

NAIS GREEN POWER MAGNETIC STARTERS AND CONTACTORS

OPERATING INSTRUCTIONS

GP-N reen over series	TYPE	FC	FR·M	FCK	FHK(P)
		FCR·M	FH	FK(P)	FKB(P)
		F		FKR·M	

1. Unpacking

Prior to use, check that the rating, coil voltage and frequency are as required and that the parts are not missing or damaged due to trouble during transportation.

2. Installation and removal

(1) Be sure to install the unit in a dry place, free of corrosive gas, dust or dirt and vibration, and under the ambient temperature of 50°C Max. (40°C Max. with case cover)
Contact misoperation caused by vibration may occur at 5G(10 to 55 Hz) or more. However, it may occur at 2G or more in case that the auxiliary contact unit is attached, and FC-7 AC type.

(2) Install it vertically as illustrated on the right. The allowable mounting angle is up to 30° Max. in all directions.

(3) For parallel direct installation at interval 5mm.
(The FC-7, 7D, 18N, 20N can be closely installed.)

(4) For installation on DIN rails, as shown in Fig.2 hook the upper part of the bottom surface on the rails, and press the bottom until a click is heard.

(5) To remove from DIN rails, as shown in Fig.3, slide the Slider (a white part at the bottom of the product, in case of FC-7, 7D at a hinge.) outward and remove the product. For a reversible type, slide both sliders outward before removal.

(6) Holding capacity to DIN rail is vibration of 40G or more for one contactor. However, please consider the intensity of the rail itself when numbers of contactors are mounted on the same DIN rail.

(7) When using the reversible type, fixing by 4screws is recommended.

NOTE: The FC-18N/20N have no mounting interchangeability with the conventional unit. For this replacement, use an interchangeability plate available at present.

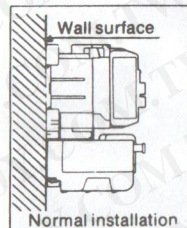


Fig. 1



Fig. 2

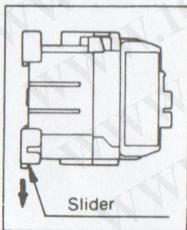


Fig. 3

3. Wiring [(1) to (3) are explained only types with case cover]

(1) Wiring connections should be correct as per the wiring diagram, provided at the inside of cover.

(2) The unit is provided with a knock hole: tap on the knock hole part and use the supplied bushing. (It is unnecessary to knock out for plastic case.)

(3) An earth terminal is provided at the lower part of case: remember to provide grounding before operation. (The ground wiring is unnecessary for plastic case.)

(4) The maximum number of electric wires (same size) inserted into the same terminal should be 2 Max. When using different diameter wires, always use a crimp style terminal.

(5) Tighten the terminal screws securely.

Size of terminal screw	M3.5	M4	M5
Proper tightening torque N·m	1.2	1.5	2.5

(6) Upon completion of the wiring connections, perform nonloaded operation tests.

(7) When using the crimp style terminal, the size of terminal screw, proper crimp style terminal are as shown in the table below.

TYPE	Main circuit		Auxiliary and control circuit			
	Magnetic contactor (Power source, Load)	With thermal relay (Load)	Magnetic contactor (Power source, Load)		Thermal relay (Load)	
			FKT	FT	Aux. terminal	Coil terminal
7(D)(L), K(D)(L), G(D)(L) 10N(L), KN(L), GN(L) 15N(L), KN(L), GN(L)	2-3.5 (M3.5)	2-3.5 (M3.5)	1.25-3.5M 2-3.5 (M3.5)		1.25-3.5M 2-3.5 (M3.5)	
18N(L), KN(L), GN(L) 20N(L), KN(L), GN(L)	3.5-4 5.5-4S (M4)	3.5-4 5.5-4S (M4)	1.25-4 (M4)	1.25-3.5M 2-3.5 (M3.5)	1.25-3.5M 2-3.5 (M3.5)	
25N(L), KN(L), GN(L) 35N(L), KN(L), GN(L)	5.5-5 14-5 (M5)	5.5-5 14-5 (M5)	1.25-3.5M 2-3.5 (M3.5)		1.25-3.5M 2-3.5 (M3.5)	

NOTES: 1. () indicates the size of terminal screw.

2. Crimp style terminal shown here uses a standard wire size and round type crimp style terminal.

3. The types with plastic case are shown by (P)

4. Thermal relay

(1) Adjust the thermal relay current adjust control, and set the current so that it coincides with the full load current of motor (as described on the motor rating nameplate).

(2) When tripping the relay manually, thermal relay can be manually tripped continuously by mechanical trip lever move to the direction of arrow as below Fig.

(3) When the thermal relay was tripped, remove the cause, and then lightly press the reset button for resetting.

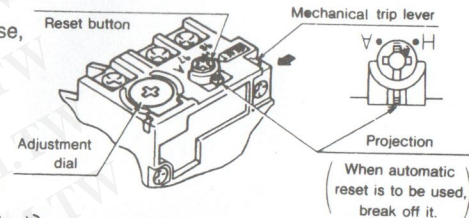
(4) In the manual reset operation, the mechanical trip lever is hidden in the case, when the relay is tripped. In the automatic reset operation, the mechanical trip lever is not hidden ever when the relay is tripped.

(5) FT and FKT thermal relay is reset manually. when automatic reset is to be used, after breaking off the projection, press the reset button deeply, and turn to the left until stopped position by screw driver.

[Move ▲ mark to ● mark (A : Automatic reset position)]

And then confirm automatic reset function.

(When Mechanical lever is moved to arrow direction, 97-98 are closed and releasing it, 97-98 are opened)

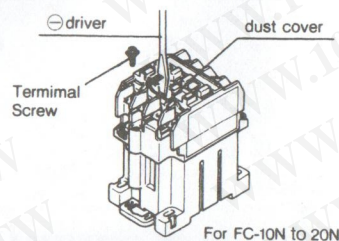


(When automatic reset is to be used, break off it.)

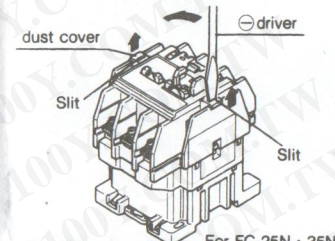
5. Replacing coil and contacts

(1) Replacement is separately possible with coil unit or contact unit (refer to the catalogues). The method for replacement are explained in the instruction sheet included in each box of contact unit and coil unit.

(2) For replacing contacts, although contact unit exchange is recommended, the contact point can be also replaced individually by removing dust (or terminal) cover.



For FC-10N to 20N



For FC-25N to 35N

6. Cautions

(1) Take care so that electric wire chips and foreign matter do not intrude into magnetic starter.

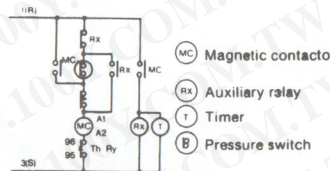
(2) Do not apply oil to the contact point and the movable section.

(3) Once-a-year inspection is recommended.

(4) If the operation switch, such as a pressure switch flutters, contact deposition may result. Therefore, use a flutterless operation switch or use a circuit as illustrated below to remove the effect of operation switch flutter.

(5) Do not use the organic solvent for plastic parts. (ex: thinner)

(6) When reversible type of magnetic contactors and starters, and standard type of magnetic starters are installed in a ship, please replace the control lead wires with those approved by NK standard.



7. Optional item and catalog No. list

Many different types of optional items can be installed in the table below.

Description	Cat. No.	Applicable model
Auxiliary contact unit (Twin contact) 2a(2NO) 1a1b(1NO 1NC) 2b(2NC)	BMF 991420K BMF 991411K BMF 991402K	FC-10N to 35N
Interlock unit (Used for reversible type)	BMF 9918	FC-10N to 20N
Numbering plate (For equipment No. indication)	BMF9921	FC-10N to 20N Interlock unit
Surge damper type 0 Surge damper type 1 (For coil switching surge absorption)	BMF 9910 BMF 9911	FC-7 FC-10N to 20N
Thermal relay trip indicator	for 100V for 200V BMF 9901K BMF 9902K	FT·FKT Thermal relay

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