

Instructions for A200 Size 4, 3 Pole Motor Controller

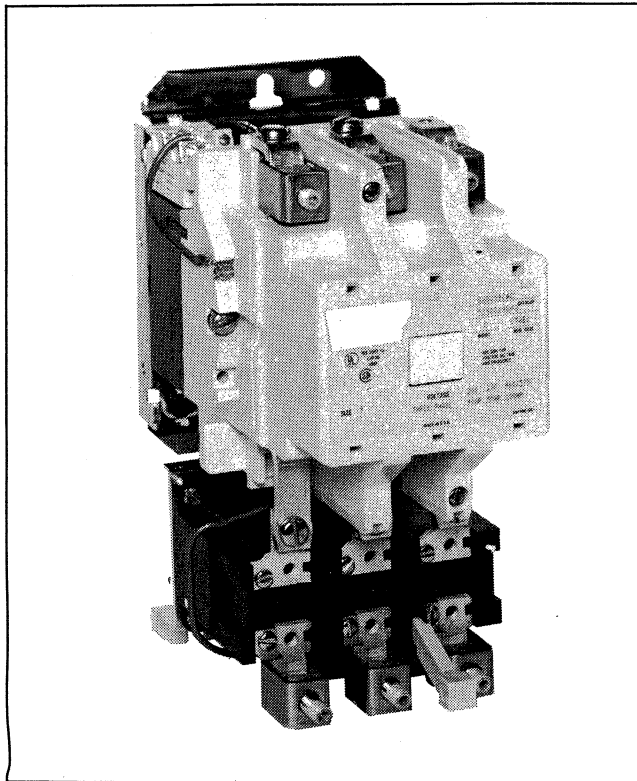
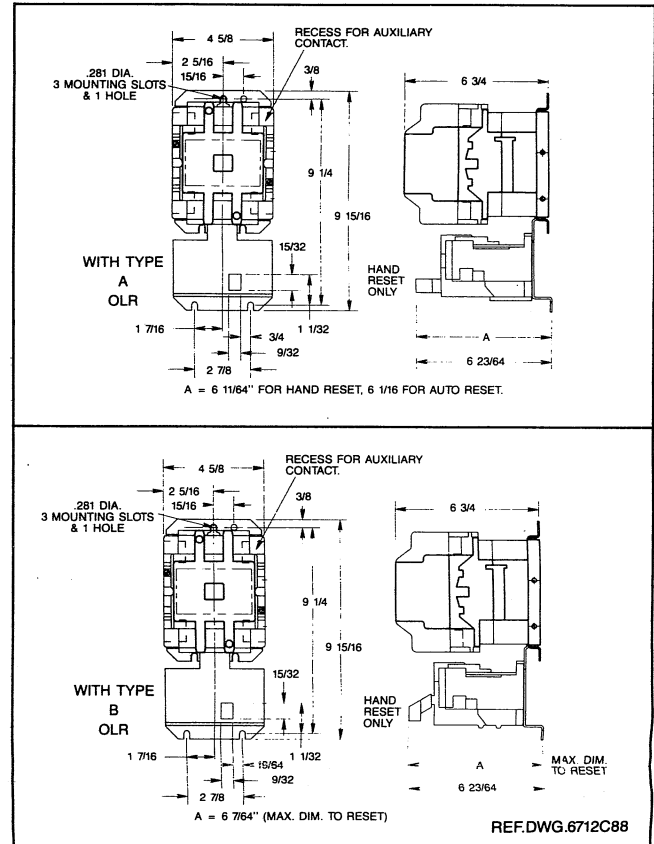


Fig. 1 Size 4 A200 Motor Controller (Type B Overload Relay shown)



THE CONTROLLER

The A200 motor controller, when wired as shown in Figures 5 and 6, will operate as a full voltage starter and will give protection against overload, but not against short circuit currents, when wired and provided with overload relay (OLR) heaters as listed in heater selection tables or when used with any means of inherent protection activated by motor temperature.

The controller should be protected against short circuits by providing branch circuit protection not to exceed the maximum protective device ratings listed in Table I.

This industrial type control is designed to be installed, operated, and maintained by adequately trained workmen. These instructions do not cover all details, variations, or combinations of the equipment, its storage, delivery, installation, check out, safe operation, or maintenance. Care must be exercised to comply with local, state, and national regulations, as well as safety practices, for this class of equipment.

Fig. 2 Dimension Drawing (Dim. in inches)

CONTROLLER RATINGS				
NEMA SIZE	3 PHASE HORSEPOWER AT			
	60 HERTZ 200 V	60 HERTZ 230 V	50 HERTZ 380 V	60 HERTZ 460/575 V
4	40	50	75	100

POWER CIRCUIT TERMINALS	
NEMA Size 4	Wire Size #12 - 4/0 AWG
Wire with copper conductors only.	

AUXILIARY CONTACTS — TYPE J

A J20 with two normally open poles is supplied mounted in the upper left hand corner recess of the contactor. One pole is used as the holding circuit auxiliary.

AUXILIARY CONTACTS — TYPE J (cont.)

A maximum of four auxiliary units can be installed with terminals either in line or in a right angle relationship to the power poles. Auxiliary contacts mount by means of a spring clip and retainer screw. To remove the unit rotate the retainer screw several times (counterclockwise) and then slide the auxiliary contact unit out of the recess.

TYPE J AUXILIARY CONTACTS			
Contact Type	Catalog No.		
2 Normally Closed	J02		
2 Normally Open	J20		
1 Normally Open and 1 Normally Closed	J11		
1 Normally Open and 1 Normally Closed, Delayed Break	J1C		
TYPE J CONTACT RATINGS (A600, R300)			
Voltage	Continuous	Make	Break
120-600 VAC	10A	7200VA	720VA
72-120 VAC	10A	60A	720VA
28-72 VAC	10A	60A	10A
28-300 VDC	1.0A	28VA	28VA

TYPE B OVERLOAD RELAY (See Figure 1)

This A200 motor controller is usually equipped with a Type B block type ambient compensated overload relay (with gray reset rod). The controller can also be supplied with a non-ambient compensated overload relay (with red reset rod). The relay is of the bimetal actuated type equipped with a normally closed control contact. An optional isolated normally open control circuit is available for field mounting. When the overload relay trips, a yellow dot will appear flush with the molded surface below the reset rod. Resetting the relay returns this indicator to its normal concealed position.

TYPE A OVERLOAD RELAY (See Figure 3)

The A200 motor controller can be equipped with a Type A block type non-ambient compensated overload relay (unmarked and with red reset rod) or with a block type temperature compensated overload relay (marked "ambient compensated" and with gray reset rod). The relay is of the bimetal actuated type equipped with trip indicator, trip adjustment covering $\pm 15\%$ of rating and a normally closed control contact. It may be operated with either hand or automatic reset.

Reset operation is determined by the position of the plate on the load side of the overload base. Position the reset plate away from the panel to set the "hand" position. Loosen the locking screw, move the reset plate toward the panel, and retighten the screw to set the "auto" position.

Automatic reset should not be used with 2-wire control circuits where automatic starting of the motor may be hazardous.

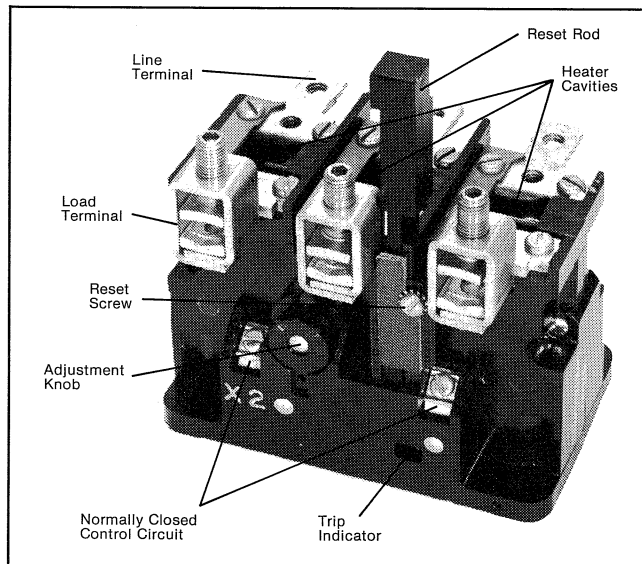


Fig. 3 Type A Block Overload Relay

HEATERS

Heaters are not included with the motor controller and must be ordered separately per the heater selection table and the information listed below. When installing heaters be sure that connecting surfaces are clean and heaters are attached securely to the relay in the proper location with the screws provided. The trip rating of a heater in a 40°C Ambient is 125% of the minimum full

TABLE I — F SERIES HEATER SELECTION

For compensated OLR's in any size enclosure, and non-compensated OLR's in enclosures with volume not less than 5500 cu. in. Wire with 75°C wire.

Code Marking	Full Load Current of Motor (Amperes) (40°C Ambient)	Max. Protect. Device (Amp)	Load Wire Size
FH79	37.6 — 41.5	150	#6
FH80	41.6 — 46.3	175	#6
FH81	46.4 — 50	200	#6
FH82	51 — 55	200	#4
FH83	56 — 61	225	#4
FH84	62 — 66	250	#4
FH85	67 — 73	250	#3
FH86	74 — 78	250	#3
FH87	79 — 84	300	#2
FH88	85 — 92	350	#2
FH89	93 — 101	350	#00
FH90	102 — 110	350	#00
FH91	111 — 122	400	#000
FH92	123 — 129	400	#000
FH93	130 — 133	400	#0000

ABOVE HEATERS FOR USE ON SIZE 4

WARNING: To provide continued protection against fire and shock hazard, the complete overload relay must be replaced if burnout of a current element occurs. See Table II.

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load current shown in Table I. When tested at 600 percent of its trip rating, the relay will trip in 20 seconds or less.

Heaters should be selected on the basis of the actual full load current and service factor as shown on the motor nameplate or in the manufacturer's published literature. When the service factor of the motor is 1.15 to 1.25, select heaters from the heater application table. If the service factor of the motor is 1.0, or there is no service factor shown, or a maximum of 115% protection is desired, select one size smaller heater than indicated. When motor and overload relay are in different ambients and when using non-compensated overload relays, select heaters from the table using adjusted motor currents as follows: decrease rated motor current 1% for each °C motor ambient exceeds controller ambient. Increase rated motor current 1% for each °C controller ambient exceeds motor ambient.

COIL

The A200 motor controller is available with a single or dual voltage coil. When equipped with a single voltage coil, the contactor is wired as shown in Figure 5. A connection diagram for a dual voltage coil is shown in Figure 4. When supplied with a dual voltage coil, the motor controller is normally wired for the higher voltage connection. The wiring may be changed to the lower voltage connection by removing and reconnecting the jumpers as illustrated below.

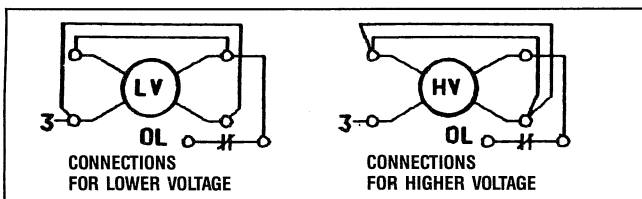


Fig. 4 Dual Voltage Coil Connections

OVERLOAD RELAY CONTROL CONTACT RATINGS				
AC Volts	Normally Closed		Normally Open	
	Make	Break	Make	Break
Type A 24-120 120-600	20A 2400VA	2A 240VA	5A 600VA	.5A 60VA
Type B 24-120 120-600	30A 3600VA	3A 360VA	30A 3600VA	3A 360VA

TABLE II — REPLACEMENT OVERLOAD RELAY		
OVERLOAD RELAY	CATALOG NUMBER	
	SIZE 3	SIZE 4
Type B Non-ambient compensated	BN33A	BN43A
Type B Ambient compensated	BA33A	BA43A
Type A Non-ambient compensated	AN33A	AN43A
Type A Ambient compensated	AA33A	AA43A

REPLACEMENT COIL: ORDER BY PART NUMBER, VOLTAGE, AND FREQUENCY

MODEL K SIZE 4 OPERATING COILS		
Voltage	Freq.	Part Number
24	60	5250C79G34
120/110	60/50	5250C79G01
208	60	5250C79G02
240	60	5250C79G12
277	60	5250C79G14
380	50	5250C79G07
480/440	60/50	5250C79G13
600	60	5250C79G05
120/240*	60/60	5250C79G10
240/480*	60/60	5250C79G03

* Dual Voltage Coils. Use only on starters originally supplied with a dual voltage coil.

Inrush VA	Sealed VA	Sealed Watts	Pickup (Time in Milliseconds)	Dropout
700	62	21	20—23	12—16

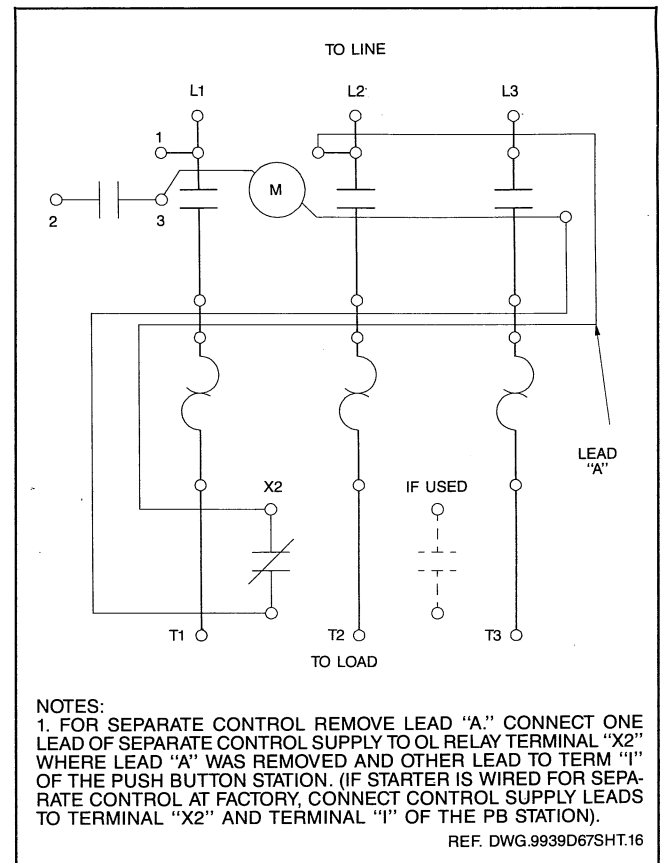


Fig. 5 Connection Diagram (Type B Overload Relay shown)

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SHORT-CIRCUIT WITHSTAND

This motor controller is suitable for use on a circuit capable of delivering not more than the current (rms

symmetrical amperes) shown below in circuits rated not more than the voltage shown below (Table III).

TABLE III — SHORT-CIRCUIT WITHSTAND RATINGS					
Short-Circuit Protective Device (SCPD)	Max. Rating SCPD	Circuit Breaker Interrupting Rating	Short-Circuit Rating		Typical Disconnect Device Cat. No.
			Current	Voltage	
Class H Fuse	400A	—	10,000A	600V	DS465
Class J Fuse	400A	—	100,000A	600V	HKB Interrupter
Class R Fuse	400A	—	100,000A	600V	HKB Interrupter
Class T Fuse	400A	—	100,000A	600V	HKB Interrupter
Magnetic Only ¹ Type CB ²	150A	Marked HMCP	50,000A	600V	HMCP
			100,000A	480V	
Thermal/Mag. Type CB ³	250A	25,000A	25,000A	600V	HJD
		65,000A	65,000A	480V	
		35,000A	50,000A	600V	JDC
		100,000A	100,000A	480V	
Magnetic Only Type CB + CL ⁴	150A	HMCP + Current Limiter	100,000A	600V	HMCP + EL
Thermal/Mag. Type CB + CL ⁵	250A	200,000A	100,000A	600V	LA + TRI-PAC
Thermal/Mag. Type CLB ⁶	250A	150,000A	100,000A	480V	LCL

¹ Instantaneous Adjustable Trip

² Circuit Breaker

³ Inverse-Time Circuit Breaker

⁴ Instantaneous Adjustable Trip with Current-Limiting Attachment

⁵ Inverse-Time with Built-In Current-Limiting Fuses

⁶ Inverse-Time Current-Limiting Breaker

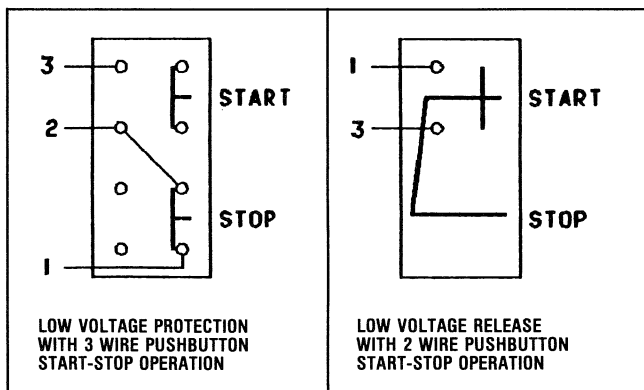


Fig. 6 Control Station Connection Diagram

TABLE IV — RENEWAL PARTS	
Model K Pole Combination and Size 3 Pole Size 4	Model K Contact Kit Part Number 5250C81G02

TABLE V — ACCESSORIES		
Alarm Circuit Contact for Type B Overload Relay Rated B600 (1 normally-open pole)		Cat. No. B3NO4
Fuse Block Kits — Meet requirements of NEC concerning common control fusing.		
Order Cat. No.	Qty.	Description
F56	2	Contactor mounted Fuse Holder for 1 600 volt Bussman KTK Fuse
FKR	1	Panel mounted Fuse Holder for 2 Class CC (Bussman KTKR) Fuses.*
*Use when available fault current exceeds 10,000 amperes		
Order Fuses Separately By Ampere Rating.		
Controller Size	Minimum Wire Size in Control Circuit	Suggested Fuse Size†
4	#16 AWG	10 AMP
† When using a control transformer, select fuse size per the National Electrical Code.		

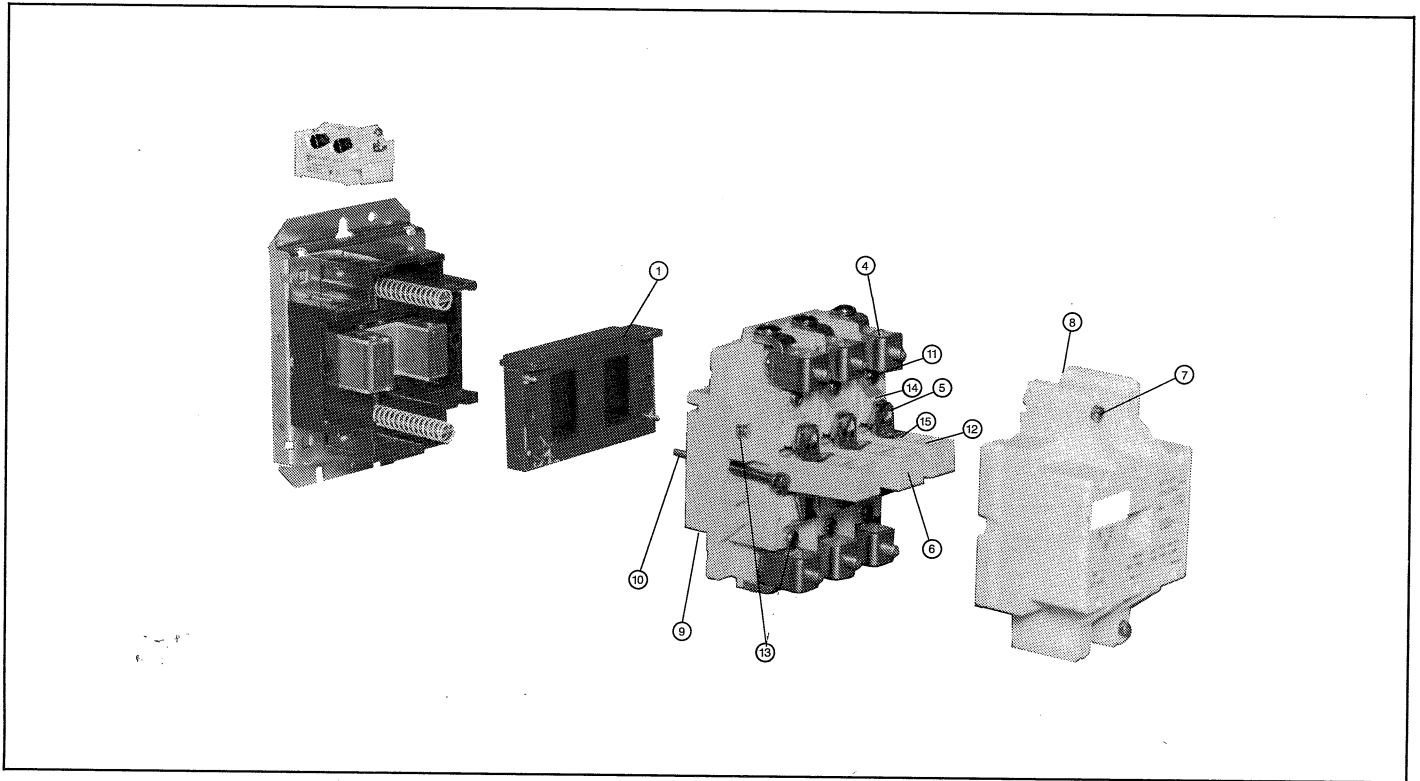


Fig. 7 Size 4 Contactor (Exploded View)

MAINTENANCE — First Turn Off Power

To Inspect Contacts

Refer to Figure 7. Loosen the two arc box assembly screws (7) located immediately above and below the nameplate and remove the arc box (8). Contacts (5) are visible. Retighten the screws per Table VI.

To Replace Contacts

After removing the arc box and with replacement contacts at hand, compress the overtravel spring (12) and remove the moving contact (5) from the crossbar (6). Remove the retaining screws (11) and lift out the stationary contact carriers (14).

To replace contacts, reverse the above procedure, making sure that stationary contacts are secure (see Table VI), moving contacts are free to move, overtravel springs are seated and the crossbar moves freely when the arc box is in position.

The silver cadmium oxide contact buttons need **NO** dressing or lubricant throughout their life.

Important — Replace all contacts and springs as a group to avoid misalignment.

To Replace The Coil

Refer to Figure 7. Loosen the assembly screws (10) located to the immediate left and right of the arc box. Remove connector straps to the overload relay. Pull the

loosened upper base structure (9) forward. Pull the coil (1) from the upper base, plug in a new coil, replace the upper base structure and check the auxiliary contacts for secureness when repositioning the upper base. Tighten the assembly screws and the connector straps screws. Refer to Table VI.

Magnet — Armature Assembly

Self alignment and permanent air gap features of the magnet armature make replacement unnecessary. Mating pole face surfaces should be kept clean.

Arcbox must be in place when controller interrupts a circuit.

TABLE VI — RECOMMENDED DRIVING TORQUE		
Location (Qty.)	Driving Torque (lb.-in.)	Fig. 7 Item
Cover Screw (2)	18 — 20	7
Coil Wire Connector (2)	8 — 9	13
Stationary Contact Screw (6)	18 — 20	11
Main Power Connector (6)	90 — 100	4
Overload Relay Connecting Screws (3)	45 — 50	—
Overload Heater Fastening Screws (6)	45 — 50	—

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