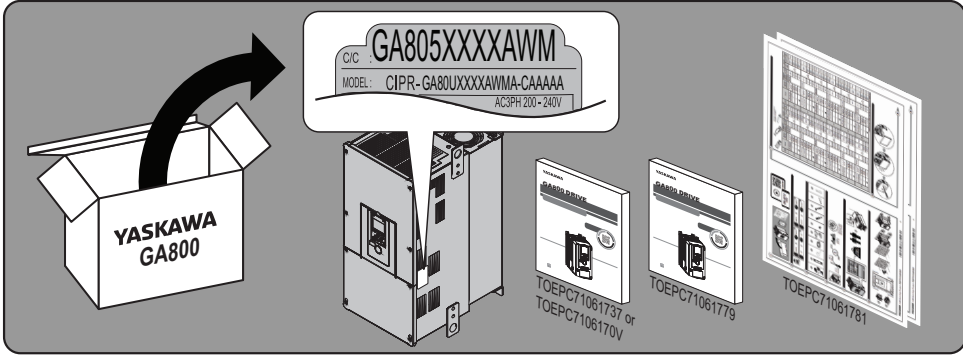
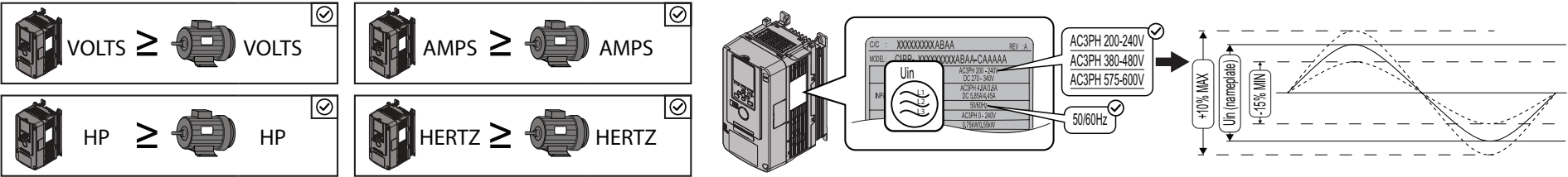


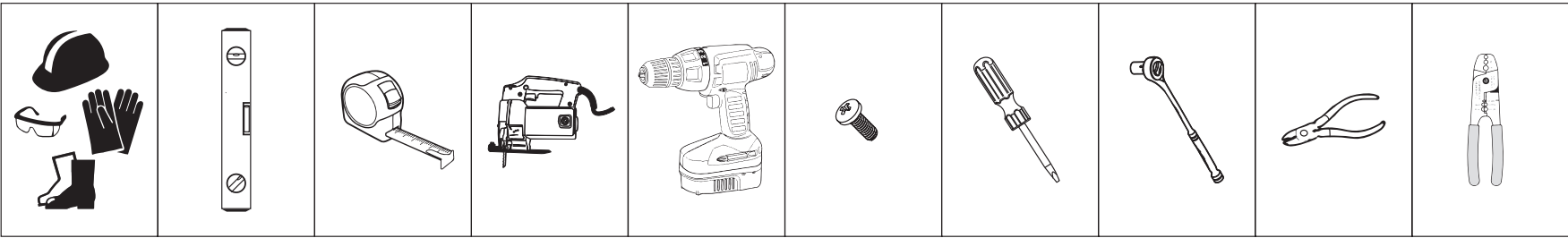
TOEPC71061781



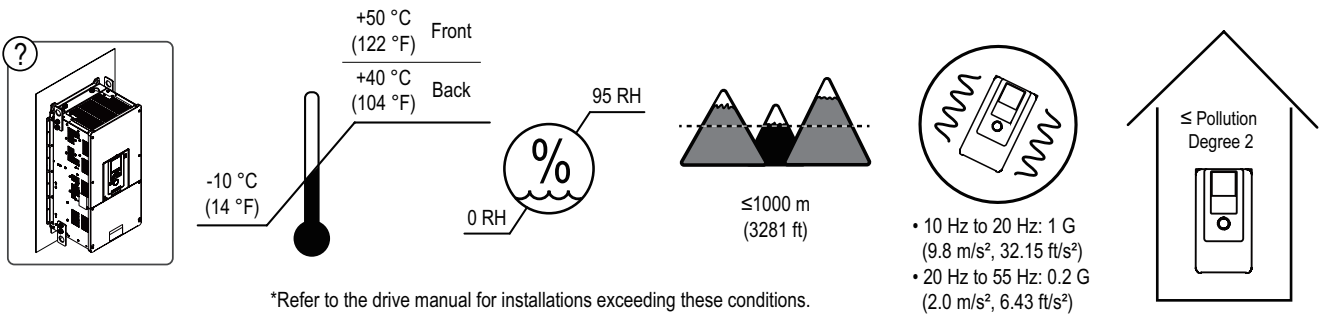
1 Confirm the Drive and Motor Specifications



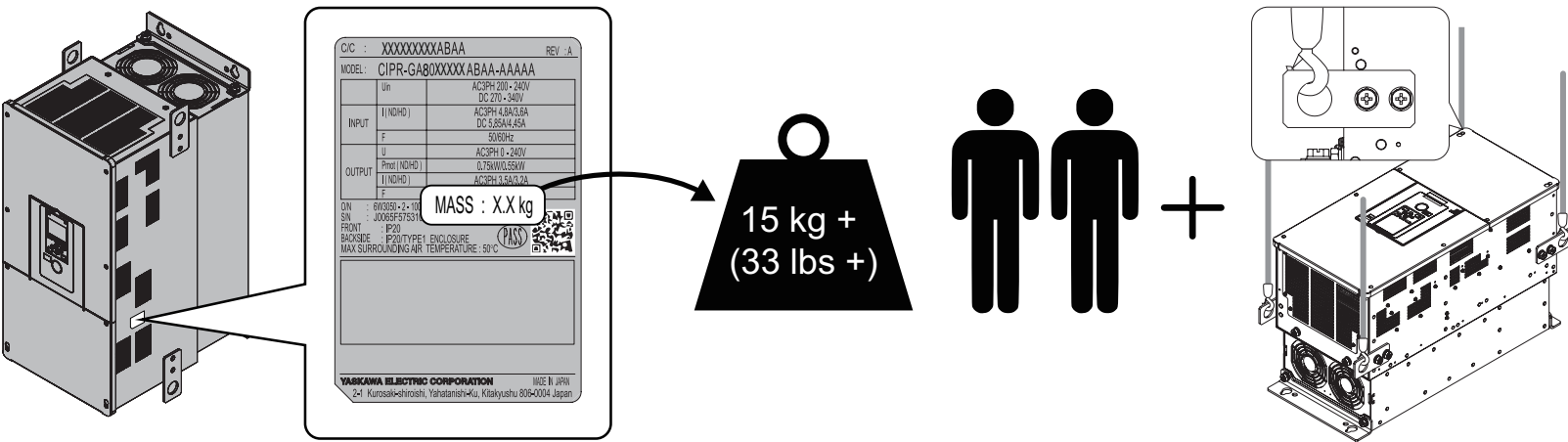
2 Collect the Required Tools and Equipment



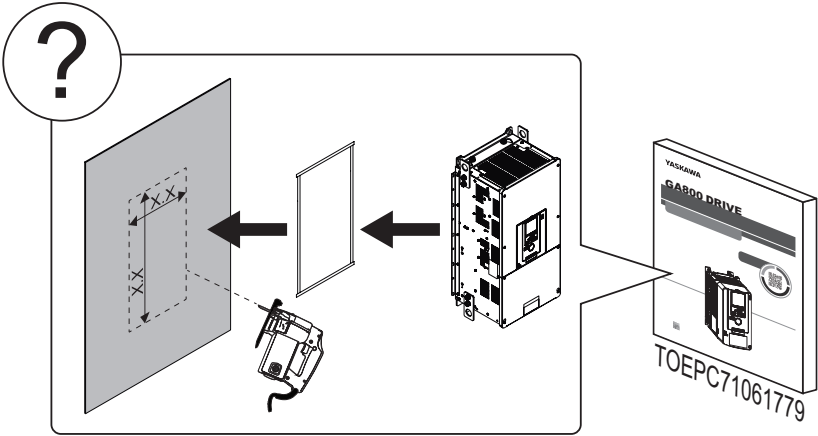
3 Confirm the Correct Drive Installation Environment



4 Correctly Lift the Drive

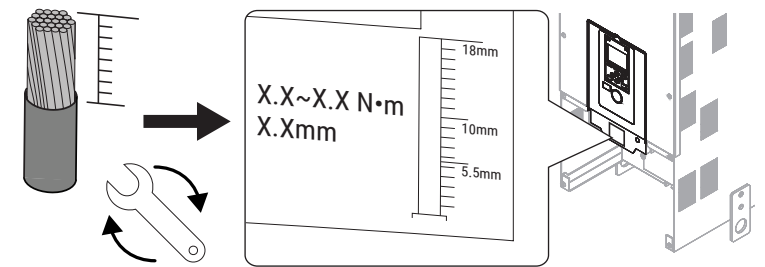


5 Cut an Opening and Install the Drive



6 Select the Correct Branch Circuit Protection, Wires, and Wire Strip Length, and Tightening Torque

Factory-Recommended Wires and Crimp Terminals: Use UL-Listed, vinyl-coated insulated copper wires for operation with a continuous maximum permitted temperature of 75 °C at 600 V. Use UL-Listed closed-loop crimp terminals to maintain compliance with UL 508C. Use the tools recommended by PANDUIT Corp. to crimp the closed-loop crimp terminals. To comply with UL standards, use only insulated crimp terminals or crimp terminals with heat-shrinkable tubing.



UL Compliance: Install one of these types of short circuit protection devices to comply with UL 508C. Semiconductor protective type fuses are recommended, but the table also shows alternative short circuit protection devices. When you use MCCBs, RK1, or RK5 fuses as UL listed drive protection devices, you must mount the drive in a ventilated enclosure according to the minimum enclosure volume specified in this document.

Molded Case Circuit Breaker (MCCB) and Non-Semiconductor Fuse Ratings: Maximum MCCB rating is 200% of the Normal-Duty drive full load output amp (FLA) rating. Maximum CC, J, T, RK1, or RK5 fuse rating is 175% of the Normal-Duty drive full load output amp (FLA) rating. When you use MCCBs, Yaskawa recommends the current-limiting type.

Short Circuit Current Rating (SCCR): The maximum SCCR provided by drive and fuse, or drive and MCCB combinations in this document, is 100,000 RMS symmetrical amps. Use the protection specified in this document to prepare the drive for use on a circuit capable of delivering not more than 100,000 RMS symmetrical amps and not more than 240 Vac (240 V models), 480 Vac (480 V models), and 600 Vac (600 V models) when there is a short circuit in the power supply.

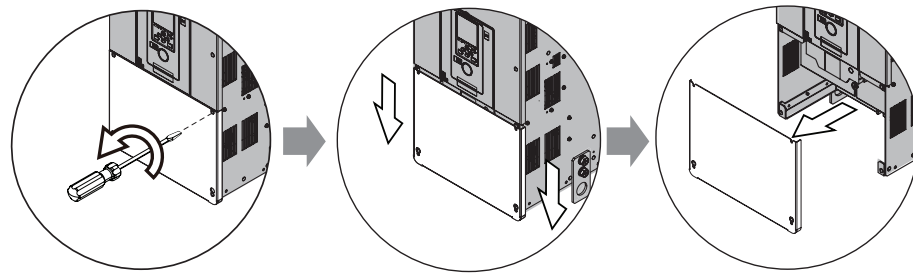
Model	R/L1 S/L2 T/L3		U/T1 V/T2 W/T3		- +1		+3				Semiconductor Fuse Manufacturer: Eaton/Bussmann or Mersen Part Number	Class CC, J, or T Fuse Maximum Size (Amps)	MCCB Maximum Size (Amps)	Class RK1 or RK5 Fuse Maximum Size (Amps)	Enclosure Volume Minimum Size (in³)	
	Wire AWG, kcmil **	PANDUIT Crimp Terminal Part Number **	Wire AWG, kcmil **	PANDUIT Crimp Terminal Part Number **	Wire AWG, kcmil **	PANDUIT Crimp Terminal Part Number **	Wire AWG, kcmil **	PANDUIT Crimp Terminal Part Number **	Wire AWG, kcmil **	PANDUIT Crimp Terminal Part Number **		Ventilated Protected Enclosure Required				
	Three-Phase 200 V Class															
2257	2/0 - 4/0 x 2P (2/0 x 2P)	S2/0-38R-X	2/0 - 4/0 x 2P (2/0 x 2P)	S2/0-38R-X	4/0 - 250 x 2P (4/0 x 2P)	S4/0-38R-5	1/0 x 2P (1/0 x 2P)	S1/0-38R-X	3 - 350 (3)	S2-38R-X	FWH-600A +3	400	500	400	14657	
2313	2/0 - 4/0 x 2P (4/0 x 2P)	S4/0-38R-5	2/0 - 4/0 x 2P (3/0 x 2P)	S3/0-38R-5	4/0 - 250 x 2P (250 x 2P)	S250-38R-5	1/0 x 2P (1/0 x 2P)	S1/0-38R-X	2 - 350 (2)	S2-38R-X	FWH-700A or FWH-800A +3	500	600	500	14657	
2360	250 - 300 x 2P (250 x 2P)	S250-12R-5	250 - 300 x 2P (250 x 2P)	S250-12R-5	300 - 400 x 2P (350 x 2P)	LCA350-12-X or LCAX350-12-6	1/0 - 4/0 x 2P (3/0 x 2P)	S3/0-12R-5	1 - 350 (1)	S2-12R-X	FWH-800A or FWH-1000B +3	600	700	600	52800	
2415	250 - 300 x 2P (250 x 2P)	S250-12R-5	250 - 300 x 2P (300 x 2P)	LCA300-12-X or LCAX300-12-6	300 - 400 x 2P (350 x 2P)	LCA350-12-X or LCAX350-12-6	1/0 - 4/0 x 2P (3/0 x 2P)	S3/0-12R-5	1 - 350 (1)	S2-12R-X	FWH-1000B +3	700	800	n/a	52800	
Three-Phase 400 V Class																
4208	2/0 - 4/0 x 2P (1/0 x 2P)	S1/0-38R-X	2/0 - 4/0 x 2P (1/0 x 2P)	S1/0-38R-X	4/0 - 250 x 2P (3/0 x 2P)	S3/0-38R-5	1/0 x 2P (1/0 x 2P)	S1/0-38R-X	4 - 350 (4)	P4-38R-E or S4-38R-E	FWH-500A +3	350	400	350	14657	
4250	2/0 - 4/0 x 2P (2/0 x 2P)	S2/0-38R-X	2/0 - 4/0 x 2P (2/0 x 2P)	S2/0-38R-X	4/0 - 250 x 2P (2/0 x 2P)	S3/0-38R-5	1/0 x 2P (1/0 x 2P)	S1/0-38R-X	2 - 350 (2)	P2-38R-X or S2-38R-X	FWH-600A +3	400	500	400	14657	
4302	2/0 - 4/0 x 2P (3/0 x 2P)	S3/0-38R-5	2/0 - 4/0 x 2P (3/0 x 2P)	S3/0-38R-5	4/0 - 250 x 2P (3/0 x 2P)	S4/0-38R-5	1/0 x 2P (1/0 x 2P)	S1/0-38R-X	2 - 350 (2)	P2-38R-X or S2-38R-X	FWH-700A +3	500	600	500	14657	
4371	250 - 300 x 2P (250 x 2P)	S250-12R-5	250 - 300 x 2P (250 x 2P)	S250-12R-5	300 - 400 x 2P (350 x 2P)	LCA350-12-X or LCAX350-12-6	1 - 4/0 x 2P (3/0 x 2P)	S3/0-12R-5	1 - 350 (1)	S2-12R-X	FWH-800A	600	700	600	52800	
4414	250 - 300 x 2P (300 x 2P)	LCA300-12-X or LCAX300-12-6	250 - 300 x 2P (300 x 2P)	LCA300-12-X or LCAX300-12-6	300 - 400 x 2P (400 x 2P)	LCA400-12-6	1 - 4/0 x 2P (4/0 x 2P)	S4/0-12R-5	1 - 350 (1)	S2-12R-X	FWH-800A or FWH-1000B	700	800	n/a	52800	
4477	250 - 300 x 4P (250 x 4P)	S250-12R-5	250 - 300 x 4P (4/0 x 4P)	S4/0-12R-5	300 - 400 x 4P (4/0 x 4P)	S4/0-12R-5	4/0 x 4P (3/0 x 4P)	S3/0-12R-5	1/0 - 300 (1/0)	S1/0-12R-X	FWH-1000B or FWH-1200B	800	900	n/a	52800	
4568	250 - 300 x 4P (250 x 4P)	S250-12R-5	250 - 300 x 4P (4/0 x 4P)	S4/0-12R-5	300 - 400 x 4P (300 x 4P)	LCA300-12-X or LCAX300-12-6	4/0 x 4P (3/0 x 4P)	S3/0-12R-5	2/0 - 300 (2/0)	S2/0-12R-X	FWH-1000B or FWH-1200B	900	1000	n/a	52800	
4605	250 - 300 x 4P (300 x 4P)	LCA300-12-X or LCAX300-12-6	250 - 300 x 4P (300 x 4P)	LCA300-12-X or LCAX300-12-6	300 - 400 x 4P (400 x 4P)	LCA400-12-6	4/0 x 4P (4/0 x 4P)	S4/0-12R-5	2/0 - 300 (2/0)	S2/0-12R-X	FWH-1200B or FWH-1400A	1000	1200	n/a	52800	
4720	250 - 300 x 4P (300 x 4P)	LCA300-12-X or LCAX300-12-6	250 - 300 x 4P (300 x 4P)	LCA300-12-X or LCAX300-12-6	300 - 400 x 4P (400 x 4P)	LCA400-12-6	4/0 x 4P (4/0 x 4P)	S4/0-12R-5	2/0 - 300 (2/0)	S2/0-12R-X	FWH-1200B or FWH-1400A	1200	1400	n/a	52800	
Three-Phase 600 V Class																
5125	1 - 4/0 x 2P (2/0)	S2/0-38R	1 - 4/0 x 2P (2/0)	S2/0-38R	2/0 - 250 x 2P (3/0)	S3/0-38R	3 - 1/0 x 2P (2)	S2-38R	3 - 300 (3)	LCA4-56-L	A070UD31L1250	n/a	n/a	n/a	n/a	
5144	1/0 - 4/0 x 2P (2/0)	S2/0-38R	2/0 - 4/0 x 2P (3/0)	S3/0-38R	3/0 - 250 x 2P (4/0)	S4/0-38R	3 - 1/0 x 2P (1/0)	S1/0-38R	3 - 300 (3)	LCA4-56-L	A070UD31L1250	n/a	n/a	n/a	n/a	
5192	2/0 - 300 x 2P (250)	S250-12R	2/0 - 300 x 2P (250)	S250-12R	1 - 400 x 2P (400)	LCAX400-12	3 - 300 x 2P (3/0)	S3/0-12R	1 - 350 (1)	S2-12R	A070UD32L1315	n/a	n/a	n/a	n/a	
5242	2/0 - 300 x 2P (2/0 x 2P)	S2/0-12R	2/0 - 300 x 2P (2/0 x 2P)	S2/0-12R	1 - 400 x 2P (3/0 x 2P)	S3/0-12R	3 - 300 x 2P (4/0)	S4/0-12R	1 - 350 (1)	S2-12R	A070UD32L1350	n/a	n/a	n/a	n/a	
5289	2/0 - 300 x 2P (2/0 x 2P)	S2/0-12R	2/0 - 300 x 2P (3/0 x 2P)	S3/0-12R	3/0 - 400 x 2P (4/0 x 2P)	S4/0-12R	1 - 4/0 x 2P (1/0 x 2P)	S1/0-12R	1 - 350 (1)	S2-12R	A070UD32L1400	n/a	n/a	n/a	n/a	
5382	2/0 - 300 x 4P (4/0 x 2P)	S4/0-12R	2/0 - 300 x 4P (250 x 2P)	S250-12R	3/0 - 400 x 4P (350 x 2P)	LCAX350-12	2 - 4/0 x 4P (3/0 x 2P)	S3/0-12R	1 - 300 (1)	S2-12R	FWP-600A	n/a	n/a	n/a	n/a	
5412	2/0 - 300 x 4P (2/0 x 4P)	S2/0-12R	2/0 - 300 x 4P (2/0 x 4P)	S2/0-12R	3/0 - 400 x 4P (4/0 x 4P)	S4/0-12R	2 - 4/0 x 4P (1/0 x 4P)	S1/0-12R	1 - 300 (1)	S2-12R	FWP-600A	n/a	n/a	n/a	n/a	
5472	2/0 - 300 x 4P (3/0 x 4P)	S3/0-12R	2/0 - 300 x 4P (3/0 x 4P)	S3/0-12R	3/0 - 400 x 4P (4/0 x 4P)	S4/0-12R	1 - 4/0 x 4P (1/0 x 4P)	S1/0-12R	1/0 - 300 (1/0)	S1/0-12R	FWP-700A	n/a	n/a	n/a	n/a	

*1 Values in bold parentheses are the recommended values.

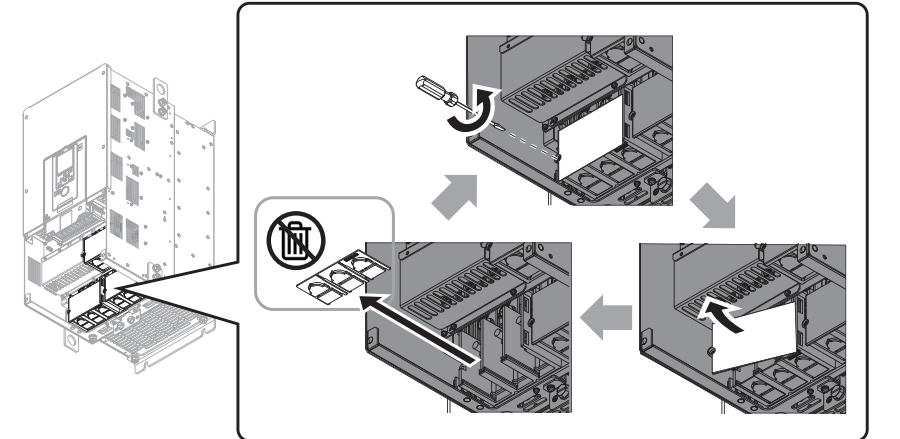
*2 For use with PANDUIT Corp. heat-shrinkable tubing HSTT series or an equivalent UL-recognized heat-shrinkable tubing rated 600 V minimum.

*3 When you use semiconductor fuses for the drive with UL Type 1 Kit, install the drive in a supplemental enclosure. The UL Type 1 Kit does not support internal fuses for this drive model.

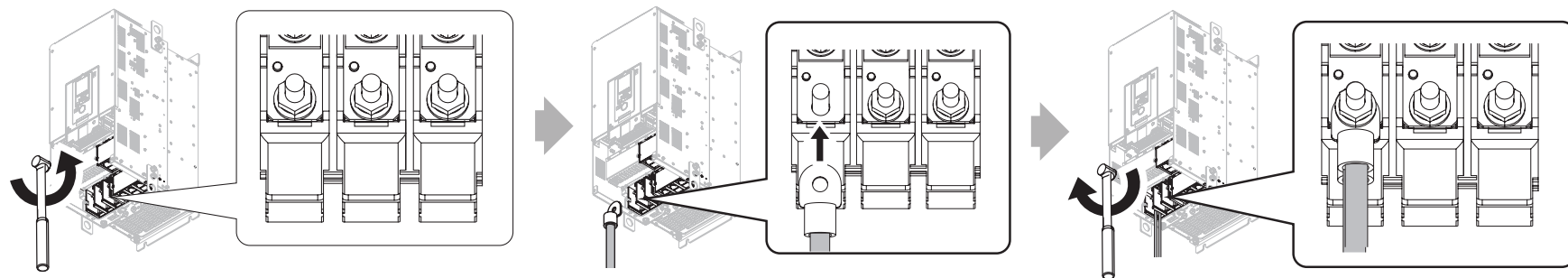
7 Remove the Terminal Cover Torque



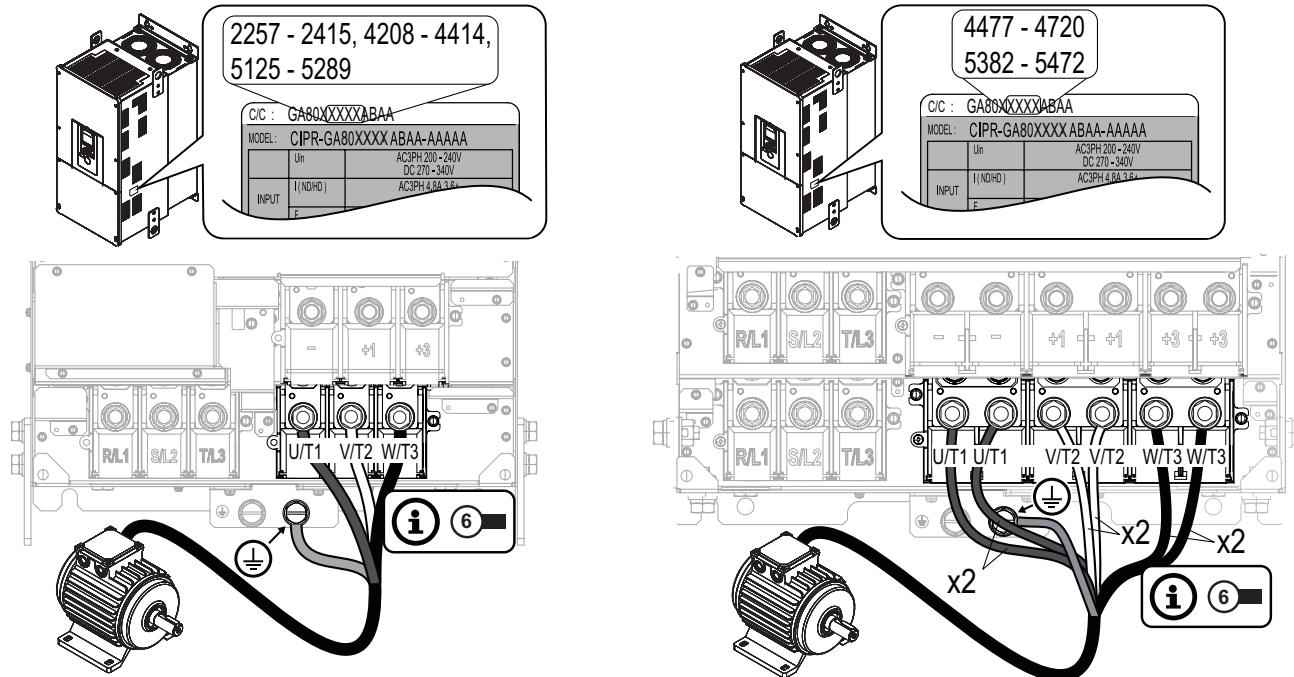
8 Remove the Terminal Block Cover and Wiring Cover



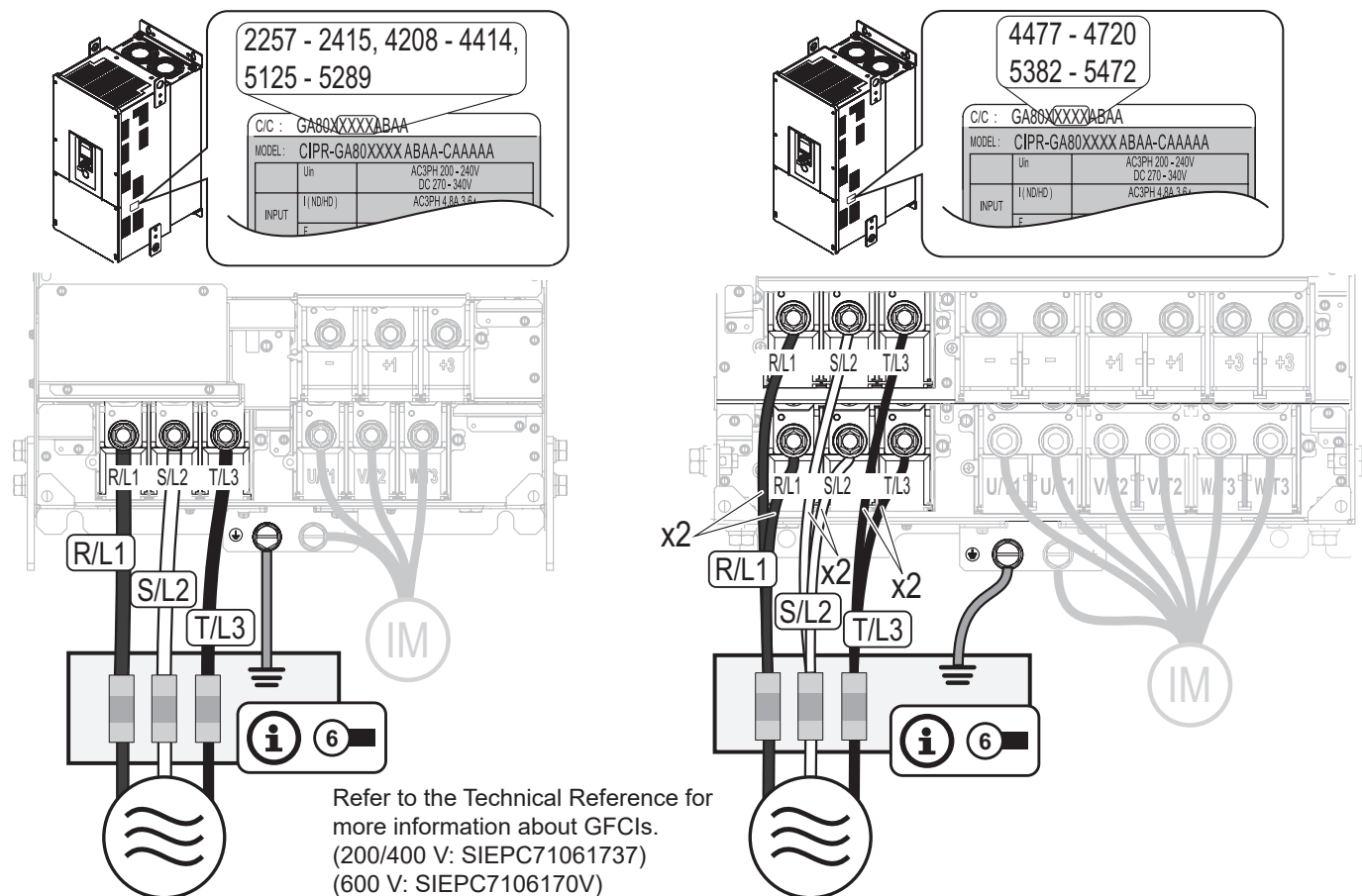
9 Remove Terminal Block Nut to Attach Crimp Terminals



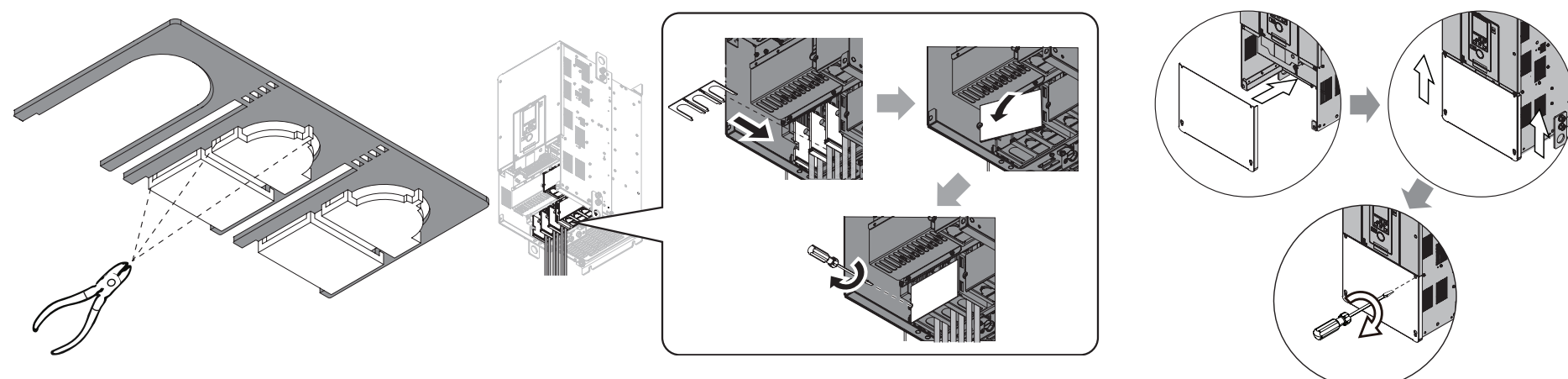
10 Install the Motor Wiring



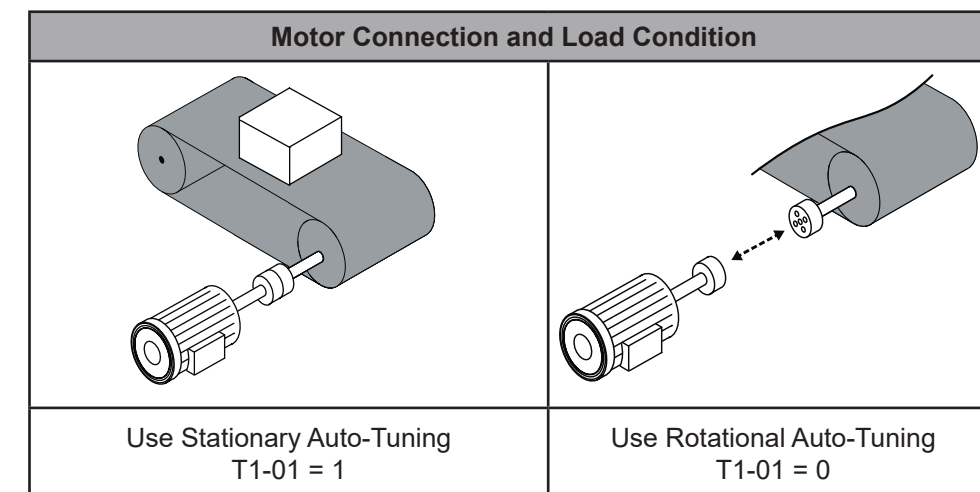
11 Install the Power Wiring



12 Remove the Tabs and Install the Wiring Cover, Terminal Block Cover, and Terminal Cover



13 Determine the Correct Auto-Tuning Method



14 Collect and Record Auto-Tuning Data from Motor Nameplate

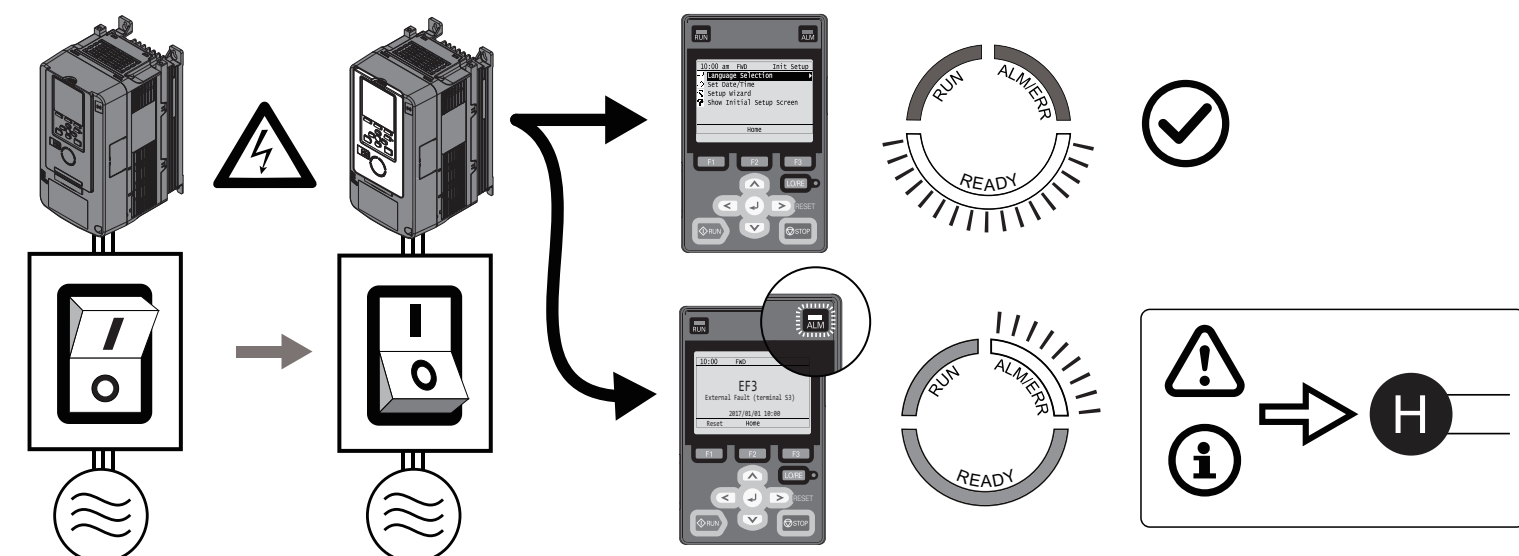
3 PHASE INVERTER DUTY AC INDUCTION MOTOR NAMEPLATE EXAMPLE

MODE E XX	123AAA123XX-X0	X FRAME 123AX
POLES X	ENC XXX CODE X	DES A TYPE ABC INS X0
VOLTS XXX B	FL RPM XXXX F	FL AMPS XX/XX C
SF 1.0 DUTY CONT	MAX AMB °C XX	TEMP. SENSORS T-STATS
SERIAL	N.L. AMPS XX.X/X.X G	
MAX RPM 4200	S.E. BRG. 309	O.S.E. BRG. XXX
		ROTOR WK² X.X
HZ	HP	RPM
TORQUE (LB FT)	VOLTS (HIGH CONN)	AMPS (HIGH CONN)
1	0	XX.X
60	XX A	XXXX
120	XX	XXXX
OHMS PH.	R1: .XXX	R2: .XXX
	X1: X.XX	X2: X.XX
		XM: XX.X
P/N XXXXXXXX		

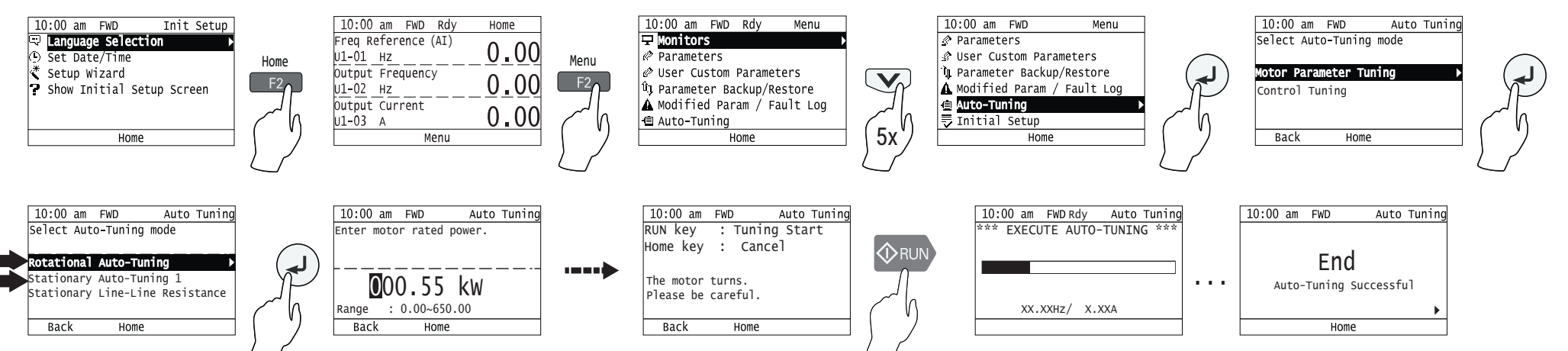
Reference	Motor Nameplate Data	Motor Nameplate Value	T1-xx Parameter (Ex-xx Parameter *)
A	Motor Rated Power	(HP × 0.746) kW	T1-02 (E2-11)
B	Motor Rated Voltage	V	T1-03 (E1-05)
C	Motor Rated Current (FLA)	A	T1-04 (E2-01)
D	Motor Rated Frequency (Base Frequency)	Hz	T1-05 (E1-04/E1-06)
E	Motor Pole Count	-	T1-06 (E2-04)
F	Motor Rated RPM	RPM	T1-07
G	Motor No-Load Current *	A	T1-09 (E2-03)
-	Motor Rated Slip **	0.000 Hz	T1-10 (E2-02)
-	Test Mode Selection **	-	T1-12
-	Motor No-Load Voltage	V	T1-13

*1 Auto-Tuning will automatically set the E1-xx and E2-xx parameters. You can manually adjust Ex-xx parameters after Auto-Tuning.
*2 These values are only necessary for Stationary Auto-Tuning (T1-01 = 1).
*3 If you do not know this value, leave at the default value of 0.000.

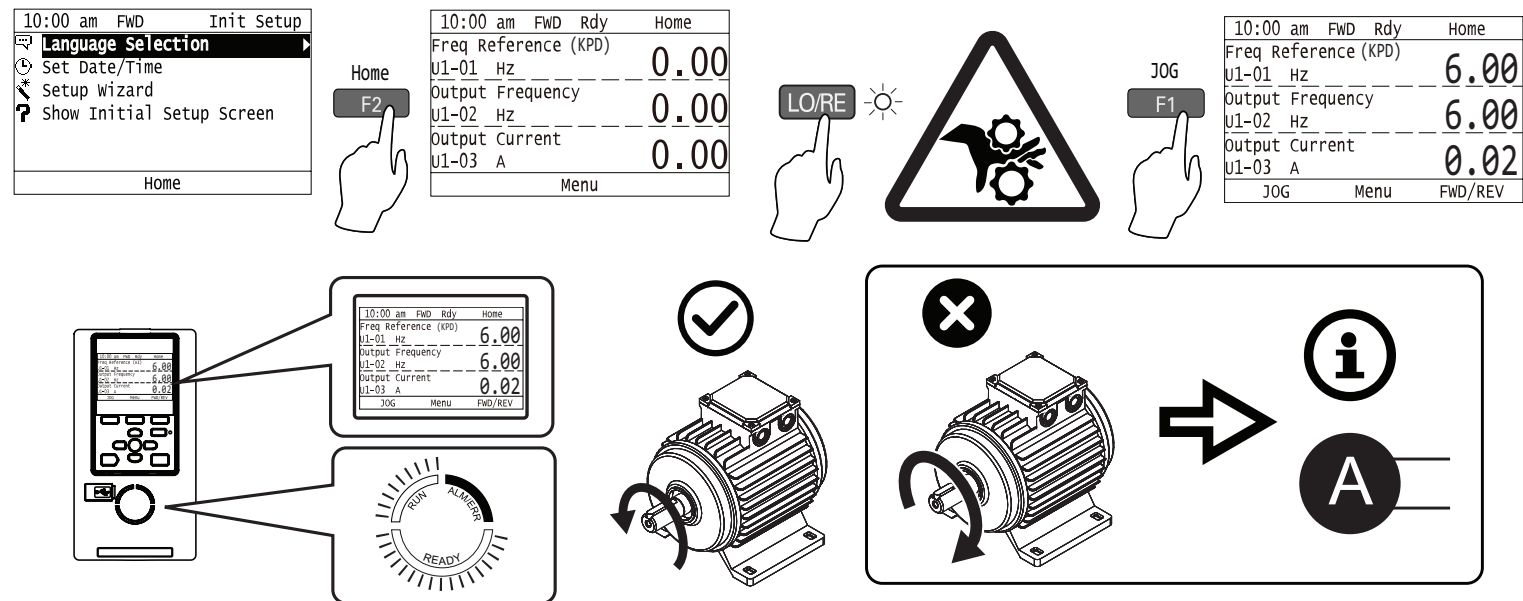
15 Energize the Drive and Confirm It Is Ready



16 Use Auto-Tuning Data from Motor Nameplate to Set Parameters and Auto-Tune the Drive

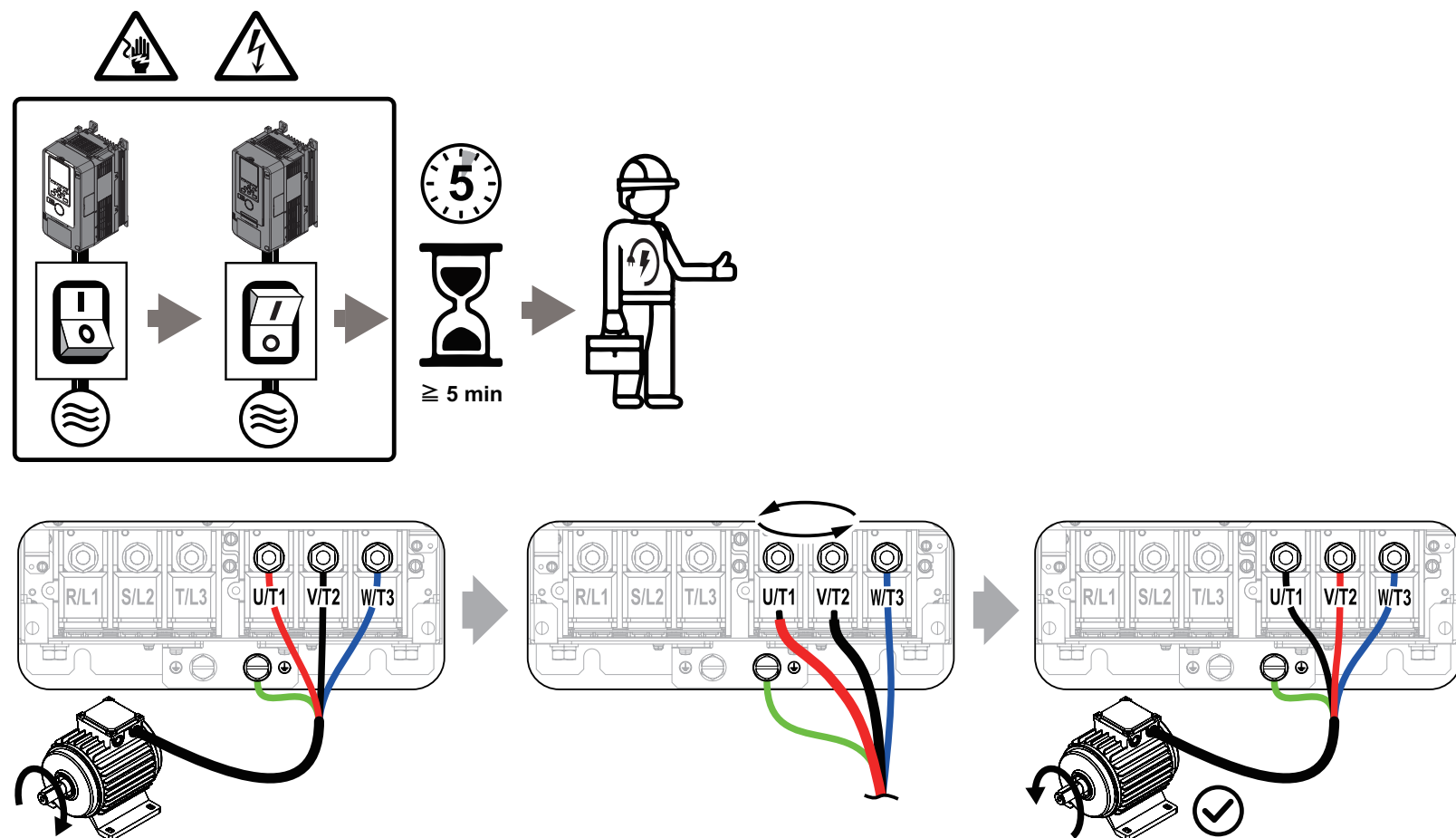


17 Set the Drive for LOCAL Control and Check the Motor Rotation Direction

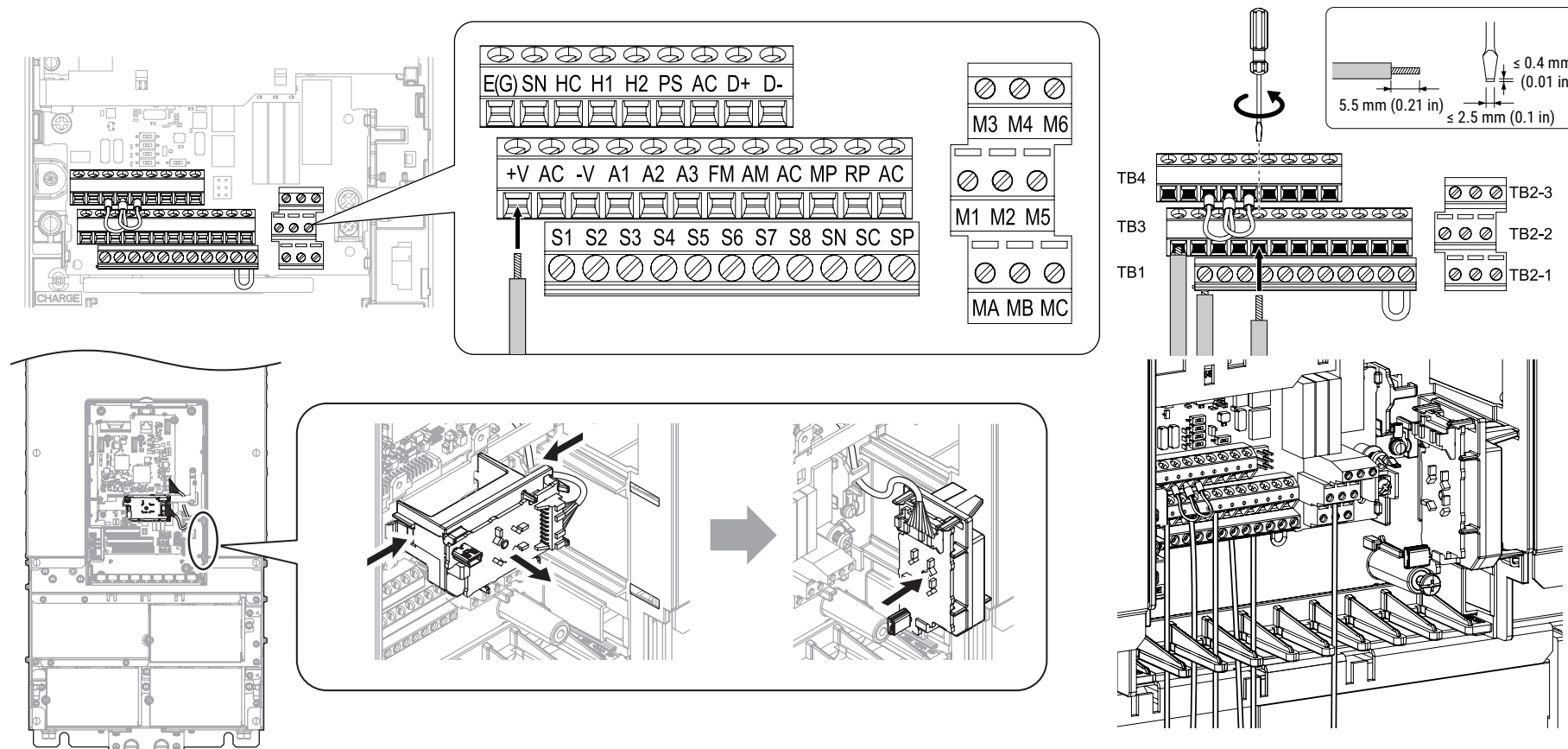


Additional Information for Installation and Primary Operation

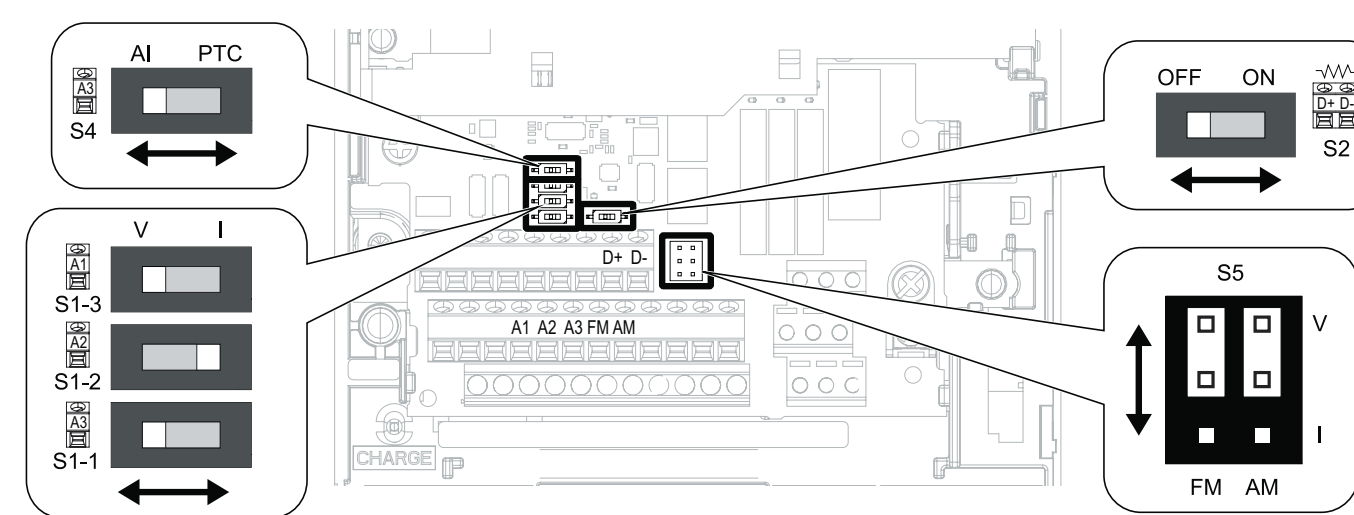
A If the Motor Does Not Rotate in the Correct Direction



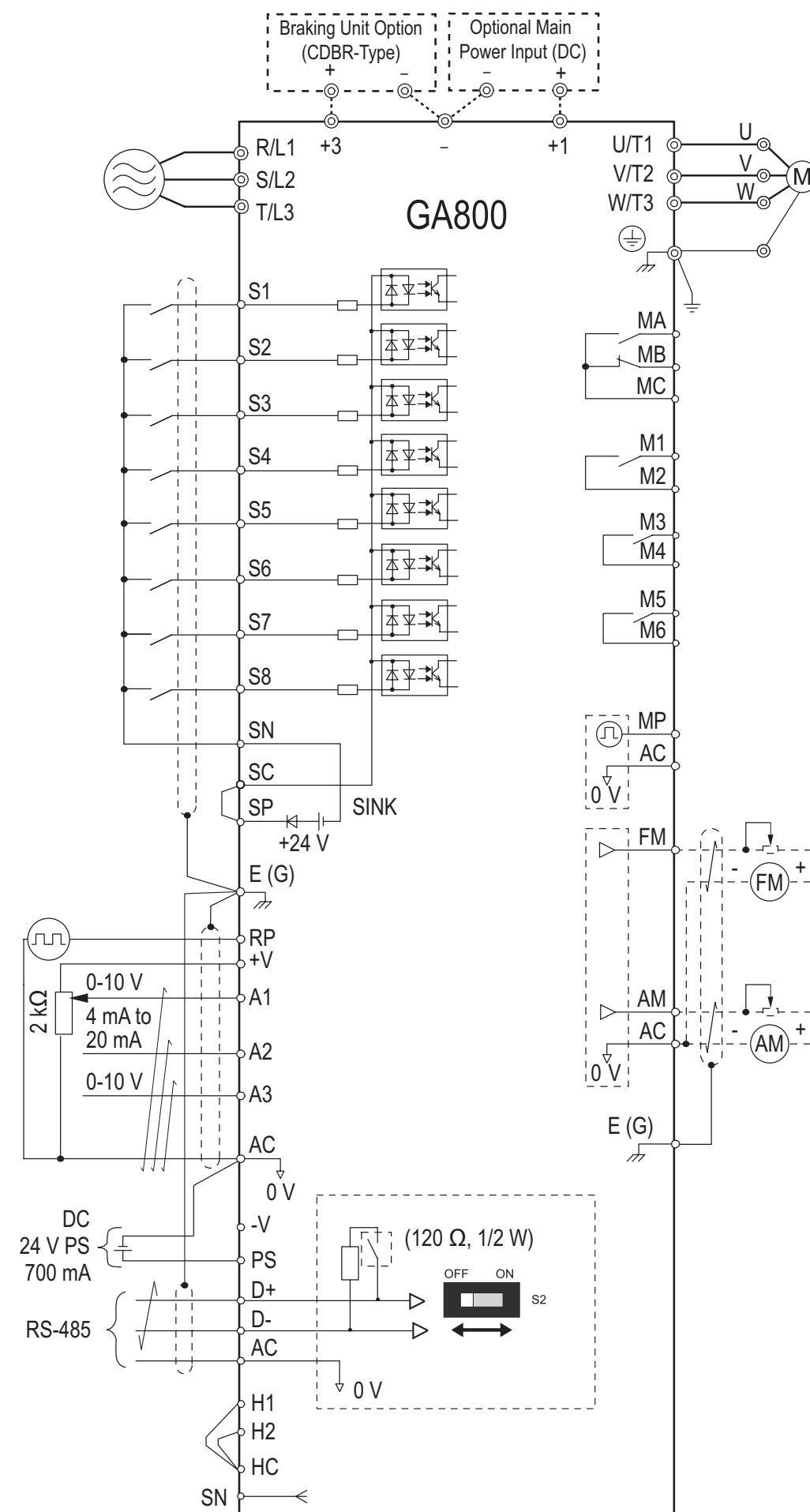
B Control Circuit Configuration and Accessibility



C Switches and Jumpers on the Control Board



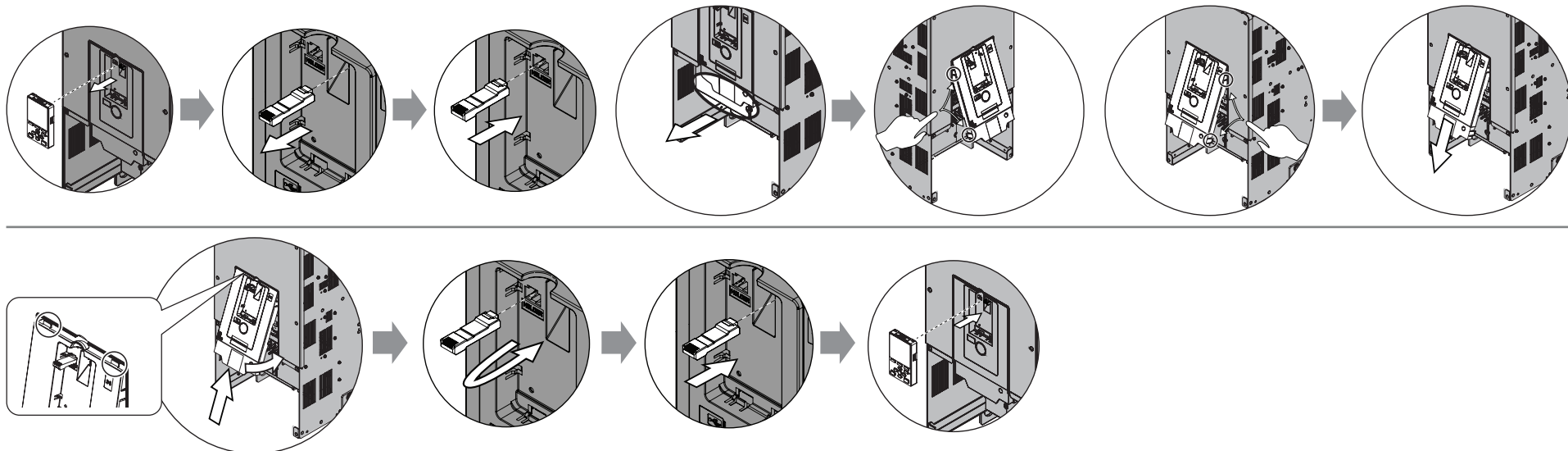
D Connection Diagram and Terminal Functions



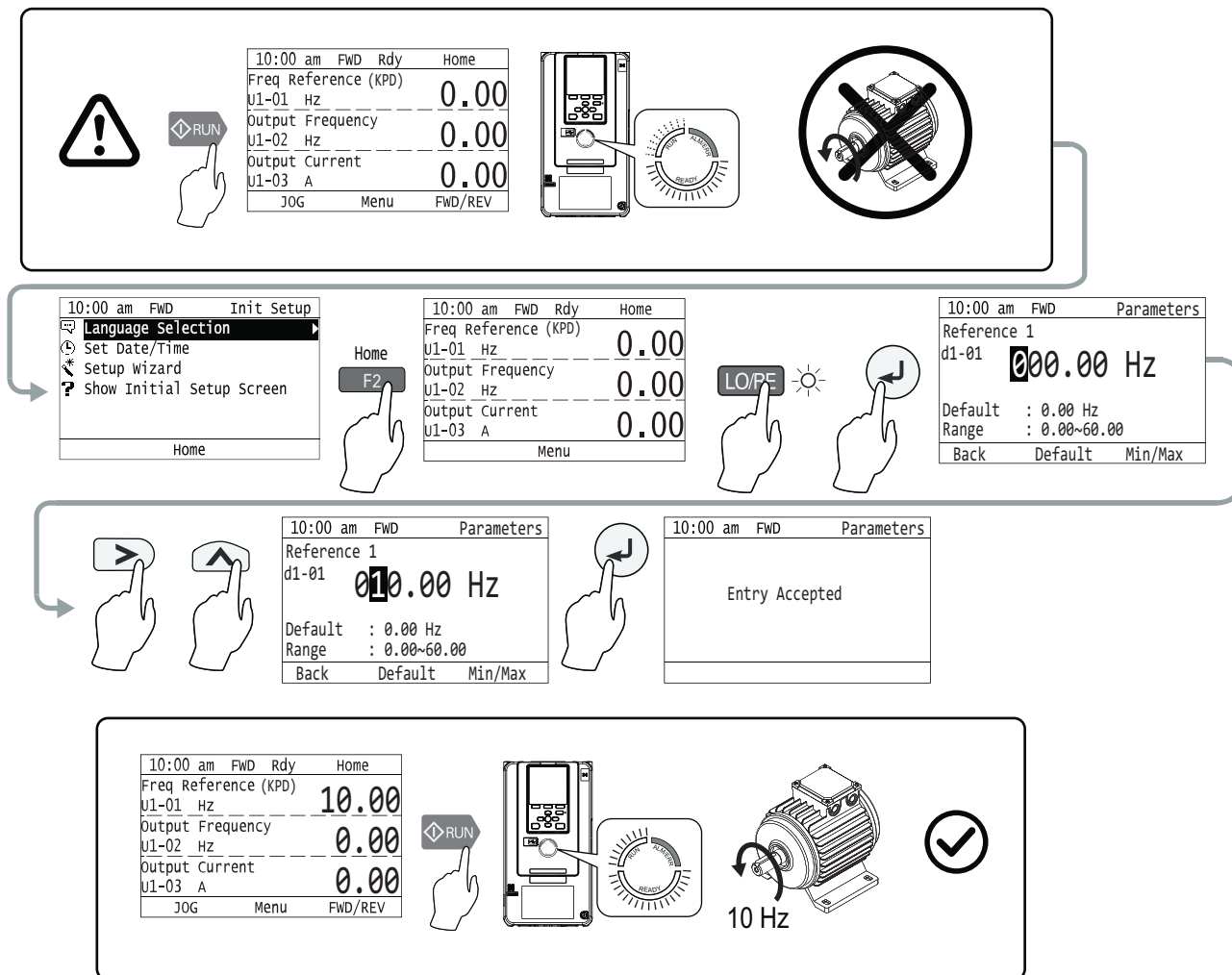
Terminal	Type	Signal Level	Default
S1	MFDI selection 1	Photocoupler 24 V, 6 mA	Forward run/Stop
S2	MFDI selection 2		Reverse run/Stop
S3	MFDI selection 3		External fault (N.O.)
S4	MFDI selection 4		Fault reset
S5	MFDI selection 5		Multi-step speed reference 1
S6	MFDI selection 6		Multi-step speed reference 2
S7	MFDI selection 7		Jog command
S8	MFDI selection 8		Baseblock command (N.O.)
SN	MFDI power supply 0 V	24 V, 150 mA maximum	-
SC	MFDI selection common		-
SP	MFDI power supply +24 Vdc		-
H1	Safe Disable input 1	24 V, 6 mA Internal impedance: 4.7 kΩ Minimum OFF time: 2 ms	-
H2	Safe Disable input 2		-
HC	Safe Disable function common		-
RP	Master frequency reference pulse train input	Response frequency: 0 Hz ~ 32 kHz H level duty: 30% ~ 70% H level voltage: 3.5 V ~ 13.2 V L level voltage: 0.0 V ~ 0.8 V Input impedance: 3 kΩ	Master frequency reference
+V	Power supply for frequency setting	10.5 V (20 mA maximum)	-
-V		-10.5 V (20 mA maximum)	-
A1	MFAI 1	-10 V ~ +10 V/-100% ~ +100% 0 V ~ 10 V/100% (input impedance 20 kΩ)	Master frequency reference
A2	MFAI 2	4 mA ~ 20 mA/100% 0 mA ~ 20 mA/100% (input impedance 250 Ω)	
A3	MFAI 3/PTC input	-10 V ~ +10 V/-100% ~ +100% 0 V ~ 10 V/100% (input impedance 20 kΩ) 4 mA ~ 20 mA/100% 0 mA ~ 20 mA/100% (input impedance 250 Ω) PTC input	Auxiliary frequency reference
AC	Frequency reference common	0 V	-
E(G)	Cable shielding connection	-	-
MA	N.O. output	30 Vdc, 10 mA ~ 1 A 250 Vac, 10 mA ~ 1 A	Fault
MB	N.C. output	250 Vac, 10 mA ~ 1 A Minimum load: 5 V, 10 mA	Fault
MC	MA/MB common		-
M1	MFDI	30 Vdc, 10 mA ~ 1 A 250 Vac, 10 mA ~ 1 A Minimum load: 5 V, 10 mA	During Run
M2	MFDI		Zero Speed
M3	MFDI		Speed Agree 1
M4	MFDI		
M5	MFDI		
M6	MFDI		
MP	Pulse train output	32 kHz maximum	Output frequency
FM	Analog monitor output 1	0 V ~ +10 V/0% ~ 100% -10 V ~ +10 V/-100% ~ +100%	Output frequency
AM	Analog monitor output 2	4 mA ~ 20 mA	Output current
AC	Monitor common	0 V	-
PS	External 24 V power supply input	21.6 Vdc ~ 26.4 Vdc, 700 mA	-
AC	External 24 V power supply ground	0 V	-
D+	Communication input/output (+)	MEMOBUS/Modbus, RS-485 115.2 kbps maximum	-
D-	Communication output (-)		-
AC	Signal ground	0 V	-

MFDI: Multi-function Digital Input
MFAI: Multi-function Analog Input
MFDO: Multi-function Digital Output

E How to Remove the Drive Front Cover



F If You Push the Run Button but the Motor Does Not Spin



G Parameter Groups

A: Initialization		d: Reference Settings		F: Options		L: Protection Functions		o: Keypad-Related Settings	
A1	Initialization	d1	Frequency Reference	F1	Encoder Option Setup	L1	Motor Protection	o1	Keypad Display
A2	User Parameters	d2	Reference Limits	F2	Analog Input Option	L2	Power Loss Ride Through	o2	Keypad Operation
b: Application		d3	Jump Frequency	F3	Digital Input Option	L3	Stall Prevention	o3	Copy Keypad Function
b1	Operation Mode Selection	d4	Frequency Ref Up/Down & Hold	F4	Analog Output Option	L4	Speed Detection	o4	Maintenance Monitors
b2	DC Injection Braking and Short Circuit Braking	d5	Torque Control	F5	Digital Output Option	L5	Fault Restart	o5	Log Function
b3	Speed Search	d6	Field Weakening/Forcing	F6	Communication Option	L6	Torque Detection	q: DriveWorksEZ Parameters	
b4	Timer Function	d7	Offset Frequency	F7	Ethernet Options	L7	Torque Limit	r: DWEZ Connection 1-20	
b5	PID Control	E: Motor Parameters		H: Terminal Functions		L8	Drive Protection	U: Monitors	
b6	Dwell Function	E1	V/f Pattern for Motor 1	H1	Digital Inputs	L9	Drive Protection 2	U1	Operation Status Monitors
b7	Droop Control	E2	Motor 1 Parameters	H2	Digital Outputs	n: Special Adjustment		U2	Fault Trace
b8	Energy Saving	E3	V/f Pattern for Motor 2	H3	Analog Inputs	n1	Hunting Prevention	U3	Fault History
b9	Zero Servo	E4	Motor 2 Parameters	H4	Analog Outputs	n2	Auto Freq Regulator (AFR)	U4	Maintenance Monitors
C: Tuning				H5	Modbus Communication	n3	High Slip/Overexcite Braking	U5	PID Monitors
C1	Accel & Decel Time			H6	Pulse Train Input/Output	n4	Adv Open Loop Vector Tune	U6	Operation Status Monitors
C2	S-Curve Characteristics			H7	Virtual MFIO selection	n5	Feed Forward Control	U8	DriveWorksEZ Monitors
C3	Slip Compensation					n6	Online Tuning		
C4	Torque Compensation								
C5	Auto Speed Regulator (ASR)								
C6	Duty & Carrier Frequency								

H Troubleshooting Resources for Drive Faults and Alarms

Resource	Choose This When:	URL	QR Code for Download
Installation & Primary Operation		200/400 V Class: https://www.yaskawa.com/toepc71061737	
		600 V Class: https://www.yaskawa.com/toepc7106170v	
DriveWizard Mobile App	You want to use your smartphone or tablet and use the embedded help to look up the full complement of causes and solutions to all drive faults and alarms. 	https://www.yaskawa.com/dwm	 App download
200/400 V Class: Maintenance & Troubleshooting Manual	You want to download a PDF of the manual to your smartphone or tablet. This manual lists the full complement of causes and solutions to all drive faults and alarms and also includes detailed information about drive maintenance, wiring, and programming. 	https://www.yaskawa.com/toepyaiga8001	
600 V Class: Technical Reference		https://www.yaskawa.com/siepc7106170v	

I Additional Resources



Mobile App



DriveWizard® Mobile
Commissioning
Smartphone App
<https://www.yaskawa.com/dwm>



Product Manuals



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•Manuals App
<https://www.yaskawa.com/ga800manuals>

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