



DESCRIPTION

• INSTALLATION

• MAINTENANCE

INSTRUCTIONS

Types "GP" and "GPD"—SIZE 6—A-C CONTACTORS 2 - 3 Pole Front or Rear Connected

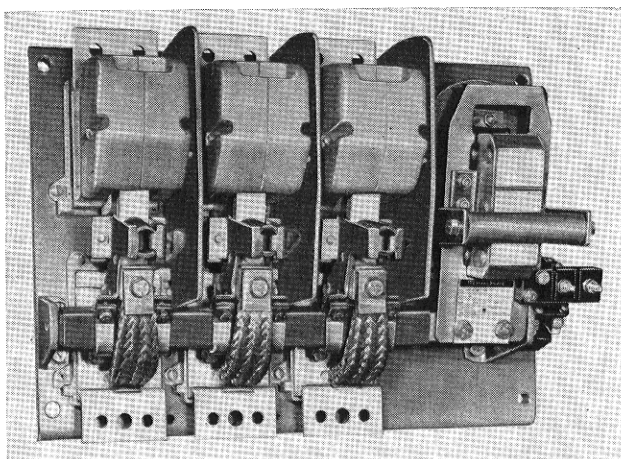


FIG. 1. Type GP-630 Front Connected Contactor
A-C Magnet

THE TYPE GP AND GPD SIZE 6 CONTACTORS are unit assembled A-C contactors having all parts mounted on a steel base. The unit is suitable for mounting on either steel or insulating panels. Contactors are available in two or three pole, front or rear connected assemblies, with or without arc quenchers.

Rear connected contactors are similar in construction to those shown in Figs. 1 and 2 for front connection, except that stationary contact support and shunt support assemblies are provided with brazed on rear connection studs which project from the rear of the steel base plate through holes provided in the center of the molded insulating bases.

All parts of the front connected contactors are removable from front of panel. On the rear connected contactors, hardware and connections must be removed from rear connection studs before stationary contact support and shunt support assemblies can be removed.

The Type GP contactor has an A-C operating magnet, and the Type GPD contactor has a D-C operating magnet.

The Type GP and GPD contactors are insulated for a maximum of 600 volts. The operating coils are designed for continuous duty. The A-C coils

will operate the contactor at 85% to 110% of rated coil voltage. The D-C coils will operate the contactors at 80% to 110% of rated coil voltage.

Table 1. Ratings

CHARACTERISTICS	OPEN	ENCLOSED
Voltage	600	600
8-Hour Rating, Amperes	600	540
1-Hour Rating, Amperes	800	720

DESCRIPTION

The A-C magnet is of a laminated "C" shape construction and mounted to the right of the contact arrangement. The moving armature engages the stationary magnet in a vertical plane parallel to the base plate and has a total travel from the opened to the sealed position of approximately 14 degrees.

The stationary magnet laminations are assembled into a precision die cast aluminum base. A permanent air gap is built into this structure to provide sufficient reluctance in the magnetic path to insure a positive drop out on de-energization. The air gap is so situated that the hammering resulting from operational impact will not decrease the amount of air

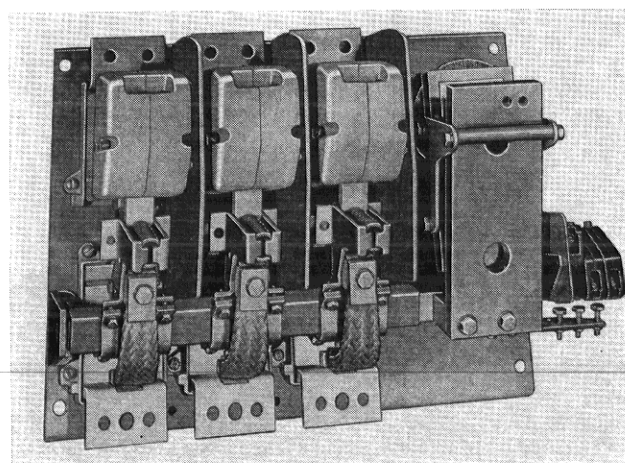


FIG. 2. Type GPD-630 Front Connected Contactor
D-C Magnet

TYPES GP AND GPD CONTACTORS

gap. The operating coil surrounds the upper leg of the stationary magnet and is held in place by two bolts.

The moving armature is flexibly supported by a domed plate which makes it capable of self-alignment as it closes against the stationary magnet. An anti-bounce device straddling the armature and fastened to the stationary magnet absorbs the kinetic energy of the moving system on de-energization thereby minimizing armature bounce.

The D-C magnet frame parts are made of high grade steel. A beryllium copper shim on the top pole face provides a permanent air gap to insure positive drop-out when the coil is de-energized.

Needle bearing assemblies support the ends of the insulated shaft which mounts the moving armature and moving contact assembly. Stainless steel compression springs in the moving contact assembly supply final contact forces from 12 to 14 lbs. with new contacts.

Each stationary contact assembly is mounted on an individual molded insulator, and the contacts which are faced with a silver alloy, close with a rolling and wiping action which serves to keep the contacting surfaces clean.

The shunts are made from flexible braided copper cable. The fixed end of the shunt is secured to the load terminal connector.

Electrical Interlocks. The Type GP (A-C magnet) size 6 contactor will accommodate a total of three Type L-60 electrical interlocks. The interlocks may be converted from normally open to normally closed circuit action or vice versa without additional parts as illustrated in Instruction Leaflet I.L. 15-829-2.

The Type GPD (D-C magnet) size 6 contactor will accommodate a total of three Type L-63 electrical interlocks. The interlocks may be converted from normally open to normally closed circuit action or vice versa without additional parts as illustrated in Instruction Leaflet I.L. 15-829-4.

Mechanical Interlocks. The Type M-40 mechanical interlock is used when a pair of GP contactors must be mechanically protected against closing of one when the other is closed. Mechanical interlocking is possible on all pole arrangements with contactors mounted one below another.

The Type M-40 mechanical interlock consists of a bearing bracket, operating arms and lever. An adjustment screw and locknut is provided at each

end of the lever. The following procedure should be followed when adjustments are made. With the upper contactor in the fully closed position and the lower adjusting screw resting on the lower contactor operating arm, adjust the upper adjusting screw until there is $\frac{1}{64}$ inch clearance between it and the upper operating arm. Next, tighten the locknut. Check adjustment by opening the upper contactor and fully closing the lower contactor. The clearance specified above should prevail. Lock the adjusting screw in position by tightening locknut.

The Type M-42 mechanical interlock is used when a pair of GPD contactors must be mechanically protected against closing of one when the other is closed. Mechanical interlocking is possible on all pole arrangements with contactors mounted one below another.

The Type M-42 mechanical interlock consists of an upper operating lever, a tie rod, a lower operating lever and an operating pin secured to the top of the armature of the lower contactor. With the upper contactor open and the lower contactor closed, adjust the tie rod so that the lower operating lever clears the operating pin by $\frac{1}{16}$ inch. Tighten the tie rod lock nuts.

INSTALLATION AND MAINTENANCE

Arc Quenchers. The arc quenchers should be in place at all times that the contactor is required to interrupt a circuit.

The arc quencher is held in place by two fillister head machine screws and special washers located in recesses on each side of the arc quencher. To avoid mis-alignment stresses, the back side of the arc quencher must seat intimately against the face of the arc quencher support, before and after being fastened in place. Mis-alignment stresses could result in the fracture of the arc quencher due to the vibration encountered during contactor operation.

When replacing an arc quencher care must be taken to be sure that the special washers are placed correctly in the grooves in order to utilize the maximum groove bearing surface.

A-C Armature Assembly. A periodic check of the armature assembly should be made to assure that the armature has the desired degree of freedom. It is essential that the two leaf springs are also always in place between the bottom front of the bearing plate and the inside leg of the armature.

The socket head screws fastening the armature bearing plate to the armature support must be

tightened at all times. The insulating plates and sleeves which are a part of this assembly must always be in place.

A-C and D-C Operating Coils. Check the identification label when installing a new operating coil so that the voltage rating, frequency and coil style numbers are correct for the application.

Coils for the A-C and D-C operated contactors have been designed to operate at higher temperatures and are insulated to meet such service. The operator should not be alarmed to find the coils hot to the touch.

Table 2 gives a listing of the more commonly used coils.

To remove and replace the A-C operating coil, proceed as follows:

1. Remove arc quenchers.
2. Disconnect upper end of shunts to avoid deforming the shunts when swinging armature out of the way to remove coil.
3. Remove armature stop bracket by removing the bolt on the right hand side securing the right hand stop arm to magnet base and by removing nut on left hand end of the stop cross bar. This will permit the armature and moving contact assemblies to be rotated out of the way to facilitate coil removal.
4. Remove the coil leads.
5. Loosen coil by removing the two 1/4—20 locking nuts and coil retainer.
6. Remove coil.

To mount the new A-C coil reverse the procedure.

To remove and replace the D-C operating coil proceed as follows:

1. Remove coil leads.

2. Remove the top two 5/16 inch bolts that secure the armature stop brackets to the top magnet pole face and loosen the bottom two 5/16 inch bolts that secure the armature stop brackets to the bottom pole face. This will allow the armature and moving contact assemblies to be rotated out of the way to facilitate coil removal.

3. Remove top pole face and beryllium copper shim by removing 5/16 inch bolt.

4. Remove coil from top core.

To mount the new D-C coil reverse the procedure.

Contact Forces. Contact forces with new contacts should be as follows:

Initial Force— 5 to 7 lbs.

Final Force —12 to 14 lbs.

Table 2. Operating Coils

COIL VOLTS	FREQ. CYCLES	2, 3 POLE
		Style Number
220	60	1625 681
440	60	1625 682
550	60	1625 683
600	60	1625 684
220	50	1625 685
380	50	1625 686
440	50	1625 687
550	50	1625 688
220	25	1625 687
440	25	1625 689
550	25	1625 690
80	D-C	438C804G01
115	D-C	438C804G02
160	D-C	438C804G03
230	D-C	438C804G04
250	D-C	438C804G05
320	D-C	438C804G06
400	D-C	438C804G07

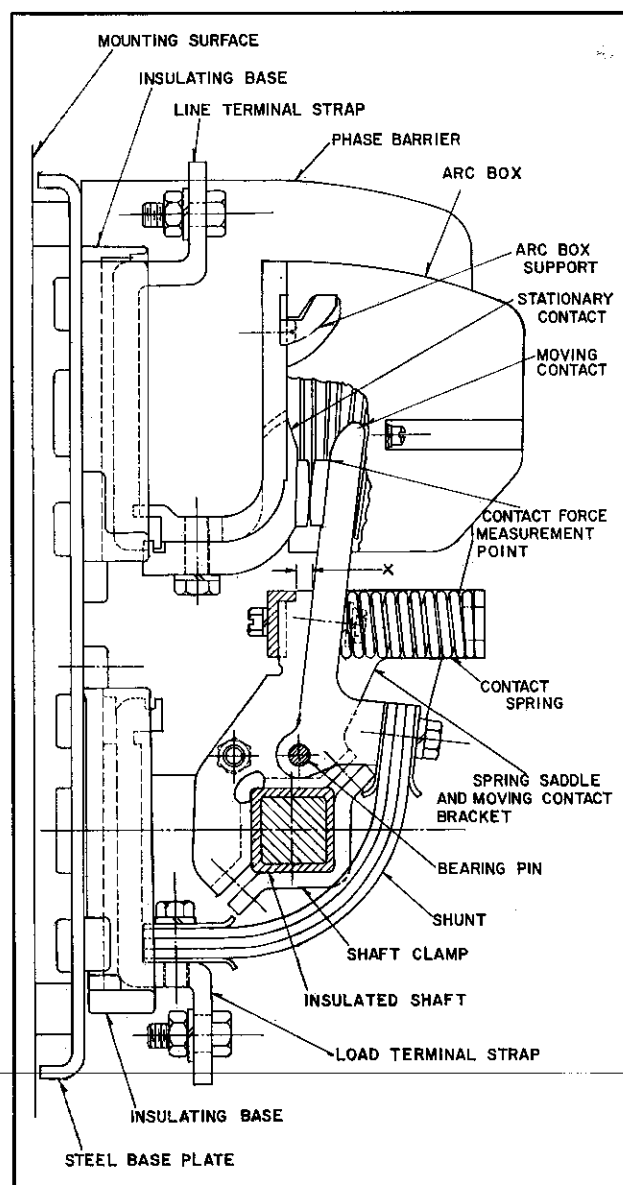


FIG. 3. Overtravel Measurement

TYPES GP AND GPD CONTACTORS

Measure the contact force at the top of the moving contact inlay and in a line perpendicular to the moving contact.

Initial contact force is measured with the contacts in the open position. The force reading should be taken at the instant contact overtravel begins, that is, when the contact leaves the contact stop.

Contact replacement is necessary when the contact overtravel has been reduced to $\frac{5}{16}$ inch. This is represented by a gap of $\frac{1}{16}$ inch measured at point "X", Figure 3.

Contact removal is achieved by the following procedure:

1. Remove phase barriers.

2. Remove arc quenchers.

3. Remove moving contact bearing pin.

4. Remove shunt bolts from moving contact.

5. Remove moving contact and contact spring by lifting moving contact out in a vertical direction.

6. Remove stationary contacts.

To install new contacts reverse the procedure.

Contact Adjustment. Make sure that the contacts touch simultaneously within $\frac{1}{32}$ inch. Sufficient adjustment can generally be obtained by a selective tightening of the two bolts securing the shaft clamp to the moving contact bracket (Fig. 3), tightening one more than the other to produce a slight rotation of the assembly on shaft.



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