

ABB DRIVES

**ACS580-01..., ACH580-01... and ACQ580-01...**  
**+C135 drives with flange mounting kit**  
Supplement





# ACS580-01..., ACH580-01... and ACQ580 01...+C135 drives with flange mounting kit

## Supplement

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Mechanical installation





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### Further information

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# 1

# Introduction to the supplement

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## Contents of this chapter

This chapter describes the supplement.

## Applicability

This supplement is applicable to ACS580-01...+C135, ACH580-01...+C135 and ACQ580-01...+C135 drives with flange mounting kit:

- for these R1 to R3 drive types:  
-02A7-4, -03A4-4, -04A1-4, -05A7-4, -07A3-4, -09A5-4, -12A7-4, -018A-4, -026A-4, -033A-4, -039A-4, -046A-4
- for all R4 to R9 drive types.

## Target audience

This supplement is intended for people who plan the installation and install the drive with the flange mounting kit. Read the supplement before you work on the drive. You are expected to know the fundamentals of electricity, wiring, electrical components and electrical schematic symbols.

The supplement is written for readers worldwide. Both SI and imperial units are shown.

## Purpose of the supplement

This supplement tells you how to install the drive mechanically onto an opening in a mounting plate with the flange mounting kit.

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## Related documents

Drive hardware manuals and guides	Code (English)
<i>ACS580-01..., ACH580-01... and ACQ580-01...+C135 drives with flange mounting kit supplement</i>	<a href="#">3AXD50000349821</a>
<i>ACS580-01...+C135, ACH580-01...+C135 and ACQ580-01...+C135 frames R1 to R3 flange mounting kit quick installation guide</i>	<a href="#">3AXD50000119172</a>
<i>ACS580-01...+C135, ACH580-01...+C135 and ACQ580-01...+C135 frames R4 to R5 flange mounting kit quick installation guide</i>	<a href="#">3AXD50000287093</a>
<i>ACS880-01...+C135, ACS580-01...+C135, ACH580-01...+C135 and ACQ580-01...+C135 frames R6 to R9 flange mounting kit quick installation guide</i>	<a href="#">3AXD50000019099</a>
<i>ACS580-01 drives (0.75 to 250 kW, 1.0 to 350 hp) hardware manual frames R1 to R9</i>	<a href="#">3AXD50000044794</a>
<i>ACS580-01 drives quick installation and start-up guide for frames R1 to R5</i>	<a href="#">3AXD50000044838</a>
<i>ACS580-01 drives quick installation and start-up guide for frames R6 to R9</i>	<a href="#">3AXD50000009286</a>
<i>ACH580-01 drives (0.75 to 250 kW, 1 to 350 hp) hardware manual frames R1 to R9</i>	<a href="#">3AXD50000044839</a>
<i>ACH580-01 drives quick installation and start-up guide for frames R1 to R5</i>	<a href="#">3AXD50000044861</a>
<i>ACH580-01 drives quick installation and start-up guide for frames R6 to R9</i>	<a href="#">3AXD50000036602</a>
<i>ACQ580-01 drives (0.75 to 250 kW, 1.0 to 350 hp) hardware manual frames R1 to R9</i>	<a href="#">3AXD50000044862</a>
<i>ACQ580-01 drives quick installation and start-up guide for frames R1 to R5</i>	<a href="#">3AXD50000044864</a>
<i>ACQ580-01 drives quick installation and start-up guide for frames R6 to R9</i>	<a href="#">3AXD50000037301</a>

You can find manuals and other product documents in PDF format on the Internet. See section [Document library on the Internet](#) on the inside of the back cover. For manuals not available in the Document library, contact your local ABB representative. The codes below open an online listing of the manuals applicable to the product.



[ACS580-01 manuals](#)



[ACH580-01 manuals](#)



[ACQ580-01 manuals](#)





# Hardware description

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## Contents of this chapter

This chapter describes the flange mounting kit.

## Product overview

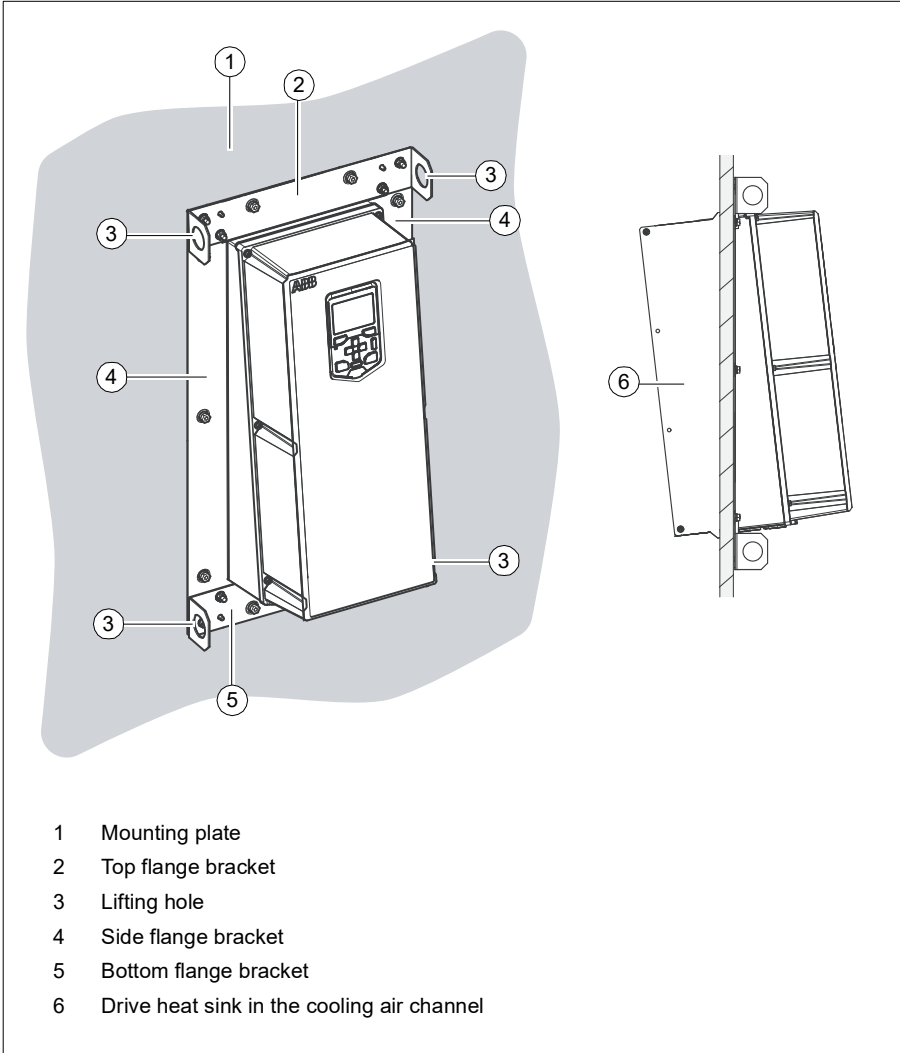
The flange mounting kit contains brackets for attaching the drive onto a mounting plate. The heat sink of the drive can be located in the cooling air channel and the front part on the other side of the mounting plate.

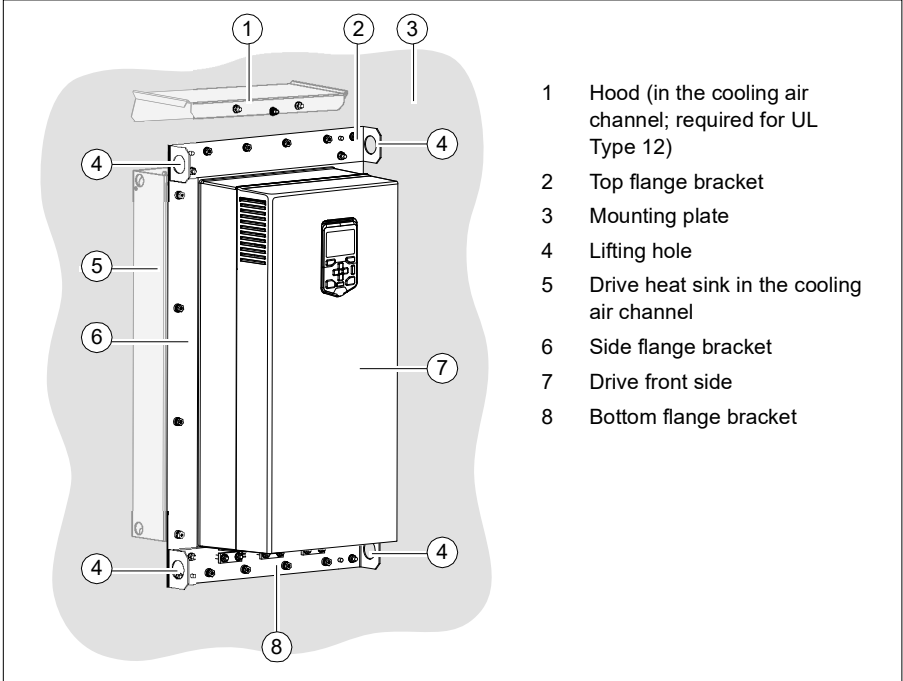
## Layout and mounting position

The flange-mounted drive is installed in a tilted or an upright position depending on the drive type.

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**Example: tilted position, frames R1 to R3**



**Example: upright position, frames R4 to R9****Degree of protection**

This table shows the degree of protection of the flange-mounted drive. In frames R1, R2, R4 and R5 to R9 the degree of protection of IP55 (UL Type 12) for the front is not possible because the cover cannot be installed.

Frame size	Plus code	Degree of protection	Degree of protection with flange	
			Front	Back
R1	-	IP21 (UL Type 1)	IP20 (UL Open Type)	IP55 (UL Type 12)
R1	B056	IP55 (UL Type 12)	IP20 (UL Open Type)	IP55 (UL Type 12)
R2	-	IP21 (UL Type 1)	IP20 (UL Open Type)	IP55 (UL Type 12)
R2	B056	IP55 (UL Type 12)	IP20 (UL Open Type)	IP55 (UL Type 12)
R3	-	IP21 (UL Type 1)	IP20 (UL Open Type)	IP55 (UL Type 12)
R3	B056	IP55 (UL Type 12)	IP55 (UL Type 12)	IP55 (UL Type 12)
R4	-	IP21 (UL Type 1)	IP20 (UL Open Type)	IP55 (UL Type 12)
R4	B056	IP55 (UL Type 12)	IP20 (UL Open Type)	IP55 (UL Type 12)
R5	-	IP21 (UL Type 1)	IP20 (UL Open Type)	IP55 (UL Type 12)
R6	-	IP21 (UL Type 1)	IP20 (UL Open Type)	IP55 (UL Type 12)
R7	-	IP21 (UL Type 1)	IP20 (UL Open Type)	IP55 (UL Type 12)

Frame size	Plus code	Degree of protection	Degree of protection with flange	
			Front	Back
R8	-	IP21 (UL Type 1)	IP20 (UL Open Type)	IP55 (UL Type 12)
R9	-	IP21 (UL Type 1)	IP20 (UL Open Type)	IP55 (UL Type 12)

## Special requirements

Frame size	IP21 (UL Type 1)
R1	Insert a sealing plug and install an extra internal fan, or remove the front cover. <b>Reason for installing an extra fan</b> is that the sealing plug will prevent cooling air flow from below to the control circuits of the drive. This fan is included in IP55 (UL Type 12) drives as standard. For IP21 (UL Type 1 drives) it can be ordered with the codes given in section <a href="#">Ordering codes</a> below. <b>Exception:</b> In dry environment, you can leave the cover in place without inserting the sealing plug.
R2	
R3	
R4	

## Ordering codes

The flange mounting kit is a plus code option (+C135) or can be ordered with these ordering codes separately.

Frame size	Ordering code of flange mounting kit
R1	3AXD50000105311 (IP21, UL Type 1)
R2	3AXD50000105328 (IP21, UL Type 1)
R3	3AXD50000105335 (IP21 and IP55, UL Type 1 and UL Type 12)
R4	3AXD50000031460 (IP21, UL Type 1)
R5	3AXD50000031461 (IP21, UL Type 1)
R6	3AXD50000018852 (IP21, UL Type 1)
R7	3AXD50000018853 (IP21, UL Type 1)
R8	3AXD50000018854 (IP21, UL Type 1)
R9	3AXD50000018855 (IP21, UL Type 1)

Frame size	Ordering code of IP55 (UL Type 12) internal cooling fan for IP21 (UL Type 1) drives
R1	3AXD50000050128
R2	3AXD50000050128
R3	3AUA0000088115
R4	3AXD50000034334

# 3

## Mechanical installation – General

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### Contents of this chapter

This chapter describes generally how to install a drive with the flange mounting kit.

### Safety instructions

Obey the general safety instructions in the hardware manual and the task-specific instructions in this supplement.

Wear protective gloves and long sleeves. Some parts have sharp edges.

### Examining the installation site

Make sure that the installation site agrees with these requirements:

- The installation site has sufficient ventilation to prevent overheating of the drive. See section *Losses, cooling data and noise* in the hardware manual for the required air flow in the cooling air channel and in the front part of the drive.
- The operation conditions of the drive agree with the specifications in section *Ambient conditions* in the hardware manual.
- The mounting plate is vertical, not flammable and strong enough to hold the weight of the drive module.
- The material below the installation is not flammable.
- There is enough free space above and below the drive for cooling air flow, service and maintenance. There is enough free space in front of the drive for operation, service and maintenance. See section *Free space requirements* in the mechanical installation chapter of the frame size in this manual..



## **Additional requirements for cabinet installations**

Make sure that the cooling air gratings of the drive will not be covered. Make sure that the required cooling air change is achieved. In a totally closed cabinet with no forced ventilation, a fan for circulating the air inside the cabinet may be needed.

## **Required tools**

To install the drive mechanically, you need the following tools:

- drill with suitable bits
- screwdriver.

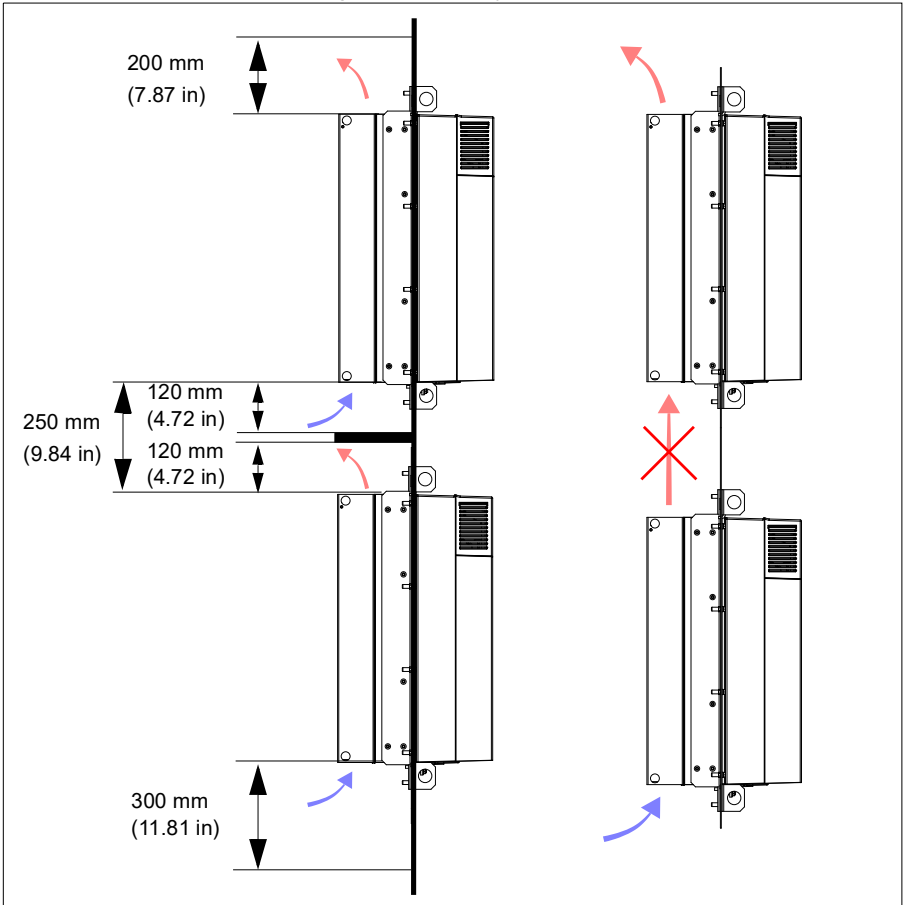
## **Moving the drive**

Move the drive in its transport package to the installation site. Use a pallet truck when you move a heavy drive package.



## Installing drives above one another

Make sure that the outlet cooling air flows away from the drive above.







## 4

# Mechanical installation – Frames R1 to R3

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## Contents of this chapter

This chapter describes how to install drive frame sizes R1 to R3 with the flange mounting kit mechanically.



## Unpacking and examining the delivery

### ■ Transport package contents

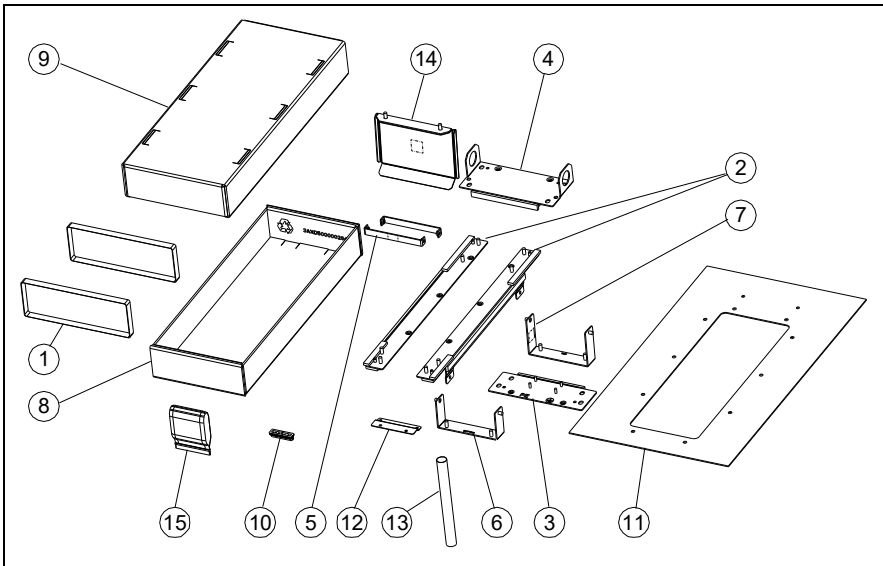
The flange mounting kit package is tied with straps onto the drive package or sent separately. Examine that all items are present and there are no signs of damage. Read the data on the type designation label of the drive to make sure that the drive is of the correct type.

To unpack:

- Cut the straps.
  - Remove the flange mounting kit package. For the contents of the kit package, see [Flange mounting kit package contents](#) on page 18.
  - Open the drive cardboard box. For the contents of the drive package, see the drive hardware manual.
  - Lift the drive.
-

## ■ Flange mounting kit package contents

The drawings below show the layout of the flange mounting kit packages. Examine that all items are present and there are no signs of damage.



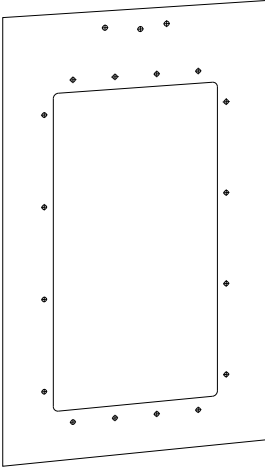
Item	Description	Item	Description
1	Straps	12	Grounding plate (In frame R3 different)
2	Side brackets	13	Quick guide
3	Bottom bracket	14	Hood (required for UL Type 12)
4	Top bracket (In frame R3 different)	15	Screw package: <ul style="list-style-type: none"> <li>• M4 nut (4 pcs)</li> <li>• M5x20 screw (4 pcs)</li> <li>• M6x25 screw (R1: 10 pcs; R2: 12 pcs; R3: 14 pcs)*</li> <li>• M6 nut (R1...R2: 18 pcs; R3: 19 pcs)</li> <li>• M4x8 screw (R1...R2: 2 pcs)</li> </ul>
5	Tightening brackets		
6	Bottom U-bracket		
7	Top U-bracket		
8	Cardboard tray		
9	Top cardboard cover		
10	Sealing plug		
11	Mounting template		

\*The delivery does not include the Rivet or Kalei nuts for the M6 screws.

## Mounting template

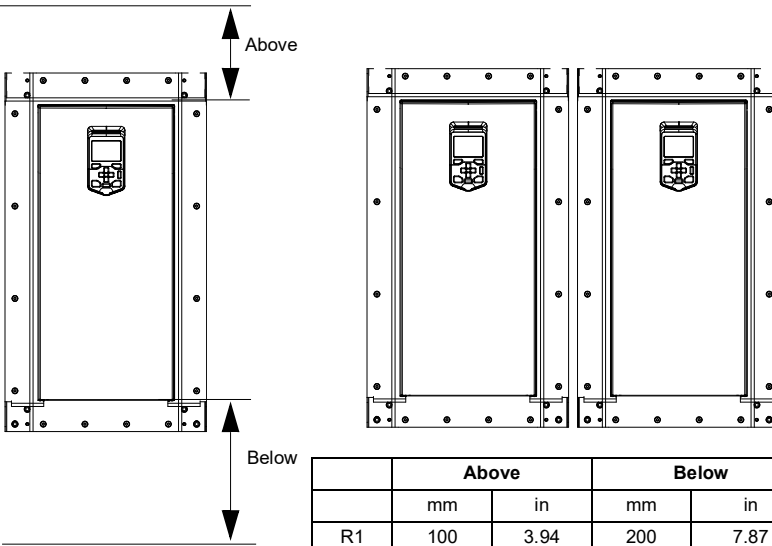
The flange mounting kit package includes a template in actual size for drilling the attaching holes and cutting the hole in the mounting plate.

An example template is shown below.



## Free space requirements

The flange-mounted drives can be installed side by side. For free space requirements above and below the drives, see the table.



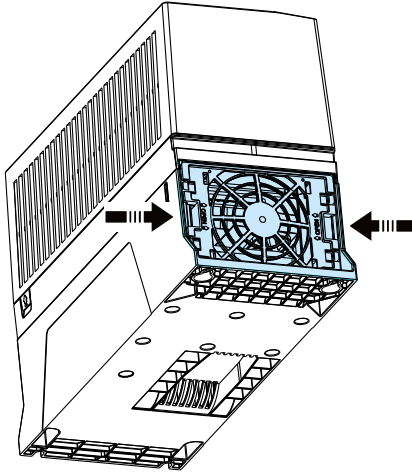
	Above		Below	
	mm	in	mm	in
R1	100	3.94	200	7.87
R2	100	3.94	200	7.87
R3	115	4.53	200	7.87



## Installation procedure

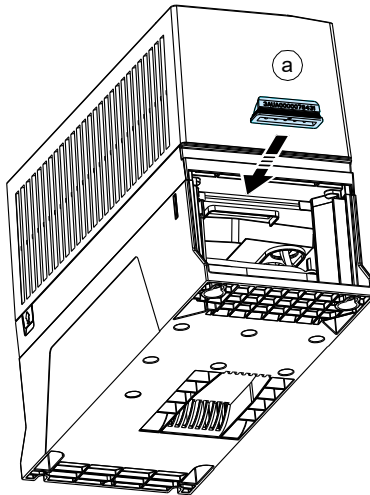
1. To remove the fan assembly, push the retaining clips. Lift the assembly up.

IP21 (UL Type 1)



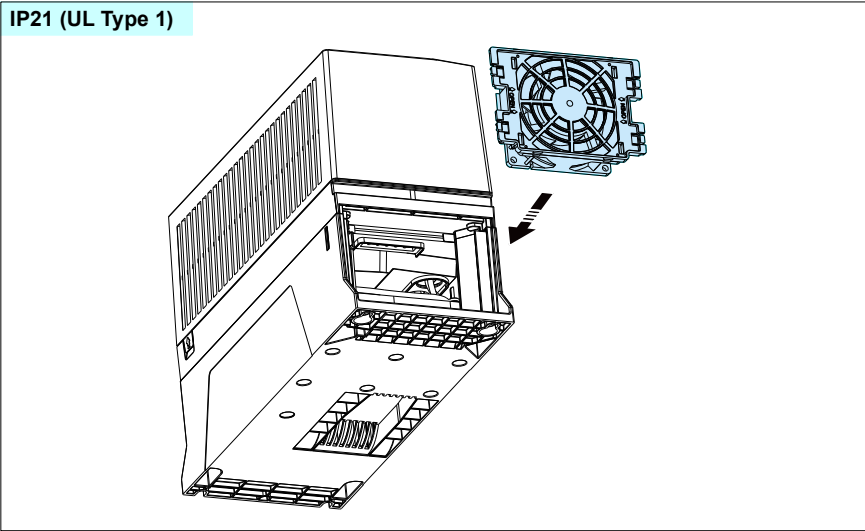
2. Insert the sealing plug (a) to the hole. The sealing plug is installed in IP55 (UL Type 12) drives at the factory.

IP21 (UL Type 1)



3. Reinstall the fan assembly.

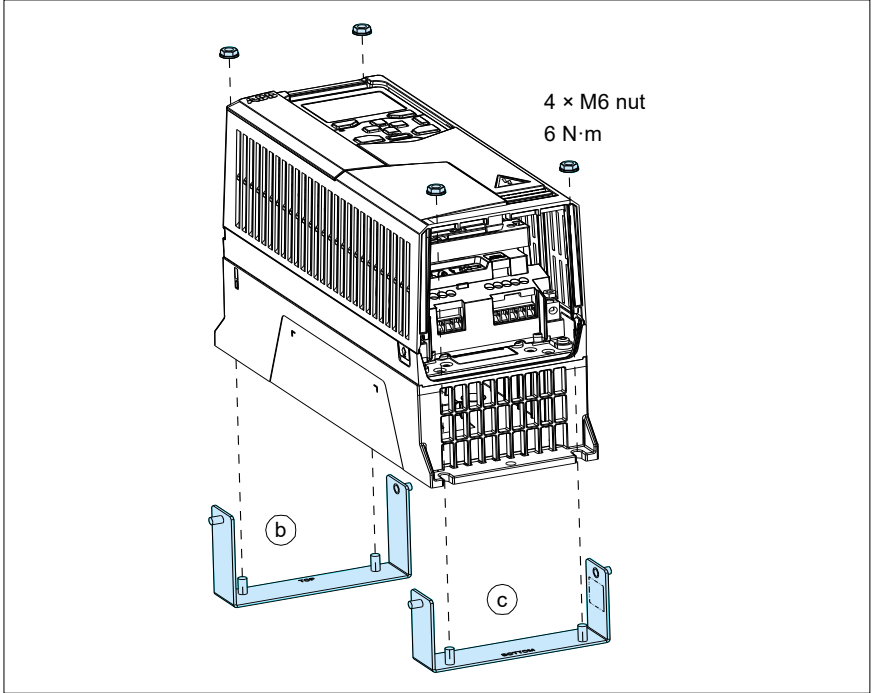
**IP21 (UL Type 1)**



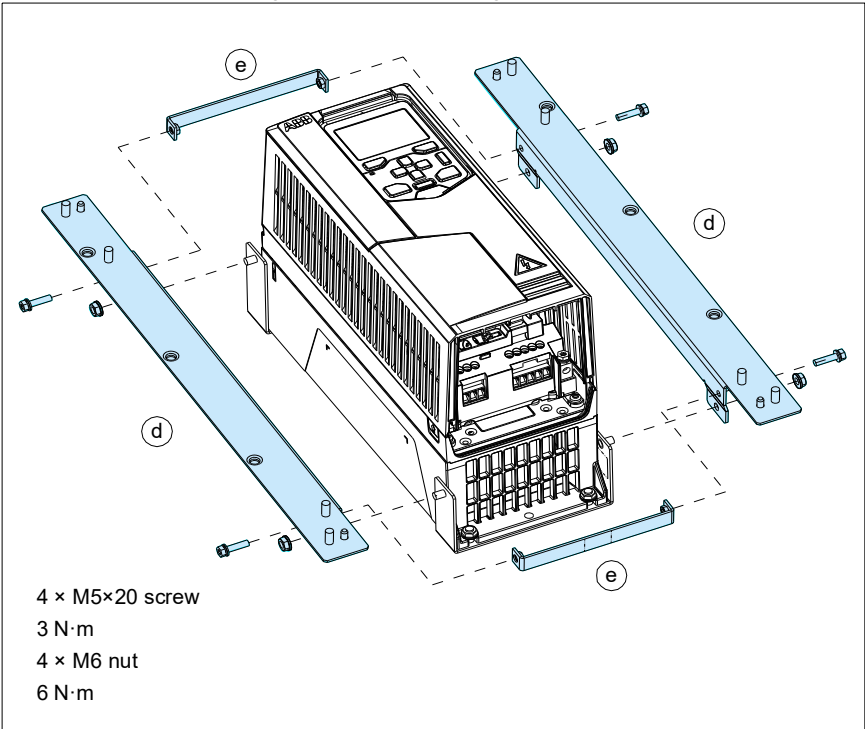
4. To install the internal fan for IP21 drives, see the hardware manual section *Replacing the auxiliary cooling fan, IP55 (UL Type 12) frames R1 ...R2* or *Replacing the auxiliary cooling fan, IP55 (UL Type 12) frames R3*.



5. Attach the U-brackets (b and c) to the back of the drive.

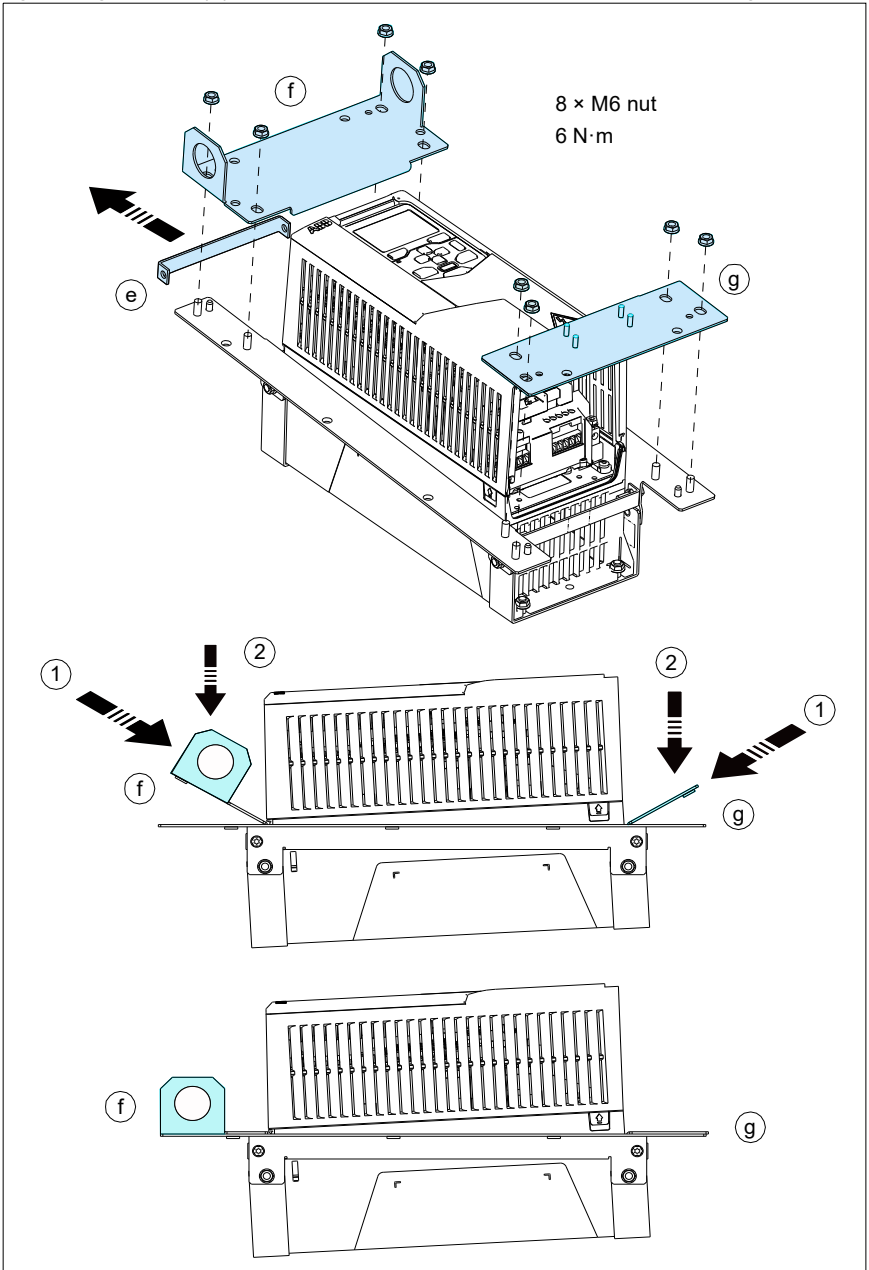


6. First attach the side brackets (d) to the U-brackets which were attached in step 5 using M6 nuts finger-tight. Then use the tightening brackets (e, M5×20 screws) to press the side brackets against the module. Tighten the side bracket nuts.





7. Attach the top (f) and bottom (g) brackets to the side brackets, first the inner sides (1) (the sides that touch the drive), then the outer sides (2). Remove the tightening bracket (e) from the top to enable replacement of the cooling fan.



## Optional steps

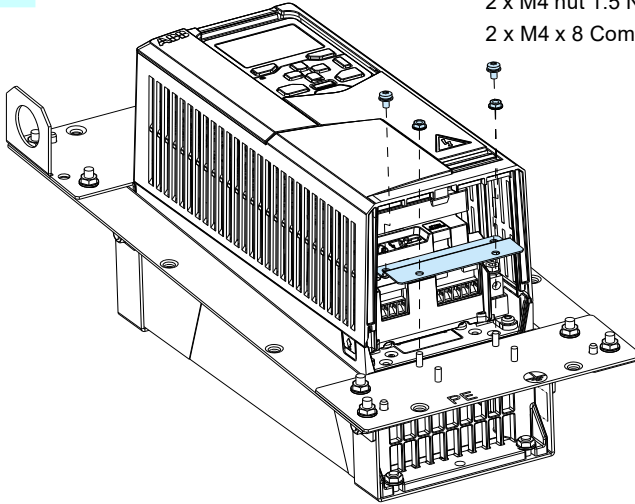
### Grounding plate

If you wish to install the grounding plate, push it onto the alignment pins of the bottom bracket and attach it.

#### R1 and R2

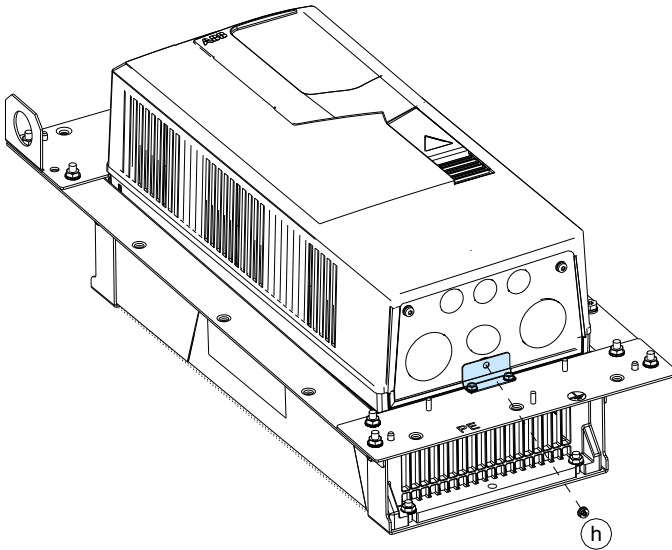
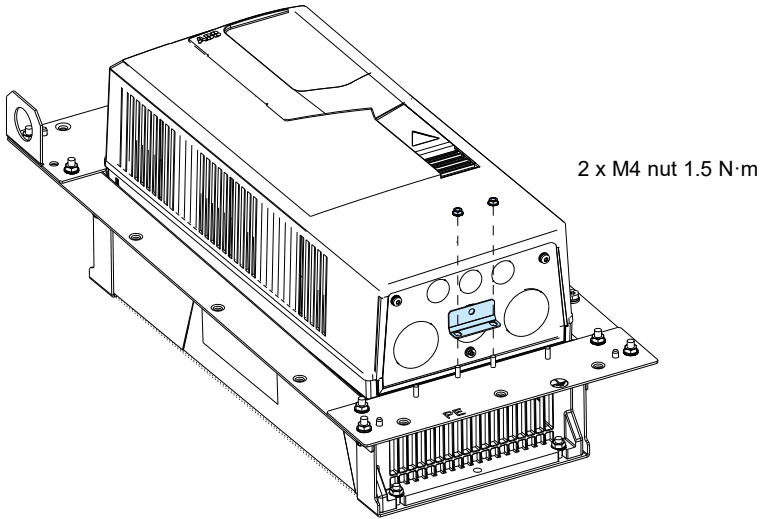
2 x M4 nut 1.5 N·m

2 x M4 x 8 Combi screw 1.5 N·m



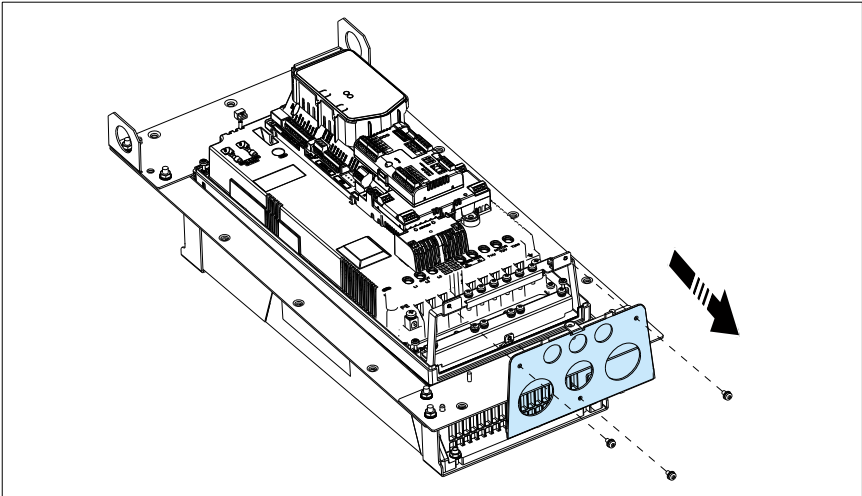
To attach the grounding plate to the bottom plate use the cable entry plate screw (h).

R3

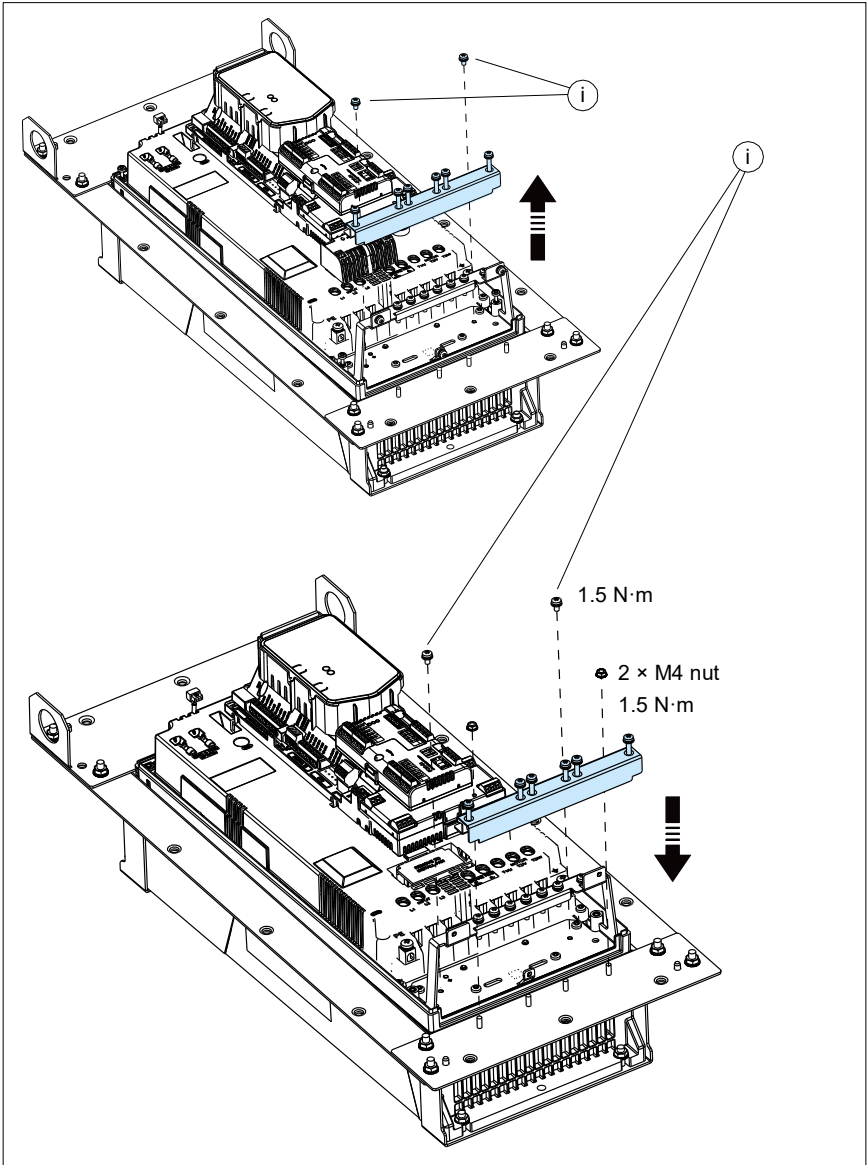


### Power cable grounding shelf

1. If you wish to install the power cable grounding shelf lower on the bottom bracket, first remove the cover and the cable entry plate.



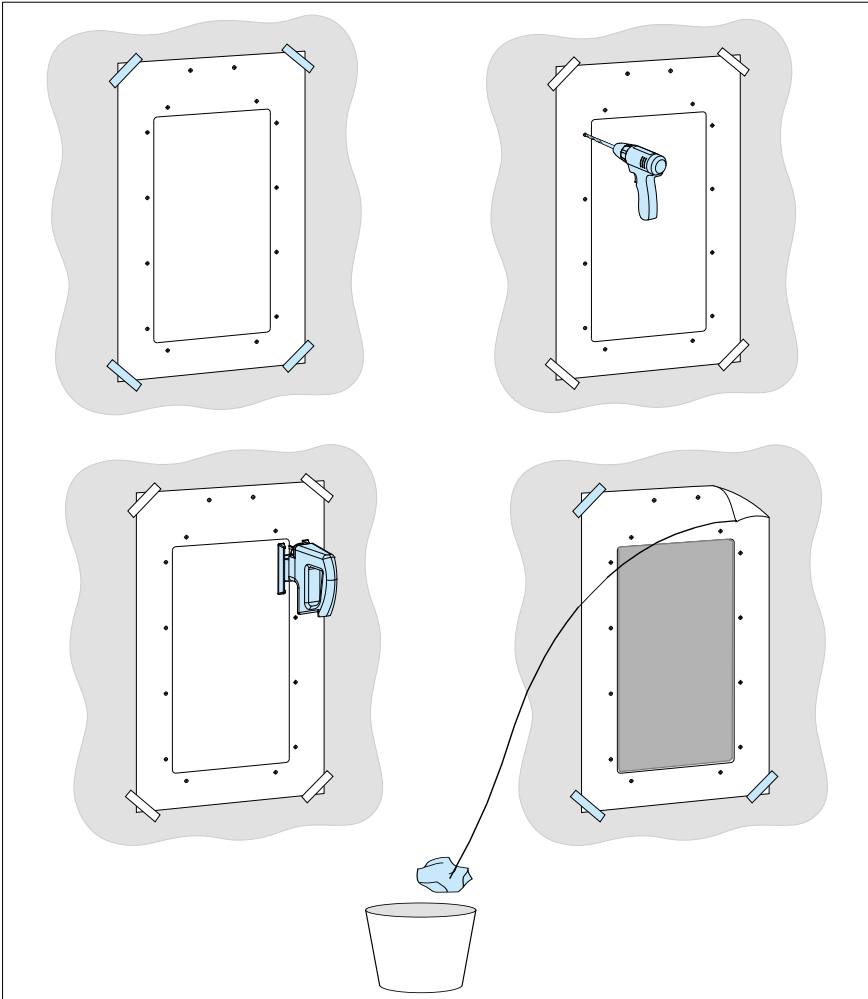
- Then detach the power cable shelf (screws i). Reinstall the screws to avoid moisture exchange through the empty holes! Attach the cable shelf to the bottom bracket with M4 nuts. Frame R3 is shown as an example. The cable shelf varies in different frame sizes.



### ■ Installing the drive on the mounting plate

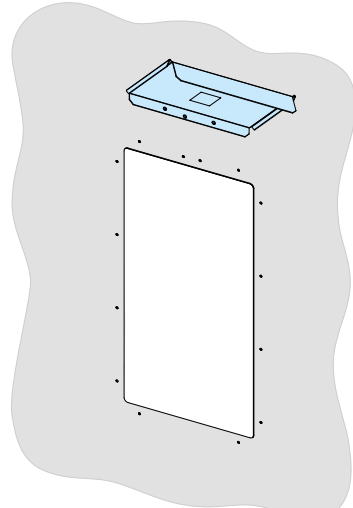
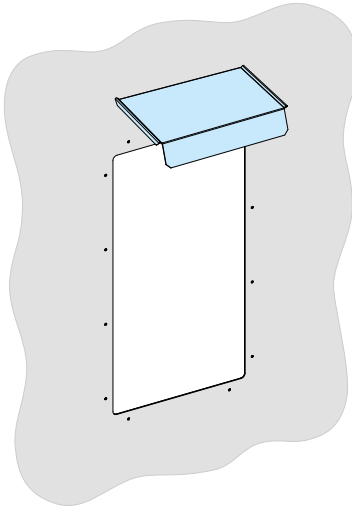
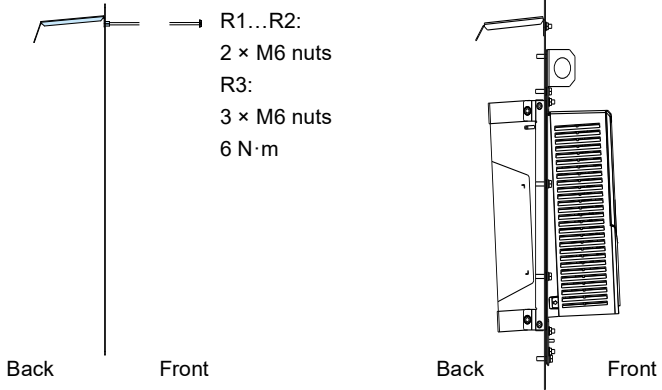
1. See chapter [Dimension drawings](#) for the dimensions of the flange and the required opening in the mounting plate. Attach the mounting template from the flange mounting kit package onto the mounting plate.

Make the opening and drill the holes for the mounting screws. Consider the hole size for the Rivet or Kalei nuts (not included in the delivery). Remove the mounting template.



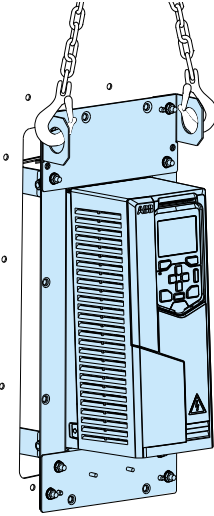
2. Attach the hood to the cooling channel. UL Type 12 is fulfilled on the drive backside when the flange and hood are installed. This is not required for IP55.

**UL Type 12**

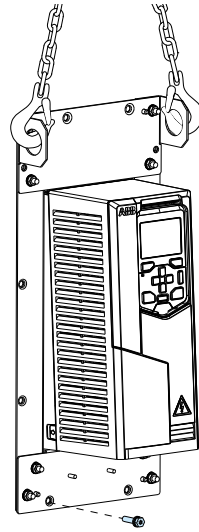


3. Attach chains to the drive lifting holes and lift the drive with a lifting device onto the opening in the mounting plate.
4. Attach the bottom bracket with one screw.
5. Attach the top bracket with one screw.
6. Attach the rest of the mounting screws. Remove the chains.

⑩

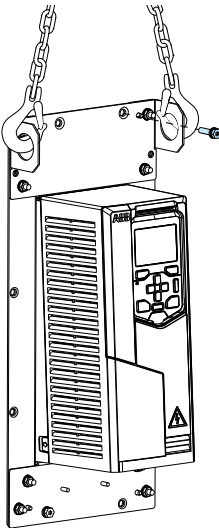


⑪



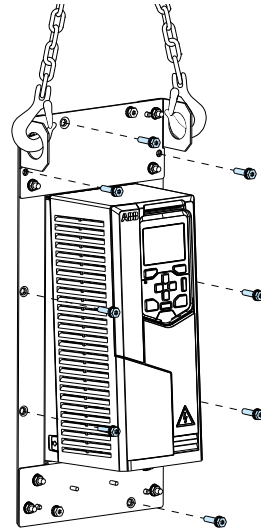
1 × M6×25 screw  
6 N·m

⑫



1 × M6×25 screw  
6 N·m

⑬



R1: 8 × M6×25 screw  
R2: 10 × M6×25 screw  
R3: 12 × M6×25 screw  
6 N·m



# 5

## Mechanical installation – Frames R4 and R5

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### Contents of this chapter

This chapter describes how to install drive frame sizes R4 and R5 with the flange mounting kit mechanically.



## Unpacking and examining the delivery

### ■ Transport package contents

The flange mounting kit package is tied with straps onto the drive package or sent separately. Examine that all items are present and there are no signs of damage. Read the data on the type designation label of the drive to make sure that the drive is of the correct type.

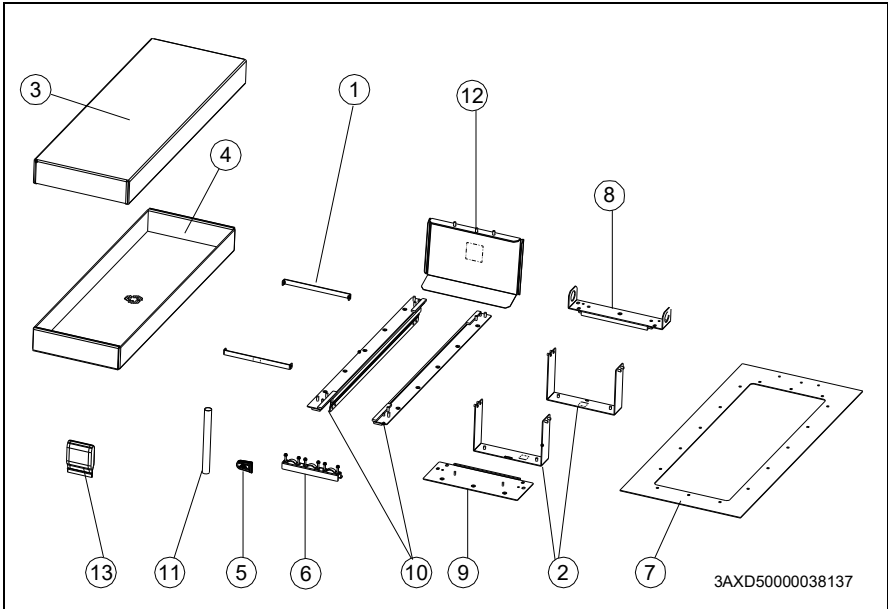
To unpack:

- Cut the straps.
- Remove the flange mounting kit package. For the contents of the kit package, see [Flange mounting kit package contents](#) on page 35.
- Remove the drive cardboard box and option box.
- Remove the cover protecting film. For the contents of the drive package, see the drive hardware manual.
- Lift the drive.



## ■ Flange mounting kit package contents

The drawings below show the layout of the flange mounting kit packages. Examine that all items are present and there are no signs of damage.



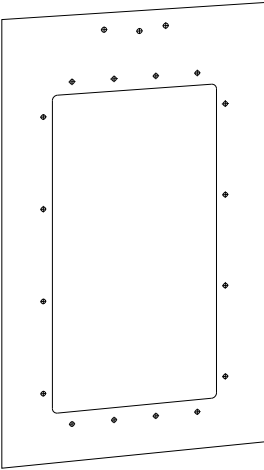
Item	Description	Item	Description
1	Tightening brackets	9	Bottom bracket
2	Top and bottom U-brackets	10	Side brackets
3	Top cardboard cover	11	Quick guide
4	Cardboard tray	12	Hood (required for UL Type 12)
5	Sealing plug R4	13	Screw package: • M5x20 screw (4 pcs) • M6x25 screw (16 pcs) * • M6 nut (23 pcs)
6	Clamp plate R5		
7	Mounting template		
8	Top bracket		
9	Bottom bracket		

\*The delivery does not include the Rivet or Kalei nuts for the M6 screws.

### Mounting template

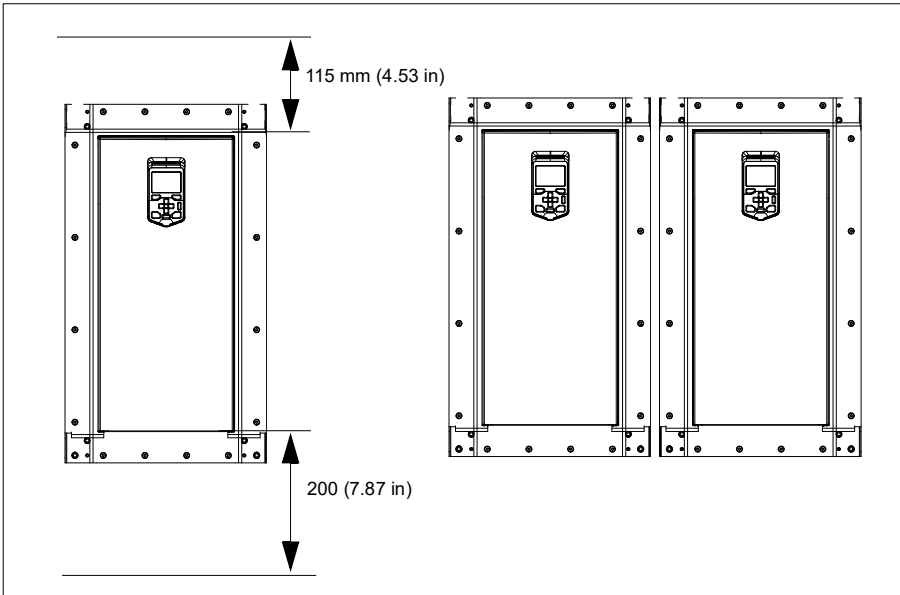
The flange mounting kit package includes a template in actual size for drilling the attaching holes and cutting the hole in the mounting plate.

An example template is shown below.



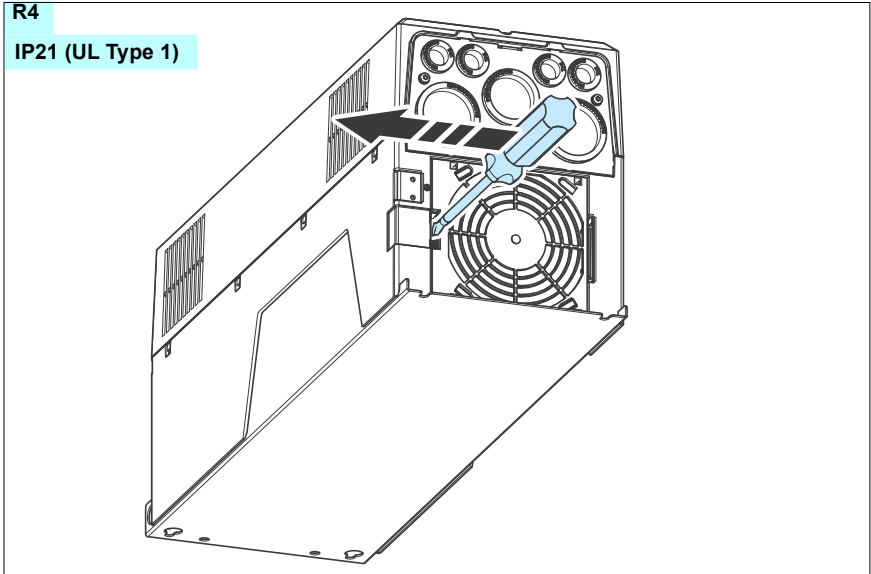
## Free space requirements

The flange-mounted drives can be installed side by side. For free space requirements above and below the drives, see the table.

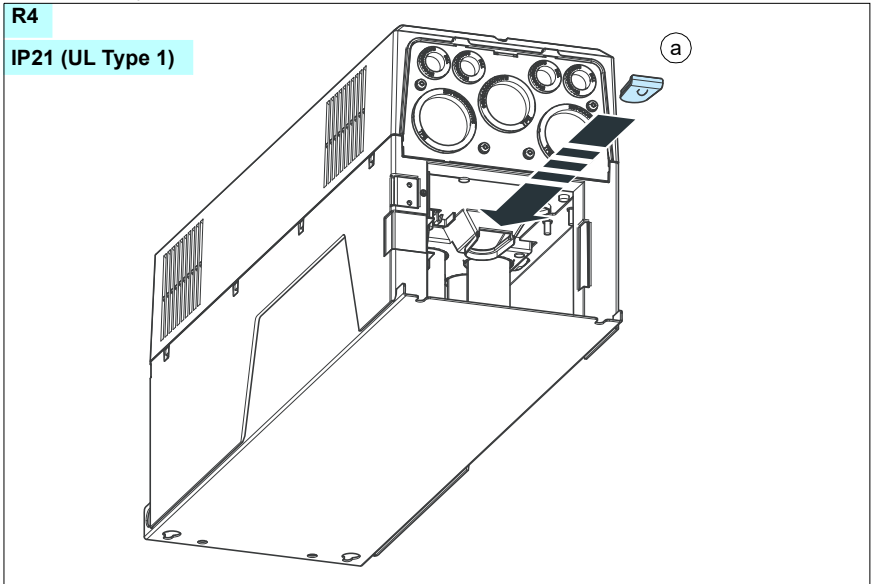


## Installation procedure

1. To remove the fan assembly, push the retaining clip with a flat screwdriver. Lift the assembly up.



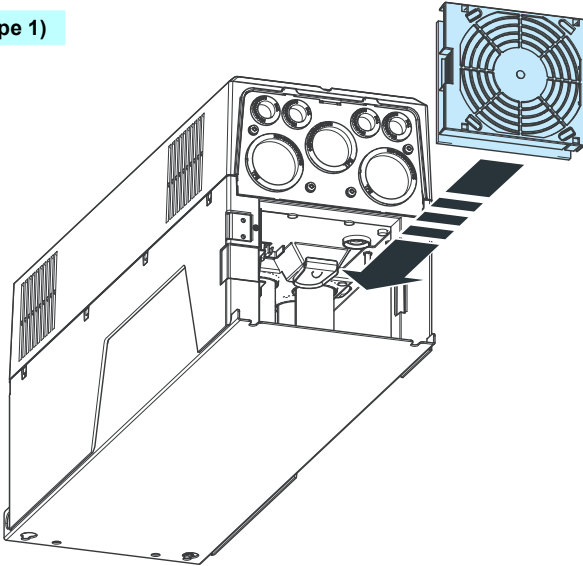
2. Insert the sealing plug (a) to the hole. For IP55 (UL Type 12) the plug is installed at the factory.



3. Reinstall the fan assembly.

**R4**

**IP21 (UL Type 1)**

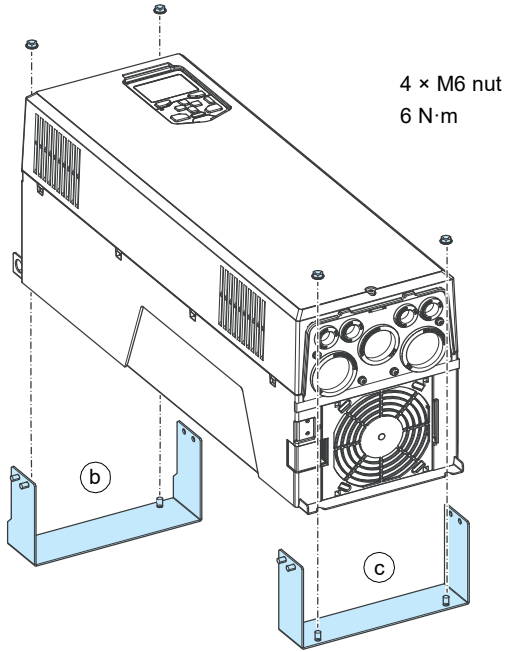


4. To install the internal fan for IP21 drives, see the hardware manual section *Replacing the auxiliary cooling fan, IP55 (UL Type 12) frames R4*.

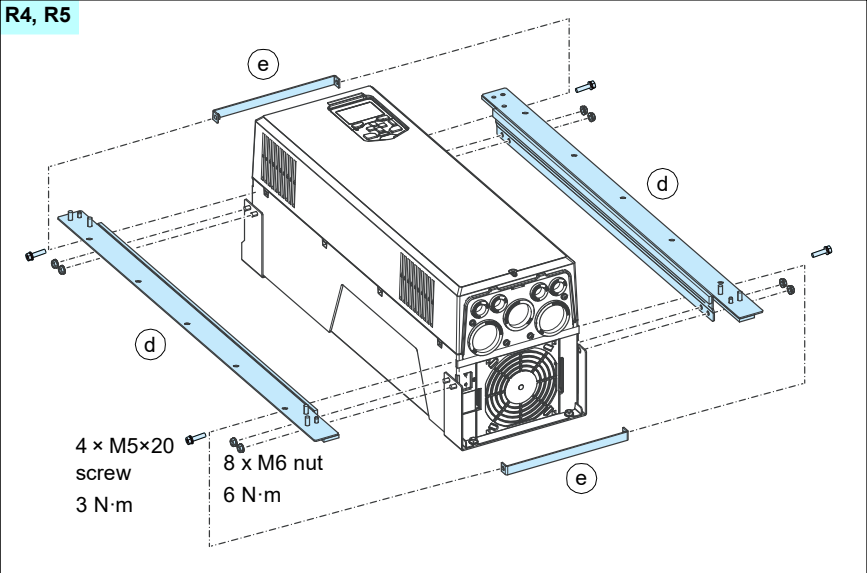


5. Attach the U-brackets (b and c) to the back of the drive.

R4, R5

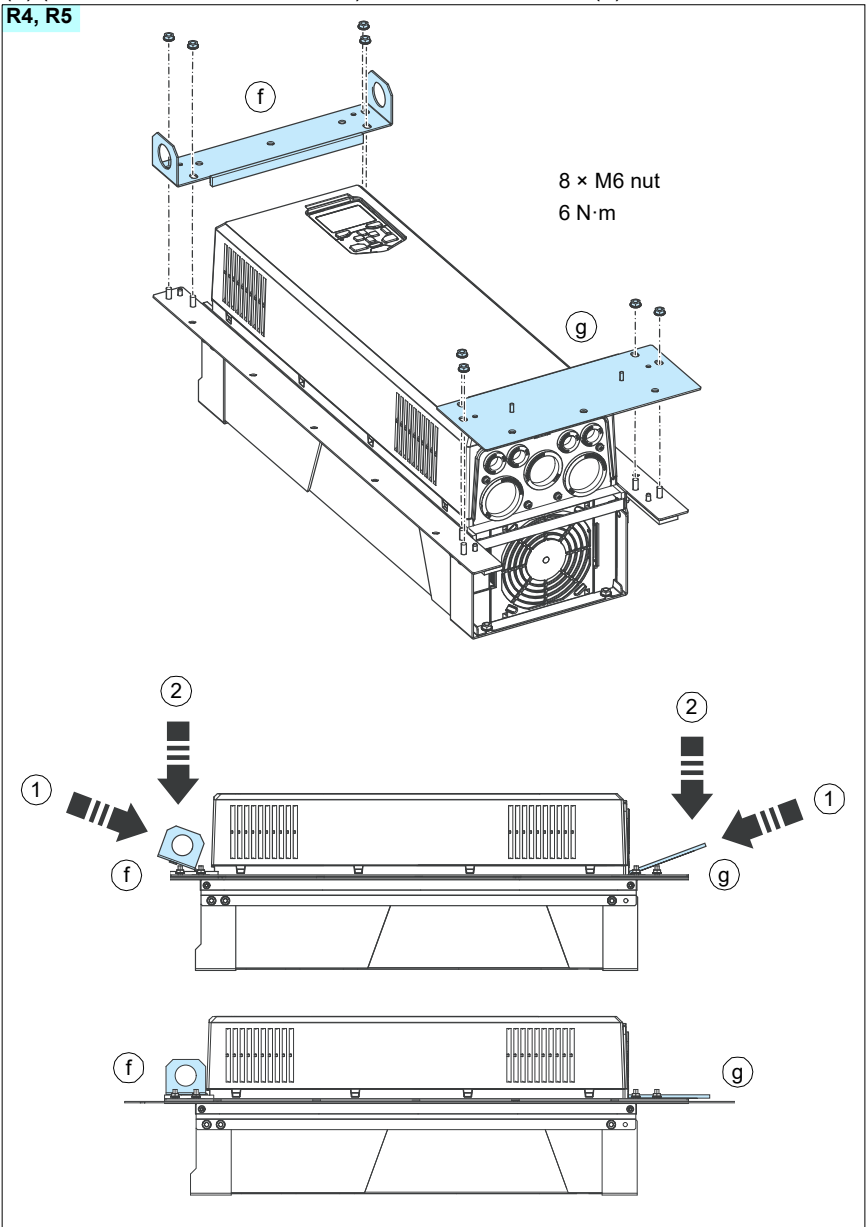


6. Attach the side brackets (d) to the U-brackets using M6 nuts finger-tight. Then use the tightening brackets (e, 4 × M5×20 screws) to press the side brackets against the module. Tighten the side bracket nuts.



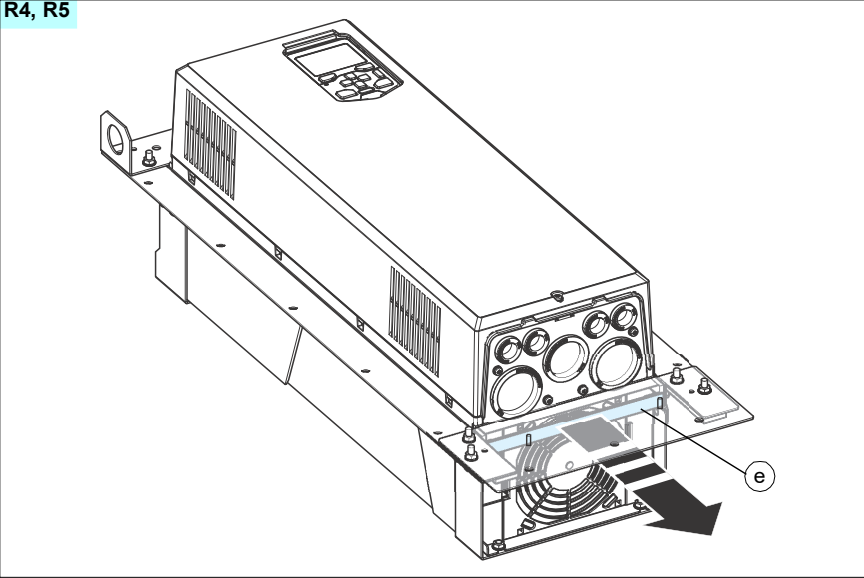


7. Attach the top (f) and bottom (g) brackets to the side brackets, first the inner sides (1) (the sides that touch the drive), then the outer sides (2).



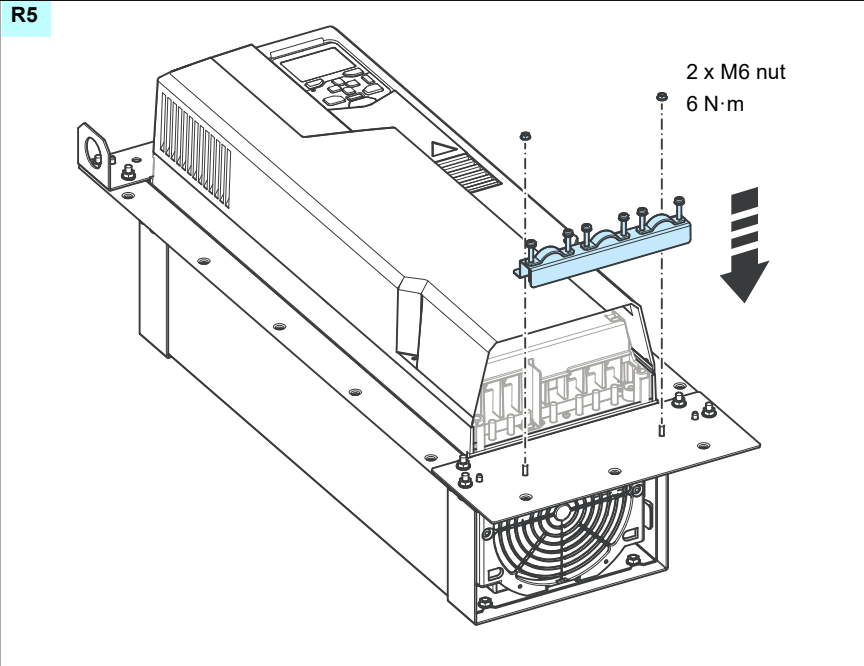
8. Remove the tightening bracket (e) from the front of the fan.

R4, R5



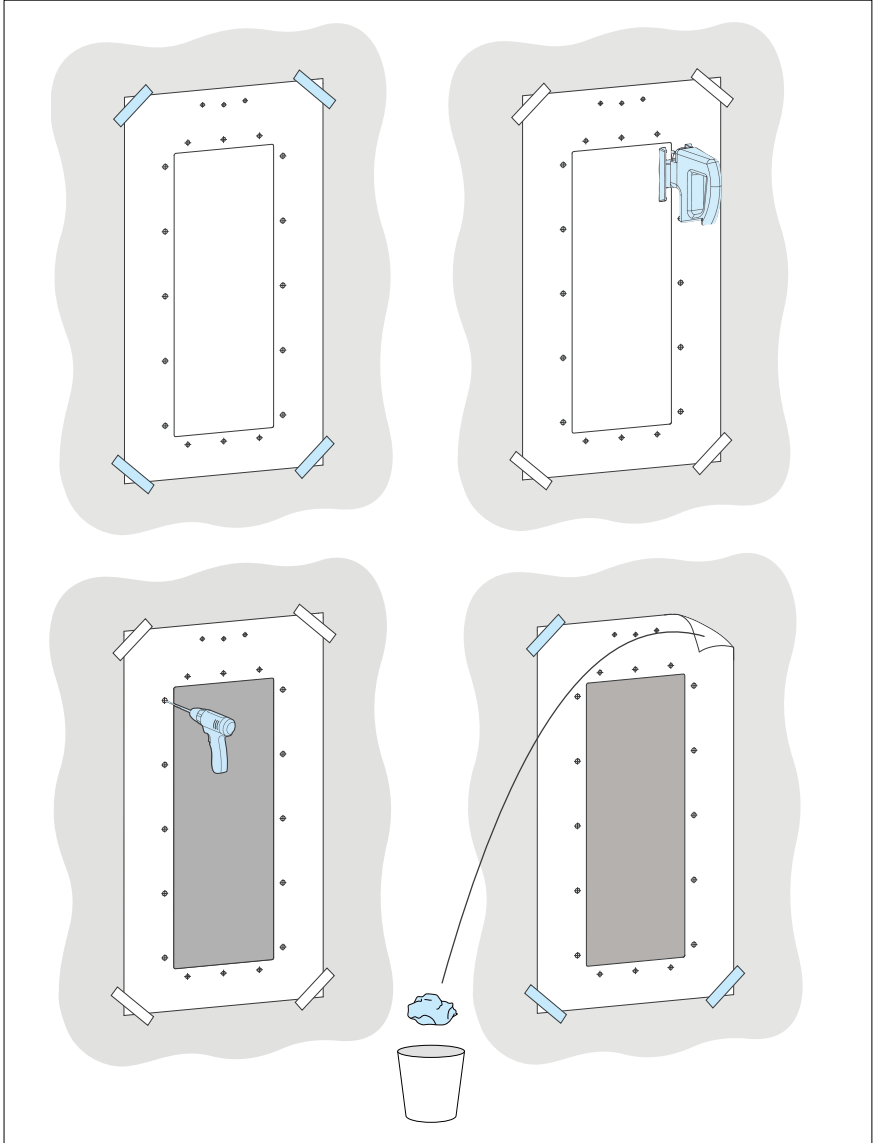
9. Attach the clamp plate.

R5



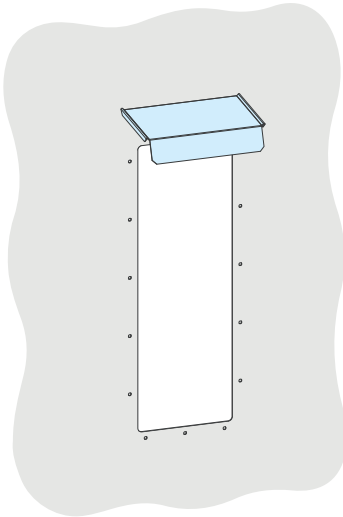
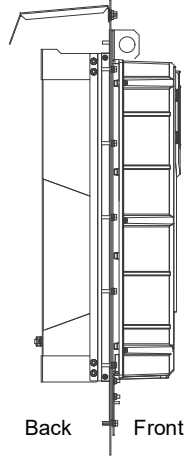
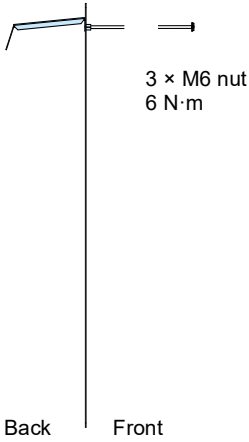
10. See chapter [Dimension drawings](#) for the dimensions of the flange and the required opening in the mounting plate. Attach the mounting template from the flange mounting kit package onto the mounting plate.

Make the opening and drill the holes for the mounting screws. Consider the hole size for the Rivet or Kalei nuts (not included in the delivery). Remove the mounting template.

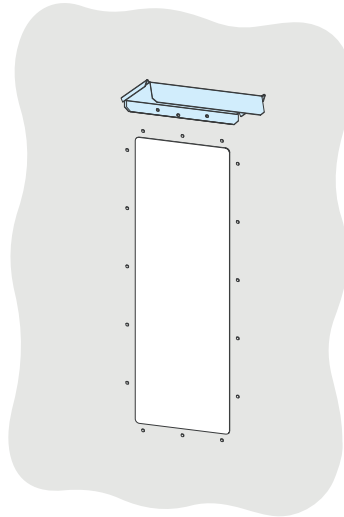


11. Attach the hood to the cooling channel for UL Type 12. The degree of protection is fulfilled on the drive backside when the flange and hood are installed. This step is not needed for IP55..

**UL Type 12**



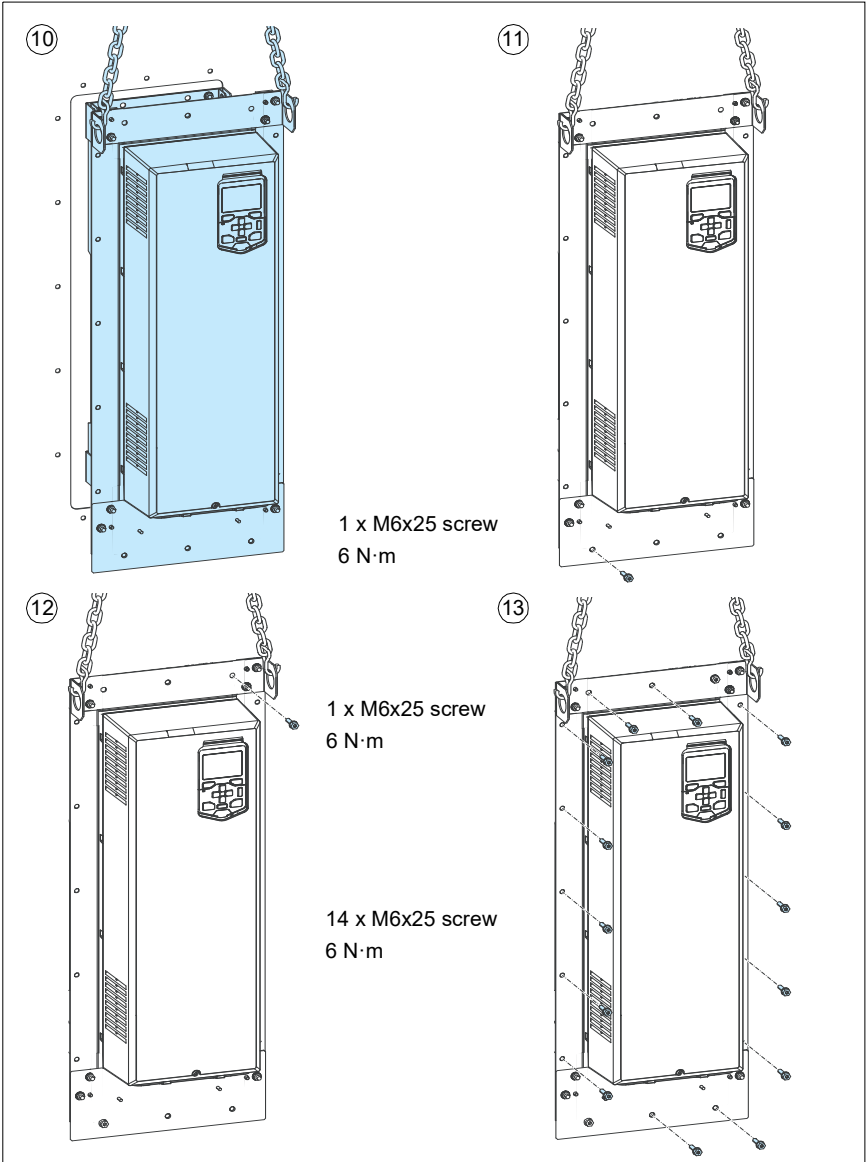
Back: View from top



Back: View from bottom



12. Attach the chains to the lifting holes of the flange and lift the drive with a lifting device onto the opening in the mounting plate.
13. Attach the bottom bracket with one screw.
14. Attach the top bracket with one screw.
15. Attach the rest of the mounting screws. Remove the chains.





# 6

## Mechanical installation – Frames R6 to R9

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### Contents of this chapter

This chapter describes how to install drive frames sizes R6 to R9 with the flange mounting kit mechanically.

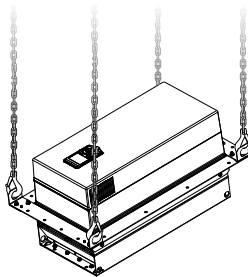
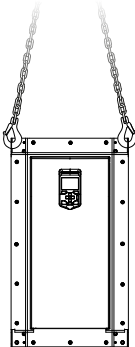


### Safety

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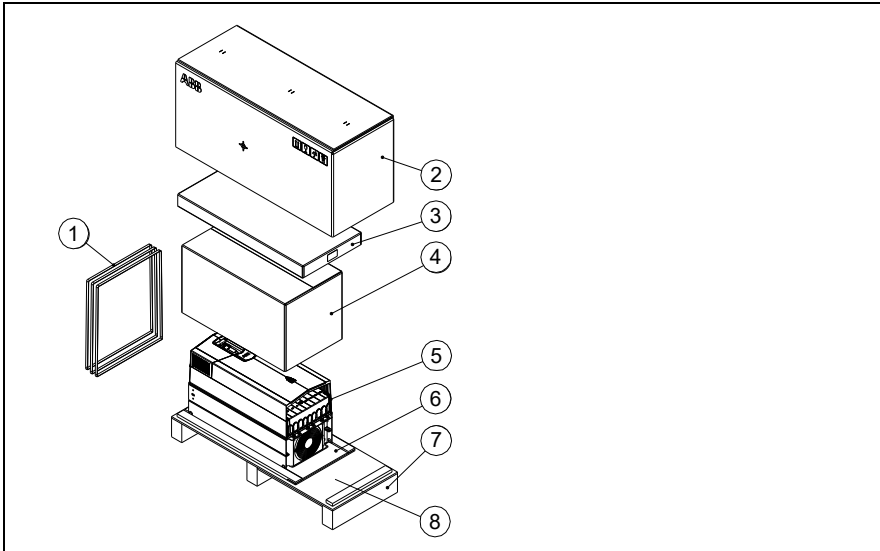
**WARNING!** For frame sizes R6 to R9: Use the lifting eyes of the drive when you lift the drive. Do not tilt the drive. The drive is heavy and its center of gravity is high. An overturning drive can cause physical injury.



## Unpacking and examining the delivery

### ■ Transport package contents

The flange mounting kit package is on the side of the drive package or sent separately. Examine that all items are present and there are no signs of damage. Read the data on the type designation label of the drive to make sure that the drive is of the correct type.



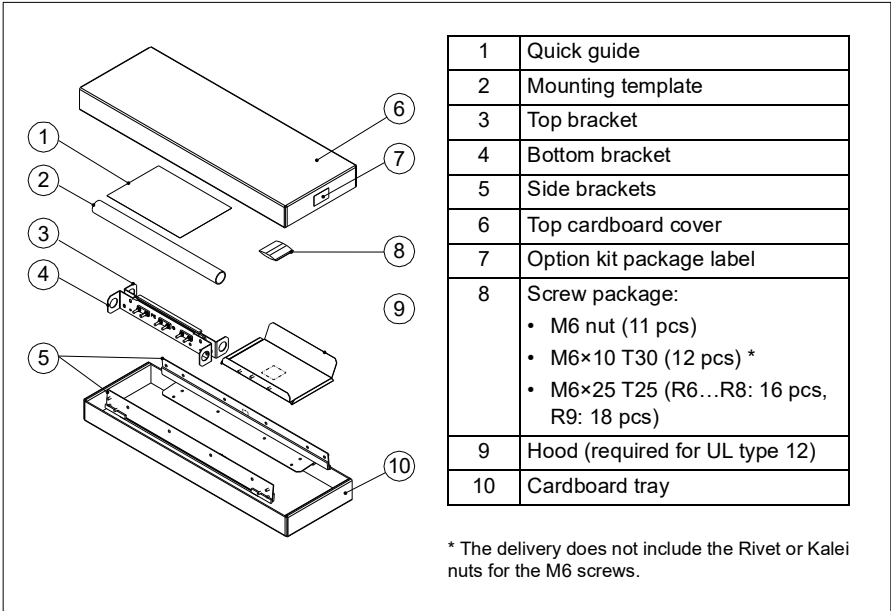
Item	Description	Item	Description
1	Straps	5	Drive with factory installed options
2	Cardboard cover	6	Pallet stopper
3	Flange mounting kit	7	Pallet tray
4	Cardboard sleeve	8	Printed manuals and quick guides, manuals CD and multilingual residual voltage warning stickers

To unpack:

- Cut the straps (1).
- Remove the cardboard cover (2).
- Lift the flange mounting kit (3).
- Remove the cardboard sleeve (4).
- Attach lifting hooks to the lifting eyes of the drive (5). Lift the drive with a hoist.



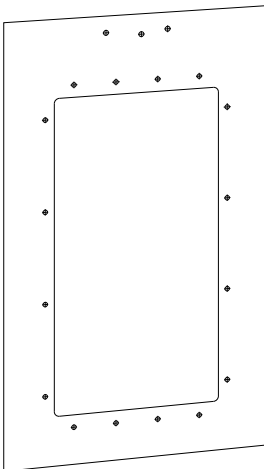
## Flange kit contents



### Mounting template

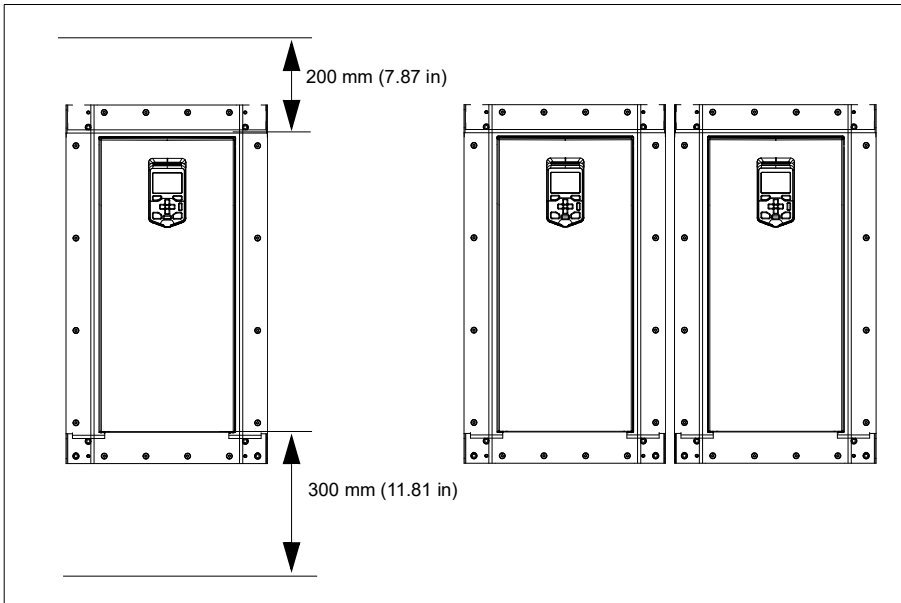
The flange mounting kit package includes a template in actual size for drilling the attaching holes and cutting the hole in the mounting plate.

An example template is shown below.



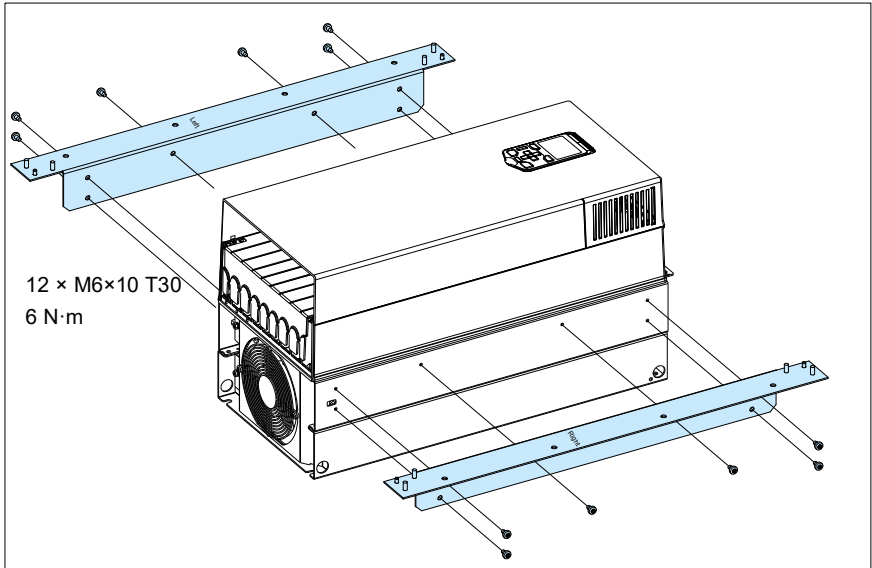
## Free space requirements

The flange-mounted drives can be installed side by side. For free space requirements above and below the drives, see the table.

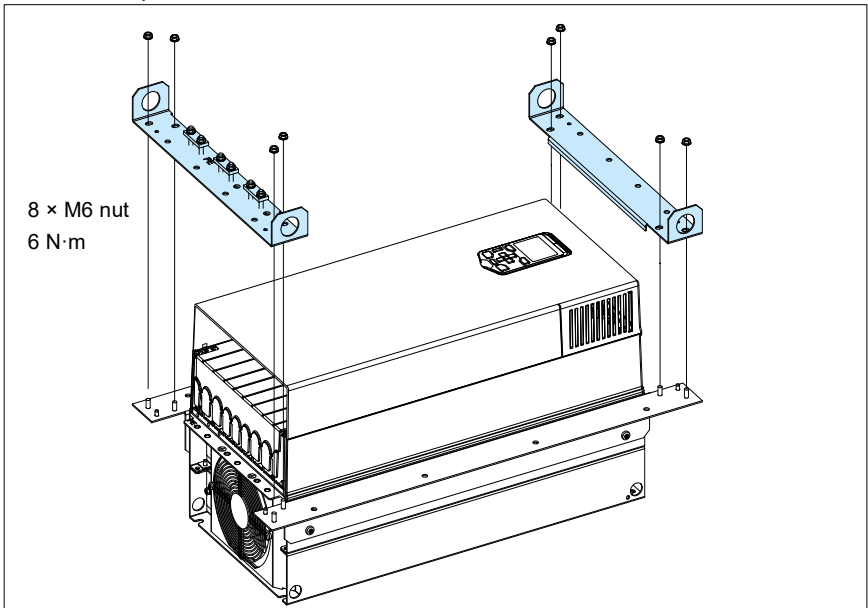


## Installation process

1. Attach the side brackets to the drive.

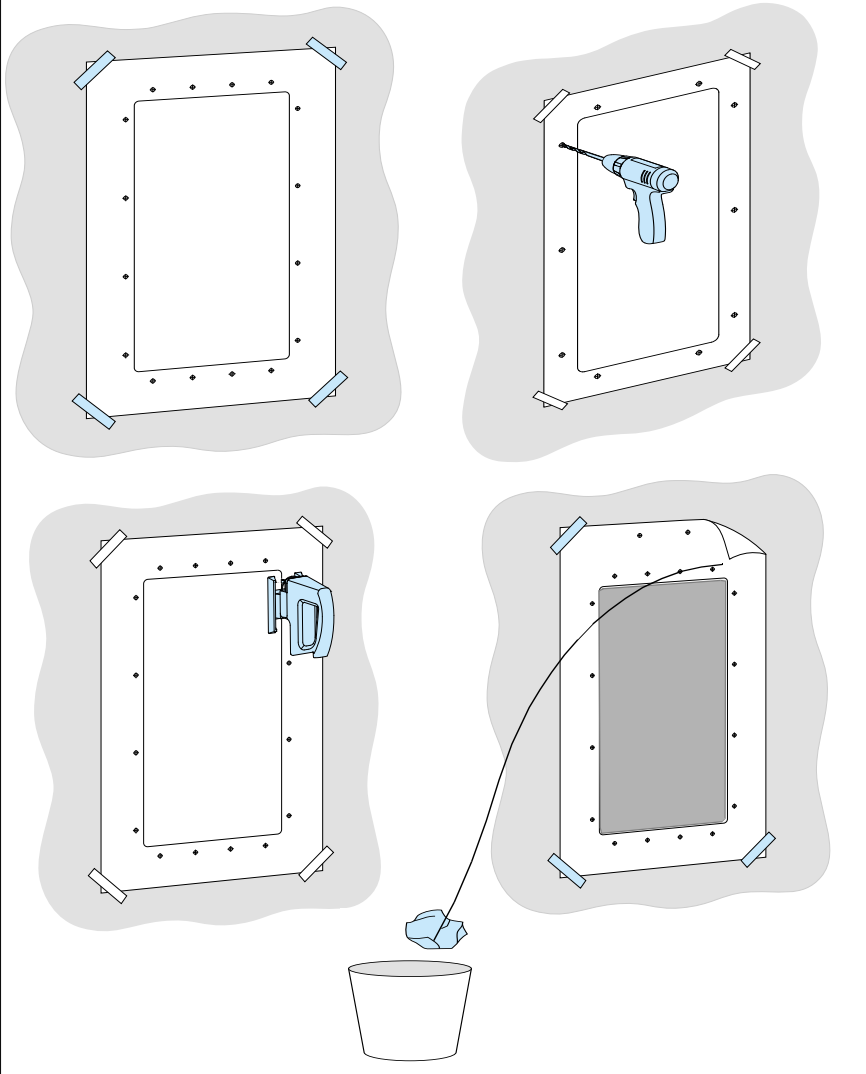


2. Attach the top and bottom brackets.



- See chapter *Dimension drawings* for the dimensions of the flange and the required opening in the mounting plate. Attach the mounting template from the flange mounting kit package onto the mounting plate.

Make the opening and drill the holes for the mounting screws. Consider the hole size for the Rivet or Kalei nuts (not included in the delivery). Remove the mounting template.



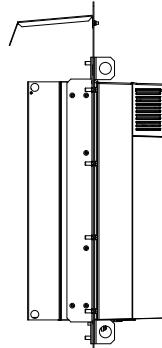
- Attach the hood to the cooling channel for UL Type 12. The degree of protection is fulfilled on the drive backside when the flange and hood are installed. This step is not needed for IP55.

**UL Type 12**

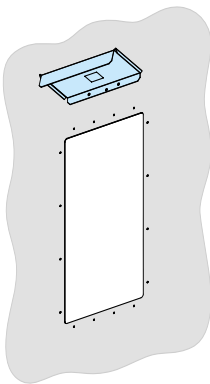
3 × M6 nut  
6 N·m



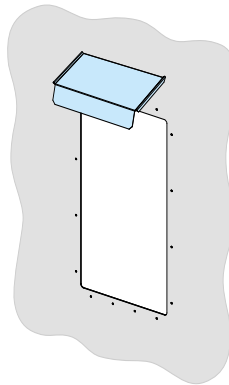
Back Front



Back Front



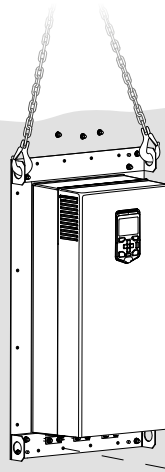
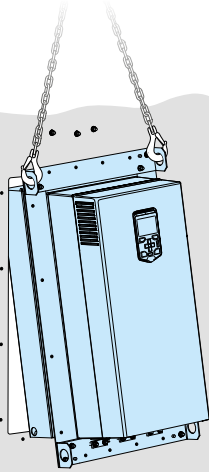
Back: View from bottom



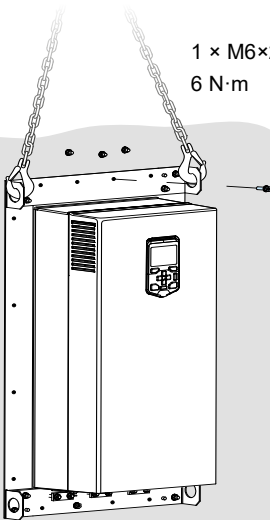
Back: View from top



5. Attach the chains to the lifting holes of the flange and lift the drive with a lifting device onto the opening in the mounting plate.
6. Attach the bottom bracket with one screw.
7. Attach the top bracket with one screw.
8. Attach the rest of the mounting screws. Remove the chains.



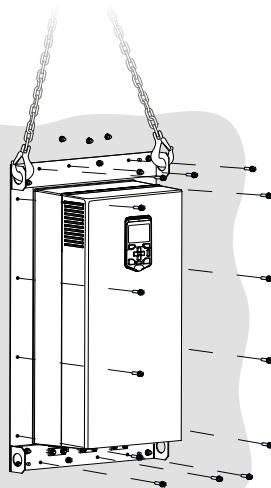
1 × M6×25  
6 N·m



1 × M6×25  
6 N·m

R6...R8:  
14 × M6×25  
6 N·m

R9:  
16 × M6×25  
6 N·m





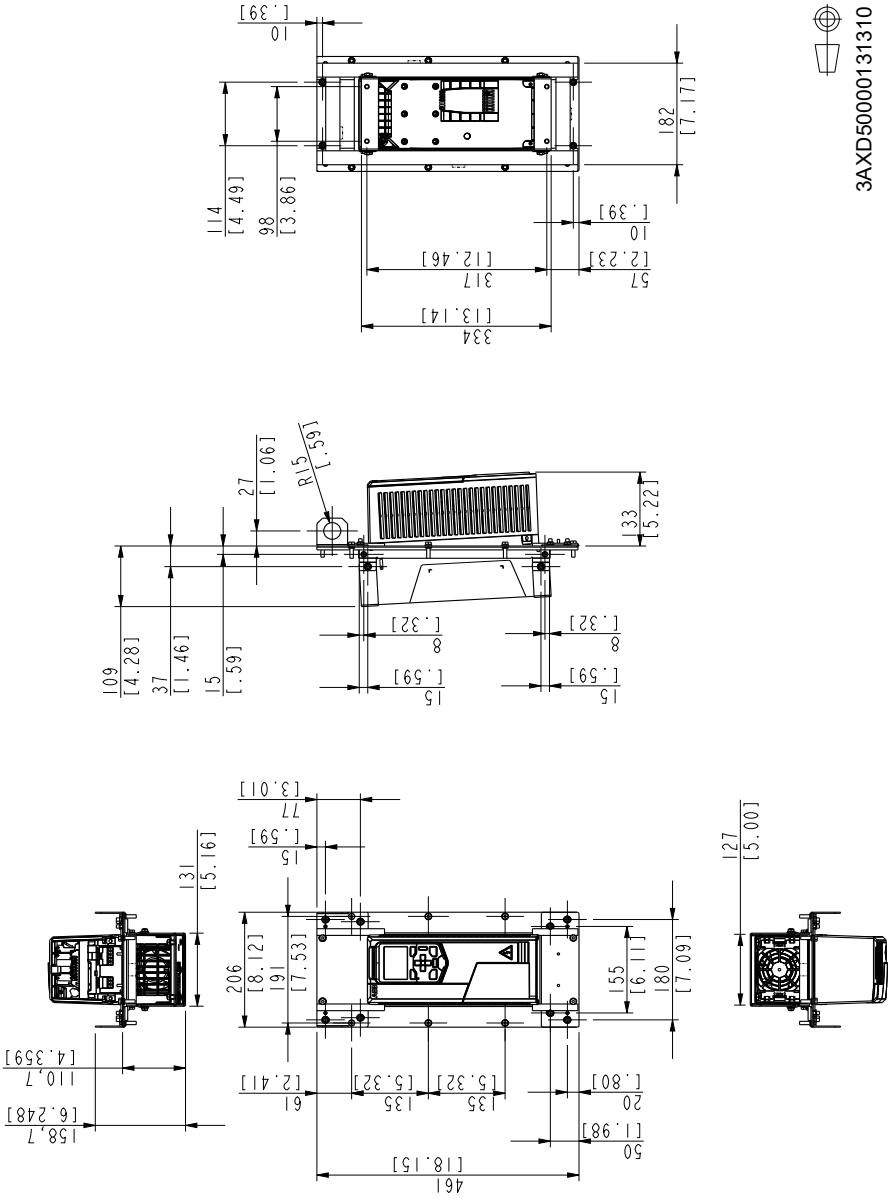
# Dimension drawings

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## Contents of this chapter

This chapter contains the dimension drawings of the flange mounting kits and required openings in the mounting plate.

# Frame R1



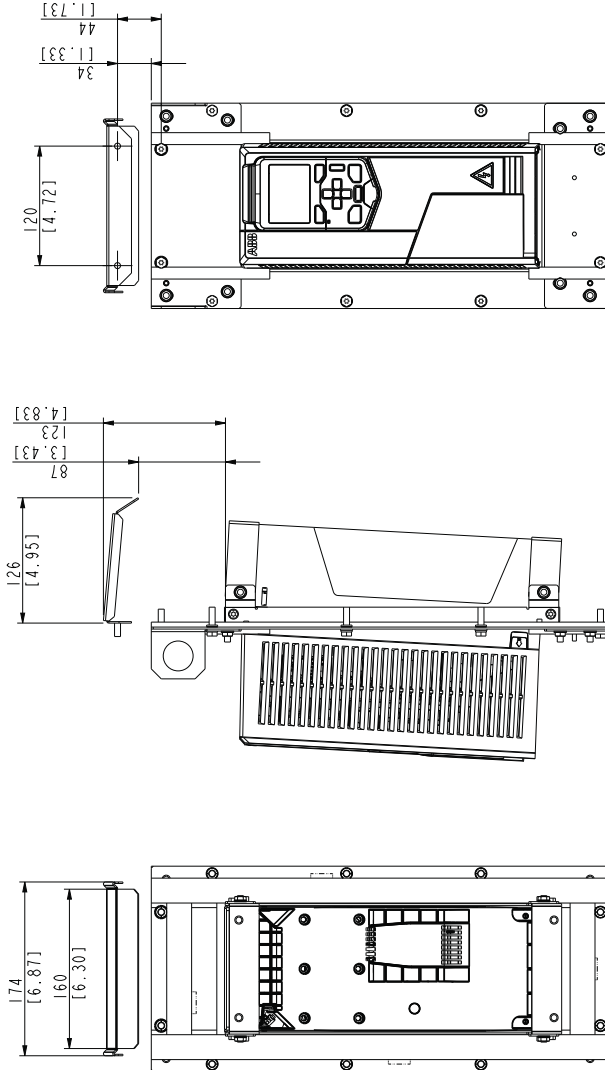
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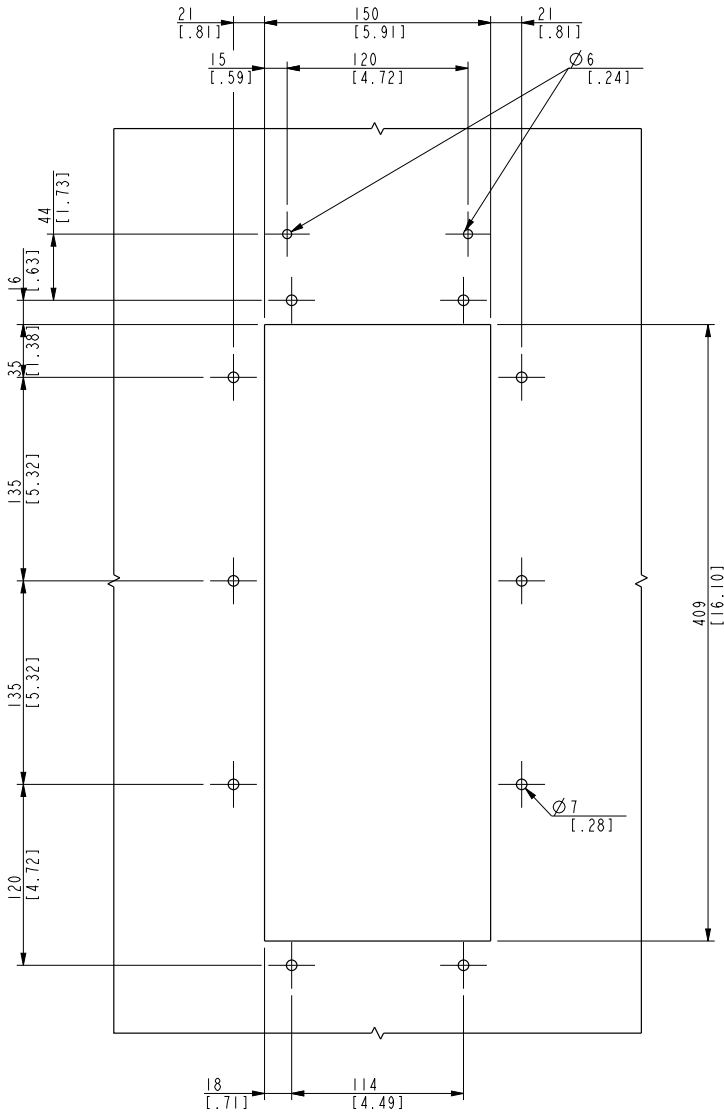
Hood is needed for UL Type 12 installation only



3AXD50000131242

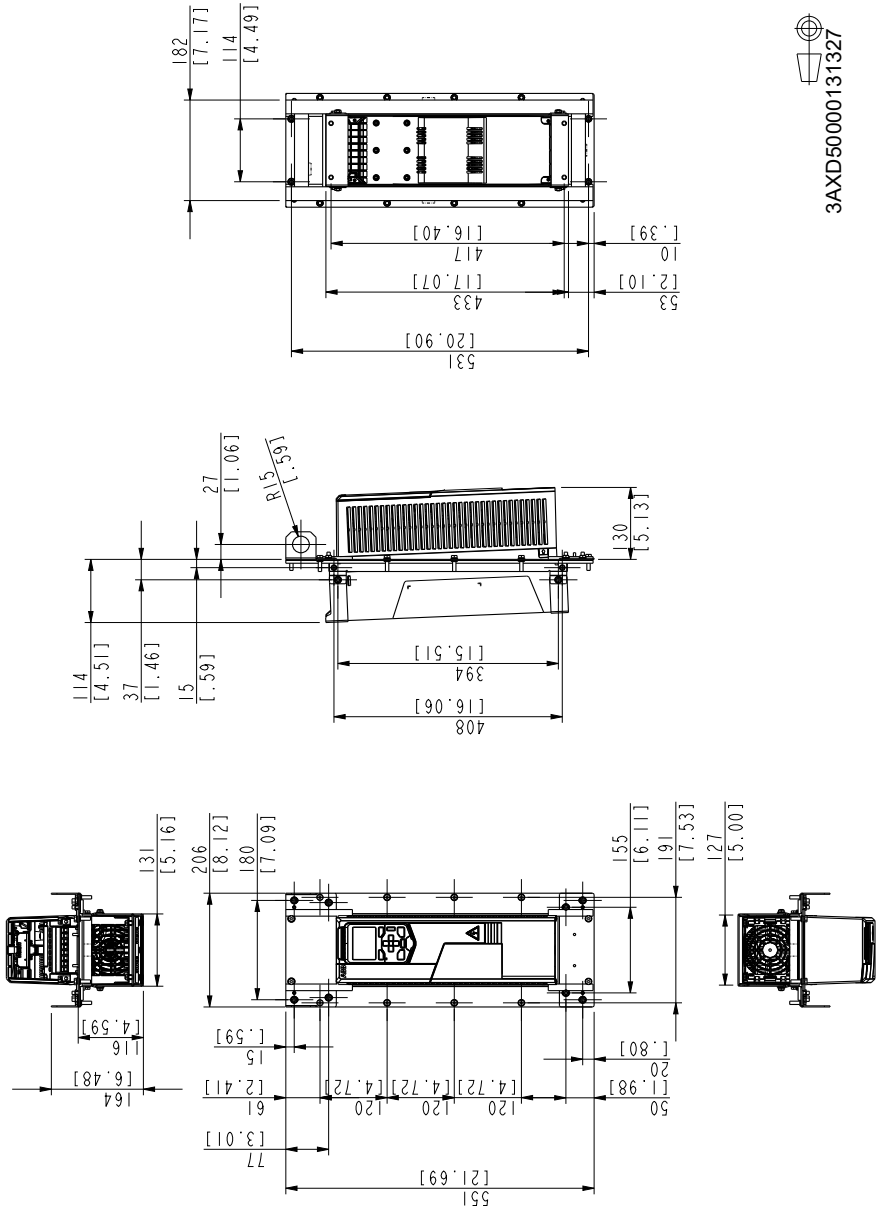


■ Attaching points and hole dimensions



3AXD50000035517

# Frame R2

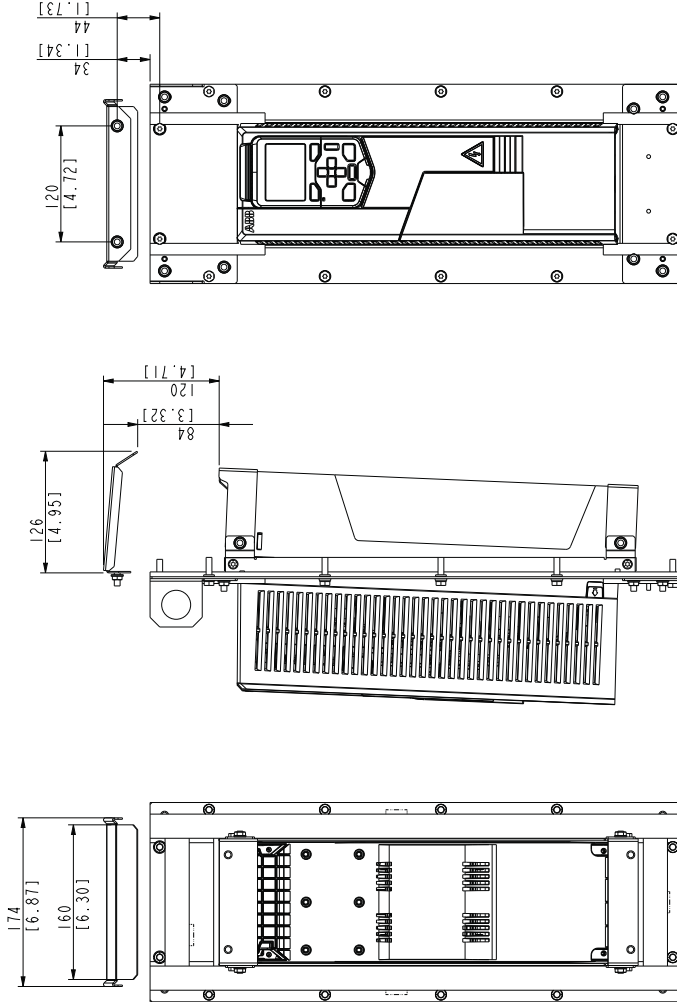


3AXD50000131327

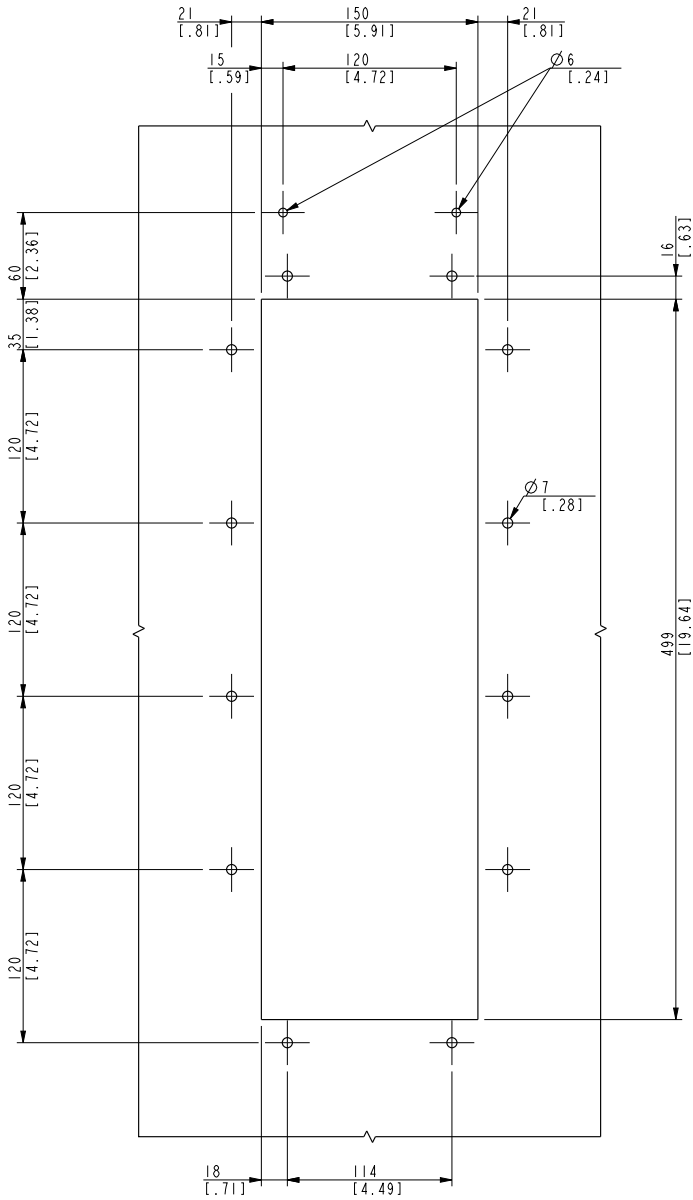
Hood is needed for UL Type 12 installation only



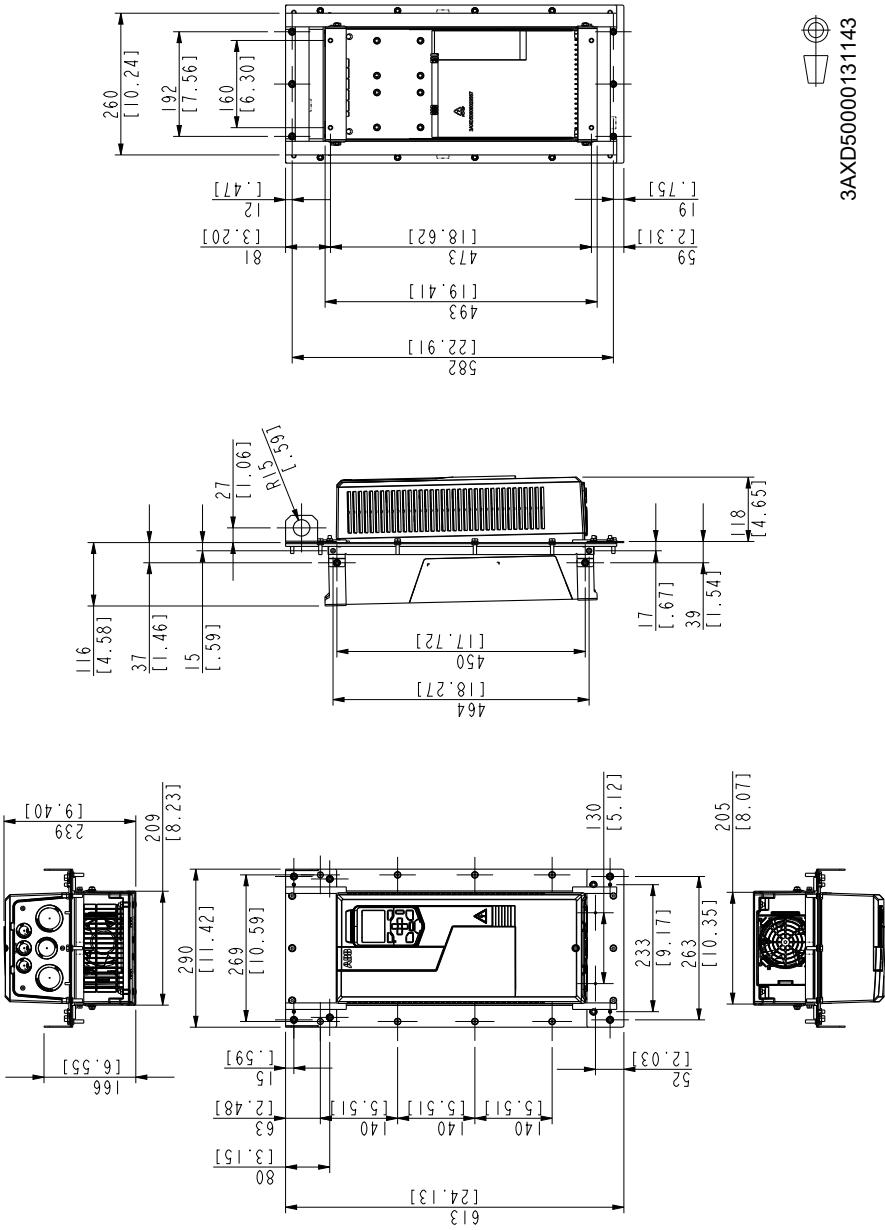
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■ Attaching points and hole dimensions



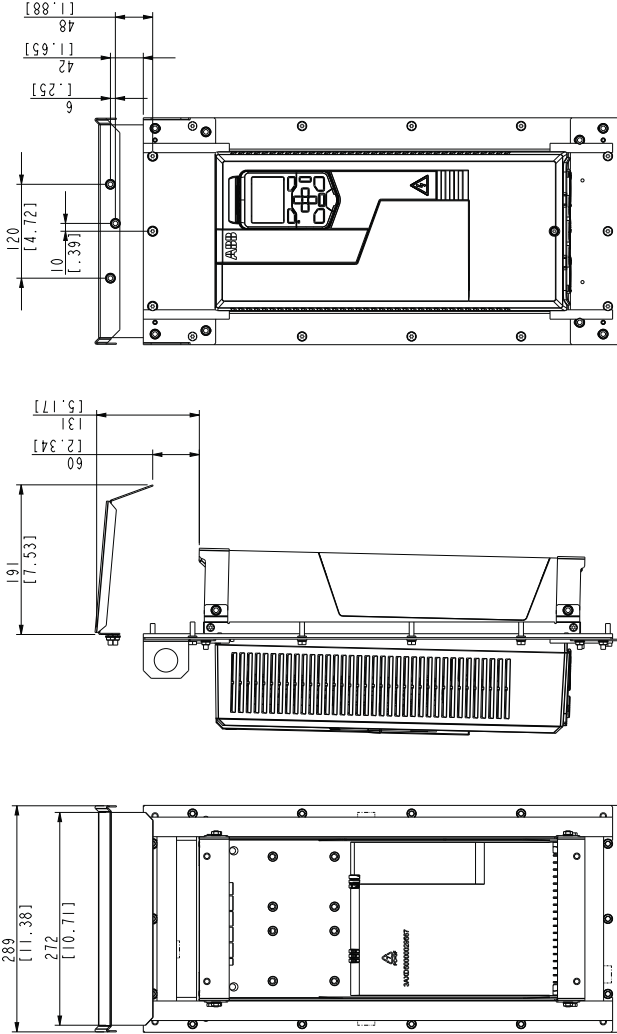
### Frame R3



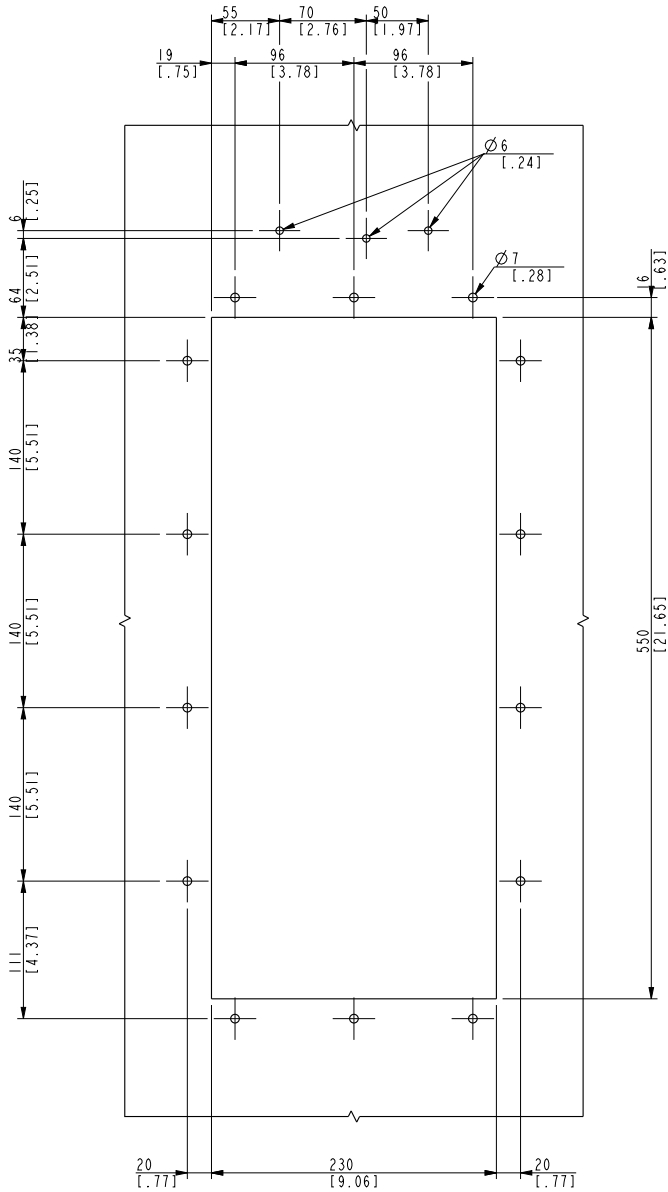
Hood is needed for UL Type 12 installation only



3AXD50000130870



■ Attaching points and hole dimensions

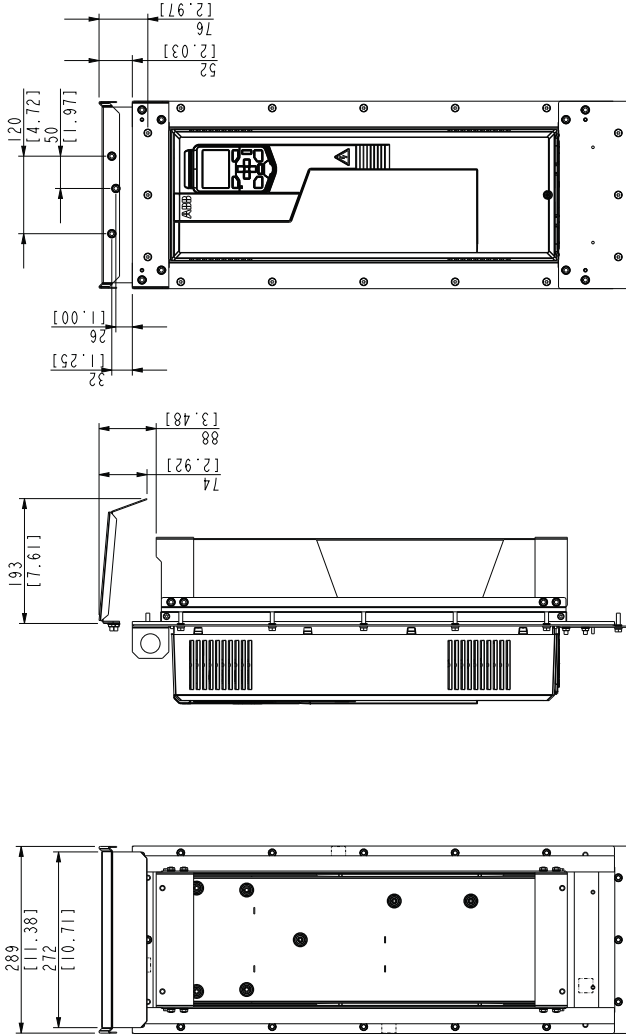


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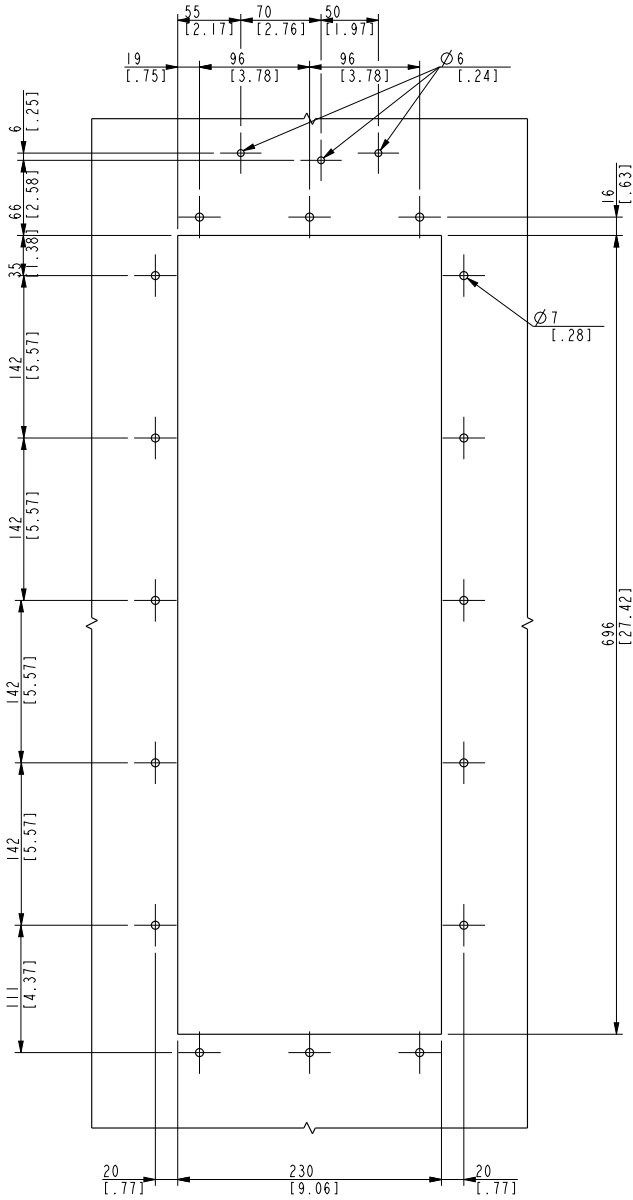


Hood is needed for UL Type 12 installation only



3AXD50000038179

■ Attaching points and hole dimensions

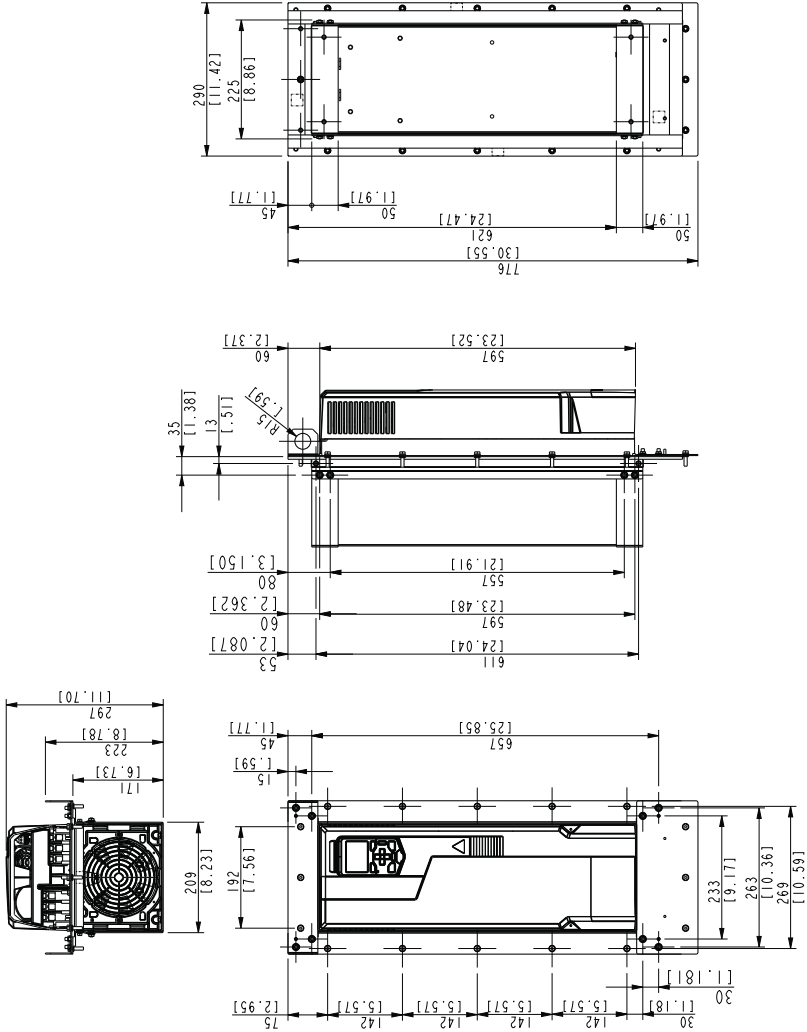


3AXD50000036765

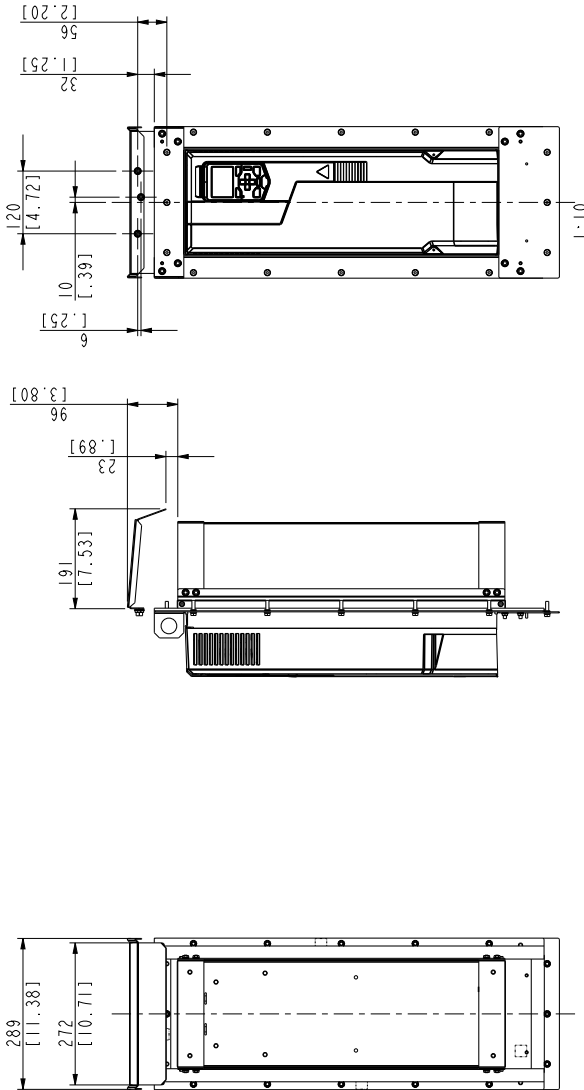
# Frame R5



3AXD50000038123

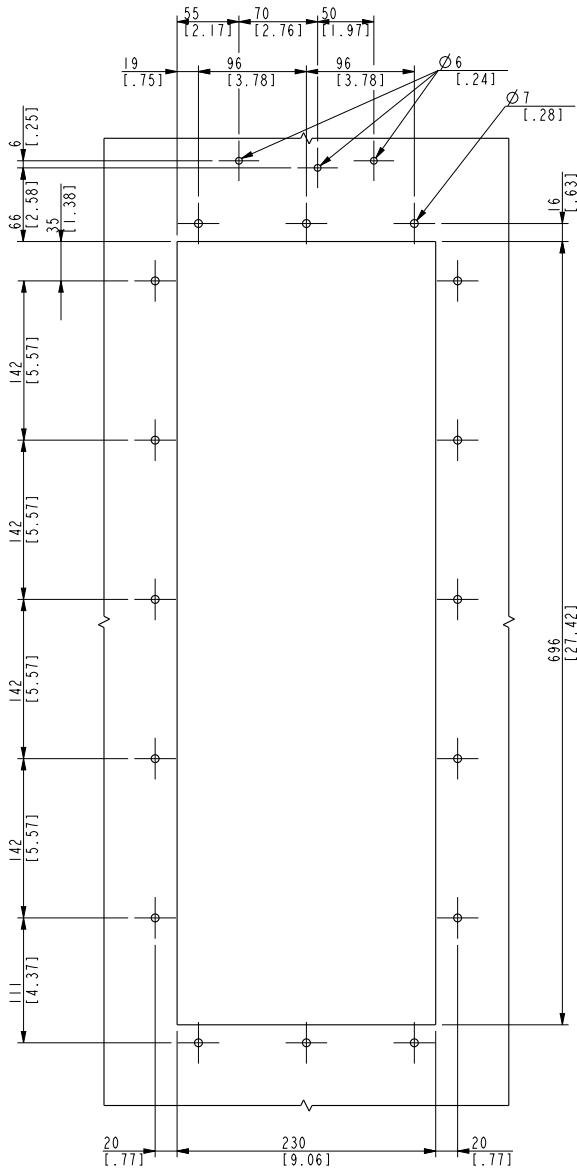


Hood is needed for UL Type 12 installation only



3AXD50000038180

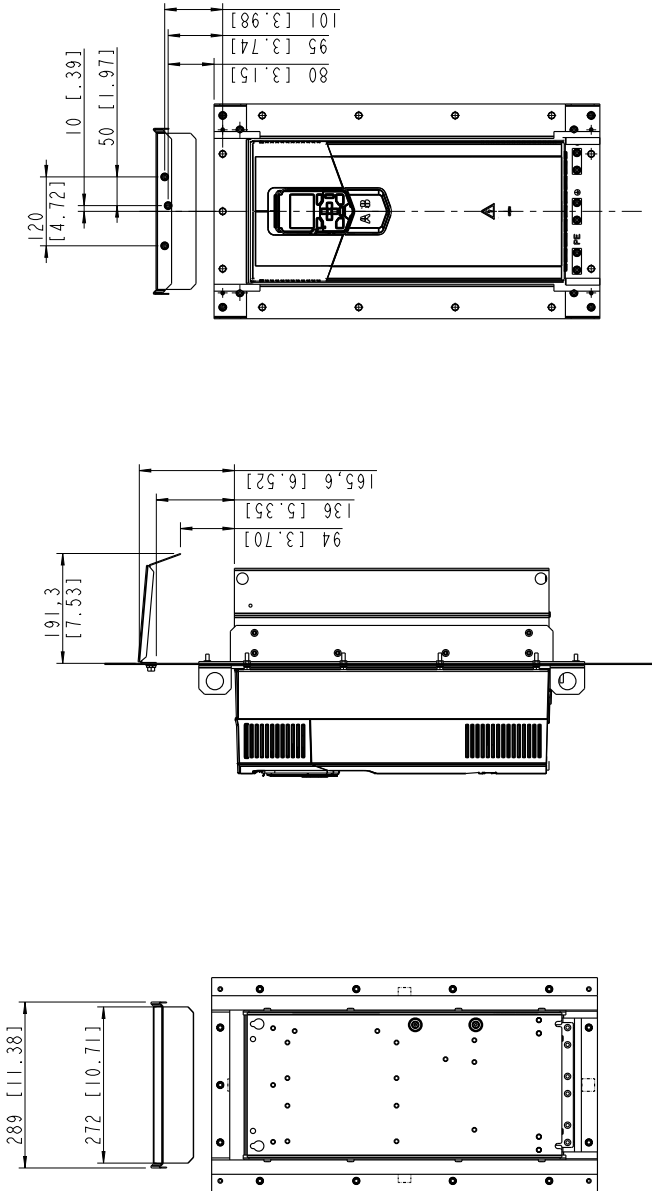
■ Attaching points and hole dimensions



3AXD50000430598



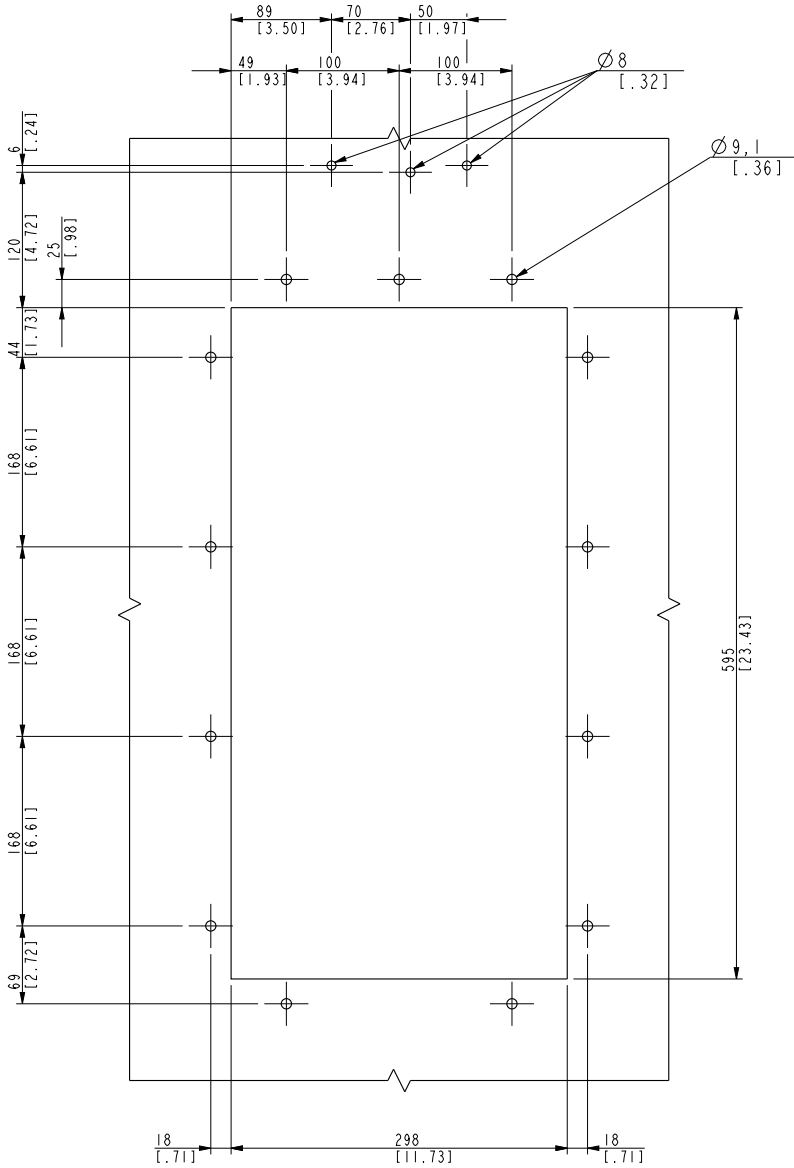
Hood is needed for UL Type 12 installation only



3AXD50000021919

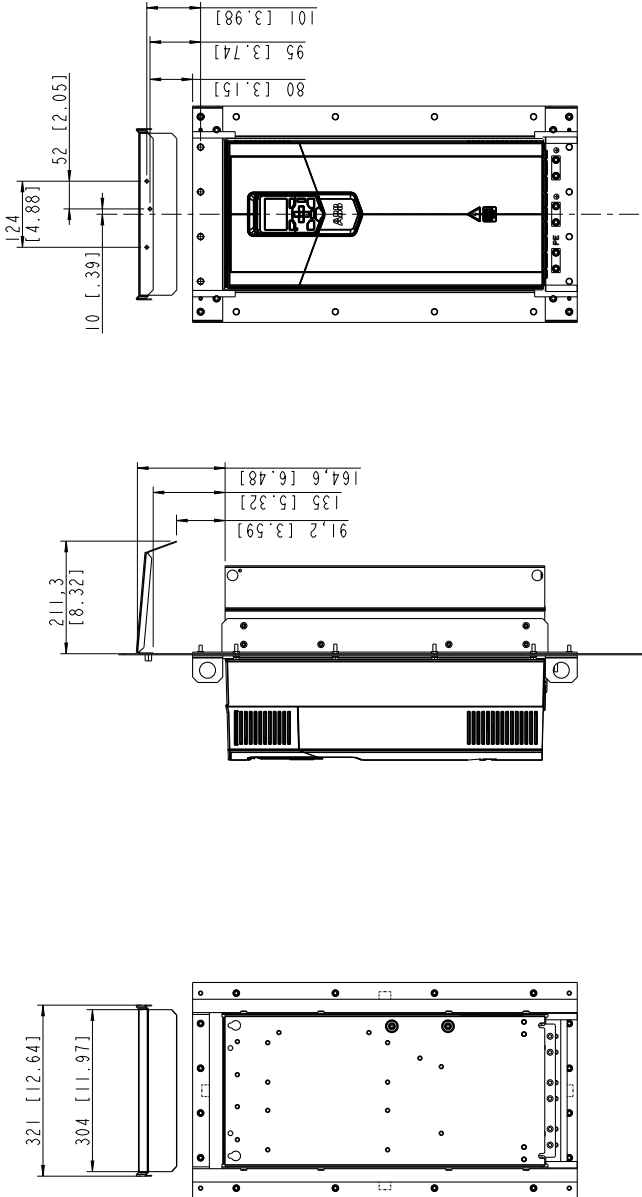


■ Attaching points and hole dimensions



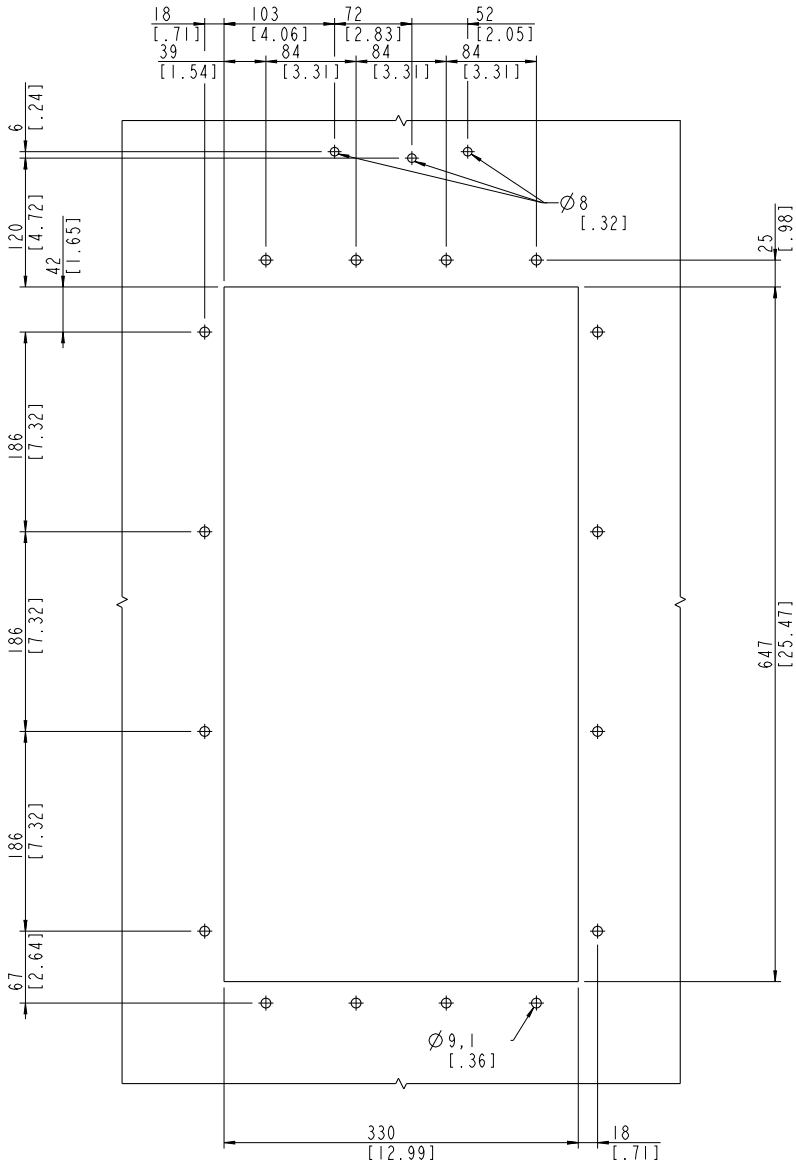


Hood is needed for UL Type 12 installation only

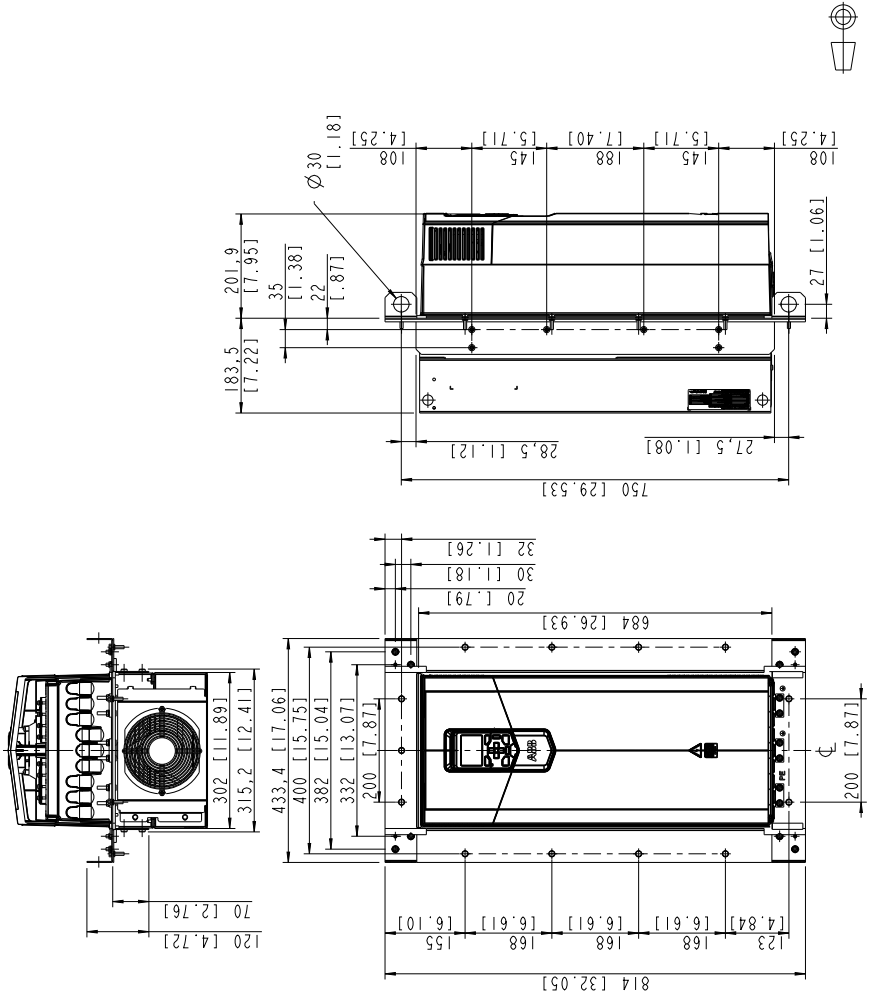


3AXD5000002 1920

■ Attaching points and hole dimensions

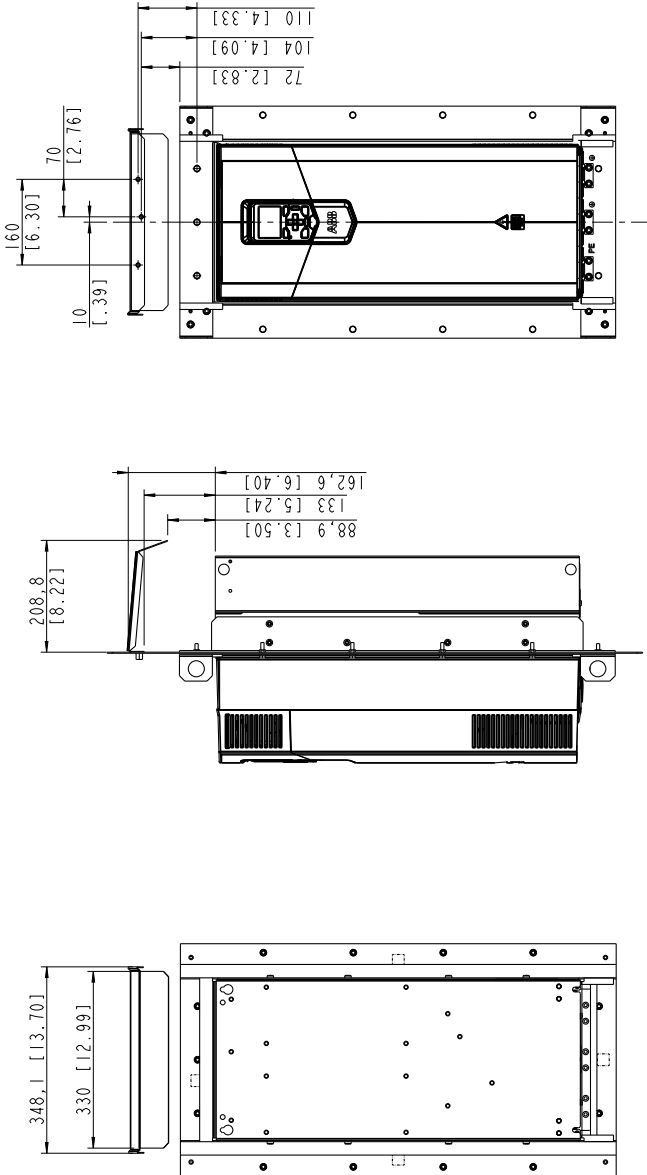


# Frame R8



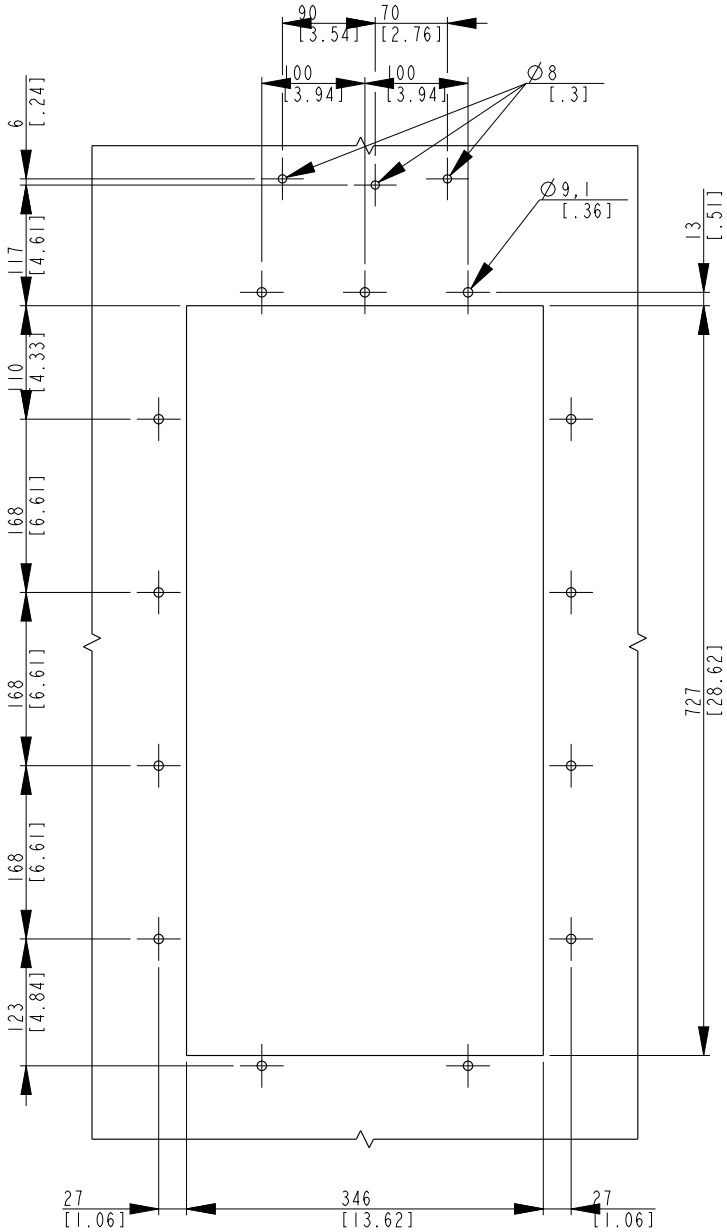
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Hood is needed for UL Type 12 installation only

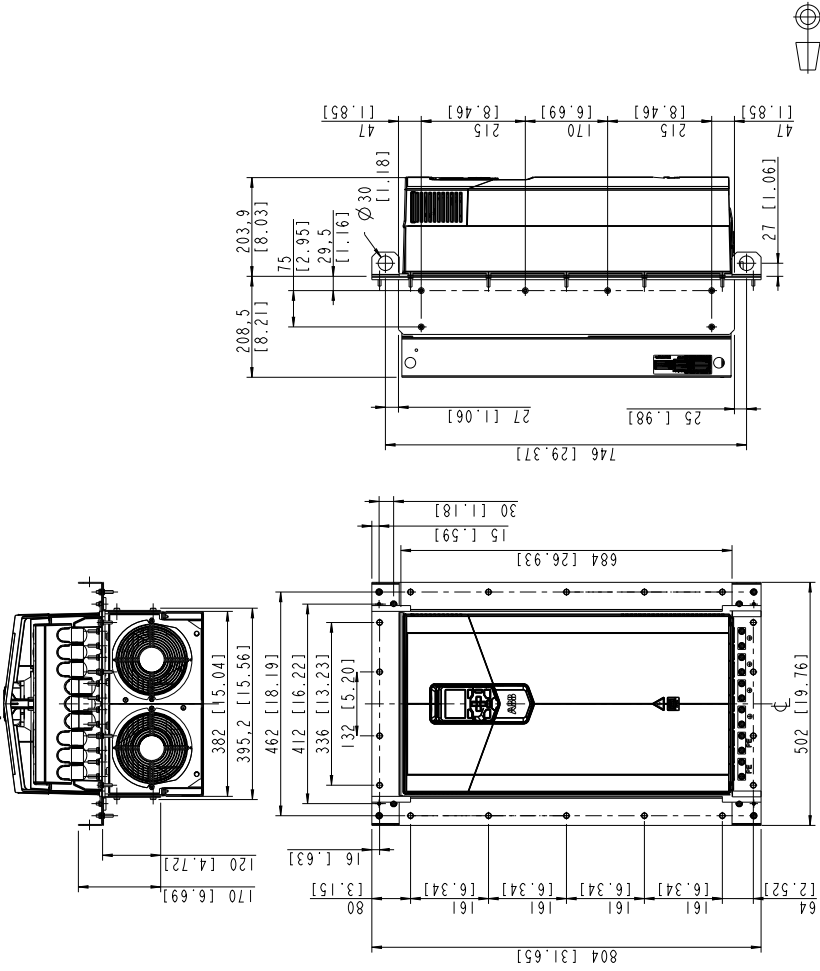


3AXD50000021921

■ Attaching points and hole dimensions



# Frame R9

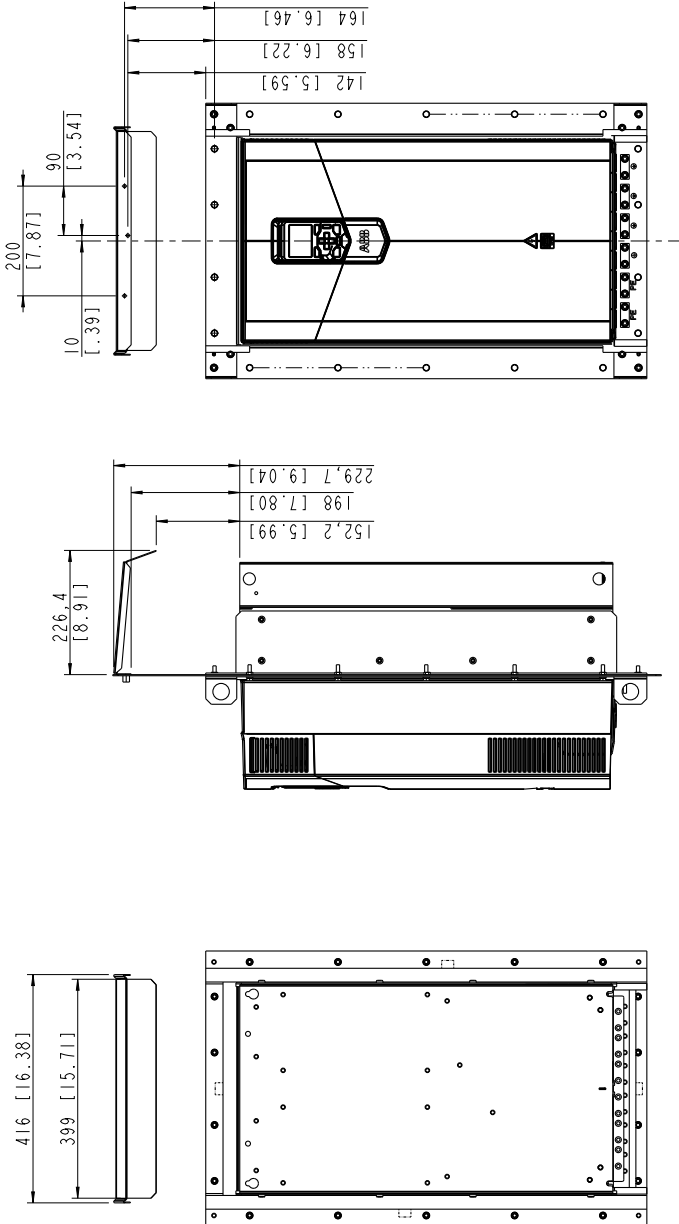


3AXD5000021922



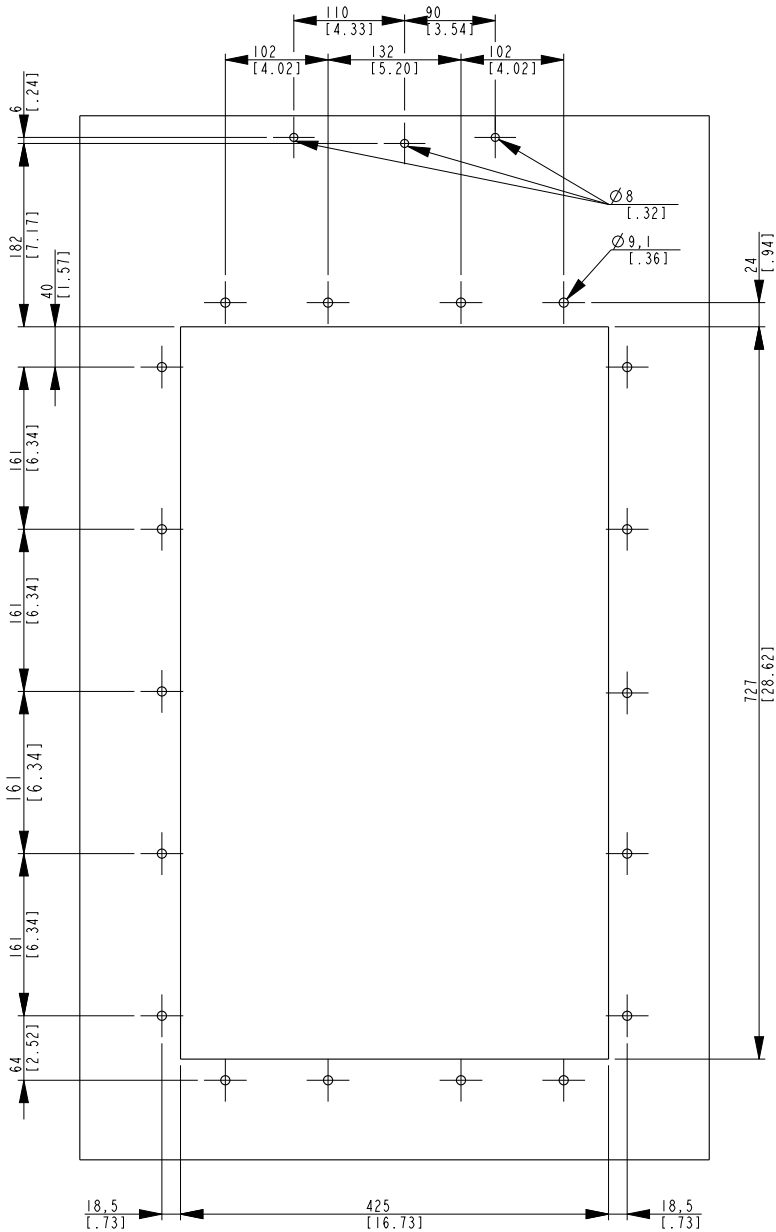


Hood is needed for UL Type 12 installation only



3AXD50000021922

■ Attaching points and hole dimensions



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# Further information

## **Product and service inquiries**

Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to [abb.com/searchchannels](http://abb.com/searchchannels).

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[abb.com/drives](http://abb.com/drives)

