SERVICE BULLETIN 7004-8

AUGUST, 1967

NEMA SIZE 6 SINGLE POLE SPRING CLOSED L LINE-ARC CONTACTOR

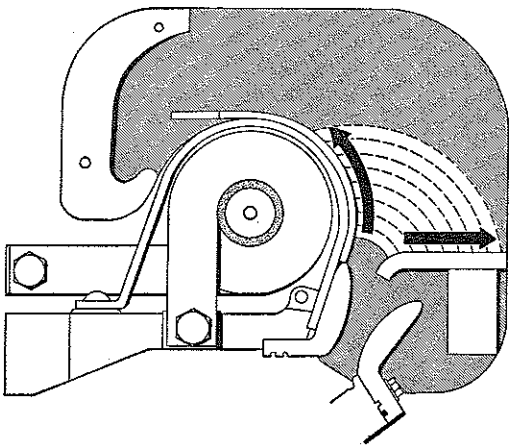
FRONT CONNECTED
FOLIO 3A & 3B
FOR DC OPERATION

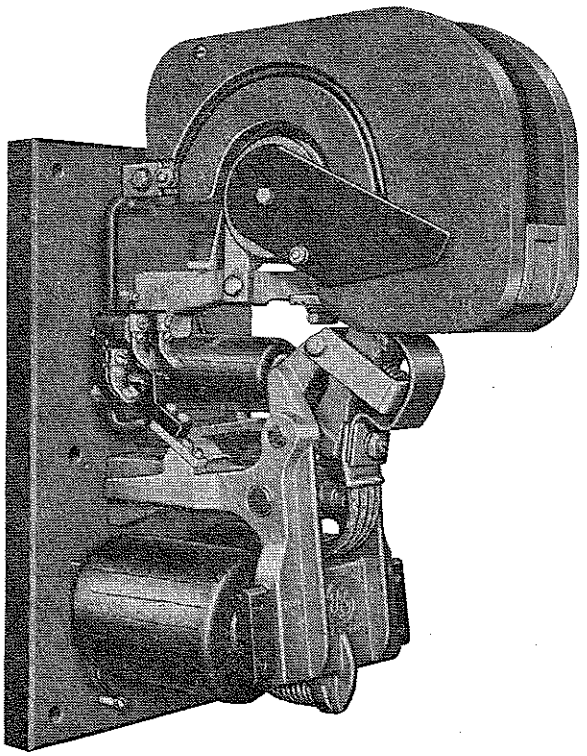
INSTRUCTIONS

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

Contactor Size NEMA	Continuous Rating Amperes	Crane and Mill Rating Amperes
No. 6	600	800
——	800	1065

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 3⅞" 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.

THE MAGNET CIRCUIT: To insure quick release of the magnet arm when the coils are de-energized, a non-magnetic spacer .016" thick is placed between the magnet cores and core caps. See that the magnet faces are free from oil or sticky foreign material. To insure snappy operation when the operating coils are energized, a retarding coil, located on the main arm stop bar, is connected across the control circuit supply. This holds the arm against the stop bar until the magnetic flux in the operating coils builds up sufficiently to pull it away with a quick action, which greatly prolongs the life of the contact tips.

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.

Each contactor has a horseshoe type magnetic circuit using two duplicate magnet coils. Contactors for 115 volt and 230 volt service are supplied with half-voltage coils connected in series. Contactors for 550 volt service are supplied with 230 volt coils and suitable resistor mounted on the base to suit.

To remove the operating coils, first disengage the operating spring. Next remove the connector from the auxiliary arm by backing off the set-screw nut. Then back out the magnet arm pin set screw and remove the magnet arm pin. The magnet arm may then be removed for access to the coils. When replacing coils, be sure to replace the non-magnetic spacer under the core caps.

(Continued on Page 4)

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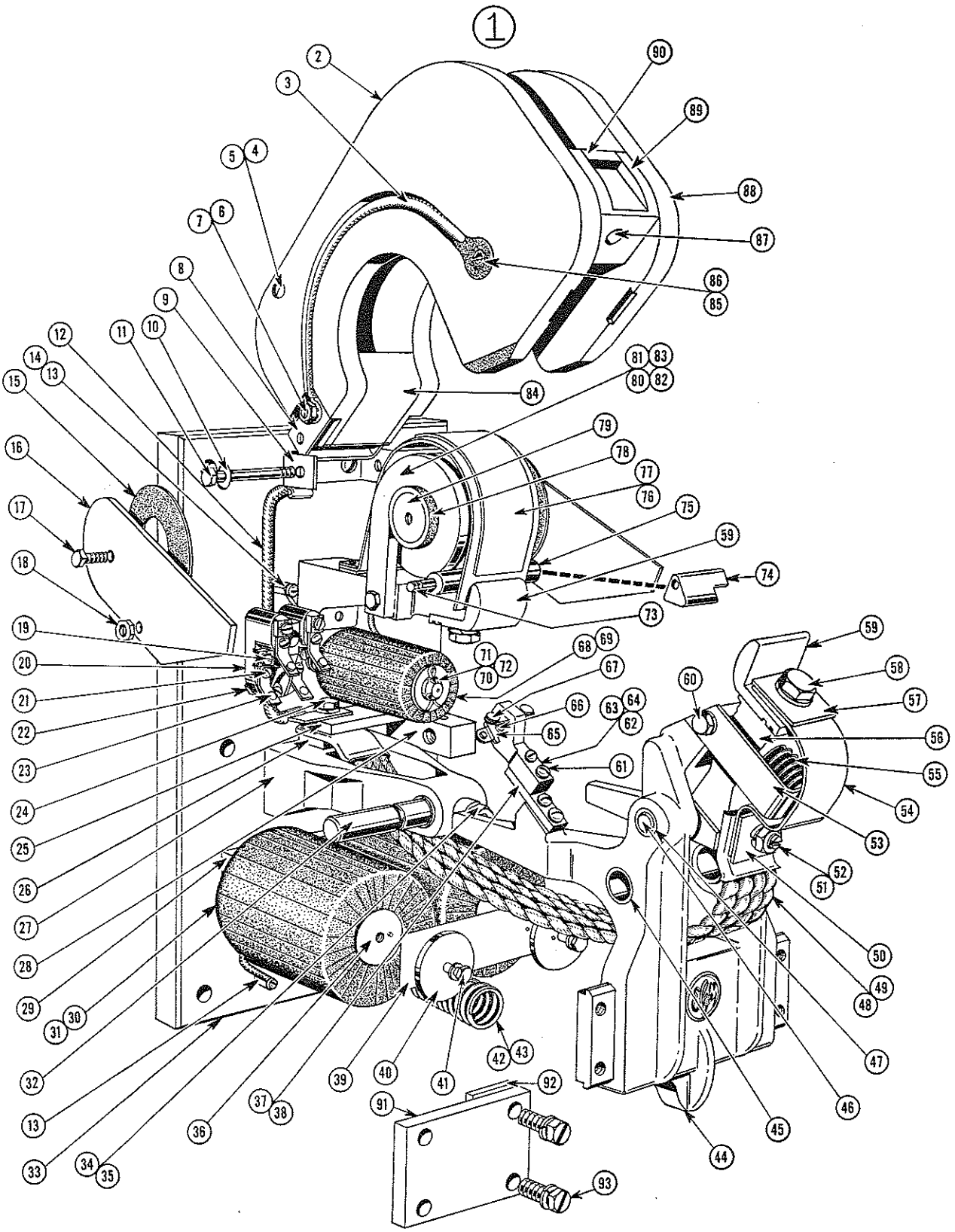

ADVISE NAMEPLATE MARKING WHEN ORDERING PARTS

NEMA SIZE 6 SINGLE POLE SPRING CLOSED L LINE-ARC CONTACTOR, FOLIO 3A & 3B

Item No.	List No.	Description
1	LT-4708-A	Arc Shield, complete
2	LT-4741	Arc Shield, left hand
3	LT-4778	Arc Plate Connector, 2 req'd.
●4	22999-14320	Binding Screw
●5	29418-14680	Binding Nut
6		5/16"-18x3½" H.I. Cap Screw, Nut and Washers
7		#1118 Shake Proof Lk. Washer
8	LT-4734	Arc Shield Hinge
9	LT-4657	Arc Shield Clip
●10	B50502-004-02	Spring Washer, 2 req'd.
11		5/16"-18x3½" H.I. Cap Screw with 2 Nuts
●*12	L-4755-A	Blowout Connector
13	L-1722	Coil Terminal Stud, 6 req'd.
14		10-24x⅜" R. Stl. Mach. Screw
15	LT-4750	Insulator for Blowout Ear, 2 req'd.
16	LT-4738	Blowout Ear, 2 req'd.
17		¼"-20x½" H.I. Cap Screw and Lk. Washer
18		¼"-20 H.I. Jam Nut and Lk. Washer
19	FP-28H1-10	Terminal
20	EL-100-A	Control Circuit Base
21		10-32x⅜" R. Stl. Machine Screw and Lk. Washer
22	EL-138	Mounting Studs, 2 req'd.
†23	EL-109-A	Assembled Contact
24		⅜"-16x1¼" H.I. Cap Screw, Std. I Washer Lk. Washer
25	L-4752	Bus Bar
26	L-4762-A	Assembled Terminal Block
27	L-4104-A	Magnet Arm Bracket
●28	L-4758	Main Terminal Stud
29	LT-4814-A	Assembled Frame
●†30	LT-4805-AE	Coil, 115 volt, 2 req'd., (57.5 V Coils in series)
●†31	LT-4804-AE	Coil, 230 volt, 2 req'd., (115 V Coils in series)
32	LT-4037	Magnet arm pin
33		Base, advise Name Plate Data
34	LT-3394	Set Screw
35		⅜"-16 H.I. Jam Nut and Lk. Washer
36	L-4132-A	Assembled Core, 2 req'd.
37	EL-122	Spacer
38		10-24x¾" R. Stl. Mach. Screw and Lk. Washer
39	LT-4824	Non-Magnetic Spacer
40	LT-4067	Core Cap, 2 req'd.
41		¼"-20x¾" Everdur Hex. Mach. Bolt and Lk. Washer
42	L-4106	Operating Spring Holder (Not Shown)
†43	L-4105	Operating Spring
44	L-4102-A	Assembled Magnet Arm
45	FP-24B16	Bearing, 2 req'd., Pressed into Magnet Arm
46	LT-4777	Auxiliary Arm Pin
47	FP-24B14	Bearing, 2 req'd., Pressed into Magnet Arm
†48	L-4111-A	Assembled Connector, for No. 4
†49	L-4121-A	Assembled Connector, for No. 4A
50	L-4011	Washer
51	L-3092	Set Screw
52		⅜"-16 H.I. Jam Nut and Lk. Washer
●53	LT-4737	Spring Bracket
54	LT-4727	Auxiliary Arm Guard
†55	LT-4755	Contact Spring
56	LT-4716-A	Assembled Auxiliary Arm
57	L-4010	Washer
58		½"-13x1" H.I. Cap Screw and Lk. Washer
●†59	A50005-017-01	Contact Tip
60		5/16"-18x¾" H.I. Cap Screw and Lk. Washer
61		10-24x⅞" R. Stl. Mach. Screw and 3/16" Lk. Washer
62	EL-1-A	Control Circuit Arm, complete, for Open or Closed Control Circuit
63	EL-2-A	Control Circuit Arm, complete, for Open and Closed Control Circuit
64	EL-47	Control Circuit Arm, only
65	EL-87	Spring Retainer
†66	EL-49	Spring
67	EL-84-A	Assembled Contact Bridge, 1 req'd. for Item 62, 2 req'd. for Item 63
●†68	L-4114-AE	Retarding Coil, 115 volt
●†69	L-4113-AE	Retarding Coil, 230 volt
70	L-4108	Stop Bar
71	L-3120	Spring, for Retarding Coil, (located at rear of Coil)
72	L-3119	Washer, 2 req'd.
73	LT-4748	Stud, for Blowout Ear Spacer
74	LT-4743	Blowout Ear Spacer, 2 req'd., for Folio 3A Contactors
75	LZA-6134	Blowout Ear Spacer, 2 req'd., for Folio 3B Contactors
	LZA-6135	Insulator, 1 req'd., for Folio 3B Contactors
76	LT-4732-A	Blowout Guard, for Folio 3A Contactors
77	LZA-6193-A	Assembled Blowout Guard, for Folio 3B Contactors
78	LT-4749	Insulator, for Blowout Core
79	LT-4757	Blowout Core
80	L-4730-A	Assembled Contact Bracket, for No. 4 Folio 3A Contactors
●81	L-4731-A use LT-4458-A	Assembled Contact Bracket, for No. 4A Folio 3A Contactors
●82	L-4457-A and LT-4511-G	Assembled Contact Bracket, for No. 4 Folio 3B Contactors
83	L-4458-A	Assembled Contact Bracket, for No. 4A Folio 3B Contactors
84	LT-4745	Arc Shield Spacer
85		¼"-20x1½" F.I. Screw (Not Shown) 2 req'd.
86	ZO-1150	Cup Washer (Not Shown) 2 req'd.
87		¼"-20x1⅜" R.B. Mach. Screw and #1214 Lk. Washer
88	LT-4742	Arc Shield, right hand
89	LT-4744	Arc Block
90	LT-4720-A	Arc Plate

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
†30		Operating Coil, advise Name Plate Data
33		Base, advise Name Plate Data
†68		Retarding Coil, advise Name Plate Data
91	L-4148	Tie Bar
92	~~L-3048~~ L-3048	Tie Bar Spacer, as req'd.
93	L-3034	¼"-20x¾" H. Stl. Slotted Cap Screw, Blk. Burr and Lk. Washer

Rev. 355 1/23/67

† Essential Parts for General Maintenance
* Early production of contactors had blowout connector mounted on front of base as illustrated. Current production has blowout connector mounted on rear of base.
● Minor revision since previous issue.

NEMA SIZE 6 SINGLE POLE SPRING CLOSED L LINE-ARC CONTACTOR, FOLIO 3A & 3B

ELECTRICAL INTERLOCKS: These consist of stationary contacts mounted on the base and a moving contact attached to the magnet arm. The moving contact should provide 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

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 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 contacts. 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 CONTACTS FULLY CLOSED. Follow-up decreases with contact wear. When dimension "B" is reduced to 1/32", 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 closed.....220"

CONTACT PRESSURE IN POUNDS

Surface at "B" just breaking (new or old).....11.5-13.5

Sealed, Contacts fully closed (when new).....18-20