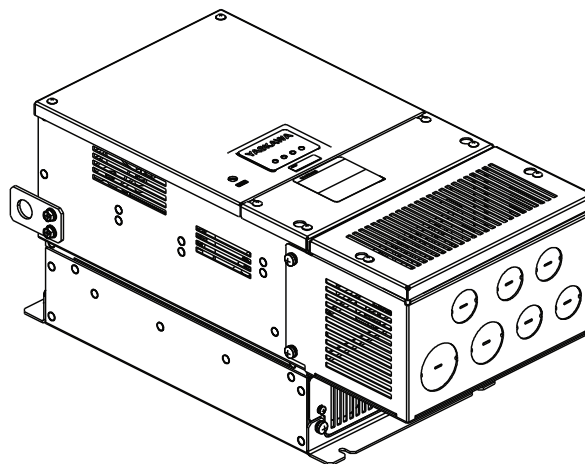


UL Type 1 Kit for Single Phase Converter

YASKAWA AC Drive Option Installation Manual

Type: UUX001686
UUX001687
UUX001703
Models: 200 V class: 20 to 60 HP
400 V class: 30 to 125 HP

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



This Page Intentionally Blank

Table of Contents

| | |
|---------------------------------------|----|
| 1. Preface and General Safety | 4 |
| General Description | 4 |
| Option Package Contents | 4 |
| Applicable Documentation | 4 |
| General Safety | 5 |
| 2. Kit Installation | 7 |
| Section Safety | 7 |
| Installation Tools and Supplies | 7 |
| Kit Installation Procedure | 8 |
| Revision History | 16 |

1 Preface and General Safety

◆ General Description

This option will change the Single Phase Converter (SPC) from an open type enclosure to a UL Type 1 enclosure.

■ Option Package Contents

| Kit | SPC Model | UL Type 1 Bottom Housing | UL Type 1 Bottom Cover | UL Type 1 Top Cover | UL Type 1 Heatsink Cover | Mounting Hardware |
|-----------|------------------------------|--------------------------|------------------------|---------------------|--------------------------|---|
| UUX001686 | 2015 2022 4022 4030 | | | | | <p>A - M4 × 10 captive pan head screw (6 ea.) B - M4 × 10 truss head screw (2 ea.) C - M6 × 12 captive pan head screw (4 ea.)</p> |
| UUX001687 | 2030 4037 4045 | | | | | <p>A - M4 × 10 captive pan head screw (8 ea.) B - M4 × 10 truss head screw (4 ea.) C - M6 × 12 captive pan head screw (4 ea.)</p> |
| UUX001703 | 2037 2045 4056 4093 | | | | | <p>A - M4 × 10 captive pan head screw (8 ea.) B - M4 × 10 truss head screw (4 ea.) C - M6 × 12 captive pan head screw (4 ea.)</p> |

■ Applicable Documentation

| Document | Description |
|--|--|
| YASKAWA AC Drive Option UL Type 1 Kit for Single Phase Converter Installation Manual | Read this manual before you install this option. This manual gives information about how to install the option and change the enclosure type of the single phase converter from an open type enclosure to a UL Type 1 enclosure. |
| YASKAWA AC Drive Option UL Type 1 Kit for Single Phase Converter DC Link Choke Installation Manual (TOEPYAISPC02) | This manual gives information about how to install the option and change the enclosure type of the single phase converter DC link choke from an open type enclosure to a UL Type 1 enclosure. |
| Single Phase Converter for Industrial Applications Installation & Primary Operation (TOEPYAISPC01) | This manual gives information about how to install, mount, and test the single phase converter. You can download drive manuals from the Yaskawa product and technical information website shown on the back cover of this manual. |

◆ General Safety

General Precautions

- The diagrams in this manual may be indicated without covers or safety shields to show details. Replace the covers or shields before operating the SPC and run the SPC according to the instructions described in this manual.
- Any illustrations, photographs, or examples used in this manual are provided as examples only and may not apply to all products to which this manual is applicable.
- The products and specifications described in this manual or the content and presentation of the manual may be changed without notice to improve the product and/or the manual.
- When ordering a new copy of the manual due to damage or loss, contact your Yaskawa representative or the nearest Yaskawa sales office and provide the manual number shown on the front cover.
- If nameplate becomes worn or damaged, order a replacement from your Yaskawa representative or the nearest Yaskawa sales office.

⚠ WARNING *Read and understand this manual before installing, operating or servicing this converter. The converter must be installed according to this manual and local codes. The following conventions are used to indicate safety messages in this manual. Failure to heed these messages could result in serious or fatal injury or damage to the products or to related equipment and systems.*

⚠ DANGER *Indicates a hazardous situation, which, if not avoided, WILL result in death or serious injury.*

⚠ WARNING *Indicates a hazardous situation, which, if not avoided, COULD result in death or serious injury.*

⚠ CAUTION *Indicates a hazardous situation, which, if not avoided, COULD result in MINOR OR MODERATE injury.*

NOTICE *Indicates a PROPERTY DAMAGE MESSAGE.*

■ Safety Messages

⚠ DANGER *Heed the safety messages in this manual. The operating company is responsible for any injuries or equipment damage resulting from failure to heed the safety messages in this manual. Failure to comply will result in death or serious injury.*

⚠ DANGER *Electrical Shock Hazard. Do not connect or disconnect wiring while the power is on. Failure to comply will result in death or serious injury. Before servicing, disconnect all power to the equipment. The internal capacitor remains charged even after the power supply is turned off. The charge indicator LED will extinguish when the DC bus voltage is below 50 Vdc. To prevent electric shock, wait for at least the time specified on the warning label, once all indicators are OFF, measure for unsafe voltages to confirm the converter is safe prior to servicing. Failure to comply will result in death or serious injury.*

⚠ WARNING *Sudden Movement Hazard. System may start unexpectedly when the unit is energized, resulting in death or serious injury. Clear all personnel from the converter, drive, motor, and machine area before energizing. Secure covers, couplings, shaft keys, and machine loads before energizing.*

⚠ WARNING *Electrical Shock Hazard. Do not attempt to modify or alter the converter in any way not explained in this manual. Yaskawa is not responsible for any modification of the product made by the user. This product must not be modified. Failure to comply could result in death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Do not allow unqualified personnel to use equipment. Installation, maintenance, inspection, and service must be performed only by authorized personnel familiar with installation, adjustment and maintenance of AC converters. Failure to comply could result in death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Do not remove covers or touch circuit boards while the power is on. Failure to comply could result in death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Make sure the protective earthing conductor complies with technical standards and local safety regulations. Because the leakage current exceeds 3.5 mA, IEC/EN/UL 61800-5-1 states that either the power supply must be automatically disconnected in case of discontinuity of the protective earthing conductor or a protective earthing conductor with a cross-section of at least 10 mm² (Cu) or 16 mm² (Al) must be used. Failure to comply could result in death or serious injury.*

⚠ WARNING *Electrical Shock Hazard. Use appropriate equipment for Ground Fault Circuit Interrupters (GFCIs). The converter can cause a residual current with a DC component in the protective earthing conductor. Use a type B GFCI according to IEC/EN 60755, where a residual current operated protective or monitoring device is used for protection in case of direct or indirect contact. Failure to comply could result in death or serious injury.*

⚠ WARNING *Fire Hazard. Do not use an improper voltage source. Verify that the rated voltage of the converter matches the voltage of the incoming power supply before applying power. Failure to comply could result in death or serious injury by fire.*

⚠ WARNING *Fire Hazard. Install adequate branch circuit protection according to applicable local codes and this Installation Manual. The device is suitable for use on a circuit capable of delivering not more than 100,000 RMS symmetrical amperes, 240 Vac maximum (200 V class) and 480 Vac maximum (400 V class), when protected by branch circuit protection devices specified in this document. Failure to comply could result in death or serious injury by fire.*

⚠ CAUTION *Crush Hazard. Do not carry the converter by the front cover. Failure to comply may result in minor or moderate injury from the main body of the converter falling.*

NOTICE *Damage to Equipment. Observe proper electrostatic discharge procedures (ESD) when handling the converter and circuit boards. Do not perform a withstand voltage test or Megger test. Do not operate damaged equipment. Do not connect or operate any equipment with visible damage or missing parts. Failure to comply may result in damage to circuitry or damage to the sensitive devices within the converter.*

NOTICE *Damage to Equipment. Do not immediately turn on the power supply or attempt to operate the equipment if a fuse is blown or a Ground Fault Circuit Interrupter (GFCI) is tripped. Repair the cause of the problem prior to re-energizing the equipment. Check the wiring and the selection of the peripheral devices. Check for short circuits or ground faults on the secondary side of fuses and GFCIs and check the wiring and the selection of peripheral devices. Failure to comply may result in damage to circuitry or damage to the sensitive devices within the converter.*

NOTICE *Damage to Equipment. Do not expose the converter to halogen group disinfectants. Do not pack the converter in wooden materials that have been fumigated or sterilized. Do not sterilize the entire package after the product is packed. Failure to comply may result in damage to circuitry or damage to the sensitive devices within the converter.*

2 Kit Installation

◆ Section Safety

⚠ DANGER *Electrical Shock Hazard. Do not connect or disconnect wiring while unit is energized. Failure to comply will result in death or serious injury.*

⚠ WARNING *Fire Hazard. Provide sufficient cooling when installing the converter inside an enclosed panel or cabinet. When multiple drives are placed inside the same enclosure panel, install proper cooling to ensure air entering the enclosure does not exceed 40°C. Failure to comply may result in overheating and fire.*

⚠ CAUTION *Crush Hazard. Do not carry the converter by the front cover. Failure to comply may result in minor or moderate injury from the main body of the converter falling.*

◆ Installation Tools and Supplies

■ Installation Tools

- Phillips screwdriver #2
- Torque wrench or driver
- Straight-edge screwdriver

◆ **Kit Installation Procedure**

1. Collect the necessary installation tools and materials.
2. Use the information in [Figure 2.1](#) and [Table 2.1](#) to make sure that SPC with the installed kit will fit in the desired installation location:

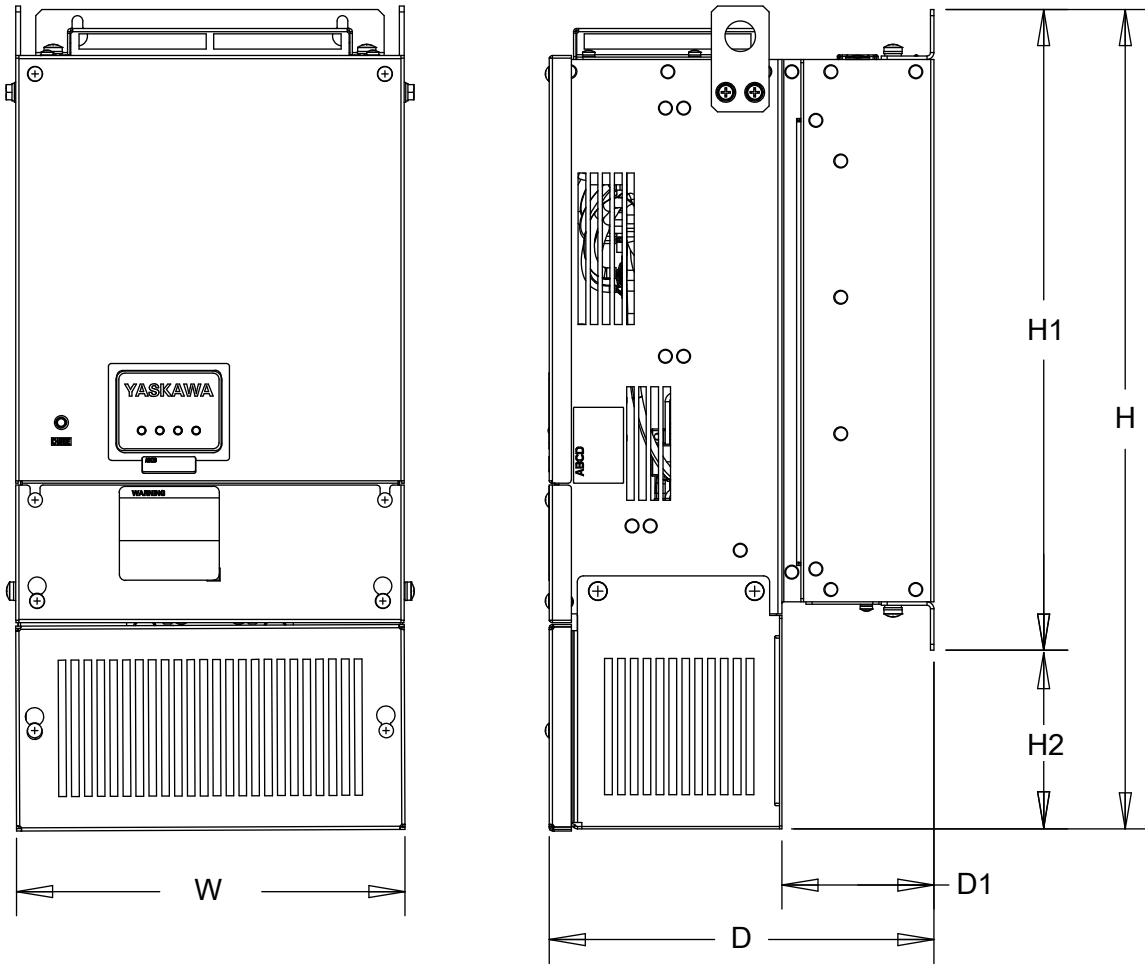


Figure 2.1 Exterior and Mounting Dimensions

Table 2.1 UL Type 1 Kit Mounting Dimensions

| SPC Model | Kit Number | Knockout Dimension Figure | Dimensions mm (in) | | | | | |
|------------------------------|------------|----------------------------|--------------------|----------------|----------------|---------------|----------------|---------------|
| | | | W | H | D | D1 | H1 | H2 |
| 2015 2022 4022 4030 | UUX001686 | Figure 2.2 | 256 (10.08) | 541 (21.30) | 254 (10.00) | 100 (3.94) | 423 (16.65) | 118 (4.65) |
| 2030 4037 4045 | UUX001687 | Figure 2.3 | 310 (12.20) | 688 (27.09) | 264 (10.43) | 106 (4.17) | 525 (20.67) | 163 (6.42) |
| 2037 2045 4056 | UUX001703 | Figure 2.4 | 310 (12.20) | 847 (33.34) | 290 (11.43) | 106 (4.17) | 636 (25.04) | 210 (8.27) |
| 4090 | UUX001703 | Figure 2.5 | 310 (12.20) | 847 (33.34) | 375 (14.77) | 191 (7.51) | 636 (25.04) | 210 (8.27) |

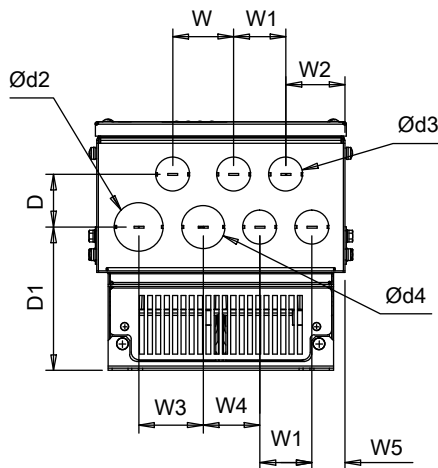


Figure 2.2 Frame 1 Conduit Knockout Dimensions

Table 2.2 Frame 1 Conduit Knockout Dimensions

| Dimensions mm (in) | | | | | | | | | | |
|--------------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------|--------------|--------------|
| D | D1 | W | W1 | W2 | W3 | W4 | W5 | Ød2 | Ød3 | Ød4 |
| 54 (2.12) | 147 (5.77) | 62.3 (2.45) | 53.3 (2.10) | 60.3 (2.37) | 65.8 (2.59) | 57.8 (2.28) | 33.6 (1.32) | 50 (1.97) | 44 (1.73) | 35 (1.38) |

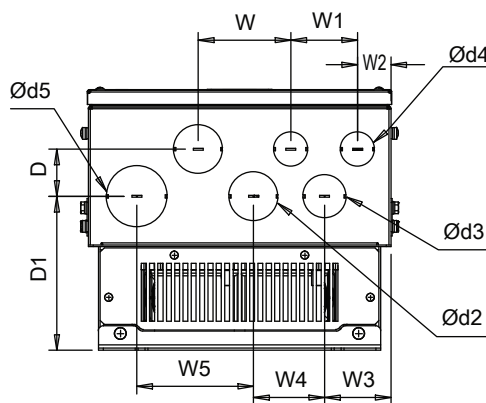


Figure 2.3 Frame 2 Conduit Knockout Dimensions

Table 2.3 Frame 2 Conduit Knockout Dimensions

| Dimensions mm (in) | | | | | | | | | | | |
|--------------------|---------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------|--------------|--------------|--------------|
| D | D1 | W | W1 | W2 | W3 | W4 | W5 | Ød2 | Ød3 | Ød4 | Ød5 |
| 48 (1.89) | 157 (6.19) | 94.5 (3.72) | 68.1 (2.68) | 34.1 (1.34) | 67.8 (2.67) | 72.3 (2.85) | 119 (4.69) | 50 (1.97) | 44 (1.73) | 35 (1.38) | 62 (2.44) |

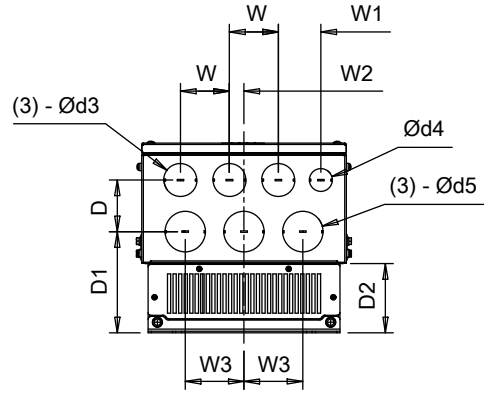


Figure 2.4 Frame 3A Conduit Knockout Dimensions

Table 2.4 Frame 3A Conduit Knockout Dimensions

| Dimensions mm (in) | | | | | | | | | |
|--------------------|---------------|---------------|--------------|--------------|----------------|--------------|--------------|--------------|--------------|
| D | D1 | D2 | W | W1 | W2 | W3 | Ød3 | Ød4 | Ød5 |
| 79 (3.11) | 155 (6.09) | 106 (4.17) | 75 (2.95) | 65 (2.56) | 22.3 (0.88) | 90 (3.54) | 50 (1.97) | 35 (1.38) | 62 (2.44) |

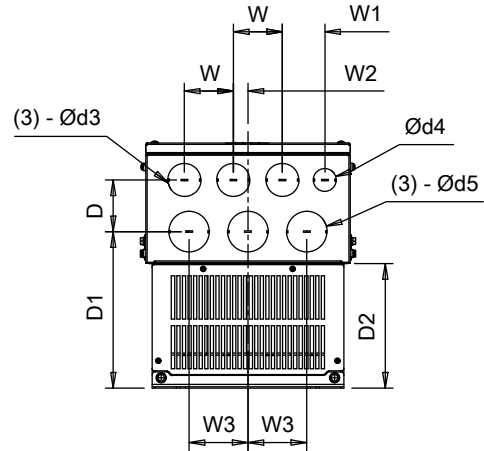


Figure 2.5 Frame 3B Conduit Knockout Dimensions

Table 2.5 Frame 3B Conduit Knockout Dimensions

| Dimensions mm (in) | | | | | | | | | |
|--------------------|---------------|---------------|--------------|--------------|----------------|--------------|--------------|--------------|--------------|
| D | D1 | D2 | W | W1 | W2 | W3 | Ød3 | Ød4 | Ød5 |
| 79 (3.11) | 240 (9.43) | 191 (7.51) | 75 (2.95) | 65 (2.56) | 22.3 (0.88) | 90 (3.54) | 50 (1.97) | 35 (1.38) | 62 (2.44) |

3. Use 4 of the provided M4 x 10 captive pan head screws to attach the top cover. Tighten the screws to a tightening torque of 0.98 to 1.33 N·m (8.67 to 11.77 in-lb).

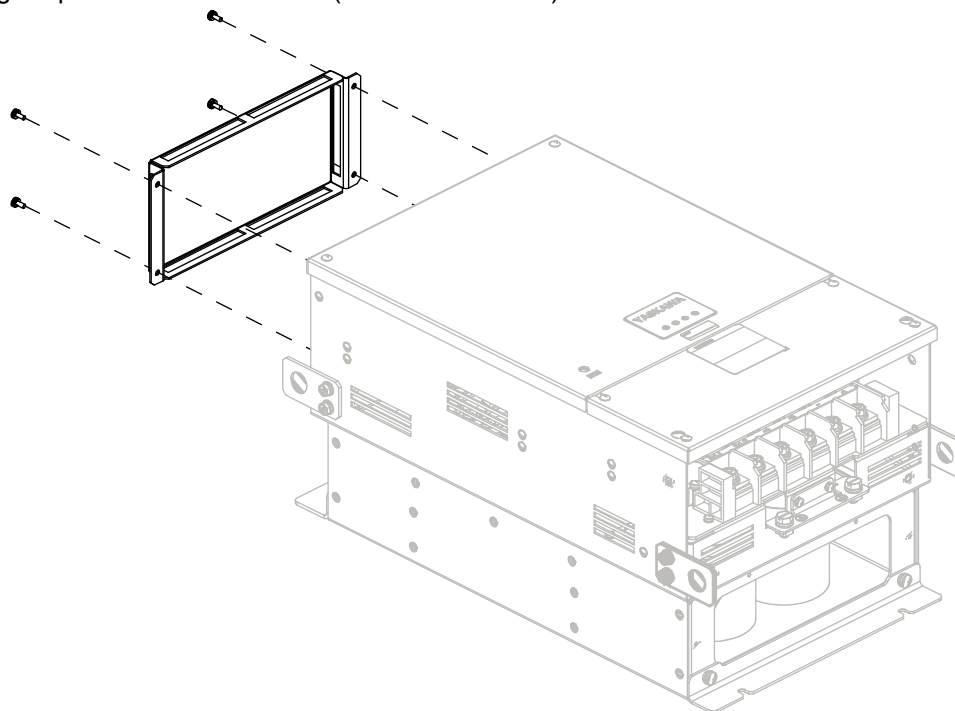


Figure 2.6 Attach the Top Cover

4. Remove the two bottom lifting brackets. You will not need the screws or the brackets after you install the kit.

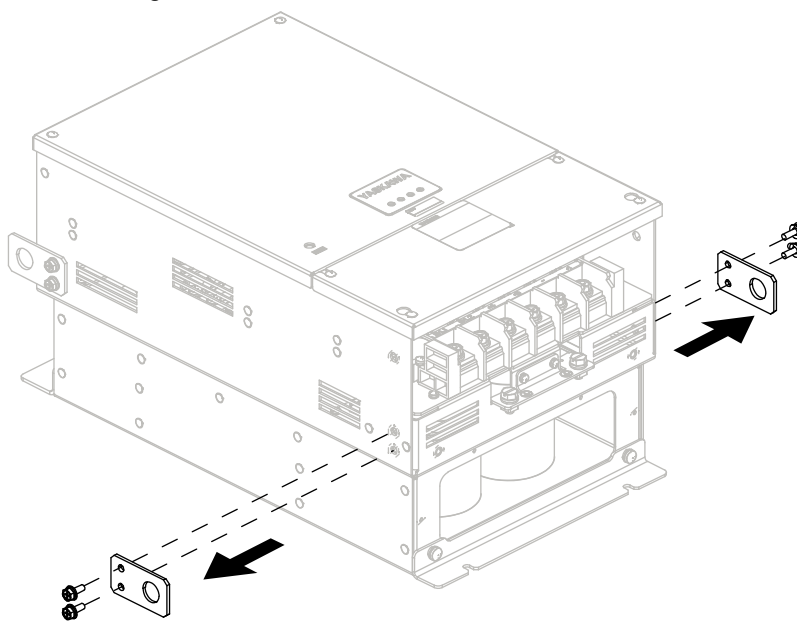


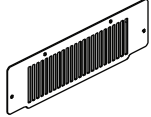
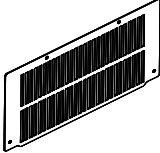
Figure 2.7 Remove the Lifting Brackets

- Use the provided M4 x 10 captive pan head screws to attach the heatsink cover. Tighten the screws to a tightening torque of 0.98 to 1.33 N·m (8.67 to 11.77 in-lb).

Note:

Kit UUX001783 ships with two heatsink covers. Use the information in [Table 2.6](#) to select the correct cover. The part number is stamped on the part for identification. You can discard the unused part.

Table 2.6 Heatsink Cover Selection for Kit UUX001783

| SPC Model | Correct Heatsink Cover | |
|----------------------|------------------------|---|
| 2037 2045 4056 | USP04763-1 |  |
| 4093 | USP04765-1 |  |

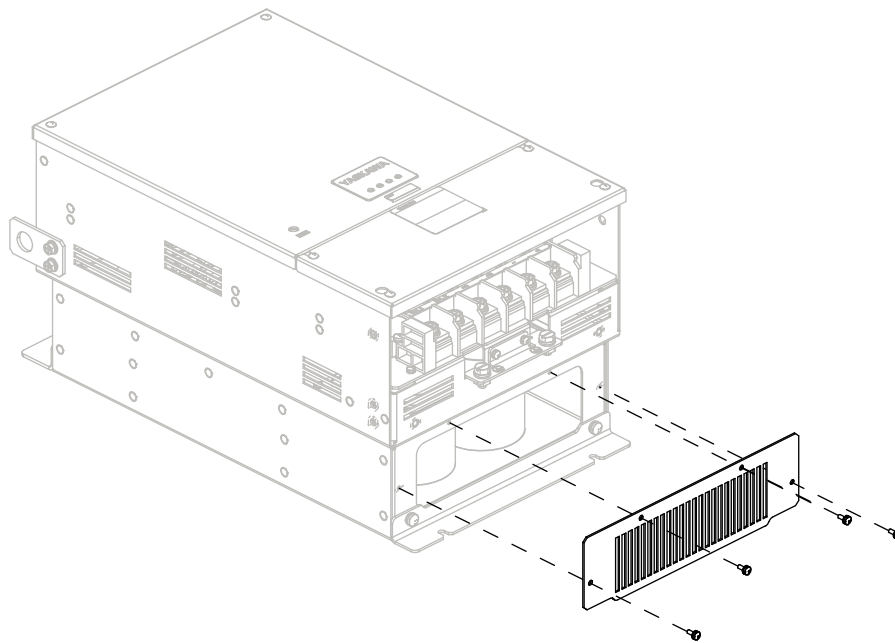


Figure 2.8 Attach the Heatsink Cover

Note:

Kit UUX001686 uses 2 screws to attach the heatsink cover.

6. Use 4 of the provided M6 x 12 captive pan head screws to attach the bottom housing. Tighten the screws to a tightening torque of 3.92 to 4.90 N·m (34.69 to 43.37 in-lb).

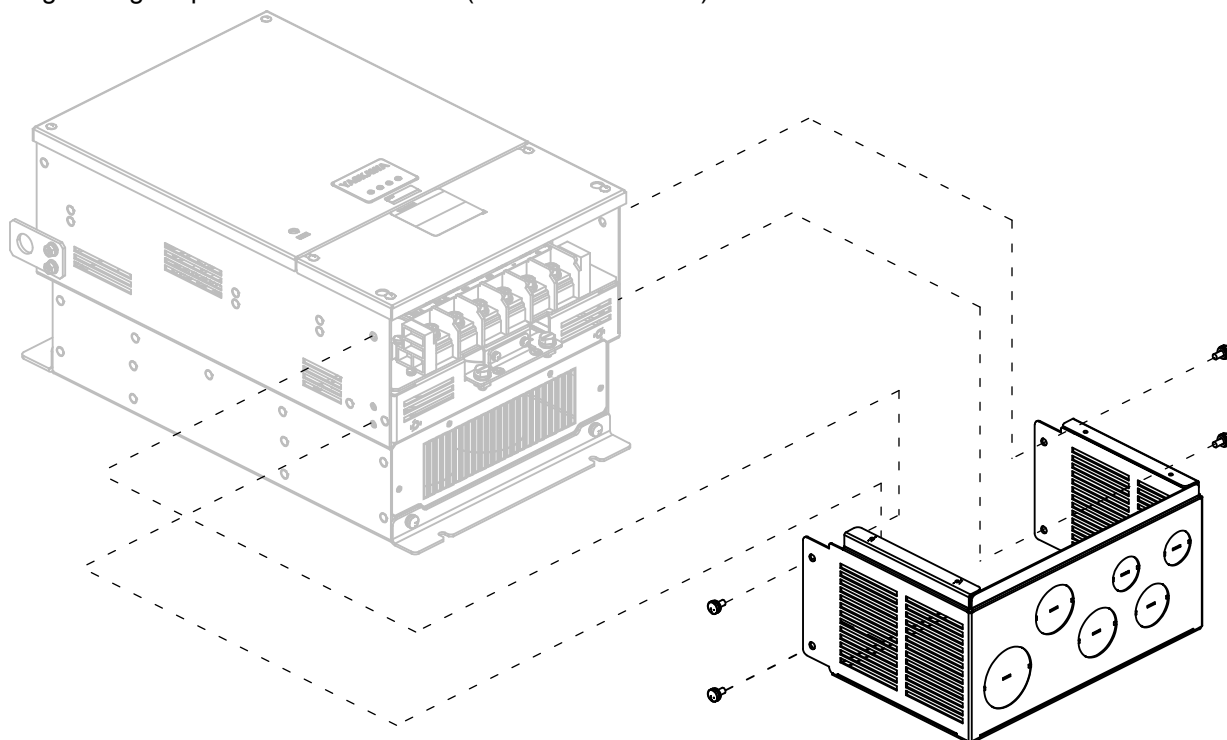


Figure 2.9 Attach the Bottom Housing

7. Remove the necessary conduit knockouts. To remove a conduit knockout, insert the tip of a straight-edge screwdriver into rectangular hole “A” in Figure 2.10. Move the screwdriver up and down to break the metal connections marked “B” in Figure 2.10.

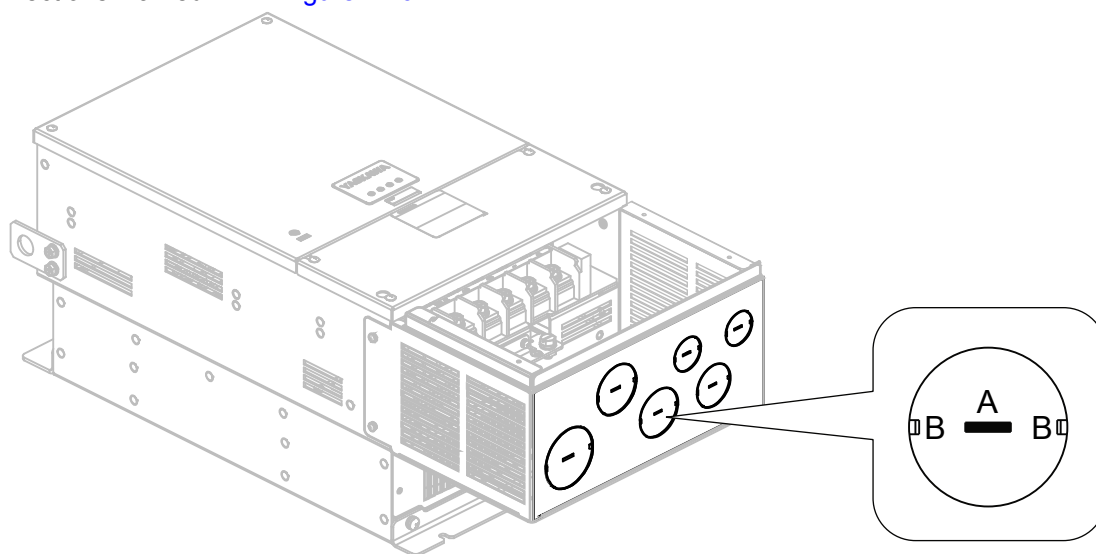


Figure 2.10 Remove Conduit Knockouts

8. Correctly wire the SPC. Refer to the manual packaged with the SPC for wiring instructions.

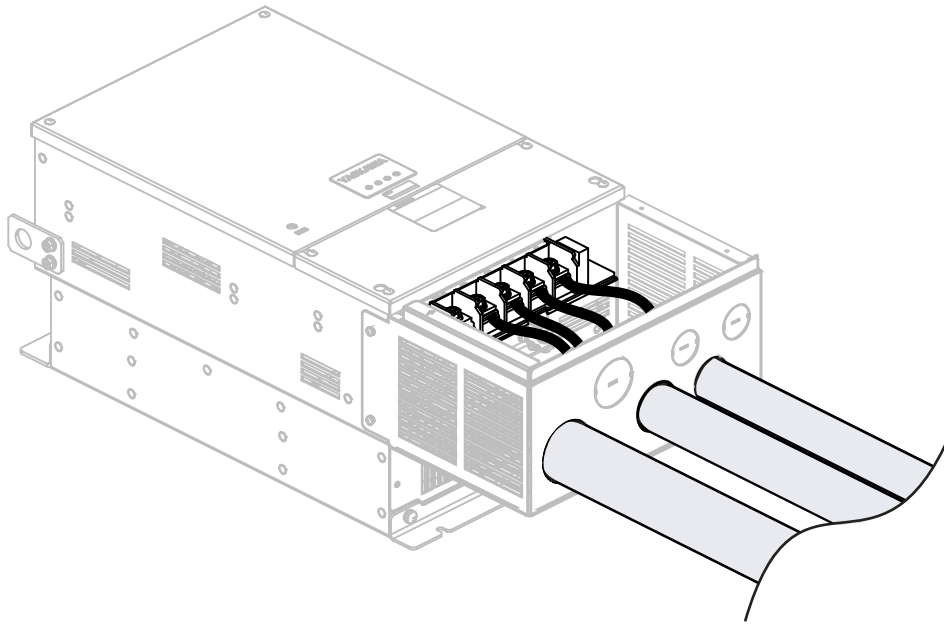


Figure 2.11 Wire the SPC

9. Use the provided M4 x 10 truss head screws to attach the bottom cover. Tighten the screws to a tightening torque of 0.98 to 1.33 N·m (8.67 to 11.77 in-lb).

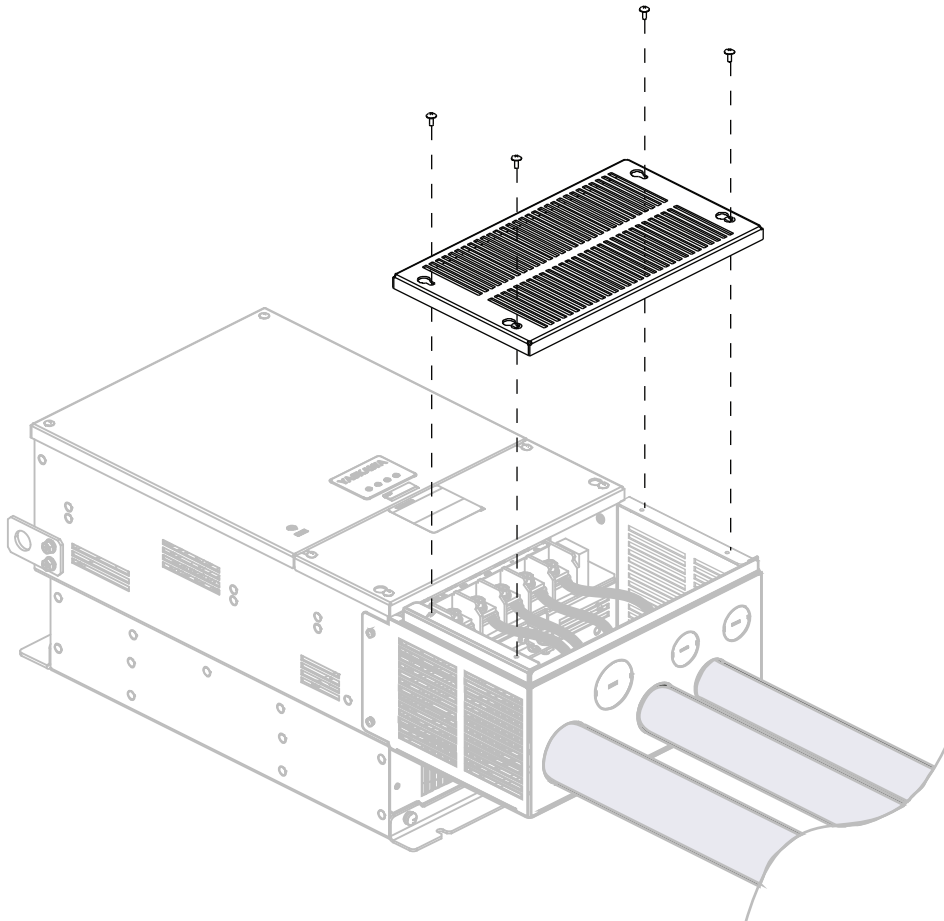


Figure 2.12 Attach the Bottom Cover

Note:

Kit UUX001686 uses 2 screws to attach the bottom cover.

10. The kit installation is complete and the SPC is now enclosed in a UL Type 1 enclosure.

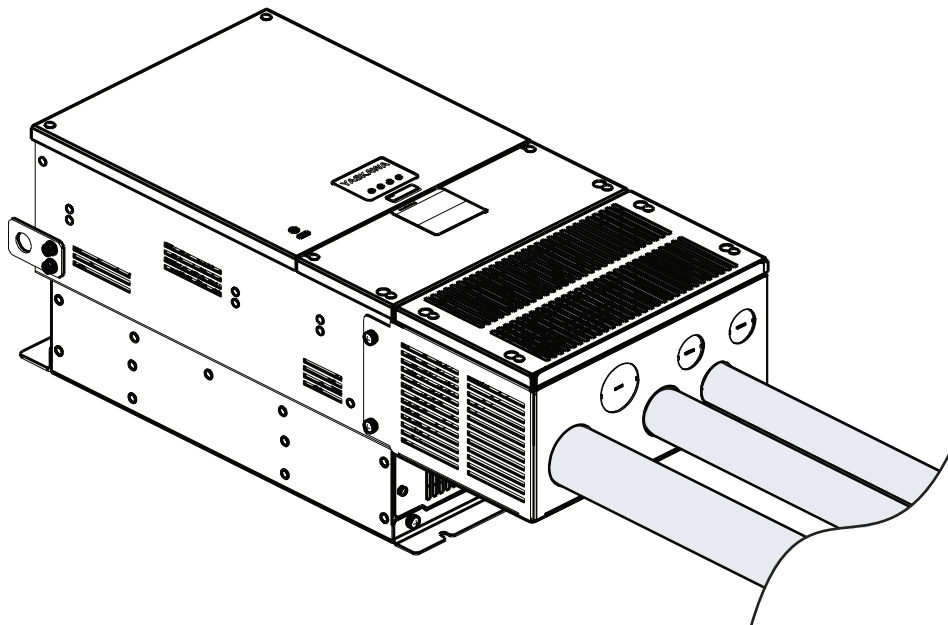


Figure 2.13 Installation is Complete

Revision History

| Date of Publication | Revision Number | Section | Revised Content |
|---------------------|-----------------|---------|-----------------|
| February 2019 | - | - | First Edition |

UL Type 1 Kit for Single Phase Converter

YASKAWA AC Drive Option Installation Manual

YASKAWA AMERICA, INC.

2121, Norman Drive South, Waukegan, IL 60085, U.S.A.

Phone: +1-800-YASKAWA (927-5292) or +1-847-887-7000 Fax: +1-847-887-7310

<http://www.yaskawa.com>

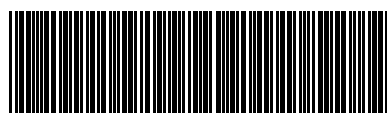
YASKAWA

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.

© 2019 YASKAWA Electric Corporation



TOEPYAIIPC03

MANUAL NO. TOEPYAIIPC03
Published in USA February 2019
19-2