MAXPAK PLUS BLOWER MOTOR STARTER KITS

MODEL NUMBERS 23C41, 23C42, 23C43, 23C44, 23C45, 23C46, 23C51, 23C81, 23C82, 23C83, AND 23C84

FOR S6 CONTROLLERS 5-150 HP @ 230 VAC, 5-300 HP @ 460 VAC

FOR S6R CONTROLLERS 5-75 HP @ 230 VAC, 5-150 HP @ 460 VAC, 60-360 HP@ 575 VAC

VS®

DRIVES

Instruction Manual D-3821-5

July, 1992

RELIANCE ELECTRIC

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.

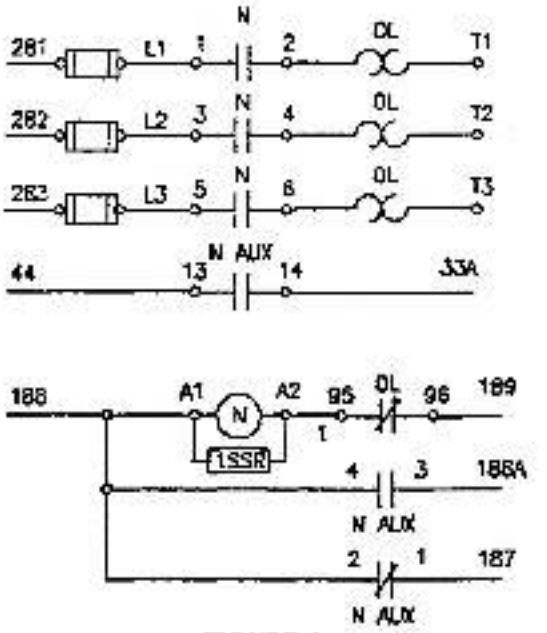


FIGURE 1
BLOWER MOTOR STARTER SCHEMATIC

DESCRIPTION

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

This kit provides a starter to control, protect and interlock the 3-phase A-C motor used for cooling a force ventilated air-over or dual cooled D-C motor.

Each starter kit provides a 3-pole magnetic starter with adjustable overload, 3 Class CC Type CCMR fuses, a wiring harness and mounting hardware. Figure 1 provides a schematic of the starter.

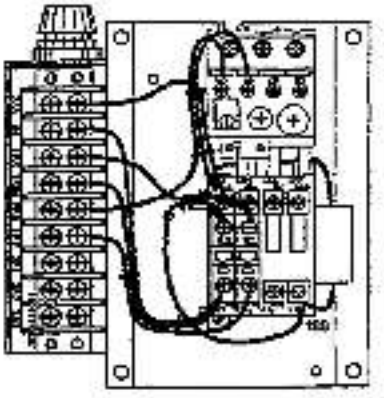
OPERATION

Blower motor control is provided by means of a magnetically operated 3-phase motor starter. The starter coil receives power from the MaxPak Plus control circuit transformer and, as such, the starter closes with application of plant power to the input of the drive and drops out upon removal of plant power.

Thermal overload protection for the A-C motor is provided by an addition of overloads mounted in the starter. Thermal overload trip will cause the blower motor starter to open.

Short circuit protection is provided by means of three Class CC Type CCMR fuses wired in series with the power feed to the A-C motor and mounted as part of the starter assembly.

A normally open auxiliary contact on the starter (terminals 33A and 44) allows interlocking with the drive to stop the drive motor upon an A-C motor overload trip. A normally closed auxiliary contact on the starter (terminals 188 and 187) or a normally open auxiliary contact on the starter (terminals 188 and 188A) allows the user to monitor the status of the blower motor starter and to alarm a "blower motor starter open" condition.



SPECIFICATIONS

Coil Voltage ..... 115 volts A-C, 50/60 Hz.

Power Contact Rating ..... 21 amperes full load, at up to 600 volts A-C

Fuse Rating ..... Per Table 2

Overload Data:

Overload Selection ... Per Table 1 and 2

SELECTING THE CORRECT BLOWER MOTOR STARTER OVERLOADS

The blower motor starter overload must be adjusted to match the full load current of the A-C blower motor used. Table 1 lists blower motor full load current for Reliance force ventilated air-over and dual cooled motors.

Table 2 provides an overload setting and fuse selection chart based on blower motor full load amps selected in Table 1.

Table 1
ENGINEERING DATA
Blower Motor Data

A-C Motor Specifications For Blower Motors On Standard Drip-proof Force-Ventilated D-C Motors (1) (2)

D-C Motor		Blower Motor					
			3-Phase, 60 Hz, 240/480 V		3-Phase, 50 Hz, 240/480 V		
Frame	Speed rpm	HP	rpm	F.L. Amps	rpm	F.L. Amps	Part No.
C180ATZ	All	1/2	3450	1.5/.75	2850	1.7/.85	610490-1-A
C210ATZ	All	1/2	3450	1.5/.75	2850	1.7/.85	610490-1-A
C250ATZ	All	1/2	3450	1.5/.75	2850	1.7/.85	610490-1-A
C280ATZ	All	3/4	3450	2.2/1.1	2850	2.4/1.2	610490-1-AH
C320ATZ	All	3/4	3450	2.2/1.1	2850	2.4/1.2	610490-1-AH
C360ATZ	All	1 1/2	3450	3.5/1.75	2850	3.9/1.95	610490-1-AF
B400ATZ	All	1 1/2	3450	3.5/1.75	2850	3.9/1.95	610490-1-AF
B505ATZ thru B509ATZ(7)	All	1	1730(5)	3.4/1.7(5)	1440(5)	4.2/2.1(5)	406122-5KS
B505ATZ thru B510ATZ	All	2	1730(5)	5.8/2.95(5)	1450(5)	7.0/3.5(5)	406122-5KR
B587ATZ thru B589ATZ	All	2	1730(5)	5.8/2.95(5)	1450(5)	7.0/3.5(5)	406122-5KR
B686ATZ thru B688ATZ	All	2	1730(5)	5.8/2.95(5)	1450(5)	7.0/3.5(5)	406122-5KR

A-C Motor Specifications For Blower Motors On Standard Totally Enclosed Air-Over In-Line D-C Motors (1) (2)

D-C Motor		Blower Motor					
			3-Phase, 60 Hz, 240/480 V		3-Phase, 50 Hz, 240/480 V		
Frame	Speed rpm	HP	rpm	F.L. Amps	rpm	F.L. Amps	Part No.
C180ATZ	All	1/3	1725	1.4/.70	1425	2.2/1.1	610490-1-M
C210ATZ	All	1/3	1725	1.4/.70	1425	2.2/1.1	610490-1-M
C250ATZ	All	1/3	1725	1.4/.70	1425	2.2/1.1	610490-1-M
C280ATZ	All	1	1725	3.4/1.7	1425	3.7/1.85	610490-1E
C320ATZ	All	1	1725	3.4/1.7	1425	3.7/1.85	610490-1E
C360ATZ	All	1 1/2	1725	4.8/2.4	1425	5.2/2.6	610490-1-F

A-C Motor Specifications For Blower Motors On Standard Totally Enclosed Air-Over Piggy-Back D-C Motors (1) (2)

D-C Motor		Blower Motor					
			3-Phase, 60 Hz, 240/480 V		3-Phase, 50 Hz, 240/480 V		
Frame	Speed rpm	HP	rpm	F.L. Amps	rpm	F.L. Amps	Part No.
C180ATZ	All	1/2	3450	1.5/.75	2850	1.7/.85	610490-1-A
C210ATZ	All	1/2	3450	1.5/.75	2850	1.7/.85	610490-1-A
C250ATZ	All	1/2	3450	1.5/.75	2850	1.7/.85	610490-1-A
C280ATZ	All	3/4	3450	2.2/1.1	2850	2.4/1.2	610490-1-AH
C320ATZ	All	3/4	3450	2.2/1.1	2850	2.4/1.2	610490-1-AH
C360ATZ	All	1 1/2	3450	3.5/1.75	2850	3.9/1.95	610490-1-AF
B400ATZ	All	1 1/2	3450	3.5/1.75	2850	3.9/1.95	610490-1-AF
B500ATZ	All	1	1730(5)	3.4/1.7(5)	1440	4.2/2.1	406122-5KS

A-C Motor Specifications For Blower Motors On Standard Totally Enclosed Dual-Cooled D-C Motors With Air-to-Water Heat Exchangers (1) (2)

D-C Motor		Blower Motor, 3-Phase, 60 Hz, 230/460 V				
Frame	Speed rpm	HP	rpm	F.L. Amps	Part No.	Frame
B680ATZ	All	3	1745	9.2/4.6	406122-5-LH	182TC

(1) For estimating purposes only.
(2) Verify by reading the A-C blower motor nameplate.
(3) Two blower motors of this HP rating on each D-C motor.
(4) 220/380 V.
(5) 230/460 volts.

Table 2

OVERLOAD DATA

Model Number	Adjustable Overload Setting (Amps)	Fuse Rating (Amps)	Fuse Part Number
23C41	.4 – .63	.8	64676-72C
23C42	.63 – 1.0	1.25	64676-72E
23C43	1.0 – 1.4	2.0	64676-72H
23C44	1.4 – 1.8	2.5	64676-72J
23C45	1.7 – 2.4	3.5	64676-72L
23C51	2.2 – 3.1	4.5	64676-72N
23C46	2.8 – 4.0	6.0	64676-72R
23C81	3.5 – 5.0	7.5	64676-72U
23C82	4.5 – 6.5	9.0	64676-72W
23C83	6.0 – 8.5	12.0	64676-72Y
23C84	7.5 – 11.0	15.0	64676-72Z

MOUNTING LOCATION

Mounting locations available for the blower motor starter within the MaxPak Plus controller depend upon the horsepower rating and configuration of the controller. Table 3 lists these positions and indicates the preferable mounting location where a choice exists.

Mounting on the Upper Portion of the Auxiliary Panel. Mounting the blower motor starter on the upper portion of the auxiliary panel of non-regenerative, non-reversing low horsepower controllers will allow more room in the area of armature output terminal board for field connection of armature leads than the lower auxiliary panel mounting position.

Mounting on the Lower Portion of the Auxiliary Panel. This position is generally available on both low and medium horsepower controllers. This is the **only** mounting location available for the starter when being installed into low horsepower non-regenerative controllers equipped with armature reversing (two armature contactors). In these installations, the starter **must** be mounted in the lower auxiliary panel position.

The blower motor starter cannot be installed in standard non-regenerative low horsepower controllers with armature reversing if a field current regulator has also been specified. Mounting space for both is not available. If both a blower motor starter and field current regulator are required with a non-regenerative reversing controller in this horsepower range, they can be supplied on a factory-built controller mounted in a larger-than-standard enclosure.

Mounting behind the Power Unit. Mounting the blower motor starter behind the power module on medium horsepower controllers removes the possibility of conflict with the mounting of other controller kits. This is the **only** mounting position available when the controller is also equipped with a field current regulator.

Table 3
MOUNTING POSITIONS

Controller Type	Controller Horsepower Range	Horsepower			Mounting Location		
		230 Volt A-C Input	460 Volt A-C Input	575 Volt A-C Input	Upper Aux. Panel	Lower Aux. Panel	Behind Power Module
Non-Regenerative	Low (non-reversing)	5–20	5–40	–	preferred	available alternate	not available
	Low (reversing)	5–20	5–40	–	not available	available	not available
	Medium (All)	25–75	50–300	40–300	not available	available alternate	preferred
Regenerative	All	5–75	5–150	40–180	not available	available alternate	preferred

INSTALLATION

(Refer to Assembly Drawing 801592-92 provided with kit)

DANGER

THIS EQUIPMENT IS AT LINE VOLTAGE WHEN A-C POWER IS CONNECTED TO THE CONTROLLER. DISCONNECT ALL UNGROUNDED CONDUCTORS OF THE A-C POWER LINE FROM THE CONTROLLER. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE BODILY INJURY OR LOSS OF LIFE.

Auxiliary Panel Mounting

1. Remove the terminal board and terminal board marking strip from the auxiliary panel. Set the marking strip and mounting screws aside. They will be required in step 5.
2. The harness leading to the terminal board removed in step 1 is looped and dressed with a large tyrap. Cut this tyrap and extend the cable to its full length.
3. Mount the terminal board bracket to the starter assembly using three #10x32x1/2" self tapping screws.
4. Mount the starter assembly to the auxiliary panel, oriented as shown on sheet 2 of assembly drawing 801592-92, using four #10x32x1/2" self tapping screws.
5. Remount the terminal board and marking strip to the terminal board bracket using the mounting hardware removed in step 1.
6. Route and connect the wiring harness containing wire numbers 188, 189, 281, 282 and 283 per sheet 2 of the assembly drawing. Secure this harness to the existing harness on the power module using tyraps furnished.
7. Complete the installation by connecting the blower motor wiring to the starter load side terminals (T1, T2 and T3), and wiring the starter's normally open auxiliary contacts (33A and 44) between terminals 33 and 44 on the drive controller. If other protective interlocking devices are already installed and wired into this line, the auxiliary contacts must be wired in series with them.
8. Set the amperage dial on the starter to the blower motor nameplate full load current.

Mounting Behind Power Unit

1. Route and connect the wiring harness containing wire numbers 188, 189, 281, 282 and 283 to the power unit and the motor starter. Route and connect the wiring as shown on sheet 2 of the assembly drawing. Coil excess wire length and tyrap.
2. Slide the starter assembly, oriented as shown on the assembly drawing, into the mating clip on the power unit panel. Fasten to the panel using one #10x32x1/2" self tapping screw.
3. Complete the installation by connecting the blower motor wiring to the starter load side terminals (T1, T2 and T3), and wiring the starter's normally open auxiliary contact (terminals 33A and 44) between terminals 33 and 44 on the drive controller. If other protective interlocking devices are already installed and wired into this line, the auxiliary contacts must be wired in series with them.
4. Set the amperage dial on the starter to the blower motor nameplate full load current.

TRIP RESET

The Blower Motor Starter Kit is shipped from the factory for manual reset operation which is accomplished by pushing in the blue button on the starter.

WARNING

SELECTING AUTOMATIC RESET OF THE OVERLOAD RELAY OR WIRING THE START CIRCUITRY IN A MANNER OTHER THAN SHOWN IN THIS AND OTHER APPLICABLE INSTRUCTION MANUALS MAY CAUSE INADVERTENT AND/OR UNEXPECTED MACHINE MOVEMENT. MAKE A CONSCIOUS DECISION BEFORE SETTING UP THE DRIVE IN SUCH A MANNER. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY INJURY.

If automatic reset is desired, move the tan dial with a small screwdriver in its slot to the counter clockwise direction so the arrow is pointing to the Auto location on the starter. (Located left of the blue pushbutton). This will result in an automatic reset capability on trip.

REPAIR PARTS

A complete parts list is provided on assembly drawing 801592-92.

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