SERVICE BULLETIN 7004-11

AUGUST, 1967

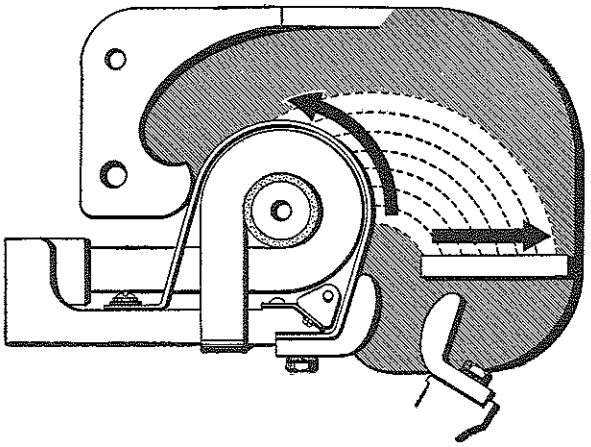
NEMA SIZE 4 SINGLE POLE L LINE-ARC CONTACTOR
FOLIO 3
FOR D C OPERATION

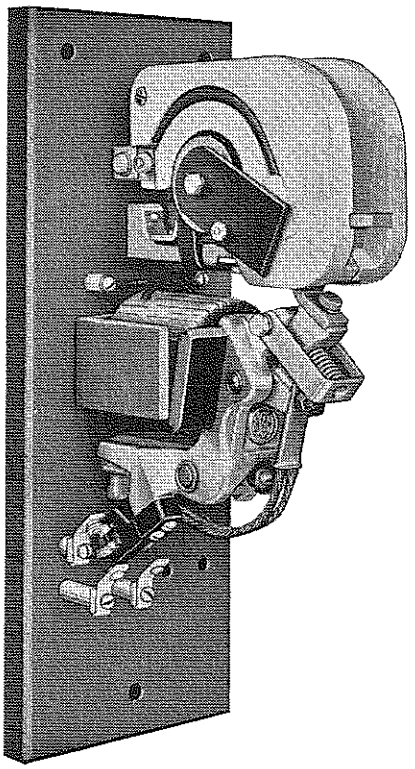
INSTRUCTIONS

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. 4	150	200	1500

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" 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, an air gap of .034" minimum and .049" maximum is provided between the magnet arm and the front ends of the U-shaped frame. See that the magnet faces are free from oil or sticky 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.

Contactors for 115 and 230 volt service are supplied with continuous capacity coils. Contactors for 550 volt service are supplied with a 230 volt coil and suitable resistor mounted on the back of the base.

To remove the operating coil, 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 coil.

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 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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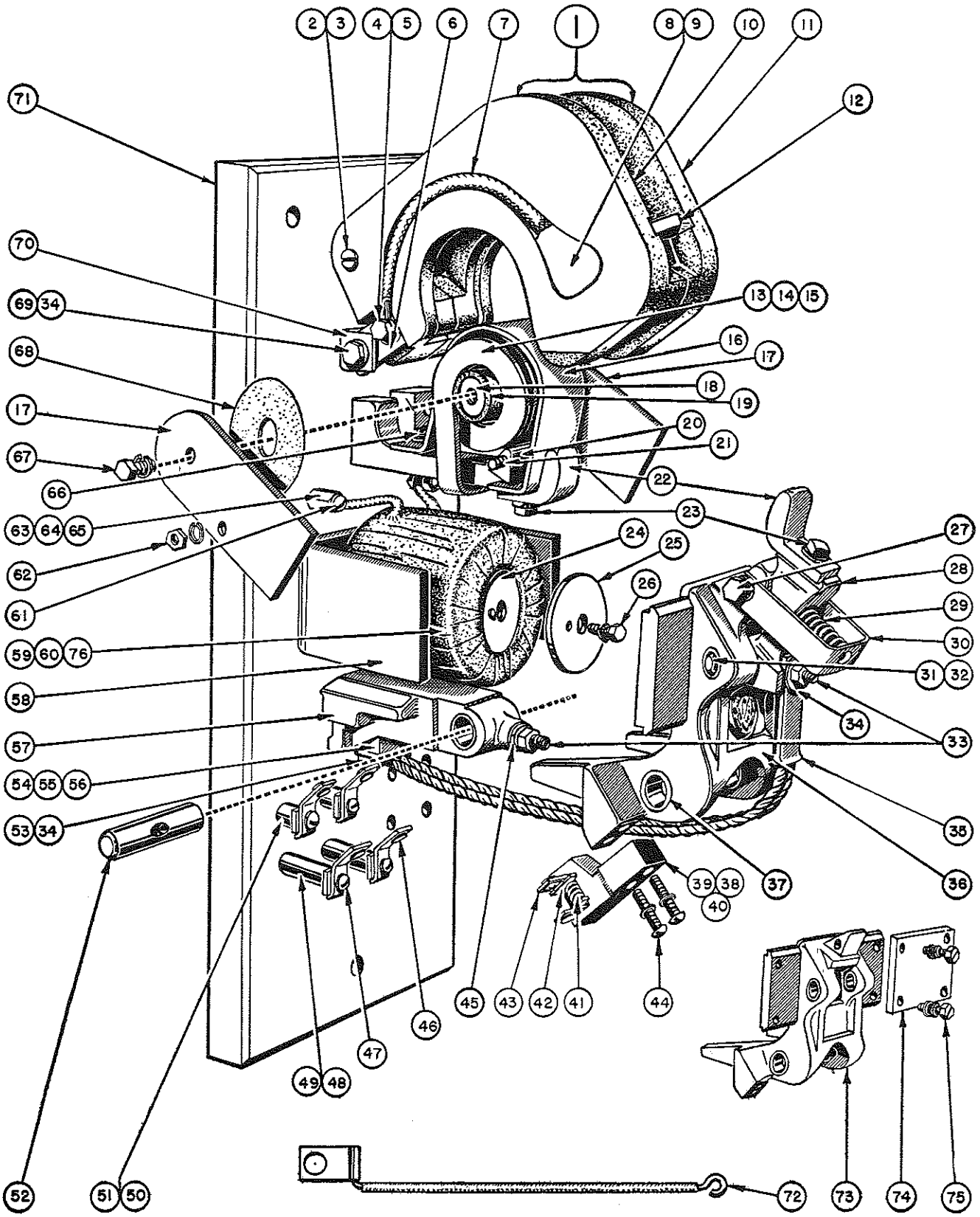
NEMA SIZE 4 SINGLE POLE L LINE-ARC CONTACTOR, FOLIO 3



ADVISE NAMEPLATE MARKING WHEN ORDERING PARTS

NEMA SIZE 4 SINGLE POLE L LINE-ARC CONTACTOR, FOLIO 3

NOTE: Indented items are component parts of item immediately preceding.

Item No.	List No.	Description
1	LT-2024-A	Assembled Arc Shield, Complete
●2	~~29008-14400~~	Binding Screw No Sale
●3	~~29416-14400~~	Binding Nut No Sale
4		¼"-20x2½ H.I. Cap Screw, Nut & Shake-proof Lk. Washer
5	~~ZO-1150~~	Cup Washer, 2 req'd.
6	LT-1049	Arc Shield Hinge, 2 req'd.
7	~~LT-1081~~	Arc Plate Connector, 2 req'd. No Sale
8		8-32x¾" F.I. Mch. Screw, (not shown) 2 req'd.
9	~~ZO-1121~~	Cup Washer, (not shown) 2 req'd.
10	~~LT-2035~~	Arc Shield, left hand No Sale
11	~~LT-2036~~	Arc Shield, right hand No Sale
12	LT-2032	Arc Plate
13	LT-2656-AB	Blowout Coil & Contact Bracket, for 1" Base
14	LT-2657-AB	Blowout Coil & Contact Bracket, for 1¼"-1½" Base
15	LT-2658-AB	Blowout Coil & Contact Bracket, for 2" Base
16	LT-2265-A	Blowout Guard
17	LT-1052	Blowout Ear, 2 req'd.
18	LT-2039	Blowout Core
19	LT-2074	Insulator, for Blowout Core
20	LT-2064	Blowout Ear Spacer
21	~~LT-2072~~	Stud, for Blowout Ear Spacer
●†22	~~A50005-005-02~~	Contact Tip, 2 req'd. 50005-120-02
23		5/16"-18x¾" H.I. Cap Screw & Lk. Washer, 2 req'd.
24 ⊙	~~L-2015-A~~	Core
25 ⊙	L-1026	Core Cap
26		¼"-20x¾" Bronze Hex. Mch. Bolt & Lk. Washer
27 ⊙		¼"-20x½" H.I. Cap Screw & Lk. Washer
28	LT-2028-A	Auxiliary Arm
†29 ⊙	L-2027	Contact Spring
30 ⊙	L-1021	Spring Bracket
31	~~LT-2038~~	Aux. Arm Pin
32	~~FP-24B12~~	Bearing, 2 req'd., pressed into Magnet Arm 29005-24161
33	~~LT-1443~~	Set Screw & ¼"-20 H.I. Nut 21802-20360
34		¼" Std I. Washer & Lk. Washer
†35	LT-2025-A	Connector
36 ⊙	L-2013-A	Magnet Arm, Complete with Bearings, Item 32 and 37
37	~~FP-24B13~~	Bearing, 2 req'd., pressed into Magnet Arm 29005-32220
38 ⊙	~~EL-1-A~~	Control Circuit Arm, Complete, for Open or Closed Control Circuit, (same as Item 39 except only one Item 43) 51075-022-50
39 ⊙	~~EL-2-A~~	Control Circuit Arm, Complete, for Open and Closed Control Circuit
40 ⊙	~~EL-47~~	Control Circuit Arm, only
†41 ⊙	~~EL-49~~	Spring 50502-602-38
42 ⊙	~~EL-87~~	Spring Retainer, 2 req'd. 51075-040-01
†43 ⊙	~~EL-84-A~~	Contact Bridge, 1 req'd. for Item 38, 2 for Item 39 51075-023-50
44		10-24x1" R.I. Mch. Screw & Lk. Washer, 2 req'd
45		¼" Lk. Washer
†46 ⊙	EL-6-A	Control Circuit Contact, 4 req'd. for Open and Closed Control Circuit, 2 req'd. for Open or Closed Control Circuit
47		10-24x½" R.I. Mch. Screw & Lk. Washer
48 ⊙	~~EL-23~~	Stud, for 1"-1¼" Base (list number stamped on Stud)
49 ⊙	~~EL-24~~	Stud, for 1½"-2" Base (list number stamped on Stud)
50 ⊙	~~EL-11~~	Stud, for 1"-1¼" Base (list number stamped on Stud)
51 ⊙	~~EL-12~~	Stud, for 1½"-2" Base (list number stamped on Stud)
52	~~LT-2037~~	Magnet Arm Pin
53		¼"-20x¾" Cap Screw
54	~~LT-2044-A~~	Main Terminal Stud, for 1" Base
55	~~LT-2045-A~~	Main Terminal Stud, for 1¼"-1½" Base
56	~~LT-2046-A~~	Main Terminal Stud, for 2" Base
57	LT-2029-A	Magnet Arm Bracket
58 ⊙	~~L-2018-A~~	Frame
59 ⊙	L-2010-AE	Magnet Coil, for 230 Volt Single Pole only
●†60 ⊙	L-2011-AE	Magnet Coil, for 115 Volt Single Pole only
		NOTE: Furnish Voltage information if other than 115 Volt or 230 Volt
61		10-24x⅜" R.I. Mch. Screw
62		10-24 H.I. Nut & Lk. Washer, 2 req'd., for Blowout Ear Spacer Stud
63	~~LTZ-1809~~	Coil Terminal Stud, for 1" Base
64	~~LTZ-1810~~	Coil Terminal Stud, for 1¼"-1½" Base
65	~~LTZ-1811~~	Coil Terminal Stud, for 2" Base
66		5/16"-18x¾" R.I. Mch. Screw, Washer & Lk. Washer, for Blowout Guard
67		¼"-20x½" H.I. Cap Screw & Lk. Washer, 2 req'd. (screws into Blowout Core)
68	LT-1075	Insulator, for Blowout Ear
69		¼"-20x2¼" H.I. Cap Screw with 2 nuts
70	LT-2050	Arc Shield Clip
71 ⊙		Base, furnish thickness and number of Poles
72 ⊙	~~L-2016-A~~	Blowout Connector, connects Arc Shield Clip to Main Terminal Stud

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
71 ⊙		Base, furnish thickness and number of Poles
73 ⊙	~~L-2003-A~~	Magnet Arm, Complete with Bearings, Item 32 & 37
74 ⊙	~~L-1036~~	Tie Bar
75 ⊙		¼"-20x¾" H.I. Slotted Mch. Screw, Washer & Lk. Washer, 4 req'd.
†76 ⊙		Coil, furnish Voltage and number of Poles

⊙ These are new parts used on Folio 3 Contactors only 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.

NEMA SIZE 4 SINGLE POLE L LINE-ARC CONTACTOR, FOLIO 3

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 ⅜" 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 H. I. Division.

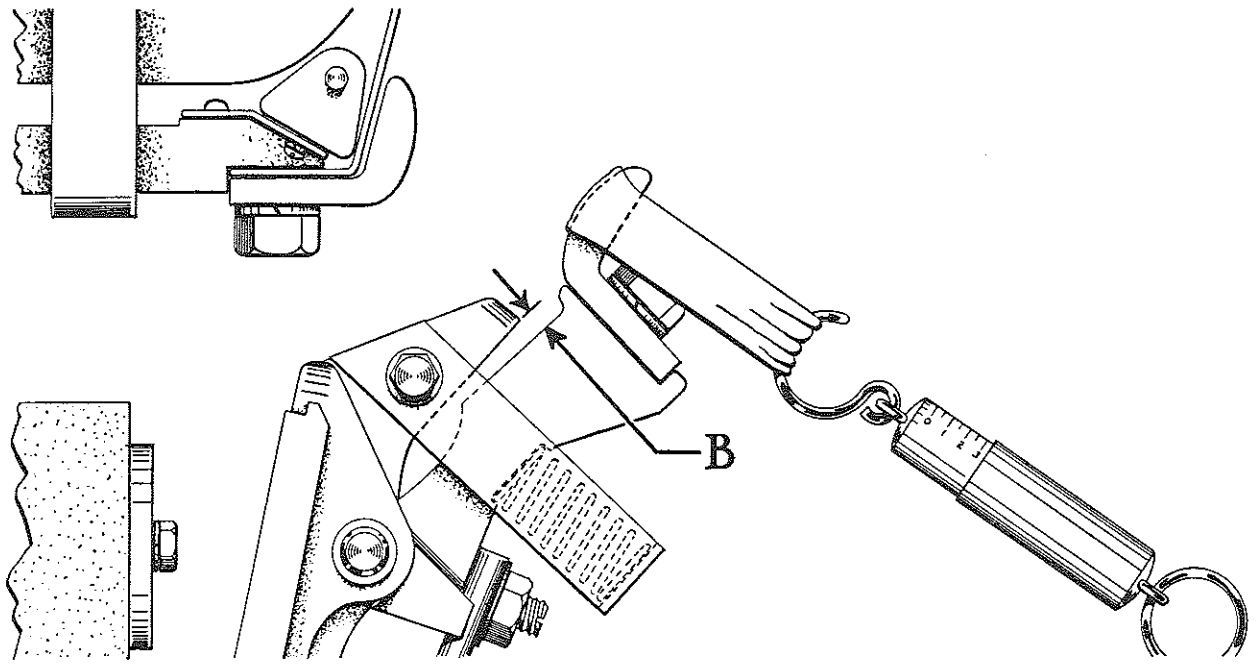
MAIN CONTACT OPENING: In the table at right is shown the correct dimension for contact opening. Contact follow-up is necessary so that the contact pressure will be maintained as the contacts wear. The follow-up is the amount of opening between the moving contact auxiliary arm and its stop shown at "B" in the sketch below, WITH THE CONTACTOR FULLY CLOSED. Follow-up decreases with contact wear. When dimension "B" is reduced to 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 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".

OPENING WHEN NEW	
Opening at "B" with Contactor fully Closed	.220"

CONTACT PRESSURE IN POUNDS	
Surfaces at "B" just breaking (new or old)	3.0-3.5
Sealed, Contactor fully closed (when new)	5.0-5.5



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