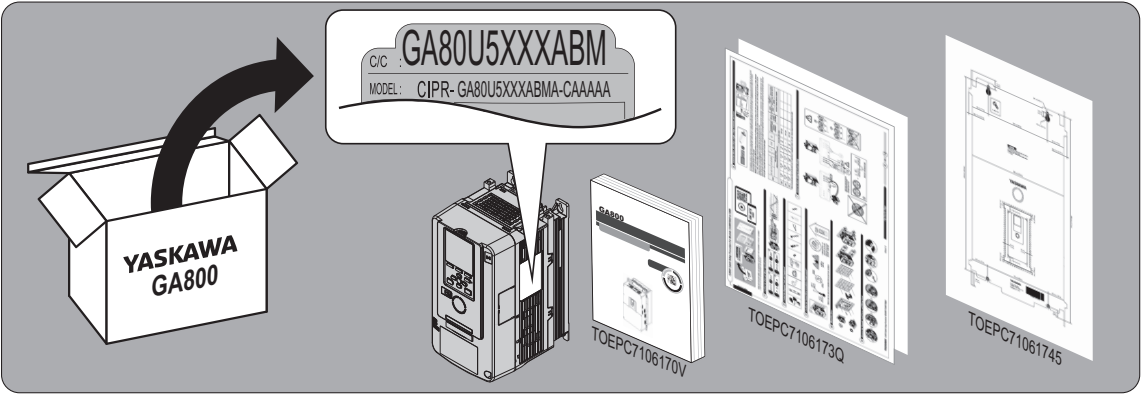


TOEPC7106173Q*



Read and follow the safety and installation procedures in the Installation & Primary Operation (TOEPC7106170V) manual packaged with the drive.

1 Confirm the Drive and Motor Specifications

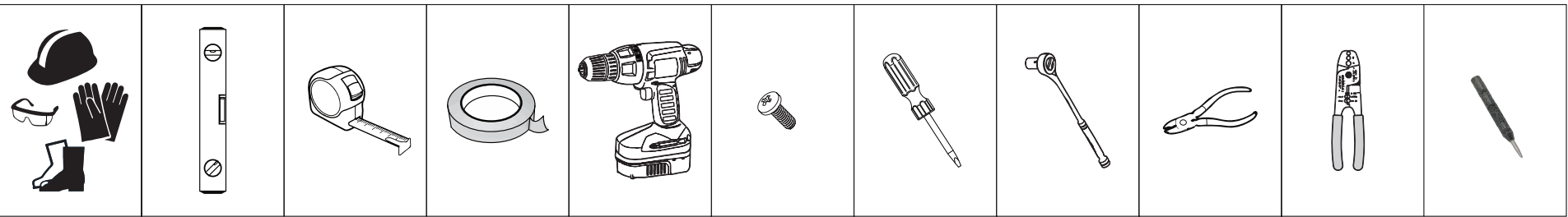
VOLTS ≥ VOLTS

AMPS ≥ AMPS

HP ≥ HP

HERTZ ≥ HERTZ

2 Collect the Required Tools and Equipment



3 Confirm the Correct Drive Installation Environment *

?

+50 °C
(122 °F)

-10 °C
(14 °F)

95 RH

0 RH

≤1000 m
(3281 ft)

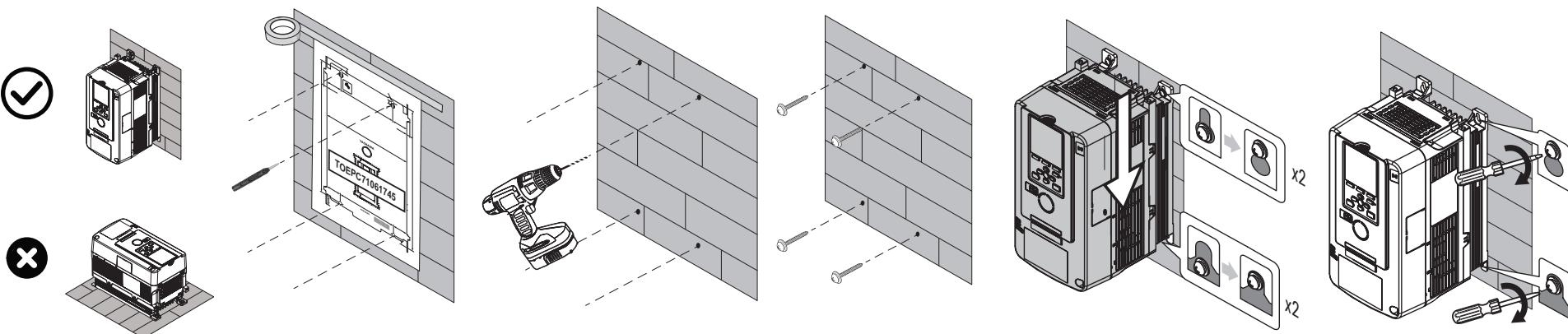
• 10 Hz to 20 Hz: 1 G
(9.8 m/s², 32.15 ft/s²)

• 20 Hz to 55 Hz: 0.6 G
(5.9 m/s², 19.36 ft/s²)

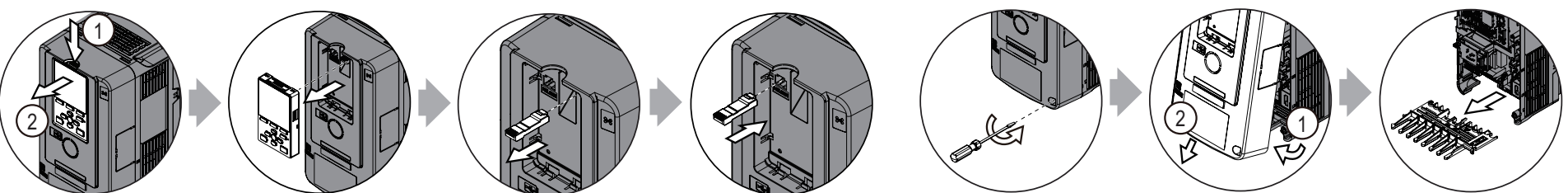
≤ Pollution
Degree 2

*Refer to the drive manual for installations that exceed these conditions.

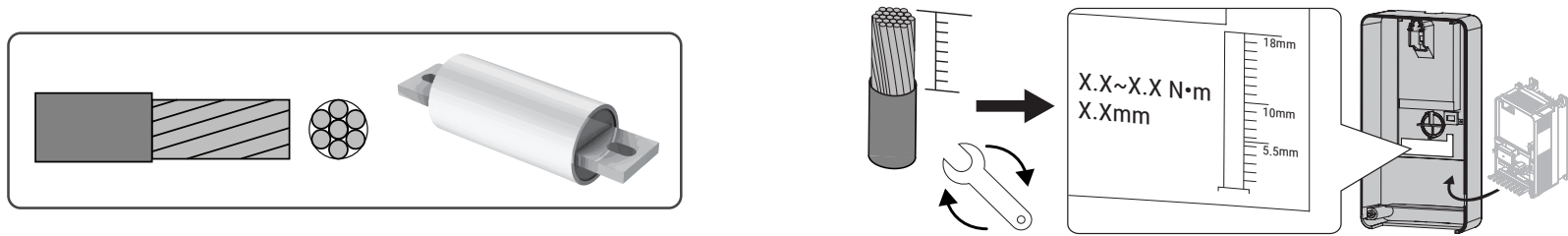
4 Mount the Drive



5 Remove the Keypad, Front Cover, and Wiring Cover



6 Select the Wires, Wire Strip Length, Crimp Terminals, and Fuses



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. You can substitute an alternate UL listed current limiting type MCCB where the peak let-through current and I²t of the alternate MCCB is not greater than the specified MCCB in this table.

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 600 Vac when there is a short circuit in the power supply.

Model	R/L1, S/L2, T/L3	U/T1, V/T2, W/T3	—	+1	B1, B2	⊕	Semiconductor Fuse Manufacturer: Eaton/Bussmann Part Number *1
	IP20 Applicable Gauge AWG (Recommended Value in Parentheses)						
	Three-Phase 600 V Class						
5002 - 5011	14 - 6 (14)	14 - 6 (14)	14 - 3 (14)	14 - 10 (14)	n/a (10)		FWP-70B
5017	8 - 3 (10)	10 - 4 (10)	8 - 1 (8)	14 - 8 (14)	n/a (8)		FWP-100B
5022	8 - 3 (8)	10 - 4 (10)	8 - 1 (8)	14 - 8 (12)	n/a (8)		FWP-100B
5027 - 5032	10 - 4 (8)	10 - 6 (6)	10 - 3 (6)	14 - 8 (10)	n/a (6)		FWP-125A
5041 - 5052	12 - 3 (6)	12 - 3 (6)	10 - 2 (4)	14 - 6 (8)	n/a (6)		FWP-150A
5062	2/0 - 250 (2)	3/0 - 300 (2)	1/0 - 2/0 (2)	1 - 2/0 (4)	n/a (4)		FWP-150A
5077	2/0 - 250 (2)	3/0 - 300 (2)	1/0 - 2/0 (1)	1 - 2/0 (4)	n/a (4)		FWP-150A
5099	2/0 - 250 (1)	3/0 - 300 (1)	1/0 - 2/0 (2/0)	1 - 2/0 (3)	n/a (4)		FWP-150A

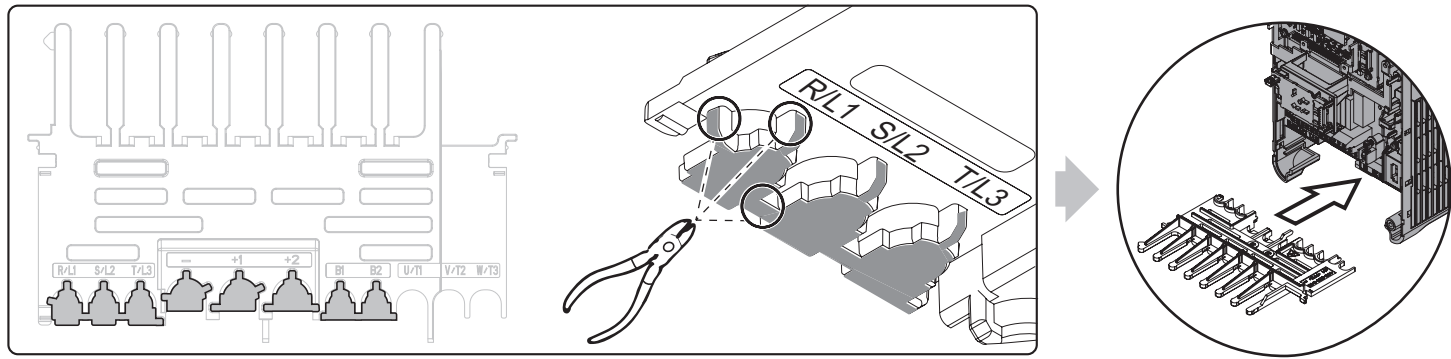
*1 Install the specified semiconductor fuses in UL Type 1 Kit UUX002314, which attaches to the drive. Alternatively, both the drive and the fuses may be installed in a supplemental enclosure.

7 Install the Motor Wiring and Power Wiring

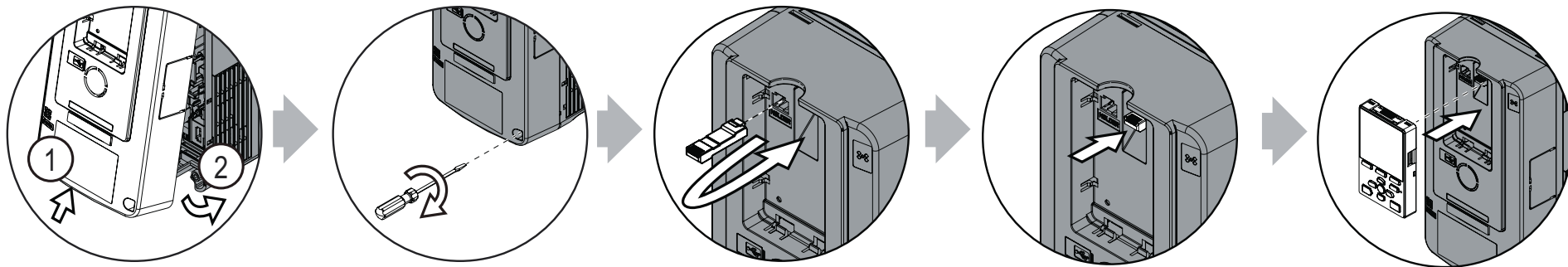
Refer to the Technical Reference (SIEPC7106170V) for more information about GFCIs.

Spacing per local electrical codes

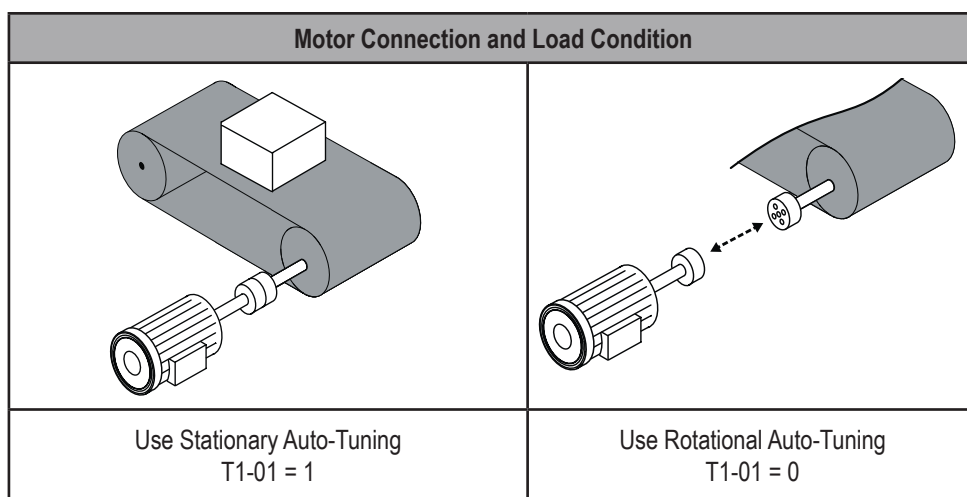
8 Remove the Tabs and Install the Wiring Cover



9 Install the Front Cover and Keypad



10 Determine the Correct Auto-Tuning Method



11 Collect and Record Auto-Tuning Data from Motor Nameplate

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

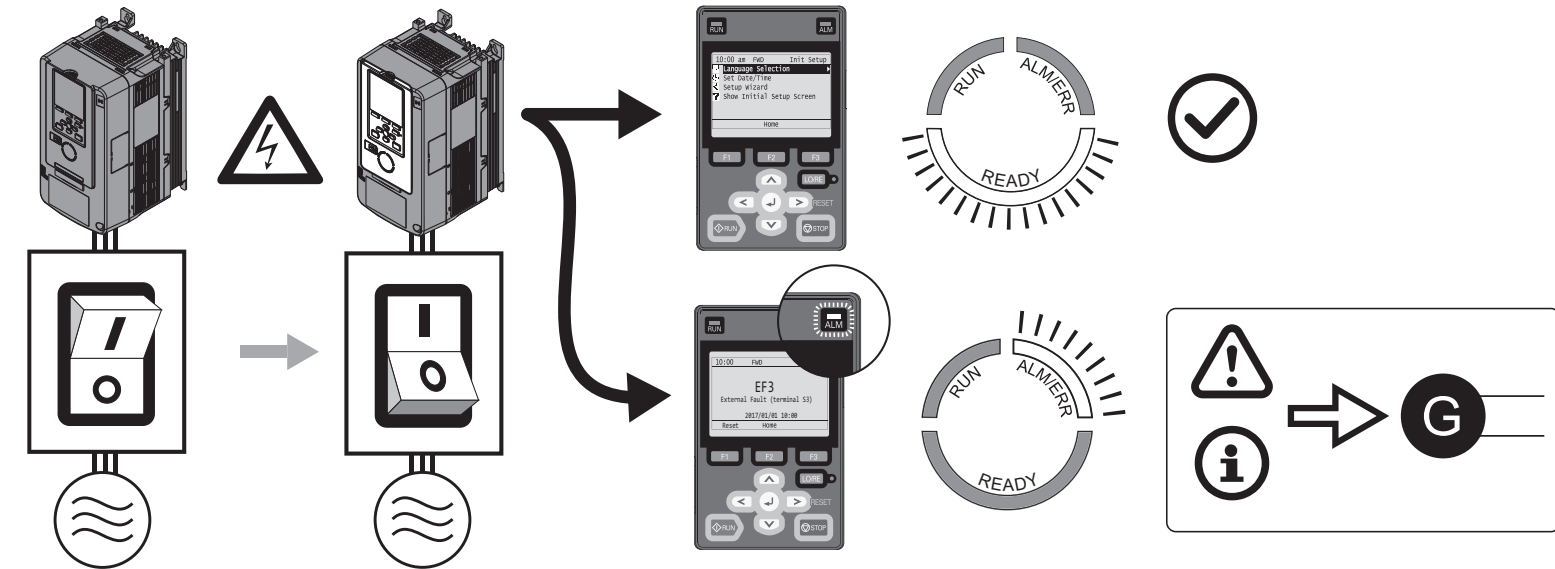
Reference	Motor Nameplate Data	Motor Nameplate Value		T1-xx Parameter (Ex-xx Parameter *)
A	Motor Rated Power	(HP x 0.746)	kW	T1-02 (E2-11)
B	Motor Rated Voltage		V	T1-03 (E1-05)
C	Motor Rated Current (FLA)		A	T1-04 (E2-01)
D	Motor Rated Frequency (Base Frequency)		Hz	T1-05 (E1-04/E1-06)
E	Motor Pole Count		-	T1-06 (E2-04)
F	Motor Rated RPM		RPM	T1-07
G	Motor No-Load Current *2		A	T1-09 (E2-03)
-	Motor Rated Slip *3	0.000	Hz	T1-10 (E2-02)
-	Test Mode Selection *2		-	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.

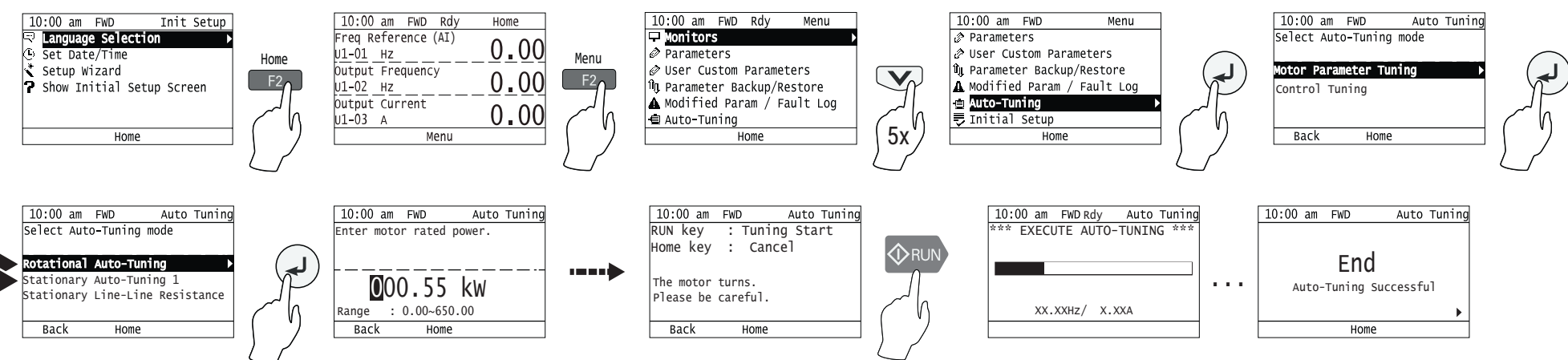
*2 These values are only necessary for Stationary Auto-Tuning (T1-01 = 1).

*3 If you do not know this value, leave at the default value of 0.000.

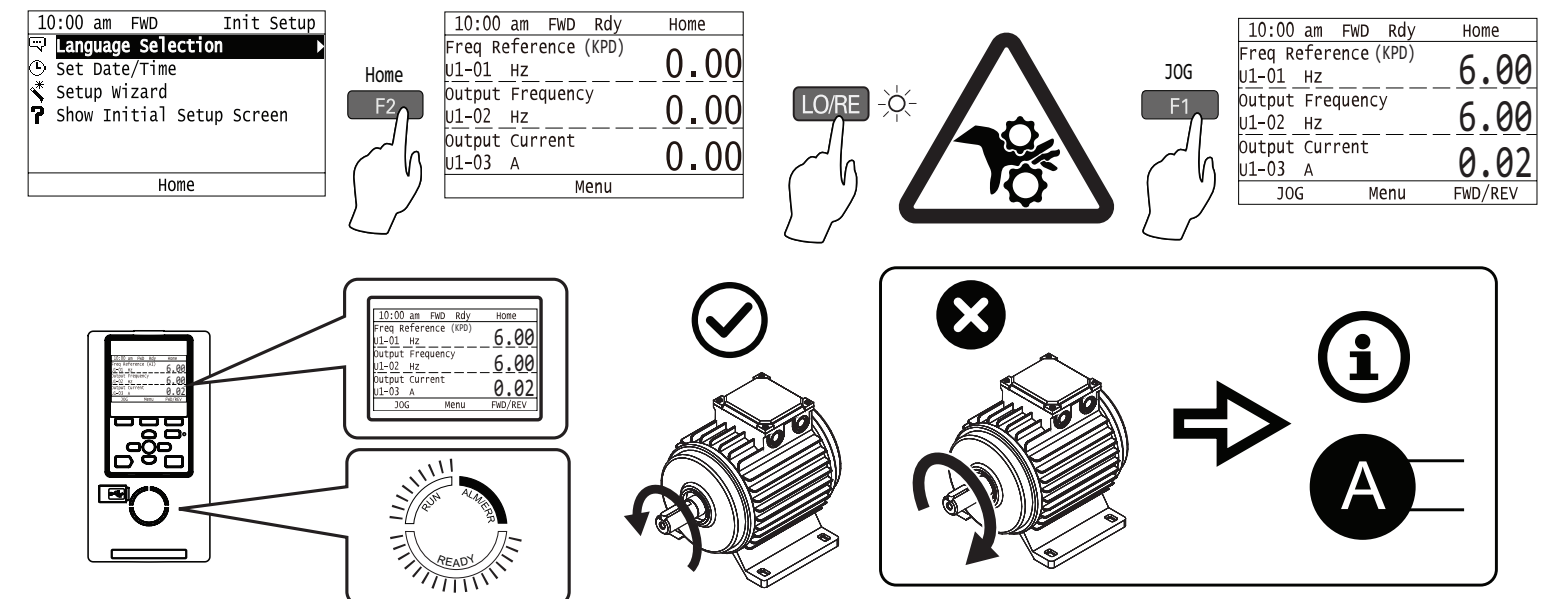
12 Energize the Drive and Confirm It Is Ready



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

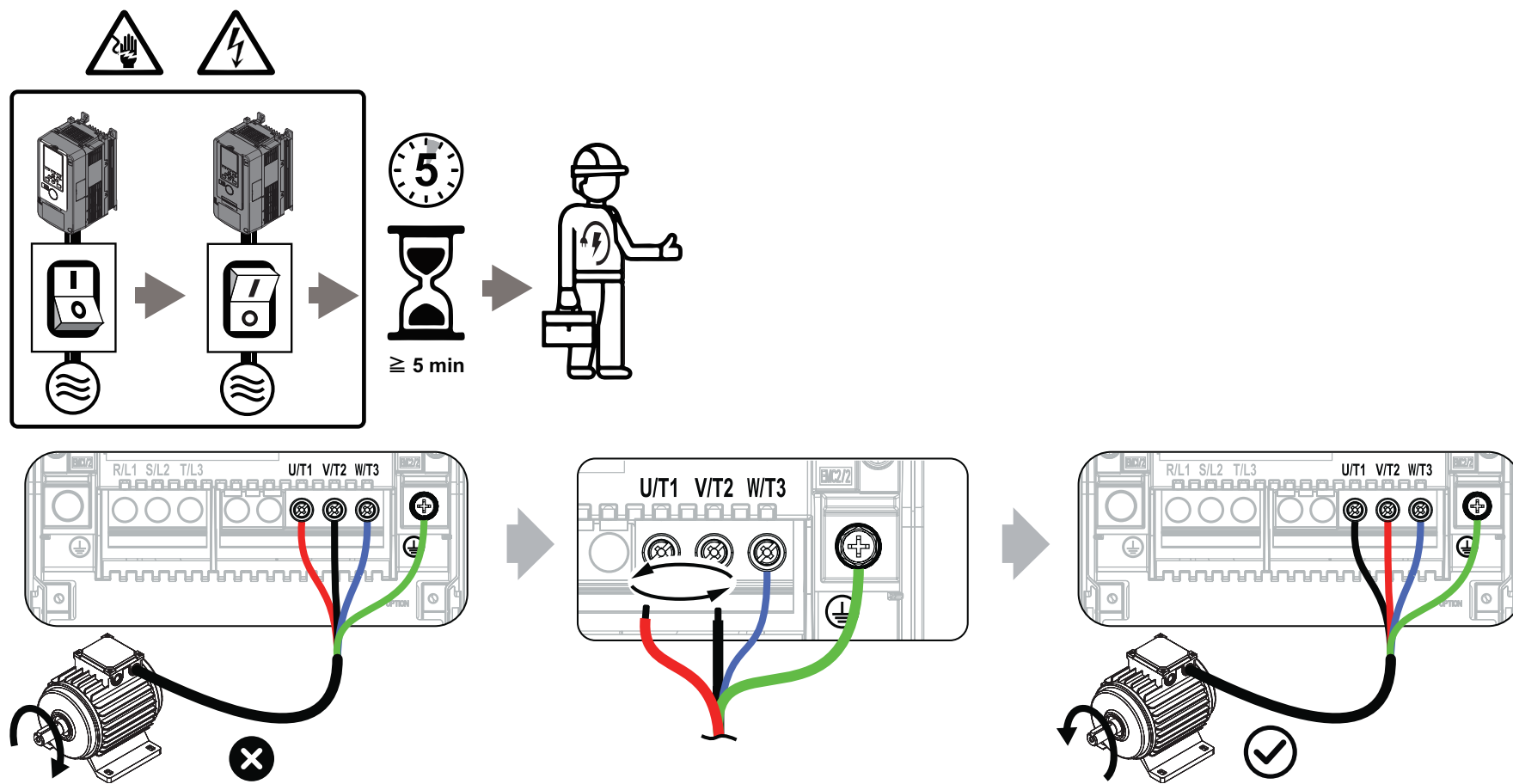


14 Set the Drive for LOCAL Control and Check the Motor Rotation Direction

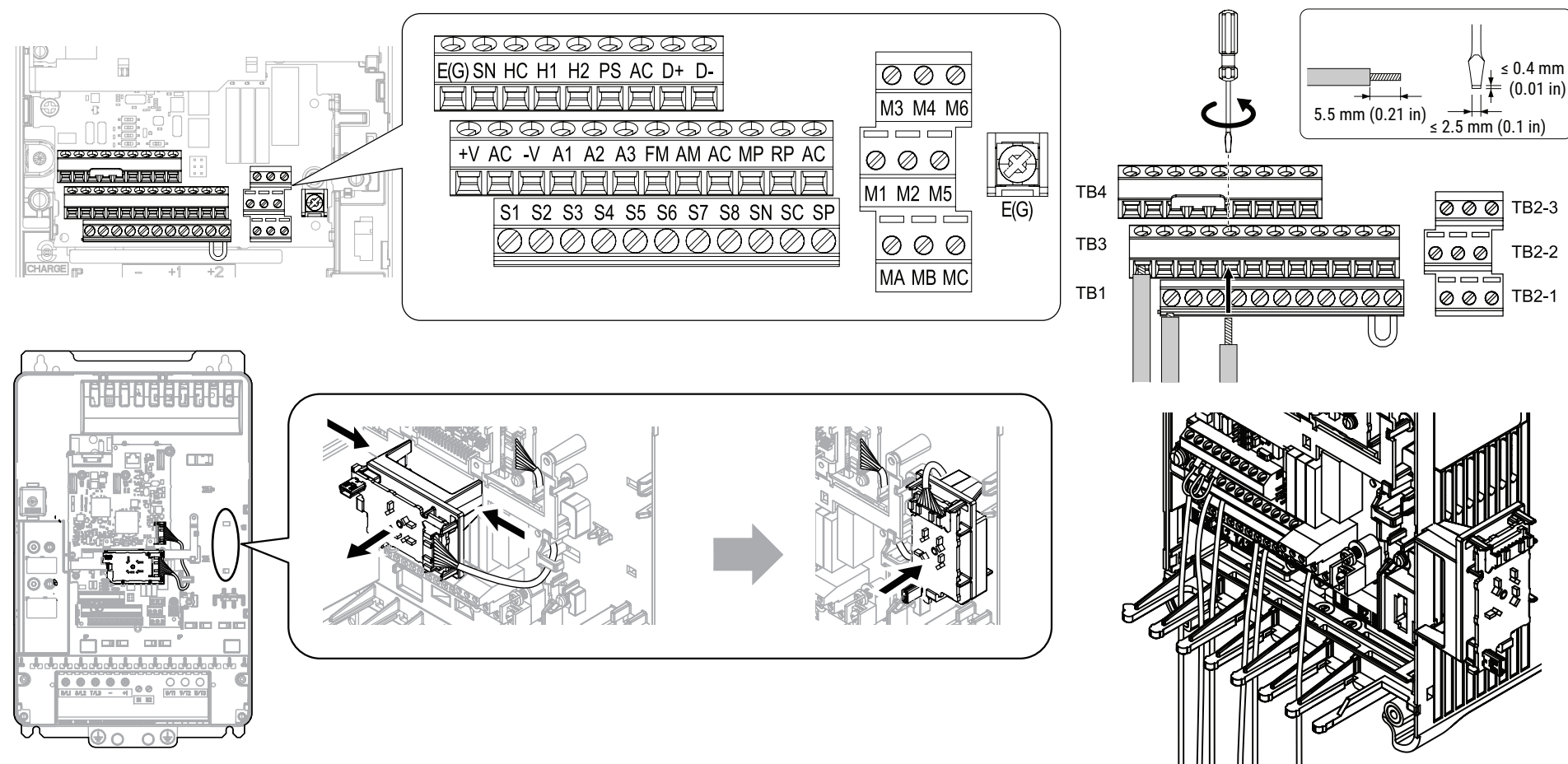


Additional Information for Installation and Primary Operation

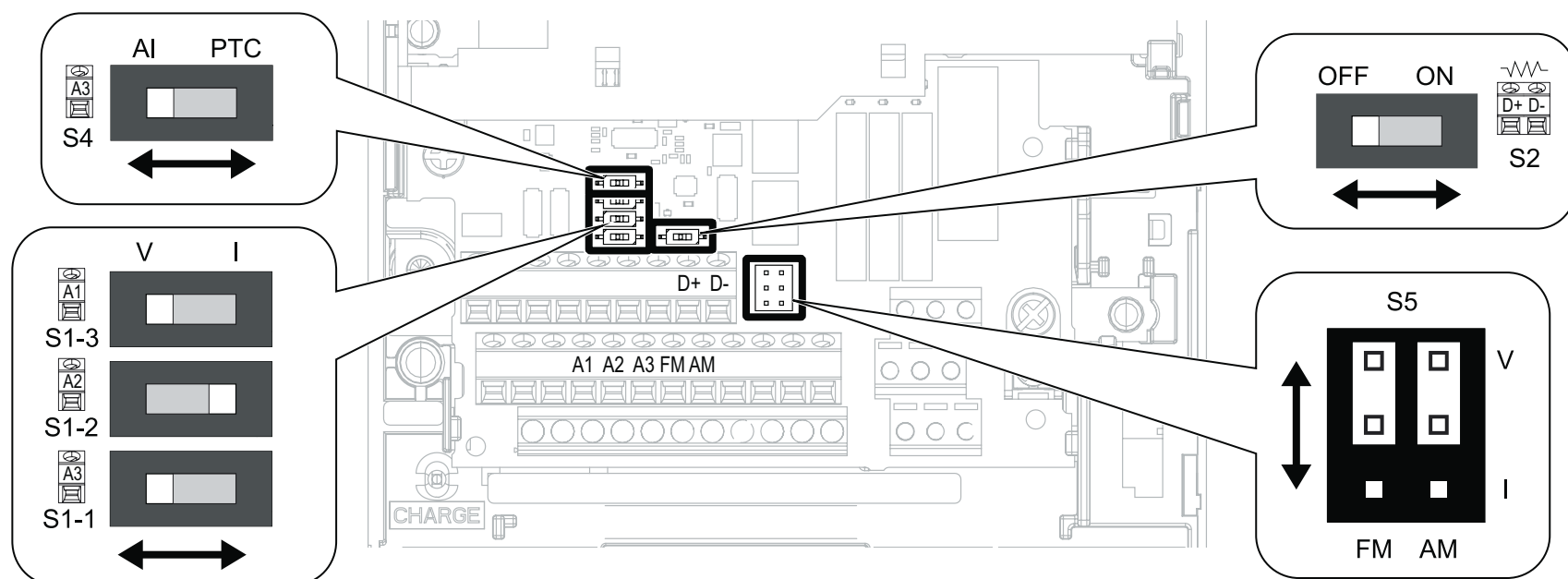
A If the Motor Does Not Rotate in the Correct Direction



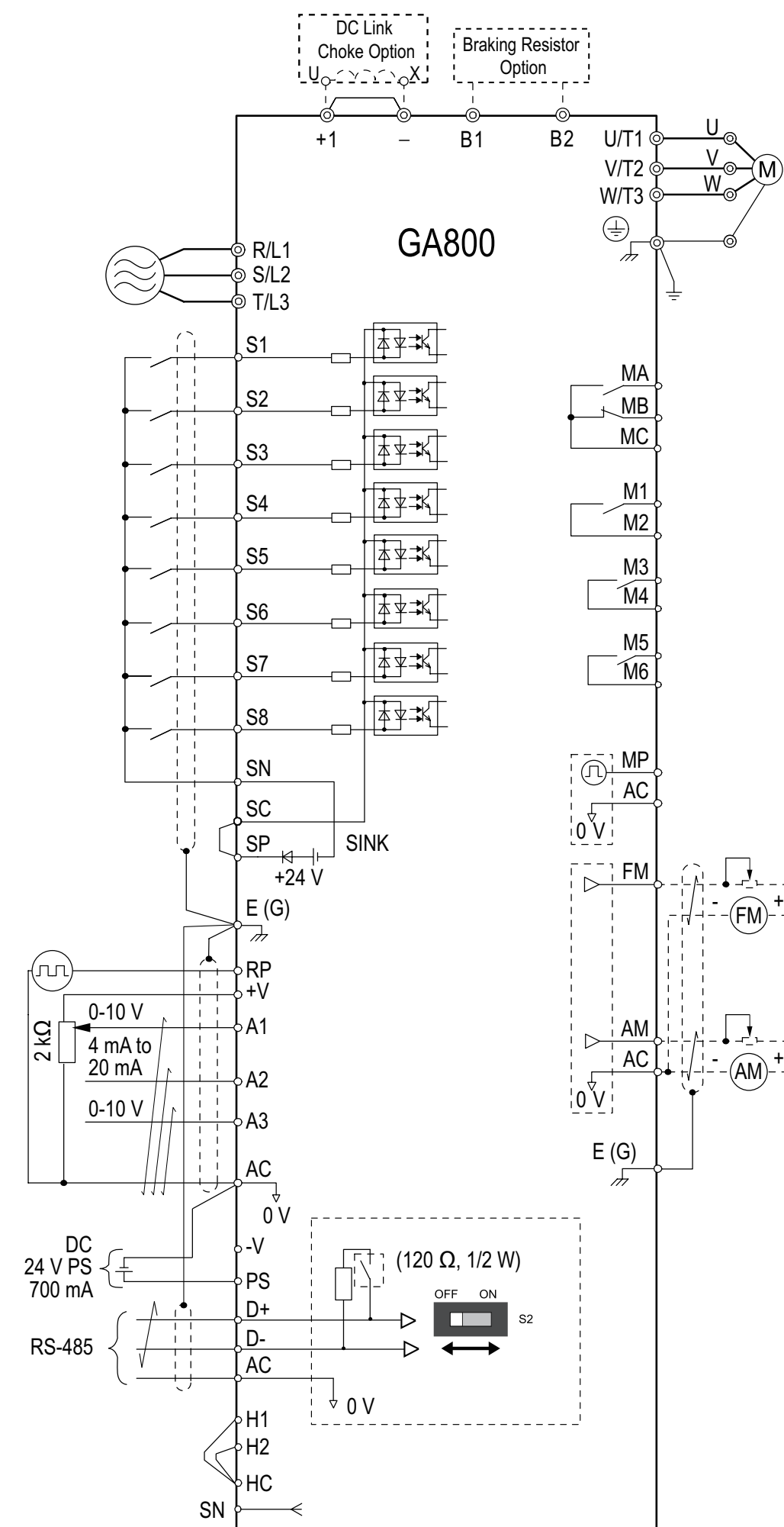
B Control Circuit Configuration and Accessibility



C Switches and Jumpers on the Control Board



D Connection Diagram and Terminal Functions



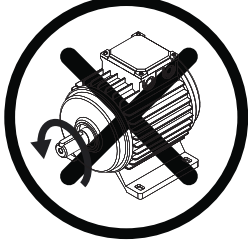
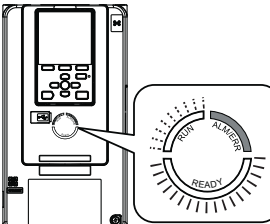
Terminal	Type	Signal Level	Default
S1	MFDI selection 1	Photocoupler 24 V, 6 mA	Forward run/Stop
S2	MFDI selection 2		Reverse run/Stop
S3	MFDI selection 3		External fault (N.O.)
S4	MFDI selection 4		Fault reset
S5	MFDI selection 5		Multi-step speed reference 1
S6	MFDI selection 6		Multi-step speed reference 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) 4 mA ~ 20 mA/100% 0 mA ~ 20 mA/100% (input impedance 250 Ω)	Master frequency reference
A2	MFAI 2		Combined to terminal A1
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 Minimum load: 5 V, 10 mA	Fault
MB	N.C. output		Fault
MC	MA/MB common		-
M1	MFDO	30 Vdc, 10 mA ~ 1 A 250 Vac, 10 mA ~ 1 A Minimum load: 5 V, 10 mA	During Run
M2	MFDO		Zero Speed
M3	MFDO		Speed Agree 1
M4	MFDO		
M5	MFDO		
M6	MFDO		
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% 4 mA ~ 20 mA	Output frequency
AM	Analog monitor output 2		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

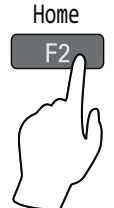
E If You Push the Run Button but the Motor Does Not Spin



10:00 am	FWD	Rdy	Home
Freq Reference (KPD)			
U1-01	Hz	0.00	
Output Frequency			
U1-02	Hz	0.00	
Output Current			
U1-03	A	0.00	
JOG	Menu	FWD/REV	



10:00 am	FWD	Init Setup
Language Selection		
Set Date/Time		
Setup Wizard		
Show Initial Setup Screen		
Home		



10:00 am	FWD	Rdy	Home
Freq Reference (KPD)			
U1-01	Hz	0.00	
Output Frequency			
U1-02	Hz	0.00	
Output Current			
U1-03	A	0.00	
Menu			



10:00 am	FWD	Parameters
Reference 1		
d1-01	000.00 Hz	
Default : 0.00 Hz		
Range : 0.00~60.00		
Back	Default	Min/Max

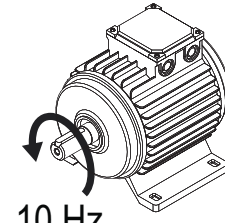
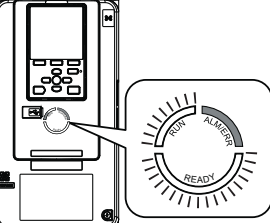


10:00 am	FWD	Parameters
Reference 1		
d1-01	010.00 Hz	
Default : 0.00 Hz		
Range : 0.00~60.00		
Back	Default	Min/Max



Entry Accepted		
----------------	--	--

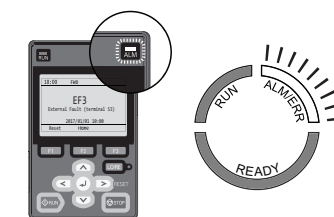
10:00 am	FWD	Rdy	Home
Freq Reference (KPD)			
U1-01	Hz	10.00	
Output Frequency			
U1-02	Hz	0.00	
Output Current			
U1-03	A	0.00	
JOG	Menu	FWD/REV	

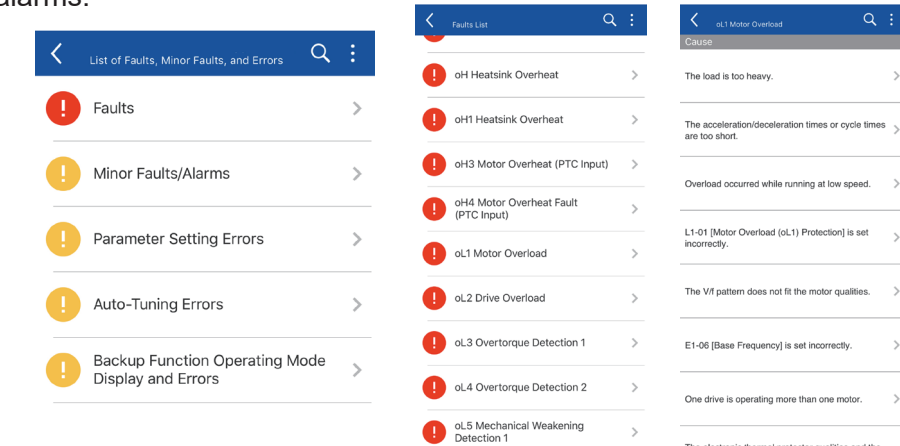


F Parameter Groups

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								

G Troubleshooting Resources for Drive Faults and Alarms



Resource	Choose This When:	URL	QR Code
Installation & Primary Operation	You have access to the paper copy of the manual that was packaged with the drive. This manual lists all drive faults and alarms, and offers a selection of causes and solutions. 	https://www.yaskawa.com/toepc7106170v	 PDF download
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
Technical Reference	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/siepc7106170v	 PDF download

H Additional Resources


Mobile App

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