GENERAL SPECIFICATION NO. 14288

GE-247-D 600 VOLT RAILWAY MOTOR.

General Specifications
GE-247-D 600 Volt Railway Motor.

RATING AND CHARACTERISTICS:

The GE-247-D railway motor has a rating of 40 HP on 600 volts according to the General Electric Company's standard of 75°C. rise by thermometer on any part of the windings after a one hour's run on the stand with all covers off. The motor has a continuous capacity of 34.4 amperes on 300 volts, 35.8 on 450 volts and of 36.6 on 600 volts for a temperature rise of 65°C by thermometer.

Characteristic curves will be found on C-45541, attached.

OUTLINE:

The outline dimensions of the motor are shown on Diagram 14979.

WEIGHT:

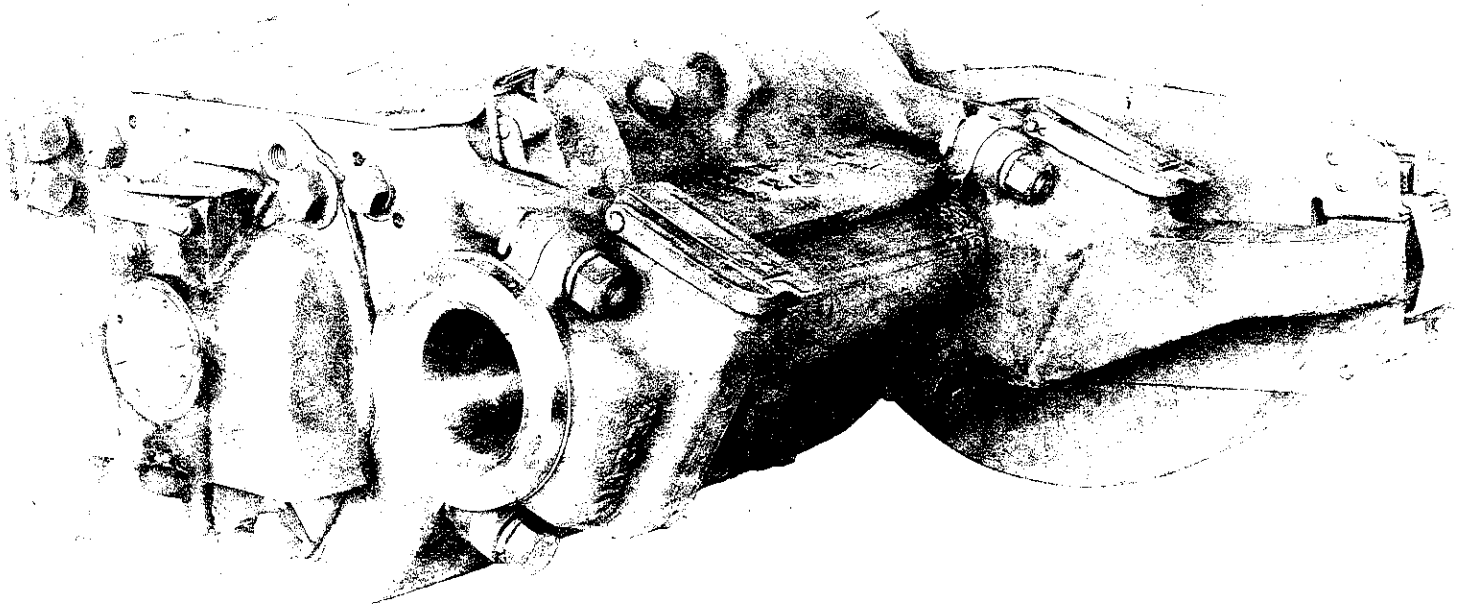
The weight of the motor with gear, pinion, gear cover and axle linings is approximately 1870 pounds.

(GE-247-D motors.

FRAME:

The magnet frame is of the box type, octagonal in transverse section and provided with bored openings at each end. Through one of these openings, the armature, pole pieces and field coils can be inserted or removed.

Brackets are provided on the front of the frame for the suspension of the motor, by means of a bolted bar.



263812 GE-247-D RAILWAY MOTOR.

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263813 GE-247-D RAILWAY MOTOR.

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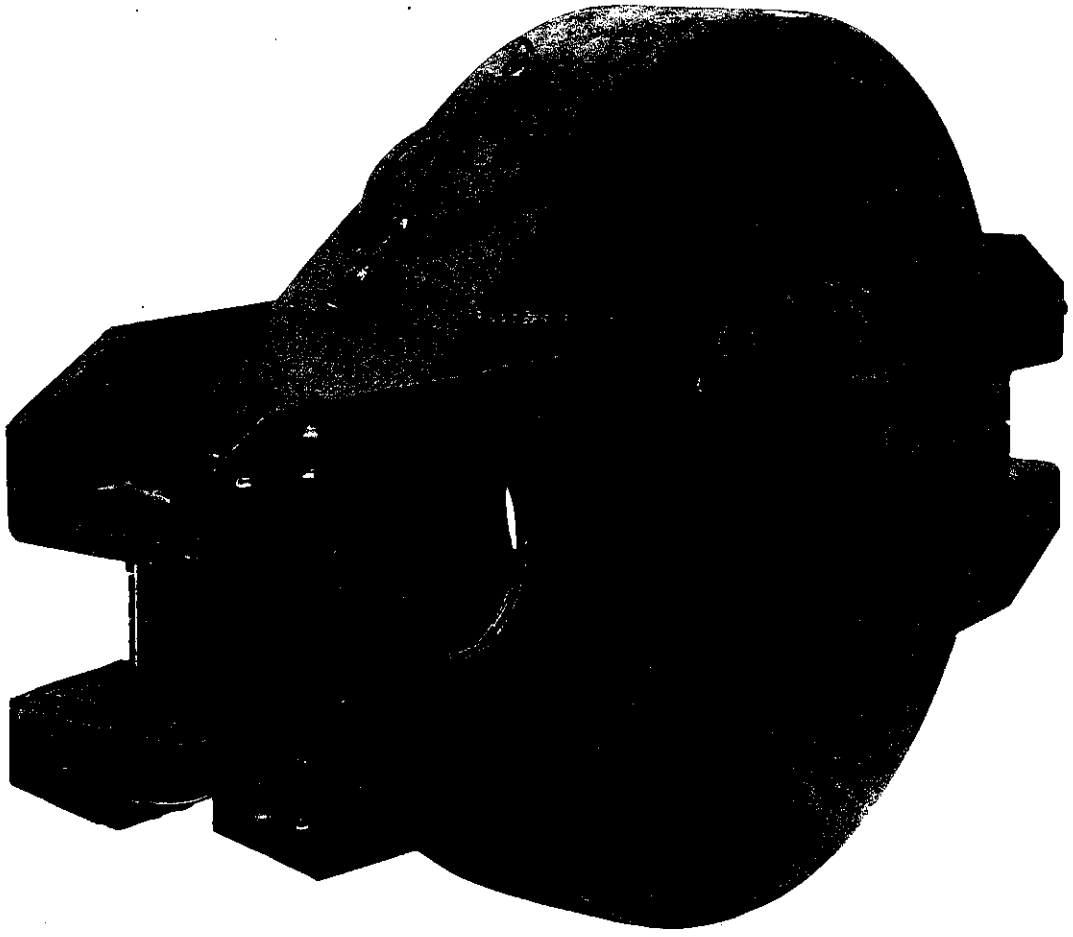
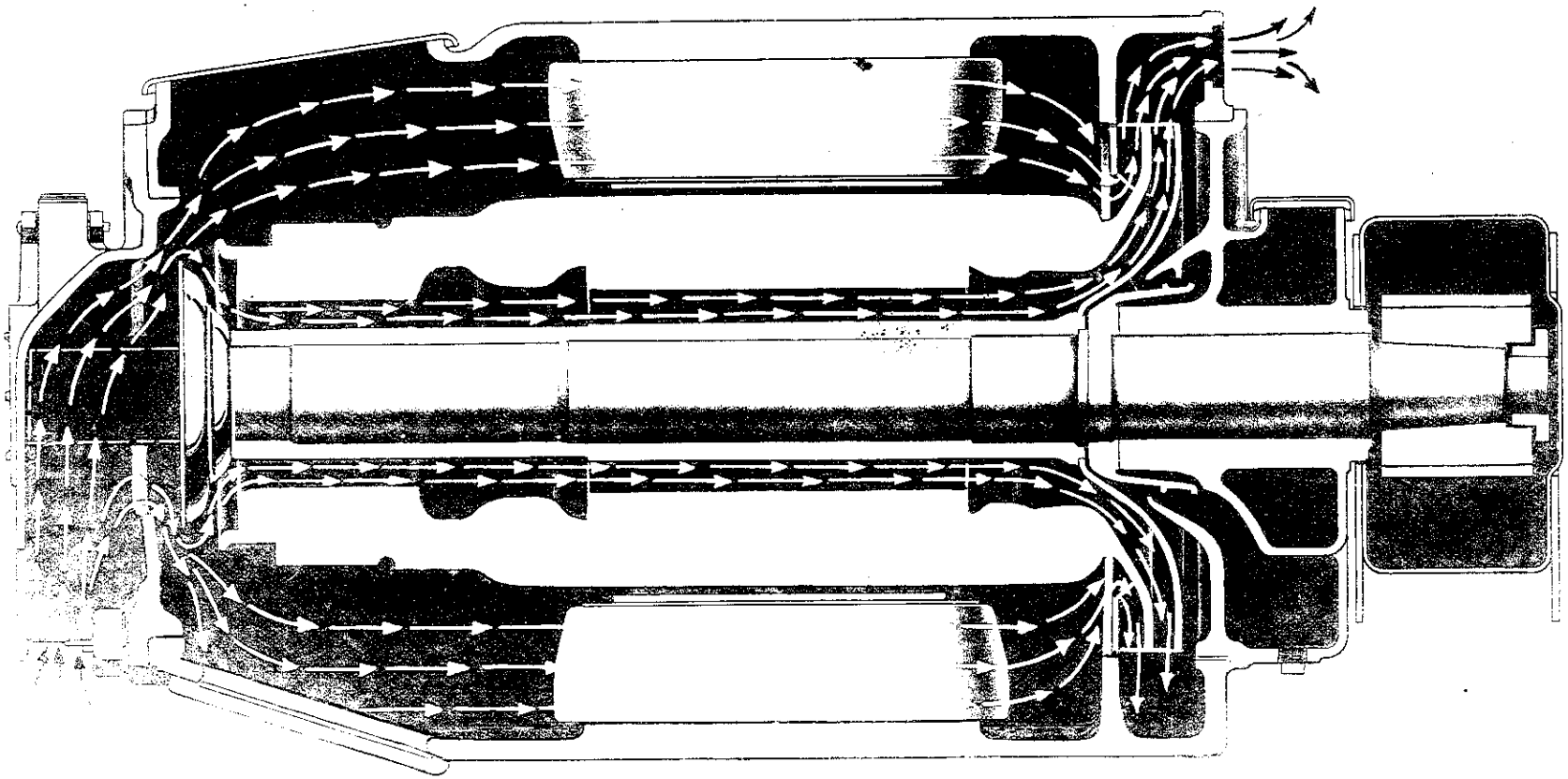


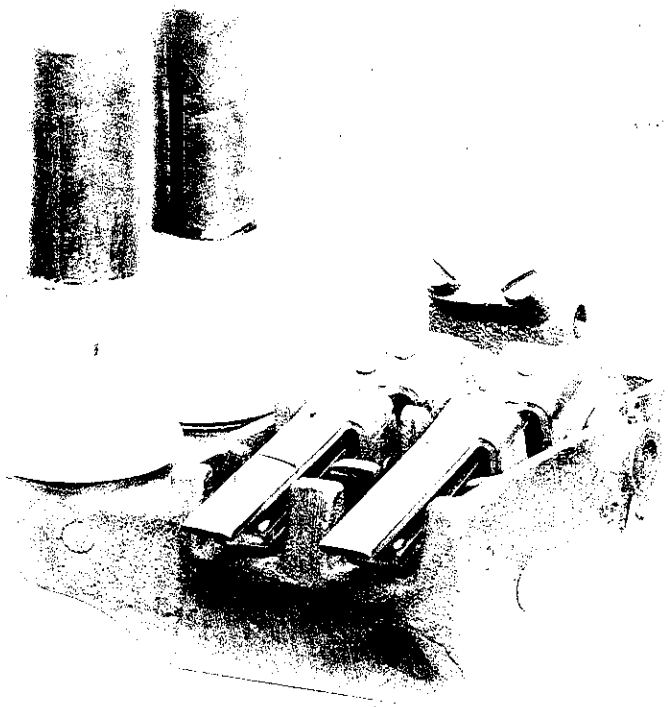
264407 CAT. NO. 174287 PRESSED STEEL GEAR COVER FOR GE-247-C AND D RAILWAY MOTORS.

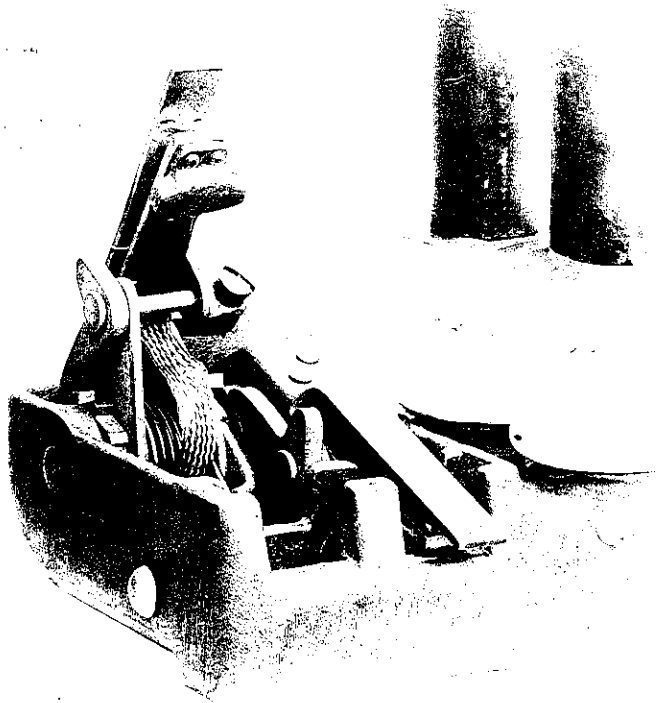
INDEX E-315.1



233185 G.E. RAILWAY MOTOR. SECTION SHOWING LONGITUDINAL VENTILATION WITH MULTIPLE FAN.

INDEX E.3154





233175 BRUSH HOLDER FOR GE-247.600 [illegible]

INDEX E 815.1 - E 910.2

The frame heads carrying the armature shaft bearings are supported in the recessed ends of the magnet frame and are held in place by tap bolts which are securely locked against turning. In each head, two tapped holes diametrically opposite, are provided for jack screws, for facilitating the removal of the frame heads. The frame heads are provided with auxiliary oil wells for filling and gauging the supply of oil, and also have drip pockets for waste oil from the deflectors on the armature shaft.

The exciting coils, of which there are four in number, are located in the corners of the frame at an angle of approximately 45° to the horizontal.

The commutating field coils are located in the top, bottom and side of the motor frame between the exciting coils.

The motor frame has a large hand hole for inspection, which is closed by a cover with a gasket. A large opening is also provided at an angle to allow easy access to the commutator and brush holders. The cover over the commutator is made of pressed steel and is held in place by a spring locking device, no part of which projects above the top of the motor.

ARMATURE BEARINGS:

The armature bearing linings are made of bearing metal with a thin layer of babbitt sweated to the bearing shell.

The armature bearings are lubricated by means of oil and waste, and the waste bearing against the shaft on the low pressure side of the bearing. Waste oil from the armature bearings is prevented from entering the interior of the motor by a series of oil deflectors which throw it into grooves in the heads from which it is conducted into the drip pockets.

AXLE CAPS:

The axle caps are tongued and bolted to machined surfaces which are inclined at an angle of approximately 70° to the horizontal. The bearings are lubricated by means of oil and waste, and the linings are held from turning by means of dowels. The motor provides for a 4-1/2" diameter of axle in the bearings. The axle caps are provided with auxiliary oil wells for measuring the depth of oil and inserting new oil.

POLE PIECES

Exciting pole pieces are built up of soft iron laminations, mounted on a steel key, into which tap bolts are inserted for holding the poles to the magnet frame.

Commutating pole pieces are made of drop forgings and are held in position by tap bolts.

FIELD COILS AND SUPPORTS:

The field coils, exciting and commutating, are wound of rectangular copper.

After winding, the coils receive a wrapping of cotton tape and are filled with an insulating compound by the vacuum process. They are then thoroughly insulated with several wrappings of specially prepared tape and heavy cotton webbing, and filled with japan.

The exciting field coils are held against spring steel pads, and areheld from movement in any direction by spring steel flanges, which are compressed between the pole tips and frame when the pole pieces are tightened up.

The commutating field coils are held by spring flanges against finished surfaces on the magnet frame. This construction insured the coils being held firmly in position without danger of abrasion.

ARMATURE CORE AND WINDINGS:

The armature core is built up of soft iron laminations mounted upon and keyed to the armature shaft.

The armature is so constructed that the shaft can be removed without disturbing the windings or connections to the commutator. All binding bands are placed on flat surfaces below the surface of the armature, and are securely anchored in position. The armature windings are made of standard round wire and the armature coils assembled in units or polycoils. The hood over the end windings at the commutator end is made of asbestos webbing filled with and insulating compound and over the end windings at the pinion end, it is made of canvas.

ARMATURE SHAFT AND THRUST COLLAR:

The armature shaft is made of high grade steel and the shaft keys of cold rolled steel. The thrust collars are made of drop forgings shrunk on the shaft.

COMMUTATOR:

The commutator shell and cap have surfaces accurately machined and insulated, the insulation being the best grade of mica.

The commutator bars are of hard drawn copper machined accurately to gauge and are insulated from each other by a high grade of mica grooved out to a depth of 3/64" below the surface.

BRUSH HOLDERS:

The method of supporting the brush holders in this motor is very simple; mica insulated studs are pressed directly into the brush holder body castings; these are clamped at the opposite ends between clamps, held against machined seats on the frame by a tap bolt inserted from the outside of the frame. Porcelain insulators with insulating collars, are provided between the brush holder body and the support.

The brushes slide in finished ways and are pressed against the commutator by fingers, having springs designed to give practically uniform pressure throughout the working range of the brush. The brush holder finger pressure is adjustable

and may be varied to suit the condition of operation. Z
A braided copper shunt is provided between the finger tips and the brush holder body.

MOTOR LEADS:

The motor leads are brought through the frame in rubber bushed holes on the axle or suspension side of motor, as required.

VENTILATION:

This motor is arranged with exceptionally good ventilation. Cool air is drawn in at the commutator end and travels in parallel paths to the pinion end. One of the paths is through the commutator shell and through a number of longitudinal ducts in the armature core, and the other is over and around the armature and field coils. A double fan made integral with the pinion end armature head drives the two streams of air out through openings provided in the end of the frame.

GEARS AND PINIONS:

The gears are made of steel and the pinions of a specially treated high grade steel. These are cut to a diametral pitch of three and have a working face of four inches.

GEAR COVER:

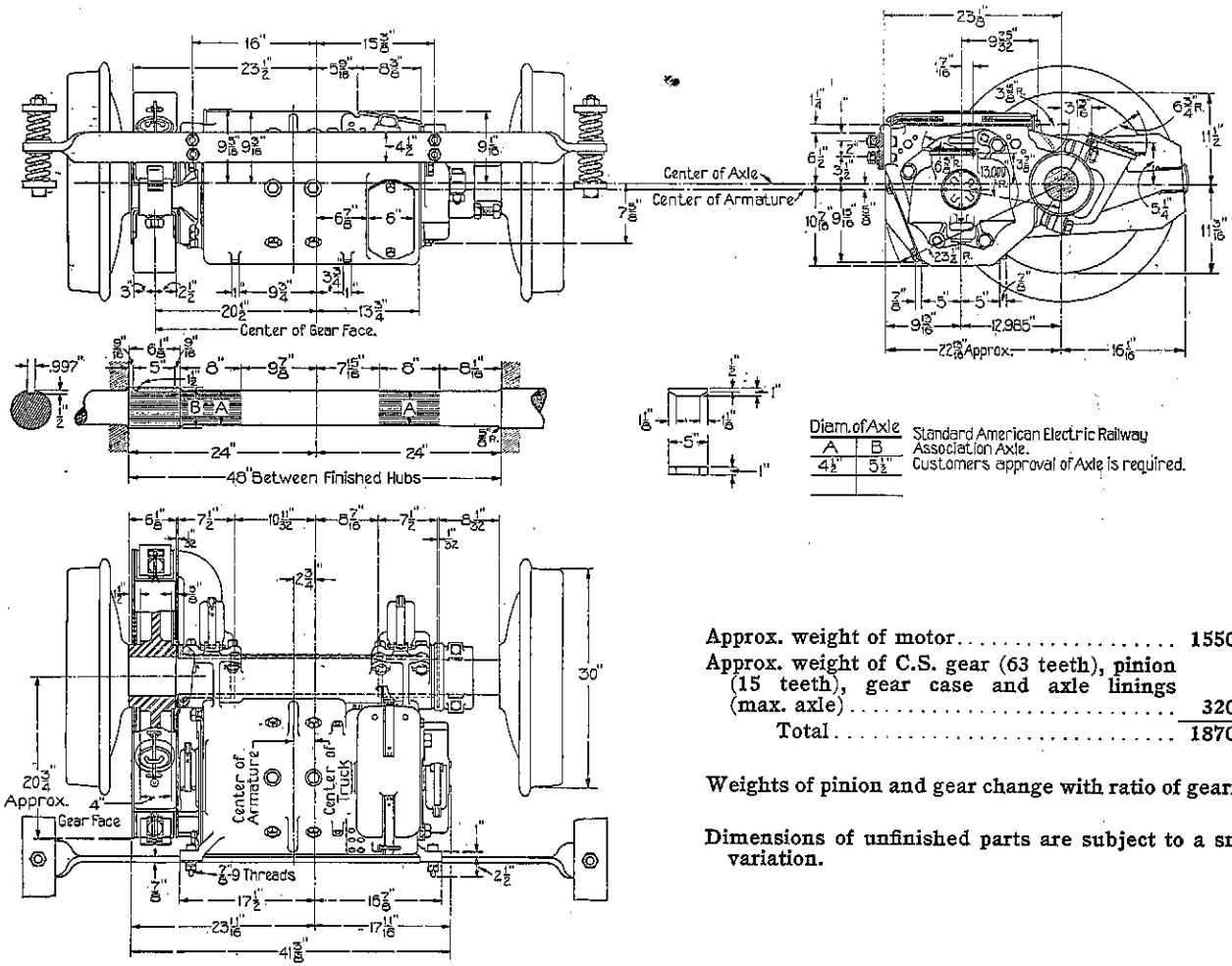
The gear cover is made of sheet steel and is supported by a horn on the axle cap and by a lug on the pinion end frame head. Each of the two halves of the case are spot welded to a separate cradle of formed sheet steel which is

bolted to the supporting lugs.

JLB:HM

March 3d, 1917.

DIMENSIONS OF GE-247-D MOTOR



Diam. of Axle A	Diam. of Axle B
4½"	5½"

Standard American Electric Railway Association Axle.
Customers approval of Axle is required.

Approx. weight of motor	1550 lb.
Approx. weight of C.S. gear (63 teeth), pinion (15 teeth), gear case and axle linings (max. axle)	320 lb.
Total	1870 lb.

Weights of pinion and gear change with ratio of gearing.

Dimensions of unfinished parts are subject to a small variation.

For REFERENCE ONLY unless endorsed on back.

15 SEPT., 1916

No. 14979
From P 1608667

ENGINEERING DEPT.
GENERAL ELECTRIC COMPANY

2m 1-15-18