

## MOTOR-DRIVEN CHARGING GENERATORS 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 following motor-generator sets.

KS-5123	KS-5137-03
KS-5123-01	KS-5145
KS-5123-02	KS-5145-01
KS-5123-03	KS-5146
KS-5123-04	KS-5146-01
KS-5123-05	KS-5419
KS-5123-06	KS-5442
KS-5135	KS-5550
KS-5135-01	KS-5550-01
KS-5137	KS-5668
KS-5137-01	KS-5668-01
KS-5137-02	

LIST 10

It also covers approved procedures for replacing these parts.

1.02 This section is reissued to remove information covering the replacement of generator bearings and armatures and to include information covering the KS-5123-06 motor-generators, the type C and F Falk couplings, and the conversion of brush holders. In addition information on motors formerly covered in Section 159-406-801 has been added and revised. Since this reissue covers a general revision, the arrows ordinarily used to indicate changes has been omitted.

1.03 Part 2 of this section covers the parts which may be replaced in the field in the maintenance of this apparatus. 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 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 and the names of the replacement parts.

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 replacement shall be ordered in accordance with Section 171-110-802.

2.04 Information enclosed by parentheses ( ) is not ordering information. This information may be references to notes, parts referred to in other portions of the section and not considered replaceable, or part names in general use in the field if these names differ from those assigned by the manufacturer.

2.05 Conversions to constant-pressure brush holders shall be made in accordance with P.E.M. 7601 for General Electric Company motor-generators and P.E.M. 8323 for Hertner motor-generators.

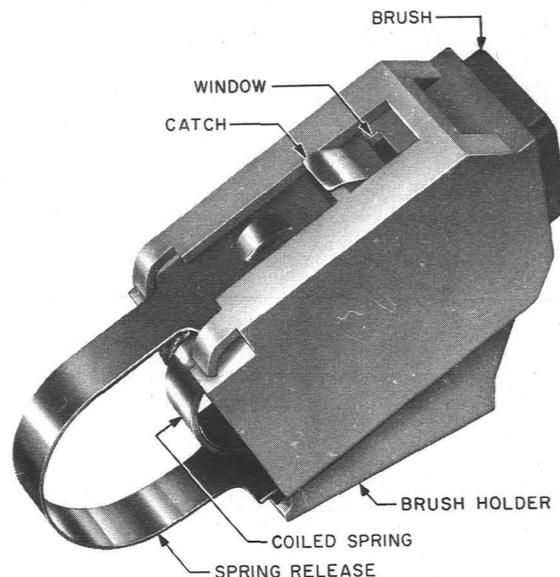


Fig. 1 — Constant-Pressure Brush Holder

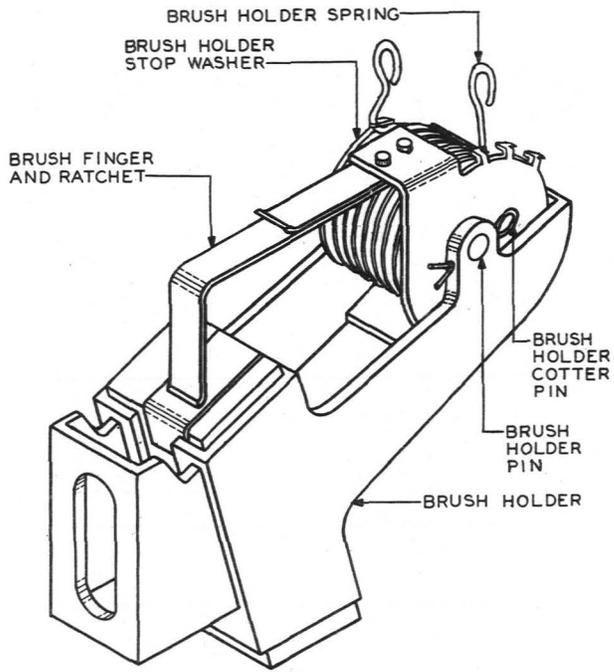


Fig. 2 - Fort Wayne-Type Brush Holder

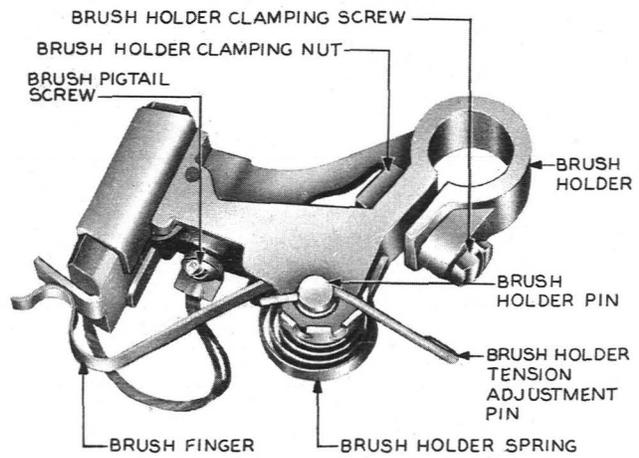


Fig. 4 - Brush Holder Used on Small General Electric Co Machines

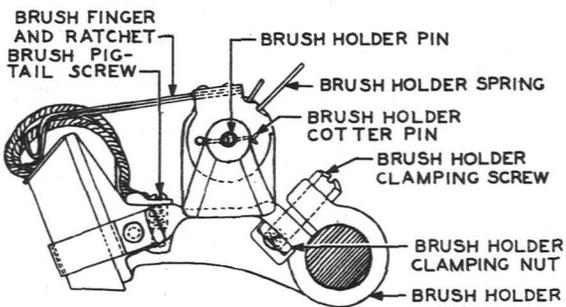


Fig. 3 - Box-Type Brush Holder

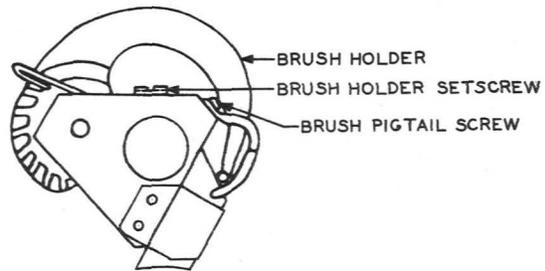


Fig. 5 - Baylis-Type Brush Holder

**3. REPLACEMENT PROCEDURES****3.01 List of Tools and Materials**

CODE OR SPEC NO.	DESCRIPTION
<b>TOOLS</b>	
K5-6854	3-1/2 Inch Screwdriver
R-2512	8-Inch Adjustable Wrench
—	4-Inch E Screwdriver
—	5-Inch E Screwdriver
—	Allen Set Screw Wrench (furnished with Falk Type F Coupling)
—	9/16-Inch Allen Socket Screw Wrench
—	P-Long-Nose Pliers
<b>MATERIALS</b>	
KS-7860	Petroleum Spirits
KS-14666	Cleaning Cloth

**3.02** Before making any replacements, remove the motor-generator set from service.

**3.03** After making any replacement of parts, the part or parts replaced shall meet the adjust requirements involved as specified in Section 155-512-701. 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 position of the leads to facilitate their correct replacement.

**3.07** Whenever it is necessary to remove the protective guard that covers the flexible coupling, care should be taken to mark the guard position to facilitate correct replacement.

*Note:* Machine should not be restored to operation without the protective guard.

**3.08 Bearings****3.09 Flexible Coupling Assemblies**

(1) Whenever it becomes necessary to replace either the bearings or the flexible couplings, the manufacturer or his authorized representative should be consulted since the replacement of either involves a major job of disconnecting and dismantling the motor and the generator and requires critical reassembly and realignment.

**3.10 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 other than constant-pressure brush holders, loosen or remove the pigtail screw. Release the tension in the brush holder spring. Raise the brush holder finger and withdraw the brush with its pigtail. Insert the new brush and tighten the pigtail screw in place over the pigtail terminal. Seat the brush in accordance with Section 155-512-701.

(3) Brushes in constant-pressure brush holders are replaced by loosening or releasing the pigtail screw and then depressing the spring release until the catch on the spring release is unhooked from the slot in the brush holder. When the new brushes have been placed in the holders, the spring release shall be inserted so that the coiled spring is bearing on the brush and the entire spring assembly shall be pushed in toward the commutator until the catch hooks into the slot.

**Brush Holders and Associated Parts**

**3.11 Brush Holder of Type Shown in Fig. 1 or 2**

(1) Remove the brush from the brush holder as outlined in 3.10. Remove the brush holder mounting nut. Remove the brush holder and mounting bolt from the stud. Mount the new brush holder and remount the brush.

**3.12 Brush Holder of Types Shown in Fig. 3, 4, and 5**

(1) Remove the brush from the brush holder as outlined in 3.10. Loosen the brush holder clamping screw, mounting bolt, or setscrew and work the holder off the stud. If difficulty is experienced in removing a holder clamped on the stud, insert a screwdriver between the edges of the clamp as near the screw as possible and spread the clamp slightly. Mount the new brush holder and tighten the clamping screw, mounting bolt, or setscrew. Mount the brush in the holder and tighten the pigtail screw in place over the pigtail terminal.

**3.13 Cartridge-Type Brush Holder Mounted in Bearing Brackets of Small Generators**

(1) Remove the screw-type cap which holds the brush and its attached string in place. Withdraw the brush and spring as a unit. Loosen the setscrew which secures the brush holder in the bearing bracket and withdraw the holder. In some cases, it may be necessary to slide the bearing bracket outward a short distance to facilitate removal of the brush holder. Mount the new holder and the other parts in the reverse order of removal.

**3.14 Brush Holder Spring and Associated Parts**

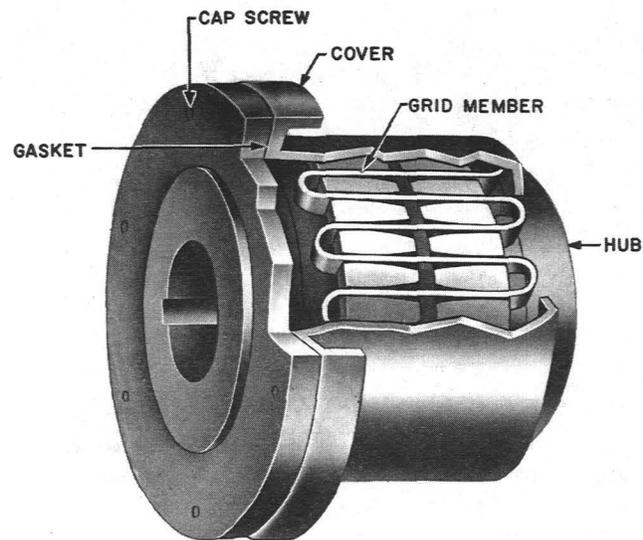
(1) To replace a spring or an associated part in other than constant-pressure brush holders, release the spring tension. Remove the cotter pin from the brush holder pin and remove the holder pin. If an adjacent brush holder prevents removal of the holder pin, either slide the holder along the stud to obtain the necessary clearance or remove the holder on which replacements are being made. Substitute new parts as required and mount the parts in reverse order of removal.

(2) Constant-pressure brush holders are made with a coiled spring that exerts a constant pressure on the brushes. The pressure cannot be altered by external manipulation and the coiled spring cannot be replaced. Consequently the spring assemblies of this type brush holder must be replaced in their entirety. If it is suspected that poor commutation is caused by improper pressure, the manufacturer's authorized representative should be consulted.

**FLEXIBLE COUPLINGS**

**Type C Falk Flexible Coupling**

**3.15 Gasket and Gridmember: Fig 6** — To replace either gasket or gridmember, remove the cap screws using the Allen wrench provided

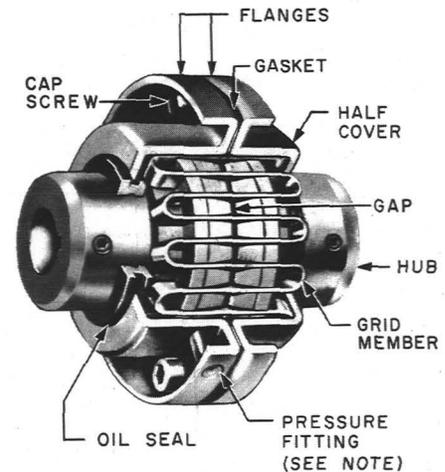


**Fig. 6 — Type C Falk Coupling Assembly**

with the coupling. Slip the cover back clear of the hub. Remove the gridmember by locating the open end and pry it loose with a 3-1/2 inch screwdriver. Clean out all the old grease from the hub teeth, from between the hub end faces, and the inner cover. If the gasket is defective, remove it. Substitute a new part. The new gasket may be made from 1/32-inch Vellumoid packing (Vellumoid Company) or a similar oil-proof paper gasket material. If the spring is to be replaced, insert the new spring in the slots by hand. Regrease in accordance with Section 155-512-701. Reassemble and tighten all cap screws securely.

#### Type F Falk Flexible Coupling

**3.16 Gasket and Gridmember: Fig. 7** — To replace either gasket or gridmember, remove the cap screws using the 9/16-inch Allen socket screw wrench. Slip the covers back clear of the hubs. Remove excess grease from the gridmember. Remove the gridmember by using a 3-1/2 inch screwdriver which will fit into the loop ends of the gridmember. Begin at the open end of the gridmember section. Use the hub teeth adjacent to each loop as a fulcrum and pry the gridmember out radially in even gradual stages. Proceed alternately from side to side lifting the gridmember about halfway out until the end is reached. By following the same procedure once again, the gridmember will clear the teeth. If the gasket is defective, remove it by slipping it through the gap between the hub faces. Substitute the new part. Replace the new gridmember by spreading it slightly so that it will pass over the coupling teeth at its outside diameter. Start the gridmember at either end and tap the rungs only part way into the grooves. After all of the rungs are partially in their grooves, tap the



NOTE: PRESSURE FITTINGS WERE FURNISHED ON SOME EARLY VINTAGE TYPE "F" COUPLINGS. THESE FITTINGS SHOULD NOT BE USED FOR LUBRICATION.

**Fig. 7 — Type F Falk Coupling Assembly**

gridmember all the way into place. Regrease in accordance with Section 155-512-701 and reassemble in the reverse order. Tighten all cap screws securely.

- 3.17 Brush Holder Yoke**
- 3.18 Rotor Assembly in Motor**
- 3.19 Commutator Assembly in Generator**

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