



DRAWOUT HIGH VOLTAGE CONTACTOR, SERIES B 2500 / 5000 VOLTS 400 AMPERE (OPEN RATING)

GENERAL DESCRIPTION

The Class 8110 drawout type contactor is a 3-pole air break device. The contactor is rated at 5 KV, 400 ampere (open) and has an interrupting rating of 50 MVA RMS symmetrical.

The contactor is supplied in 3 configurations, consisting of the following assemblies, for various applications:

- 1) Full voltage starter
 - a) basic contactor
 - b) power fuse assembly
 - c) control power transformer assembly
- 2) "Forward" contactor in a reversing starter
 - a) basic contactor with additional stab bus assembly
 - b) power fuse assembly
 - c) control power transformer assembly
- 3) "Run" contactor in a reduced voltage starter, or "Reverse" contactor in a reversing starter.
 - a) basic contactor with additional stab bus assembly

An additional 750 VA control power transformer may be supplied, to obtain 3 phase power or to double the control circuit power capacity. (See figure 1.) The wiring diagram of the starter should be consulted to determine the control transformer configuration for a particular application.

The Class 8110 contactor is also available as a mechanically latched device for transformer feeder circuits, automatic transfer applications and other applications where it is desirable to have the contactor remain closed should the voltage dip or fail. These contactors are closed electrically and may be opened by mechanical linkage; or optionally by an electrically operated solenoid for remote operation.

MAINTENANCE

GENERAL

Inspection should be done on a regular basis. The contactor should be inspected weekly under intermittent operating conditions where frequent starting is required. When used for longer, continuous-duty cycles, a less frequent inspection interval can be established. If contactor is operating in dirty or contaminated atmosphere, more frequent inspection intervals are desirable.

If trouble is found during inspection, repairs should be made immediately. Make sure all connections are tight and that the arc chutes and barriers are in good condition and properly installed.

Inspect the contact alignment. Contacts should make firmly and squarely over entire surfaces.

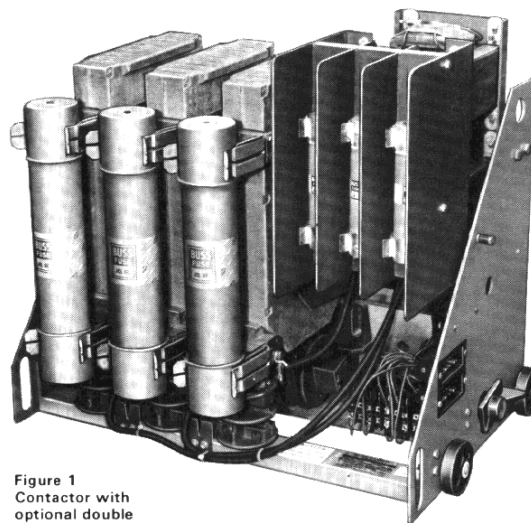


Figure 1
Contactor with
optional double
transformer assembly.

CAUTION

MAKE SURE THE CONTACTOR IS DISCONNECTED BEFORE MAINTENANCE PROCEDURES ARE ATTEMPTED.

CLEANING

Brush all dirt or dust from the contactor. Pay particular attention to the stationary and movable contact surfaces. Discoloration of the surfaces and slight pitting is allowable. If the contact surfaces show burned marks, grooves, deep pits, or are structurally weakened, they should be replaced.



Figure 2 Contact Tip
Replacement

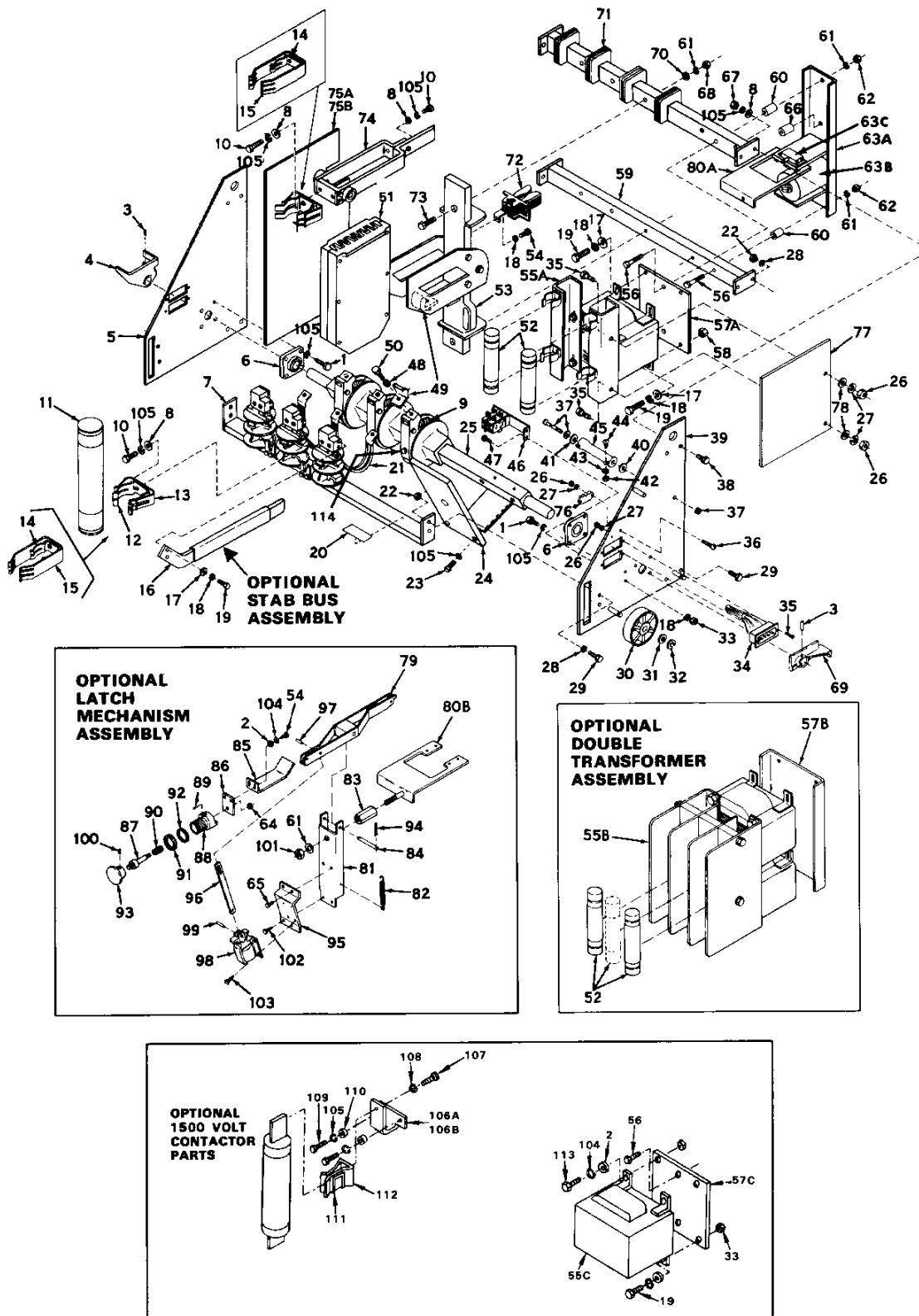
CONTACT TIP

REPLACEMENT

Remove the power fuses, if used, (item 11) and barriers (75). Raise arc chute and prop it in raised position. Use an open end wrench as shown in figure 2 to remove the screw (50) and lock washer (48) securing the lead assembly and moving contact tip (49) to the shaft assembly (25). Remove the screw securing the stationary contact tip. Replace all stationary contact tips first and then replace moving contact tip. An electrical clearance of 7/8" between the stationary and movable contact tips is required when the contactor is de-energized. To adjust the clearance between the tips, turn adjusting screw (114). Remove prop under arc chutes and lower into place; replace barriers and power fuses.



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Item No.	Part No.	Description	Item No.	Part No.	Description
1	21402-25160	3/8"-24 x 1/2" H. H. Machine Screw	57A	A51033-057-01	Mounting Plate
2	23601-00200	1/4" Plain Washer	57B	B51033-131-01	Mounting Plate
3	24209-16480	1/4" x 1 1/2" Roll Pin	•57C	A51033-223-01	Transformer Mounting Plate
4	A51033-077-50	Interlock Arm Assembly	58	23003-00200	1/4" - 20 Nut
5	C51033-016-50	Frame Sideplate (L.H.)	59	A51033-030-50	Rear Frame Support Assembly
6	29013-03320	Bearing	60	B50502-053-09	Spacer
7	A51033-027-50	Front Channel Assembly, complete with Pedestals, Standoff Insulators, and Barrier Guides	61	23701-00280	1/2" Lock Washer
8	23601-00242	3/8" Plain Washer	62	23045-28000	1/2" - 13 Nut
9	A51033-023-01	Spring (Part of Item 25)	63A	A51033-052-50	Magnet Base Assembly, including Items 63B and 63C
•10	21401-24360	3/8" x 16 x 1 1/8" H. H. Cap Screw	63B	L-6130A	Coil
*11		Power Fuse, Refer to wiring diagram supplied with specific equipment.	63C	A51033-083-50	Electrical Interlock
12	B80012-004-01	Fuse Clip, (for Single Fuse)	64	23002-00200	1/4" - 20 Hex Std. Nut
13	B80012-005-01	Fuse Clip Spring, (for Single Fuse when used)	65	21527-20160	1/4" - 20 x 1/2" Lg. Type "C" Thr'd. Form Screw
•14	A51202-184-01	Fuse Clip, (Use with Double Fuse)	66	B50502-053-10	Spacer
•15	A51202-183-01	Fuse Clip, (Use with Double Fuse)	67	23045-24000	3/8" - 16 Nut
16	A51033-067-50	Stab Bus Assembly	68	23045-28000	1/2" - 13 Nut
17	23601-00201	1/4" Plain Washer	69	A51033-081-50	Interlock Arm Assembly
18	23712-32000	1/4" Lock Washer	70	23601-00261	1/2" Plain Washer
19	21401-20240	1/4" - 20 x 3/4" H. H. Cap Screw	71	D51033-031-50	Top Support Assembly
20	A51139-047-03	Name Plate	72	A51033-042-50	Primary Disconnect Assembly, complete with Bracket, Disconnect Fingers, Pins, Springs, Spacers and Retaining Rings
21	A51033-025-50	Assembly Flex Connector	73	21401-28480	1/2" - 13 x 1 1/2" H. H. Cap Screw
22	23045-22000	5/16" - 18 Nut	74	A51033-063-50	Power Fuse Bus Assembly, complete with Bus Bars, Mounting Block, and Barriers
23	21401-24480	3/8" - 16 x 1 1/2" H. H. Cap Screw	•75A	A51033-076-01	Barrier
24	A51033-058-01	Armature	•75B	A51033-219-01	Barrier (1500V only)
25	A51033-018-50	Shaft Assembly, complete with Contact Arm Assemblies, Pins, Retaining Rings, Springs, Knockers and Flexible Shunt	76	A51033-084-50	Rectifier
26	23001-00160	No. 10-24 Nut	77	A51033-106-01	Barrier
27	23701-00160	No. 10 Lock Washer	78	23601-00141	No. 10 Plain Washer
28	23701-10221	5/16" Lock Washer	79	B51033-139-50	Assem. Mech. Latch Arm.
29	21401-22240	5/16" - 18 x 3/4" H. H. Cap Screw	80A	A51033-055-01	Armature Stop Plate
30	29099-10160	Wheel	80B	A51033-141-50	Assem. Armature Stop Plate
31	23601-00260	7/16" Plain Washer	81	A51033-142-01	Bracket Mech. Latch
32	29915-02811	Retaining Ring	82	A51033-143-01	Spring
33	23001-00200	1/4" - 20 Nut	83	A51033-144-01	Adjusting Nut
34	B51033-160-50	Wire Harness	84	B50502-276-38	Pin
35	21001-16160	No. 10 - 24 x 1/2" RD. H. Machine Screw	85	A51033-147-01	Push Arm
36	21507-16280	10 - 24 x 7/8" H. H. Machine Screw	86	A51033-148-01	Push Button Plate
37	A51033-167-50	Resistor Hardware, Includes Items, 40, 41 and 45	87	A51033-149-01	Push Button Shaft
38	21401-24320	3/8" - 16 x 1" H. H. Cap Screw	88	A51033-150-01	Reset Mech. Base
39	C51033-016-51	Frame Sideplate (R.H.)	89	2358-X1	Dowel Pin
40	TW-97	Mica Washer	90	2760-X3	Spring
41	X-2184	Mica Washer	91	2358-C1-X1	Ring Nut
42	23001-00120	No. 6 - 32 Nut	92	2358-X8	Gasket
43	23701-00120	No. 6 Lock Washer	93	2358-C6-X3	1 3/8" Dia. Mushroom Button
44	21001-12160	No. 6 - 32 x 1/2" R. H. Machine Screw	94	24201-08240	1/8" x 3/4" Lg. Cotter Pin
45	A52906-013-61	Resistor (Included in Item 37)	95	A51033-145-01	Solenoid Bracket
46	A51033-059-50	Electrical Interlock Bracket Assembly, complete with Support Electrical Interlock, and Insulator	96	A51033-146-01	Solenoid Rod
47	21401-20200	1/4" - 20 x 5/8" H. H. Cap Screw	97	24209-16240	Roll Pin (1/4 x 3/4)
48	Class 9998	3/8" Lock Washer	98	"Guardian" #18	AC Solenoid 115V 60 Cycle Intermittent Duty
•49	Type LA-1	Contact Tips	99	24209-08321	1/8 x 1" LG Roll Pin
50	Parts Kit	3/8" - 16 x 1" H. H. Cap Screw	100	2903-W1408	#8 - 32 - 1/4 Lg. Socket Set Screw
51	A51033-073-50	Arc Chute Assembly, complete with Sidewalls, Runners, Binding Posts, and Screws	101	23002-00280	1/2 - 13 Hex Std. Nut
•52		Potential Transformer Fuse, Refer to Wiring Diagram Supplied with Specific Equipment	102	21417-22240	5/16 - 18 x 3/4 Lg. Type "C" Thr'd. Form Screw
53	A51033-135-50	Stationary Contact Base Assembly, complete with Base, Bracket, Contact Clip, Contact Tip, Coil, Disconnect Assembly, Blowout Core, Washer, and Blowout Ears	103	21527-16080	#10 - 24 x 1/4" Lg. Type "C" Thr'd. Form Screw
54	21401-20160	1/4" - 20 x 1/2" H. H. Cap Screw	104	23701-00200	1/4" P.L. L. K. Washer
55A		Potential Transformer Assembly (Refer to wiring diagram supplied with the specific equipment)	105	23701-00240	3/8" Lock Washer
55B			•106A	A51033-221-01	Fuse Adapter Pad (Top)
•55C			•106B	A51033-221-02	Fuse Adapter Pad (Bottom)
56	21401-28700	1/2" - 13 x 2 3/4" H. H. Cap Screw	•107	21401-22160	5/16" - 18 x 1/2" Lg. Screw
			•108	23701-00220	5/16" Lock Washer
			•109	21401-24240	3/8" - 16 x 3/4" Lg. Screw
			•110	23602-12409	3/8" Plain Washer
			•111	J-163936	Fuse Clip Spring
			•112	L-153507D	Fuse Jaw
			•113	21401-20320	1/4" - 20 x 1" Lg. Screw

*Essential for maintenance

•Minor revision since previous issue



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ELECTRICAL INTERLOCK SWITCH REPLACEMENT

If the starter operates correctly but the electrical interlocks do not operate, remove the two screws (47), lock washers (18), and nuts (33) that secure the interlock switch assembly (46) to the side of the contactor. Replace the interlock switch assembly.

MAGNET COIL REPLACEMENT

Remove the interlock switch assembly (46) (See above paragraph). Remove two screws (23) and lock washers (9) securing the armature to the operating shaft. Remove core cap screw and core cap washers. Disconnect coil leads from rectifier block. Slide coil off the coil core. Remove and replace coil. Reconnect coil leads. When replacing core cap washers, the thickest of the two (2) washers must be placed next to the coil. Remount the armature and interlock switch assembly.

POWER FUSE REPLACEMENT

Fuse size and rating is determined by motor characteristics (full load current and locked rotor current). Make sure the new fuse is identical with the one being replaced. Fuse information is provided on the schematic diagram supplied with the specific equipment.

Pull the fuse from the top fuse clip and then from the lower clip. If the fuse is frozen in the fuse clips, pry out gently. Take care not to damage the fuse clips.

When installing a new fuse, make sure it is centered between fuse clips and is securely held by the fuse clips at top and bottom. Starters for larger horsepower motors use double fuse clips and double power fuses.

POTENTIAL TRANSFORMER FUSE REPLACEMENT

Potential transformer fuse size and rating is determined by the size of transformer used. Make sure the new fuse is identical with the one being replaced. Fuse information is provided on the schematic diagram supplied with the specific equipment.

Pull the fuse from the top fuse clip and then from the lower clip. If the fuse is frozen in the fuse clips, pry out gently. Take care not to damage the fuse clips.

When installing a new fuse, make sure it seats firmly in the clips. Check that clips are fastened securely to brackets on the potential transformer.

RECTIFIER CHECK

With the test circuit plug inserted in the receptacle at the side of the contactor, check the dc output across terminals 3 and 26 of the rectifier (76). The output voltage should be 95 volts dc if the contactor is open and 20 volts if the contactor is closed. If the output is not correct, then either the rectifier or the magnet coil is defective. Check the output across the rectifier with the coil disconnected to isolate the trouble. The rectifier output should be 95 volts dc. If the rectifier is defective, remove it from the side of the contactor frame and replace it.

TROUBLESHOOTING CHART

Trouble	Probable Cause	Remedy
Contact chatter.	Loose connection in control circuit.	Check connections in control circuit.
	Defective control relay.	Check control relay. Replace if defective.
	Defective magnet.	Check coil or rectifier.
	Low control voltage.	Check line voltage.
Contact life short.	Contacts chatter or bounce	Check contact springs.
	Arc chutes not installed properly.	Seat arc chutes.
	Contacts not properly aligned.	Check alignment. Contacts should make squarely with even pressure across full surface.
	Foreign material in operating or contact mechanisms.	Clean all contact surfaces. Clean all operating mechanism parts.
Contacts overheat.	Loose connection.	Tighten all connections.
	Contact tips not making firmly with stationary contacts.	Check springs on operating shaft assembly for weak or deformed condition. Replace defective springs.
	Dirt or foreign matter on surfaces.	Clean contact surfaces.
	Contact surfaces scored or burned.	Replace contacts.
Contact pressure weak.	Defective contact springs.	Replace springs on operating shaft assembly.
	Contact tips worn beyond limits.	Replace contact tips.
Contacts do not close.	Potential transformer fuses blown.	Inspect potential transformer fuses. Replace if blown.
	Control circuit fuse blown.	Inspect control circuit fuse on relay panel. Replace if blown.
	Magnet coil defective.	Check coil resistance. Cold coil resistance 28 Ohms at 25°C.
	Control relay defective	Check control relay. Replace if defective.
	Potential transformer defective.	Check potential transformer as directed in the Routine Maintenance section of Service Bulletin 8198-1.
	Rectifier defective.	Check as directed in the Maintenance section. Replace if defective.