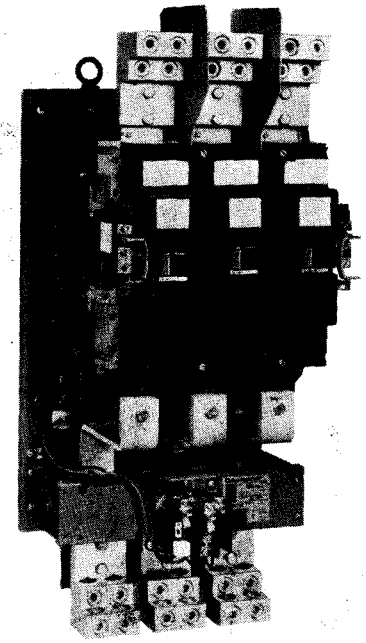
RENEWAL PARTS PUB FOR NEMA SIZE 8
NON-REVERSING & REVERSING CONTACTORS AND STARTERS



TYPICAL SIZE 8 STARTER

INTRODUCTION
This publication is designed to simplify inspection and maintenance through the use of photographs and detail views for easy identification of parts. Illustrated steps on assembly and disassembly are shown. This information should be read carefully.

DESCRIPTION
This publication covers 3 pole, 3 phase non-reversing and reversing, contactors and starters with ratings as shown on the nameplates.

CARE
These contactors/starters require no mechanical maintenance. If maintenance is needed, please note that these devices use **metric hardware**. All power contacts should be renewed at the same time before the contact tip material has worn away. Refer to publication 14183 for helpful information on inspecting and determining when to replace the contacts. When renewing contacts, check all terminal screws to insure they are tight and secure. During routine electrical maintenance the arc chutes are to be removed to inspect the main contacts for wear and to check the fuse links (located below the line terminals) to see that they are not open. Fuse link and main contact replacement are covered in this publication. Please note Fig. **10** exploded view drawing for service or repair.

ARC CHUTE REMOVAL
1. Disconnect all power to the contactor/starter.
2. Loosen the 4 screws attached to the arc chute hold-downs far enough to rotate them 90°. See Fig. **1**.
3. Remove the 3 arc chutes.
4. To reinstall arc chutes, reverse the above.

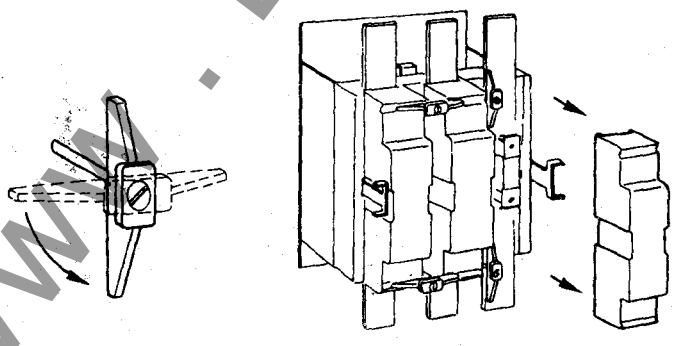


FIG. 1 — ARC CHUTE REMOVAL

MAIN COIL RENEWAL
Caution — If the device has been in service, many parts may still be thermally hot.
1. Disconnect all power to the contactor/starter.
2. Remove arc chutes.
3. Loosen the 2 screws that secure each coil.
4. Push on pole two movable contact assembly until the main contacts touch. **Caution** — If device was in service, the contacts will be very hot.
5. When main contacts touch, pull upward on the lever located directly behind the L2 terminal to lock open the magnet. Then release the pressure on the movable contacts until they stop at their full open position. See Fig. **2**.
6. Grasp the coil by its handle and pull straight forward to remove.
7. Slide in new coils and tighten the screws to secure in place.
8. Push firmly on pole two movable contact assembly until the main contacts touch. The magnet will then lock into place. Then release the movable contacts.
9. Reinstall the arc chutes.

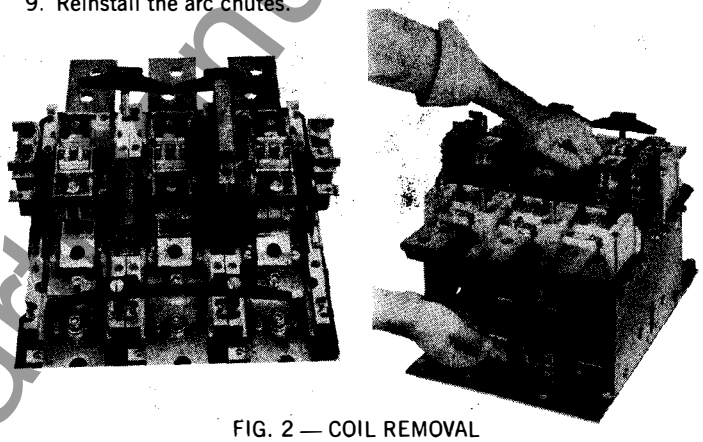


FIG. 2 — COIL REMOVAL

Main Coils

Control Voltage		Main Coil Part No. 2 Required
Volts	Hertz	
120	50/60	9-2654
240	50/60	9-2654-2
480	50/60	9-2654-3
600	50/60	9-2654-4
380	50/60	9-2654-5
208	50/60	9-2654-6
415	50/60	9-2654-7
110	50/60	9-2654-8
220	50/60	9-2654-9
550	50/60	9-2654-10
440	50/60	9-2654-11

FEEDER GROUP
This is the panel assembly located below the contactor load terminals. It supplies the main contactor coils with DC control voltage. See instruction pub for wiring diagram. Remove the feeder group from the contactor before servicing any of its components.

FEEDER GROUP RENEWAL
1. Disconnect all power to the contactor/starter.
2. Disconnect the 6 wires going to the terminal block.
3. Loosen and remove the panel mounting screws and remove the panel. Use 6mm allen wrench.
4. Reverse the above to install new feeder group.

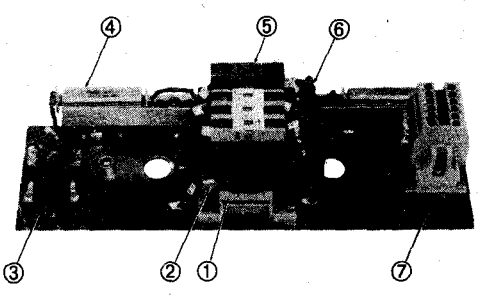


FIG. 3 — FEEDER GROUP

Feeder Group Renewal Parts — See Fig. 3.

Control Voltage		Feeder Group (Complete)	DC Relay (Complete) Item 1	Relay Coil Item 2 (Includes It. 5 and 6)	Rectifier Item 3	Main Coil Saving Resistor Panel Item 4	RC Group Item 7
Volts	Hertz						
120V	50/60	9-2664	10-5885	9-2653	35-880	57-4114	34-1151
240V	50/60	9-2664-2	10-5885-2	9-2653-2	35-878	57-4114-2	34-1151
480V	50/60	9-2664-3	10-5885-3	9-2653-3	35-878	57-4114-3	34-1151
600V	50/60	9-2664-4	10-5885-4	9-2653-4	35-879	57-4114-4	....
380V	50/60	9-2664-5	10-5885-5	9-2653-5	35-878	57-4114-5	34-1151
208V	50/60	9-2664-6	10-5885-6	9-2653-6	35-878	57-4114-6	34-1151
415V	50/60	9-2664-7	10-5885-7	9-2653-7	35-878	57-4114-7	34-1151
110V	50/60	9-2664-8	10-5885-8	9-2653-8	35-880	57-4114-8	34-1151
220V	50/60	9-2664-9	10-5885-9	9-2653-9	35-878	57-4114-9	34-1151
550V	50/60	9-2664-10	10-5885-10	9-2653-10	35-879	57-4114-10	....
440V	50/60	9-2664-11	10-5885-11	9-2653-11	35-878	57-4114-11	34-1151

FEEDER GROUP COMPONENT REPLACEMENT
DC RELAY COIL RENEWAL

1. Disconnect all power to the contactor/starter.
2. Remove feeder group assembly per "Feeder Group Renewal."
3. Disconnect the wires going to the coil terminals and the red colored auxiliary contact.
4. Disconnect the coil saving resistor.
5. Remove the red colored auxiliary contact. See Fig. 4.
6. Remove the relay from the panel by loosening and removing the 2 mounting screws.
7. Turn the relay over to show the bottom.
8. Using a screwdriver, pry loose the clips holding the relay together. See Fig. 4.
9. Carefully remove the 2 spring clips and separate the relay to expose the coil. Be careful not to loose the 2 return springs.
10. Remove the old coil by lifting it straight up.
11. Install new coil. The return spring retainers and the coil terminals are on the top. See Fig. 4.
12. Reassemble the return springs and the two halves of the relay.
13. Install the spring clips.
14. Remount the relay and reconnect the coil terminal wires.
15. Install new coil saving resistor and new "Red" auxiliary contact block.
16. Reconnect the wires to the auxiliary contact.

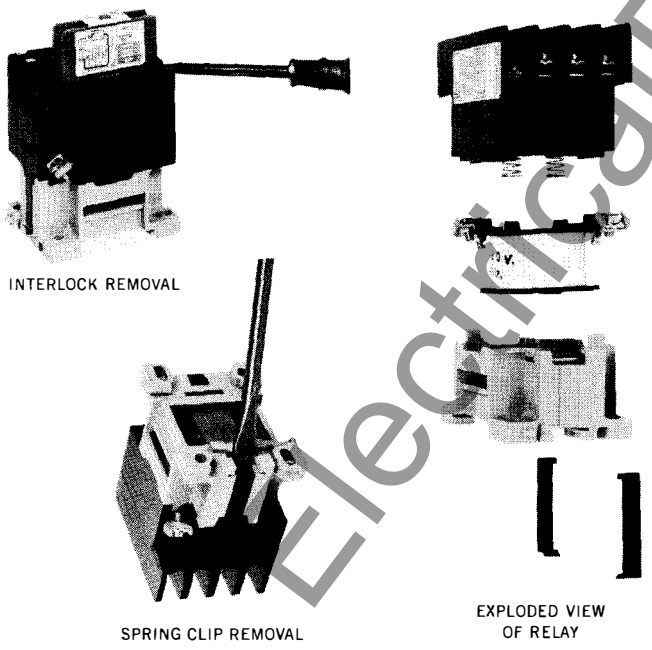


FIG. 4 — COIL REMOVAL AND AUXILIARY CONTACT REMOVAL

RECTIFIER REPLACEMENT

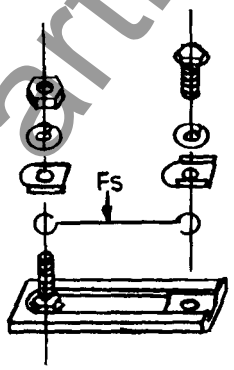
1. Disconnect all power to the contactor/starter.
2. Remove the 4 terminal screws and wires from the top of the rectifier.
3. Remove the 2 mounting screws.
4. Mount the new rectifier in the same location using the mounting screws.
5. Reattach the wires to the terminals in their proper location (DC wires marked "+" and "−"). See instruction pub for wiring diagram.

MAIN COIL SAVING RESISTORS REPLACEMENT

1. Remove feeder group as mentioned above.
2. Remove the two end wires on the resistor panel.
3. Loosen and remove the two screws holding the mounting bracket to the panel and remove the resistor panel.
4. Remove and replace the resistors.
5. Remount the resistor panel and reconnect the two end wires.
6. Reassemble the feeder group to the contactor/starter.
7. Reconnect the terminal block wires.

FUSE LINK RENEWAL

1. Disconnect all power to the contactor/starter.
2. Remove arc chutes.
3. Remove mounting hardware. See Fig. 5.
4. Remove fuse link. Reinstall new fuse link based on the line voltage. See table in Fig. 5.



Line Voltage	Fs Color
208/240	Green
380	Black
480/600	Red

See Renewal Parts Information for Replacement Fuse Links.

FIG. 5 — FUSE LINK

MAIN CONTACT RENEWAL

1. Disconnect all power to the contactor/starter.
2. Remove arc chutes.
3. Install contact removal tools onto movable contact assembly. See Fig. **6**.
4. Compress the contact springs about 1/16" by turning down screw, until the locking pins become loose.
5. Remove locking pins by sliding them to the right or left.
6. Remove movable contact assembly and tools.
7. Remove stationary contacts by removing the 3 allen screws. Use a 6mm allen wrench.
8. Install new stationary contacts and screws.
9. Assemble movable contacts, springs, and spring retainers. Hold them together using the contact tools. See Fig. **7**.
10. Place the movable contact assembly into the drive bracket. Make sure that the pin fits into the center movable contact.
11. Compress the contact springs about ½" using the assembly tools until you can slide the locking pins into position.
12. Slide locking pins into place.
13. Remove contact tools.
14. Install arc chutes.

NOTE - The damper contact should be replaced when the main contacts are renewed. See "Renewal of Damper Contacts."

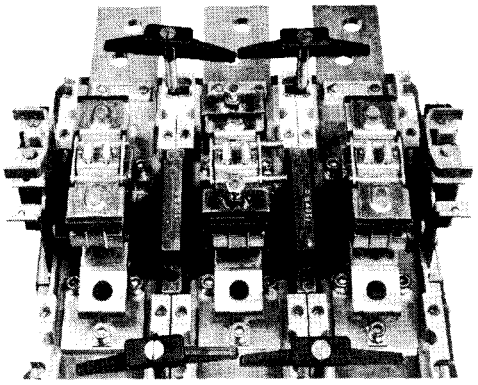


FIG. 6

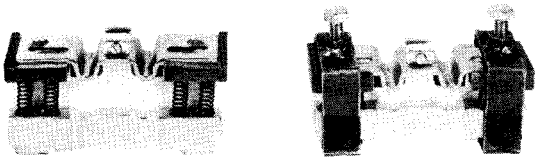


FIG. 7

FIGURES 6 AND 7 — MAIN CONTACT RENEWAL

RENEWAL OF DAMPER CONTACTS

1. Disconnect all power to the contactor/starter.
2. Remove the arc chutes and main coils as previously described.
3. Remove the main contacts as previously described.
4. Remove contact guide bracket, return spring and movable contact by removing the 2 mounting screws. See Fig. **8**. Tilt the guide bracket as shown to remove.
5. Remove the stationary contacts using a 10mm wrench.
6. Install new stationary contacts and lockwashers.
7. Install the new contact guide bracket, return spring, and movable contact.
8. Reinstall the main contacts, the coils, and the arc chutes.

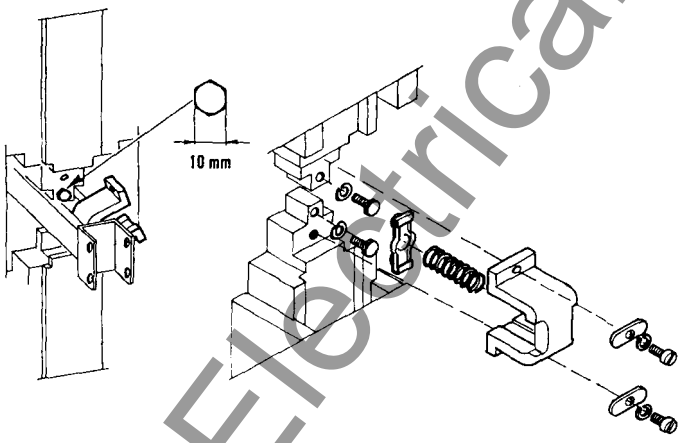


FIG. 8 — DAMPER CONTACT RENEWAL

RENEWAL OF THE MAGNET FRAME ASSEMBLY

This consists of 2 "U" shaped frames located under the line and load sides. Both frames are to be replaced using the following procedure. See Fig. **9**.

1. Disconnect **all** power to the starter/contactor.
2. Remove the locking ring, Item 1, from one end of the support shaft, Item 2.
3. Slide the support shaft outward until it clears the magnet frame. Be careful not to loose the nylon spacers. Support the magnet so it does not fall.
4. Remove magnet.
5. Reverse steps 2 and 3 to reinstall the new magnet frame. **NOTE:** It may be necessary to lightly lubricate the shaft with "MolyCoat" grease or equivalent before reassembly.

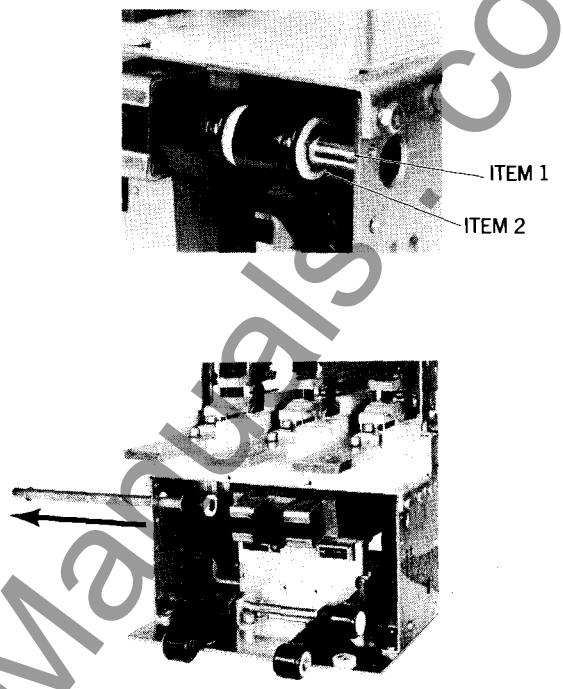


FIG. 9 — MAGNET RENEWAL

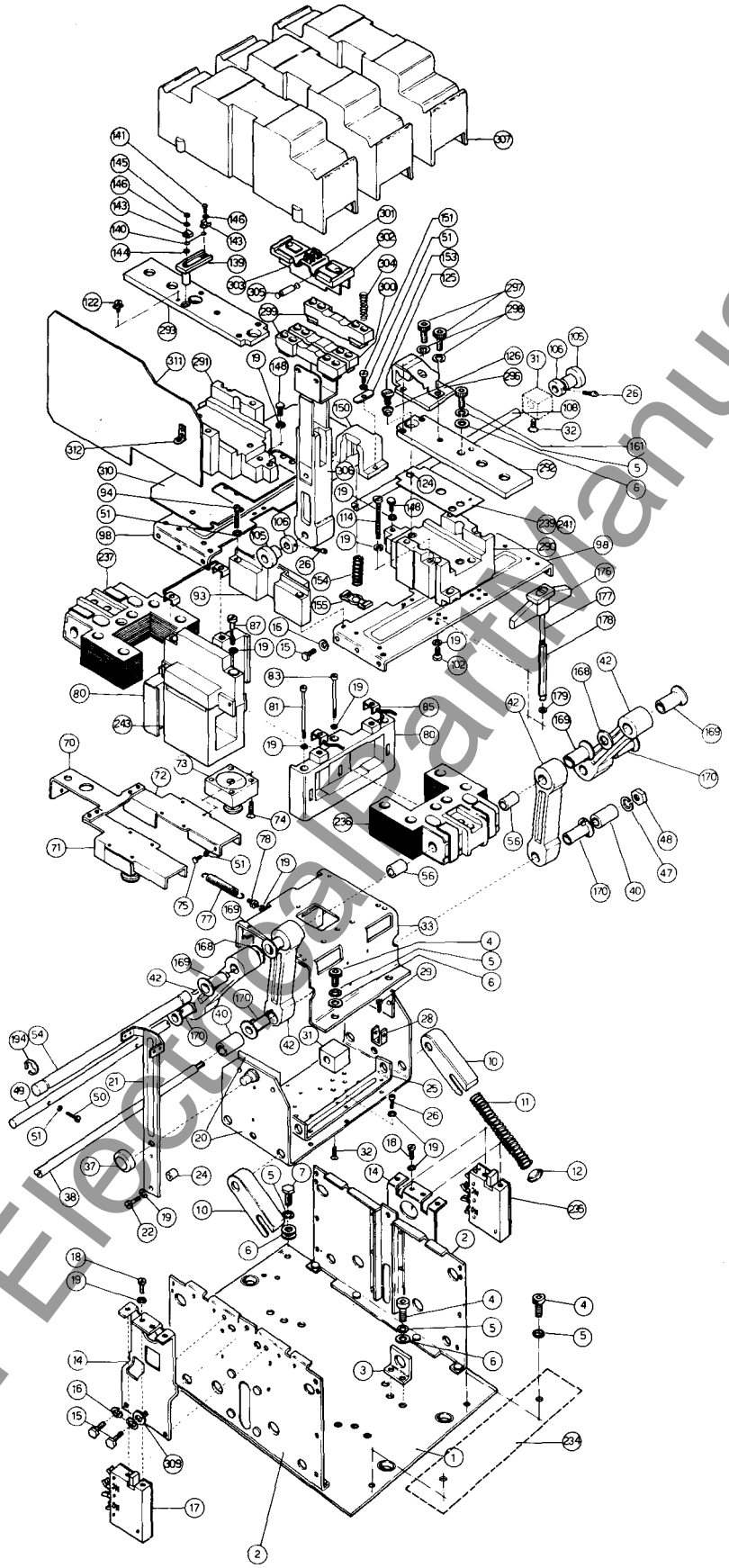


FIG. 10

Item No.	Description	Part Number	Quantities C10	A10	C50	A50
1	Mounting Plate Assembly, Base Plate		1	1	2	2
2	Side Plate		2	2	4	4
3	Bracket		4	4	8	8
4	M8x16 Allen Screw		14	14	28	28
5	Helical Lockwasher (M8)		18	18	36	36
6	Flat Washer (M8)		17	17	34	34
7	M8x16 Hex Screw (Ground)		1	1	2	2
10	Return Spring Guide		4	4	8	8
11	Return Spring		4	4	8	8
12	Return Spring Retainer		4	4	8	8
14	Auxiliary Mounting Bracket		2	2	4	4
15	M6x10 Screw		18	18	36	36
16	Helical Lockwasher (M6)		18	18	36	36
17	Auxiliary Contact (NO/NC)	C320KA5	1	1	2	2
18	M5x8 Shoulder Screw		4	4	8	8
19	Helical Lockwasher (M5)		57	57	114	114
20	Drive Frame Assembly		1	1	2	2
21	Auxiliary Contact Drive Bracket		2	2	4	4
22	M5x20 Screw		4	4	8	8
24	Spacer		4	4	8	8
25	Lower Shaft Support Bracket		2	2	4	4
26	M5x10		8	8	16	16
28	Pivot Bracket		4	4	8	8
29	M5x10 Screw		4	4	8	8
31	Pivot Supporting Block		2	2	4	4
32	M6x10 Screw		4	4	8	8
33	Coil Supporting Frame		1	1	2	2
37	Roller		2	2	4	4
38	Threaded Rod		2	2	4	4
40	Spacer		4	4	8	8
42	Pivot Arm		8	8	16	16
47	Helical Lockwasher (M10)		2	2	4	4
48	Hex Nut (M10)		2	2	4	4
49	Rod		2	2	4	4
50	M4x18 Screw		4	4	8	8
51	Helical Lockwasher (M4)		16	16	32	32
54	Magnet Frame Support Rod		2	2	4	4
56	Magnet Frame Bushing		4	4	8	8
70						
71	Coil Release Bracket Assy		1	1	2	2
72						
73	Shock Absorber		2	2	4	4
74	M5x25 Screw		8	8	16	16
75	M4x8 Screw		2	2	4	4
77	Return Spring		1	1	2	2
78	Spring Pivot		1	1	2	2
80	Magnet Support Frame		2	2	4	4
81	M5x75 Screw		4	4	8	8
83	M5x60 Screw		2	2	4	4
85	Coil Connectors		4	4	8	8
93	Side Insulating Block		2	2	4	4
94	M4x30 Screw		4	4	8	8
98	Terminal Block Platform		2	2	4	4
102	M5x12 Screw		4	4	8	8
105	Roller		2	2	4	4
106	Locking Bushing		2	2	4	4
108	Connecting Rod		1	1	2	2
114	M5x60 Screw		24	24	48	48
122	M3x5 Screw		3	3	6	6
125	8x16 Screw		9	9	18	18
126	Countersunk External Tooth Lockwasher (M8)		9	9	18	18
139	Fuseholder		3	3	6	6
140	Fuse Wire Kit	44-2078	1	1	2	2
141	M4x12 Screw		3	3	6	6
143	Anti-rotation Plate		6	6	12	12
144	M4x2 Hex Nut		3	3	6	6
145	M4x4 Hex Nut		3	3	6	6
146	Spring Washer		6	6	12	12
148	Stationary Contact — Damper Circuit	See Item 328	6	6	12	12
150	Guide Bracket	See Item 328	3	3	6	6
151	M4x16 Screw	See Item 327	6	6	12	12
153	Clamping Plate	See Item 328	6	6	12	12

Item No.	Description	Part Number	Quantities C10	A10	C50	A50
154	Contact Spring — Damper Circuit	See Item 328	3	3	6	6
155	Movable Contact — Damper Circuit	See Item 328	3	3	6	6
161	M8x22 Screw		3	3	6	6
168	Spacer		4	4	8	8
169	14mm Rod Bushing		8	8	16	16
170	12mm Rod Bushing		8	8	16	16
176	Arc Chute Hold-Down	99-2164	4	4	8	8
177	M6x100 Screw	See Item 176	4	4	8	8
178	Threaded Column	See Item 176	4	4	8	8
179	Internal Tooth Lockwasher (M5)	See Item 176	4	4	8	8
194	Clip Ring		4	4	8	8
234	Feeder Group	See Table p. 2				
235	Auxiliary Contact DC	10-5883	1	1	2	2
236	Magnet Frame, Lower — Includes Items 56 & 237.	17-17719-3	1	1	2	2
237	Magnet Frame, Upper	See Item 236				
239	1mm Thick Plate		6	6	12	12
241	0.5mm Thick Plate		6	6	12	12
243	Main Coil (includes Item 87)	See Table p. 1	2	2	4	4
290	Lower Terminal Block		3	3	6	6
291	Upper Terminal Block		3	3	6	6
292	Lower Terminal Plate		3	3	6	6
293	Upper Terminal Plate		3	3	6	6
296	Stationary Contact	See Item 328	6	6	12	12
297	M8x16 Screw	See Item 328	18	18	36	36
298	Helical Lockwasher	See Item 328	18	18	36	36
299	Outside Movable Contact	See Item 328	6	6	12	12
300	Center Movable Contact	See Item 328	3	3	6	6
301	Retainer Bracket	See Item 328	3	3	6	6
302	Contact Spring Retainer	See Item 328	6	6	12	12
303	Contact Barrier	See Item 328	6	6	12	12
304	Contact Spring	See Item 328	36	36	72	72
305	Locking Pin	See Item 328	6	6	12	12
306	Movable Contact Drive Assembly		3	3	6	6
307	Arc Chute	62-841-2	3	3	6	6
309	Flat Washer (M6)		2	2	4	4
310	Frame Barrier	73-2788	2	2	4	4
311	Phase Barrier — Includes Item 312	73-2789	2	2	4	4
313	Fuse Block Assembly	C320FBR	2	2	2	2
314	3/8-16x1.75 Hex Screw	911-5654Z	12	9	12	3
315	3/8-16x2.00 Hex Screw	911-5656Z	—	—	—	6
316	3/8-16x1.50 Hex Screw	911-5652Z	—	6	—	6
317	Lug (Size 8)	80-4181	6	6	6	6
318	Connector	19-2911	—	3	—	3
319	Current Transformer	42-3418-2	—	3	—	3
320	Side Plate	47-28267	—	2	—	2
	1/4-20x.500 R.H. Sems Screw	11-1108	—	4	—	4
321	Top Plate	81-15983	—	1	—	1
	10-32x.562 R.H. Sems Screw	11-681	—	2	—	2
	10-32x.375 R.H. Sems Screw	11-934	—	2	—	2
	10-32 Locknut	15-645	—	1	—	1
	#10 Washer	916-521Z	—	1	—	1
322	Power Terminal Clamp	55-1763	—	6	—	6
323	Thermal Element	10-4057	—	3	—	3
	6-20x.281 P.H. Thread Cut Screw	11-2500	—	3	—	3
324	Terminal Plate	80-2749	—	6	—	6
	6-20x.438 P.H. Thread Cut Screw	11-2669	—	6	—	6
325	Reset Button (white)	53-1236-6	—	1	—	1
326	Overload Relay (complete)	C300CN3	—	1	—	1
327	Strap	19-2922	—	3	—	3
328	Contact Kit (Not Shown) Includes Items 148-155, and 296-305	6-571	1	1	2	2

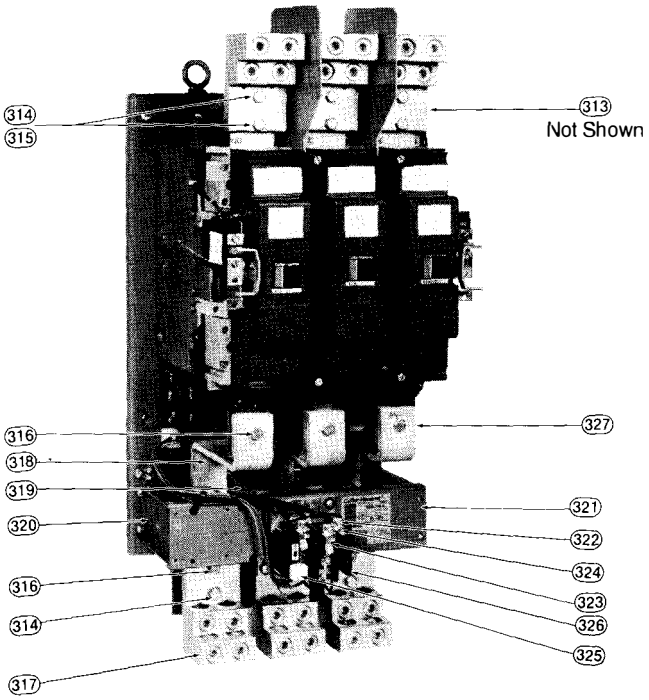


FIG. 11

RENEWAL OF CURRENT TRANSFORMERS

1. Disconnect all power to the starter.
2. Remove the two screws holding the top plate to the right-hand side plate. This will allow the top plate to swing away from the transformers.
3. Disconnect the transformer wiring.
4. Remove the mounting hardware that secures the bus bar connectors which pass through the transformers.
5. Remove the two screws that secure the transformer to its mounting brackets. Note the location of the polarity mark.
6. Remove the bus bar connectors and the transformers.
7. Reinstall new transformers by reversing the above. Make sure the transformer polarity is correct.

RENEWAL OF EUTECTIC OVERLOAD RELAY

The overload relay has two steps of adjustment (low or high) obtained by POSITIONING THE HEATER COILS as shown in the illustration below. **Note:** The location of the pointed terminal on the heater coil.

The heater coil selection table furnished with the starter illustrates the proper mounting position. All coils must be mounted in the same position for a given overload relay.

Heater Coil Position

LOW POSITION	HIGH POSITION
	

Reset and tripped indication —
A transparent rectangular window above the reset button provides visual indication.

Relay Reset — Dark window.

Relay Tripped — Light (silver) window.

DO NOT disassemble this relay!

The parts illustrated (Fig. 11) and listed on page 5 are available for repairs. If parts are required other than those listed, replace the complete relay.

AUXILIARY INTERLOCKS

The electrical interlocks are renewable as a complete assembly. They are available in a N.O./N.C. configuration.

LIttle care is required for the interlocks beyond occasional examination to ensure that parts move freely without interference or binding.

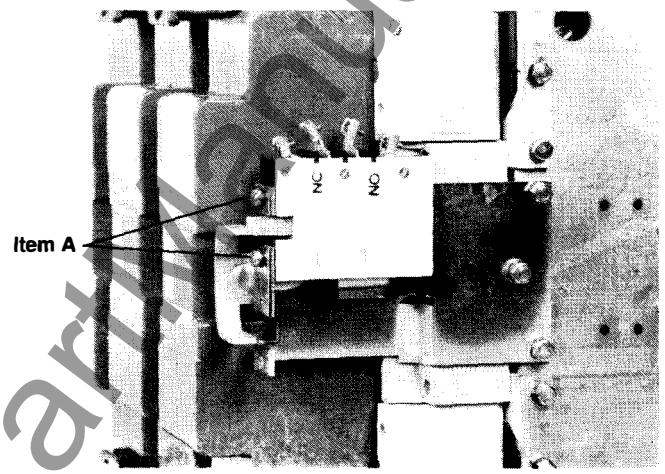


FIG. 14

INSTALLATION INSTRUCTIONS

1. Remove Screws and Lockwashers (Item A) from top of interlock.
2. Line up holes in interlock with desired holes in mounting frame — right or left side of device.
3. Mount the interlock to the frame by installing screws and lockwashers (Item A).
4. Tighten screws to secure interlock to the mounting frame.

FOR A50 AND C50 DEVICES ONLY

MECHANICAL INTERLOCK ADJUSTMENT

HORIZONTAL VERSION
PART NO. 10-5833

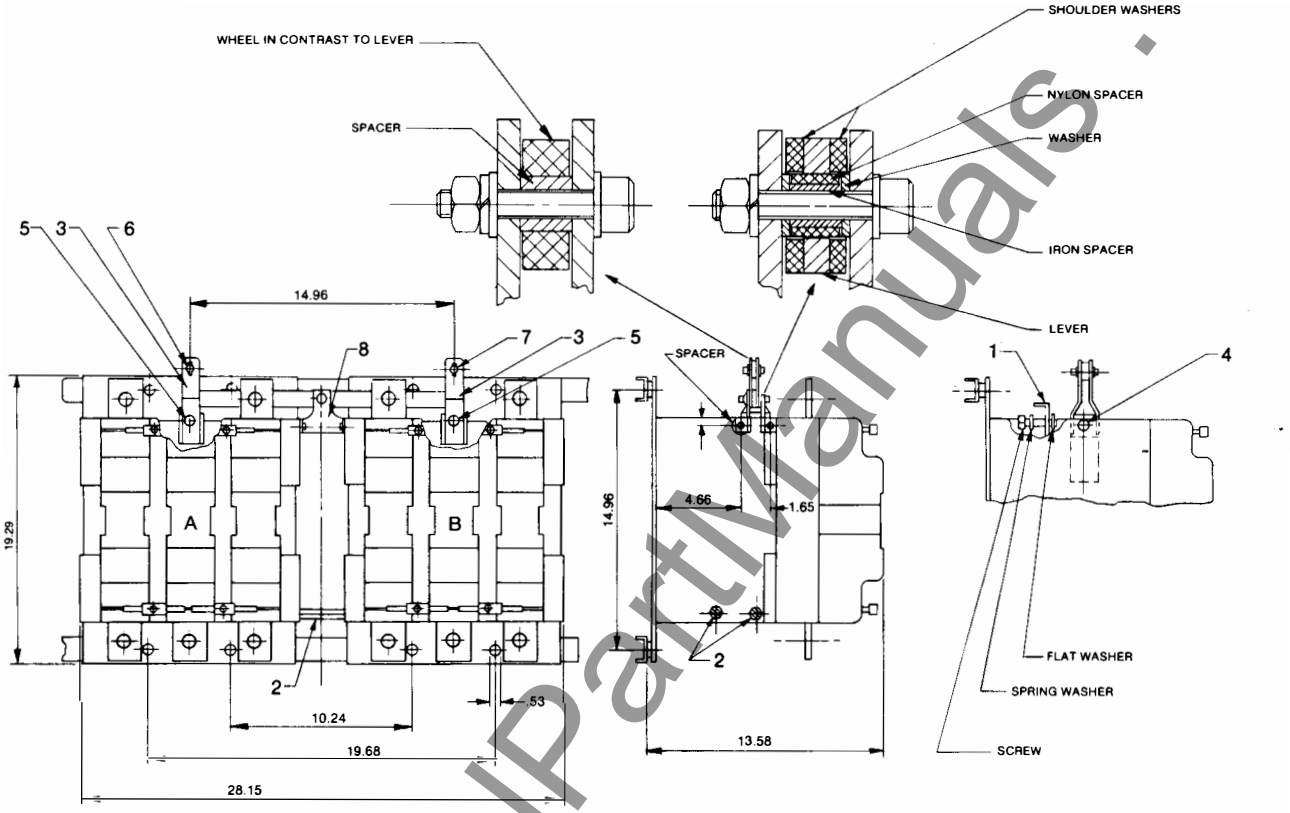


FIG. 13

1. Place the two devices A and B in the given position and unite them by means of the two spacers ITEM 2 and the lever ITEM 8.
2. Assemble the U bolts ITEM 3 on the magnets, tightening screw 5.
3. Tighten screw 6 in the center of the slot; loosen screw 7 and energize the A device.
4. Tighten screw 7 so that the wheel is .040 from the lever.
5. Check that the clearance is retained when de-energizing A device and energizing B.

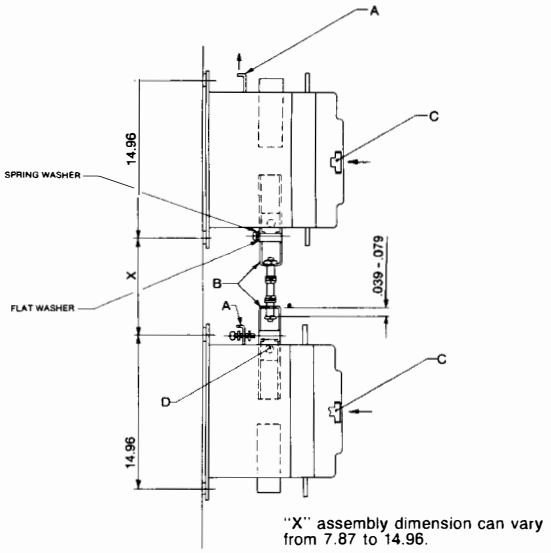


FIG. 12

VERTICAL MECHANICAL INTERLOCK — PART NO. 10-5832

1. Pull levers "A" up in order to pull magnets from coils. Mount "B" stirrups onto magnets with M8 x 45 screws.
2. Return magnets to their normal position by pushing on "C" auxiliary contact drive brackets.
3. Adjust device to obtain about .039–.079 clearance as indicated in drawing, upper contactor being energized. Check that clearance is kept when de-energizing upper contactor and energizing lower one.