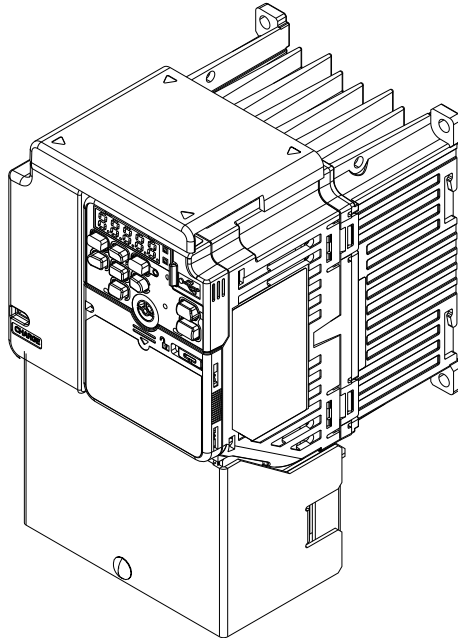


Yaskawa AC Drive Option UL Type 1 Kit Installation Manual

Model ZBAA-GA50Vx-x

To properly use the product, read this manual thoroughly and retain for easy reference, inspection, and maintenance. Ensure the end user receives this manual.



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1 Receiving

◆ Applicable Documentation

Document	Description
Yaskawa AC Drive Option UL Type 1 Kit Installation Manual	Read this manual before you install this option to the drive. This manual gives information about how to install the option and change the enclosure type of the drive from IP20/UL Open Type to IP20/UL Type 1.
Yaskawa AC Drive Manuals	Refer to the manual packaged with the drive for basic information about the drive. Refer to the Technical Manual for more information about programming and parameter settings. You can download the Technical Manual from the Yaskawa website shown on the back cover of this manual.

◆ Glossary

Terminology Used in this Document	Description
Drive	YASKAWA AC Drive GA500
Kit, Option	Yaskawa AC Drive Option UL Type 1 Kit

2 General Safety

◆ Supplemental Safety Information

▲ DANGER This signal word identifies a hazard that will cause serious injury or death if you do not prevent it.

▲ WARNING This signal word identifies a hazard that can cause death or serious injuries if you do not prevent it.

▲ CAUTION This signal word identifies a hazardous situation, which, if not avoided, can cause minor or moderate injury.

NOTICE This signal word identifies a property damage message that is not related to personal injury.

◆ Section Safety

General Precautions
<ul style="list-style-type: none"> Some figures in the instructions include options and drives without covers or safety shields to more clearly show the inside of the drive. Replace covers and shields before operation. Use options and drives only as specified by the instructions. The figures in this manual are examples only. All figures do not apply to all products included in this manual. Yaskawa can change the products, specifications, and content of the instructions without notice to make the product and/or the instructions better. If you damage or lose these instructions, contact a Yaskawa representative or the nearest Yaskawa sales office on the rear cover of the manual, and tell them the document number on the front cover to order new copies.

⚠ DANGER *Electrical Shock Hazard. Do not examine, connect, or disconnect wiring on an energized drive. Before servicing, disconnect all power to the equipment and wait for the time specified on the warning label at a minimum. The internal capacitor stays charged after the drive is de-energized. The charge indicator LED extinguishes when the DC bus voltage decreases below 50 Vdc. When all indicators are OFF, measure for dangerous voltages to make sure that the drive is safe. If you do work on the drive when it is energized, it will cause serious injury or death from electrical shock.*

⚠ CAUTION *Burn Hazard. Do not touch a hot drive heatsink. De-energize the drive, wait for a minimum of 15 minutes, then make sure that the heatsink is cool before you replace the cooling fans. If you touch a hot drive heatsink, it can burn you.*

⚠ WARNING *Electrical Shock Hazard. Only let approved personnel install, wire, maintain, examine, replace parts, and repair the drive. If personnel are not approved, it can cause serious injury or death.*

⚠ WARNING *Sudden Movement Hazard. Tighten the screws to the specified tightening torque. Incorrect tightening torques can cause damage to equipment and cause serious injury or death from falling equipment.*

NOTICE *Damage to Equipment. When you touch the drive and circuit boards, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*

3 Overview

This option will change an IP20/UL Open Type enclosure drive to an IP20/UL Type 1 enclosure drive.

The option has a bracket that will prevent damage to the wiring and a top protective cover that will not let unwanted material get in the drive. You can use this option when the installation environment of the drive meets the specifications shown in [Installation Environment on page 7](#).

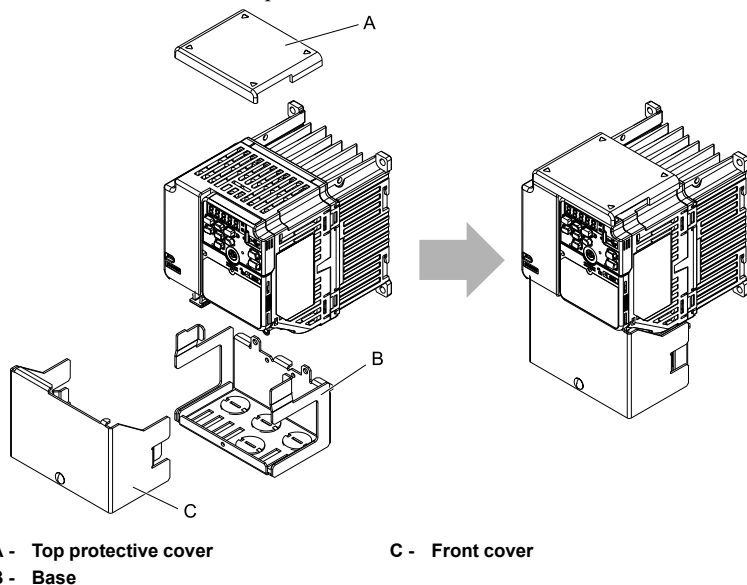


Figure 3.1 IP20/UL Type 1 Drive Overview

◆ Compatible Products

This installation kit is compatible with these drives:

- GA500

■ For Yaskawa Customers in the North or South America Regions

If your drive series is not shown in the “Compatible Products” section, refer to the web page below to confirm that your drive is compatible with this option. The web page shows a list of drives and compatible options, and also directs you to the correct installation manual and installation procedure for your drive.

Refer to the URL or scan QR code:



<https://www.yaskawa.com/products/option-lookup>

◆ Installation Environment

The installation environment is important for the lifespan of the product and to make sure that the drive performance is correct. Make sure that the installation environment agrees with these specifications.

Environment	Conditions
Area of Use	Indoors
Power Supply	Overvoltage Category III (IEC60664)
Ambient Temperature Setting	IP20/UL Type 1: -10 °C to +40 °C (14 °F to 104 °F) <ul style="list-style-type: none"> • Drive reliability is better in environments where the temperature does not increase or decrease quickly. • Do not let the drive freeze.
Humidity	95%RH or less Do not let condensation form on the drive.
Storage Temperature	-20 °C to +70 °C (-4 °F to +158 °F) (short-term temperature during transportation)
Surrounding Area	Pollution degree 2 or less (IEC 60664-1) Install the drive in an area without: <ul style="list-style-type: none"> • Oil mist, corrosive or flammable gas, or dust • Metal powder, oil, water, or other unwanted materials • Radioactive or flammable materials. • Harmful gas or fluids • Salt • Direct sunlight Keep wood and other flammable materials away from the drive.
Altitude	1000 m (3281 ft) Maximum Note: Derate the output current by 1% for each 100 m (328 ft) to install the drive in altitudes between 1000 to 4000 m (3281 to 13123 ft). It is not necessary to derate the rated voltage in these conditions: <ul style="list-style-type: none"> • Installing the drive at 2000 m (6562 ft) or lower • Installing the drive between 2000 to 4000 m (6562 to 13123 ft) and grounding the neutral point on the power supply. Contact Yaskawa or your nearest sales representative when not grounding the neutral point.

4 Receiving

Environment	Conditions
Vibration	<ul style="list-style-type: none"> • 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)
Installation Orientation	Install the drive vertically for sufficient airflow to cool the drive.

NOTICE Do not put drive peripheral devices, transformers, or other electronics near the drive. Shield the drive from electrical interference if components must be near the drive. Components near the drive can cause incorrect drive operation from electrical interference.

NOTICE Do not let unwanted objects, for example metal shavings or wire clippings, fall into the drive during drive installation. Put a temporary cover over the drive during installation. Remove the temporary cover before start-up. Unwanted objects inside of the drive can cause damage to the drive.

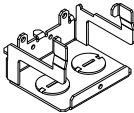
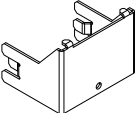
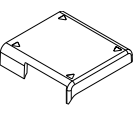
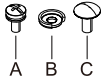
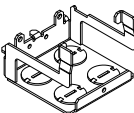
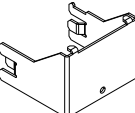
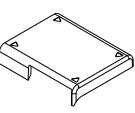
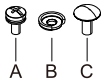
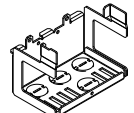
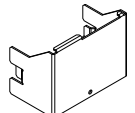
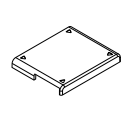
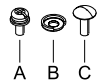
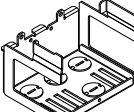

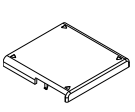
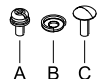
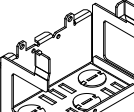
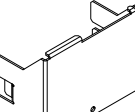
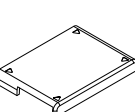
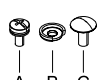
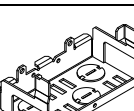
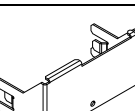
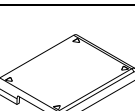
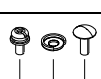
4 Receiving

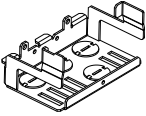
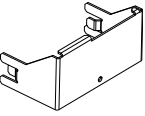
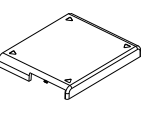

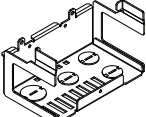
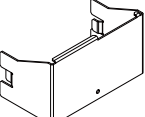
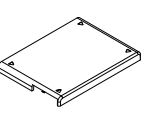

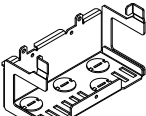
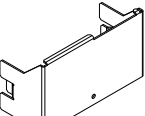
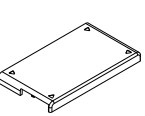

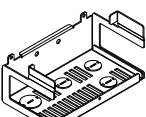
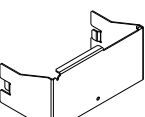
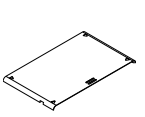

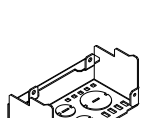
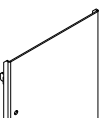
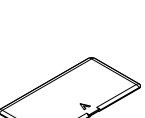

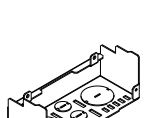
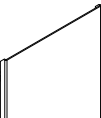
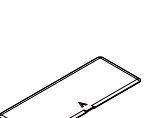

1. Examine the products for damage.
If there is damage to the products, contact the shipping company immediately. The Yaskawa warranty does not include damage from shipping.
2. Verify the product model number to make sure that you received the correct model.
If you have problems with the products, contact the distributor where you purchased the products or the Yaskawa sales office immediately.

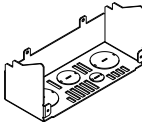
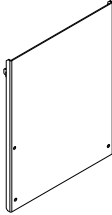
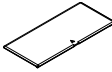

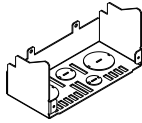
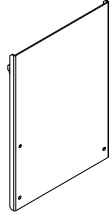
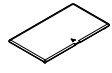

Table 4.1 Drive Model and Kit

Drive Model			Kit Model ZBAA-xxxxxx-x
Three-Phase 200 V	Single-Phase 200 V	Three-Phase 400 V	
2001 - 2006	B001, B002	-	GA50V1-1
-	B004	-	GA50V1-2
2012	B006	-	GA50V2-1
-	B010	4005 - 4009	GA50V2-2
2008, 2010	-	-	GA50V2-3
-	-	4001, 4002	GA50V2-4
-	-	4004	GA50V2-5
-	B012	-	GA50V3-1
2018, 2021	-	4012	GA50V3-2
-	B018	-	GA50V4-1
2030, 2042	-	4018, 4023	GA50V5-1
2056	-	4031, 4038	GA50V6-1
2070, 2082	-	-	GA50V7-1
-	-	4044, 4060	GA50V8-1

◆ Option Package Contents

Kit Model ZBAA-xxxxxx-x	Base	Front Cover	Top Protective Cover	Mounting Screw
GA50V1-1	 #1	 #1	 #1	 A - M3.5 × 8 pan head screw: #2 B - C-Washer: #2 C - Mounting screw: #1
GA50V1-2	 #1	 #1	 #1	 A - M3.5 × 8 pan head screw: #2 B - C-Washer: #2 C - Mounting screw: #1
GA50V2-1	 #1	 #1	 #1	 A - M4 × 8 pan head screw: #2 B - C-Washer: #2 C - Mounting screw: #1
GA50V2-2	 #1	 #1	 #1	 A - M4 × 8 pan head screw: #2 B - C-Washer: #2 C - Mounting screw: #1
GA50V2-3	 #1	 #1	 #1	 A - M4 × 8 pan head screw: #2 B - C-Washer: #2 C - Mounting screw: #1
GA50V2-4	 #1	 #1	 #1	 A - M4 × 8 pan head screw: #2 B - C-Washer: #2 C - Mounting screw: #1

Kit Model ZBAA-xxxxxx-x	Base	Front Cover	Top Protective Cover	Mounting Screw
GA50V2-5	 #1	 #1	 #1	 A - M4 × 8 pan head screw: #2 B - C-Washer: #2 C - Mounting screw: #1
GA50V3-1	 #1	 #1	 #1	 A - M4 × 8 pan head screw: #2 B - C-Washer: #2 C - Mounting screw: #1
GA50V3-2	 #1	 #1	 #1	 A - M4 × 8 pan head screw: #2 B - C-Washer: #2 C - Mounting screw: #1
GA50V4-1	 #1	 #1	 #1	 A - M5 × 10 pan head screw: #2 B - Mounting screw: #1
GA50V5-1	 #1	 #1	 #1	 A - M4 × 12 pan head screw: #2 B - Mounting screw: #2
GA50V6-1	 #1	 #1	 #1	 A - M4 × 12 pan head screw: #2 B - Mounting screw: #2

Kit Model ZBAA-xxxxx-x	Base	Front Cover	Top Protective Cover	Mounting Screw
GA50V7-1	 #1	 #1	 #1	 A - M4 × 12 pan head screw: #2 B - Mounting screw: #2
GA50V8-1	 #1	 #1	 #1	 A - M4 × 12 pan head screw: #2 B - Mounting screw: #2

◆ Necessary Tools

To install the kit, use these tools:

- Phillips screwdriver #2, #3
- Wrench
- Slotted screwdriver
- File

5 Drive Exterior and Mounting Dimensions

◆ Drive Models and Exterior and Mounting Dimensions

Table 5.1 Three-Phase 200 V Class

Drive Model	Drive Exterior and Mounting Dimensions	Knock-Out Hole Dimensions Diagram
2001 - 2006	Figure 5.1	Figure 5.4
2008, 2010	Figure 5.2	Figure 5.7
2012 - 2021		Figure 5.6
2030 - 2056	Figure 5.3	Figure 5.10
2070, 2082		Figure 5.11

Table 5.2 Single-Phase 200 V Class

Drive Model	Drive Exterior and Mounting Dimensions	Knock-Out Hole Dimensions Diagram
B001, B002	Figure 5.1	Figure 5.4
B004		Figure 5.5
B006, B010	Figure 5.2	Figure 5.6
B012		Figure 5.8
B018		Figure 5.9

Table 5.3 Three-Phase 400 V Class

Drive Model	Drive Exterior and Mounting Dimensions	Knock-Out Hole Dimensions Diagram
4001, 4002	Figure 5.2	Figure 5.7
4004 - 4012		Figure 5.6
4018 - 4038	Figure 5.3	Figure 5.10
4044, 4060		Figure 5.12

◆ IP20/UL Type 1

■ 2001 to 2006, B001 to B004

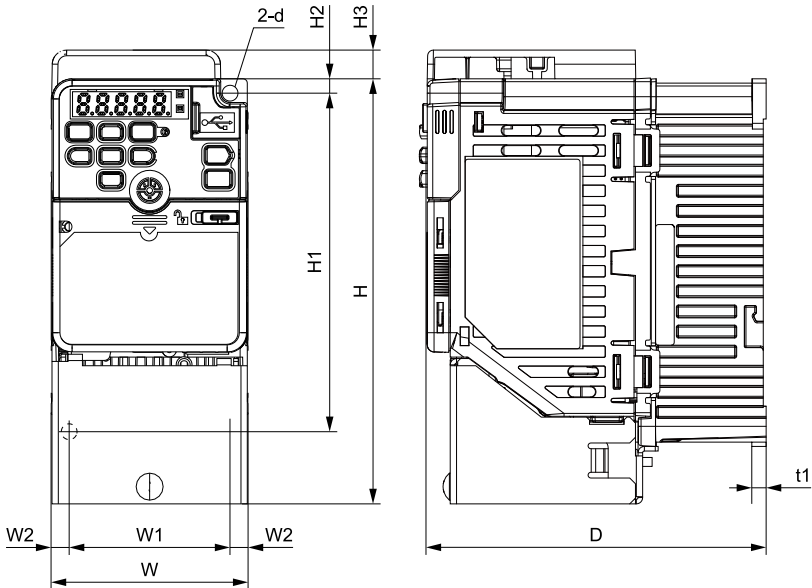


Figure 5.1 Exterior and Mounting Dimensions: 2001 to 2006, B001 to B004

Table 5.4 Three-Phase 200 V Class (IP20/UL Type 1, without Built-in EMC Filter)

Drive Model	Dimensions mm (in)										Est. Weight kg (lb)
	W	H	D	W1	W2	H1	H2	H3	t1	d	
2001 2002	68 (2.68)	148 (5.83)	76 (2.99)	56 (2.20)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	3 (0.12)	M5	0.7 (1.5)
2004	68 (2.68)	148 (5.83)	108 (4.25)	56 (2.20)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	1.0 (2.1)
2006	68 (2.68)	148 (5.83)	128 (5.04)	56 (2.20)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	1.1 (2.4)

Table 5.5 Single-Phase 200 V Class (IP20/UL Type 1, without Built-in EMC Filter)

Drive Model	Dimensions mm (in)										Est. Weight kg (lb)
	W	H	D	W1	W2	H1	H2	H3	t1	d	
B001 B002	68 (2.68)	148 (5.83)	76 (2.99)	56 (2.20)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	3 (0.12)	M5	0.7 (1.5)
B004	68 (2.68)	148 (5.83)	118 (4.65)	56 (2.20)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	1.0 (2.2)

■ 2008 to 2021, B006 to B018, 4001 to 4012

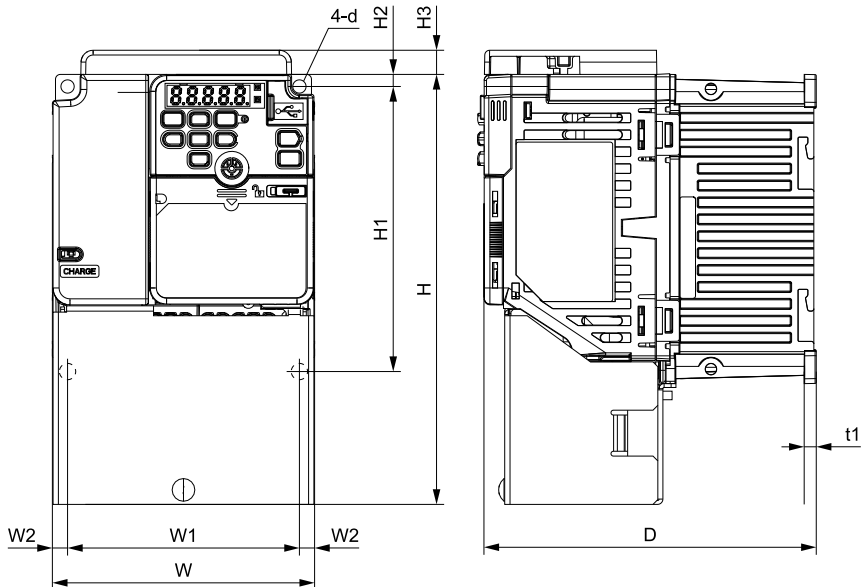
**Figure 5.2 Exterior and Mounting Dimensions: 2008 to 2021, B006 to B018, 4001 to 4012**

Table 5.6 Three-Phase 200 V Class (IP20/UL Type 1, without Built-in EMC Filter)

Drive Model	Dimensions mm (in)										Est. Weight kg (lb)
	W	H	D	W1	W2	H1	H2	H3	t1	d	
2008 2010	108 (4.25)	178 (7.01)	129 (5.08)	96 (3.78)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	1.9 (4.2)
2012	108 (4.25)	178 (7.01)	138 (5.41)	96 (3.78)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	1.9 (4.2)
2018 2021	140 (5.51)	178 (7.01)	143 (5.63)	128 (5.04)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	2.5 (5.5)

Table 5.7 Single-Phase 200 V Class (IP20/UL Type 1, without Built-in EMC Filter)

Drive Model	Dimensions mm (in)										Est. Weight kg (lb)
	W	H	D	W1	W2	H1	H2	H3	t1	d	
B006	108 (4.25)	178 (7.01)	138 (5.41)	96 (3.78)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	1.9 (4.2)
B010	108 (4.25)	178 (7.01)	154 (6.06)	96 (3.78)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	2.0 (4.4)
B012	140 (5.51)	178 (7.01)	163 (6.42)	128 (5.04)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	2.6 (5.7)
B018	170 (6.69)	182 (7.17)	180 (7.09)	158 (6.22)	6 (0.24)	118 (4.65)	5 (0.20)	1.5 (0.06)	5 (0.20)	M5	3.5 (7.7)

Table 5.8 Three-Phase 400 V Class (IP20/UL Type 1, without Built-in EMC Filter)

Drive Model	Dimensions mm (in)										Est. Weight kg (lb)
	W	H	D	W1	W2	H1	H2	H3	t1	d	
4001	108 (4.25)	149 (5.87)	81 (3.19)	96 (3.78)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	1.0 (2.3)
4002	108 (4.25)	149 (5.87)	99 (3.90)	96 (3.78)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	1.1 (2.5)
4004	108 (4.25)	149 (5.87)	138 (5.41)	96 (3.78)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	1.8 (3.9)
4005 4007 4009	108 (4.25)	178 (7.01)	154 (6.06)	96 (3.78)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	2.0 (4.4)
4012	140 (5.51)	178 (7.01)	143 (5.63)	128 (5.04)	6 (0.24)	118 (4.65)	5 (0.20)	10 (0.39)	5 (0.20)	M5	2.5 (5.5)

■ 2030 to 2082, 4018 to 4060

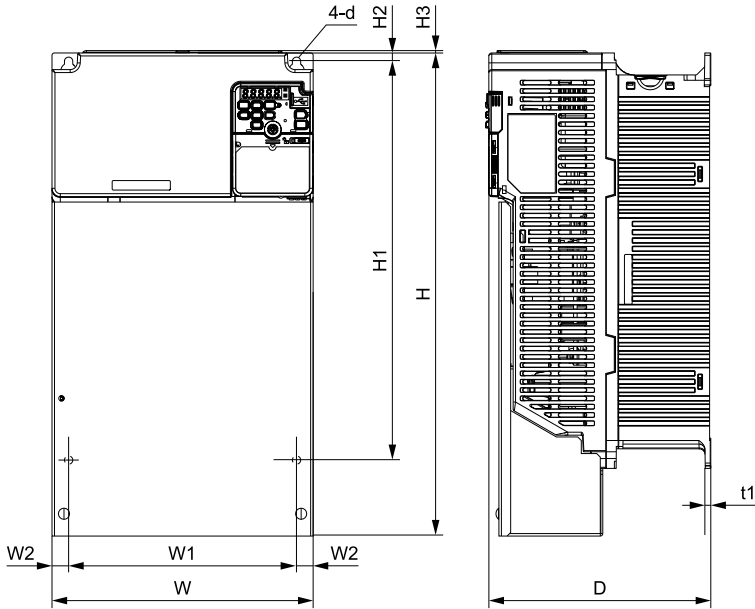


Figure 5.3 Exterior and Mounting Dimensions: 2030 to 2082, 4018 to 4060

Table 5.9 Three-Phase 200 V Class (IP20/UL Type 1, without Built-in EMC Filter)

Drive Model	Dimensions mm (in)										Est. Weight kg (lb)
	W	H	D	W1	W2	H1	H2	H3	t1	d	
2030	140 (5.51)	298 (11.73)	140 (5.51)	122 (4.80)	9 (0.35)	248 (9.76)	6 (0.24)	1.5 (0.06)	5 (0.20)	M5	4.0 (8.9)
2042	140 (5.51)	298 (11.73)	140 (5.51)	122 (4.80)	9 (0.35)	248 (9.76)	6 (0.24)	1.5 (0.06)	5 (0.20)	M5	4.2 (9.3)
2056	180 (7.09)	340 (13.39)	143 (5.63)	160 (6.30)	10 (0.39)	284 (11.18)	8 (0.31)	1.5 (0.06)	5 (0.20)	M5	6.4 (14.1)
2070	220 (8.66)	403 (15.87)	187 (7.36)	192 (7.56)	14 (0.55)	336 (13.23)	7 (0.28)	1.5 (0.06)	5 (0.20)	M6	8.9 (19.6)
2082	220 (8.66)	403 (15.87)	187 (7.36)	192 (7.56)	14 (0.55)	336 (13.23)	7 (0.28)	1.5 (0.06)	5 (0.20)	M6	9.4 (20.7)

Table 5.10 Three-Phase 400 V Class (IP20/UL Type 1, without Built-in EMC Filter)

Drive Model	Dimensions mm (in)										Est. Weight kg (lb)
	W	H	D	W1	W2	H1	H2	H3	t1	d	
4018	140 (5.51)	298 (11.73)	140 (5.51)	122 (4.80)	9 (0.35)	248 (9.76)	6 (0.24)	1.5 (0.06)	5 (0.20)	M5	3.6 (8.0)
4023	140 (5.51)	298 (11.73)	140 (5.51)	122 (4.80)	9 (0.35)	248 (9.76)	6 (0.24)	1.5 (0.06)	5 (0.20)	M5	3.8 (8.4)
4031	180 (7.09)	340 (13.39)	143 (5.63)	160 (6.30)	10 (0.39)	284 (11.18)	8 (0.31)	1.5 (0.06)	5 (0.20)	M5	5.5 (12.1)
4038	180 (7.09)	340 (13.39)	143 (5.63)	160 (6.30)	10 (0.39)	284 (11.18)	8 (0.31)	1.5 (0.06)	5 (0.20)	M5	5.7 (12.6)
4044 4060	190 (7.48)	403 (15.87)	204 (8.03)	160 (6.30)	15 (0.59)	336 (13.23)	7 (0.28)	1.5 (0.06)	5 (0.20)	M6	7.6 (16.9)

◆ **Knock-Out Hole Dimensions (IP20/UL Type 1)**

■ **2001 to 2006, B001, B002**

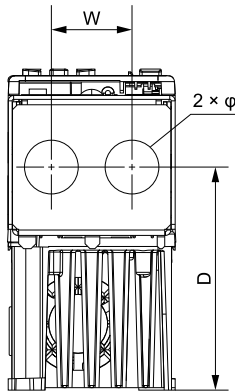


Figure 5.4 Knock-Out Hole Dimensions: 2001 to 2006, B001, B002

Drive Model	Dimensions mm (in)		
	D	W	φ
2001, 2002, B001, B002	39 (1.53)	33 (1.30)	22 (0.87)
2004	71 (2.79)	33 (1.30)	22 (0.87)
2006	91 (3.57)	33 (1.30)	22 (0.87)

■ B004

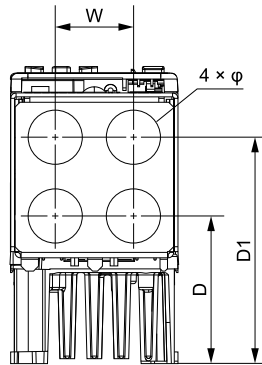


Figure 5.5 Knock-Out Hole Dimensions: B004

Drive Model	Dimensions mm (in)			
	D	D1	W	φ
B004	60 (2.36)	92 (3.62)	32 (1.26)	22 (0.87)

■ 2012 to 2021, B006, B010, 4004 to 4012

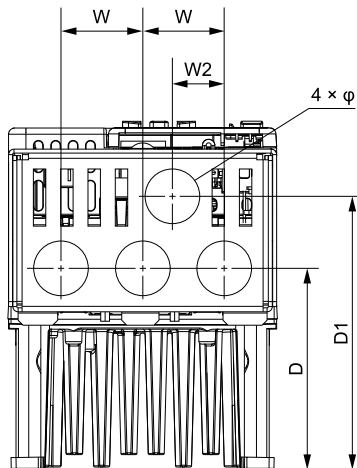


Figure 5.6 Knock-Out Hole Dimensions: 2012 to 2021, B006, B010, 4004 to 4012

Drive Model	Dimensions mm (in)				
	D	D1	W	W2	φ
2012	79 (3.11)	110 (4.33)	33 (1.30)	21 (0.83)	22 (0.87)
2018, 2021	89 (3.50)	115 (4.53)	46 (1.81)	21 (0.83)	22 (0.87)
B006	81 (3.18)	110 (4.33)	33 (1.30)	21 (0.83)	22 (0.87)
B010	84 (3.31)	124 (4.88)	33 (1.30)	21 (0.83)	22 (0.87)
4004	79 (3.11)	110 (4.33)	33 (1.30)	21 (0.83)	22 (0.87)
4005, 4007, 4009	84 (3.30)	124 (4.88)	33 (1.30)	21 (0.83)	22 (0.87)
4012	89 (3.50)	115 (4.53)	46 (1.81)	21 (0.83)	22 (0.87)

■ 2008, 2010, 4001, 4002

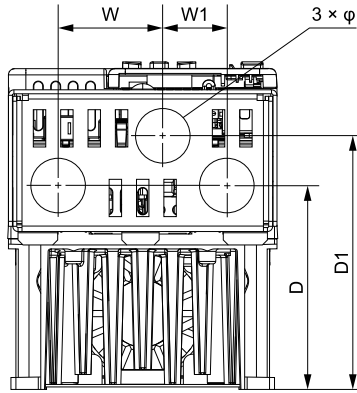


Figure 5.7 Knock-Out Hole Dimensions: 2008, 2010, 4001, 4002

Drive Model	Dimensions mm (in)				
	D	D1	W	W1	φ
2008, 2010	82 (3.23)	102 (4.02)	42 (1.65)	26 (1.02)	22 (0.87)
4001	33.5 (1.32)	53.5 (2.11)	41 (1.61)	25 (0.98)	22 (0.87)
4002	51.5 (2.03)	71.5 (2.81)	41 (1.61)	25 (0.98)	22 (0.87)

■ B012

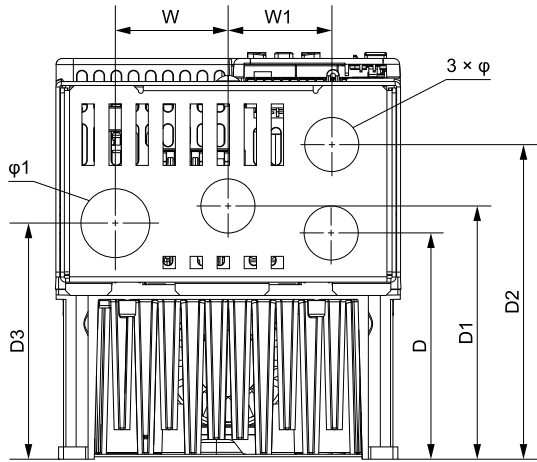


Figure 5.8 Knock-Out Hole Dimensions: B012

Drive Model	Dimensions mm (in)							
	D	D1	D2	D3	W	W1	φ	φ1
B012	92 (3.62)	103 (4.06)	128 (5.04)	96 (3.78)	46 (1.81)	42 (1.65)	22 (0.87)	28 (1.10)

■ B018

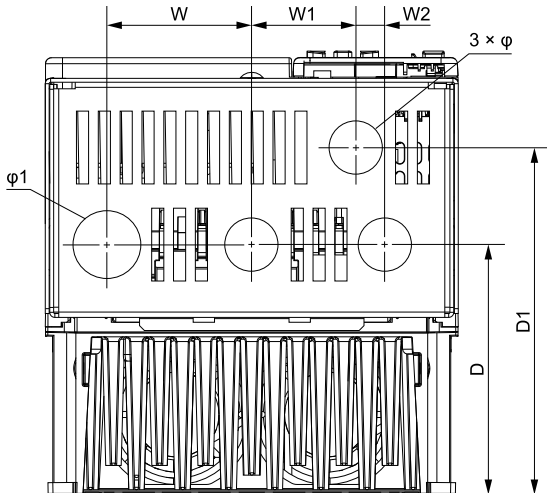


Figure 5.9 Knock-Out Hole Dimensions: B018

Drive Model	Dimensions mm (in)						
	D	D1	W	W1	W2	φ	φ1
B018	103 (4.06)	143 (5.63)	60 (2.36)	42 (1.65)	14 (0.55)	22 (0.87)	28 (1.1)

■ 2030 to 2056, 4018 to 4038

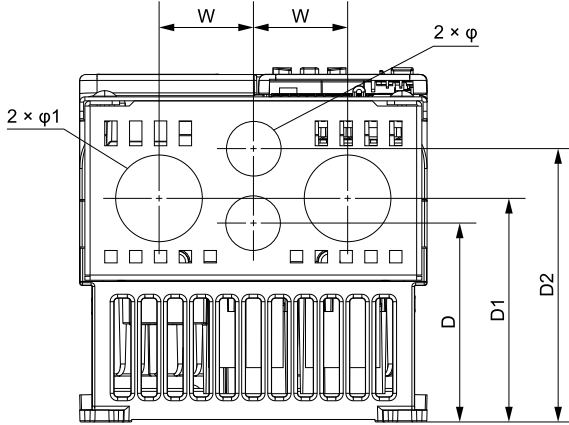


Figure 5.10 Knock-Out Hole Dimensions: 2030 to 2056, 4018 to 4038

Drive Model	Dimensions mm (in)					
	D	D1	D2	W	φ	φ1
2030, 2042	81 (3.17)	91 (3.57)	111 (4.35)	38 (1.50)	22 (0.87)	35 (1.38)
2056	75 (2.96)	90 (3.55)	105 (4.14)	50 (1.97)	22 (0.87)	44 (1.73)
4018, 4023	80 (3.15)	90 (3.55)	110 (4.33)	38 (1.50)	22 (0.87)	35 (1.38)
4031, 4038	75 (2.94)	90 (3.53)	105 (4.12)	50 (1.97)	22 (0.87)	44 (1.73)

■ 2070, 2082

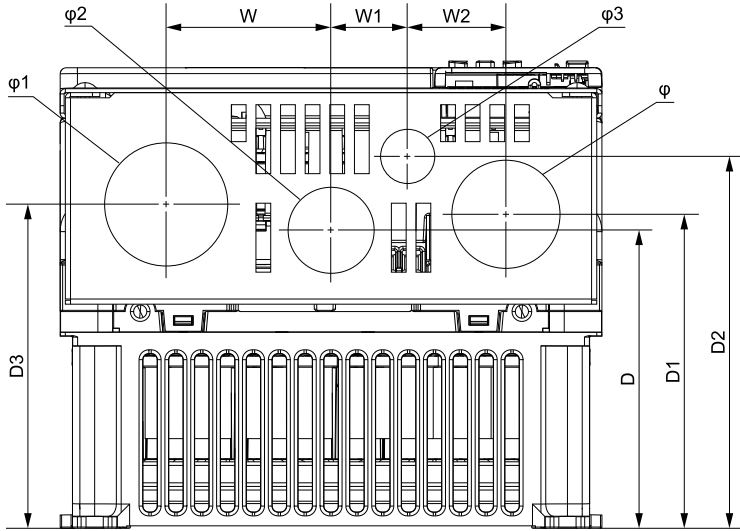


Figure 5.11 Knock-Out Hole Dimensions: 2070, 2082

Drive Model	Dimensions mm (in)										
	D	D1	D2	D3	W	W1	W2	φ	φ1	φ2	φ3
2070, 2082	121 (4.76)	127.5 (5.02)	151 (5.94)	131.5 (5.18)	67 (2.64)	31 (1.22)	40 (1.57)	44 (1.73)	50 (1.97)	35 (1.37)	22 (0.87)

■ 4044, 4060

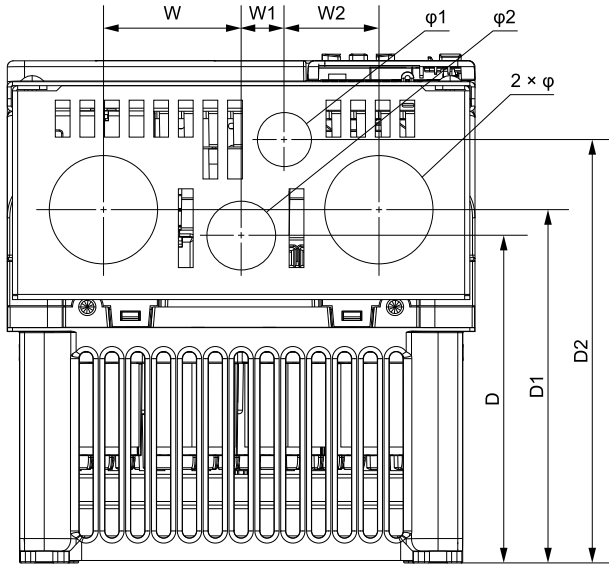


Figure 5.12 Knock-Out Hole Dimensions: 4044, 4060

Drive Model	Dimensions mm (in)								
	D	D1	D2	W	W1	W2	φ	φ1	φ2
4044, 4060	133 (5.24)	143.5 (5.65)	172 (6.77)	56 (2.20)	17.5 (0.69)	38.5 (1.52)	44 (1.73)	22 (0.87)	28 (1.10)

6 Kit Installation Procedure

⚠ CAUTION Crush Hazard. Tighten terminal cover screws and hold the case safely when you move the drive. If the drive or covers fall, it can cause moderate injury.

Table 6.1 Kit Installation Procedure

Drive Model			Kit Model ZBAA-xxxxxx-x	Procedure	Page
Three-Phase 200 V	Single-Phase 200 V	Three-Phase 400 V			
2001 - 2006	B001, B002	-	GA50V1-1	Procedure A	24
-	B004	-	GA50V1-2		
2012	B006	-	GA50V2-1		
-	B010	4005 - 4009	GA50V2-2		
2008, 2010	-	-	GA50V2-3		
-	-	4001, 4002	GA50V2-4		
-	-	4004	GA50V2-5		

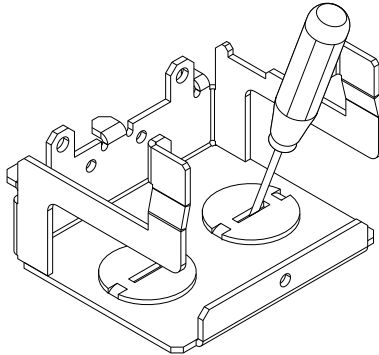
Drive Model			Kit Model ZBAA-xxxxxx-x	Procedure	Page
Three-Phase 200 V	Single-Phase 200 V	Three-Phase 400 V			
-	B012	-	GA50V3-1		
2018, 2021	-	4012	GA50V3-2		
-	B018	-	GA50V4-1		
2030, 2042	-	4018, 4023	GA50V5-1	Procedure B	26
2056	-	4031, 4038	GA50V6-1		
2070, 2082	-	-	GA50V7-1		
-	-	4044, 4060	GA50V8-1		

◆ Remove the Knock-Out Holes

Remove the knock-out holes on the UL Type 1 base before you attach the conduit bracket to the drive.

▲ CAUTION *Injury to Personnel. Use a file to remove sharp edges from the knock-out hole. If you touch the rough edges, it can cause injury.*

1. Put the end of the straight-edge screwdriver into the center hole and move it up and down to remove the plate.

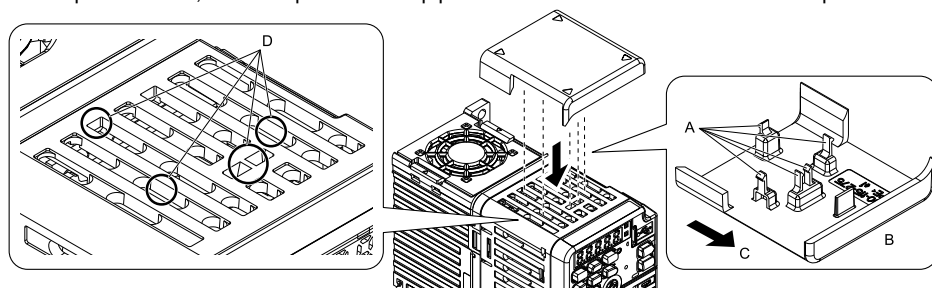


2. Use a file to make the rough surface of the plate smooth.
Do the necessary procedures to prevent damage to the wiring, for example install a conduit.

◆ Attach the Protective Cover (Procedure A)

■ Attach the Top Protective Cover

Insert the hooks on the rear side of the top protective cover into the placement holes on the top of the drive, and then push in the top protective cover until the hooks click into place.



A - Hook

B - Rear side of top protective cover

C - Drive front side

D - Placement holes

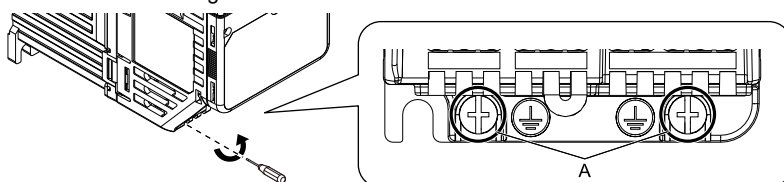
Figure 6.1 Attach the Top Protective Cover

■ Attach the Conduit Bracket

Remove the knock-out holes on the UL Type 1 base before you install the kit.

Refer to [Remove the Knock-Out Holes on page 23](#) for more information.

1. Remove the drive ground terminal screws.



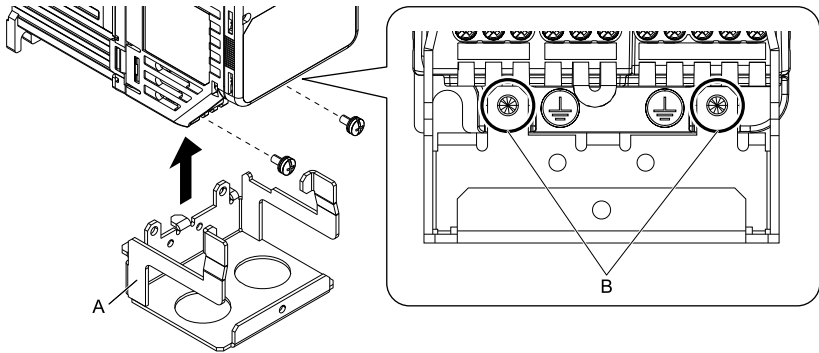
A - Screws

Figure 6.2 Remove the Ground Terminal Screws

2. Align the screw holes of the UL Type 1 base with the screw holes on the drive and safety them with the supplied screws.

Tighten the screws to a correct tightening torque:

- M3.5 × 8 pan head screw: 0.69 to 0.98 N·m (6.11 to 8.67 in·lb)
- M4 × 8 pan head screw: 0.98 to 1.33 N·m (8.67 to 11.77 in·lb)
- M5 × 10 pan head screw: 1.96 to 2.53 N·m (17.35 to 22.39 in·lb)



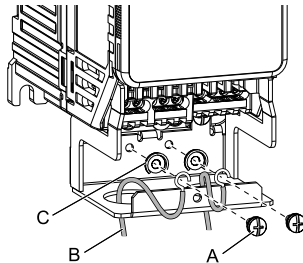
A - UL Type 1 base

B - Screw holes

Figure 6.3 Install the UL Type 1 Base

3. Wire the drive.

Use the supplied C-Washer and the drive ground terminal screws to connect the grounding wire to the base.



A - Ground terminal screw

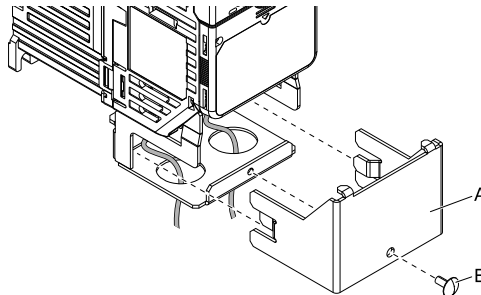
C - C-Washer

B - Grounding wire

4. Use the supplied screws to attach the front cover to the base.

Tighten the screws to a correct tightening torque:

- M4 × 10 truss head screw: 0.98 to 1.33 N·m (8.67 to 11.77 in·lb)



A - Front cover

B - M4 × 10 truss head screw

Figure 6.4 Reattach the Front Cover

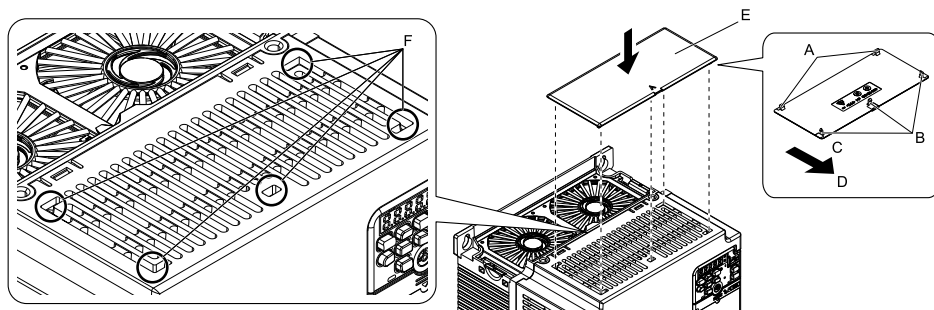
◆ Attach the Protective Cover (Procedure B)

■ Attach the Top Protective Cover

Insert the hooks (A) on the back side of the top protective cover into the placement holes (F) on the rear side of the drive. Then put the hooks (B) on the front side of the top protective cover into the placement holes on the front side of the drive.

Note:

- Attach the top protective cover and make sure that the mark (Δ) on the upper surface of the top protective cover is on the front side of the drive.
- When you attach the top protective cover to the drive, make sure that you cover the slits on the top of the drive.



A - Hooks A

B - Hooks B

C - Back side of top protective cover

D - Drive front side

E - Top protective cover

F - Placement holes

Figure 6.5 Attach the Top Protective Cover

■ Attach the Conduit Bracket

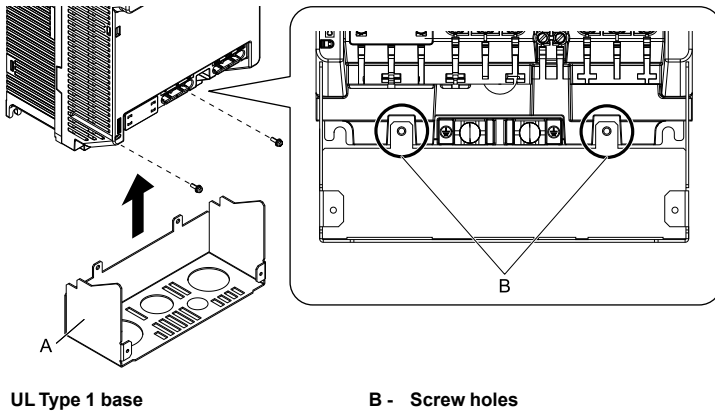
Remove the knock-out holes on Type 1 base before you install the kit.

Refer to [Remove the Knock-Out Holes on page 23](#) for more information.

1. Align the screw holes of Type 1 base with the screw holes on the drive and safety them with the supplied screws.

Tighten the screws to a correct tightening torque:

- M4 × 12 pan head screw: 0.98 to 1.33 N·m (8.67 to 11.77 in·lb)

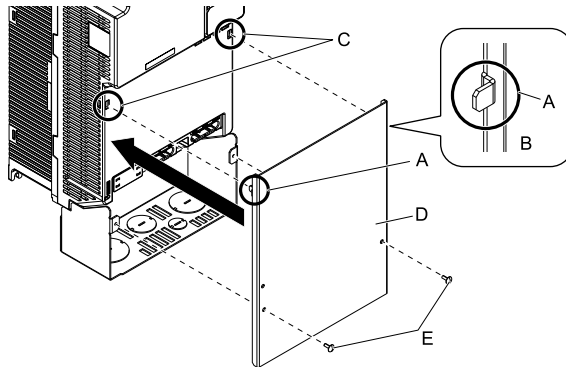


A - UL Type 1 base

B - Screw holes

Figure 6.6 Install the UL Type 1 Base

2. Wire the drive.
3. Use the supplied screws to attach the front cover to the base. Put the hooks (A) on the rear side of the front cover (B) into the placement holes (C) on the drive. Tighten the screws to a correct tightening torque:
 - M4 × 10 truss head screw: 0.98 to 1.33 N·m (8.67 to 11.77 in·lb)



A - Hook

B - Rear side of the front cover

C - Placement holes

D - Front cover

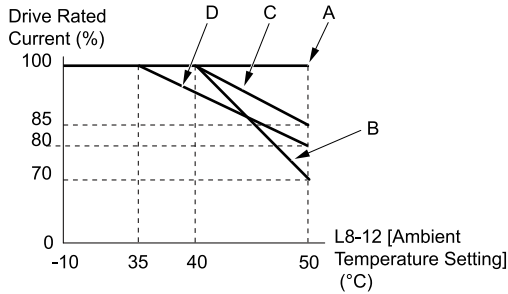
E - M4 × 10 truss head screw

Figure 6.7 Reattach the Front Cover

7 Related Parameters

When you attach the kit to the drive and do an IP20/UL Type 1 Installation, set $L8-35 = 2$ [*Installation Method Selection = IP20/UL Type 1*]. Refer to the drive manual for information about setting parameters.

No.	Name	Description	Default (Range)
L8-12	Ambient Temperature Setting	Sets the ambient temperature of the drive installation area. The setting range changes when the L8-35 [Installation Method Selection] value changes:	40 °C (-10 °C - +60 °C)
L8-35	Installation Method Selection	Sets the type of drive installation. 0 : IP20/UL Open Type 1 : Side-by-Side Mounting 2 : IP20/UL Type 1 3 : External Heatsink	0 (0 - 3)



- A - L8-35 = 0 [IP20/UL Open Type]
- B - L8-35 = 1 [Side-by-Side Mounting]
- C - L8-35 = 2 [IP20/UL Type 1]
- D - L8-35 = 3 [External Heatsink]

Figure 7.1 Derating Depending on Drive Installation Method

Revision History

Date of Publication	Revision Number	Section	Revised Content
May 2022	1	All	Reviewed and corrected entire documentation.
		Chapter 3	Addition: For Yaskawa Customers in the North or South America Regions
March 2019	-	-	First Edition

Yaskawa AC Drive Option UL Type 1 Kit Installation Manual

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