



Westinghouse

I.L. 17-000-3

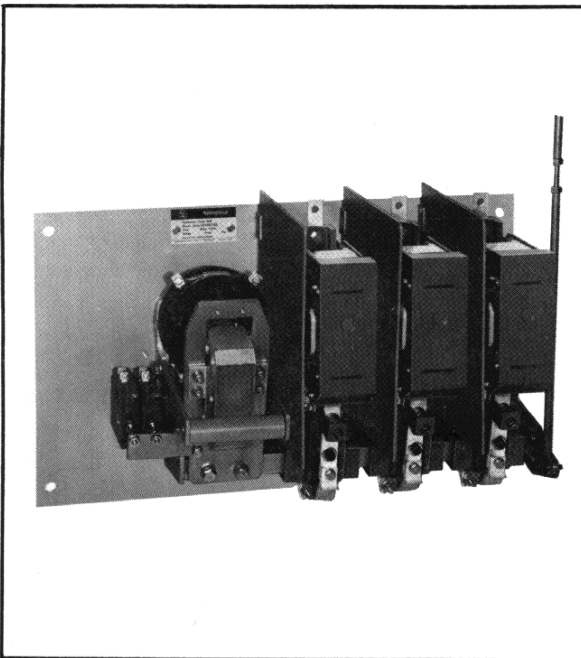
TYPES WG And WGD

Sizes 3 and 4

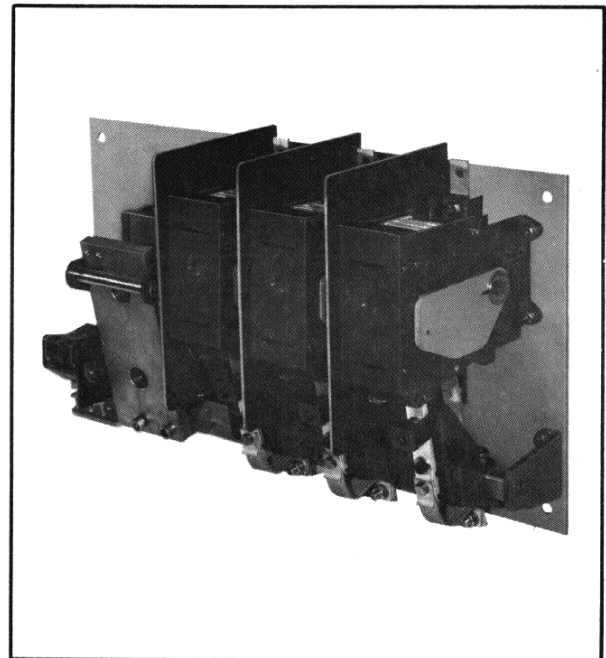
AC CONTACTORS

2 OR 3 POLES

FRONT CONNECTED



*Fig. 1 Type WG-430 Contactor with A-C Magnet
(Photo BD71-0173)*



*Fig. 3 Type WGD-430 Contactor with D-C Magnet
(Photo BD71-0175)*

APPLICATION AND RATING

The Type WG AND WGD CONTACTORS are heavy duty devices designed for use on 50 - 60 Hertz power systems up to 1500 volts.

Characteristics	Open	Enclosed
Voltage	1500	1500
Size 3		
8-Hour Rating, Amperes	100	90
Interrupting Rating, Amperes	1000	1000
Size 4		
8-Hour Rating, Amperes	150	135
Interrupting Rating, Amperes	1500	1500

Fig. 2 Contactor Ratings

DESCRIPTION

The Type WG AND WGD 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 assemblies with or without arc quenchers.

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

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.

The operating coils are designed for continuous duty and are insulated for 600 volts.

Power circuit insulating details are molded from Glass-Polyester materials having high arc and track resisting qualities. Arcing and creepage distances meet or exceed minimum values established by NEMA standards for 1500 volt equipment.

The contact structure employs a single break type moving contact together with an electromagnetic blowout and a polarized arc chute containing ceramic grid plates to extinguish the arc.

The Type WG contactor will accommodate a total of two Type L-64 electrical interlocks. Any combination of normally open or normally closed circuits is available by selection of the appropriate style interlocks.

The Type WGD contactor will accommodate a total of three Type L-63 electrical interlocks. This interlock may be converted from normally open to normally closed circuit action or vice versa without additional parts.

MAINTENANCE AND REPAIR

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 operation, or maintenance. Care must be exercised to comply with local, state, and national regulations, as well as safety practices, for this class of equipment.

A maintenance program should be initially established to provide for periodic inspections of the contactor. After the contactor has been inspected a number of times and the condition noted, the frequency of inspection can be increased or reduced to suit the conditions found.

All work on this contactor should be performed with the main branch circuit disconnect device open. Magnetic operation of the contactor should be achieved by use of a separate source of control power and one secondary lead of the control transformer disconnected to prevent inducing a high voltage in the other controller parts.

The insulation resistance between poles and from each pole to ground should be measured and recorded. It is not feasible to establish the correct or absolute value of this reading since it is dependent on other connected apparatus and conditions of environment. However, any abrupt reduction in this value from the previous reading would indicate a possible source of trouble and the cause should be established and corrected.

Connections to the load side of the contactor should be bolted to the front side of the load terminal support so as to make direct contact with the moving contact shunt. The load terminal support is a tin plated steel strap having adequate conductivity for momentary arc horn currents, but not for carrying load current continuously.

ARC CHUTES

The arc chute must be in place and the arc horn connection securely tightened at all times that the contactor is required to interrupt a circuit.

The arc chute is hinged from the top so that it may be conveniently raised by hand to inspect the contacts, after loosening the Arc Horn Connection Screw. To remove the Arc Chute completely, it can be lifted vertically off its pivot.

Usually, the arc chutes require little or no maintenance, but it is convenient to check them whenever the main contacts are examined or changed.

Examine the arc horns and the insulating supports for excessive arc erosion; also examine the arc shields at each side of the arc chute and the grid assembly for either excessive arc erosion or metal deposits and for cracks.

CONTACTS

Contact forces with new contacts should be as follows:

Initial Force – 5.5 to 7 lbs.

Final Force – 8.5 to 10.5 lbs.

Measure the contact force from a line .25 inch below the moving contact bend and in line perpendicular to the moving contact face.

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 bolt.

Final force is measured with the magnet fully sealed.

Contact overtravel with new contacts should be $.140 \pm .016$ inch measured at the top edge of the contact spring saddle.

This measurement is the difference in dimension "X" in Fig. 4 with the contacts open and closed.

The general condition of the contacts and shunts should be noted, especially with respect to any discoloration other than on the contact faces themselves, which would indicate excessive heating due to loose hardware, high current, or low contact pres-

sure. The bolts which fasten the current carrying parts should be tightened if necessary.

Dressing or filing of the contacts is normally not necessary. Since a perfectly smooth contact surface is not necessary, only major contact surface irregularities should be removed. For example, after a severe interruption, metal beads may appear around the contacts. This does not cause any harm unless the beads occur on the contact face proper and are quite large ($1/16''$ diameter or more). These beads should be removed with a file, but it is not necessary to reshape the contact face or clean the entire contact face down to bright metal.

When the overtravel dimension is reduced to .060 inch both moving and stationary contacts should be replaced as follows:

1. Remove arc chutes and phase barriers and swing the blowout pole pieces up out of the way.
2. Remove the shunt connection bolt and Allen head shoulder bolt from the moving contact and slide the moving contact out of the contact spring saddle.
3. Remove the single stationary contact bolt and then the stationary contact. To install new contacts, reverse the procedure outlined above.

After the new contacts are installed, make sure contacts on the two or three poles touch simultaneously within .032 inch and have the correct overtravel

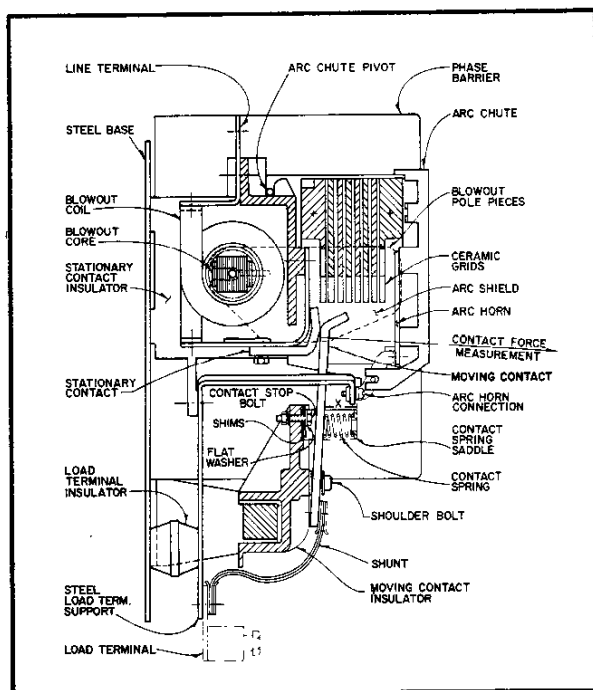


Fig. 4 Overtravel Measurement (Dwg. 6355D81)

and forces. Contact overtravel, touch point and forces may be adjusted by adding or removing flat washers or shims under the head of the contact stop bolt as shown in Fig. 4.

A-C MAGNET

The moving armature is flexibly supported by a domed plate which makes it capable of self-alignment as it closes against the stationary magnet.

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.

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

1. Remove the two bolts attaching the magnet armature to the contact shaft and then remove the magnet armature.
2. Remove the coil leads.
3. Loosen coil by removing the two $1/4-20$ locking nuts and coil retainer.
4. Remove coil.

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

D-C MAGNET

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. This shim should be checked during regular maintenance inspections to be sure it is in place.

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

1. Remove the two bolts attaching the magnet armature to the contact shaft and then remove the magnet armature.
2. Remove the two pole face bolts and then remove the armature stop and pole face assembly.
3. Remove the coil leads.
4. Remove coil.

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

Coil Volts	Freq. Hertz	Style Number
110	60	1754374
220	60	1617648
440	60	1617649
550	60	1617650
600	60	1617651
110	50	1818000
220	50	1617652
440	50	1617654
550	50	1617655
80	DC	438C804G01
115	DC	438C804G02
160	DC	438C804G03
230	DC	438C804G04
250	DC	438C804G05
320	DC	438C804G06
400	DC	438C804G07

Fig. 5 Operating Coils

MECHANICAL INTERLOCKS

The Type M-42 mechanical interlock is used when a pair of WG or WGD 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 above the other.

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 .062 inch. Tighten the tie rod lock nuts.

A mechanical interlock is also available to provide interlocking with the Type WGM Isolating Switch.

ELECTRICAL INTERLOCKS

Electrical interlocks should be adjusted so that the plunger is free to travel .016-.032 inch past the position taken when the magnet is sealed to insure the plunger will not bottom.

The Type L-64 interlock is available with any combination of normally open or normally closed circuits by selection of the appropriate style from Fig. 6.

The Type L-63 interlock 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.

Interlock Type	Interlock Style	Circuit Combination Provided by one Interlock Assembly
L-64	843D943G04	One normally open, one normally closed
L-64	843D943G05	Two normally open
L-64	843D943G06	Two normally closed
L-63	578D461G01	One normally open or closed

Fig. 6 Electrical Interlocks

CAUTION - Following any inspection procedure, or after any maintenance work - **BE SURE TO REPLACE** the arc chutes and reconnect the arc horn, replace the three phase barriers, and lower the magnetic blowout pole pieces to the operating position. Never energize the contactor at line potential without having arc chutes, phase barriers, and blowout pole pieces in their proper operating position.

Name of Part	Identification No.	Number per Contactor	
		Two Pole	Three Pole
Stationary Contact	486B603H01	2	3
Moving Contact	486B600H01	2	3
Moving Contact Spring	2043A69H05	2	3
Moving Contact Shunt	3475C51G01	2	3
Arc Chute Complete	2059A75G05	2	3
Operating Coil	See Fig. 5	1	1

Fig. 7 Renewal Parts