTION

Starter is a 12-volt, four-pole unit of conventional design. Magnetic switch assembly is mounted on gear case. Starters have a overrunning clutch connected by a shift lever to magnetic switch plunger. Brushes and springs are retained inside yoke assembly by holders.

APPLICATION

Hitachi

Model	Part No.
Datsun	
A-13	
Man. Trans.	S114-156
Auto. Trans.	S114-87M
L-18 & L-20B	
Man. Trans.	S114-103P
Auto. Trans.	S114-126M
L-26	
Man Trans.	S114-122N
Auto. Trans.	S114-182
Chevrolet LUV	S114-118
Honda	31200-634-670

Mitsubishi

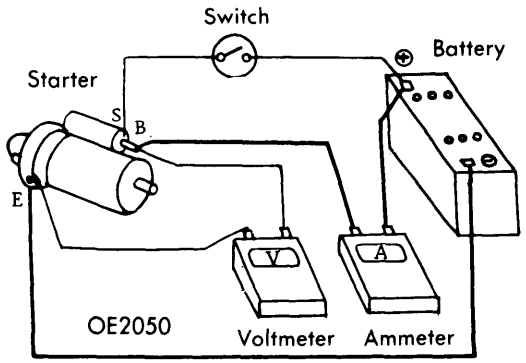
Dodge Colt	
4G32	
Man. Trans.	MEA03-1
Auto. Trans.	MED03-4
4G52	M4T14572
Mazda	
Man. Trans.	
808 & B1600	0222 18 400B
RX-2	1907 18 400A
All Others	1757 18 400A
Auto. Trans.	
RX-2 & RX-3	2869 18 400A
RX-4	1758 18 400, 1758 18 400A

TESTING

PERFORMANCE TESTS

No Load Tests – Connect starter in series with a 12 volt battery, being certain ammeter used is capable of 1000 ampere reading. Connect voltmeter to starter (see illustration). Compare readings with specifications.

Lock (Torque) Test – Mount starter in a test stand to allow starter torque measurement (follow manufacturers instructions). With voltage adjusted (see specifications), ammeter reading and starter torque should be within specifications.



NO LOAD TEST HOOK-UP

OVERHAUL

DISASSEMBLY

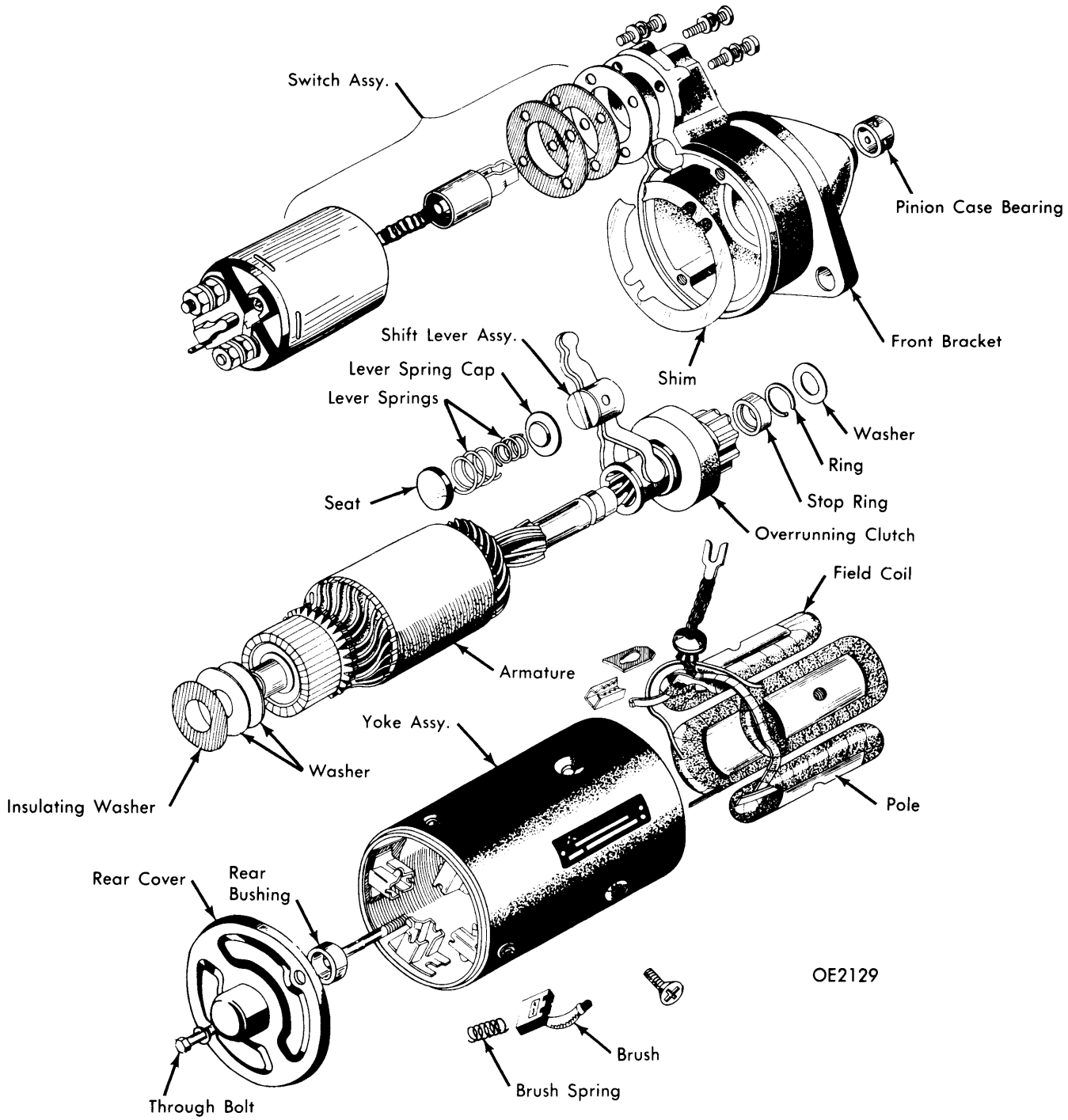
1) Loosen nut securing connecting plate to magnetic switch "M" terminal, remove screws securing magnetic switch and remove switch assembly. Remove two through bolts and brush cover assembly, then tap yoke assembly with a wooden hammer and remove it. Remove armature assembly shift lever.

2) Remove pinion stop ring from end of armature shaft by pushing stop ring to the clutch side. Remove snap ring and then remove stop ring with overrunning clutch. Remove overrunning clutch assembly from armature shaft.

STARTER PERFORMANCE SPECIFICATIONS

Model	No Load Test ①		Lock Test		
	Amps.	RPM	Amps.	Volts	Torque
HITACHI					
31200634670	below 70	7000	below 380	4.9	over 5.4 ft. lbs.
S 114-87M	below 60	7000	below 420	6.3	over 6.5 ft. lbs.
S 114-103P	below 60	7000	below 430	6	.....
S 114-118	below 60	6000	below 330	5.1	over 5.8 ft. lbs.
S 114-122N	below 60	5000	below 460	6	.....
S 114-126M	below 60	6000	below 540	5	.....
S 114-156	below 60	6000	below 420	6.3	over 7.2 ft. lbs.
S 114-182	below 60	6000	below 500	5	.....
MITSUBISHI					
Colt	below 55	5500	below 500	6	over 11.6 ft. lbs.
Mazda 1.2 kw Starter	below 75	4900	below 1100	5	over 17.3 ft. lbs.
2.0 kw Starter	below 100	7800	below 780	5	over 7.95 ft. lbs.

HITACHI & MITSUBISHI (Cont.)



MITSUBISHI STARTER (TYPICAL)

HITACHI & MITSUBISHI (Cont.)

PARTS REPLACEMENT & TESTING

Brushes & Springs – Check brush spring tension using a suitable spring scale (see specifications). Check brush contact surface condition. If brush contact is loose, replace brush. If brush length is less than specified, replace brushes. Check lead clip and wire connection, check condition of brush holders and spring clip, repair or replace parts as necessary.

Brush Spring Tension

Application	Lbs. (Kg)
Colt	2.98 (1.35)
Datsun	
S114-87M	1.8 (0.8)
All Others	3.5 (1.6)
LUV	1.8 (0.8)
Mazda & Honda	3.5 (1.6)

Brush Length

Application	In. (mm)
Colt	.45 (11.5)
Datsun	
L-26	.50 (12.5)
All Others	.25 (6.5)
Honda	.16 (4.0)
LUV	.50 (12.5)
Mazda	①

① – Replace if worn to 1/3 of original length.

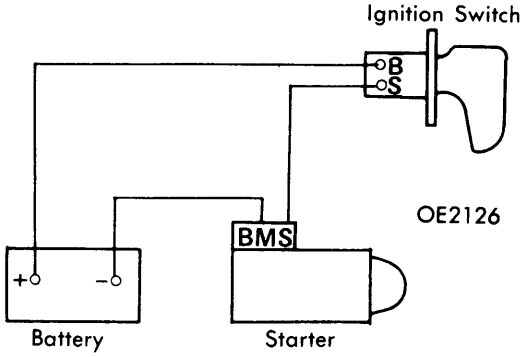
Armature – Check external condition of armature. Measure shaft for distortion or bending, using a dial indicator gauge. Replace armature shaft if bending exceeds .0031" on Datsun, .006" on Luv and .004" on all other models.

Commutator – Inspect commutator for roughness, if surface is pitted or grooved, it should be sanded lightly with no. 500 emery paper. Also check commutator for being out-of-round. If out-of-round is more than .0079", or insulating mica depth is less than .0079" from the cummutator surface, turn commutator in a lathe until out-of-round is less than .002". Insulating mica should be undercut to depth of .0197-.0315". Wear limit of commutator diameter is .0787", if excessively worn, it must be replaced.

Field Coil – Check field coil continuity by connecting test probe of a circuit tester or a resistance counter to the field coil positive terminal and positive brush holder, if tester shows no continuity, field circuit or coil is open. Check for grounded field coils by placing one probe of a circuit tester on yoke and other probe to field coil positive terminal, if resistance is read, field coils are grounded.

Overrunning Clutch Assembly – Inspect pinion assembly and sleeve. Sleeve should slide freely along armature shaft spline and if damage or resistance is noted, replace assembly. Inspect pinion teeth for excessive rubbing, replace as necessary. Check flywheel ring gear for damage or wear.

Magnetic Switch Assembly – After checking starter motor, magnetic switch assembly should also be checked. Connect jumper cables between negative battery terminal and starting motor "M" terminal, and positive battery terminal and starting motor "S" terminal, connecting ignition switch in series (see illustration). With ignition switch on, measure distance between the pinion front edge and pinion stopper (see illustration). Clearance should be .012-.059" on Hitachi starters and .02-.08" on Mitsubishi starters. If not within specifications, adjust by changing washer between magnetic switch and gear case on all models except Datsun 1200. On Datsun 1200 models, depress switch plunger and measure distance between adjusting nut and magnetic switch cover. If not within specifications (1.248-1.272"), adjust by loosening nut and turning plunger until measurement is within specifications.



MAGNETIC SWITCH ASSEMBLY TEST CIRCUIT

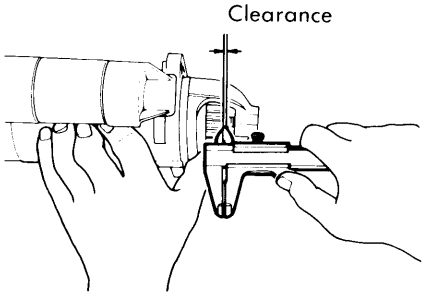
Pinion Case Bearing – Inspect bearing for wear and check side play. Clearance between bearing and armature shaft should not exceed .0079". If limit is exceeded, replace bearing. Clearance with new bearing installed should be .001-.004" on Hitachi starters and .002-.004" on Mitsubishi starters. *NOTE – Be sure bearing is installed so that end of bearing is flush with gear case end plane.*

CLEANING & INSPECTION

Clean all disassembled parts, being careful not to use a grease dissolving solvent on overrunning clutch, armature assembly, magnetic switch assembly or field coils, as damage could result. Check all parts for damage or excessive wear, replace as required.

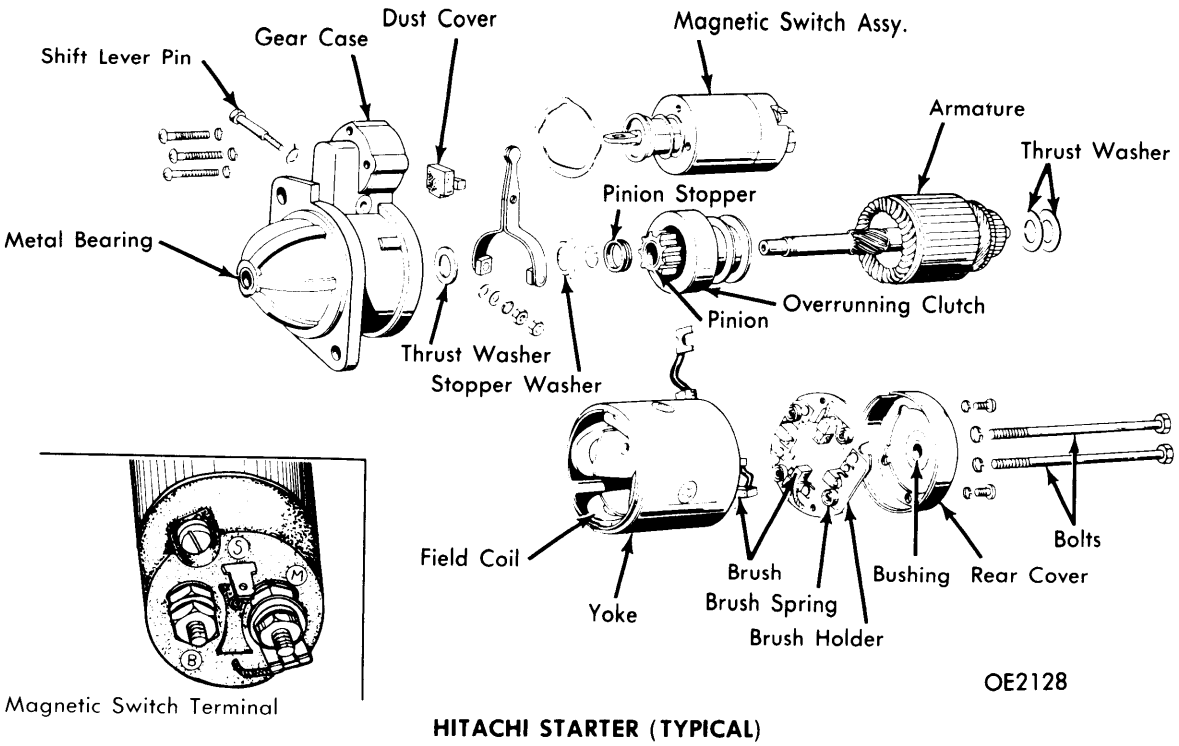
REASSEMBLY

To reassemble, reverse disassembly procedure and be certain to fill rear case with grease and to lightly oil rear cover metal bearing and pinion.



MEASURING PINION EDGE-TO-PINION STOPPER CLEARANCE

HITACHI & MITSUBISHI (Cont.)



Magnetic Switch Terminal

HITACHI STARTER (TYPICAL)