

INSTRUCTIONS

IC2800-Y109 AND IC2800-Y110 D-C ACCELERATING CONTACTORS

IC2800-Y109—150 AMPERES, 600 VOLTS

IC2800-Y110—300 AMPERES, 600 VOLTS

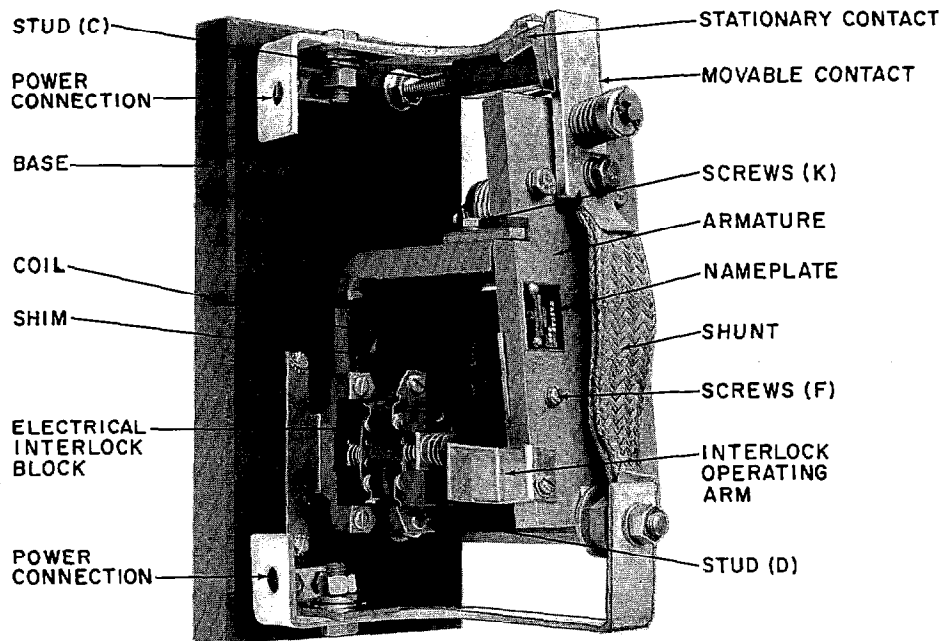


Fig. 1. IC2800-Y110 contactor with two-circuit auxiliary interlock block

GENERAL

The IC2800-Y109 and IC2800-Y110 contactors have one normally closed main pole and maximum ratings as listed above. These shunt-type contactors are normally used as accelerating contactors for short-circuiting starting resistance of d-c motors. They do not have blowout coils and, therefore, should not be used to interrupt current.

All contactors pick up instantly and have a time-delay dropout which can be adjusted from approximately 0.75 to 3 seconds.

Two auxiliary electrical interlock circuits which are contained in a single molded housing are available as a combination of two normally open, two normally closed or one normally open and one normally closed.

INSTALLATION

IC2800-Y109 and IC2800-Y1110 contactors should be mounted with the main tips at the top and the operating coil at the bottom as shown in Fig. 1.

These contactors are front-connected devices. They are unit-mounted on their own individual compound bases that can be mounted on either steel or insulation panels. When mounting the contactor on a steel panel, make sure that the sheet of insulation supplied with the contactor is in place between the contactor base and the main base or panel.

All contacts, armature and core, and pivot points must be free from dirt or foreign material.

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

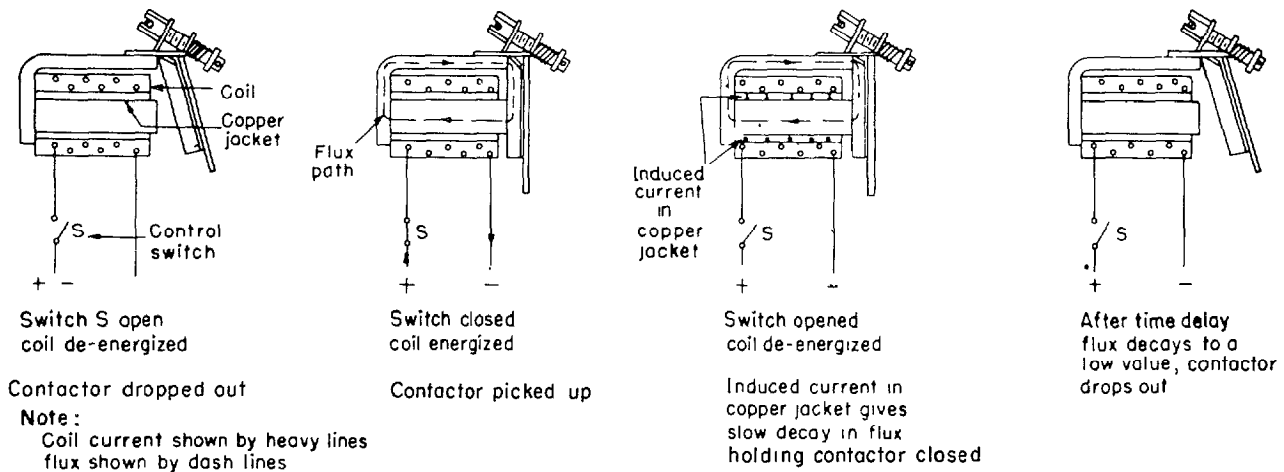


Fig. 2. Time-delay dropout of contactor with copper jacket

OPERATION

The construction is such that when voltage is applied to the operating coil, magnetic action attracts the armature to the core which opens the normally closed contacts.

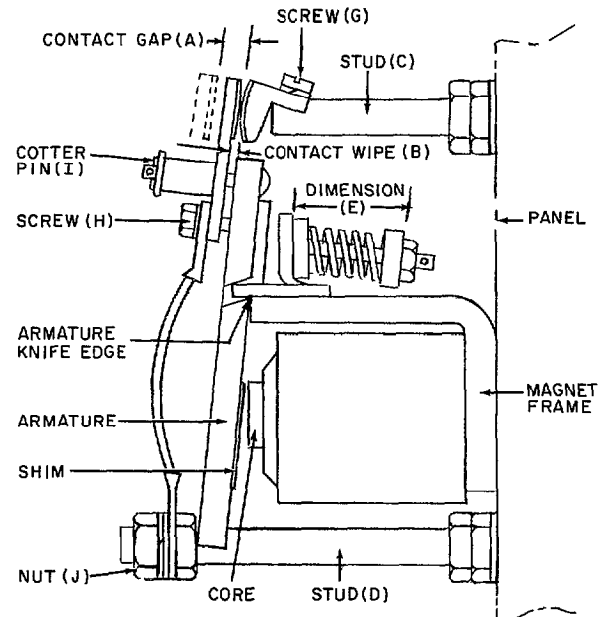
The contactors have a magnetic time-delay action which prevents the power contacts from closing immediately upon the removal of voltage from the coil. This time delay is obtained by use of a cylindrical copper jacket between the core and the coil.

Removal of the coil voltage induces a current in the copper jacket which produces a flux that slowly decays, resulting in a time-delay dropout as shown in Fig. 2.

ADJUSTMENTS

These contactors have been completely adjusted at the factory and no additional adjustments should be needed. It may be necessary, however, to re-adjust or at least to recheck the contactor after changing of any part.

- Adjust spring to "E" dimension so that the armature will rest against its stop when the magnet is de-energized.



Power Contacts

Adjust, if necessary, the power contact gap and wipe as follows (see Fig. 3):

- Adjust top contact stud (C) to obtain contact gap (A) with armature depressed against the core.
- Adjust bottom stud (D) to obtain contact wipe (B).

Contactor	Gap A $\pm 1/64''$	Wipe B $\pm 1/64''$	BW*	Spring Dimension E	Tip Forces (lb)	
					Initial	Final
Y109	$1/16''$	$3/32''$	$3/64''$	$15/16''$	$2 \pm 1/4$	$2 1/2 \pm 1/4$
Y110	$9/64''$	$3/32''$	$3/64''$	$15/16''$	$5 \pm 1/2$	$8 \pm 3/4$

* When contact wipe B measures BW, it is recommended that contact tips be replaced.

Fig. 3. Power contact tip gap and wipe and other maintenance reference

The knife edge of the armature must make contact with the magnet frame over its entire length. The armature must not rub against the bottom stud (D).

Shims

To regulate timing of the contactor, a variable shim is used on the inside of the armature between the armature and core. This shim is an edgelay metal strip, half steel and half copper, plated with hard chromium.

Since copper and chromium are both non-magnetic metals, they provide an effective air gap which varies with the portion of the shim under the core face. The time delay is increased as the shim is moved up on the armature, allowing more steel to come under the pole face.

If it is necessary to adjust the shim, loosen screws ((F), (Fig. 1)) slightly to allow shim to slide. Tighten screw after obtaining desired time.

ELECTRICAL INTERLOCKS

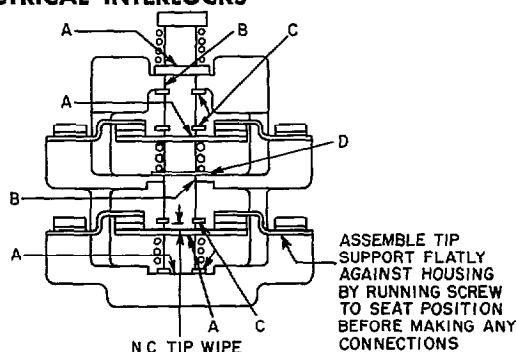


Fig. 4. Interlock block with normally closed contacts in unoperated position

Interlock ratings are shown in Table I.

These contactors use an interlock block having internal parts which can be rearranged to give different contact arrangements. Should this be necessary, the parts should be reassembled in accordance with Fig. 4, 5, or 6.

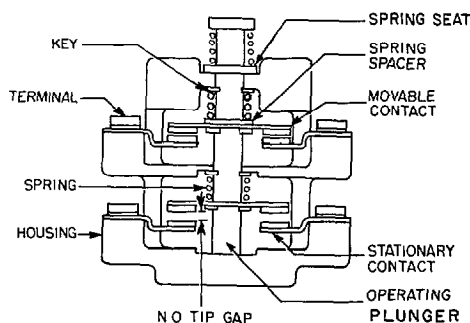


Fig. 5. Interlock block with normally open contacts in unoperated position

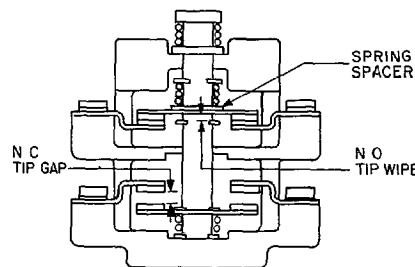


Fig. 6. Interlock block with one set of normally open contacts and one set of normally closed contacts in operated position

TABLE I
Interlock Ratings (In Amperes)

Number of Contacts	Carry	Make	Interrupt						
			*D-c Inductive			†A-c			
			125v	250v	600v	110v	220v	440v	600v
One Set	10	60	1.8	0.5	0.2	6	3	1.5	1.2
Two Sets in Series	10	60	4.0	1.2	0.35	-	-	-	-

* Noninductive d-c interrupting rating is 1.5 times inductive.

† Capable of interrupting inrush current of 60 amperes at 110 volts, 30 amperes at 220 volts, 15 amperes at 440 volts, and 12 amperes at 600 volts, a limited number of times.

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Spring ends must not protrude into holes (A), slots (B), or keys (C), which serve as guides for the operating plunger. See Figs. 4 and 5.

Interlock blocks with two normally closed circuits require a spring spacer (D) as shown in Fig. 4 to assure that the center spring is properly in place. Because of the circuit rearrangement feature, a spring spacer is also supplied with other two-circuit interlock blocks, as shown in Fig. 5 and 6.

When circuits are rearranged to obtain one normally open and one normally closed circuit, the normally closed circuit must be located at the bottom as shown in Fig. 6.

The interlock block should be positioned on its bracket so that with the contactor in its energized position, the interlock plunger (Fig. 5) should not bottom, and with the contactor in its de-energized position, there should be some clearance ((C), (Fig. 7)) between the interlock plunger and the interlock operating arm.

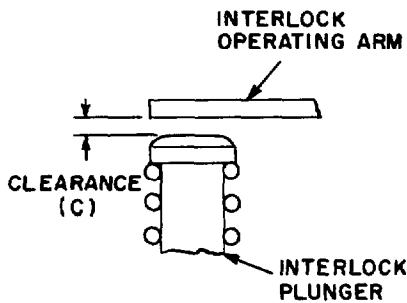


Fig. 7. Contactor in its de-energized position

Tip gaps and wipes, when new, should be as shown in Table II.

TABLE II
Contact Tip Gap and Wipe

Contacts		Maximum	Minimum
Not Operated	(N.O.) Tip Gap	1/8 in.	5/64 in.
	(N.C.) Tip Wipe	3/32 in.	3/64 in.
Operated	(N.O.) Tip Wipe	5/64 in.	3/64 in.
	(N.C.) Tip Gap	7/64 in.	5/64 in.

An interlock block (Fig. 6) having one set of normally open contacts and one set of normally closed contacts must be adjusted so that with one set of contacts just touching, there is at least 1/64 inch of gap between the other set of contacts.

The electrical interlock can be moved on its mounting bracket to make major adjustments for obtaining interlock tip gaps and wipes. The interlock operating arm (Fig. 1) can be bent slightly for minor adjustments.

MAINTENANCE
(Refer to Fig. 1 and 3)

POWER CONTACTS

The power contacts are silver faced and should require little or no cleaning. Check them occasionally for wear and replace them before the silver is worn away.

To replace the stationary contact, remove screw ((G) (Fig. 3)) and replace worn contact with new one.

To replace the movable contact, remove screw (H) and cotter pin (I). This releases the cup washer and spring. Replace worn contact with a new one.

When replacing contacts, make sure that all electrical contact surfaces are clean. If necessary, clean such surfaces with an extremely fine steel file to assure good contact and reduce heating at these points.

COILS

To replace the coil, loosen nut (J) and remove screws ((K), (Fig. 1)). Then swing armature assembly to one side. Remove the bronze coil retainer carefully to assure that no damage is inflicted on the core head. Damage such as burrs to the edge of the core will increase the effective air gap such that the timing is appreciably reduced. Remove the copper jacket as this allows greater freedom in removing the coil. Replace coil and copper jacket. Replace the bronze coil retainer being sure that it fits into the groove in the core. Replace the armature assembly and be sure to tighten nut (J) as this is a current carrying connection. Check to see that adjustments (Fig. 3) have been maintained.

SHIMS

Shims should be replaced when the shim has been damaged to a point where the timing is no longer acceptable.

To replace a shim, remove screws ((F), (Fig. 1)) which will allow removal of the shim clamp located under the armature. Replace the shim being careful to mount the new shim with the beveled edges down as shown in Fig. 1. Position tapped holes in the shim clamp with the slots in the shim and the through holes in the armature. Insert screws (F)

and tighten to engage the shim clamp. Readjust the shim to obtain proper timing. Then tighten screws (F) securely to maintain shim setting.

ELECTRICAL INTERLOCKS

Replace contact tips when the wiper as specified in Table II decreases to one-half of the minimum specified.

To replace removable contacts on interlock blocks illustrated in Fig. 4, 5, and 6, lift the spring seat with the thumb and forefinger and remove the operating plunger which supports the movable contacts. Snap off the U-shaped keys and the movable contacts can be removed and replaced. Care should be taken not to lose any parts or pieces during this operation.

To replace a stationary contact, remove the terminal screw and lift the contact assembly off the housing. Replace by pressing the new contact

assembly into the molded insert and run the terminal screw to its seal position. Care should be taken to avoid changing the shape of this contact assembly in handling. Also, the shape should not change during operation.

The complete electrical interlock block can be replaced with a new one by removing it and its bracket from the contactor base. Remove the interlock block from the bracket, then assemble the new interlock block on the bracket, maintaining the same position on the bracket. Assemble the interlock bracket to the contactor base and check the tip gaps and wipers as given in Table II.

RENEWAL PARTS

When ordering renewal parts, address the nearest General Electric sales office, specify the quantity required, and give the catalog numbers or describe the required parts in detail. Also be sure to give the complete nameplate rating of the equipment.