



(NEMA SIZE 5)

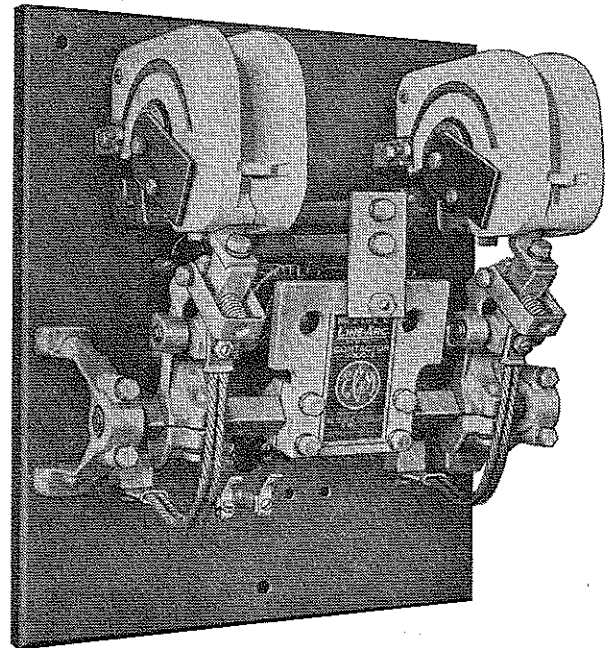
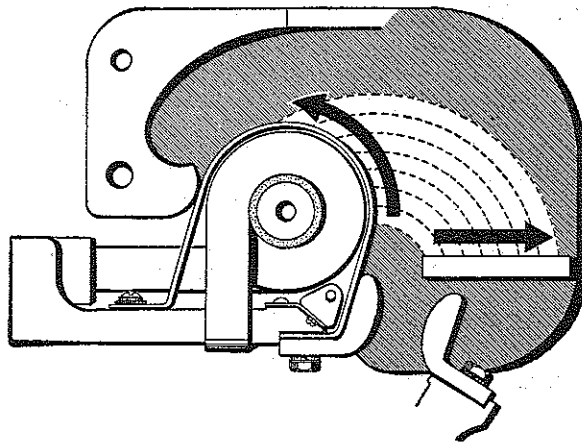
# No. 3 DOUBLE POLE L LINE-ARC CONTACTOR FOLIO 3 FOR DC OPERATION

## INSTRUCTIONS

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

Contactor Size		Continuous Rating Amperes	Crane and Mill Rating Amperes	Rupturing Capacity Amperes
NEMA	EC&M			
No. 5	No. 3	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.



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 remove the control circuit arm and remove the stop plate. 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 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

**CAUTION** — Before operating the contactor under load, be sure that the arc shields are lowered in their proper positions.

**INSTALLATION:** Mount the contactors vertically on rigid supports with at least 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.

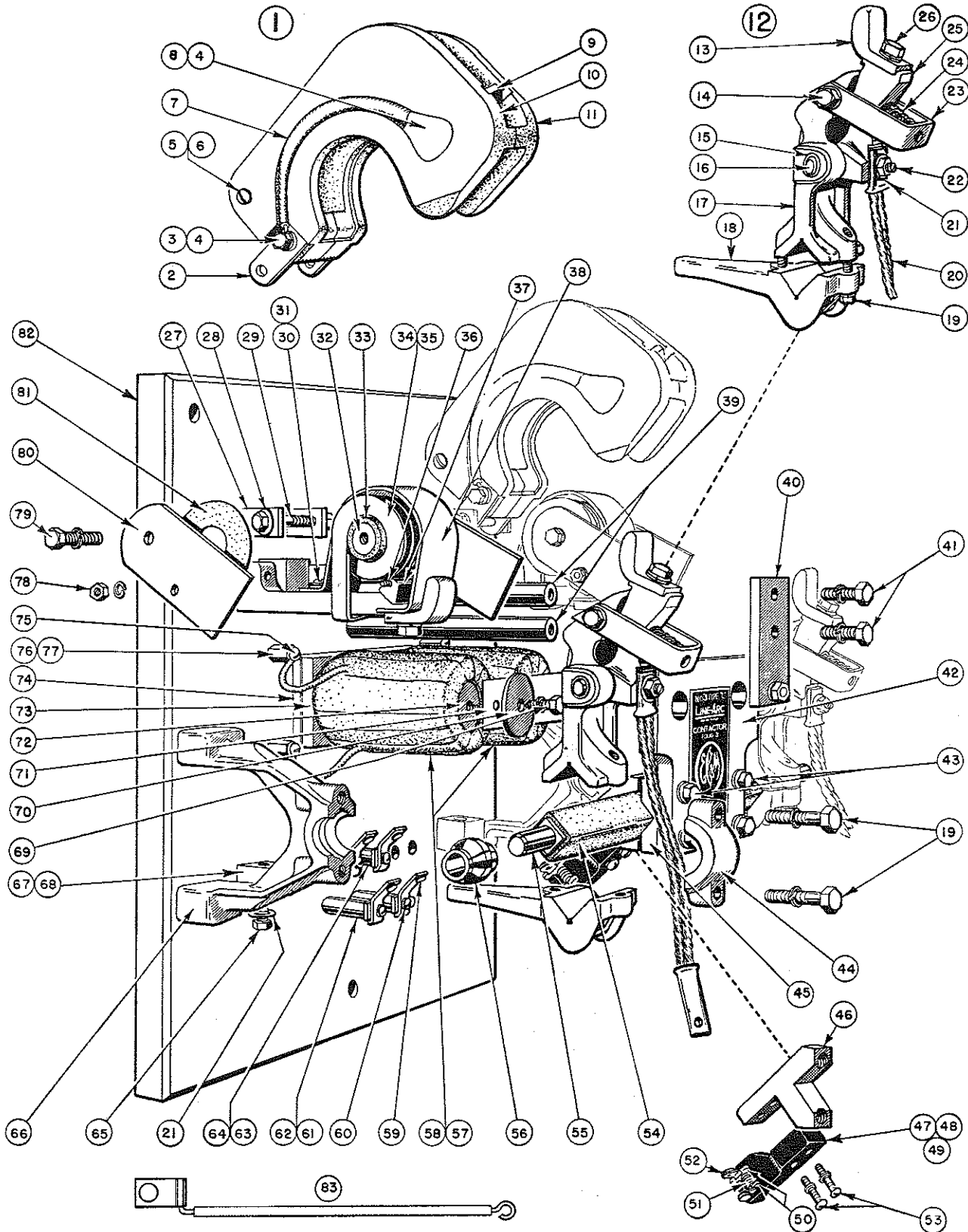
**MAGNET AIR GAP:** To insure quick release of the magnet arm, a non-magnetic spacer .0159" thick is placed between the magnet cores and the core caps. See that the magnet faces are free from oil or sticky foreign material.

**BEARINGS:** Type L contactors are equipped with Nitralloy pins and 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.

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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, 2 req'd.	43		3/8"-16x1 3/4" H.I. Cap Screw & Lk. Washer
2	LT-1049	Arc Shield Hinge, 2 req'd.	44	LT-3125	Bearing Bracket Clamp
3		1/4"-20x2 1/2" H.I. Cap Screw, Nut & Shake-proof Lk. Washer	45	⊙ L-3211	Clamp
4	ZO-1150	Cup Washer	46	⊙ L-3206	Magnet Arm Clamp
5	FP-23A36	Binding Screw	47	⊙ EL-1-A	Control Circuit Arm, Complete, for Open or Closed Control Circuit
6	FP-23A13	Binding Post	48	⊙ EL-2-A	Control Circuit Arm, Complete, for Open and Closed Control Circuit
7	LT-3081	Arc Plate Connector, 2 req'd.	49	⊙ EL-3	Control Circuit Arm, only
8		10-24x1" F.I. Mch. Screw, 2 req'd. (not shown)	50	⊙ EL-87	Spring Retainer, 2 req'd.
9	LT-3032	Arc Plate	†51	⊙ EL-49	Spring
10	LT-3035	Arc Shield, left hand	†52	⊙ EL-84-A	Contact Bridge, 1 req'd. for Item 47, 2 for Item 48
11	LT-3036	Arc Shield, right hand	53		10-24x1" R.I. Mch. Screw & Lk. Washer
12	⊙ L-3203-G	Assembled Contact Arm, Complete, 2 req'd.	54	LTZ-3775	Insulator, for Shaft
†13	LT-3031	Contact Tip	55	⊙ L-3208-A	Shaft, Complete with Insulator, Item 54
14		5/16"-18x1/2" H.I. Cap Screw & Lk. Washer	56	LT-3121	Bearing
15	FP-24B13	Bearing, 2 req'd.	†57	LT-4704-AE	Coil, for 230 Volt
16	LT-2037	Auxiliary Arm Pin	†58	LT-4705-AE	Coil, for 115 Volt
17	⊙ L-3204-A	Contact Arm, Complete with Bearing Item 15	†59	⊙ EL-6-A	Contact
18	LT-3123	Contact Arm Clamp	60		10-24x1/2" R.I. Mch. Screw & Lk. Washer
19		3/8"-16x1 1/2" H.I. Cap Screw & Lk. Washer	61	⊙ EL-29	Stud, for 1 1/4" Base (list number stamped on Stud)
†20	LT-3114-A	Connector	62	⊙ EL-30	Stud, for 1 1/2"-2" Base (list number stamped on Stud)
21		3/8" Std. l. Washer & Lk. Washer	63	⊙ EL-17	Stud, for 1 1/4" Base (list number stamped on Stud)
22	LT-3395	Set Screw & 3/8"-16 H.I. Nut	64	⊙ EL-18	Stud, for 1 1/2"-2" Base (list number stamped on Stud)
23	⊙ L-3021	Spring Bracket	65		3/8"-16x1" H.I. Cap Screw
†24	⊙ L-3027	Contact Spring	66	LT-3115	Bearing Bracket
25	LT-3028-A	Auxiliary Arm	67	LT-3044-A	Main Terminal Stud, for 1 1/4" Base
26		3/8"-16x7/8" H.I. Cap Screw & Lk. Washer	68	LT-3045-A	Main Terminal Stud, for 1 1/2"-2" Base
27	LT-3050	Arc Shield Clip	69		1/4"-20x3/4" H.B. Cap Screw & Lk. Washer, 2 req'd.
28	85-0502-004-01	Spring Washer, 2 req'd.	70	LT-4067	Core Cap, 2 req'd.
29		1/4"-20x2 3/4" H.I. Cap Screw with 2 Nuts	71	LT-4752	Non-magnetic Spacer
30		3/8"-16x3/4" R.I. Mch. Screw & Lk. Washer	72	⊙ L-4015-A	Core
31	LT-1068	Washer	73	LT-4729-A	Coil Frame
32	LT-3039	Blowout Core	74	⊙ L-3212	Spacer
33	LT-3074	Insulator, for Blowout Core	75		10-24x3/8" R.I. Mch. Screw & Lk. Washer
34	LT-3657-AB	Blowout Coil & Contact Bracket, for 1 1/4" & 1 1/2" Base	76	LTZ-1810	Coil Terminal Stud, for 1 1/4"-1 1/2" Base
35	LT-3658-AB	Blowout Coil & Contact Bracket, for 2" Base	77	LTZ-1811	Coil Terminal Stud, for 2" Base
36	LT-3072	Stud, for Blowout Ear Spacer	78		10-24 H.I. Nut & Washer for Blowout Ear Spacer Stud
37	LT-3064	Blowout Ear Spacer	79		1/4"-20x1 1/2" H.I. Cap Screw & Lk. Washer
38	LT-3265-A	Blowout Guard	80	LT-3052	Blowout Ear
39	⊙ L-3219	Stop Bar, 2 req'd.	81	LT-3075	Blowout Ear Insulator
40	⊙ L-1214-A	Stop Plate (Includes Spl. Cap Screw LTZ-1304, 5/16" H.I. Jam Nut & Lk. Washer)	82		Base, furnish thickness and number of Poles
41		5/16"-18x3/4" H.I. Cap Screw & Lk. Washer	83	LT-3128-A	Blowout Connector
42	⊙ L-3210	Armature Plate			

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

† Essential Parts for General Maintenance.

**No. 3 DOUBLE 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  $\frac{3}{8}$ " 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. Contactors are adjusted at the factory to give simultaneous closing of the contacts.

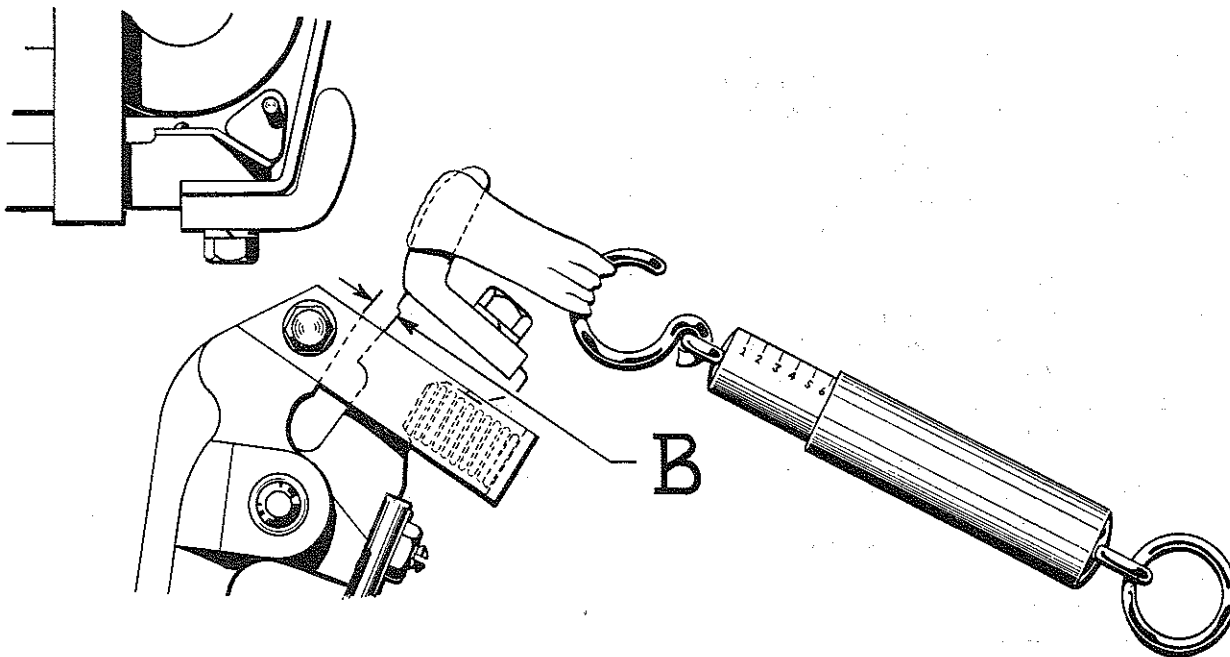
The stationary and moving contacts may wear unequally, depending upon polarity. It may not be necessary to change both contact tips when replacement is necessary. The best operation is obtained with positive connected to the stationary contacts and negative to the moving contacts. Wiring diagrams are so arranged by the EC&M 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" is reduced to  $\frac{1}{32}$ ", the contacts 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 springs 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 "B".

CONTACT OPENING WHEN NEW	
Contact 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



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