Motors

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This is the classic 1950's era Cub Scout electric motor.

**ARMATURE** - For the armature shaft, wrap 1 1/2 inches (38mm) of a 4 inch (102mm) nail with two layers of tape.

For armature core, tape two pairs of 2 1/2 inch (64mm) nails alternately heads and points.

Center one pair of core nails each side of shaft nail about 1 inch (25mm) from head. Wrap with two layers of tape from tip to tip.

**COMPETATOR** - Scrape all insulation off ends of armature windings.

**MATERIALS**

- One roll No. 24 enameled wire
- One roll tape
- Three 4-inch (102mm) nails (20-penny)
- Four 2 1/2 inch (64mm) nails (8-penny)
- Four 3-inch (76mm) finishing nails (10-penny)
- Wood board for motor base
- Two staples or four small brads
- Two tacks
- Two dry cells or 6-volt transformer

Wind armature with two layers of wire. Start at shaft, wind out and back on each half of core. Always wind in the same direction. Leave 6 inches (152mm) of wire at start and finish.

To form commutator, bend bare ends of wires as shown. Lay against tape on sides of shaft halfway between the armature coils. Hold commutator down with narrow strips of tape as
FIELD - Bend 2 4-inch (102mm) nails in the center for the field core. Space heads of nails about 3 inches (76mm) apart. Wrap nails together with two layers of tape. Wrap field cores with about 400 turns of wire. Attach to wood base with (heavy-duty long) staples or bent over brads. Leave 3 or 4 inches (80-100mm) of wire at start and finish.

ARMATURE SUPPORTS AND BRUSHES - For armature supports, drive four 3-inch (76mm) finishing nails into base, locating them so that the armature turns exactly between the field poles. Wrap wire around the armature supports to form armature bearings.

Scrape insulation from ends of two 6-inch (152mm) pieces of wire. Tack them to the base and bend them as shown to form brushes.