

(EC&M No. 6)

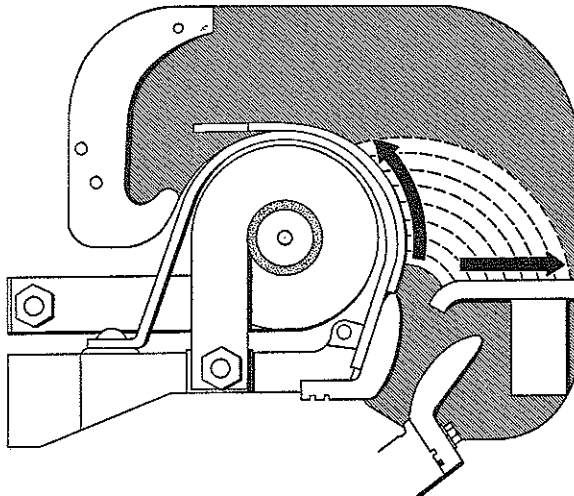
**NEMA SIZE 8 SINGLE POLE L LINE-ARC CONTACTOR  
FRONT CONNECTED  
FOLIO 3A  
FOR DC OPERATION**

**INSTRUCTIONS**

TYPE LINE-ARC CONTACTORS are general purpose, direct current magnetic contactors.

Contactor Size		Continuous Rating Amperes	Crane and Mill Rating Amperes
NEMA	EC&M		
No. 8	No. 6	1350	1800

**LINE-ARC:** These contactors derive their name from the manner in which they handle the arc. The Line-Arc principle of controlling the arc is simple . . . and automatic. There is nothing to adjust or wear out. At the instant the contacts start to separate, the arc is automatically transferred from the contacts to the arcing plate and circular guard over the blowout coil. The arc, as it travels along the arcing plate and circular guard, is stretched out in a line centered between the arc shields. Hence—cool contacts and the name Line-Arc.



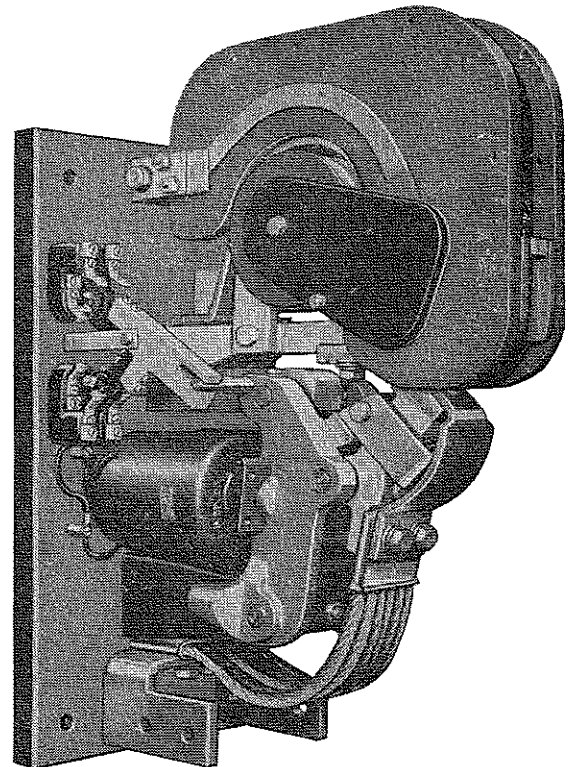
**CAUTION**—Before operating the contactor under load, be sure that the arc shield is lowered in its proper position.

**INSTALLATION:** Mount the contactors vertically on rigid supports with at least 3½" clearance above and in front of the arc shields to provide the proper distance for arcing clearance and also for removal of the arc shields. The life of the contactor will be considerably prolonged by installing it in a clean, dry place, preferably in a cabinet and as free as possible from external vibration or shock.

**MAGNET AIR GAP:** To insure quick release of the magnet arm, a non-magnetic spacer .045" thick is placed between the magnet cores and the core caps. See that the magnet faces are free from oil or sticky foreign material.

**BEARINGS:** Type L contactors are equipped with Nitralloy pins and Oilite bearings. These bearings are self-lubricating and require no lubrication in the field.

**OPERATING COILS:** These contactors will operate satisfactorily on 80% of normal control voltage when the coils are hot and will hold in on 20% of normal voltage. The coils will stand 110% of normal voltage continuously.



This contactor has a horseshoe type magnetic circuit using two duplicate magnet coils connected in series.

Contactors for 115 and 230 volt service are supplied with half-voltage coils. Contactors for 550 volt service are supplied with 230 volt coils and suitable resistor mounted on the base.

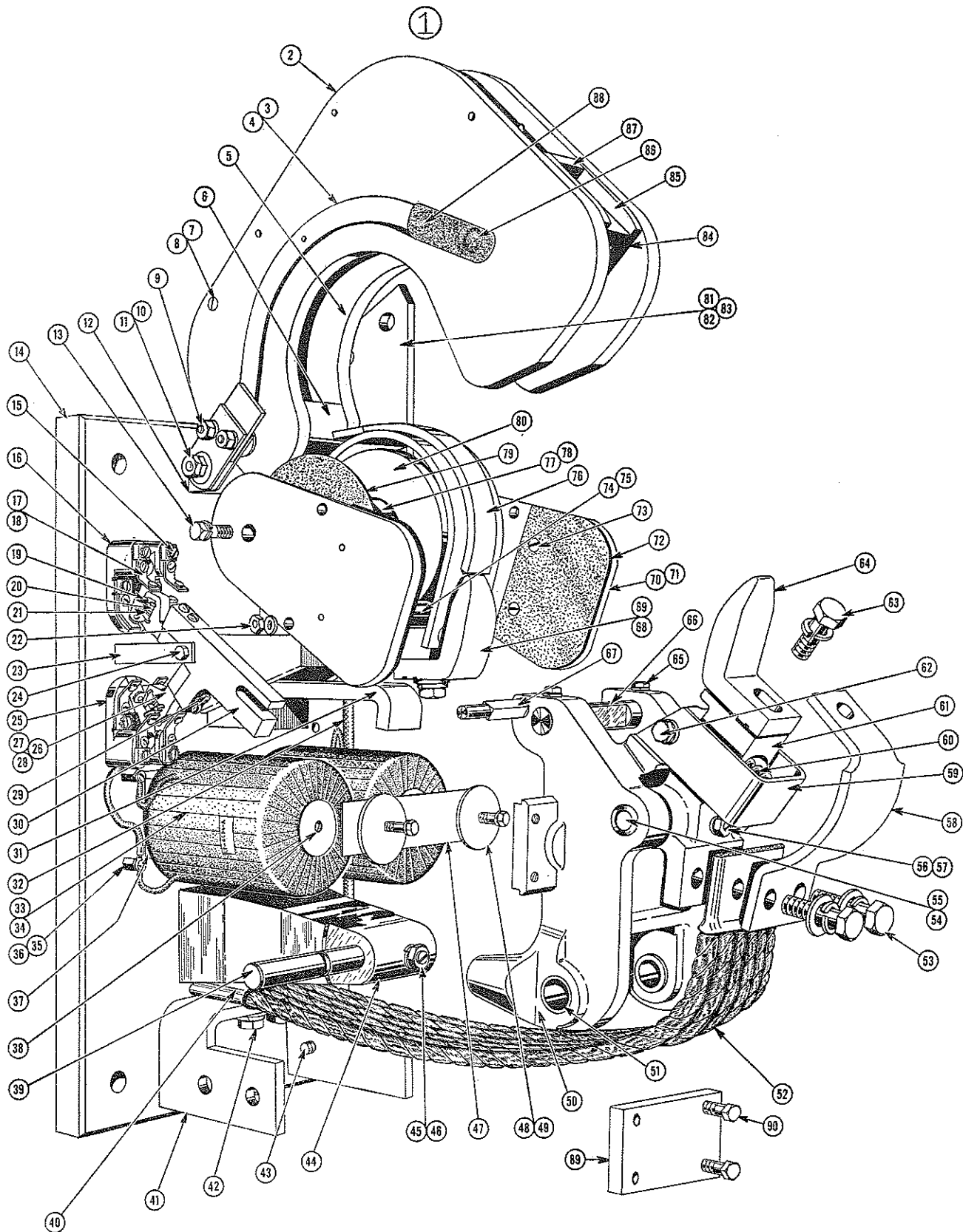
To remove the operating coils, first back out the magnet arm pin set-screw and remove the magnet arm pin. The magnet arm may then be lowered to remove the operating coils.

**ELECTRICAL INTERLOCKS:** These consist of stationary contacts mounted on the base and a moving contact operated by a pin on the top of the magnet arm. The moving contact should provide ⅛" follow-up when the magnet arm reaches its limit of travel, either completely closed or completely opened. The rating of these electrical interlocks is as follows:

	Max. Inrush	Cont. Amps.	Rupturing Capacity Amps. Inductive			
			115 V.	250 V.	440 V.	550 V.
A.C.	30	15	10	10	5	5
D.C.	30	15	2.5	1.0	.4	.4

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NEMA SIZE 8 SINGLE POLE L LINE-ARC CONTACTOR, FOLIO 3A



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Item No.	List No.	Description	Item No.	List No.	Description
1	L-6003-A	Assembled Arc Shield, Complete.....	45	L-6057	Set Screw.....
2	L-6041	Arc Shield, Left Hand.....	46		3/8"-16 H.I. Jam Nut and Lk. Washer.....
3	L-6045-A	Arc Plate Connector, Left Hand.....	47	LT-6003	Non-Magnetic Spacer.....
4	L-6046-A	Arc Plate Connector, Right Hand.....	48	L-6094	Core Cap, 2 req'd.....
5	L-6042	Arc Shield, Right Hand.....	49		1/4"-20x3/4" Everdur Hex. Machine Bolt and Lk. Washer.....
6	L-6026	Arc Shield Spacer.....	50	L-6013-A	Assembled Magnet Arm.....
7	29418-14640	Binding Post.....	51	FP-24B16	Bearing, 2 req'd. pressed into Magnet Arm.....
8	22999-14400	Binding Screw.....	52	L-6716-A	Assembled Connector.....
9		5/8"-18x1 1/2" H.I. Cap Screw, Lk. Washer and H.I. Nut.....	53		1/2"-13x1 1/2" H.I. Cap Screw, S.A.E. Small Aircraft Washer and Lk. Washer.....
10		3/8"-16x1" H.I. Cap Screw and 2 H.I. Nuts.....	54	L-6056	Auxiliary Arm Pin.....
11	85-0502-004-03	Spring Washer.....	55	FP-24B15	Bearing, 2 req'd. pressed into Magnet Arm.....
12	L-6028	Arc Shield Clip.....	56	L-6058	Set Screw.....
13		3/8"-16x1" H.I. Cap Screw and Lk. Washer	57		1/8"-18 H.I. Jam Nut and Lk. Washer.....
14		Base, Advise Name Plate Data.....	58	L-6052	Auxiliary Arm Shunt.....
15	FP-28H1-10	Terminal.....	59	L-6022-A	Assembled Spring Bracket.....
16	EL-100-A	Control Circuit Base.....	60	L-6027	Contact Spring.....
17	EL-109-A	Contact.....	61	L-6049	Auxiliary Arm.....
18	21916-17120	10-32x3/8" R. Stl. Machine Screw and Lk. Washer.....	62		3/8"-16x5/8" H.I. Cap Screw and Lk. Washer.....
19	EL-84-A	Assembled Contact Bridge, 1 req'd. for Item 26, 2 req'd. for Item 27.....	63		1/2"-13x1 3/4" H.I. Cap Screw, S.A.E. Small Aircraft Washer and Lk. Washer.....
20	EL-49	Spring.....	64	A50005-025-01	Contact Tip.....
21	EL-87	Spring Retainer, 2 req'd.....	65		1/4"-20x3/4" H.I. Cap Screw and Lk. Washer.....
22		1/4"-20 H.I. Nut and Lk. Washer.....	66	L-6050	Stop Pin.....
23	EL-131-A	Assembled Arm Support.....	67	EL-132	Operating Pin, Uses 3/8"-16 H.I. Jam Nut and Lk. Washer.....
24	EL-95	Pivot Pin, uses 5/16"-18 H.I. Jam Nut and Lk. Washer.....	68	A50005-025-01	Contact Tip.....
25	EL-120	Mounting Studs (not shown).....	69		1/2"-13x1 1/2" H.I. Cap Screw, Lk. Washer and 1/2" S.A.E. Aircraft Washer.....
26	EL-1-A	Control Circuit Arm, complete, for Open or Closed Control Circuit.....	70	L-6040-A	Assembled Blowout Ear, 2 req'd.....
27	EL-2-A	Control Circuit Arm, complete, for Open and Closed Control Circuit.....	71	L-6039	Blowout Ear, Only.....
28	EL-47	Control Circuit Arm, Only.....	72	L-6038	Insulator.....
29		10-24x1 1/4" R.I. Machine Screw, H.I. Nut, #6 Blk. Burr and 3/16" Lk. Washer.....	73		#10x1/2" Type "F" Flat Hd. Self Tap. Screw.....
30	EL-129	Operating Arm.....	74	L-6048	Blowout Ear Spacer, 2 req'd.....
31	L-6061-A	Assembled Stop.....	75	L-6065	Blowout Ear Spacer Stud.....
32	L-6733-A	Assembled Blowout Connector.....	76	L-6020-A	Assembled Blowout Guard.....
33	LT-4805-AE	Coil, 115 volt, 2 req'd., (57.5 V Coils in series)	77	L-6062	Insulator for Blowout Core.....
34	LT-4804-AE	Coil, 230 volt, 2 req'd., (111 V Coils in series)	78	L-6063	Blowout Core.....
35	L-1722	Coil Terminal Stud, 4 req'd.....	79	L-6064	Blowout Ear Insulator, 2 req'd.....
36		10-24x3/8" R. Stl. Machine Screw, 4 req'd.....	80	L-6730-A	Assembled Contact Bracket.....
37	LT-4814-A	Assembled Frame.....	81	L-6718	Connector Plate, for Four Terminal Lugs.....
38	L-4132-A	Assembled Core, 2 req'd.....	82	L-6713	Connector Plate, for Three Terminal Lugs.....
39	L-6055	Magnet Arm pin.....	83	L-6717	Connector Plate, for Two Terminal Lugs.....
40	L-6708	Terminal Block.....	84		1/4"-20x2 1/2" R.B. Machine Screw and #1114 Shakeproof Lk. Washer.....
41	L-6714	Connector Plate.....	85	L-6009	Arc Block.....
42		1/2"-13x2" H. Stl. Cap Screw, Lk. Washer and Std. Stl. Washer.....	86		3/8"-16x1" Fl. Machine Screw, 2 req'd. (not shown).....
43		1/2"-13x1 3/4" H. Stl. Cap Screw and Lk. Washer	87	L-6018-A	Assembled Arc Plate.....
44	L-6047	Magnet Arm Bracket.....	88		6-32x1/4" Flat Hd. type "F" Self Tapping Screw, 2 req'd. (not shown).....

MECHANICALLY-TIED CONTACTORS

Two or more single pole contactors, mounted on a single base, may be mechanically tied to operate as a multiple-pole contactor.

For this type contactor, the following parts are used.

Item No.	List No.	Description
14		Base, Advise Name Plate Data.....
32	L-6734-A	Assembled Blowout Connector.....
33		Operating Coil advise Name Plate Data.....
89	L-6715	Tie Bar.....
90		1/4"-20x3/4" Hex. Stl. Slotted Hd. Machine Screw, Blk. Burr. and Lk. Washer.....

† Essential Parts for General Maintenance

● Minor revision since previous issue.

1617-0001000  
CPM = F Contactor (Coilless)

## NEMA SIZE 8 SINGLE POLE L LINE-ARC CONTACTOR, FOLIO 3A

**MECHANICAL INTERLOCKS:** These are horizontal bakelite bars, pivoted at the center. They are carefully ground at the factory to suit the contactors with which they are used. They must prevent the contacts of both contactors touching simultaneously but not interfere with the complete closure and seal of either contactor alone. **CAUTION**—The interlock should maintain one set of contacts open at least  $\frac{3}{16}$ " when the other contacts just touch.

**MAIN CONTACTS:** These are made of pure copper by a special forging process to give high Brinell hardness throughout their entire thickness. These contacts close with a slight rolling action, there is no wiping action.

The stationary and moving contacts may wear unequally, depending upon polarity. It may not be necessary to change both contact tips when replacement is necessary. The best operation is obtained with positive connected to the stationary contacts and negative to the moving contact. Wiring diagrams are so arranged by the Square D Company.

**CONTACT-WEAR ALLOWANCE:** in the table at right is shown the correct dimension for auxiliary arm opening. Contact follow-up is necessary so that the contact pressure will be maintained as the contacts wear. The follow-up is the amount of opening between the moving contact auxiliary arm and its stop shown at "B" in the sketch below, **WITH THE CONTACTOR FULLY CLOSED.** Follow-up decreases with contact wear. When dimension "B" reaches  $\frac{1}{32}$ ", the contact tips must be replaced.

**MAIN CONTACT PRESSURE:** Type L contactors are designed with contact pressures as given in the table below. A slight arcing or splitting of the contacts when closing may be an indication that the contact tips or spring should be replaced.

To check spring pressures, a spring balance may be used with a tape on the hook passing around the contact tip at its point of contact and pulled at right angles to the auxiliary contact arm, as shown in the sketch below. Contact pressure is correct if the balance scale shows a pull as given in the following table with the arm just leaving its stop at "B".

OPENINGS WHEN NEW	
Opening at "B" with Contactor fully closed.....	250"
CONTACT PRESSURE IN POUNDS	
Surfaces at "B" just breaking (new or old).....	12.5-14
Sealed, Contactor fully closed (when new).....	23-24.5

