



INSTRUCTIONS

GEH-2363C
Supersedes GEH-2363

CR9500 SOLENOIDS

for A-C and D-C Service

INTRODUCTION

Solenoids are electromagnetic devices which provide straight line motion. The load returns the plunger to the de-energized position. There are two types: the pull-type solenoid, Fig. 1, and the push type, Fig. 2. The stroke of the pull type is determined by an external stop supplied by the customer, while the stop for the push type is integral to the solenoid.

For the d-c form, Fig. 3, a cutout switch with normally closed contacts is mounted on the side, allowing resistance to be inserted in the coil circuit when the solenoid closes.

INSTALLATION

Proper alignment of the solenoid with the load means less wear and longer life. A linkage should be used, if necessary, to allow the plunger to travel in a straight line. The load should not be applied off center with respect to the plunger center line.

Be sure that the plunger will start and seat. The solenoid plunger must seat (see Fig. 8) at the end of the stroke to prevent overheating and coil burnout.

The recommended maximum stroke should not be exceeded. The stroke of the push type can be adjusted in $\frac{1}{8}$ -inch steps, from one inch to $\frac{5}{8}$ inch, and from $\frac{1}{2}$ inch to $\frac{1}{8}$ inch by changing the number of synthetic rubber pads. (See part J, Fig. 5.)

Fasten the solenoid securely. It is recommended that heavy-section lockwashers be used. The surface to which the solenoid is attached should be flat to avoid strain on the solenoid when the mounting bolts are tightened; the contact area with the solenoid feet should be large and metal to metal to permit heat to flow away from the solenoid. The solenoid should be mounted so that it doesn't receive vibration from other equipment.

The end-mounted solenoid can be changed to a side-mounted solenoid as shown in Fig. 4 and 5. Corresponding parts in each figure have the same part identification.

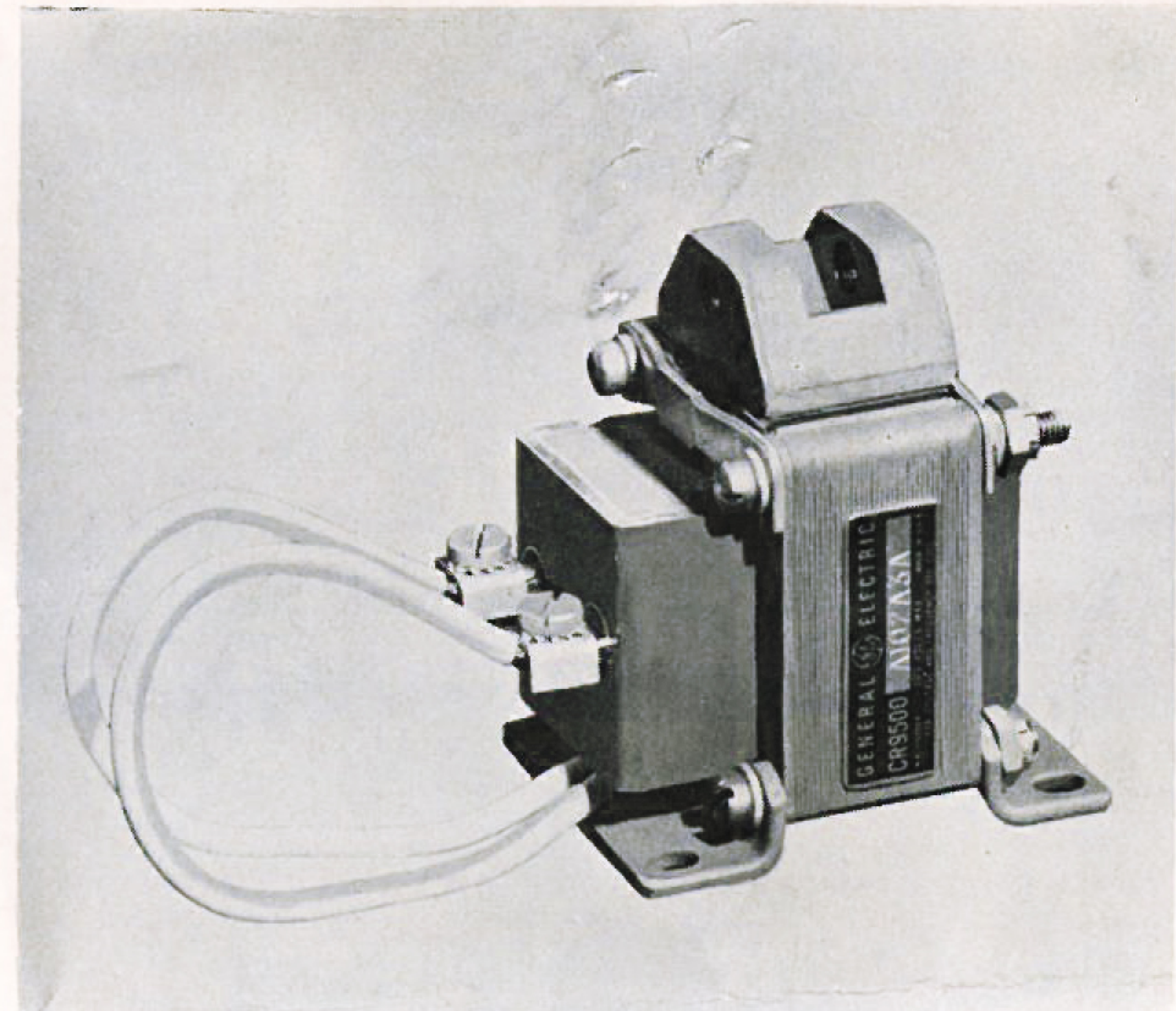


Fig. 1. CR9500 pull-type solenoid (a-c)

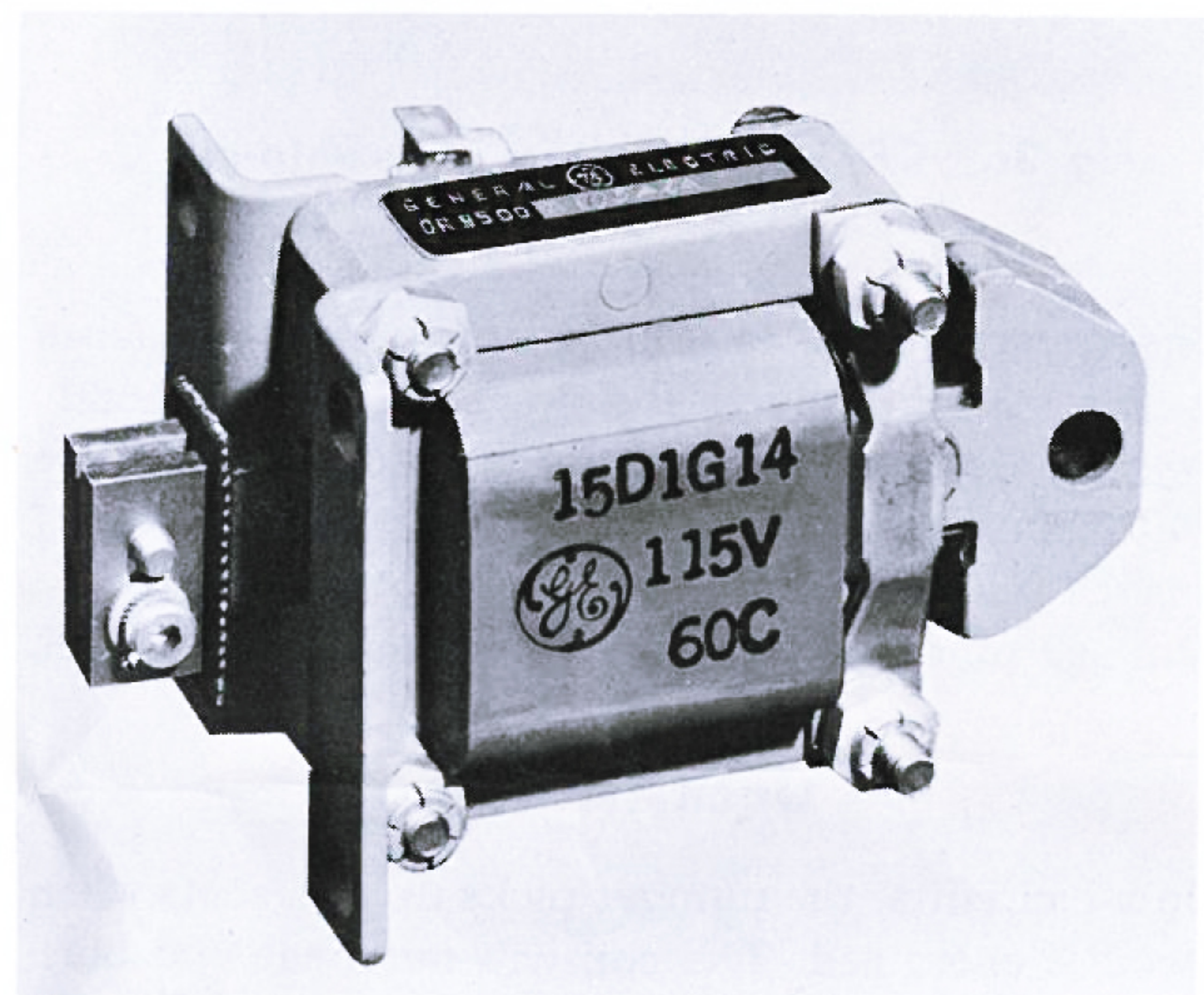


Fig. 2. CR9500 push-type solenoid (a-c)

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

GENERAL  ELECTRIC

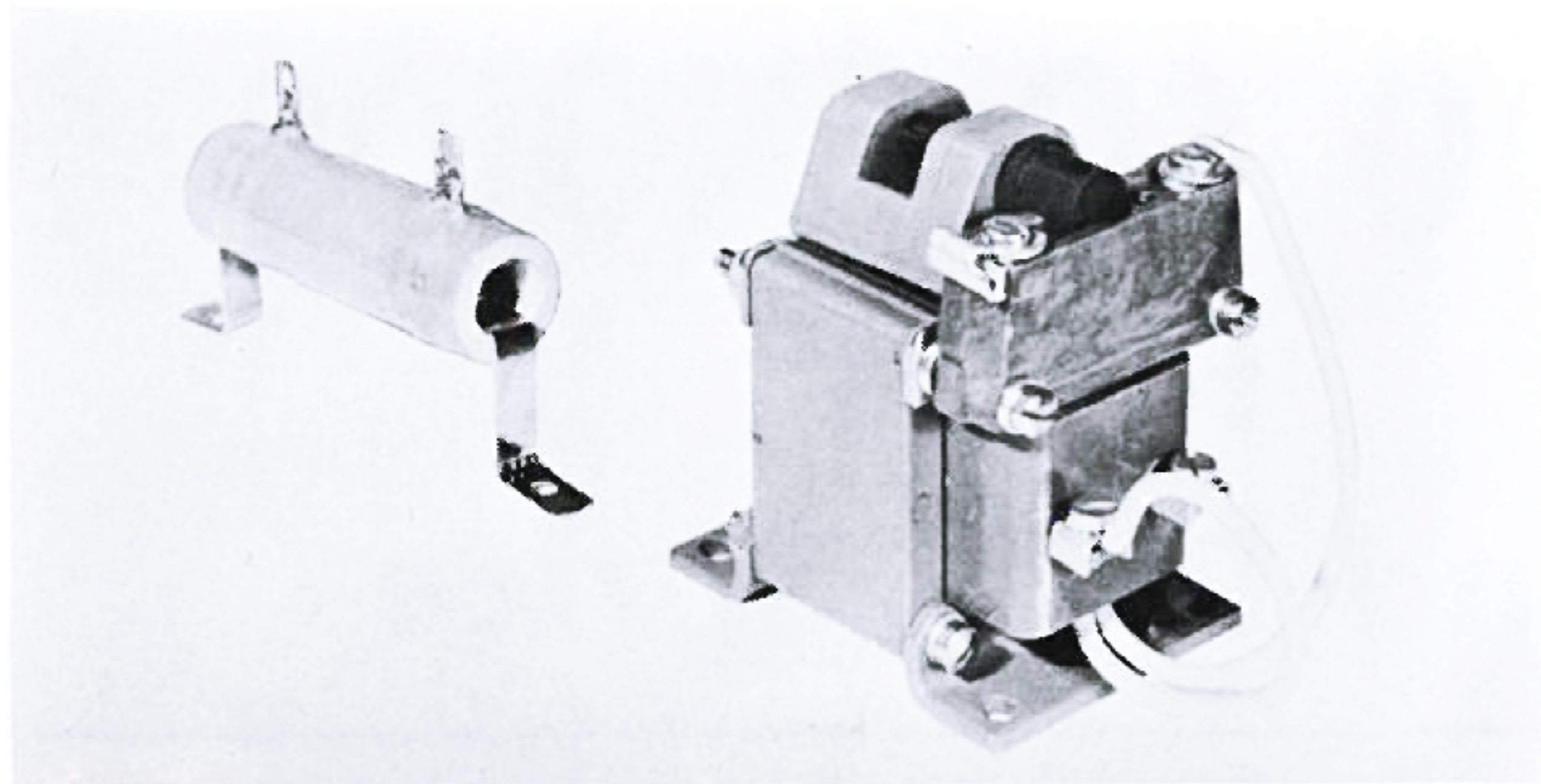


Fig. 3a. CR9500A200 series solenoid (d-c)

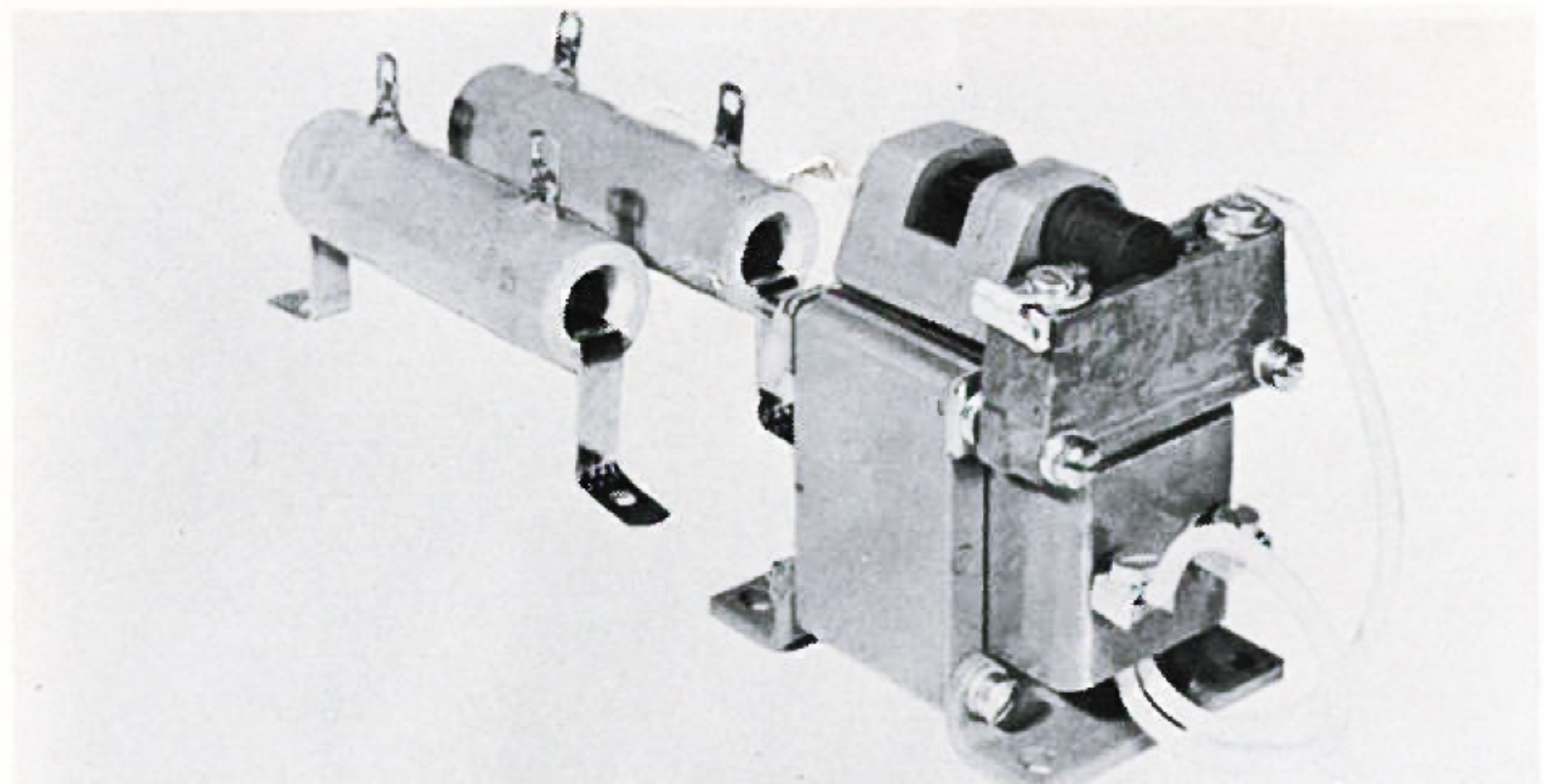


Fig. 3b. CR9500B200 series solenoid (d-c)

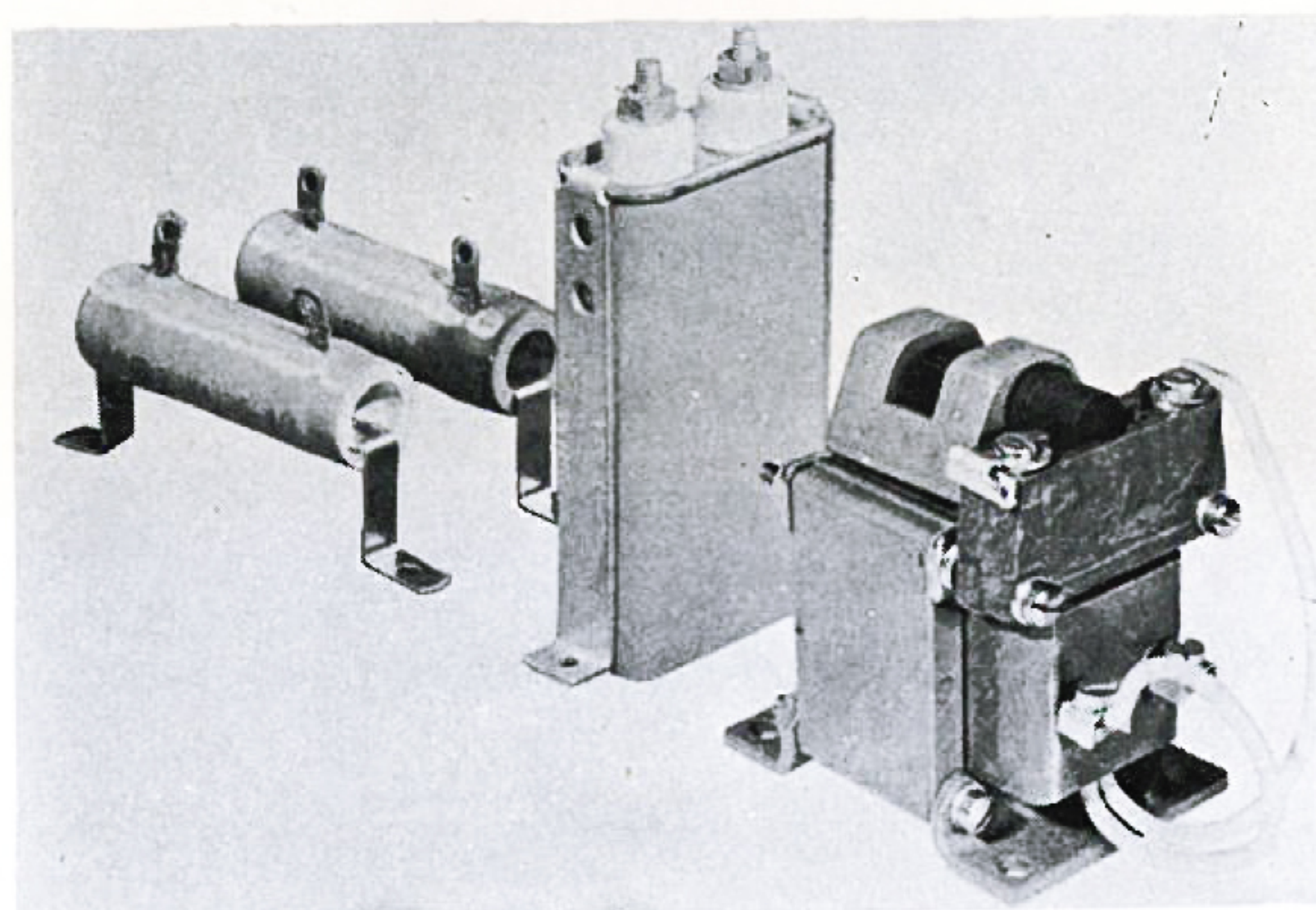


Fig. 3c. CR9500C200 series solenoid (d-c)

The resistor (Fig. 3a and 3b) or resistor-capacitor unit (Fig. 3c) provided for d-c service is remotely mounted. Connections for d-c solenoids should be made as shown on the connection diagram 544A297 furnished with the unit.

Linkage pins and terminal covers can be furnished.

OPERATION

On a-c circuits, the plunger picks up and seats when the coil is energized. The coil will overheat and burn out unless the plunger seats properly (see Fig. 8).

On d-c circuits the coil, when energized, picks up the plunger and, just before the plunger seats, the normally closed cut-out switch opens and inserts a

resistance in series with the coil. The CR9500C200 series is provided with a capacitor connected across the cut-out switch tips for arc suppression.

DISASSEMBLY AND ASSEMBLY PROCEDURE

DISASSEMBLY

1. Remove the plunger B (Fig. 4). On push type (Fig. 5), first remove stop blocks K and pad J before plunger BB.
2. Remove the coil spring D by pushing alternately on the free tips, and finally pulling from the closed end of the spring.

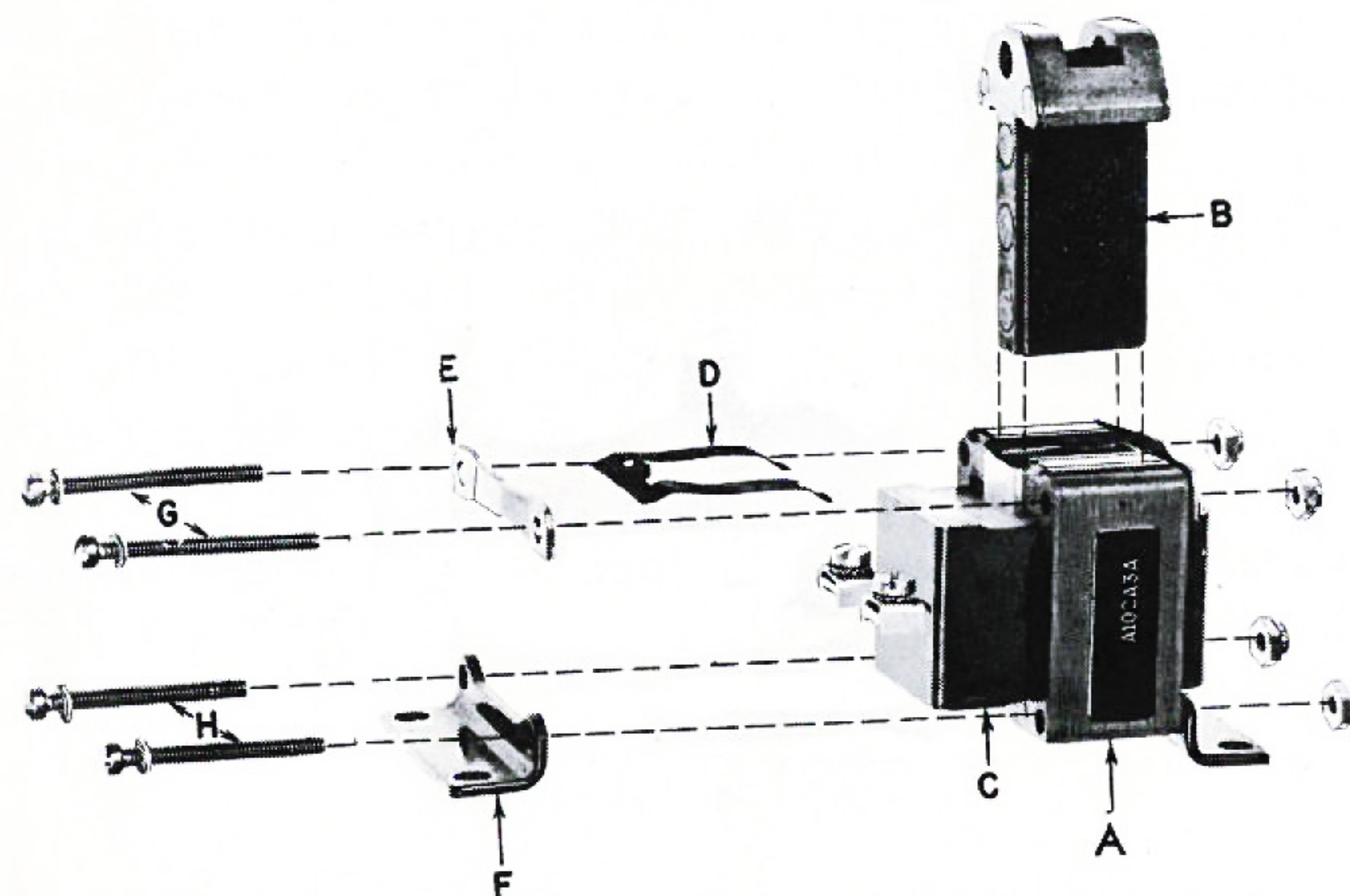


Fig. 4. Exploded view of CR9500 pull-type solenoid, end mounted

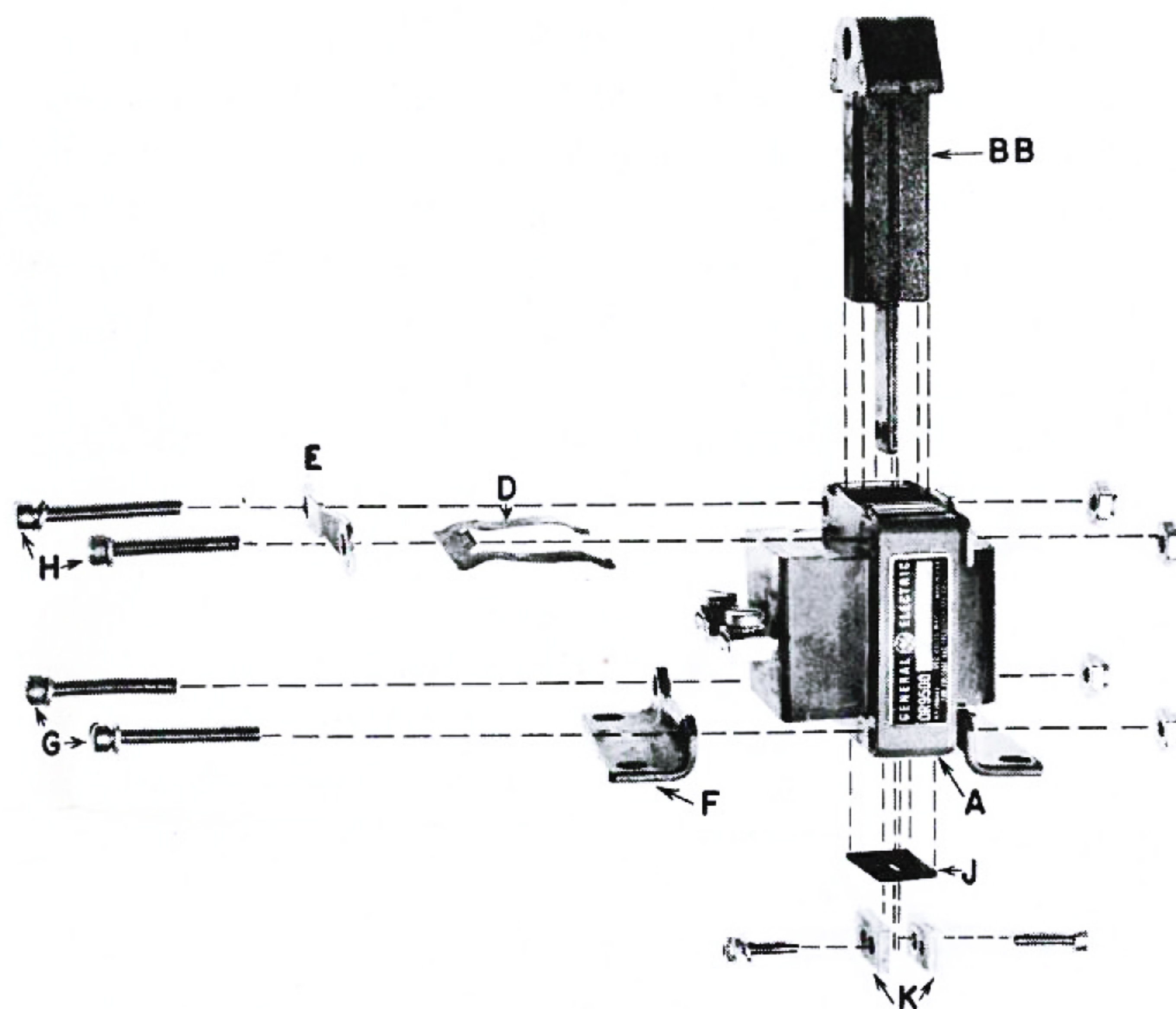


Fig. 5. Exploded view of CR9500 push-type solenoid, side mounted

3. Remove the screws G (Fig. 4), G and H (holding bracket E, Fig. 5), and remove bracket E.
4. Remove the coil C by raising slightly and sliding it out.

ASSEMBLY

1. Reverse the disassembly procedure. When re-assembling spring D, be sure that coil leads are not damaged. Reassemble with the same screws, as these are high-strength, stainless-steel screws. To attach hardware, use the following pound-inch torques:

- A Size—20 to 30 lb-in.
- B Size—30 to 40 lb-in.
- C Size—60 to 70 lb-in.

2. Upon reassembly of the stop block on the push type, first draw the screws up snug. Then, holding the solenoid so that the plunger falls to the open position, let the stop blocks strike against the stop to align them. Finally tighten the screws according to the directions in the table given above.

MAINTENANCE

Keep the plunger and frame seating surfaces as well as the gap clean and free from oil or grit. Dirty

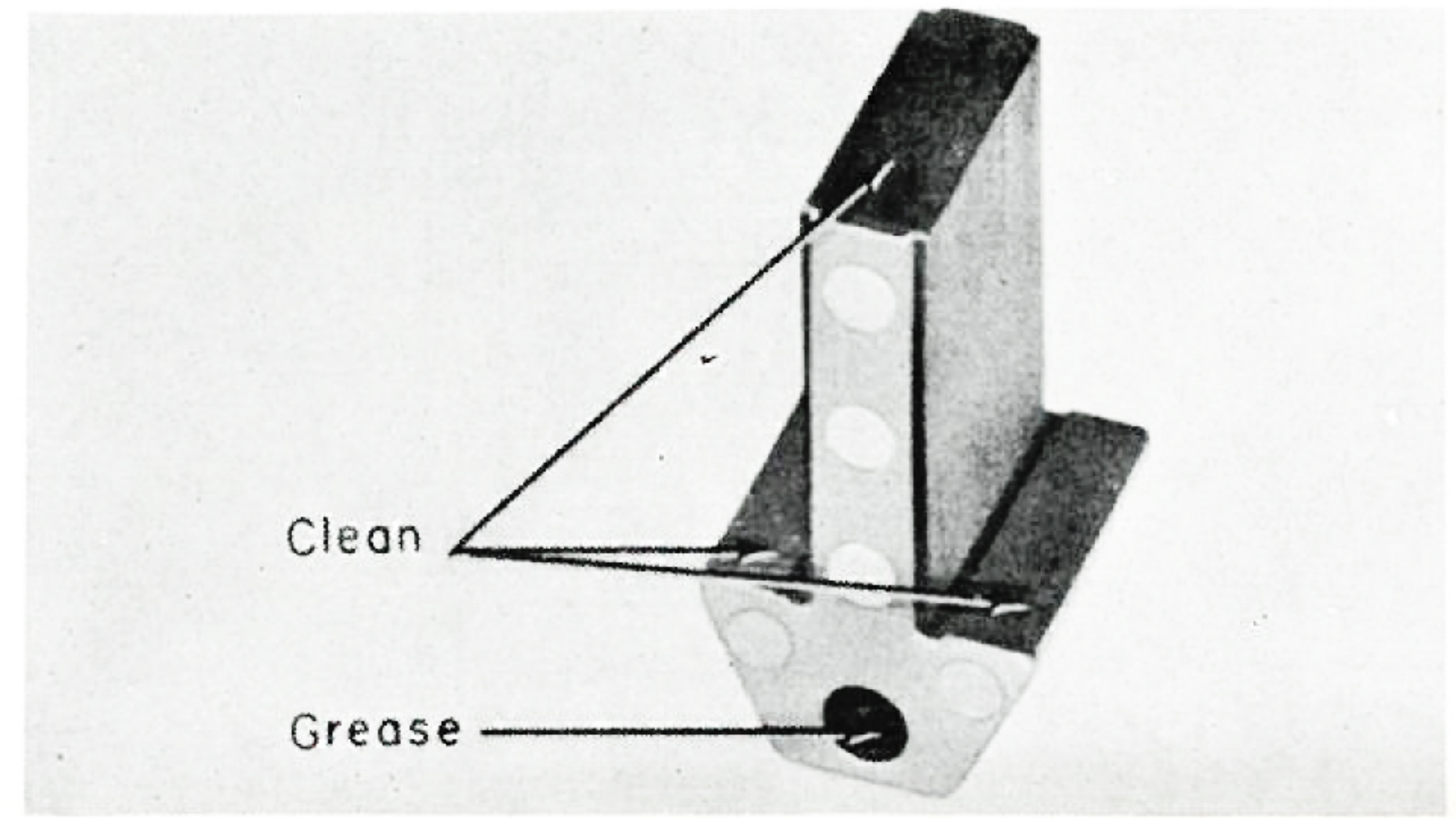


Fig. 6. Plunger maintenance

seating surfaces cause solenoid noise. A cover over the solenoid will aid in keeping it clean.

Grease the plunger pin (Fig. 6). Tighten mounting and frame bolts to the recommended tensions.

Avoid any unnecessary strain on the coil leads.

ADDITIONAL PUBLICATIONS:

- Renewal Parts GEF-3997
- Application Information GEA-6215
- Accessories GEA-6215

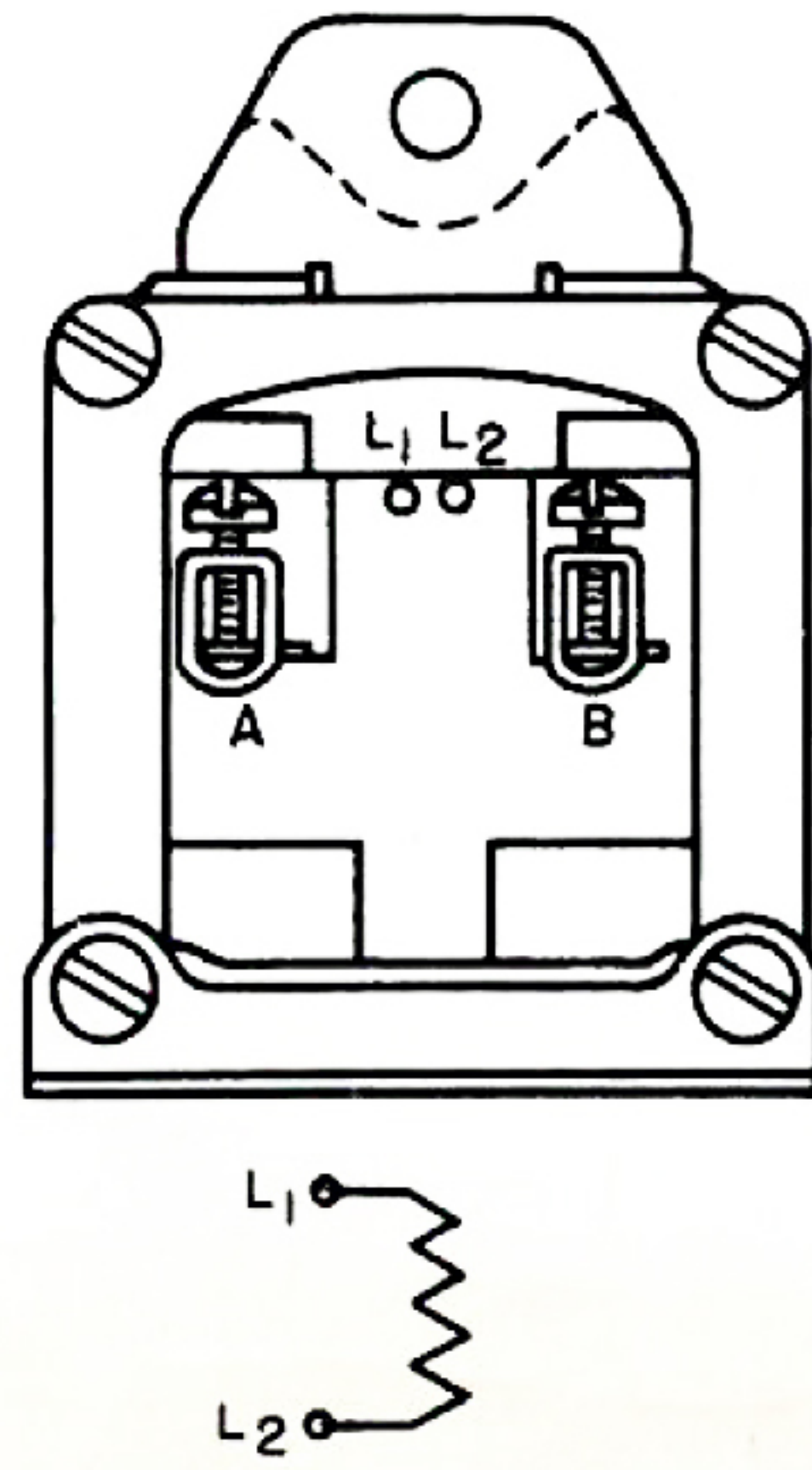
RENEWAL PARTS

Major renewal parts are listed in the following table. See *Renewal-parts Bulletin GEF-3997* for complete listings. NOTE: When either plunger or frame is replaced, it is recommended that *both* be replaced to insure proper operation.

CR9500	Frame (A)	Plunger (B, BB)	Bracket for Magnet Frame (E)	Pad for Stop (J)	Coil Spring (D)
A100, A200	9729267G1	9729266G1	5757026	.....	5759012
A101, A201	9729267G2	9729266G2	5757026	.....	5759013
A102, A202	9729267G3	9729266G3	5757026	.....	5759014
A103, A203	9729267G4	9729266G4	5757026	9645755	5759012
A104, A204	9729267G5	9729266G5	5757026	9645755	5759013
A105, A205	9729267G6	9729266G6	5757026	9645755	5759014
B100, B200	9723645G1	9723646G1	5757027	.....	9756581
B101, B201	9723645G2	9723646G2	5757027	.....	9756582
B102, B202	9723645G3	9723646G3	5757027	.....	9756583
B103, B203	9723645G7	9723646G13	5757027	9644963P1	9756581
B104, B204	9723645G8	9723646G14	5757027	9644963P1	9756582
B105, B205	9723645G9	9723646G15	5757027	9644963P2	9756583
B106, B206	9723645G7	9723646G7	5757027	9644963P1	9756581
B107, B207	9723645G8	9723646G8	5757027	9644963P1	9756582
B108, B208	9723645G9	9723646G9	5757027	9644963P2	9756583
C100, C200	9723645G4	9723646G4	5757028	.....	9756595
C101, C201	9723645G5	9723646G5	5757028	.....	9770703
C102, C202	9723645G6	9723646G6	5757028	.....	9779088
C103, C203	9723645G10	9723646G16	5757028	9644964P1	9756595
C104, C204	9723645G11	9723646G17	5757028	9644964P1	9770703
C105, C205	9723645G12	9723646G18	5757028	9644964P2	9779088
C106, C206	9723645G10	9723646G10	5757028	9644964P1	9756595
C107, C207	9723645G11	9723646G11	5757028	9644964P1	9770703
C108, C208	9723645G12	9723646G12	5757028	9644964P2	9779088

Applies only to Forms A, B, C, D, E, and F.

Order COIL by catalog number stamped on coil. *Always specify voltage and frequency.*



Terminals A and B are not internally connected but serve as binding posts

Fig. 7. Connections for CR9500-100 series (a-c coils)

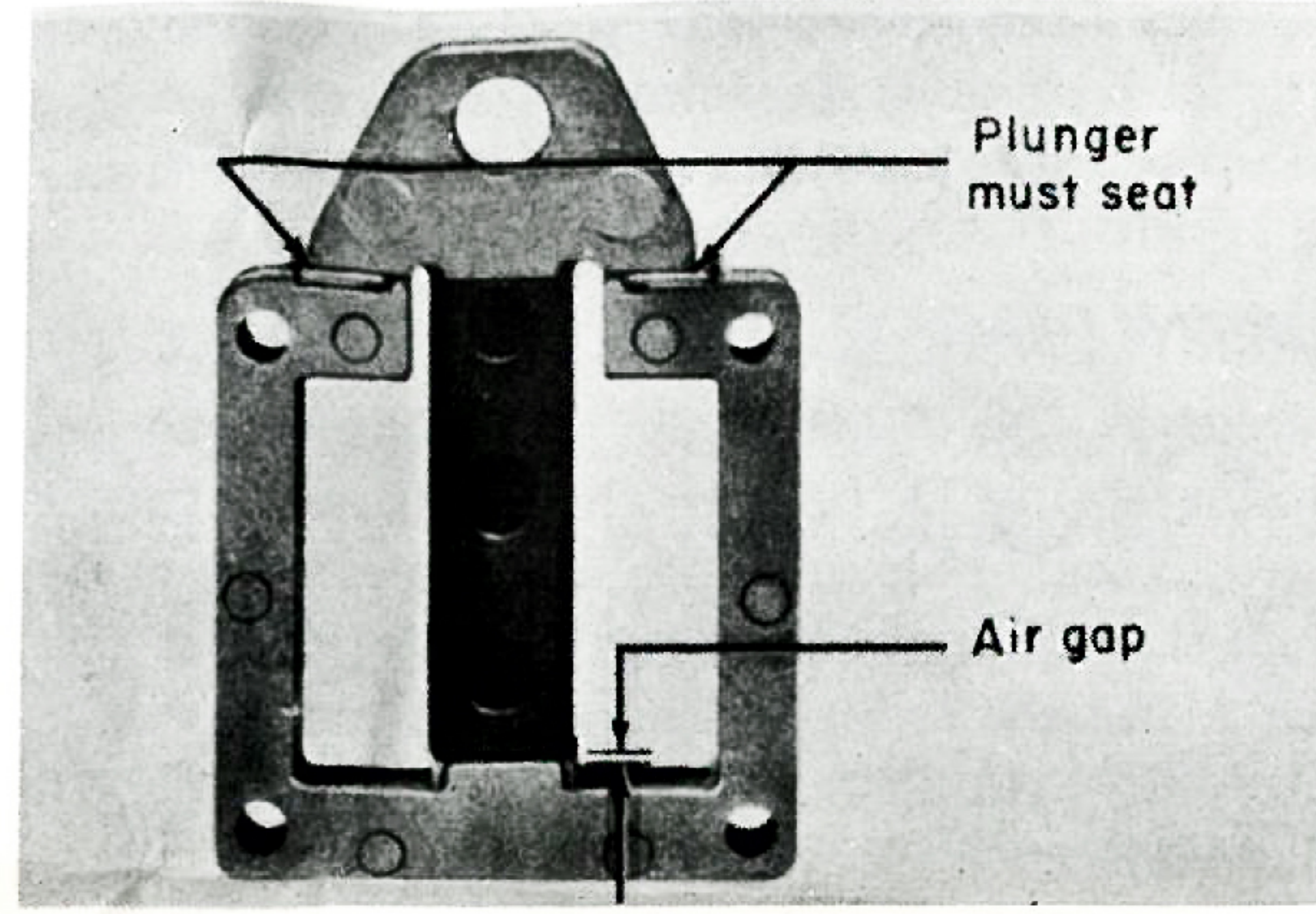


Fig. 8. Proper seating of solenoid plunger

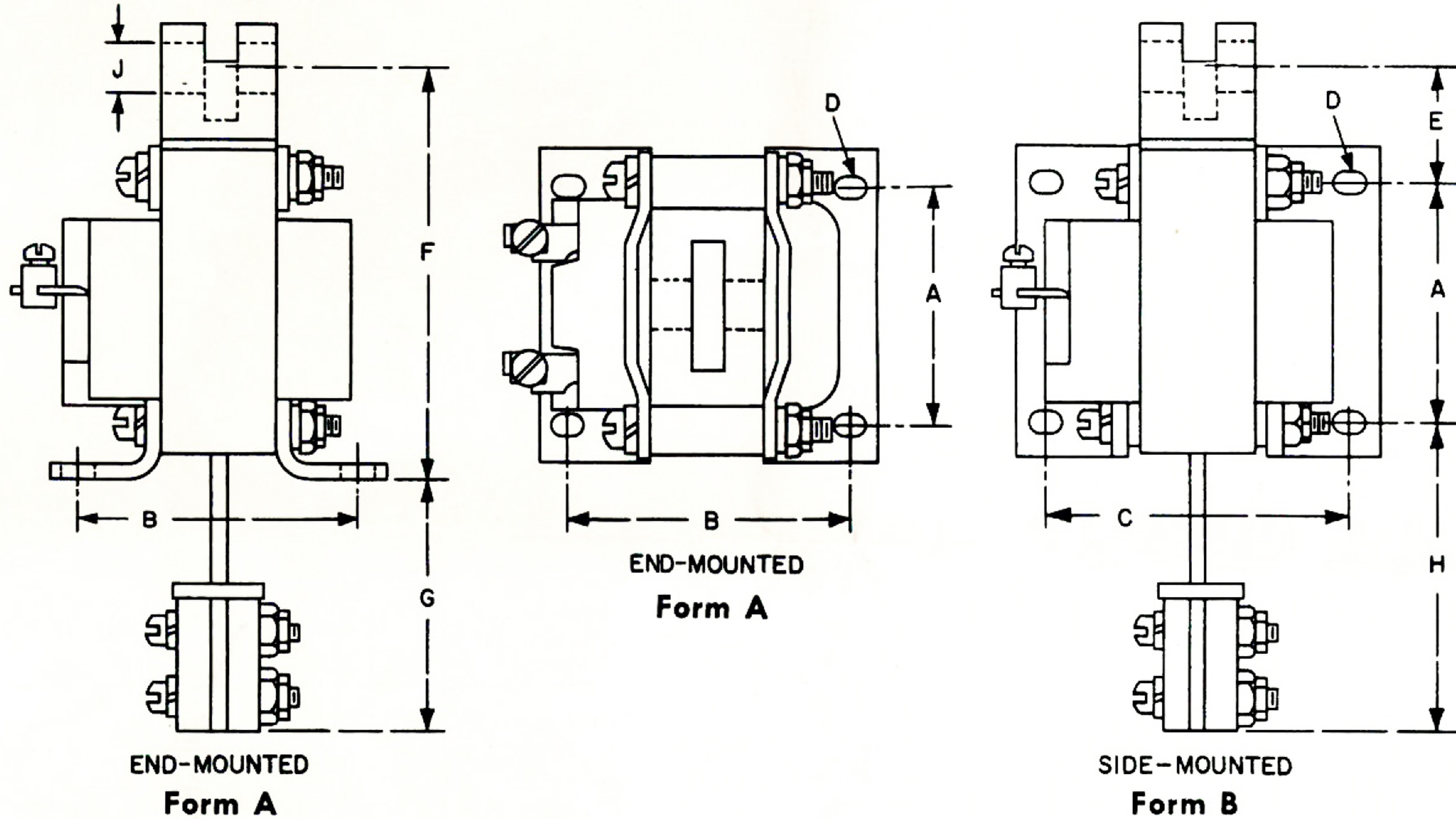


TABLE 1 — MOUNTING DIMENSIONS (IN INCHES)

CR9500-																		
Form	A100-A103-		A101-A104-		A102-A105-		B100-B103-B106-		B101-B104-B107-		B102-B105-B108-		C100-C103-C106-		C101-C104-C107-		C102-C105-C108-	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
A	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4
B	1 13/32		1 13/32		1 13/32		2 1/8		2 3/8		2 3/8		2 11/32		2 9/32		3 11/32	
C		1 23/32		1 23/32		2 3/32		2 1/8		2 1/8		2 13/16		2 23/32		3 1/32		3 13/32
D	No. 8 screws		No. 8 screws		No. 8 screws		No. 10 screws		No. 10 screws		No. 10 screws		1/4-in. screws		1/4-in. screws		1/4-in. screws	
E		4 1/4 = 1/4		4 1/4 = 1/4		4 1/4 = 1/4		7/8 = 1/4		7/8 = 1/4		7/8 = 1/4		1 3/32 = 1/4		1 3/32 = 1/4		1 3/32 = 1/4
F	2 23/64 = 1/32		2 23/64 = 1/32		2 23/64 = 1/32		3 1/8 = 1/32		3 1/8 = 1/32		3 1/8 = 1/32		3 49/64 = 1/32		3 49/64 = 1/32		3 49/64 = 1/32	
G*	9/16 = 3/4		9/16 = 3/4		9/16 = 3/4		B103 1 13/32 B106 1 21/32		B104 1 13/32 B107 1 21/32		B105 1 13/32 B108 1 21/32		C103 1 27/64 C106 2 1/4		C104 1 27/64 C107 2 1/4		C105 1 27/64 C108 2 1/4	
H*		1 1/4 = 3/4		1 1/4 = 3/4		1 1/4 = 3/4		B103 1 23/32 B106 2 13/32		B104 1 23/32 B107 2 13/32		B105 1 23/32 B108 2 13/32		C103 2 13/64 C106 2 49/64		C104 2 13/64 C107 2 49/64		C105 2 13/64 C108 2 49/64
	0.253 +0.000 -0.002		0.253 +0.000 -0.002		0.253 +0.000 -0.002		0.378 +0.000 -0.002		0.378 +0.000 -0.002		0.378 +0.000 -0.002		0.440 +0.000 -0.002		0.440 +0.000 -0.002		0.440 +0.000 -0.002	

The CR9500-200 d-c series has corresponding mounting dimensions.
*Omit for pull-type solenoids.

GENERAL PURPOSE CONTROL DEPARTMENT, GENERAL ELECTRIC COMPANY, BLOOMINGTON, ILL.