



TYPE DPR CONTACTOR

DEFINITE PURPOSE

DIRECT CURRENT

MAGNET CLOSED

DESCRIPTION

WARNING: THE DPR CONTACTOR IS A NON-LOAD BREAK DEVICE AND SHOULD NEVER BE USED TO INTERRUPT CURRENT.

APPLICATION

The Type DPR contactor is a 1000 volt DC, definite purpose, magnet closed, reversing contactor especially designed for use in applications in which a compact heavy duty device is essential but where interruption of a load is not required. This contactor may also be applied where dust and vibration are present.

This industrial type control is designed to be installed, operated, and maintained by adequately trained workmen. These instructions do not cover all details, variations, or combinations of the equipment, its storage, delivery, installation, check-out, safe operations, or maintenance. Care must be exercised to comply with local, state, and national regulations, as well as safety practices, for this class of equipment.

The current and voltage ratings are indicated in the table of Figure 2.

The type DPR contactor is intended for mounting on a vertical panel with the mounting bracket horizontal. For other mounting configurations, contact Westinghouse General Control Division. The contactor is suitable for mounting on either metal or insulating panels.

The DC operating coils are rated for continuous duty and will operate the contactor over a voltage range of 80% to 110% of rated coil voltage. The .250" x .032" thick dual terminal tabs are for No. 250 Faston terminals.

Insulation between the power circuit parts and coil, auxiliary contact units, and mounting rack is for operation at a maximum of 1000 volts DC.

GENERAL

The type DPR contactor is of unit construction, assembled on an insulating base. See Fig. 3 & 4.

Power circuit insulating details are made from glass-polyester materials having excellent arc and tracking resisting qualities. Arcing and creepage distances meet or exceed minimum values established by NEMA standards for 1000 volt equipment.

OPERATING MAGNET

The magnet armatures hinges on a long life knife-edge bearings which requires little or no maintenance. Bearing plates attached to both sides of magnet frame maintain armatures in proper operating position and also prevent falling dust and dirt from collecting in the knife-edge bearings.

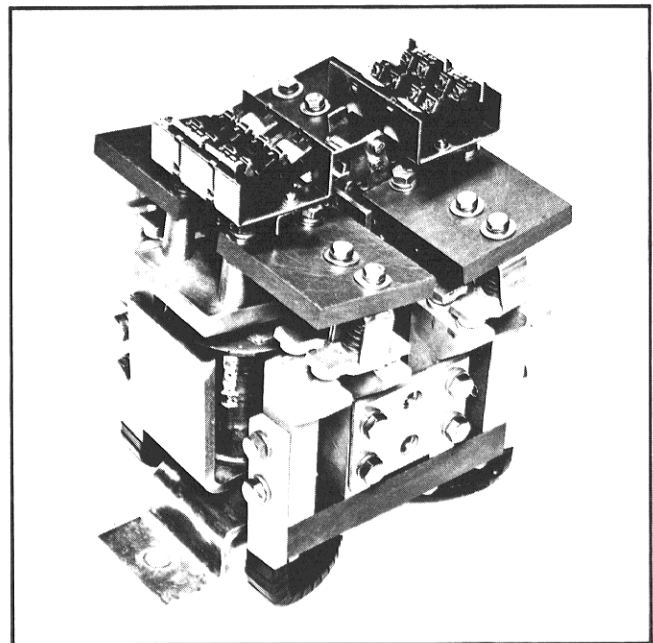


Fig. 1 - Type DPR Contactor Photo GC82-001
(Not Shown In Operating Position)

Line Voltage (DC)	Continuous Current Carrying Capacity (Amperes)
1000	1100

Fig. 2 - Rating Table

The armatures are mechanically tied together to prevent an accidental closing of both forward and reversing contacts at the same time.

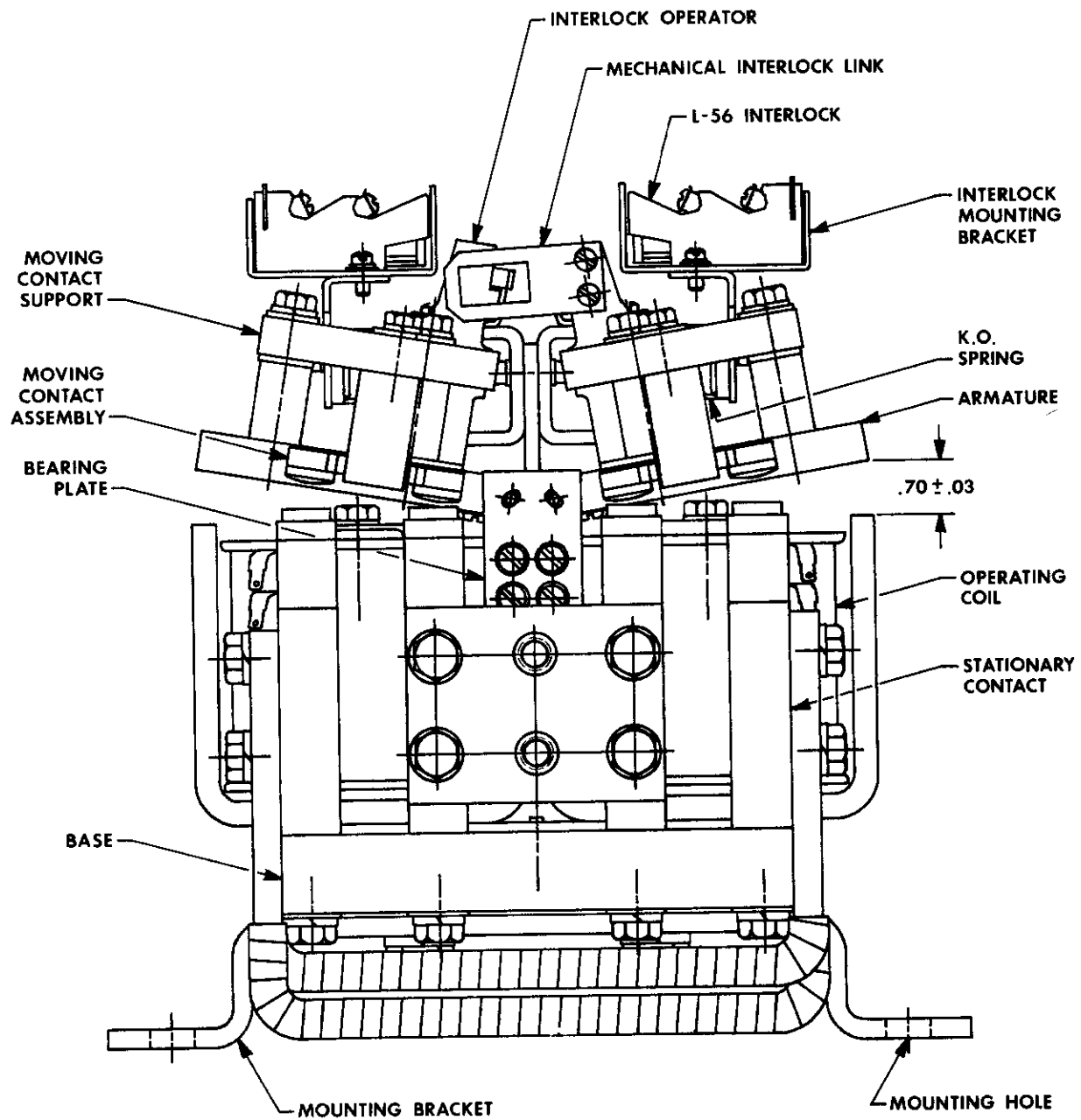


Fig. 3 Type DPR Contactor (Front View) (Not Shown In Operating Position)

Drawing 5249C55

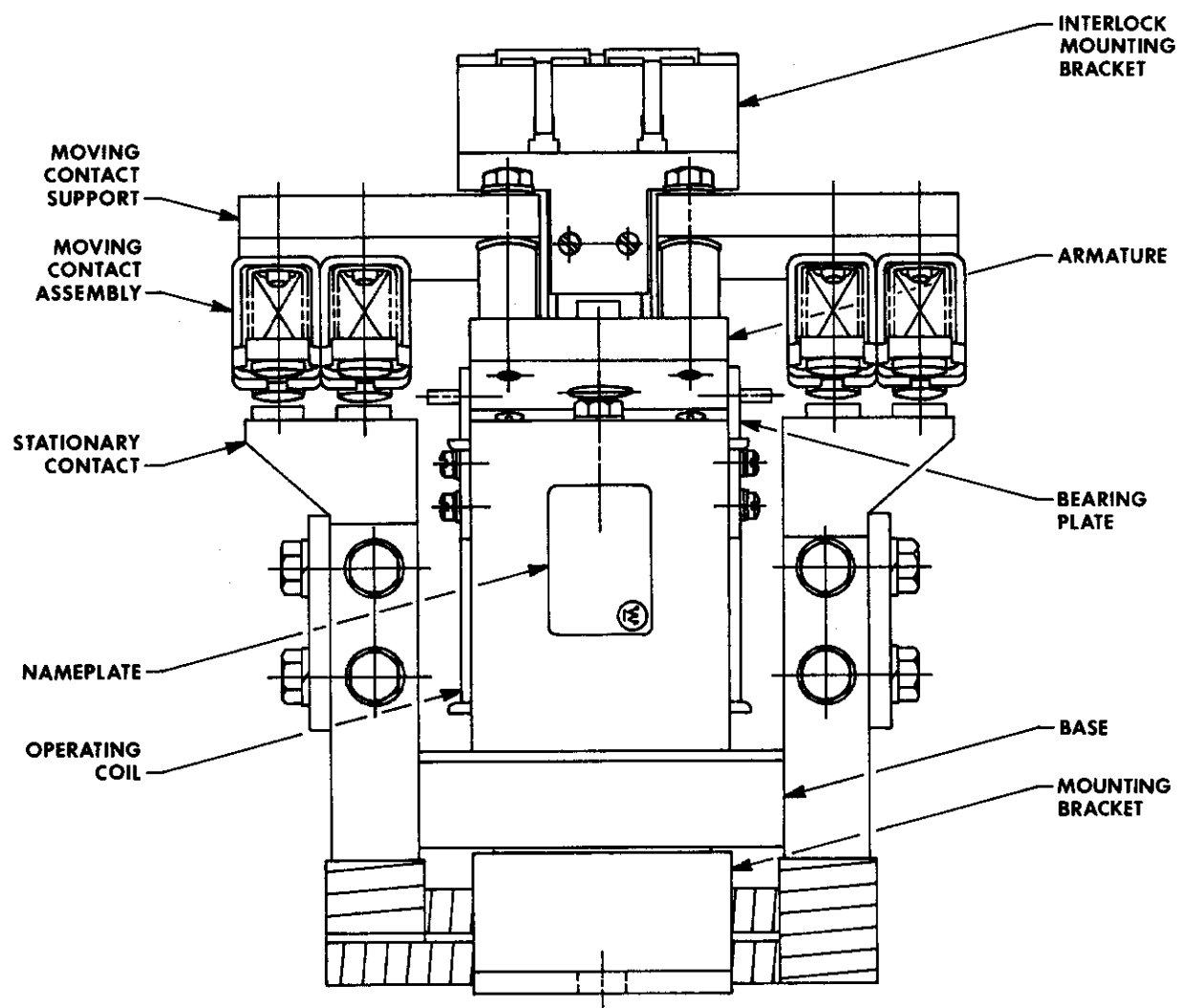


Fig. 4 Type DPR Contactor (Side View) (Not Shown In Operating Position)

Drawing 5249C55

A strong kickout spring minimizes the risk of accidental closing of the contactor under conditions of shock or tilt and also insures positive dropout of the armature assembly when the operating coil is de-energized.

ELECTRICAL INTERLOCKS

The Type DPR contactor will accommodate a total of four Type L-56 electrical interlock units, (two per side), providing a total of 8 circuits. The interlock units are retained in two metal interlock mounting brackets by spring clips and operated by a metal operator mounted on the top of the armature.

Electrical interlock units are available with various contact arrangements as listed in Figure 5.

Interlock Pole Combination	Style No. + Interlock Unit
1 NO - 1 NC	2609D01G17
2 NO	2609D01G04
2 NC	2609D01G18

NO = Normally Open Circuit
 NC = Normally Closed Circuit
 + = Supersedes 180C138 Series Styles

Fig. 5 L-56 Electrical Interlocks

MAINTENANCE AND REPAIR

General

This industrial type control is designed to be installed, operated, and maintained by adequately trained workmen. These instructions do not cover all details, variations, or combinations of the equipment, its storage, delivery, installation, check-out, safe operations, or maintenance. Care must be exercised to comply with local, state, and national regulations, as well as safety practices, for this class of equipment.

As with all electrical apparatus, a routine inspection and maintenance program should be established when this contactor is put into operation. The frequency of inspection should, of course depend upon the severity of the contactor duty.

All work on this contactor should be done with the main circuit disconnected device open.

Before the contactor is placed in service for the first time, or following maintenance work, the contactor should be operated slowly by hand two or three times without power to check the alignment and operation of moving parts.

If the contactor operates satisfactorily by hand, it should then be closed and opened two or three more times using the operating magnet, but with the main power circuit de-energized.

A routine maintenance program should include the following salient points.

Hardware - See that bolts, nuts, washers, and terminal connectors are tight and in good condition. Replace items showing excessive wear or corrosion.

Insulation - Inspect insulating members for breaks, cracks, or burns, and clean where abnormal conditions such as salt deposits, cement dust, or acid fumes prevail. This is necessary to avoid flashover as a result of the accumulation of foreign substances on their surfaces.

The insulating materials should never be cleaned with an oily rag or waste. Oil holds dirt particles which may cause arcing across the surface of insulators.

Current Carrying Parts - The general condition of connectors, and other current carrying parts, should be noted, especially any discoloration which would indicate excessive heating due to loose hardware, high current, or low contact force.

OVERTRAVEL

The initial contact overtravel, with new contacts, should be .020 to .120 inches and is measured with power off as shown in Figure 6. Contact replacement is necessary when the overtravel on any pole has been reduced to less than .020 inches. Moving contact replacement is then achieved by the following procedure with the power off.

1. Remove the moving contact assembly.
2. Remove the compression spring from the assembly and twist the moving contact to remove it from the saddle.

To install the new contact, reverse the procedure making sure all bolts are tight.

Stationary contact replacement is achieved by the following procedure:

1. Unbolt all current carrying members from the stationary contact.
2. Unbolt and remove the stationary contact from the base.

To install the new stationary contacts, reverse the procedure, making sure all bolts are tight.

After new contacts are installed, close the contactor slowly by hand and check to see that the moving

and stationary contacts are aligned within 1/16 of an inch of all sides. Poor alignment may be corrected by loosening the bolt holding the moving contact assembly and then sliding the assembly in a direction to provide proper alignment.

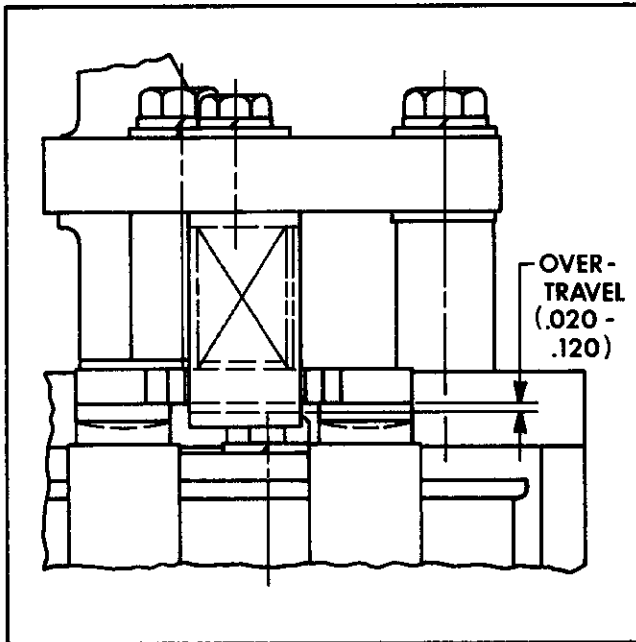


Fig. 6 Initial Contact Overtravel Drawing 7857A64

CONTACT FORCES

With new contacts, the contact forces per pole should be 7 to 9 pounds. Measure the contact force as follows: (See Fig. 7)

1. Measure overtravel. (Should be between 0.020 and 0.120 inches.)
2. Remove the moving contact assembly.
3. With push-force gauge, push the contact the overtravel distance measured in step 1. Force should be 7 to 9 pounds.

OPERATING MAGNET

The knife-edge armature bearing requires no maintenance other than the removal of accumulated dirt. Oil should not be used on the bearing, as it hastens the collection of dust. Bearing plates attached to both sides of magnet frame maintain armatures in proper operating position and also prevent falling dust and dirt from collecting in the bearings.

The magnet pole face is secured to the core by means of a .312-18" bolt having a head that projects forward into a hole in the armature. Care must be taken that the parts maintain their proper alignment and particularly that the bolt-head has clearance to the sides of the hole in the armature.

The air gap between the pole face and magnet armature shown in Fig. 8 must not be less than .010" at any point and the average gap measured on the horizontal and vertical center lines of the pole must not exceed .034".

A beryllium copper shim is mounted on the armature at the knife-edge bearing to provide a permanent non-magnetic gap to insure positive dropout when the coil is de-energized. This shim should be checked during regular maintenance inspections to be sure it is in place.

To insure proper operation, the armature gap must be $.70 \pm .03$ between bottom edge of armature and top edge of armature frame. If necessary, loosen armature stop and adjust for proper armature gap. See Fig. 3.

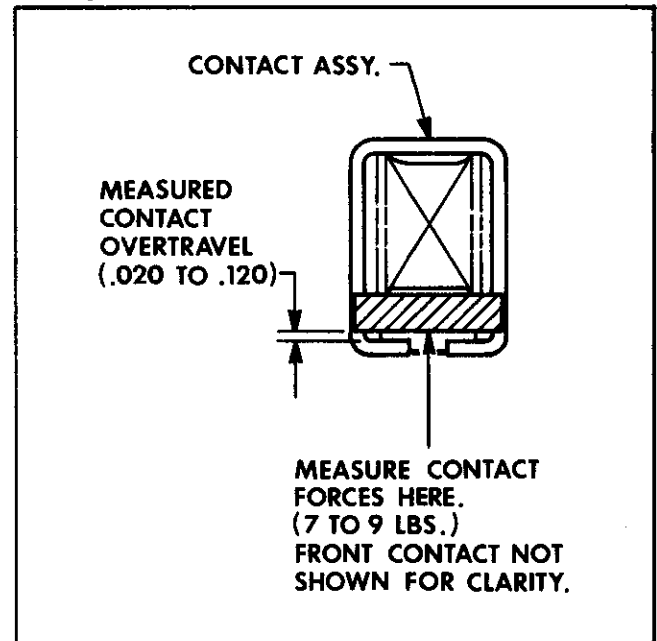


Fig. 7 - Contact Forces

Drawing 7857A65

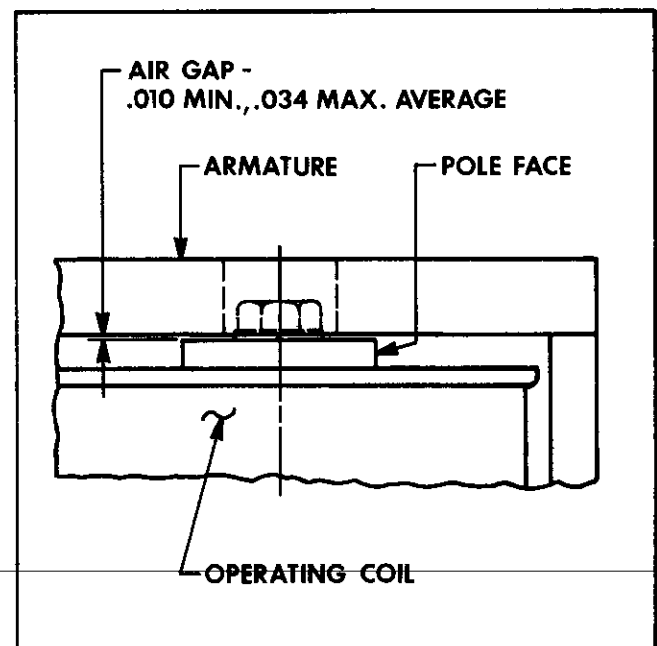


Fig. 8 Air Gap

Drawing 7857A66

FAILURE TO CLOSE

Magnet may fail to close for any of the following reasons:

1. The lead wire to the operating coil may be disconnected.
2. The operating coil may be open circuited or have shorted turns.
3. The DC operating voltage may be below 80% of the rated coil voltage.
4. Interference or friction between moving parts.
5. Excessive contact, kickout or auxiliary contact spring force.
6. Armature gap is too large.

FAILURE TO OPEN

A magnet may fail to open for any of the following reasons.

1. Mechanical interference or friction.
2. Contacts may be welded together.
3. Residual magnetism may be holding the magnet closed due to low kickout spring force, defective or missing residual shim or insufficient pole-face gap.

ELECTRICAL INTERLOCKS

The L-56 interlock units are mounted above the armature. The metal interlock operators are mounted on the top of their respective armatures. For proper interlock operation, when the contactor is fully closed, the interlock push rod must have .06 (1/16") additional travel. If adjustment is necessary, loosen screws in the interlock bracket and adjust as needed.

OPERATING COIL

The operating coil has been designed to operate at high temperatures, and is insulated to meet such service. The operator should not be alarmed to find the coils hot to the touch.

The .250" wide x .032" thick dual terminal tabs are for No. 250 Faston terminals.

When a new operating coil is installed, the identification label should be examined to make certain that the voltage rating and the coil style number are correct for the application. Commonly used operating coils are listed in Fig. 9.

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

1. Remove electrical interlock assembly.
2. Remove the moving contact supports from the armature.
3. Remove kick-out spring.
4. Remove the interlock operator from top of armature.
5. Remove one bearing plate.
6. Remove armature.
7. Remove operating coil.

DC Volts	Drawing No.
28	7861A01G04
74	7861A01G09
110	7861A01G14

Fig. 9 Operating Coils

To install new coil, reverse the above steps. Check the following and adjust when necessary.

1. Armature gap - .70 \pm .03 inches.
2. Contact alignment - 1/16 inches all sides.
3. Electrical interlock - Plunger 1/16 inch from bottoming.
4. Kick-out spring - Properly seated.
5. Roll pins do not bind in bearing plates.

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Part	Style Number	Required For One Contactor
Moving & Stationary Contacts	7857A57G03	1
Kick Out Spring	2087A05H05	2
Operating Coil	7861A01	2
Retaining "O" Ring	484B512G04	2
Auxiliary Contact Units (L-56)	2609D01	See Fig. 5

Fig. 10 Renewal Parts