MOTOR-GENERATORS

KS-5668-02 AND KS-15834

REPLACEMENT PARTS AND PROCEDURES

1. GENERAL

1.01 This section covers the information necessary for ordering parts to be used in the maintenance of the KS-5668-02 and KS-15834 motor-generators. It also covers the approved procedures for replacing these parts.

1.02 This section is reissued to add reference to constant pressure brush holders and to add Fig. 3 to 7 inclusive.

1.03 Part 2 of this section covers the various parts which it is practicable to replace in the field in the maintenance of this equipment. No attempt should be made to replace parts not designated. Part 2 also contains explanatory figures showing the different parts. This information is called Replacement Parts.

1.04 Part 3 of this section covers the approved procedures for the replacement of the parts covered in Part 2. This information is called Replacement Procedures.

2. REPLACEMENT PARTS

2.01 The figures included in this part show the various replacement parts in their proper relation to other parts of the apparatus together with their corresponding names.

2.02 When ordering parts for replacement purposes, give the name of the parts as shown in the figures of this section, the end of the machine (motor end or generator end) for which the part is required, and the complete nameplate data of the motor-generator for which the part is ordered, including the manufacturer's name, type, and frame designation, serial number, and the KS specification and list number. Do not refer to this section number.

2.03 Brush replacements shall be ordered in accordance with Section 171-110-802.

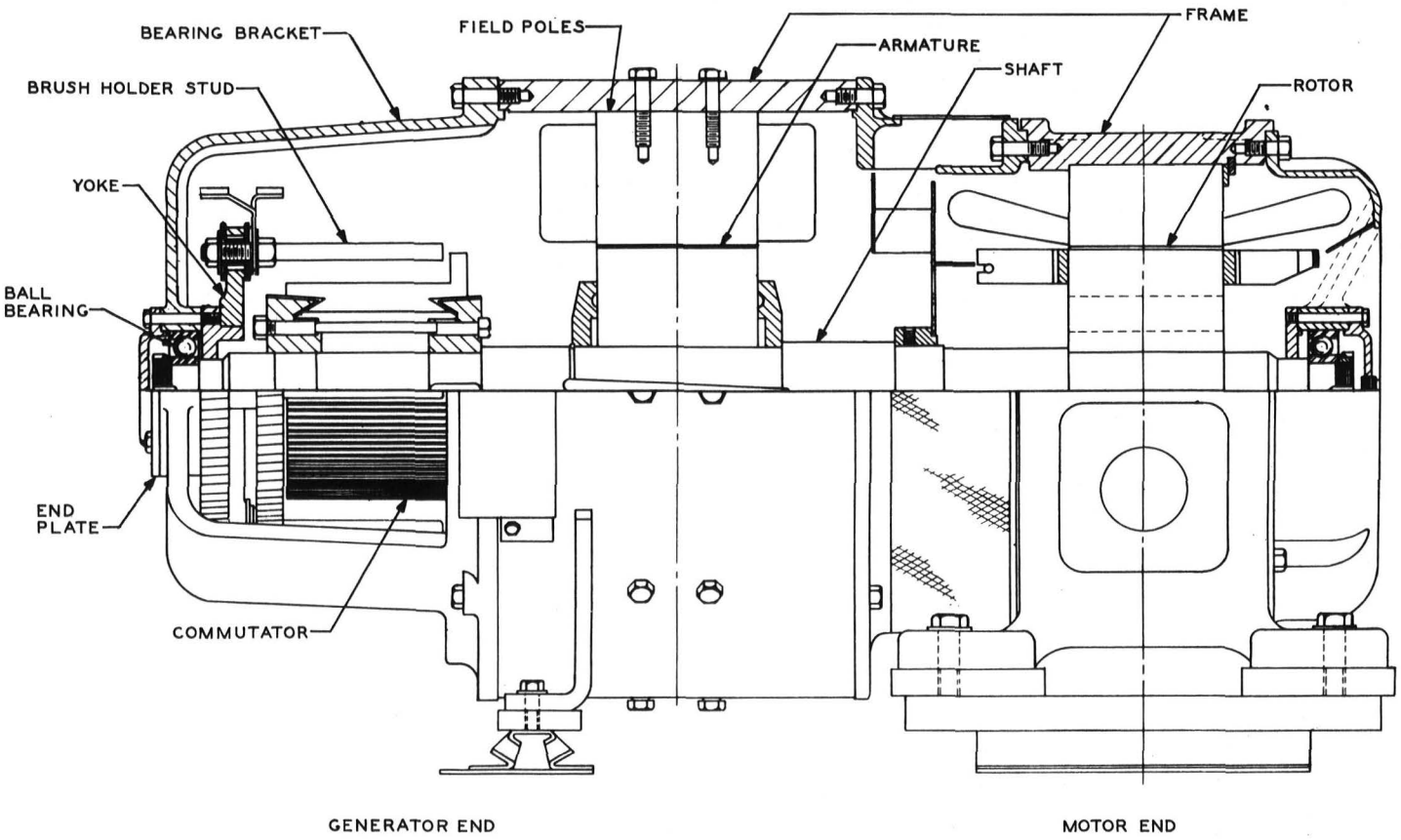

Fig. 1 – Motor-Generator — KS-5668-02, L11 Shown

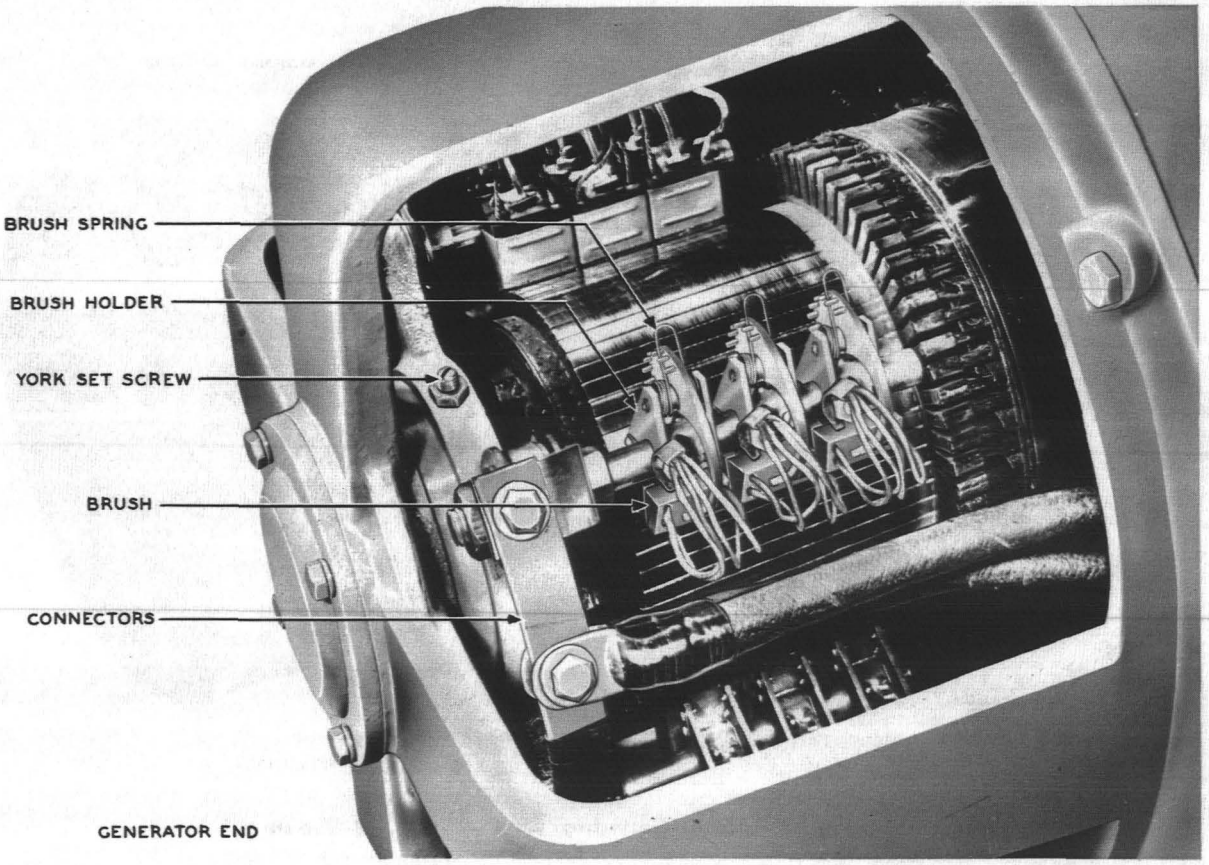

Fig. 2 – Generator End — Baylis-Type Brush Rigging

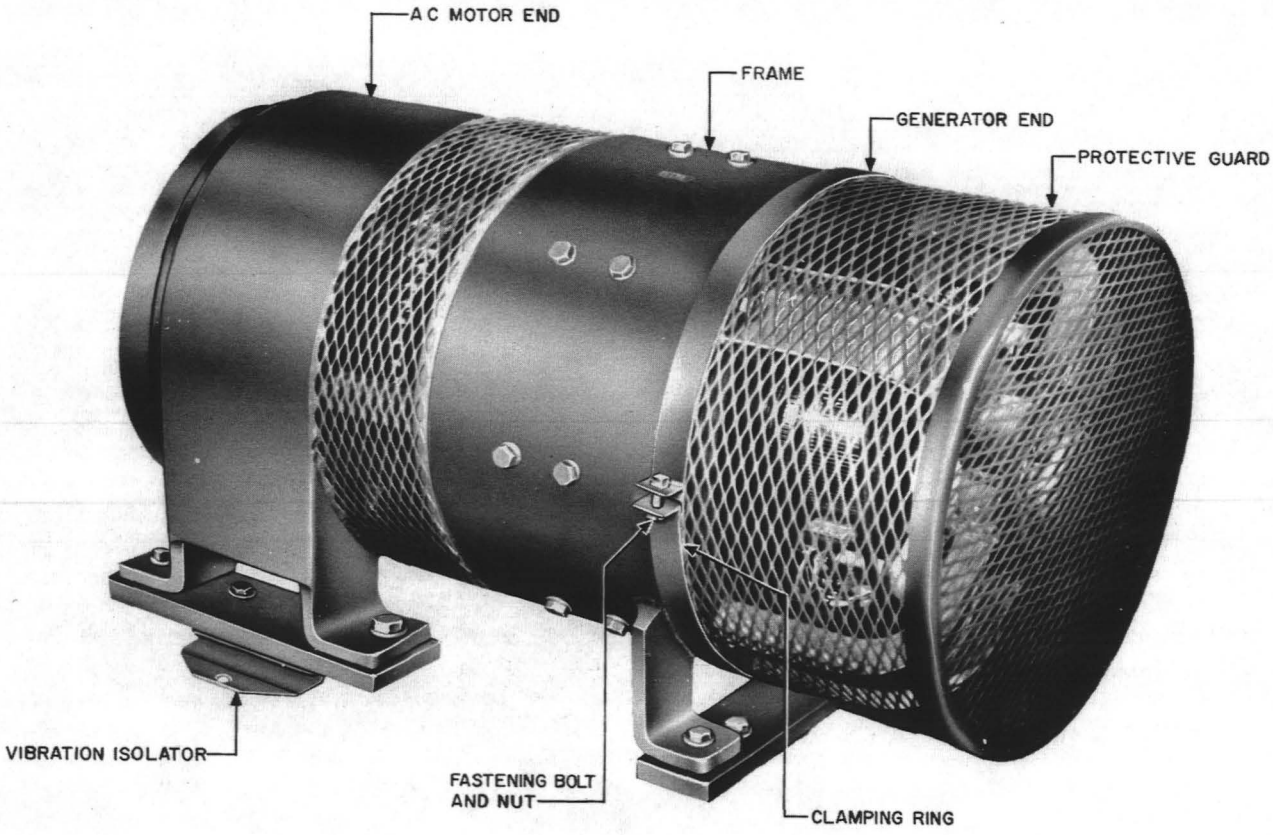

Fig. 3 – Motor-Generator — KS-15834, L8 Shown

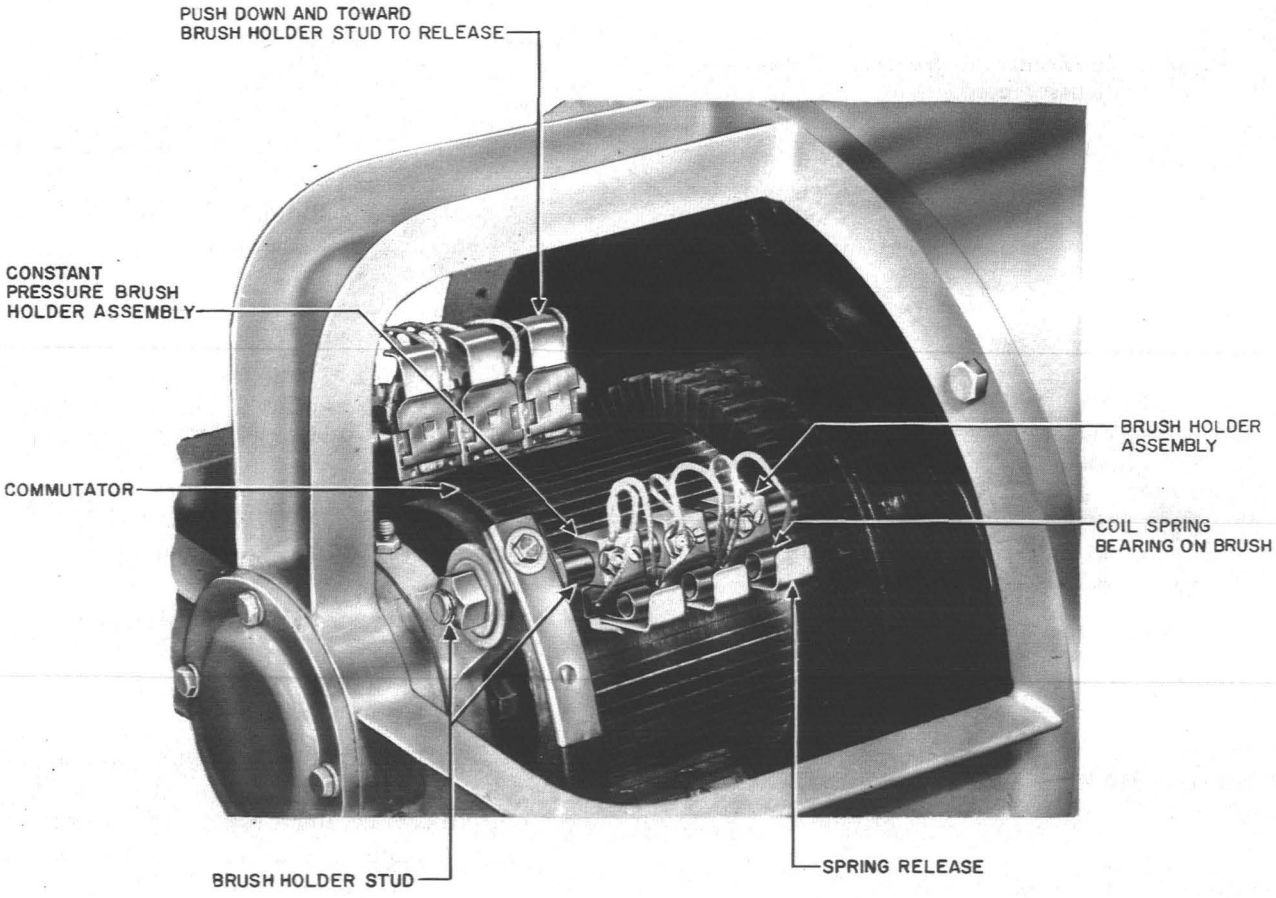

Fig. 4 – Generator End — Constant Pressure Brush Holder Rigging

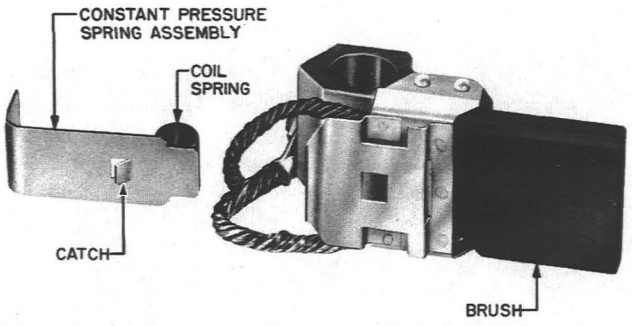

Fig. 5 — Constant Pressure Brush Holder — Disassembled

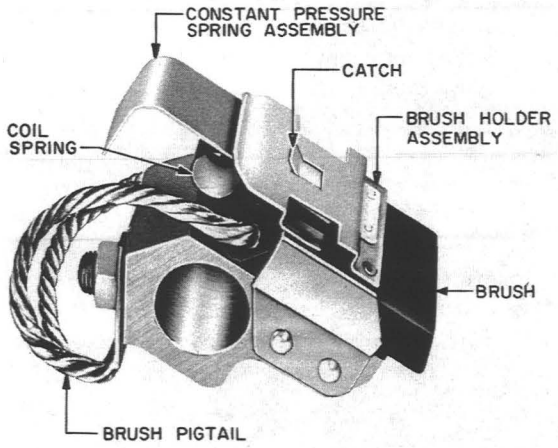

Fig. 6 — Constant Pressure Brush Holder — Assembled

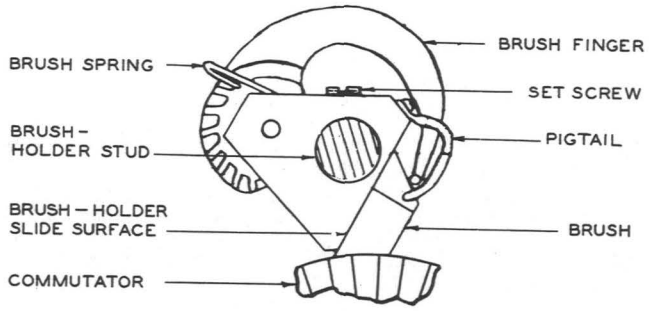

Fig. 7 — Baylis-Type Brush Holder

3. REPLACEMENT PROCEDURES

3.01 *List of Tools and Materials*

CODE OR SPEC NO.	DESCRIPTION
TOOLS	
KS-6320	Orange Stick
R-2512	8-Inch Adjustable Wrench
R-2895	Adjustable Hook Spanner Wrench
—	Puller, Owatonna Tool Co., Grip-O-Matic No. 1002, Equipped With 1002-L1 Single-End Arms
—	1-Pound Ball Peen Hammer
—	5-Inch E Screwdriver (or the replaced 5-inch regular screwdriver)
MATERIALS	
KS-14666	Cleaning Cloth
—	Petroleum Spirits
—	Wooden Wedges

3.02 Before making any replacements, be sure that service will be maintained by means of temporary wiring or in some other suitable manner. Remove the apparatus from service.

3.03 After making any replacement of parts, the part or parts replaced shall meet the readjust requirements involved, as specified in Section 155-614-701. Other parts, whose adjustments may have been disturbed by the replacing operations, shall be checked to the readjust requirements and an over-all operation check shall be made of the motor-generator before restoring it to service.

3.04 No replacement procedures are specified for screws or other parts where the replacement consists of a simple operation.

3.05 When using petroleum spirits for cleaning purposes in the power room, provide as much ventilation as practicable. After using the petroleum spirits, the commutators of all dc machines in the power room should be burnished in accordance with approved procedures for the machines involved, since the fumes from the petroleum spirits may soften commutator film and thus adversely affect commutation.

3.06 Whenever it is necessary to disconnect leads, care should be taken to mark or record the positions of the leads to facilitate their correct replacement.

3.07 ***Bearings***

(1) To replace a bearing at the generator end of a motor-generator set, proceed as follows. Support the armature by means of wooden wedges inserted between the generator armature and the field pole faces or by other means, so as to support the armature when the bearing bracket is removed. Mark the bearing bracket and frame to insure proper replacement after removal of the bearing bracket. Remove the cap screws from the bearing end plate, using the adjustable wrench, thus freeing the inner bearing retaining ring with brush holder yoke and associated parts from the bearing bracket. Remove the bearing end plate. Remove the cap screws which hold the bearing bracket to the frame with the adjustable wrench. Remove the bearing bracket. Supplementary support of the armature after the bearing bracket is removed is desirable as there is a possibility of the supporting wedges becoming dislodged while the bearing is being removed. On machines where the bearings are held in place by a bearing retaining nut and lockwasher, the nut and lockwasher shall be removed, using the screwdriver and the spanner wrench. Remove the bearing, using the bearing puller.

(2) To replace a bearing at the motor end of a motor-generator set, it may be necessary to remove a protective screen on the end of the motor before following the same procedures as are outlined in (1) with the exception of those concerning the brush holder yoke and associated parts.

(3) To install a new bearing at either end of a motor-generator set, slip the new bearing on the shaft using a short piece of clean pipe having a smooth end which will push against the inner but not the outer ball race and tap the bearing into place against the shoulder on the shaft. The bearing bracket should be cleaned with petroleum spirits and wiped with a clean cloth. An orange stick is convenient for removing hardened grease. Lubricate the bearing if required, in accordance with Section 155-614-701. Reassemble the remaining parts in reverse order to that described for the end involved.

3.08 ***Brushes***

(1) Whenever it is necessary to remove brushes from their holders for reasons other than replacement of the brushes, care should be taken to mark or record the position of the brush and the associated brush holder to facilitate the correct replacement.

(2) To replace a brush in a Baylis-type brush holder, loosen the nut which fastens the pigtail to the brush holder without loosening the associated screw. Raise the brush with its pigtail. Clean the brush holder with petroleum spirits (see 3.05) and insert the new brush with its pigtail. Return the brush finger to its proper position, tighten the nut which fastens the pigtail to the brush holder, and seat the new brush as outlined in Section 171-110-701.

(3) To replace a brush in a constant pressure brush holder, follow the procedure as indicated for the Baylis-type brush holder except that there is no necessity for adjusting the pressure, and care should be exercised to avoid tangling the flexible brush leads and the coil spring that exerts the constant pressure.

3.09 ***Brush Holders***

(1) To replace a brush holder assembly, remove the brush associated with the assembly to be replaced as covered in 3.08.

(2) Loosen the brush holder setscrew which holds the brush holder assembly on the brush holder stud and work the assembly off the stud. Slip the new complete brush holder assembly on the brush holder stud and reas-

semble in the reverse order, making sure that the brush holder setscrew and the pigtail screw are tight. In the event that it is necessary to remove an adjacent brush holder assembly before the desired assembly can be removed, the same procedure should be followed as outlined above. See Section 155-614-701 for requirements and adjusting procedures.

3.10 *Brush Holder Yoke*

(1) To replace a brush holder yoke, remove the brushes as covered in 3.08(1) and remove the associated bearing bracket and bearing as covered in 3.07(1). Wrap heavy brown paper around the commutator. Remove the nuts securing the brush holder studs to the yoke, so as to free the studs from the yoke. Slip the inner bearing retaining ring and yoke off the shaft taking care not to lose the insulators and washers associated with the brush holder studs. Loosen the yoke locknut and setscrew and remove the yoke from the retaining ring.

(2) Replace the yoke with a new one and reassemble in the reverse order, installing a new bearing as covered in 3.07(3). In assembly, position the brush holders and yoke in accordance with the requirements of Sections 171-110-701 and 155-614-701.

3.11 *Armature and Rotor Assembly*

(1) The replacement of an armature and rotor assembly is a major job which should be handled by the manufacturer of the motor-generator, or the manufacturer's authorized representative.