

## COMMERCIAL TYPE CHARGING GENERATORS PER KS-5123 AND KS-5137 DESCRIPTION

1. GENERAL:

1.01 Commercial type charging generators per KS-5123 and KS-5137 are used for charging the storage batteries of telephone, telegraph and repeater power plants or for carrying the office circuit load with a storage battery floating across the load.

1.02 The generators are usually driven by direct connected motors although in some instances they may be driven by an engine. The various capacities and voltages, together with the generator frame size, for standard generators are given in the following table. On some machines the frame and type are shown together on the nameplate under one heading. In cases of this kind the alphabetical designation e.g. (CD) refers to the type while the numerical designation e.g. (85) refers to the frame size.

FULL LOAD AMPERE OUTPUT

Frame	28V.	33V.	53V.	65V.	175V.	320V.
33	..	..	..	..	5	3
43	..	..	..	..	10	5
55	..	75	..	..	*15 or 20	10
65	..	..	..	..	30	15
73	..	200	..	100	40	20
75	..	..	..	..	50	30
83	..	..	..	..	..	*40 or 50
85	..	400	..	200	..	..
95	..	..	..	300	..	..
103	..	600	..	400	..	..
105	..	800	..	..	..	..
113	..	1000	..	500	..	..
115	..	**1300	..	750	..	..
123	1000	..	500	..	..	..
125	..	..	800	..	..	..
133	..	..	..	1200	..	..
1256	..	..	..	..	1.5	..
1266	..	..	..	..	3	1.5

\*Either current rating can be furnished for this voltage in the same frame size.  
\*\*This machine will deliver 1500 amperes at 28 volts.

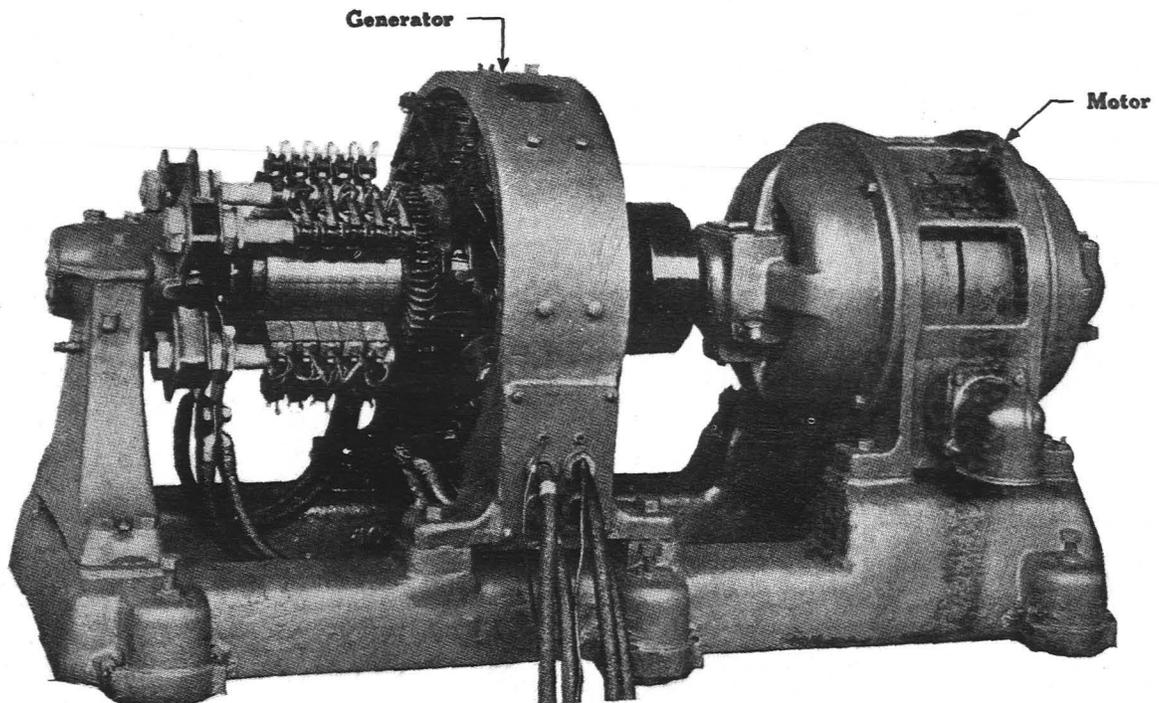


Fig. 1—Generator—Pedestal Type Bearing

- 1.03 Commercial type charging generators have a dark blue-gray semi-gloss finish instead of the glossy black finish of the "M" type generators. They are smaller in size for a given output, and operate at appreciably higher speeds. Carbon brushes instead of the brass gauze brushes are used which, together with the higher speeds and increased windage, result in an increase in the mechanical noise and vibration of the machine.
- 1.04 Commercial type generators make more noise on the central office battery than the "M" type machines and, therefore, require the installation of filtering equipments in order to reduce the noise levels which would otherwise exist on talking circuits.
- 1.05 The carbon brushes require practically no attention compared with the frequent lubrication necessary with the brass gauze brushes used on "M" type generators. In addition, the wear on the commutator will be considerably less when carbon brushes are used so that the maintenance will be minimized. Practically sparkless commutation may be expected although occasional slight sparking may be evident, without causing deterioration.

## 2. DESCRIPTION:

### Types:

- 2.01 The generators are shunt-wound machines of a commercial type, having an associated field rheostat for controlling the voltage, the larger generators (with oil ring bearings) having interpoles, connected so as to aid commutation. The smaller generators with waste packed bearings have no interpoles. Unless specified to the contrary, the standard direction of rotation of the generators is counter-clockwise when viewed from the coupling end.
- 2.02 Commercial generators are self-exciting, that is, the voltage available at the terminals of the field circuit supplying the magnetic windings is the same as the terminal pressure generated by the machine itself. A field-regulating resistance is included in the field circuit so as to provide a means of varying the field current and to compensate for variations in the terminal voltage.

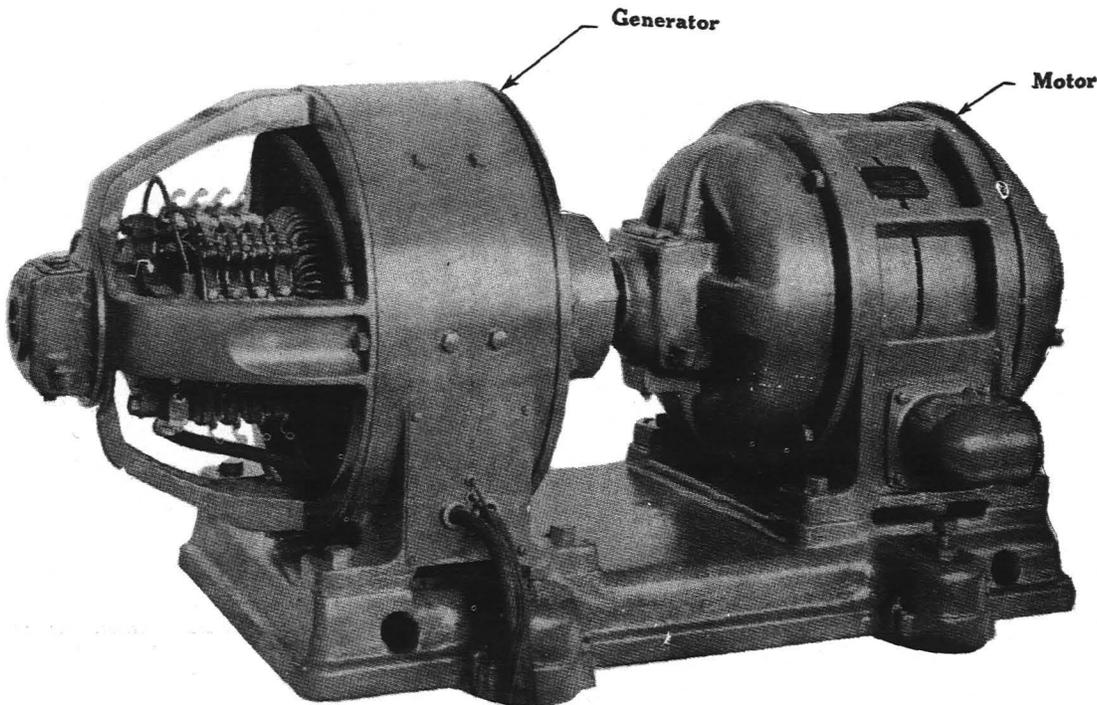


Fig. 2—Generator—End Shield Type Bearing

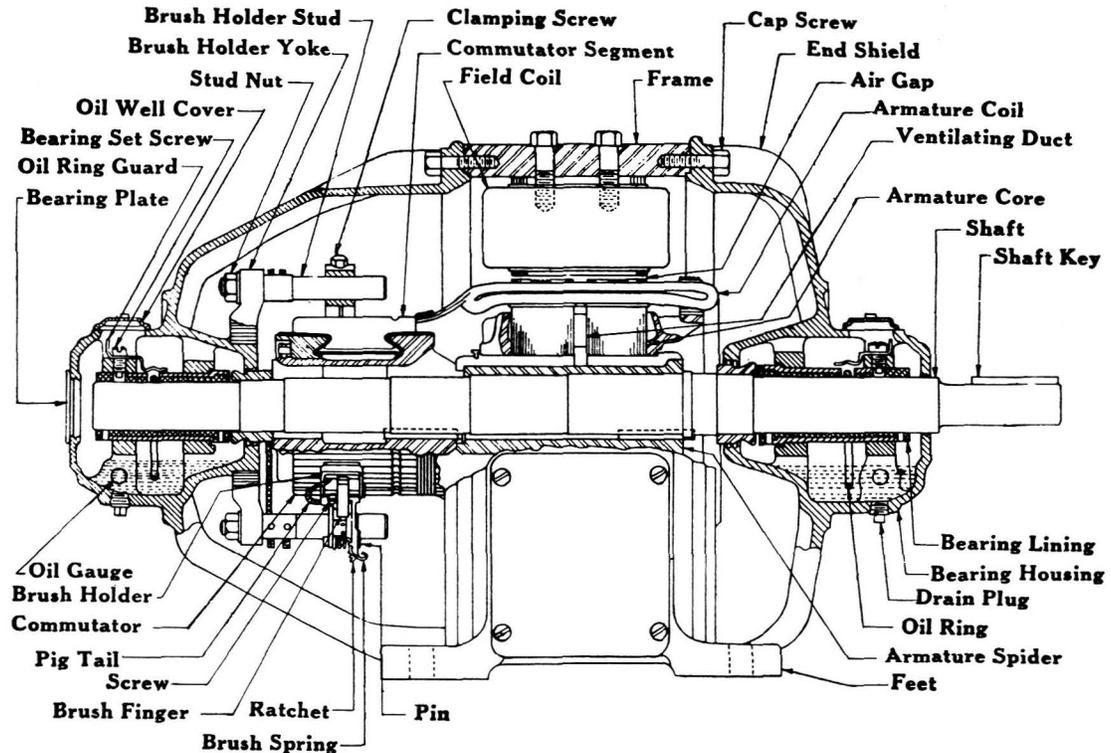


Fig. 3—Generator—Cross Section

- 2.03 The interpoles are windings located between the poles of the generator and aid in giving better commutation over the entire voltage and load ranges without shifting the position of the brushes.
- 2.04 65 volt generators primarily designed for operating on the 44-65 volt range but which in emergencies are used in the 22-33 volt range are more unstable when operating on the 22-33 volt range and may need more frequent adjusting of the rheostat to take care of varying load conditions. The instability of the lower voltages is due to operating with a weak field.

#### Armatures:

- 2.05 The commutators of all generators have the mica between the bars undercut. The armatures are built up of steel laminations or punchings. These punchings are assembled to form slots in the armature periphery into which the armature coils or windings are inserted. The ends of the windings are connected to the commutator bars. The windings of the generators are so arranged that ample circulation of air through the armature and frame for cooling purposes is provided.

#### Bearings:

- 2.06 The generators with oil ring bearings may be divided into two general classes of construction. The first class consists of those generators designed for use with three bearing motor-generator sets. These generators whether of the end shield type or of the pedestal type have but one bearing, the other end of the armature being supported by the driving member through a rigid coupling. For generators of this type the driving member will always be a motor.
- 2.07 The second class consists of the generators designed for use with four bearing sets. These generators have two bearings of the end shield type with the exception of the 1500 ampere 33 volt machines which have two pedestal bearings. Generators in this class are driven by a motor or connected to an engine.
- 2.08 The generators with waste packed bearings have two bearings of the end shield type and are connected to their driving member by means of flexible couplings. The driving member for these generators will always be a motor.

**SECTION 155-512-101**

2.09 The waste used for retaining the oil in the waste packed bearings consists of wool yarn which comes in hanks about 22 inches long and which is looped around the shaft several times inside the bearing housing.

**Brush Gear:**

2.10 On generators with oil ring bearings carbon brushes are mounted in brush holders rigidly clamped to the brush holder studs. The brush holder studs are firmly fastened to a yoke or collar which is supported by a shoulder on the bearing housing. The tension of the brushes may be varied by a spring adjustment, and the brush holder yoke may be moved around the bearing housing to the desired position for good commutation.

2.11 On generators with waste packed bearings carbon brushes are held in cartridge type brush holders mounted in, but insulated from, the end shield. These brushes have a coiled spring mounted on them which is compressed by means of a cap screw in the end of the brush holder.

**Sub-base:**

2.12 Each generator with its associated driving unit is mounted on a common sub-base either of fabricated steel or cast iron. The cast iron sub-bases are supported by car springs, except in the case of the larger engine driven units and the smaller units which rotate at a speed above 1200 r.p.m.