



INSTRUCTION SHEET D-3818-5
INCOMING LINE DISCONNECT KITS
For Low, Medium, and High Horsepower MaxPak® Plus Controllers
Model Numbers 23C2–23C6, 23C205, and 23C206
Assembly Drawings 705390, 705390-2, and 801592-94 (Supplied with kit)

DANGER

ONLY QUALIFIED ELECTRICAL PERSONNEL FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THIS EQUIPMENT AND THE HAZARDS INVOLVED SHOULD INSTALL, ADJUST, OPERATE, AND/OR SERVICE THIS EQUIPMENT. READ AND UNDERSTAND THIS MANUAL IN ITS ENTIRETY BEFORE PROCEEDING. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE BODILY INJURY OR LOSS OF LIFE.

DESCRIPTION

The products described in this instruction manual are manufactured by Reliance Electric Industrial Company.

Disconnect kits provide an A-C input line disconnect and through-the-door operating mechanism for installation into low, medium and high horsepower MaxPak Plus controllers. The circuit breaker provides additional fault protection for the drive by

means of its magnetic trip devices. It also serves as a means to disconnect and lock out incoming A-C power. A through-the-door operator allows operation of the Disconnect from outside the controller cabinet and provides a mechanical door interlock as well.

Each kit is supplied complete with its Disconnect premounted on a sheet metal plate for installation in front of the armature contactor(s), 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 Disconnect kit should be selected on the basis of controller horsepower and voltage per Table 1. Table 1 also provides breaker frame sizes, current and trip setting specifications for kits below 200 HP.

Table 1
Disconnect Kit Specifications

Kit Model Number	Controller Horsepower			Disconnect Specifications		
	Incoming Line Voltage			Current Rating (Amperes)	Frame	Magnetic Trip Setting
	230 VAC	460 VAC	550 VAC			
23C2	5–20	5–40	—	100	FB	LO
23C3	25	50	40–60	100	FB	LO
23C4	30–40	60–75	75–100	160	FB	LO
23C5	50–60	100–125	125–150	250	KB	LO
23C6	75	150	180	400	LB	LO
23C205	—	200–250	240–300	400	—	—
23C206	—	500	360	600	—	—

DANGER

DO NOT INSTALL MODIFICATION KITS WITH POWER APPLIED TO THE UNIT. DISCONNECT AND LOCK OUT INCOMING POWER BEFORE ATTEMPTING SUCH INSTALLATION. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE BODILY INJURY OR LOSS OF LIFE.

INSTALLATION

(Model Numbers 23C2 thru 23C6)

(Refer to Assembly Drawing 705390, 705390-2)

1. 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 14 with the same phase rotation. Failure to do so will result in a failure of the drive to run when re-energized in step 16.

NOTE: If the controller has already been equipped with a contactor cover kit, Model Number 23C110, 23C111 or 23C112 Steps 2 through 6 below may be skipped.

Top and bottom mounting brackets installed as part of the contactor cover kit will be used to support the disconnect and its mounting panel. Proceed to step 7.

NOTE: Steps 2, 3, 5 and 7 apply only to controllers rated 25–75 HP at 230 volts A-C input, 50–150 HP at 460 volts A-C input and 40–180 HP at 550 volts A-C input. If your controller is rated below these values, skip steps 2, 3, 5 and 7.

2. On non-reversing drives, 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.
3. 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 4 and 6 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.

4. Using the 12 inch long phillips head screwdriver with #2 magnetic tip, install the top mounting bracket to the auxiliary panel using two or four $\frac{1}{4}$ –20 x $\frac{1}{2}$ " self tapping screws.
5. Remount the busbar support to the top mounting bracket using the screws removed in step 3 above.
6. Remove the wire harness base which dresses the auxiliary contact cable to the auxiliary panel. This base occupies one of the two mounting holes for the lower bracket. Mount the bottom mounting bracket using two $\frac{1}{4}$ –20 x $\frac{1}{2}$ " 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 tyrap and base supplied with the kit. If any wires from the auxiliary harness were discon-

nected to allow easier installation of the bottom bracket, they should be reconnected at this time.

7. Mount the insulating side shield to the right side lip of the cover plate using three #6–32 x $\frac{3}{8}$ " 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.
8. Connect the load side assembly to the load side (bottom) disconnect terminals and tighten to 125/140 lb–in. (1.44/1.6 kg–m).
9. Fasten the disconnect mounting plate to the top and bottom brackets using four $\frac{1}{4}$ –20 x $\frac{1}{2}$ " self tapping screws.
10. 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).
11. Remove and discard the small cover plate on the enclosure door.
12. 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.
13. Install the disconnect handle to the door with the gasket and mounting screws provided.
14. Reconnect incoming A-C plant power to the line side (top) terminations of the disconnect. 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 re-energized in step 16.**
15. Verify the disconnect magnetic trip units to LO.
16. With the disconnect 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 disconnect. 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 to 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-3817.

REPAIR PARTS

A complete parts list is provided on assembly drawings 705390 and assembly drawing 705390-2.

INSTALLATION

(Model Numbers 23C205 and 23C206)

(Refer to Assembly Drawing 801592-94 supplied with kit).

1. 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 9 with the same phase rotation.

NOTE: If the controller has already been equipped with a contactor cover kit, Steps 3 and 4 below may be skipped. Top and bottom mounting brackets installed as part of the contactor cover kit will be used to support the disconnect and its mounting panel. Proceed to step 5.

NOTE: A long (12 inch or longer) #2 phillips head screwdriver with a magnetic tip is required to install screws in steps 3 and 4 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 components on the auxiliary panel from where they might be difficult to remove and where they can pose a short circuit risk.

2. Skip this step on reversing drives rated 200–300 HP at 480 or 550 volts A-C. Using the 12 inch long phillips head screwdriver with #2 magnetic tip, install the top mounting bracket to the auxiliary panel using four $\frac{1}{4}$ –20 x $\frac{1}{2}$ " self tapping screws.
3. Mount the bottom mounting bracket using four $\frac{1}{4}$ –20 x $\frac{1}{2}$ " self tapping screws.
4. Connect the load side cable assembly to the load side (bottom) circuit breaker terminals and tighten to 215 lb-in. (246 kg.-m).
5. Fasten the disconnect mounting plate to the top and bottom brackets using four $\frac{1}{4}$ –20 x $\frac{1}{2}$ " self tapping screws.
6. Connect the load side cable to controller incoming terminals 181, 182 and 183 and tighten to 215 lb-in. (246 kg.-m).

7. Remove handle knockout on the enclosure door.
8. Install the disconnect handle to the door with the gasket and mounting screws provided.
9. Reconnect incoming A-C plant power to the line side (top) terminations of the disconnect. 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 disconnect terminal.
10. With the Disconnect 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 Disconnect. Start the drive. A failure to start indicates the possibility that the 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 Disconnect, and once again, apply plant power. The drive should now start. If it does not, refer to section 5 of Instruction Manual D-3817.

REPAIR PARTS

A complete parts list is provided on assembly drawings 801592-94 supplied with the kit.

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