

Magnetic Contactor

Type
SC-E02 , SC-E02/G
SC-E03 , SC-E03/G
SC-E04 , SC-E04/G
SC-E05 , SC-E05/G

This manual should be given to the person who actually uses the products and is responsible for their maintenance.

Safety Precautions

To ensure proper use of the product, be sure to read this manual and the other attached documents carefully before starting installation, operation, maintenance and inspection. Within this instruction manual, safety precautions are ranked, in order of importance, as either "Warning" or "Caution".



An operator may be killed or seriously injured by a hazardous condition resulting from improper operation.



An operator may suffer minor injuries and/or objects may be damaged by a hazardous condition resulting from improper operation.

Under certain conditions, improper operation may result in serious injury and/or damage even if it is labeled only as "Caution". Every item indicated by either "Warning" or "Caution" should be considered significant. Be sure to give particular care to those items.

WARNING

- Do not touch the product or approach it when power connected. Electric shock or burns may result.
- Turn off the power before starting maintenance or inspection. Failure to turn off power may result in Electric shock or burns.

CAUTION

- For wiring, select wire sizes suitable for the applied voltage and current. Tighten wires with the tightening torque specified in the instruction manual. Failure to do so may result in fire.
- Do not touch the product immediately after the power is turned off. As it may still be hot, burns may result.
- Do not use the product after removing its arc chamber. Electric shock or burns may result.
- Treat the product as industrial waste when discarding.

1. Unpacking

- (1) Check that the type, coil voltage, and applicable capacity match the requested specifications.
- (2) Make sure that no parts have been lost or damaged.

2. Mounting

Store the unit in the packing box. Do not store the packing box in a location subject to high temperature, high humidity, corrosive gas, or direct sun light.

3. Mounting

- (1) Mount in a dry, clean and stable location.
- (2) Mounting on a vertical surface. The product must not incline more than 30° (Fig. 1)
- (3) The rail mounting type can be attached on a standard 35mm IEC60715 mounting rail. Fuji type TH35-15AL mounting rail is recommended. Mounting of the rail on the panel (Fig. 2) Attachment and removal (Fig. 3)
- (4) Even if the product is provided with four mounting holes, use any two mounting holes on a diagonal line. (Fig. 4)

4. Mounting space

- (1) Mount the products at a distance of at least that shown in the table below. (Fig. 5, Fig. 6)

Type	A [mm]	B [mm]	C [mm]
SC-E02 SC-E02/G	0	10	0
SC-E03 SC-E03/G	0	10	0
SC-E04 SC-E04/G	0	10	0
SC-E05 SC-E05/G	0	10	0

- (2) When units must be installed very closely, the temperature may rise in some conditions (i.e. the power is continuously supplied for a long time or units that frequently do switching are installed very closely), and it may shorten the life of the coil. Thus, when installing units very closely, it is recommended to install the units 5 mm or more apart.

5. Connection

Wire size and proper tightening torque.

Types			SC-E02, SC-E02/G, SC-E03, SC-E03/G	SC-E04, SC-E04/G SC-E05, SC-E05/G
Main terminals	Solid and stranded 【Note 2】	×1 [mm ²]	0.75 to 4	0.75 to 6
		×2 [mm ²]	1 to 4	1.5 to 6
	AWG conductor connection	×1	18 to 10	18 to 8
		×2	16 to 10	12 to 8
	Stripped length	[mm]	11	
	Terminal screw size 【Note 1】	M4		
Kinds of screw	⊕ ⊖			
Tightening torque	[N·m](lb . in)	1.2 to 1.5 (11 to 13)		

Control terminals	Solid and stranded 【Note 2】	×1 [mm ²]	0.75 to 2.5 (φ 1 to φ 1.6)
		×2 [mm ²]	0.75 to 2.5
	AWG conductor connection	×1	18 to 14
		×2	18 to 14
	Stripped length	[mm]	10
	Terminal screw size 【Note 1】	M3.5	
Kinds of screw	⊕ ⊖		
Tightening torque	[N·m](lb . in)	0.8 to 1 (7 to 9)	

【Note 1】 ⊕ : Philips PH2 φ 6

⊖ : Slotted-head screw 1.1 × 5.5 type B

【Note 2】 Stranded wire: Number of solids ≤ 7

Expect above stranded wire: Finely stranded with end sleeve

【Note 3】 Tighten all terminal screws even if not used.

【Note 4】 After alignment or bending back of connected leads, check the tightening torque of the clamping screws.

6. Indicator

Indicator shows contactor operates or not. (Fig.7)

Don't touch or push the indicator for continuity test, or it may result in Electric shock or burns.

7. Maintenance and inspection

- (1) Check that the operating voltage is within the allowable fluctuation range, 85 to 110% of the coil voltage before operation.
- (2) Check that all terminals are tightened with the proper torque periodically.
- (3) If necessary, remove arc chamber and separate slightly welded contacts with a screwdriver.
- (4) Dark and rough contacts can still function. Do not refinish or grease them.
- (5) If the contact facings are so badly eroded that the carrier material is visible, replace the product.
- (6) After fastening terminal screw of middle phase, insert flat-bladed screwdriver between arc chamber and washer of terminal screw and lift the arc chamber, so arc chamber will be removed.

8. Short-circuit protective device (SCPD)

- (1) Selection table according to IEC60947-4-1

Type	Type "1"			Type "2"	
	Prospective Current I _q	Fuji Breakers		Prospective Current I _q	IEC 60269-1 gG and gM Fuses
		Part No.	Max. Rating		Max. Rating
	[kA]		[A]	[kA]	[A]
SC-E02 SC-E02/G	10	SA103BA/30	30	50	20
SC-E03 SC-E03/G		SA103BA/30	30		25
SC-E04 SC-E04/G		SA103BA/30	30		40
SC-E05 SC-E05/G		SA53RC/50	50		50

Type "1" co-ordination requires that, under short-circuit conditions, the contactor or starter shall cause no danger to persons or installation and may not be suitable for further service without repair and replacement of parts.

Type "2" co-ordination requires that, under short-circuit conditions, the contactor or starter shall cause no danger to persons or installation and shall be suitable for further use. The risk of contact welding is recognized, in which case the manufacturer shall indicate the measures to be taken as regards the maintenance of the equipment.

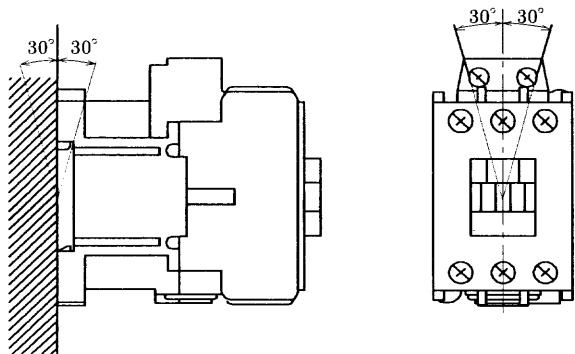


Fig. 1

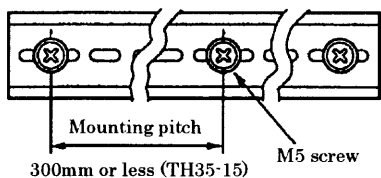


Fig. 2

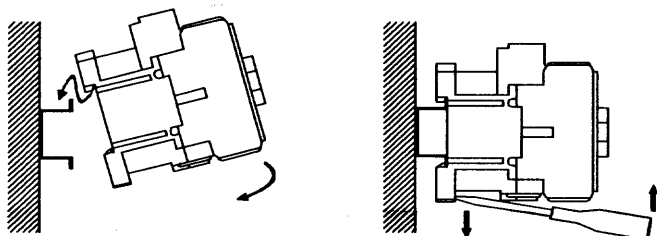


Fig. 3

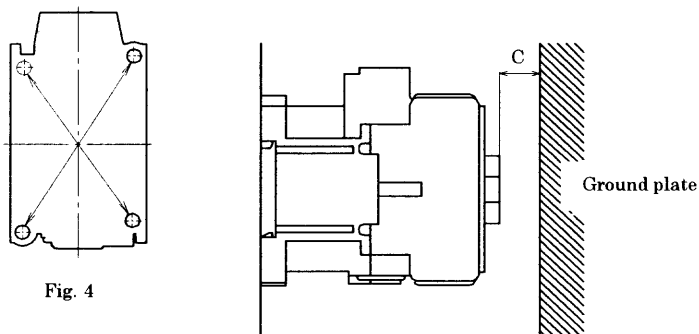


Fig. 4

Fig. 5

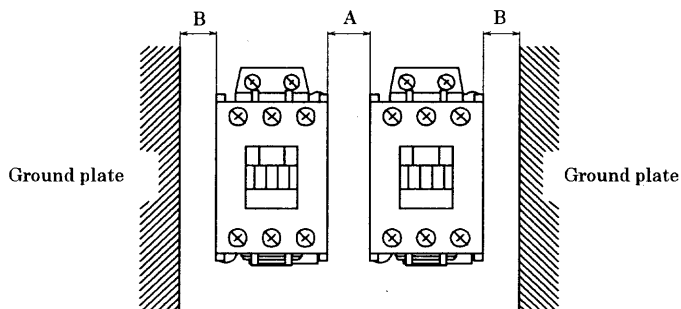


Fig. 6

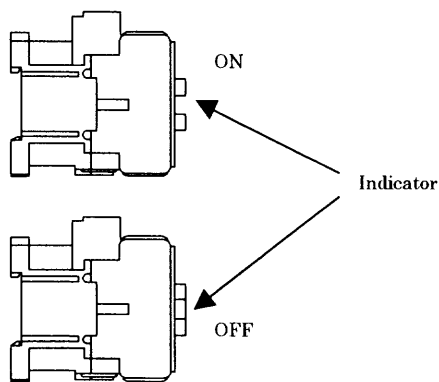


Fig. 7

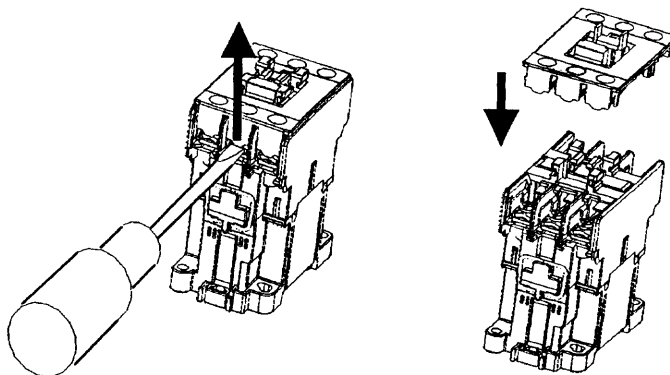
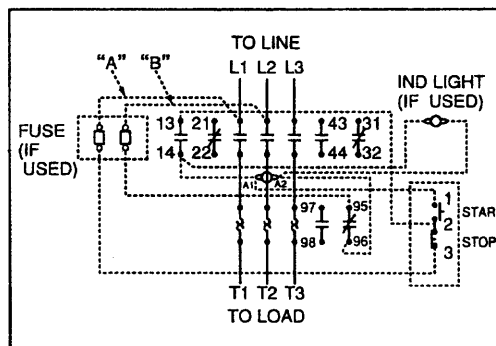


Fig. 8

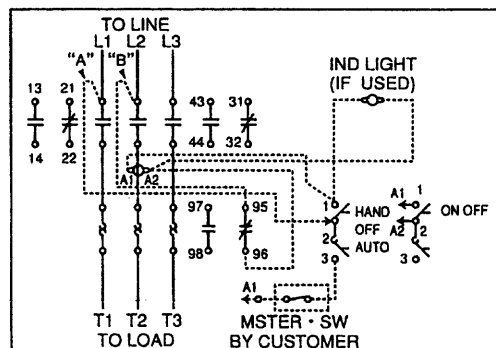
Fig. 9

Wiring diagram for USA and Canada

(1) 3-wire control circuit



(2) 2-wire control circuit



In 2 wire control circuits, be careful of the following points when using thermal overload relay with setting reset button to auto reset mode. If over-current flows, which is not large enough to blow the fuse or to operate the circuit breaker, the magnetic contactor repeats make/break operations. It does this because the thermal overload relay repeats the resets and the trips automatically. This repeated make/break operations would damage the magnetic contactor and the thermal overload relay. Eventually, contact welding short-circuit (phase to phase) or grounding occur, and the fuse blow or circuit breaker operate. In this case, check the magnetic contactor and the thermal overload relay. Replace them if they have been damaged.



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