

INTERNATIONAL HARVESTER 2-SPEED ELECTRIC

International Harvester

DESCRIPTION

A compound wound 2-speed motor which may be either a plate actuated type or cam actuated type. A worm gear on armature shaft drives a fiber gear which actuates wiper arm linkage. System uses a three position switch which allows selection of off, low or high speed operation. A fuse or circuit breaker protects against system overloading. When system is operated at low speed, a resistor is shorted out and motor receives full shunt field. When system is operated at high speed, resistor is inserted in shunt field circuit.

TROUBLE SHOOTING

Wiper Inoperative — Binding condition in shaft assemblies, connecting links, gear and shaft assembly or armature. Field coil ground connection broken. Series coil open or grounded. Brushes binding in holders. Faulty control switch. Armature shorted, open or grounded. Rivets fastening drive dog to drive gear striking contact point spring and shorting out motor.

Wiper Will Not Shut Off — Faulty parking switch assembly, cam or control switch.

Wiper Continually Shutting Off — Binding condition in shaft assemblies, connecting links, gear and shaft assembly or armature. Faulty overload switch or cable connections. Brushes binding in holders. Dirty or oily armature commutator.

Wiper Has One Speed Only — Faulty control switch. Cable harness connected incorrectly to parking switch or resistor open.

Speed Excessive Under Light Load But Stalls Under Heavy Load — Broken field coil ground connection.

Stripped Gear Teeth — Wiper blades striking windshield molding during operation. Binding connecting links. Excessive armature end play. Gear and shaft assembly not properly supported when drive arm or drive plate securing nut is tightened. Operator stopping blades manually when wiper is operating.

REMOVAL & INSTALLATION

Removal — Disconnect linkage from wiper motor and remove bolts holding mounting bracket. Disconnect wiring at control switch and lift out motor assembly. Remove bolts securing mounting bracket to end housing.

Installation — To install, reverse removal procedure and lubricate linkage with small amount of engine oil.

OVERHAUL

PLATE ACTUATED MOTOR

Disassembly — 1) Remove cover and parking switch assembly. *NOTE* — It is not necessary to disconnect motor leads from parking switch. Mark position of switch contact plate in relation to crankarm to assure correct reassembly. Remove nut, lock washer, flat washer and insulating washer from crankarm shaft. Remove switch contact plate and lift crankarm drive gear, gear key and thrust washer from drive end housing. Remove crankarm shaft.

2) Remove through bolts and drive end housing. Remove armature from motor housing. Pull commutator end frame from

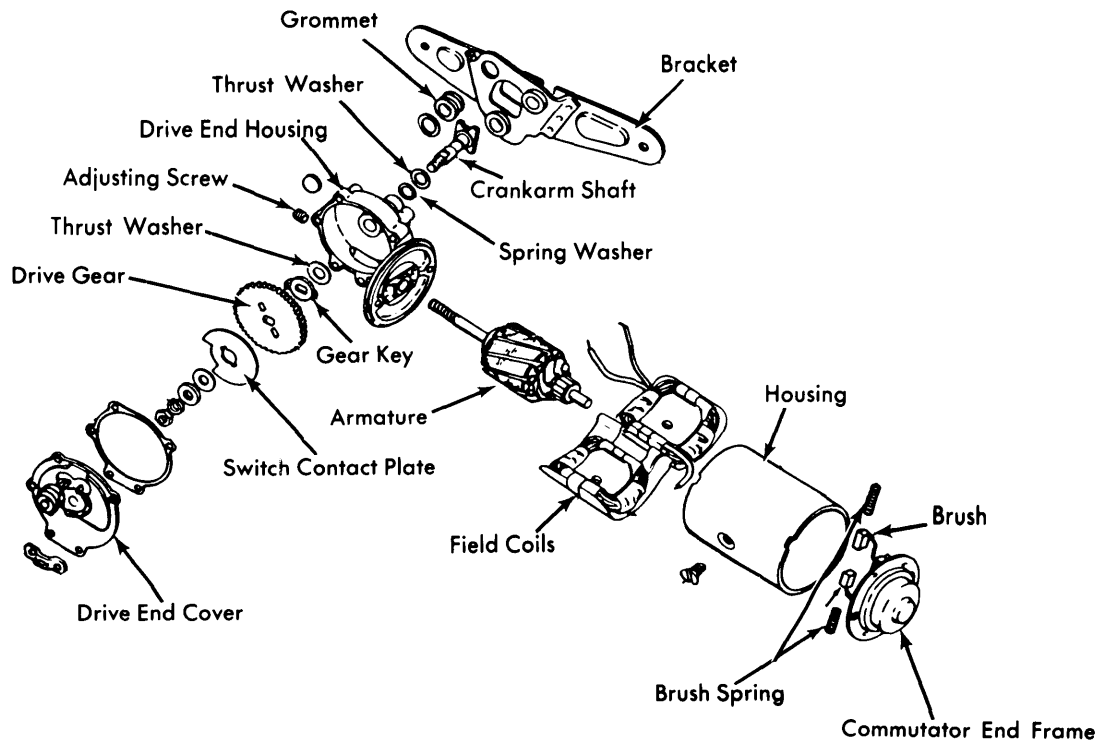


Fig. 1 Exploded View of Plate Actuated Motor

Windshield Wipers

INTERNATIONAL HARVESTER 2-SPEED ELECTRIC (Cont.)

motor housing and check that brush springs are still in place. If inspection shows it is necessary to replace fields, drive end housing, commutator end frame or parking switch, leads can be unsoldered to finish disassembly.

Reassembly — 1) If field coils were removed, solder coil lead to insulated brush holder. Place 10 drops of engine oil to felts at armature shaft bushings and allow excess to drain off. Use suitable grease on crankarm shaft and insert one tablespoon of Lubri-Plate Aero Lubricant or equivalent in gear case. Position armature in motor housing and slide drive end housing over armature worm gear. Position brush springs and brushes in holders and hold brushes in place while inserting armature into commutator end frame bushing. **NOTE** — Check that leads do not interfere with armature or brush movement.

2) Install commutator end frame on housing, place drive end housing in position on motor housing and install through bolts. Tighten bolts and strike motor once or twice to align bushings. Install thrust washer and spring washer on crankarm shaft. Grease shaft and install in commutator end frame bushing. Position drive gear thrust washer, gear key and crankarm drive gear on shaft.

3) Install switch contact plate in position noted at disassembly. Install insulating washer, flat washer, lock washer and nut on crankarm shaft. Tighten nut. Install drive end cover on housing.

CAM ACTUATED MOTOR

Disassembly — 1) Remove drive end cover and remove parking switch contact plate from housing. If parking switch assembly is being replaced, unsolder field coil leads from switch terminals. **NOTE** — Mark which terminal each lead is connected to. Remove drive gear shaft nut, washer and crankarm from drive shaft. **CAUTION** — Hold crankarm in vise before removing nut to prevent stripping of gear teeth.

2) Remove drive gear and shaft assembly. Remove parking cam and spring washer from drive shaft and note direction which dotted end of cam faces. Remove through bolts and separate commutator end frame from motor housing. Lift brushes clear of armature until commutator end frame is removed from armature shaft. Remove brushes and spring from brush holders. Remove thrust washer from commutator end frame bushing bore, remove armature and drive end housing.

Reassembly — 1) Solder coil leads to parking switch terminals. Position drive end housing on motor housing, then insert armature (worm gear end first) into motor housing. Insert thrust washer into commutator end frame bushing bore. **NOTE** — Both nylon and metal thrust washers should be assembled with metal disc at bottom of bore. Install brush springs and brushes into brush holders. **NOTE** — Brushes must move freely in holders.

2) Solder coil lead to insulated brush holder and position commutator end frame to motor housing. Install through bolts and tighten, while ensuring that armature retains end play as bolts are tightened. End play should be .002-.007". If not within specifications, adjust at set screw and stake screw in place.

3) Install spring washer to drive gear and shaft with convex surface facing drive gear. Install parking cam on shaft assembly with dotted end of cam in same direction as noted in disassembly. Place drive gear and shaft assembly in drive end housing bushing bore. Install spacer washer, crankarm and nut. **CAUTION** — Hold crankarm in vise before tightening nut to prevent stripping of gear teeth.

4) Install gasket and parking switch contact plate. Install drive end housing cover on housing and tighten retaining screws. Install mounting bracket on housing.

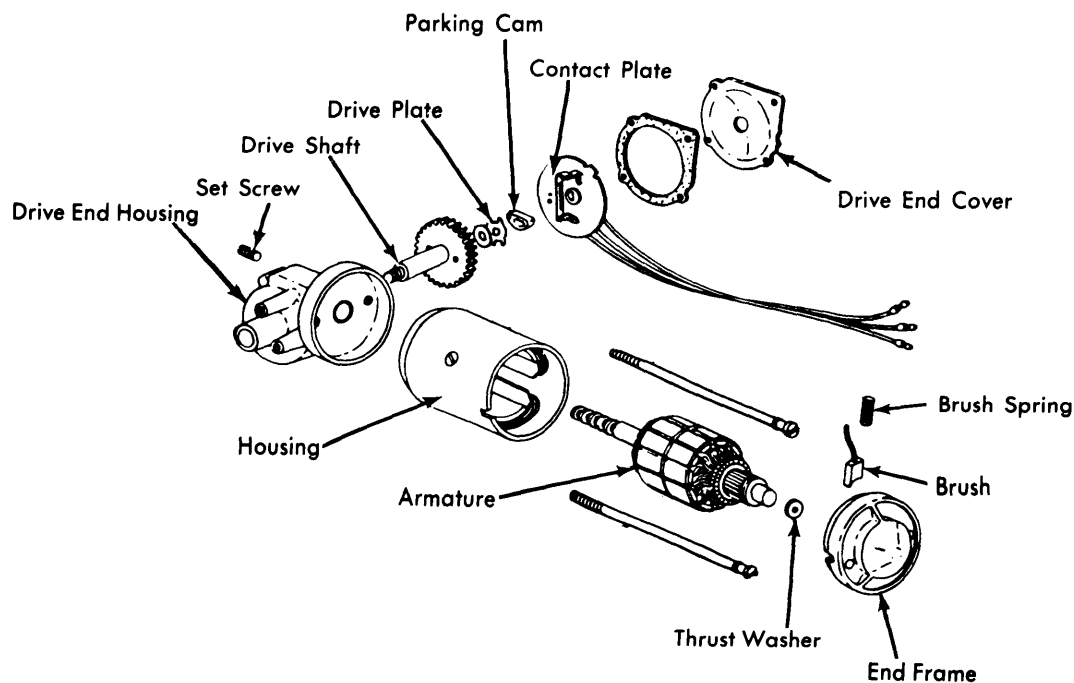


Fig. 2 Exploded View of Cam Actuated Motor