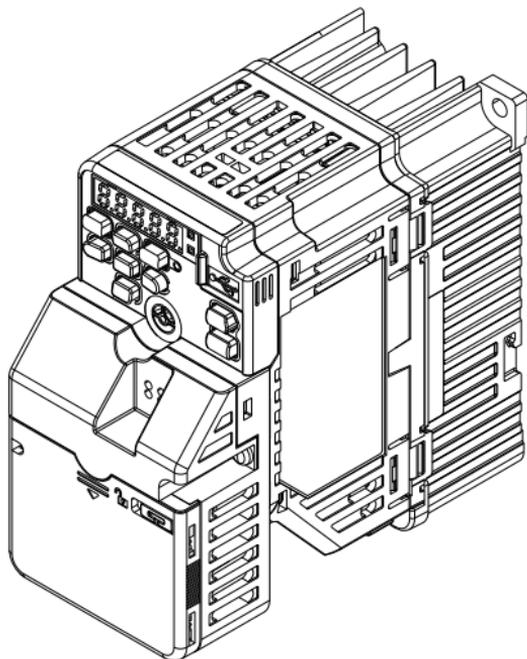


## YASKAWA AC Drive Option Option Card Mounting Kit Installation Manual

Type: JOHB-GA500

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 Option Card Mounting Kit Installation Manual	Read this manual before you install this option to the drive. This manual gives information about how to install an option card mounting kit.
YASKAWA AC Drive Option Installation Manual	Read this manual before you install this option to the drive. The manual provides information about wiring, setting, functions, and troubleshooting. The manual is packaged together with the product.
YASKAWA AC Drive Manuals	For information about drive settings, refer to the manuals for the drive with which you are using this option. The manuals provide information about basic installation, wiring, operation procedures, functions, troubleshooting, and maintenance. The manuals also include important information about parameter settings and tuning the drive. You can download drive manuals from the Yaskawa product and technical information website shown on the back cover of this manual.

## ◆ Glossary

Terminology Used in this Document	Description
Drive	YASKAWA AC Drive GA500
Case, Option	YASKAWA AC Drive Option Option Card Mounting 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** 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

- 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. The drive has internal capacitors that stay charged after you de-energize the drive.*

**⚠ 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.*

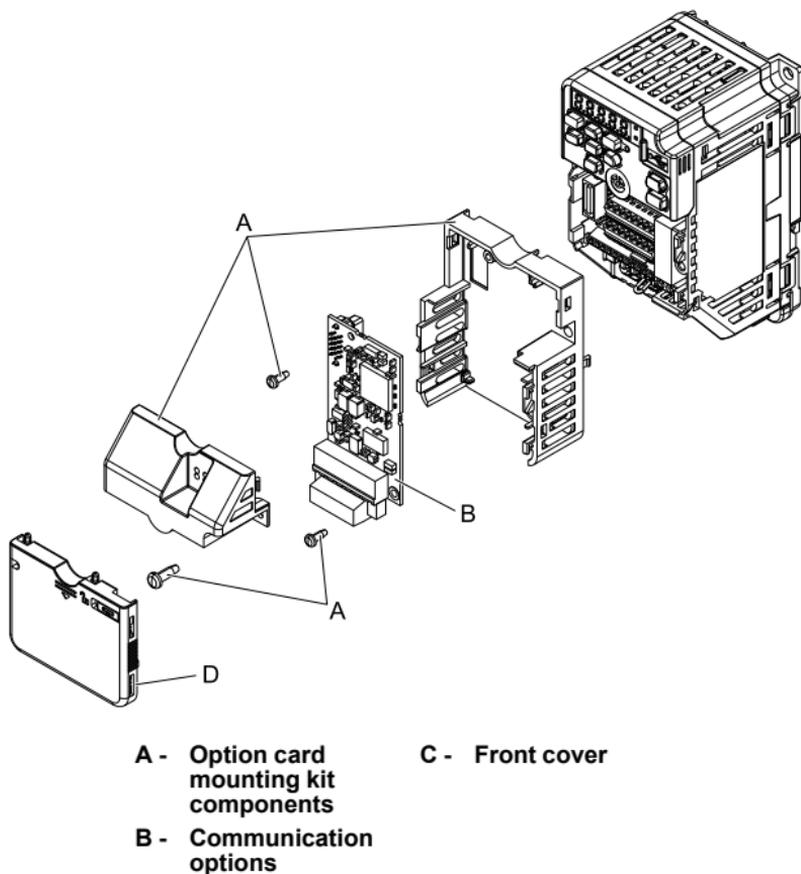
**⚠ WARNING** *Sudden Movement Hazard. Tighten the screws to the specified tightening torque. Incorrect tightening torques can cause damage to equipment and cause serious injury or death from falling equipment.*

**NOTICE** *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

Use this option to attach a communication option to a 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 Option Card Mounting Kit**

---

### ◆ Compatible Products

This installation kit is compatible with these drives:

- GA500

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### ◆ Installation Environment

The installation environment is important for the lifespan of the product and to make sure that the drive performance is correct.

### 3 Overview

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 Open Type: -10 °C to +50 °C (14 °F to 122 °F) IP20/UL Type 1: -10 °C to +40 °C (14 °F to 104 °F) <ul style="list-style-type: none"><li>• Drive reliability is better in environments that do not have wide temperature fluctuations.</li><li>• When installing the drive in an enclosure, use a cooling fan or air conditioner to keep the internal air temperature in the permitted range.</li><li>• Do not let the drive freeze.</li></ul>
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"><li>• Oil mist, corrosive or flammable gas, or dust</li><li>• Metal powder, oil, water, or other unwanted materials</li><li>• Radioactive or flammable materials.</li><li>• Harmful gas or fluids</li><li>• Salt</li><li>• Direct sunlight</li></ul> Keep wood and other flammable materials away from the drive.

Environment	Conditions
Altitude	1000 m (3281 ft) maximum <b>Note:</b> Derate the output current by 1% for each 100 m (328 ft) to install the drive in altitudes between 1000 m to 4000 m (3281 ft to 13123 ft). It is not necessary to derate the rated voltage in these conditions: <ul style="list-style-type: none"> <li>• When you install the drive at 2000 m (6562 ft) or lower</li> <li>• When you install the drive between 2000 m to 4000 m (6562 ft to 13123 ft) and ground the neutral point on the power supply. Contact Yaskawa or your nearest sales representative when not grounding the neutral point.</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>• 10 Hz to 20 Hz: 1 G (9.8 m/s<sup>2</sup>, 32.15 ft/s<sup>2</sup>)</li> <li>• 20 Hz to 55 Hz: 0.6 G (5.9 m/s<sup>2</sup>, 19.36 ft/s<sup>2</sup>)</li> </ul>
Installation Orientation	Install the drive vertically for sufficient airflow to cool the drive.

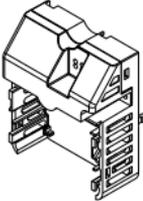
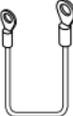
**NOTICE** Do not put drive peripheral devices, transformers, or other electronics near the drive. Shield the drive from electrical interference if components must be near the drive. Components near the drive can cause incorrect drive operation from electrical interference.

**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.

## ◆ Option Package Contents

Option Card Mounting Kit	Ground Wire	Mounting Screw
 <p>#1</p>	 <p>#4</p>	 <p>A B</p> <p>A - 3 × 8 tapping screws: #2 B - 4 × 12 tapping screw: #1</p>

**Note:**

- Use an LED label packaged with a communication option.
- Do not use ground wires or screws packaged with a communication option.

## ◆ Necessary Tools

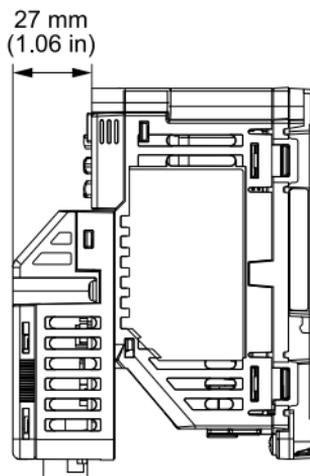
To install the attachment, use Phillips screwdriver #2.

## 5 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.*

## ◆ Option Dimensions

The installed option adds 27 mm (1.06 in) to the total depth of the drive.



**Figure 5.1 Option Dimensions**

## ◆ Installation Methods

The installation procedure is different for different drive protection design.

**Table 5.1 Installation Methods**

Type	Procedure	Reference
IP20/UL Open Type	Procedure A	11
IP20/UL Type 1 <i>*1</i>	Procedure B	20

\*1 Installing the option on an IP20/UL Type 1 enclosure drive voids UL Type 1 protection while maintaining IP20 conformity.

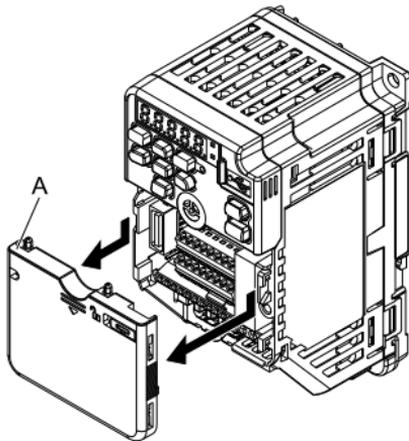
## ◆ Attach the Option Card Mounting Kit (Procedure A)

De-energize the drive.

**⚠ 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. The drive has internal capacitors that stay charged after you de-energize the drive.*

1. Unlock the front cover to remove it from the drive.

**NOTICE** *Observe correct electrostatic discharge (ESD) procedures when touching the option. Failure to obey can cause ESD damage to the option circuitry.*



**A - Front cover**

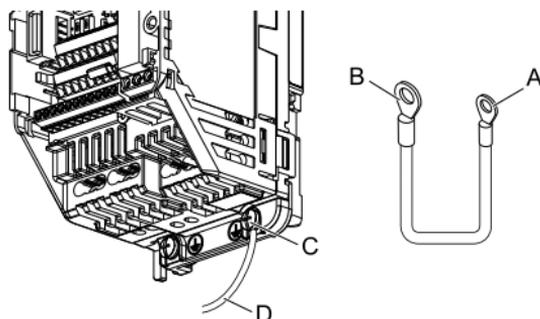
**Figure 5.2 Remove the Front Cover**

2. Connect a ground wire to a drive ground terminal.  
Connect the drive side of the ground wire to the drive ground terminal.

**Note:**

Four different ground wires are packaged with the option card mounting kit. The ground terminal size of the drive or the ground wire length is different for different drives. Select a proper ground wire for your drive.

Refer to [Table 5.2](#) for ground wire selection.



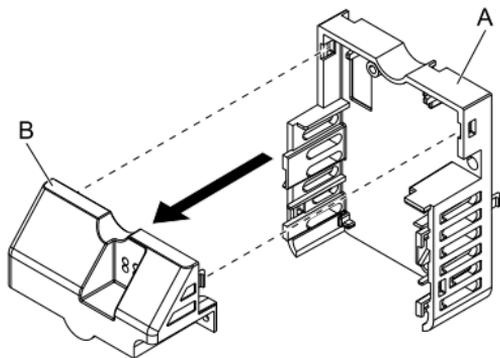
- A - Communication-option side of the ground wire  
 B - Drive side of the ground wire  
 C - Ground terminal  
 D - Ground wire

**Figure 5.3 Ground wire**

**Table 5.2 Ground Wire Length**

Drive Model			Length mm
Three-Phase 200 V Class	Single-Phase 200 V Class	Three-Phase 400 V Class	
-	-	-	150
2001, 2002, 2004, 2006, 2008, 2010, 2012, 2018, 2021	B001, B002, B004, B006, B010, B012, B018	4001, 4002, 4004, 4005, 4007, 4009, 4012	200
2030, 2042		4018, 4023	250
2056, 2070, 2082		4031, 4038, 4044, 4060	400

3. Remove a option cover from a base.



**A - Base**

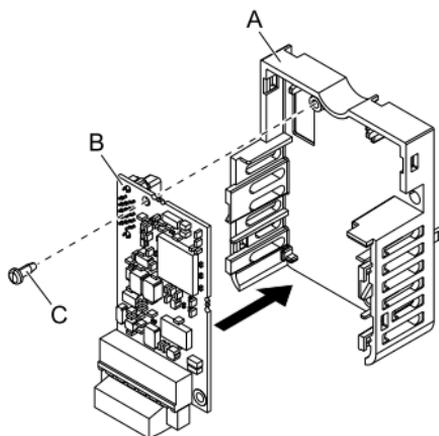
**B - Option PCB**

**Figure 5.4 Remove the Option Cover**

4. Attach a communication option to a base.

Tighten the screws to a correct tightening torque:

- M3 × 8 tapping screws: 0.49 N·m to 0.73 N·m (4.34 in·lb to 6.46 in·lb)



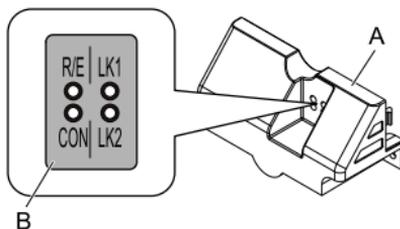
**A - Base**

**B - Communication  
option**

**C - M3 × 8 tapping  
screws**

**Figure 5.5 Attach the Communication Option**

5. Affix the LED label on the option cover.



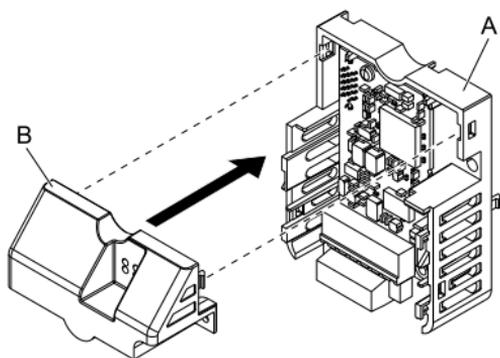
**A - Option cover**

**B - LED label**

**Figure 5.6 Affix the LED Label**

6. Attach a option cover to a base.

Push the option cover until the hooks click into place on the base.



**A - Base**

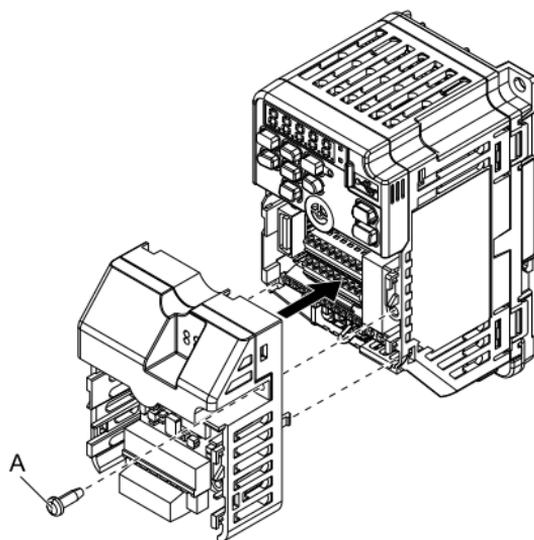
**B - Option cover**

**Figure 5.7 Attach the Option Cover**

**7.** Attach a case to a drive.

Tighten the screws to a correct tightening torque:

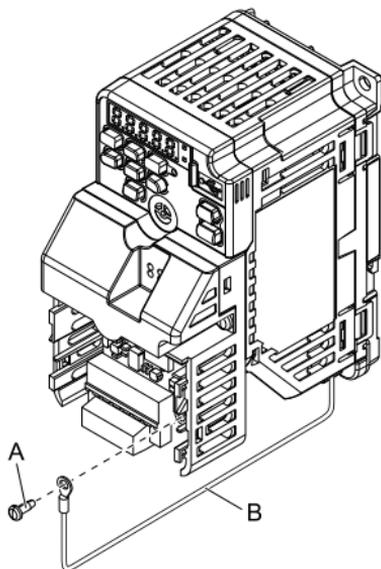
- M4 × 12 tapping screws: 0.69 N·m to 0.73 N·m (6.11 in·lb to 8.67 in·lb)



**A - M4 × 12 tapping screws**

### **Figure 5.8 Attach the Case**

8. Use a supplied screw to connect the option side of the ground wire to the communication option.  
Tighten the screws to a correct tightening torque:
  - M3 × 8 tapping screws: 0.49 N·m to 0.73 N·m (4.34 in·lb to 6.46 in·lb)



**A - M3 × 8 tapping  
screws**

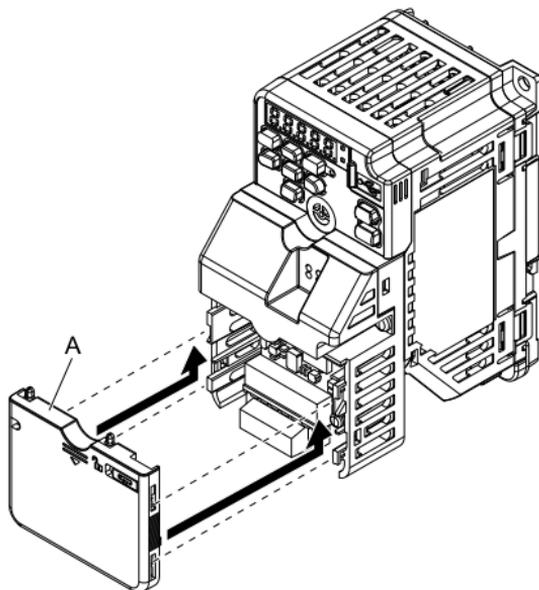
**B - Ground wire**

**Figure 5.9 Attach the Case**

9. Connect a communication cable to a option connector.

Separate communication cables from main circuit wiring and other electrical lines. Refer to the instruction manual for each communication option for more information.

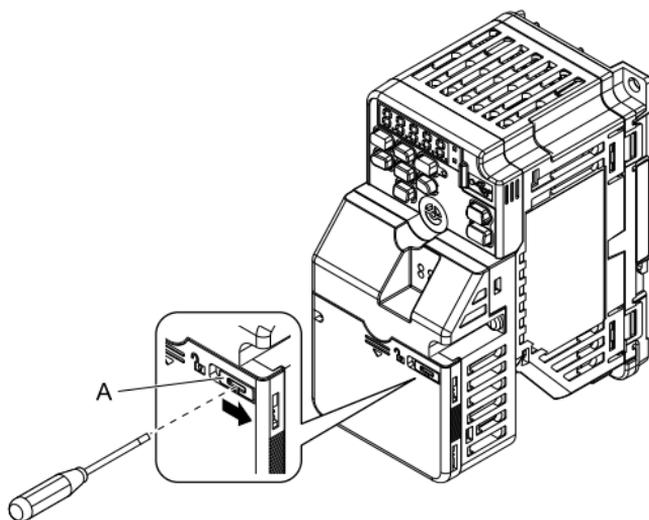
## 10. Attach the front cover.



A - Front cover

**Figure 5.10 Reattach the Front Cover**

11. Use a slotted screwdriver to lock the front cover of the drive.



**A - Locking Front Cover**

**Figure 5.11 Locking the Front Cover**

12. Set the drive related parameters.  
Refer to the instruction manual for each communication option for more information.

---

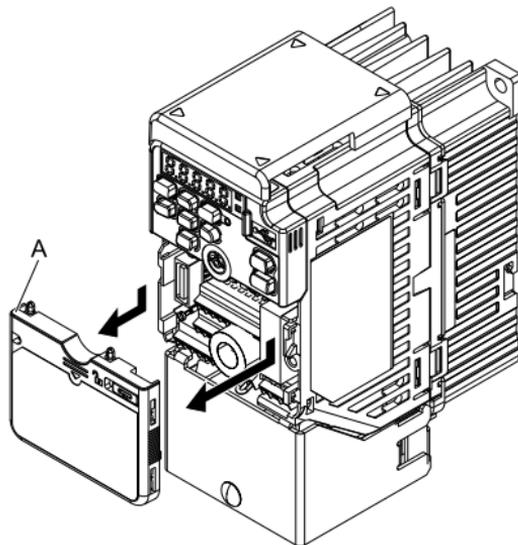
### ◆ Attach the Option Card Mounting Kit (Procedure B)

De-energize the drive.

**⚠ 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. The drive has internal capacitors that stay charged after you de-energize the drive.*

1. Unlock the front cover to remove it from the drive.

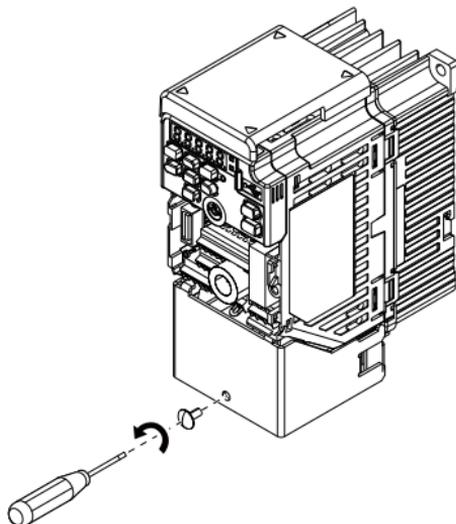
**NOTICE** Observe correct electrostatic discharge (ESD) procedures when touching the option. Failure to obey can cause ESD damage to the option circuitry.



A - Front cover

**Figure 5.12 Remove the Front Cover**

2. Remove the screws that attach the protective cover.



**Figure 5.13 Remove the Screws that Attach the Protective Cover**

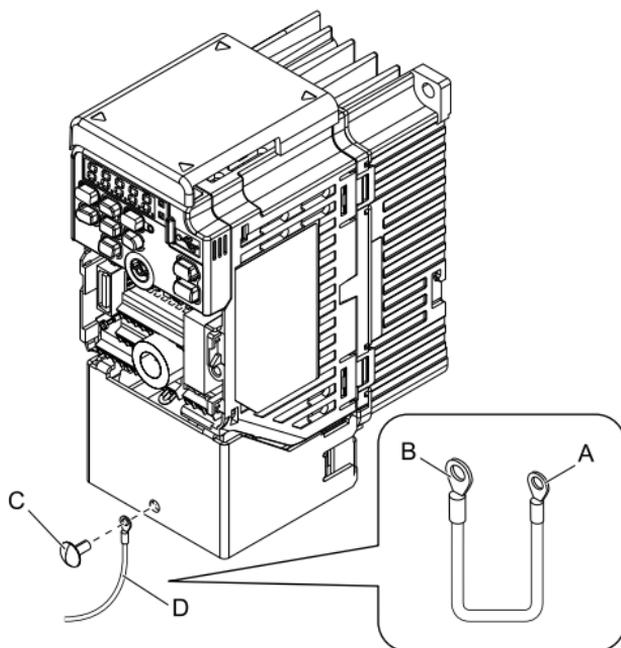
3. Use a supplied screw to connect the drive side of the ground wire to the protective cover.

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)

**Note:**

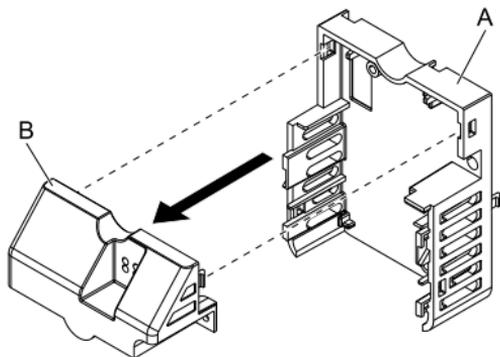
Four different ground wires are packaged with the option card mounting kit. The ground terminal size of the drive or the ground wire length is different for different drives. Select a proper ground wire for your drive.



- A - Communication-  
option side of the  
ground wire**
- B - Drive side of the  
ground wire**
- C - Ground terminal**
- D - Ground wire**

**Figure 5.14 Attach the Case**

4. Remove a option cover from a base.



**A - Base**

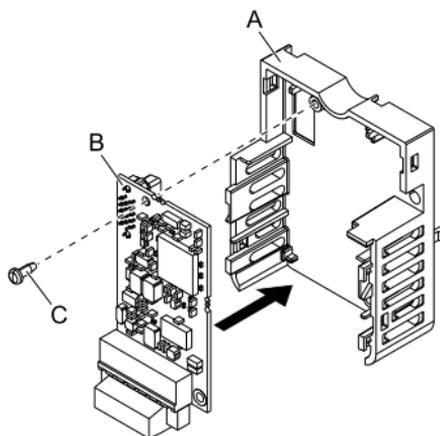
**B - Option cover**

**Figure 5.15 Remove the Option Cover**

5. Attach a communication option to a base.

Tighten the screws to a correct tightening torque:

- M3 × 8 tapping screws: 0.49 N·m to 0.73 N·m (4.34 in·lb to 6.46 in·lb)



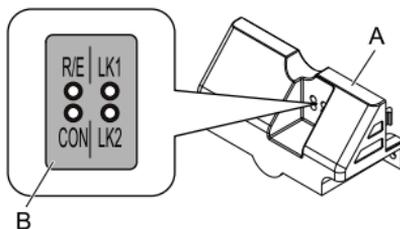
**A - Base**

**B - Communication  
option**

**C - M3 × 8 tapping  
screws**

**Figure 5.16 Attach the Communication Option**

6. Affix the LED label on the option cover.



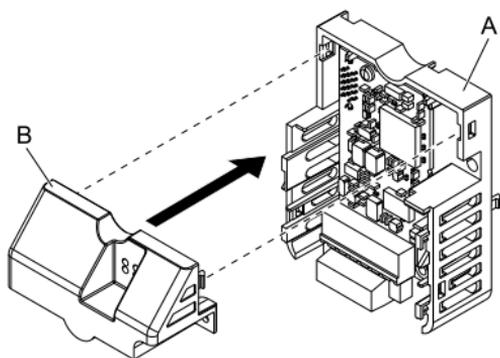
**A - Option cover**

**B - LED label**

**Figure 5.17 Affix the LED Label**

7. Attach a option cover to a base.

Push the option cover until the hooks click into place on the base.



**A - Base**

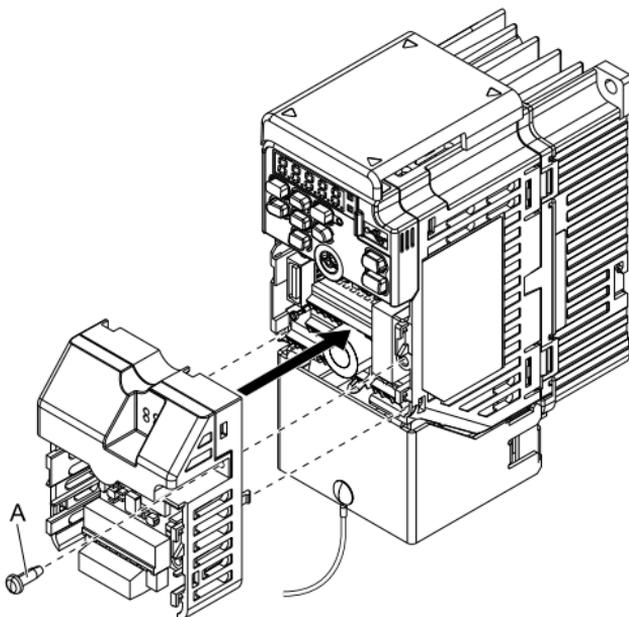
**B - Option cover**

**Figure 5.18 Attach the Option Cover**

**8.** Attach a case to a drive.

Tighten the screws to a correct tightening torque:

- M4 × 12 tapping screws: 0.69 N·m to 0.73 N·m (6.11 in·lb to 8.67 in·lb)



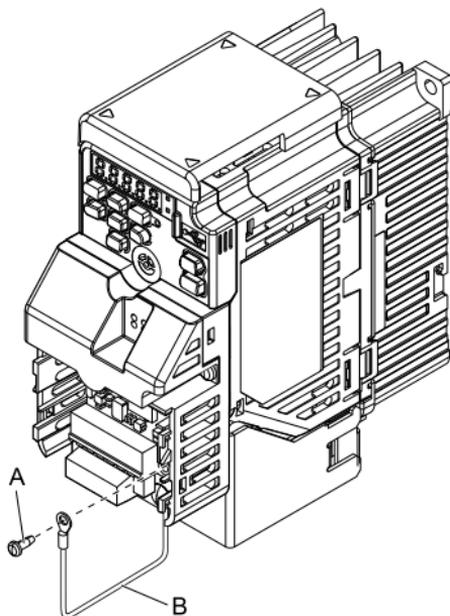
**A - M4 × 12 tapping screws**

**Figure 5.19 Attach the Case**

9. Use a supplied screw to connect the option side of the ground wire to the option.

Tighten the screws to a correct tightening torque:

- M3 × 8 tapping screws: 0.49 N·m to 0.73 N·m (4.34 in·lb to 6.46 in·lb)



**A - M3 × 8 tapping  
screws**

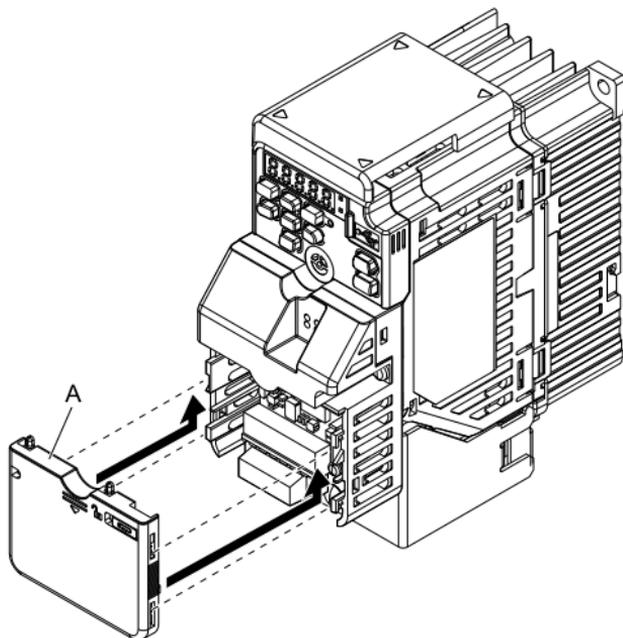
**B - Ground wire**

**Figure 5.20 Attach the Ground Wire**

10. Connect a communication cable to a option connector.

Separate communication cables from main circuit wiring and other electrical lines. Refer to the instruction manual for each communication option for more information.

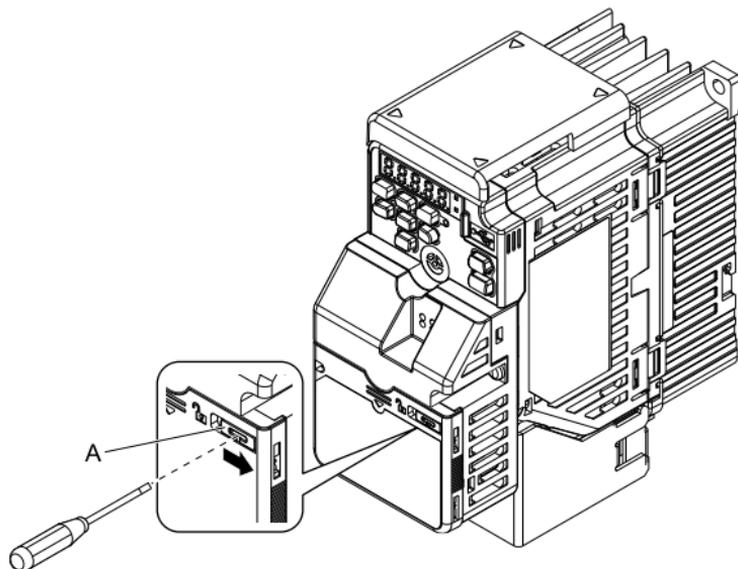
## 11. Attach the front cover.



A - Front cover

**Figure 5.21 Reattach the Front Cover**

12. Use a slotted screwdriver to lock the front cover of the drive.



**A - Locking Front Cover**

**Figure 5.22 Locking the Front Cover**

13. Set the drive related parameters.  
Refer to the instruction manual for each communication option for more information.

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## Revision History

<b>Date of Publication</b>	<b>Revision Number</b>	<b>Section</b>	<b>Revised Content</b>
March 2019	-	-	First Edition

# YASKAWA AC Drive Option Option Card Mounting Kit Installation Manual

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# YASKAWA

YASKAWA ELECTRIC CORPORATION

In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply.

Specifications are subject to change without notice for ongoing product modifications and improvements.

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