MAXPAK PLUS
ACCESSORY

INSTRUCTION MANUAL D-3852-1

INCOMING LINE CIRCUIT BREAKER KIT
For Regenerative MaxPak Plus Controllers
Model Numbers 23C301-23C304
Assembly Drawing 705390-3

The equipment described below should be installed only by qualified electrical maintenance personnel familiar with the construction and operation of the equipment and the hazards involved.

DESCRIPTION

Circuit breaker kits provide an a-c input line circuit breaker and through-the-door operating mechanism for installation into regenerative MaxPak Plus controllers. The circuit breaker provides additional fault protection for the drive by means of its magnetic trip device. It also serves as a means to disconnect and lock out incoming a-c line power. A through-the-door operator allows operation of the circuit breaker from outside the controller cabinet and provides a mechanical door interlock as well.

Each kit is supplied complete with its circuit breaker premounted on a sheet metal plate for installation in front of the armature contactor and circuit breaker, a load side wiring harness, an insulating side shield (where required) to provide personnel protection by preventing accidental contact with armature buswork hidden by the kit, and top and bottom mounting brackets. All hardware required for installation is provided with each kit.

SPECIFICATION

The appropriate circuit breaker kit should be selected on the basis of controller horsepower and voltage per Table 1. Table 1 also provides breaker frame size, current and trip setting specifications for each kit.

TABLE 1
CIRCUIT BREAKER KIT SPECIFICATIONS

Kit Model Number	Controller Horsepower			Circuit Breaker Specifications		
	Incoming Line Voltage			Current Rating (Amperes)	Frame	Magnetic Trip Setting
	230 VAC	460 VAC	550 VAC			
23C301	5-25	5-50	40-60	100	FB	LO
23C302	30-40	60-75	75-100	150	FB	LO
23C303	50-60	100-125	125-150	250	KB	LO
23C304	75	150	180	400	LB	LO

ALLOWABLE AVAILABLE FAULT CURRENT

The regenerative MaxPak Plus controller, furnished without an input circuit breaker, has a short circuit protection system designed to operate on plant power supplies with maximum allowable available symmetrical RMS fault currents as listed in Table 5 on page 10 of I/M D-3851. Do not attempt to operate the MaxPak Plus controller on plant power supplies with available short circuit currents in excess of these allowable maximums.

The addition of these incoming line circuit breaker kits do not reduce the allowable available short circuit. Table 5 on page 10 of I/M D-3851 lists allowable short circuit currents for MaxPak Plus controllers. Data in Table 5 is applicable either with or without addition of these circuit breaker kits.

INSTALLATION

(Refer to Assembly Drawing 705390-3)

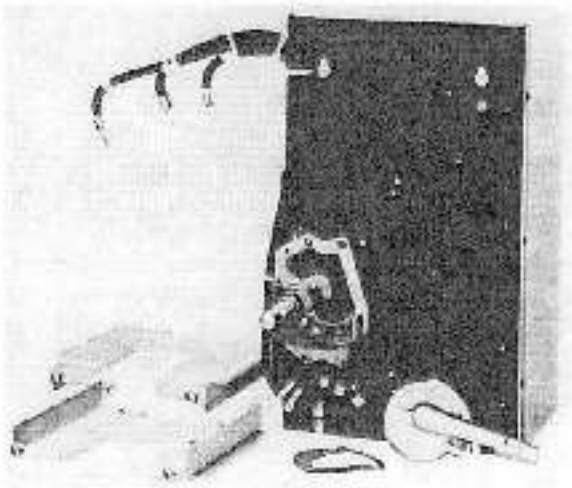
WARNING

BEFORE ATTEMPTING TO INSTALL THIS MAXPAK PLUS MODIFICATION KIT, DISCONNECT AND LOCK OUT ALL SOURCES OF INCOMING POWER TO THE CONTROLLER CABINET.

1. **DISCONNECT AND LOCK OUT ALL INCOMING DRIVE POWER TO THE MAXPAK PLUS CONTROLLER.**

2. Remove incoming line power connections from the L1, L2 and L3 (181, 182 and 183) terminals of the power unit. Mark the wires with L1, L2 and L3 identification as they are being removed. This is essential to allow reconnection of line power in step 15 with the same phase rotation. **Failure to do so will result in a failure of the drive to run when reenergized in step 17.**

NOTE: If the controller has already been equipped with a contactor cover kit, Model number 23C310, Steps 3 through 7 below may be skipped.



Top and bottom mounting brackets installed as part of the contactor cover kit will be used to support the circuit breaker and its mounting panel. Proceed to step 8.

3. It is first necessary to remove the bus bar support noted as <10 on sheet 2 of the assembly drawing. Discard the support once removed.

4. Locate the top mounting bracket and remove the bus bar support which is fastened to it with two Phillips head screws. The bus bar support will be reinstalled onto the top mounting bracket using these screws in a later step. See note <9 on sheet 2 of the assembly drawing.

   NOTE: A long (12 inch or longer) #2 Phillips head screwdriver with a magnetic tip is required to install the screws in steps 5 and 7 below. If a magnetic tipped Phillips head screwdriver of this length is not available, putty, masking tape, or some other means should be used to hold the screws on the tip of the screwdriver during installation. Otherwise, they may drop into the components on the auxiliary panel from where they might be difficult to remove and where they can pose a short circuit risk.

5. Using the 12 inch long Phillips head screwdriver with #2 magnetic tip, install the top mounting bracket to the auxiliary panel using two 1/4-20 X 1/2 self tapping screws.

6. Remount the busbar support to the top mounting bracket using the screws removed in step 4 above.

7. If necessary, remove the wire harness base which dresses the auxiliary contact cable to the auxiliary panel. This base may occupy one of the two mounting holes for the lower bracket. Mount the bottom mounting bracket using two 1/4-20 x 1/2" self tapping screws and the magnetic screwdriver. Once the lower bracket is in place, the auxiliary harness should be secured to the lower bracket using the ty-rap and base supplied with the kit. If any wires from the auxiliary harness were disconnected to allow easier installation of the bottom bracket, they should be reconnected at this time.

8. **Warning: Mount the insulating side shield to the right side lip of the cover plate using three #6-32 x 3/8" self tapping screws. This shield provides personnel protection by preventing accidental contact with otherwise hidden armature circuit buswork. Its installation is required by N.E.C. and U.L.**

9. Connect the load side cable assembly to the load side (bottom) circuit breaker terminals and tighten to 125/140 lb.-in. (1.44/1.6 kg.-m.)

10. Fasten the circuit breaker mounting plate to the top and bottom brackets using four 1/4-20 x 1/2" self tapping screws.

11. Connect the load side cable to controller incoming terminals 181, 182 and 183 and tighten to 125/140 lb.-in. (1.44/1.6 kg.-m.)

12. Remove and discard the small cover plate on the enclosure door.

13. Close the cabinet door and verify the center of the locking pin on the C/B operator shaft at 15/32" from the inner door surface. If not, adjust to 15/32" and then turn shaft CCW until slot is aligned with set screw. Tighten set screw.

14. Install the circuit breaker handle to the door with the gasket and mounting screws provided.

15. Reconnect incoming a-c plant power to the line side (top) terminations of the circuit breaker. Connect the wire previously connected to power unit terminal L1 to the left side breaker terminal, the wire from L2 to the center terminal and the wire previously connected to power unit terminal L3 connected to the right side breaker terminal. **Failure to follow this procedure may result in phase rotation reversal and a failure of the drive to run when reenergized in step 17.**

16. Verify the circuit breaker magnetic trip units to LO.

17. With the circuit breaker kit now completely installed, drive operation should be checked. Close the cabinet door. Reapply power to the incoming line feeding the controller and close the incoming circuit breaker. Start the drive. A failure to start indicates the possibility that plant power wiring was reconnected with improper phase rotation. To correct this problem, once again remove power from the plant line feeding the drive, reverse any two of the three incoming leads into the line side terminations of the circuit breaker, and once again apply plant power. The drive should now start. If it does not, refer to section 5 of I/M D-3851.

REPAIR PARTS

A complete parts list is provided on assembly drawing 705390-3.

RELIANCE ELECTRIC

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