

## 1/10 AND 1/8 HP. D-C MOTORS 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 1/10 and 1/8 HP. D-C. Precision Interrupter Motors and 1/8 HP. D-C. Test Frame Motors per KS-5224, KS-5109 and KS-5072 respectively. It also covers approved procedures for replacing these parts.

1.02 This section is reissued to incorporate material from the addendum in its proper location. In this process marginal arrows have been omitted.

1.03 Part 2 of this section is called "Replacement Parts" and covers the various parts which may be replaced 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 replacement parts.

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

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### 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 with their corresponding names.

2.02 When ordering replacement parts, give the name of the parts as shown in the figures of this sec-

tion and also the complete name-plate data of the machine including the serial and "KS" number, e.g., two brushes including springs for the motor having the following name-plate data: D-C. Motor; Model No. N-34112; Frame 339; HP. 1/10; Type SD; Volts 20/28 R.P.M. 1765, KS-5224; Serial No. 1269490.

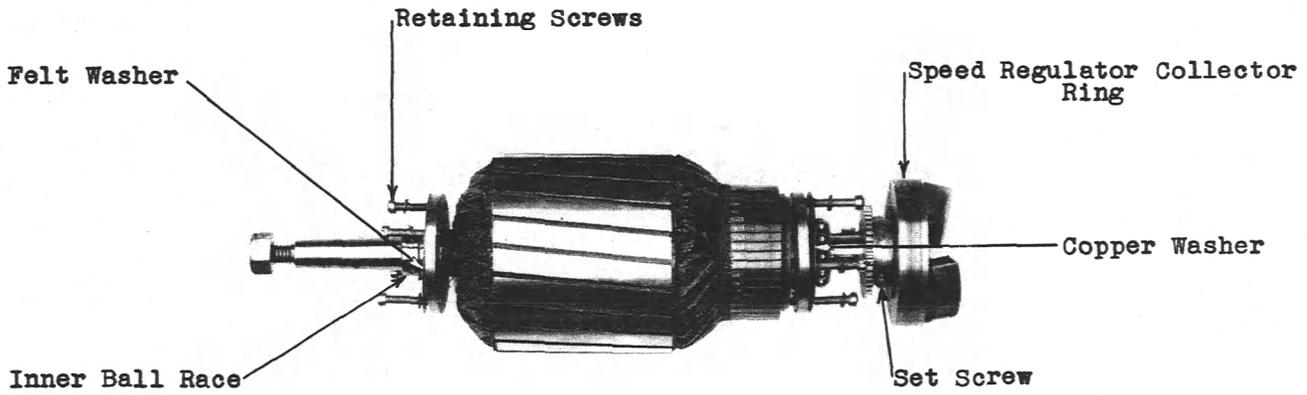


FIG. 1 - ARMATURE

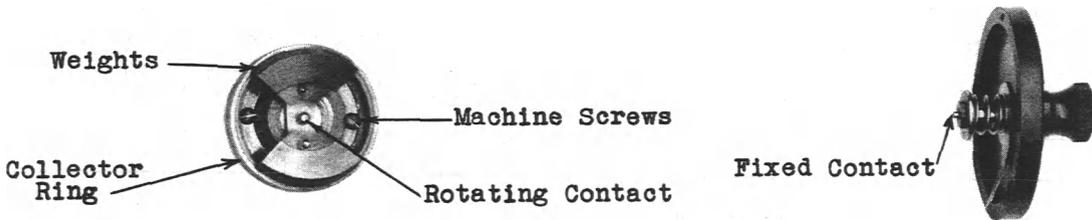
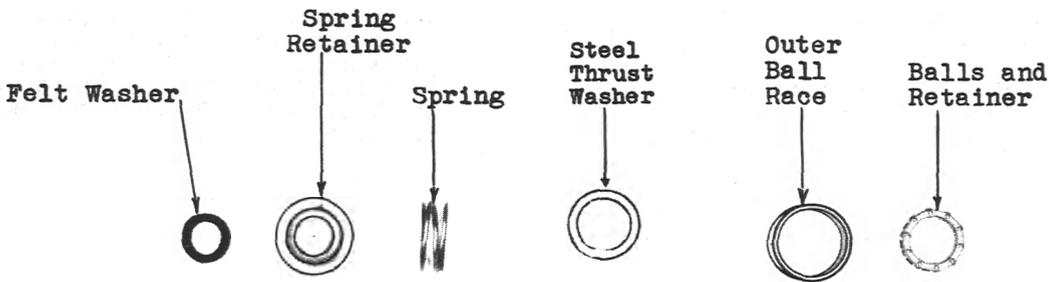


FIG. 2 - SPEED REGULATOR



Note: When a bearing part is required e.g. the inner ball race (See Fig. 1), the balls and retainer or the outer ball race, it is advisable to order the bearing complete.

FIG. 3 - BALL BEARING ASSEMBLY

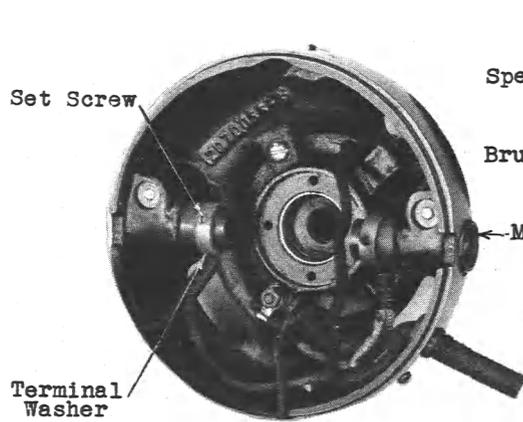


FIG. 4 - END SHIELD  
(COMMUTATOR END)

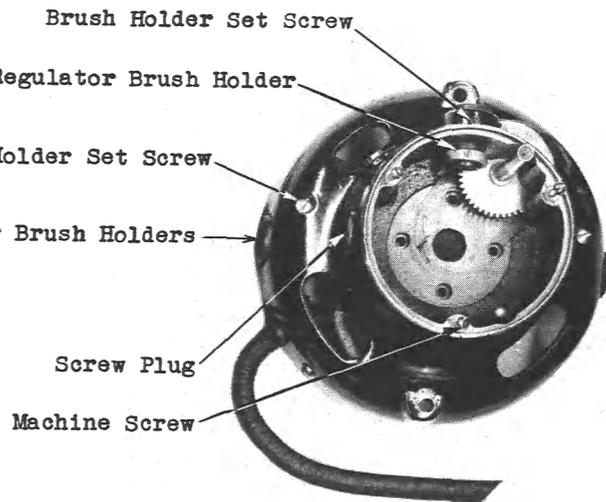


FIG. 5 - SPEED REGULATOR HOUSING

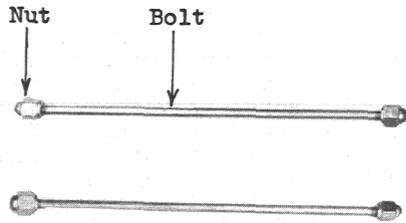


FIG. 6 - THROUGH BOLTS

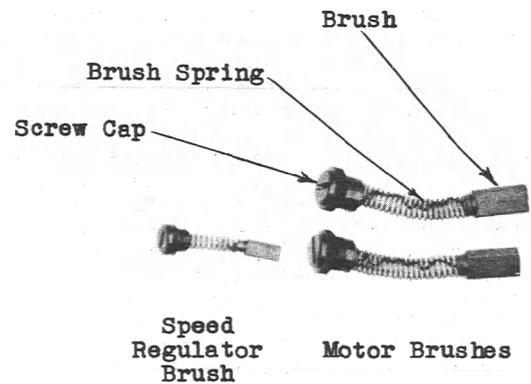


FIG. 7 - BRUSHES

3. REPLACEMENT PROCEDURES

TOOLS

Screw-driver, 3-1/2 inch, Cabinet Style,  
per A. T. & T. Std. Dwg. 46-X-40  
Tool, Code #309  
Wrench, Socket, Code #46 (2 Required)  
Wrench, Open End, Special, Code #63

MATERIALS

Cheesecloth or Equivalent  
Oil, KS-6438  
Petroleum Spirits  
Superla or Oneida Grease

3.001 After making any replacement of parts the apparatus should be checked, and when necessary, readjusted to meet the requirements specified in the Section covering the Requirements and Adjusting Procedures for this equipment.

3.01 MOTOR BRUSHES

M-1 To replace a brush remove the screw cap which holds the brush and spring in place, withdraw the old brush and spring, insert a new brush and spring with fitted surface of brush against the commutator and replace the screw cap.

3.02 SPEED REGULATOR BRUSH

M-1 Replace the speed regulator brush in the same manner as replacing the motor brushes.

3.03 BRUSH HOLDERS

M-1 To replace the brush holders, loosen the set screw in the end shield which secures the brush holder in place; loosen the set screw for the terminal washer and slip the washer from the brush holder and remove the brush holder from the end shield. Replace the old brush holder with a new brush holder taking care that the new holder is aligned in the same way the old one was aligned. Reassemble in the reverse manner from taking down.

3.04 ARMATURE

M-1 To replace an armature first loosen the motor mounting screws noting the position of any shims under the feet of the motor so that the correct alignment may be obtained when reassembling. Remove and mark the brushes so that the same brush may be inserted in the same position and in the same brush holder when reassembled.

M-2 Remove the three machine screws, the screw plug and the insulated cover from the speed regulator housing. Loosen the set screw which secures the speed regulator collector ring and rotating contact assembly to the end of the motor shaft and remove the assembly. Note the location of all parts which are removed so that they may be replaced in their proper positions.

M-3 Remove the four retaining screws for the inner retaining rings in each end shield and the acorn nuts from the through bolts. Remove the end shields, prying them off by inserting a screw-driver between the frame and the end shields if they stick. Remove the armature, taking care not to damage the windings. Remove the ball bearing assembly including the inner ball race as outlined in paragraph 3.05.

M-4 Wipe off any grease and clean the end shields, bearings and bearing housings with a clean piece of cheesecloth moistened with petroleum spirits. If the grease is caked or sticks in the bearings, use may be made of a small stiff brush wet with petroleum spirits. Wipe the motor frame and field windings with a clean dry cheesecloth. Replace the ball bearings on a new or reconditioned armature shaft.

M-5 Reassemble the parts in the reverse order from that in which they were taken down, making certain that all associated parts are assembled in their same relative positions. The retaining screws may be replaced more readily if a Code #309 tool is used in reassembling the motor. This tool is a threaded stud which is introduced through one of the holes in the copper washer and screwed into one of the holes of the inner retaining ring. In replacing the end shield this stud passes through one of the holes provided for the retaining screws and the four holes in each of the three parts (end shield, retaining ring and copper washer) are brought into alignment. See that the armature turns freely in its bearings. Refill the bearings with Superla or Oneida grease and place the motor back into service.

3.05 BEARINGS

M-1 To replace a bearing take down the motor in a similar manner to that described in paragraph 3.04, and remove the ball bearings using the flat side of a screw-driver and hammer to start the inner ball race. If necessary the inner ball race can be clamped in a vise and pulled off by turning the armature. Replace the old bearings with new bearings and reassemble the motor in the reverse order from that in which it was taken down. In replacing any part of a bearing it is usually advisable to replace the entire bearing.

3.06 SPEED REGULATOR COLLECTOR RING

M-1 To remove a speed regulator collector ring first remove the speed regulator as outlined in paragraph 3.04, M-2.

M-2 Remove the two machine screws which secure the rotating contact and weights to the collector ring and remove the rotating contact and weights. Replace the rotating contact and weights in a new or reconditioned collector ring and reassemble the speed regulator in the reverse manner from that in which it was taken down.

3.07 SPEED REGULATOR CONTACTS

M-1 To replace the rotating speed regulator contact take down the regulator in the manner described in paragraph 3.04. Remove the contact assembly from the collector ring. Re-

place the old contact assembly with a new contact assembly consisting of the contact, contact spring, weights and retaining ring.

M-2 To replace the fixed speed regulator contact, unscrew the con-

tact with the Code #63 open end, special wrench and replace the contact with a new one.

M-3 Reassemble the speed regulator in the reverse manner from taking down.