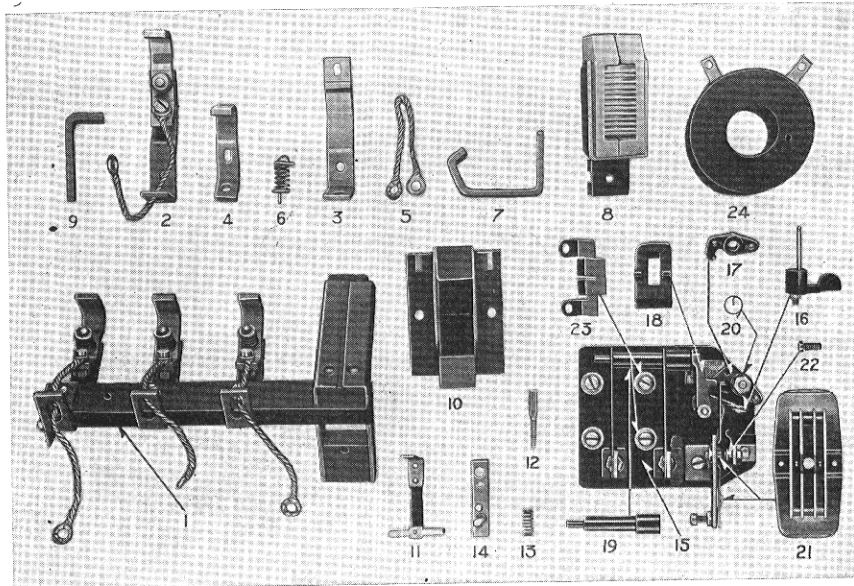


## CLASS 11-200-B-4 AND C-4 "DE-ION" LINESTARTER

For Use in Explosive Atmospheres—Class 1 Group D, Hazardous Locations

### RENEWAL PARTS DATA



This is a list of the Renewal Parts and the quantities of each that we recommend should be stocked by the user of this apparatus to minimize service interruptions caused by breakdowns. The parts recommended are those most subject to wear in normal operation, or to damage or breakage due to possible abnormal conditions.

This list of Renewal Parts is given only as a guide. When continuous operation is a primary consideration, additional insurance against shutdowns is desirable. Under such conditions more renewal parts stock should be carried, considering the severity of the service and the time required to secure replacements.

#### ORDERING INSTRUCTIONS

Name the part and give its style number. Give the complete name plate reading. State whether shipment is desired by express, freight or by parcel post. Send all orders or correspondence to nearest Sales Office of the Corporation. Small orders should be combined so as to amount to a value of at least one dollar, as order-handling and shipping expenses prevent us from billing a smaller amount.

#### RECOMMENDED STOCK OF RENEWAL PARTS

LINESTARTERS in use up to and including.....					LINESTARTERS in use up to and including.....				
Ref. No.	Name of Part	No. Per Starter	Recom- mended for Stock	Style Number of Part	Ref. No.	Name of Part	No. Per Starter	Recom- mended for Stock	Style Number of Part
# 1	Type F Contactor Frame 35-F-5....	1	0 0	674 729	#	†Thermal Strips, $\frac{3}{16}$ " Hole for Class 11-200 C4.....	1	†	653 853
#	Armature Complete.....	1	0 0	842 514	#	Base for Relay, S#576184.....	1	0 0	597 583
#	Moving Coil with Supports.....	2	0 1	152 692	#	Base for Relay, S#599174.....	1	0 0	653 839
#	Shading Coil.....	1	0 0	842 509	23	Heater.....	2	2 4	†
#	Cross Bar.....	1	0 0	842 510	#	Push Button.....	1	0 0	568 383
#	Cross Bar Spacer.....	1	0 1	765 347	#	Stop Button—Red.....	1	0 0	530 834
2	Moving Contact Element.....	3	0 0	676 118	#	Stop Button—Black.....	1	0 0	530 835
3	Moving Contact Support.....	3	3 6	557 317	#	Button Return Spring.....	2	0 0	534 625
4	Moving Contact.....	3	1 3	674 002	#	Break Contact—Stationary.....	2	0 0	534 626
5	Shunt.....	3	0 1	549 727	#	Make Contact—Stationary.....	2	0 0	534 627
6	Contact Spring and Pin.....	3	0 1	512 898	#	Moving Contact Pin.....	2	0 0	534 628
#	Moving Bearing Bracket—Con- tact End.....	1	0 0	844 433	#	Base for Starter.....	1	0 0	599 175
#	Moving Bearing Bracket—Mag- net End.....	3	3 6	518 692	24	Operating Coil.....	1	1 1	See Table
7	Stationary Contact.....	3	0 1	684 922	* Not illustrated. † When ordering Heaters specify Style Number obtained from Table of Heater Ratings. * Used only on Starter with Push Button. ‡ When Moving Contact, Stationary Contact and Holder or Thermal Strips must be renewed, the complete Relay should be sent to our works or nearest service shop, as accurate recalibration is necessary when any change in contacts is made. These contacts and thermal strips may be renewed by the customer, but at the risk of a possible change in relay calibration. Parts indented are included in the part under which they are indented.				
8	De-ion Arc Quencher.....	3	0 1	712 564					
#	Mounting Spring.....	3	0 1	712 565					
#	Rivet for Mounting Spring.....	2	0 0	512 909					
9	Stationary Bearing Bracket.....	1	0 0	662 241					
#	Armature Shaft.....	1	0 0	512 897	OPERATING COIL—TABLE Complete LINESTARTER Style No. for Class 11-200-B-4				
10	Stationary Core.....	1	0 0	507 437					
#	Type L-33 Electric Interlock.....	1	0 1	484 229					
11	Moving Contact Finger Complete.....	2	1 2	516 544					
12	Stationary Contact.....	1	0 1	478 769					
13	Spring.....	1	0 0	484 230					
14	Interlock Support.....	1	0 0	576 184					
15	Type TA-2—Relay—Used Only on Class 11-200 B-4.....	1	0 0	599 174					
15	Type TA-2—Relay—Used Only on Class 11-200 C-4.....	1	0 0	597 584					
16	Calibrating Lever.....	1	0 0	597 585					
17	Latch.....	1	0 0	597 586					
18	Operating Lever.....	1	0 0	597 587					
19	Push Rod.....	1	0 0	597 590					
20	Latch Spring.....	1	†	541 356					
21	†Moving Contact.....	1	†	659 346					
22	†Stationary Contact and Holder.....	1	†	597 588					
#	Moving Contact Support.....	1	0 0	597 589					
#	Stationary Contact Support.....	1	0 0	548 398					
#	†Thermal Strips, $\frac{3}{16}$ " Hole for Class 11-200 B4.....	1	†	548 399					
#	†Thermal Strips, $\frac{3}{16}$ " Hole for Class 11-200 B4.....	1	†	653 852					
#	†Thermal Strips, $\frac{3}{16}$ " Hole for Class 11-200 C4.....	1	†						

## CLASS 11-200-B-4 AND C-4 "DE-ION" LINESTARTER

For Use in Explosive Atmospheres—Class 1 Group D, Hazardous Locations

## INSTRUCTIONS

## MAXIMUM HORSEPOWER RATINGS

Standard Motor Types	Volts	3-Phase or 2-Phase, 4-Wire				2-Phase, 3-Wire				1-Phase				
		110	220	440	550	600	110	220	440	550	600	110	220	440

## CLASS 11-200-B-4—GENERAL SERVICE

All	Hp.	5	10	25	30	5	10	25	30	3	5	10	15
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## CLASS 11-200-C-4—GENERAL SERVICE

All	Hp.	10	20	40	40	10	20	40	40	5	10	20	20
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## HEATERS FOR THERMAL RELAYS

TABLE NO. 1 CLASS 11-200-B-4

Full Load Current of Motor	Amp. Rating of Heaters	Style No. of Heater	Full Load Current of Motor	Amp. Rating of Heaters	Style No. of Heater
.70-.90	1.0	511342	6.8-7.3	8.4	551840
.91-1.20	1.4	511341	7.4-7.8	9.0	511343
1.21-1.45	1.7	511263	7.9-9.5	11.0	474419
1.46-1.85	1.9	511264	9.6-11.0	13.0	474420
1.86-1.80	2.1	511265	11.1-13.0	15.0	474421
1.81-2.00	2.3	511261	13.1-14.5	17.0	474422
2.01-2.25	2.6	511262	14.6-17.5	20.0	502915
2.26-2.70	3.1	551944	17.6-20.0	23.0	474425
2.71-3.10	3.6	551941	20.1-22.0	26.0	474426
3.2-3.6	4.2	551942	22.1-25.0	29.0	474427
3.7-4.1	4.7	551943	25.1-27.0	32.0	501695
4.2-4.9	5.7	551937	27.1-31.0	36.0	474429
5.0-5.8	6.7	551938	31.1-35.0	40.0	474431
5.9-6.7	7.7	551939			

TABLE NO. 2—CLASS 11-200-C-4

32-35	41.0	501694	58-62	71.0	474434
35-50	58.0	474432	62-70	81.0	474436
50-58	68.0	474433	70-83	95.0	539018

## CAUTION

Before removing the enclosing cover, **BE SURE THE POWER IS OFF.** Before reapplying the power, **BE SURE THE COVER IS IN PLACE,** and that **ALL COVER BOLTS ARE PROVIDED WITH A LOCK WASHER AND ARE PROPERLY TIGHTENED.**

To 1, 2 or 3-Phase Supply

## GENERAL

The Class 11-200-B-4 and C-4 **LINESTARTERS** are for non-reversing service with single or poly-phase motors. The numeral "4" designates that the starter is for use in Explosive Atmospheres—Class 1 Group D Hazardous Locations.

## INSTALLATION

Quoting from the 1931 National Electrical Code Sections 3203—"Rigid conduit with Vapor-tite joints and fittings shall be employed as the type of wiring. At points where conduit terminates, such as at motor terminal boxes, switch boxes and similar places, provision shall be made for sealing off the conduit by the use of a suitable insulating compound to prevent the passage of gases or vapor through the conduit system."

Remove starter panel proper. Mount case on wall, make conduit connections, and draw in leads. Leads should be reasonably long to facilitate connecting. Replace starter panel and connect leads according to instructions given below, making connections to power leads last.

**BEFORE MAKING ANY CONNECTIONS BE CERTAIN THAT ALL THE LINES TO BE HANDLED ARE DEAD.**

**CHECK ALL CONNECTIONS BEFORE POWER IS TURNED ON.**

For a **THREE-PHASE SYSTEM**, connect as shown in Fig. 1.

For a **SINGLE-PHASE SYSTEM**, place jumper across L-2 to L-3 (See Fig. 1); connect power leads to L-1 and L-2; connect motor leads to T-1 and T-2.

For a **TWO-PHASE THREE-WIRE SYSTEM**, L-3 is the common lead. Connect T-4 to T-3 on panel.

For a **TWO-PHASE FOUR-WIRE SYSTEM**, connect L-4 directly to T-4 of motor; phase 1 = L-1, L-3; phase 2 = L-2, L-4.

**INSPECT STARTER UNIT** to see that parts work freely, that nuts are tightly fastened, that terminals and current-carrying parts are clean and make good contact, and that arc boxes are mounted properly.

**OVERLOAD RELAY HEATERS** are supplied separately. Before installing them, check rating against above table. Ampere rating is stamped on heater adjacent to mounting hole. Install heaters as shown in Fig. 3. Starter is shipped for use with two-wire master switch providing **HAND RESET.**

When used with 3-wire Master Switch for **AUTOMATIC RESET**, remove latch and spring as indicated in Fig. 3. Trip overload relay by hand to insure that relay functions properly.

Before starting motor see that **CALIBRATION LEVER** on overload relay is at proper setting; current stamped on heater will just trip the relay at the 100% setting.

To decrease tripping current, move relay adjusting lever toward 90; to increase, move to-

ward 120. Adjustment gives approximately 10 per cent below and 20 per cent above normal value. Tripping value should be changed only by means of calibration lever.

Quoting the Underwriters' Standard for Industrial Control Equipment, Paragraph 61, "Overload relays shall function successfully without injury under all current conditions that may maintain when protected by fuses of four times, or instantaneous circuit-breakers set at seven times the motor name plate current rating."

On starting motor, if the rotation is wrong, reverse two leads of a phase, preferably at the motor terminals. (If the power system is two-phase three-wire, do not change the common lead.)

## INSPECTION AND MAINTENANCE

Before opening cover to inspect or adjust starter, **BE SURE THE POWER IS OFF.** Inspect the starter monthly or often enough to see that parts are in good operating condition. When dressing contacts, use a fine file or sand paper; never use emery cloth for this purpose. When renewing contacts and shunts, care should be taken to see that shunts are installed with proper freedom, and that contacts are adjusted to touch simultaneously. Shunts should not be broken or touch other parts. To prevent noise, clean the armature sealing surfaces, occasionally with an oil moistened rag. Do not oil the **LINE-STARTER.**

## RENEWAL PARTS

The parts most likely to need renewal are stationary contact, Style No. 518692; moving contact, Style No. 557317; shunt, Style No. 674002 operating coil (for Style No. see tag attached to coil) and relay complete on its base without heating elements, Style 576184 for B-4 and Style 599174 for C-4. Keep these on hand, if starter is in heavy service.

To install Heaters, remove screws and washers from binding posts; set Heater in place and replace washers and screws.

When tightening in place adjust Heater to obtain  $\frac{1}{8}$  to  $\frac{1}{4}$  clearance between Bimetal Strip and Heater.

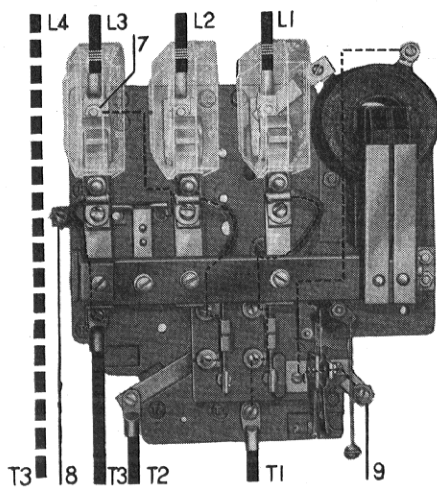
RESET LATCH

To provide Relay for Automatic Reset, remove Latch and Spring

DO NOT TAMPER WITH CONTACT SNAP SPRING

CALIBRATION LEVER MOVE this to vary Tripping Value of Current

FIG. 3—THERMAL RELAY, SHOWING HOW HEATERS ARE INSTALLED



Leads to Motor-T1, T2, T3 and T4.  
Leads to Master Switch or Push Button Station 7, 8, 9.

FIG. 1—VIEW OF LINESTARTER SHOWING WIRING CONNECTIONS

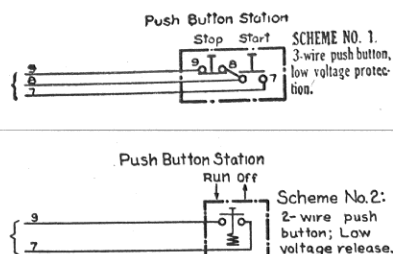


FIG. 2—WIRING DIAGRAM OF CONNECTIONS TO MASTER SWITCHES