

No. 4 & 4A SINGLE POLE L LINE-ARC CONTACTOR

FOLIO 3 & 3B

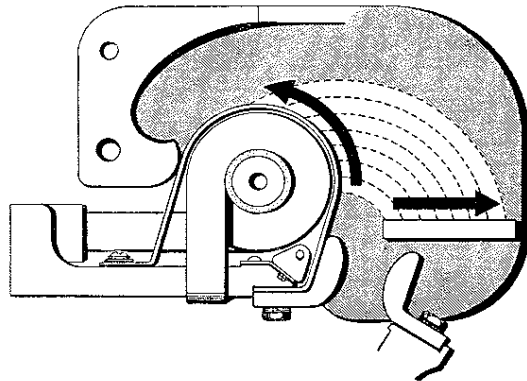
FOR DC OPERATION

INSTRUCTIONS

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

Contactor Size		Continuous Rating Amperes	Crane and Mill Rating Amperes	Rupturing Capacity Amperes
NEMA	EC&M			
No. 6	No. 4	600	800	6000
	No. 4A	800	1060	8000

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.



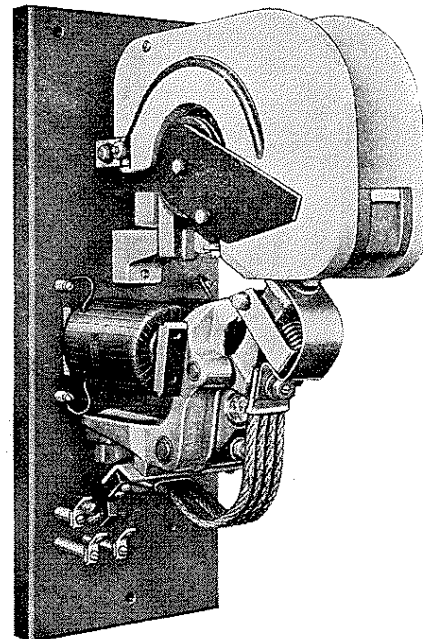
CAUTION — Before operating the contactor under load, be sure that the arc shield is lowered in its proper position.

INSTALLATION: Mount the contactors vertically on rigid supports with at least 3 $\frac{3}{4}$ " 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 magnet cores and the core caps. See that the magnet faces are free from oil or stick; foreign material.

BEARINGS: Type L contactors are equipped with Nitralloy pins and oil-filled 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 back of the base.

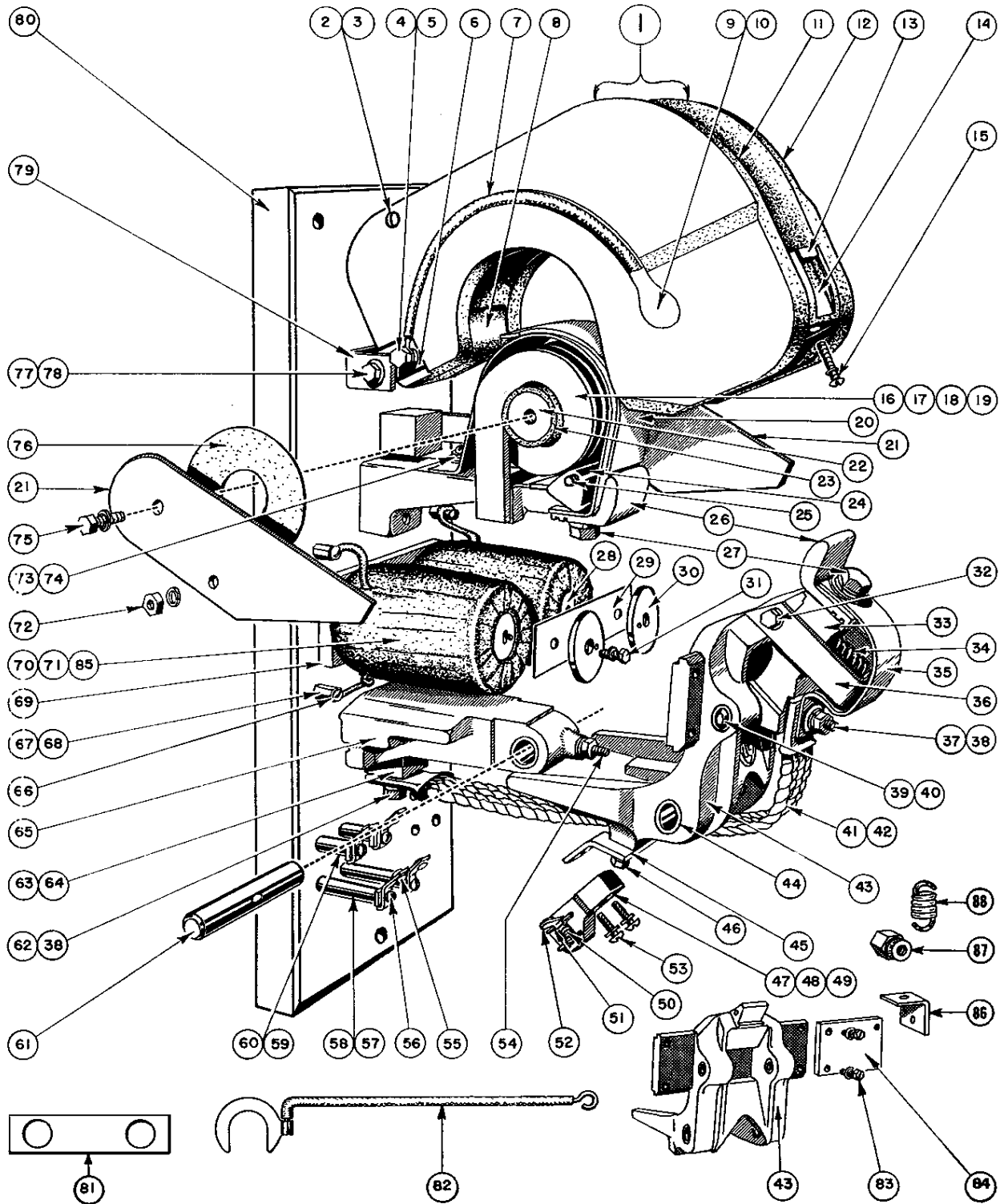
To remove the operating coils, first back out the magnet arm pin set-screw and remove the magnet arm pin. The magnet arm may then be lowered to remove the operating coils.

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 $\frac{1}{8}$ " 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-4708-A	Assembled Arc Shield	44	FP-24B16	Oilite Bearing, 2 req'd., pressed into Magnet Arm
● 2	22999-14320	Binding Screw	45	⊙ L-4020	Control Contact Bracket
● 3	29418-14680	Binding Nut	46		1/4"-20x3/4" H.I. Mch. Screw Slotted & Lk. Washer, 2 req'd.
4		5/16"x3 1/2" H.I. Cap Screw, Nut & Washers	47	⊙ EL-1-A	Control Circuit Arm, Complete, for Open or Closed Control Circuit, Same as Item 48 except only one item 52
5		#1118 Shake Proof Lk. Washer	48	⊙ EL-2-A	Control Circuit Arm, Complete, for Open and Closed Control Circuit
6	LT-4734	Arc Shield Hinge	49	⊙ EL-47	Control Circuit Arm, only
7	LT-4778	Arc Plate Connector, 2 req'd.	†50	⊙ EL-49	Spring
8	LT-4745	Arc Shield Spacer	51	⊙ EL-87	Spring Retainer
9		1/4"-20x1 1/2" F.I. Screw (not shown) 2 req'd.	†52	⊙ EL-84-A	Contact Bridge
10	ZO-1150	Cup Washer (not shown) 2 req'd.	53		10-24x1" R.I. Mch. Screw & Lk. Washer, 2 req'd.
11	LT-4741	Arc Shield, left hand	54	LT-3394	Set Screw, with Jam Nut & Lk. Washer
12	LT-4742	Arc Shield, right hand	†55	⊙ EL-6-A	Contact
13	LT-4720-A	Arc Plate	56		10-24x1/2" R.I. Mch. Screw & Lk. Washer
14	LT-4744	Arc Block	57	⊙ EL-31	Stud, for 1 1/4" Base (list number stamped on Stud)
15		1/4"-20x1 1/2" R.B. Mch. Screw & #1214 Lk. Washer	58	⊙ EL-32	Stud, for 1 1/2"-2" Base (list number stamped on Stud)
16	LT-4681-A	Blowout Coil and Contact Bracket, for 1 1/4"-1 1/2" Base.	59	⊙ EL-17	Stud, for 1 1/4" Base (list number stamped on Stud)
17	LT-4682-A	Blowout Coil and Contact Bracket, for 2" Base.	60	⊙ EL-18	Stud, for 1 1/2"-2" Base (list number stamped on Stud)
18	LT-4683-A	Blowout Coil and Contact Bracket, for 1 1/4"-1 1/2" Base.	61	LT-4037	Magnet Arm Pin
19	LT-4684-A	Blowout Coil and Contact Bracket, for 2" Base.	62		3/8"-16x1 1/4" Cap Screw & Lk. Washer
20	{ LT-4732-A	Blowout Guard, for folio 3 Contactors.	63	{ LT-4677-A	Main Terminal Stud, for 1 1/4"-1 1/2" Base, folio 3 Contactors.
	{ LZA-6131-A	Blowout Guard for folio 3B Contactors.		{ LT-4677-A	Main Terminal Stud, for 1 1/4"-1 1/2" Base, folio 3B Contactors.
21	LT-4738	Blowout Ear, 2 req'd.	64	{ LT-4678-A	Main Terminal Stud, for 2" Base, folio 3 Contactors
22	LT-4757	Blowout Core		{ LT-4678-A	Main Terminal Stud, for 2" Base, folio 3B Contactors
23	LT-4749	Insulator, for Blowout Core	65	LT-4029-A	Magnet Arm Bracket
24	{ LT-4743	Blowout Ear Spacer, for folio 3 Contactors.	66		10-24x3/8" R.I. Mch. Screw
	{ LZA-6134	Blowout Ear Spacer, 1 req'd., for folio 3B Contactors.	67	LTZ-1810	Stud, for 1 1/4"-1 1/2" Base
	{ LZA-6135	Insulator, 2 req'd., for folio 3B Contactors.	68	LTZ-1811	Stud, for 2" Base
25	LT-4748	Stud, for Blowout Ear Spacer	69	LT-4729-A	Frame
†26	A59005-017-01	Contact Tip, 2 req'd.	†70	LT-4704-AE	Coil, 230 V., 2 req'd., (115 V Coils in series).
27		1/2"-13x1" H.I. Cap Screw, Washer & Lk. Washer, 2 req'd.	†71	LT-4705-AE	Coil, 115 V., 2 req'd., (57.5 V Coils in series).
		NOTE: Std. Washer under moving contact tip screw superseded by L-4010 Sq. Washer.	72		NOTE: Furnish Voltage information if other than 115 Volt or 230 Volt.
28	⊙ L-4015-A	Core, 2 req'd.	73		1/4"-20 H.I. Jam Nut & Lk. Washer for Spacer Stud
29	LT-4752	Non-magnetic Spacer	74		3/8"-16x1" R.I. Mch. Screw & Lk. Washer
30	LT-4067	Core Cap, 2 req'd.	75		3/8" Aircraft Washer
31		1/4"-20x3/4" Bronze Hex Mch. Bolt & Lk. Washer, 2 req'd.			1/4"-20x1/2" H.I. Cap Screw & Lk. Washer, for Blowout Core
32		5/16"-8x3/4" H.I. Cap Screw & Lk. Washer, 2 req'd.	76	LT-4750	Insulator for Blowout Ear, 2 req'd.
33	{ LT-4716-A	Assembled Aux. Arm, without Item 86.	77		5/16"-18x3 1/2" H.I. Cap Screw with 2 Nuts.
	{ L-4077-A	Assembled Aux. Arm, including Item 86.	78	850502-004-02	Spring Washer, 2 req'd.
†34	LT-4755	Contact Spring	79	LT-4733	Arc Shield Clip
35	LT-4727	Aux. Arm Guard	80		Base, furnish thickness & number of Poles
36	LT-4737	Spring Bracket	81	LT-4754	Connector
37	LT-3092	Set Screw, Jam Nut & Lk. Washer	82	LT-4740-A	Blowout Connector
38	L-4011	Sq. Washer (replaces 3/8" Std. Washer)	86	L-4080	Spring Bracket, 2 req'd. (Mounted on Bottom of Item 33).
39	LT-4777	Aux. Arm Pin	87	L-4079	Spring Nut
40	FP-24B14	Oilite Bearing, 2 req'd., pressed into Magnet Arm	†88	L-4078	Spring
†41	LT-4714-A	Assembled Connector, for No. 4			
†42	LT-4784-A	Assembled Connector, for No. 4A			
43	LT-4713-A	Assembled Magnet Arm, Complete with Bearings, Item 40 & 44			

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.

80	⊙	Base, furnish thickness and number of Poles	84	⊙ L-3148	Tie Bar
83	⊙	1/4"-20x3/4" H.I. Slotted Mch. Screw, Washer & Lk. Washer, 4 req'd.	†85	⊙	Coil, furnish Voltage and number of Poles

†Essential Parts for General Maintenance

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

● Minor revision since previous issue.

No. 4 & 4A SINGLE POLE L LINE-ARC CONTACTOR, FOLIO 3 & 3B

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 contact 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 and the contact pressure. 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" is reduced to $\frac{1}{2}$ ", the contact tips must be advanced or replaced. Contacts are grooved for advancing movable contact to compensate for wear.

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 spring should be replaced or contact tips advanced or 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".

OPENING WHEN NEW	
Opening at "B" with Contactor fully closed200"
CONTACT PRESSURE IN POUNDS	
Surfaces at "B" just breaking (new or old)	11.5-13.5
Sealed, Contactor fully closed (when new)	18-20

