

## NEMA SIZE 5 SINGLE POLE L LINE-ARC CONTACTOR

### FOLIO 3

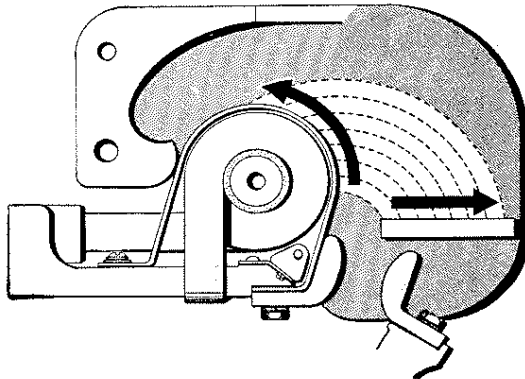
### FOR DC OPERATION

#### INSTRUCTIONS

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

Contactor Size NEMA	Continuous Rating Amperes	Crane and Mill Rating Amperes	Rupturing Capacity Amperes
No. 5	300	400	3000

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.



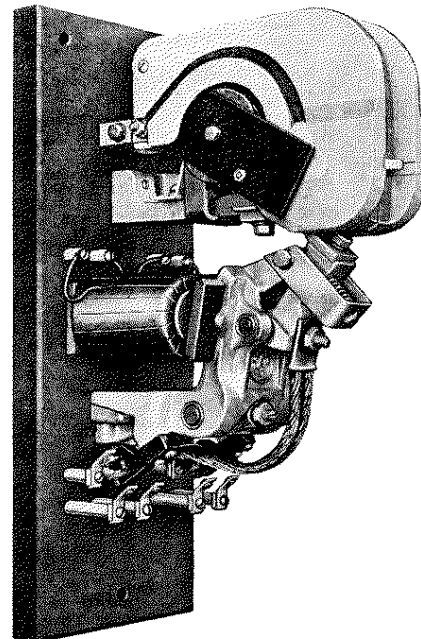
**CAUTION** — Before operating the contactor under load, be sure that the arc shield is lowered in its proper position.

**INSTALLATION**: Mount the contactors vertically on rigid supports with at least 3¼" 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 .0159" 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 horse shoe 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 back of the base.

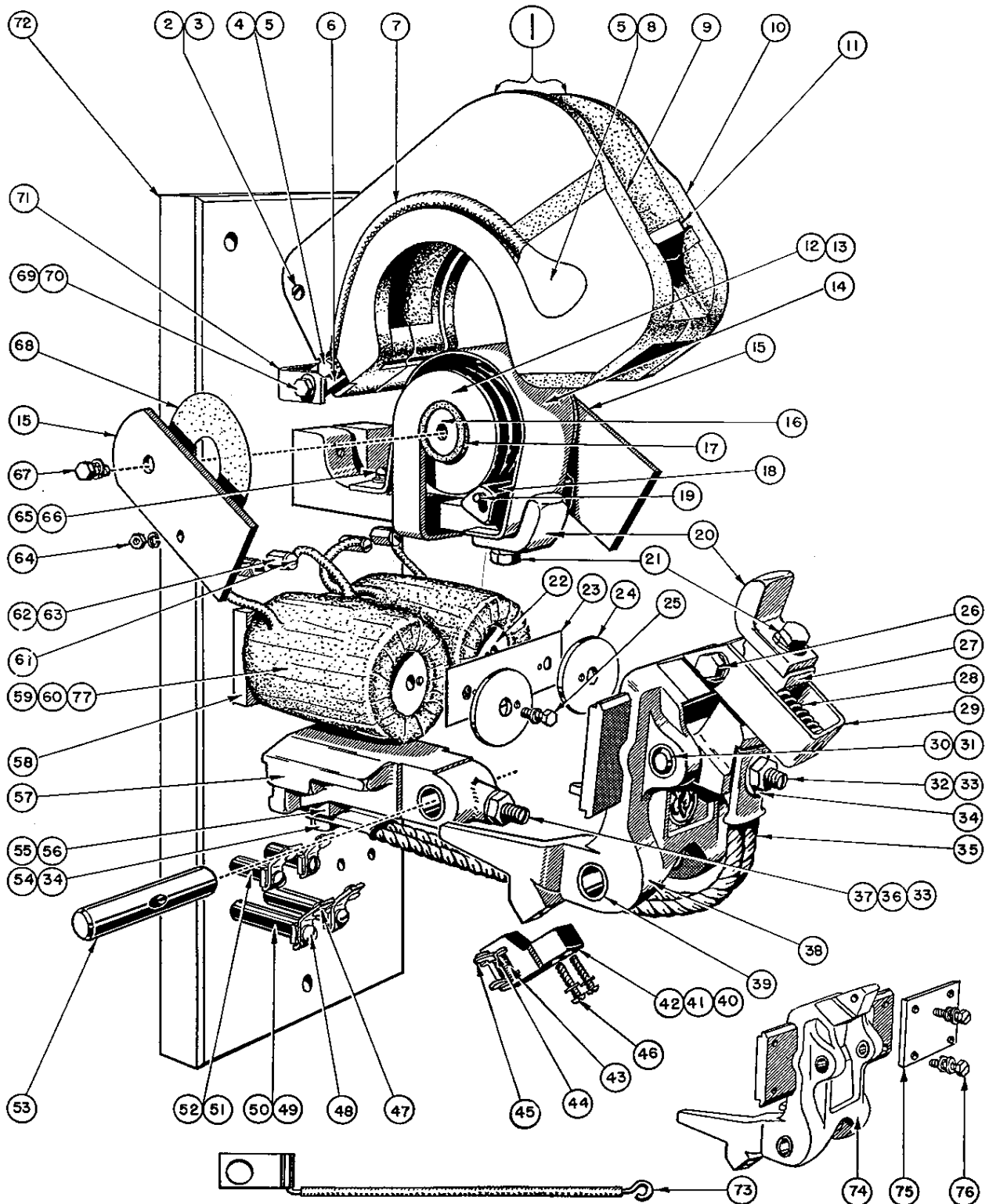
To remove the operating coils, first back out the magnet arm pin set-screw and remove the magnet arm pin. The magnet arm may then be lowered to remove the operating coils.

**ELECTRICAL INTERLOCKS**: These consist of stationary contacts mounted on the base and a moving contact attached to the bottom of the magnet arm. The moving contact should provide ½" 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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NOTE: Indented items are component parts  
of item immediately preceding.

Item No.	List No.	Description	Item No.	List No.	Description
1	LT-3024-A	Assembled Arc Shield	41	EL-2-A	Control Circuit Arm, Complete, for Open and Closed Control Circuit
2	22999-14400	Binding Screw	42	EL-47	Control Circuit Arm only
3	29418-14400	Binding Nut	43	EL-49	Spring
4		1/4"-20x2 1/2" Cap Screw, Nut & Shakeproof Lk. Washer	44	EL-87	Spring Retainer, 2 req'd.
5	ZO-1150	Cup Washer	45	EL-84-A	Contact Bridge, 1 req'd. for Item 40, 2 for Item 41
6	LT-1049	Arc Shield Hinge	46		10-24x1" R.I. Mch. Screw & Lk. Washer, 2 req'd.
7	LT-3081	Arc Plate Connector	47	EL-6-A	Control Circuit Contact, 4 req'd. for Open and Closed Control Circuit, 2 req'd. for Open or Closed Control Circuit
8		10-24x1" F.I. Screw, 2 req'd. (not shown)	48		10-24x 1/2" R.I. Mch. Screw & Lk. Washer
9	LT-3035	Arc Shield, left hand	49	EL-27	Stud, for 1 1/4" Base (list number stamped on Stud)
10	LT-3036	Arc Shield, right hand	50	EL-47	Stud, for 1 1/2"-2" Base (list number stamped on Stud)
11	LT-3032	Arc Plate	51	EL-15	Stud, for 1 1/4" Base (list number stamped on Stud)
12	LT-3657-AB	Blowout Coil & Contact Bracket, for 1 1/4"-1 1/2" Base	52	EL-16	Stud, for 1 1/2"-2" Base (list number stamped on Stud)
13	LT-3658-AB	Blowout Coil & Contact Bracket, for 2" Base	53	LT-3037	Magnet Arm Pin
14	LT-3265-A	Blowout Guard	54		1/4"-20x 3/4" H.I. Cap Screw
15	LT-3052	Blowout Ear	55	LT-3044-A	Main Terminal Stud, for 1 1/4"-1 1/2" Base
16	LT-3039	Blowout Core	56	LT-3045-A	Main Terminal Stud, for 2" Base
17	LT-3074	Insulator, for Blowout Core	57	LT-3029-A	Magnet Arm Bracket
18	LT-3064	Blowout Ear Spacer	58	L-3018-A	Core Plate
19	LT-3072	Stud, for Blowout Ear Spacer	59	L-2116-AE	Coil, 230 Volt, Single Pole only, 2 req'd., (115 V Coils in series)
20	AS005-010-01	Contact Tip	60	L-2117-AE	Coil, 115 Volt, Single Pole only, 2 req'd., (57.5 V Coils in series)
21		3/8"-16x 3/8" H.I. Cap Screw & Lk. Washer, 2 req'd.			NOTE: Furnish voltage information if other than 115 Volt or 230 Volt
22	L-3015-A	Core, 2 req'd.	61		10-24x 3/8" R.I. Mch. Screw
23	L-3029	Spacer	62	LTZ-1810	Coil Terminal Stud, for 1 1/4"-1 1/2" Base
24	L-1026	Core Cap, 2 req'd.	63	LTZ-1811	Coil Terminal Stud, for 2" Base
25		1/4"-20x 3/4" Bronze Hex Mch. Bolt, 2 req'd.	64		10-24 H.I. Nut & Lk. Washer, 2 req'd. for Blowout Ear Spacer Stud
26		3/16"-18x 1/2" H.I. Cap Screw & Lk. Washer, 2 req'd.	65		3/8"-16x 3/4" R.I. Mch. Screw & Lk. Washer
27	LT-3028-A	Auxiliary Arm	66	23602-12009	3/8" Aircraft Washer
28	L-3027	Contact Spring	67		1/4"-20x 1/2" H.I. Cap Screw & Lk. Washer (screws into Blowout Core)
29	L-3021	Spring Bracket	68	LT-3075	Insulator, for Blowout Ear, 2 req'd.
30	LT-2037	Auxiliary Arm Pin	69		1/4"-20x 2 3/4" H.I. Cap Screw & 2 Nuts
31	FP-24B13	Oilite Bearing, 2 req'd., pressed into Arm	70	BS-0502-004-01	Spring Washer, 2 req'd.
32	LT-3395	Set Screw	71	LT-3050	Arc Shield Clip
33		3/8"-16 H.I. Jam Nut	72		Base, furnish thickness and number of poles
34		3/8" Std. 1. Washer	73	LT-3090-A	Blowout Connector
35	LT-3025-A	Connector			
36	LT-3394	Set Screw			
37		3/8" Lk. Washer			
38	L-3013-A	Assembled Magnet Arm, Complete with Bearings, Item 31 & 39			
39	FP-24B15	Oilite Bearing, 2 req'd., pressed into Arm			
40	EL-1-A	Control Circuit Arm, Complete, for Open or Closed Control Circuit (same as Item 41 except only one Item 45)			

**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
72		Base, furnish thickness and number of poles
74	L-3083-A	Assembled Magnet Arm
75	L-3036	Tie Bar
76		1/4"-20x 3/4" H.I. Cap Screw Slotted, Washer & Lk. Washer, 4 req'd.
77		Coil, furnish voltage and number of Poles

⊙ These are new parts used on Folio 3 Contactors and are not interchangeable with parts of previous design contactors. All other parts are interchangeable.

†Essential Parts for General Maintenance.

● Minor revision since previous issue.

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**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  $\frac{3}{8}$ " 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.

**MAIN CONTACT OPENING:** In the table at right is shown the correct dimension for contact 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  $\frac{1}{2}$ ", 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 spitting 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 .....	.300"
CONTACT PRESSURE IN POUNDS	
Surfaces at "B" just breaking (new or old) .....	5.5-6.5
Sealed, Contactor fully closed (when new) .....	10-11

