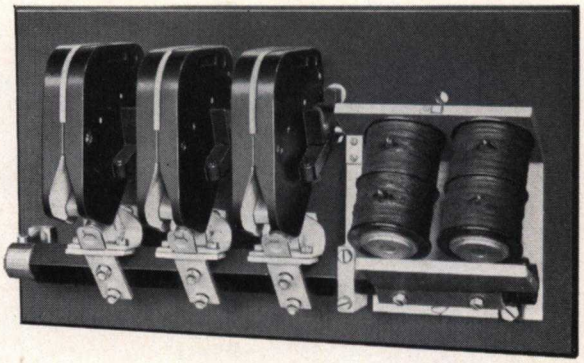
INSTRUCTIONS

CR2810 A-C LOW-VOLTAGE CONTACTORS WITH D-C MAGNET



GENERAL ELECTRIC

CR2810 A-C LOW-VOLTAGE CONTACTORS WITH D-C MAGNET

600 VOLTS MAXIMUM

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.

The coils of these contactors operate from an a-c circuit by means of rectifiers but they can be operated from a separate d-c supply if desired. Coils for use with rectifiers are designed to allow for the drop of voltage due to rectification and are therefore different from the coils used on a d-c supply.

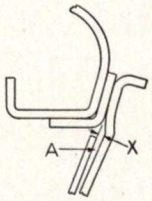


Fig. 1. ***CR2810-1503 to 1507 CR2810-1541 to 1544***

Contactors, 150 to 600 Amp Inclusive

Care of Contacts

In general, the contacts do not require attention during their normal life, but if prominent copper beads form on the surfaces, or if the contacts turn a dark color, their faces should be dressed with a fine file or replaced with new contacts.

When renewing contacts see that the contact surfaces between the contact and the shunt are clean, but the plating must not be removed from bolted joints.

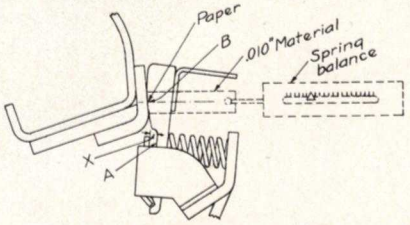


Fig. 2. ***CR2810-1514 to 1518 CR2810-1525 to 1528 CR2810-1831 to 1834***

The movable contacts of the contactors having spring caps can be removed by slightly compressing the spring with the cap and turning the latter 90 degrees.

To remove the front arcing contact from the 300- and 600-ampere sizes, take out the screws in the shunt above the spring; then, holding the spring in place, pull out the contact, using the arcing horn for a handle. The horn should then be transferred to the new contact unless badly burned.

Contact Force

It is important that the compression of the springs for the contacts be kept at values as given in the table on page 4. If the force is too low, the contacts may overheat; if too high, the magnet may be prevented from completely closing.

Spring balances should always be checked for readings in a horizontal position before checking contact force.

Initial contact force: With the contactor open and the coil de-energized, insert a strip of thin

POLES		75 Amp	150 Amp	300 AMP		600 Amp	1000 Amp
Normally Open	Normally Closed			Single Coil *	Double Coil		
3	2	.....	.....	.....	.....	CR2810–1570*(2)	.....
1	—	CR2810–1541	CR2810–1503	CR2810–1514	CR2810–1525	CR2810–1571*	.....
2	—	CR2810–1542	CR2810–1504	CR2810–1515	CR2810–1526	CR2810–1572*	CR2810–1250*
3	—	CR2810–1543	CR2810–1505	CR2810–1516	CR2810–1527	CR2810–1573*	CR2810–1251*
4	—	CR2810–1544	CR2810–1506	CR2810–1517	CR2810–1528	CR2810–1574*	CR2810–1259*
5	—	.....	CR2810–1507	CR2810–1518	.....	.....	.....
3	2	.....	CR2810–1513*(1)	.....	CR2810–1569*(2)	CR2810–1575*	CR2810–1549*(3)
1	—	.....	.....	.....	.....	CR2810–1831	.....
2	—	.....	.....	.....	.....	CR2810–1832	CR2810–1842
3	—	.....	.....	.....	.....	CR2810–1833	CR2810–1843
4	—	.....	.....	.....	.....	CR2810–1834	.....

* Coils require resistor inserted in coil circuit by means of an interlock when the contactor closes.
(1) Normally closed pole rated 75 amp is not designed to break current.
(2) Normally closed pole rated 300 amp is not designed to break current.
(3) Normally closed pole rated 600 amp is not designed to break current.

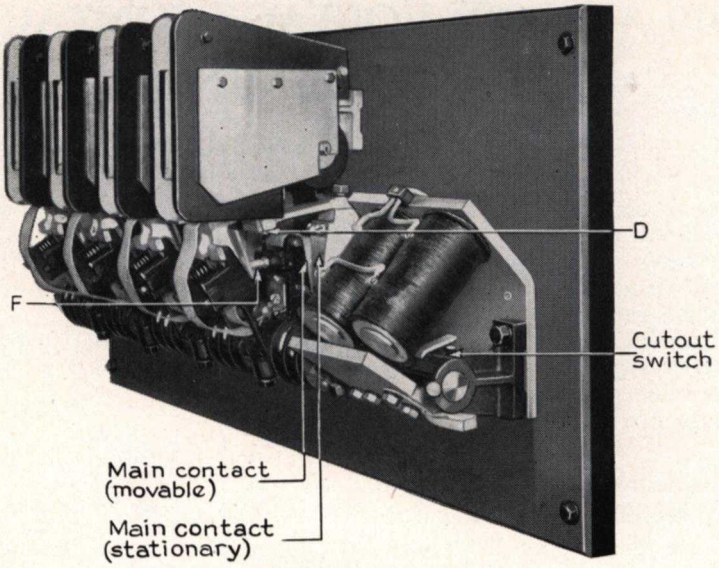


Fig. 3. Four-pole, alternating-current contactor with D-c magnet (1000-amp size)

paper between the contact support and contact, just back of spring at A in Figs. 1 and 3. Attach the hook of a spring balance to a string or a strip of thin material fastened around the contact at the line of final contact. The pounds pull at the instant the paper can be moved is the initial contact force.

Final Contact Force

The final contact force given in the table will be found only with new contacts. To measure this force insert a piece of paper and a strip of material not more than 0.01 in. thick as shown in Fig. 2 at B. With the contactor armature closed the pounds pull when the paper can be moved is the final contact force.

Failure to Open

If the contactor does not open when the coil circuit is opened, see if the contacts are frozen together.

1000-amp Contactors

Care of Contacts

In general, the contacts do not require attention during their normal life, but if prominent copper

Contactor	Contacts	CONTACT FORCE IN POUNDS				DIMENSION "X," FIG. 1 AND 2 IN INCHES WITH CONTACTOR CLOSED	
		Initial		Final			
		Min.	Max.	Min.	Max.	New Contacts	*Worn Contacts
CR2810–1541 to –1545 Incl.	Norm. Open	1½	2	2	2½	3/16	1/16
CR2810–1503 to –1507 Incl. CR2810–1513	Norm. Open	3½	4½	7	9	9/64	1/16
CR2810–1514 to –1518 Incl., 1525 to–1528 Incl., –1569	Norm. Open	7	9	14	18	17/64	1/8
CR2810–1831 to –1834 Incl. CR2810–1570 to–1575 Incl.	Norm. Open	15	17	30	34	7/32	7/64
CR2810–1513	Norm. Closed	1½	2	2	2½	1/8	1/16
CR2810–1569, –1570	Norm. Closed	7	9	11	13	1/8	1/16
CR2810–1549	Norm. Closed	7	9	16	20	13/64	7/64
CR2810–1250 CR2810–1251	Norm. Open Main	23	29	45 φ	55 φ	See Tables 1 and 2, page 6.	
CR2810–1259 CR2810–1842 CR2810–1843 CR2810–1549	Norm. Open Arcing	11	15	12	15		
	Norm. Open Auxiliary	6	8	10	12		

* Renew contacts when worn to "worn contact" dimension.
φ This force only to be measured directly over center line of spring.

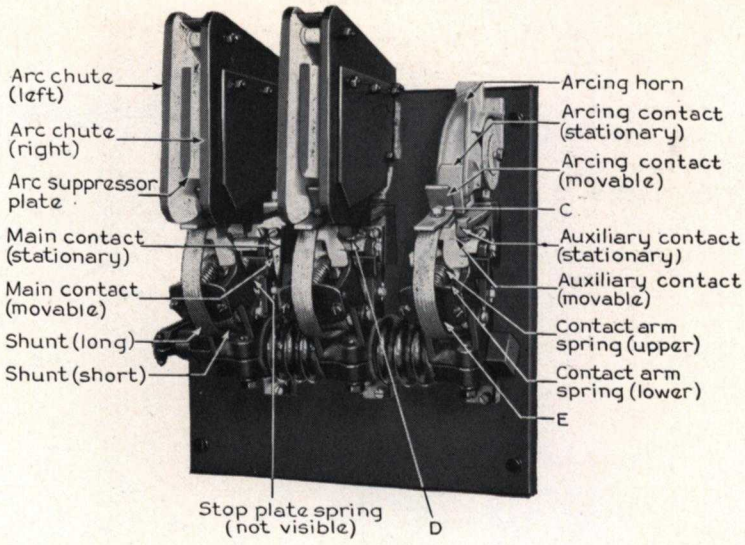


Fig. 4. Contact parts (1000-amp size)

beads form on the surfaces of the arcing or auxiliary contacts their faces should be dressed with a fine file or replaced with new contacts.

When renewing contacts the surfaces between the contacts and the shunt should be clean but the plating must not be removed from bolted joints.

If the main contacts have become roughened, they should be smoothed with a fine file and can continue in use as long as the silver facing remains. To remove them take out the screws at the lower end and remove the pins and the spring plate.

Contact Renewals

The contact gaps should be in accordance with Table 2, page. 6. *It is important that the arcing contacts touch before the auxiliary contacts, and that the auxiliary contacts touch before the main contacts*. The auxiliary contacts may be adjusted by means of the screw F, Fig. 3. The correct armature gaps are given in Table 2 (see Figs. 5, 6, and 7). When the minimum armature gap is reached, the arcing and auxiliary contacts should be replaced.

Also the arcing contacts should be replaced if so worn that they fail to make contact in advance of the auxiliary contacts. Replace the main contacts before the silver face has worn through.

To renew the arcing contacts remove the arc chute A, Fig. 8, by lifting until it releases at notch B, then remove screws C, Fig. 4.

The arcing contacts are provided with arcing horns which help in preventing the concentration of arcs on small areas, and greatly increase the life of the contacts and arc chutes.

To renew the stationary auxiliary contact after the arc chute has been removed, remove screws D, Fig. 3. To remove the front auxiliary contact remove the two screws in the spring plate E, Fig. 4, which will allow the springs to drop out. Then remove the screw which acts as a spring seat. When renewing the contacts, see that the contact surfaces between the contacts and shunts are clean to insure a good contact and to reduce heating at this point. However, the plating must not be removed from bolted joints.

Do not wait until trouble occurs, but inspect all parts at regular intervals. Keep all parts free from dirt, oil and grease. Replace contacts when worn. If the current-carrying parts, bearings, springs, and interlocks are carefully inspected periodically, trouble will be reduced to a minimum. Keep on hand extra coils, springs and contacts.

Renewal Parts

For renewal part information not given in the table on page 7, refer to the nearest Sales Office of the General Electric Company, giving the complete nameplate rating, and describing the part in detail.

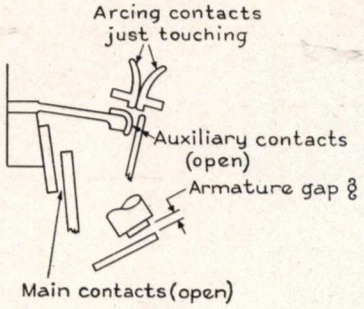


Fig. 5.
Arcing contacts just touching

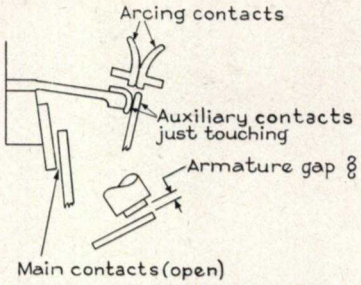


Fig. 6.
Auxiliary contacts just touching

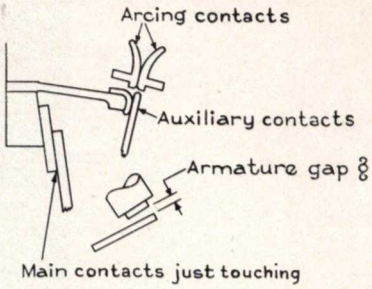


Fig. 7.
Main contacts just touching

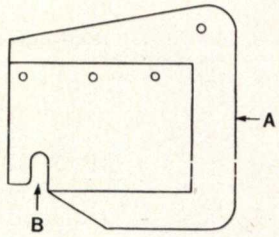


Fig. 8. Arc chute

TABLE 1

Contact	Contact Gaps in Inches with New Contacts—Contactor Open
Main	$1\frac{1}{16} \pm \frac{1}{16}$
Arcing	$1\frac{3}{16} \pm \frac{1}{16}$
Auxiliary	$1\frac{7}{32} \pm \frac{1}{16}$

TABLE 2

MAXIMUM AND MINIMUM ARMATURE GAP § IN INCHES

WITH ARCING CONTACTS JUST TOUCHING FIG. 5		WITH AUXILIARY CONTACTS JUST TOUCHING FIG. 6		WITH MAIN CONTACTS JUST TOUCHING FIG. 7	
New Contacts	Min. With Worn Contacts	New Contacts	Min. With Worn Contacts	New Contacts	Min. With Worn Contacts
$\frac{31}{64}$	$\frac{5}{16}$	$\frac{21}{64}$	$\frac{3}{16}$	$\frac{1}{4}$	*

* The main contacts should be replaced before the silver face has worn through.

§ The armature gap should be measured at the front edge of the armature.

RENEWAL PARTS

Contactor	MAIN CONTACTS (NORMALLY OPEN)		Main Contact Shunt	ARC CHUTE SIDE (IF USED)		Main Contact Spring	Cutout Switch (if Used)
	Stationary Cat. No.	Movable Cat. No.	Cat. No.	Left Cat. No.	Right Cat. No.	Cat. No.	Cat. No.
CR2810–1503A	2457337	2457351	3667564G1	3671035P1	3671036P1	2415140	5304720G1
CR2810–1504A, B, E	2457337	2457351	3667564G1	3671035P1	3671036P1	2415140	5304720G1
CR2810–1505A, B, F	2457337	2457351	3667564G1	3671035P1	3671036P1	2415140	5304720G1
CR2810–1506A	2457337	2457351	3667564G1	3671035P1	3671036P1	2415140	5304720G1
CR2810–1507A	2457337	2457351	3667564G1	3671035P1	3671036P1	2415140	5304720G1
CR2810–1513A	2457337	2457351	3667564G1	3671035P1	3671036P1	2415140	5304720G1
CR2810–1514A, B	2447762	5350495	4311012G3	4338332	4338333	2414881	5304720G2
CR2810–1515A, B	2447762	5350495	4311012G3	4338332	4338333	2414881	5304720G2
CR2810–1516A, B	2447762	5350495	4311012G3	4338332	4338333	2414881	5304720G2
CR2810–1517A	2447762	5350495	4311012G3	4338332	4338333	2414881	5304720G2
CR2810–1518A	2447762	5350495	4311012G3	4338332	4338333	2414881	5304720G2
CR2810–1525A	2447762	5350495	4311012G3	4338332	4338333	2414881	.....
CR2810–1526A	2447762	5350495	4311012G3	4338332	4338333	2414881	.....
CR2810–1527A, B	2447762	5350495	4311012G3	4338332	4338333	2414881	.....
CR2810–1528A	2447762	5350495	4311012G3	4338332	4338333	2414881	.....
CR2810–1541A, B, C, G, H, L	1468908	1445307	2840225G3	1435844	1435843	189703	5304720G1
CR2810–1542A, B, C, G, H, J	1468908	1445307	2840225G3	1435844	1435843	189703	5304720G1
CR2810–1543A, B, C, D, K, L, M, N	1468908	1445307	2840225G3	1435844	1435843	189703	5304720G1
CR2810–1544A, B	1468908	1445307	2840225G3	1435844	1435843	189703	5304720G1
CR2810–1549A	2644936G1	2644936G4	.....	1432511	1432510	244804	2839201G1(1) 2839201G2(2)
CR2810–1569A	2447762	5350495	4311012G3	4338332	4338333	2414881	3845750G4
CR2810–1570A	2458490	5151779	4959811G1	4927032	4927033	2413921	6920501G1
CR2810–1571C	2458490	5151779	4959811G1	4927032	4927033	2413921	.....
CR2810–1572C	2458490	5151779	4959811G1	4927032	4927033	2413921	.....
CR2810–1573C	2458490	5151779	4959811G1	4927032	4927033	2413921	.....
CR2810–1574C	2458490	5151779	4959811G1	4927032	4927033	2413921	.....
CR2810–1575C	2458490	5151779	4959811G1	4927032	4927033	2413921	.....
CR2810–1831A	2458490	5151779	4959811G1	4927032	4927033	2413921	.....
CR2810–1832A, B	2458490	5151779	4959811G1	4927032	4927033	2413921	.....
CR2810–1833A, B	2458490	5151779	4959811G1	4927032	4927033	2413921	.....
CR2810–1834A, B	2458490	5151779	4959811G1	4927032	4927033	2413921	.....
CR2810–1842A, B	2644936G1	2644936G4	.....	1432511	1432510	244804	.....
CR2810–1843A, B	2644936G1	2644936G4	.....	1432511	1432510	244804	.....

Contactor	NORMALLY OPEN AUXILIARY CONTACT			NORMALLY OPEN ARCING CONTACT			Arcing Horn for Movable Contact
	Stationary	Movable	Shunt	Stationary	Movable	Shunt	
CR2810–1549A	1977637P14	1977637P1	1447756G1	1476440	1476440	1447754G1	1444088
CR2810–1842A, B	1977637P14	1977637P1	1447756G1	1476440	1476440	1447754G1	1444088
CR2810–1843A, B	1977637P14	1977637P1	1447756G1	1476440	1476440	1447754G1	1444088

Contactor	NORMALLY CLOSED CONTACT				
	Stationary	Movable	Shunt	Operating Spring	Contact Spring
CR2810–1513A	2457337	2457351	3667564G1	216683	2413399
CR2810–1549A	4959854G1	4959854G2	4959811G1	2415330	2415359
CR2810–1569A	2447762	5350495	4311012G3	2415330	2414881
CR2810–1570A	2447762	5350495	4311012G3	2415330	2414881

WHEN SERVICE IS REQUIRED

GENERAL ELECTRIC operates 23 apparatus service shops strategically located and competently manned by trained personnel. Each shop is a complete service unit with modern equipment for repairing, reconditioning, and rebuilding G-E apparatus to factory specifications. The services of these shops are available at any time of day or night for work in the shops or on purchaser's premises.

GENERAL ELECTRIC APPARATUS SERVICE SHOPS

SERVICE SHOP	*ADDRESS*	*DAY PHONE*	*NIGHT PHONE*
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