

ABB INDUSTRIAL DRIVES

ACS880 multidrives cabinets

Mechanical installation instructions



ACS880 multidrives cabinets

Mechanical installation instructions

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1. Mechanical installation



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Mechanical installation

Contents of this chapter

This chapter describes the mechanical installation procedure of the drive.

Examining the installation site

Examine the installation site. Make sure that:

- The installation site is sufficiently ventilated or cooled to remove heat from the drive. See the technical data.
- The ambient conditions of the drive meet the specifications. See the technical data.
- The material behind, above and below the drive is non-flammable.
- There is sufficient free space above the drive for cooling, maintenance, and operation of the pressure relief (if present).
- The floor that the drive cabinet is installed on is of non-flammable material, as smooth as possible, and strong enough to support the weight of the unit. Check the floor flatness with a spirit level. The maximum allowed deviation from the surface level is 5 mm (0.2 in) in every 3 meters (10 ft). Level the installation site, if necessary, as the cabinet is not equipped with adjustable feet.

Necessary tools

The tools required for moving the unit to its final position, fastening it to the floor and wall and tightening the connections are listed below:

- crane, fork-lift or pallet truck (check load capacity!), slate/spud bar, jack and rollers
 - Pozidriv and Torx screwdrivers
-



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- torque wrench
- set of wrenches or sockets.

Examining the delivery

The drive delivery contains:

- drive cabinet line-up
- optional modules (if ordered) installed onto the control unit(s) at the factory
- appropriate drive and optional module manuals
- delivery documents.

Make sure that there are no signs of damage. Before attempting installation and operation, see the information on the type designation labels of the drive to verify that the delivery is of the correct type.



Moving and unpacking the drive

Move the drive in its original packaging to the installation site as shown below to avoid damaging the cabinet surfaces and door devices. When you are using a pallet truck, check its load capacity before you move the drive.

The drive cabinet is to be moved in the upright position.

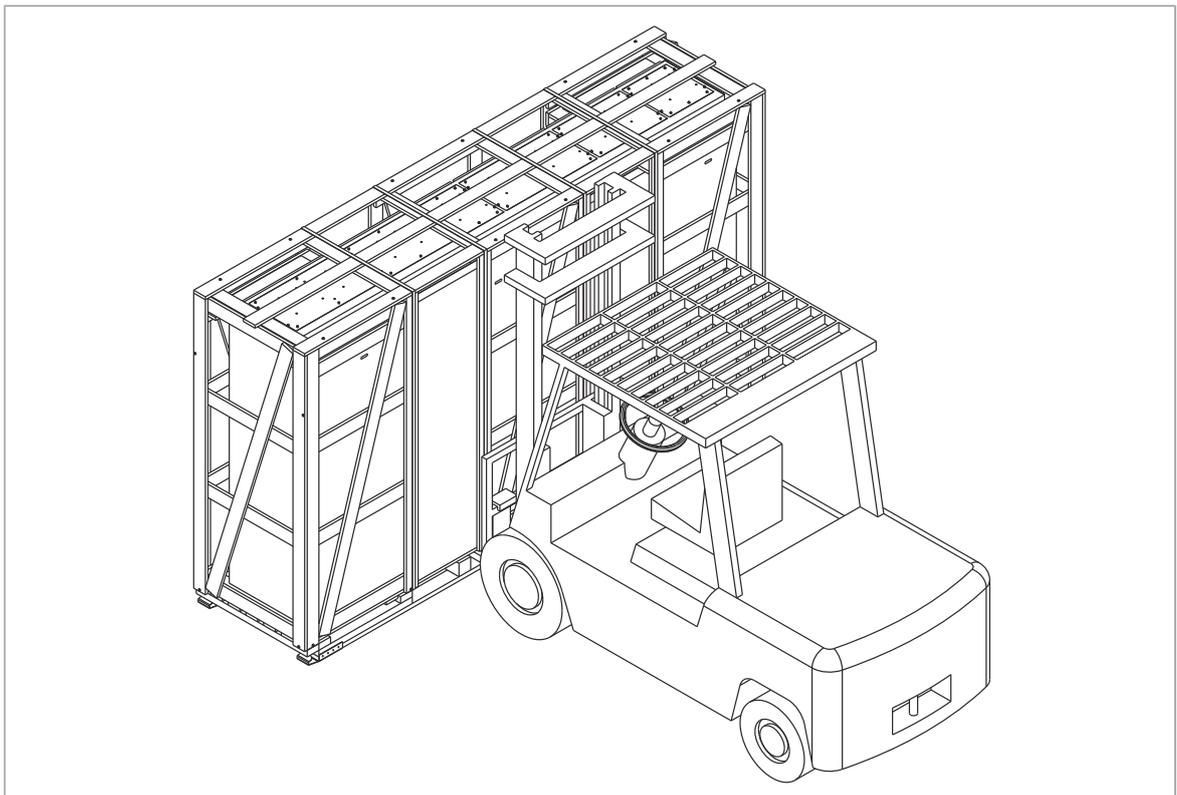
The center of gravity of the cabinet is high. Be therefore careful when moving the unit. Avoid tilting.

■ Moving the drive in its packaging

Lifting the crate with a forklift

**WARNING!**

Incorrect lifting can cause danger or damage. Obey the local laws and regulations applicable to lifting, such as requirements for planning the lift, for capacity and condition of lifting equipment, and for training of personnel.

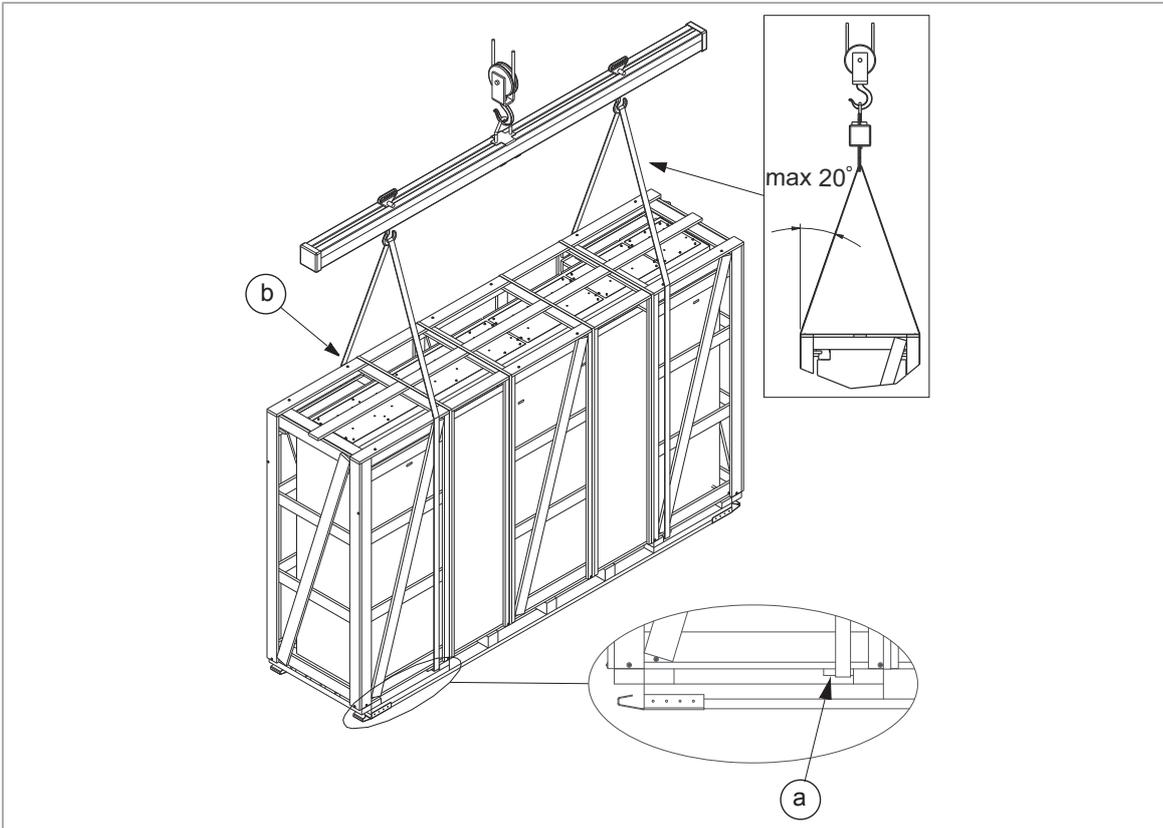


Lifting the crate with a crane



WARNING!

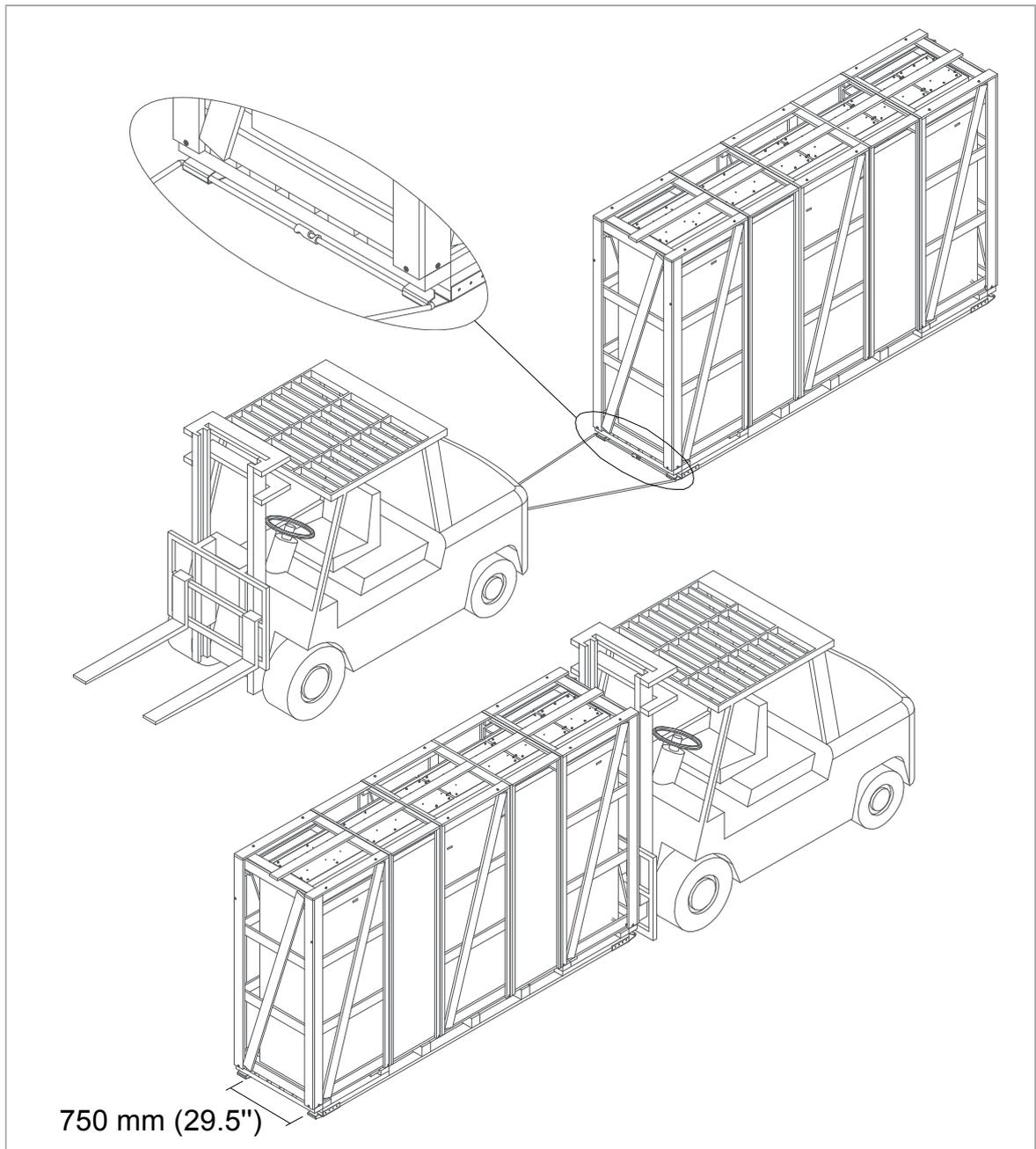
Incorrect lifting can cause danger or damage. Obey the local laws and regulations applicable to lifting, such as requirements for planning the lift, for capacity and condition of lifting equipment, and for training of personnel.



a	Lifting point
b	Optimal position for the lifting sling: as close to the traverse board as possible



Moving the crate with a forklift



■ Removing the transport package

Remove the transport package as follows:

1. Undo the screws that attach the wooden parts of the transport crate to each other.
2. Remove the wooden parts.
3. Remove the clamps with which the drive cabinet is mounted onto the transport pallet by undoing the fastening screws.
4. Remove the plastic wrapping.

■ Moving the unpacked drive cabinet

Lifting the cabinet with a crane

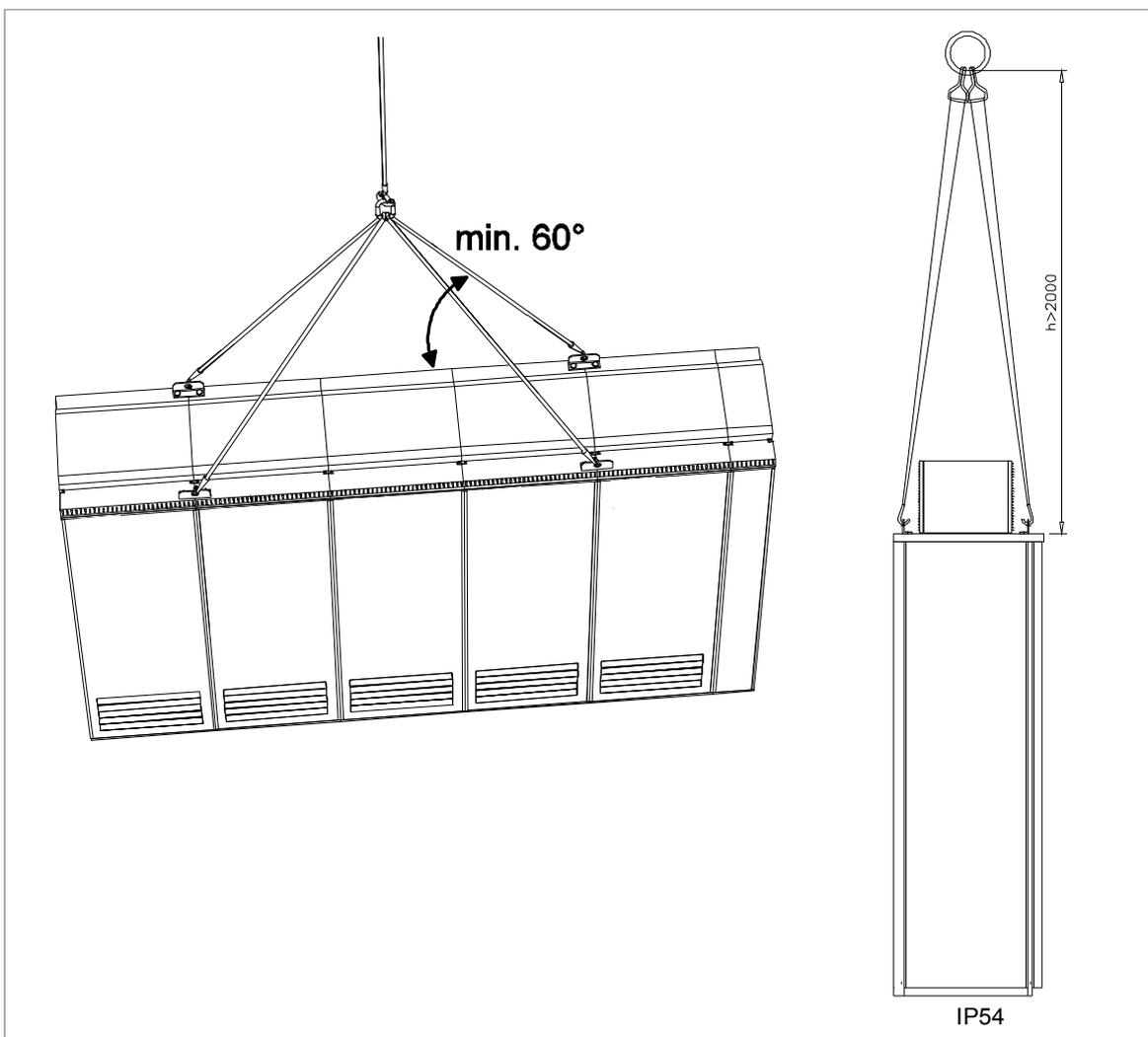


WARNING!

Incorrect lifting can cause danger or damage. Obey the local laws and regulations applicable to lifting, such as requirements for planning the lift, for capacity and condition of lifting equipment, and for training of personnel.

Lift the drive cabinet by its designated lifting points. Depending on the size of the cabinet, it has either bolt-on lifting lugs, or lifting bars with lifting holes.

Note: The minimum allowed height of the lifting slings with IP54 units is 2 meters (6'7").



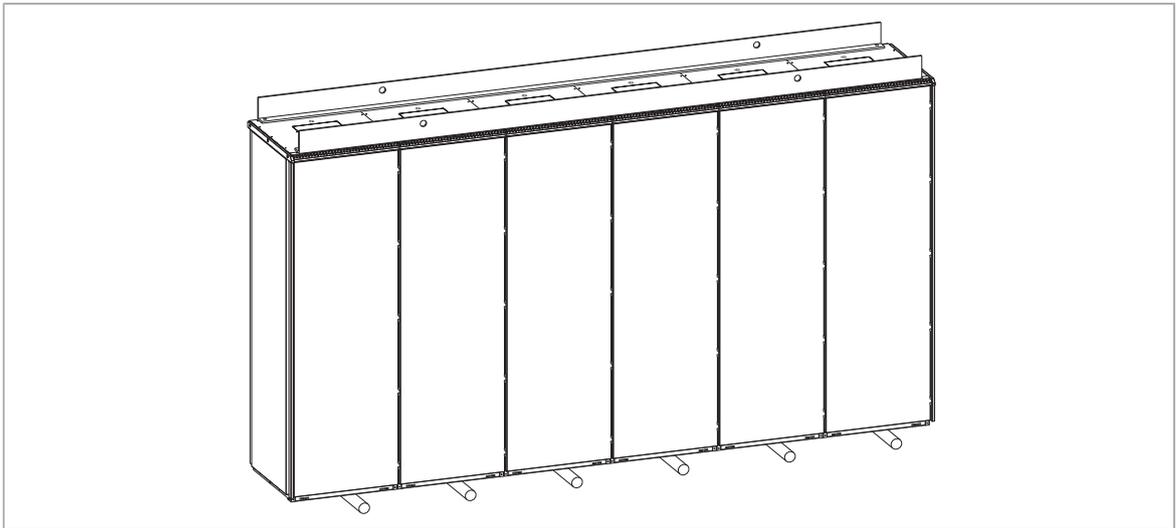
Moving the cabinet on rollers



WARNING!

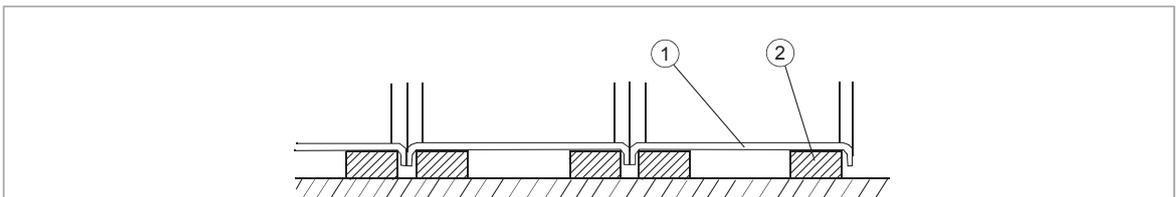
Do not move marine versions (option +C121) on rollers.

Lay the cabinet on the rollers and move it carefully until close to its final location. Remove the rollers by lifting the unit with a crane, forklift, pallet truck or jack.



Moving the cabinet on its back

If the cabinet needs to be laid on its back, support the cabinet from below alongside the cubicle seams.

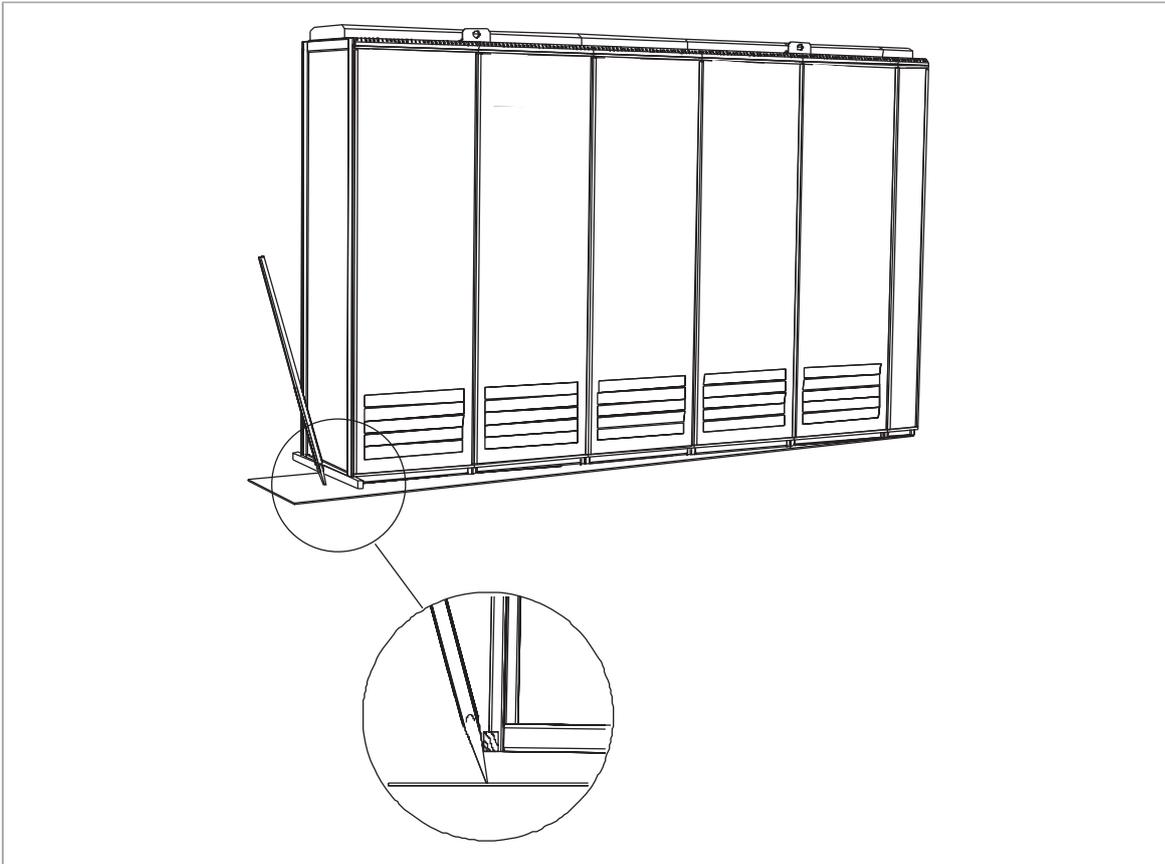


1	Cabinet back panel
2	Support

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Final placement of the cabinet

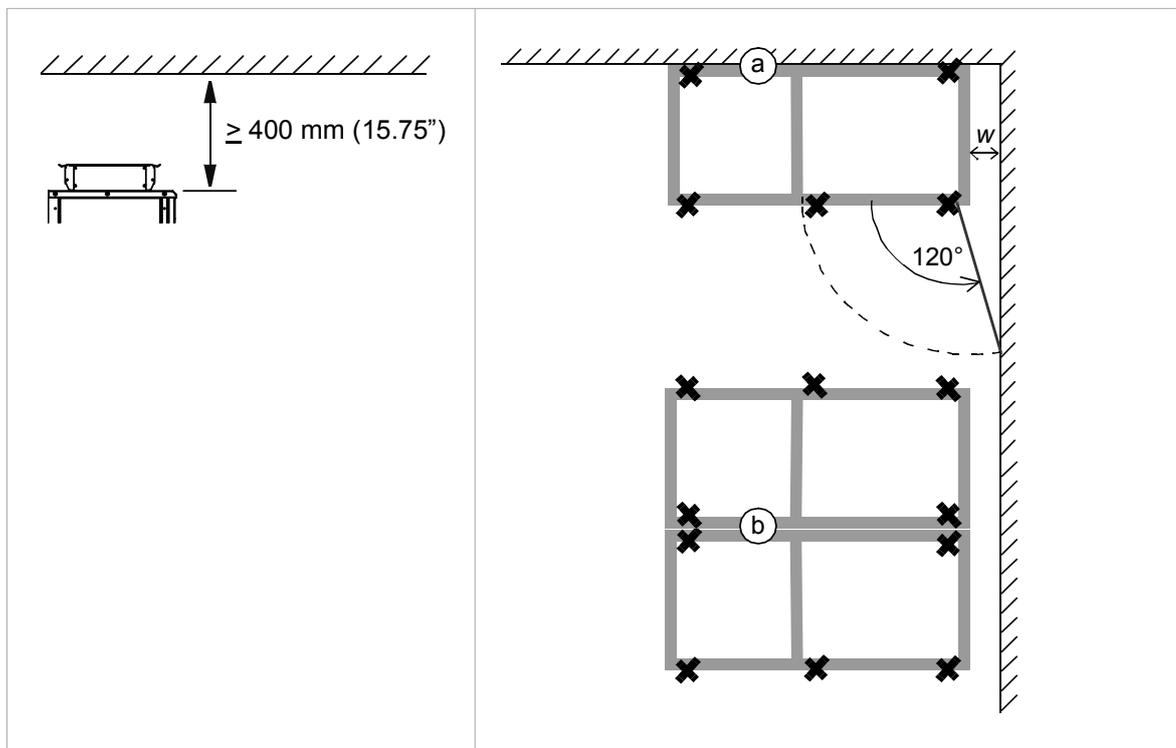
Move the cabinet into its final position with a slate bar (spud bar). Place a piece of wood between the edge of the cabinet and the bar to protect the cabinet frame.



Attaching the cabinet to the floor and wall or roof

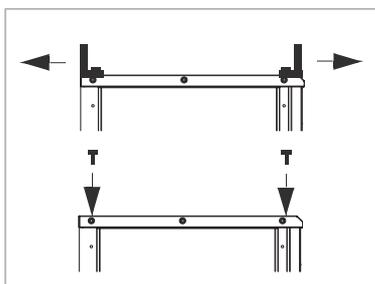
■ General rules

- The drive must be installed in an upright vertical position.
- Leave 400 mm (15.75") of free space above the basic roof level of the cabinet for cooling.
- The cabinet can be installed with its back against a wall (a), or back-to-back with another unit (b).
- Leave some space (w) at the side where the cabinet outmost hinges are to allow the doors to open sufficiently. The doors must open 120° to allow module replacement.



Note 1: Any height adjustment must be done before attaching the cabinet sections to the floor or to each other. Height adjustment can be done by using metal shims between the cabinet bottom and floor.

Note 2: Depending on the size of the cabinet, it has either bolt-on lifting eyes, or lifting bars with lifting holes. Bolt-on lifting eyes need not be removed unless the holes are used for attaching the cabinet. If the cabinet is delivered with lifting bars, remove them and store them for decommissioning. Plug any unused holes using the existing bolts and sealing rings included. Tighten to 70 N·m (52 lbf·ft).





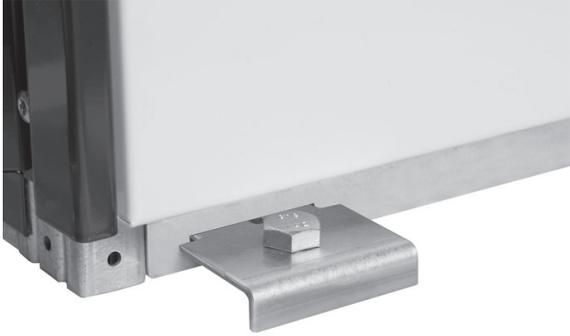
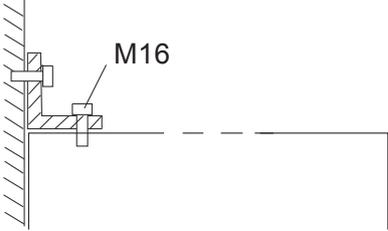
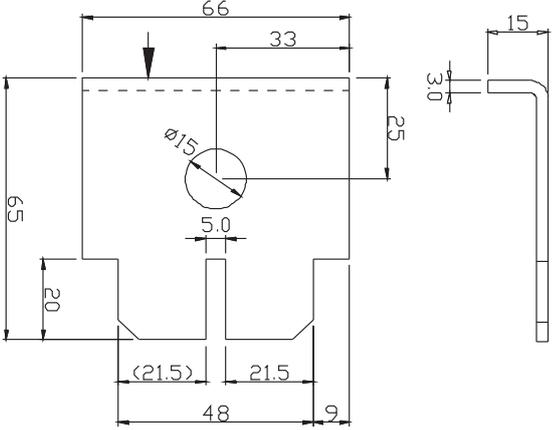
WARNING!

Do not stand or walk on the cabinet roof. Make sure that nothing presses against the roof, side or back plates or door. Do not store anything on the roof while the drive is in operation.

■ **Attaching the cabinet (non-marine units)**

Alternative 1 – Clamping

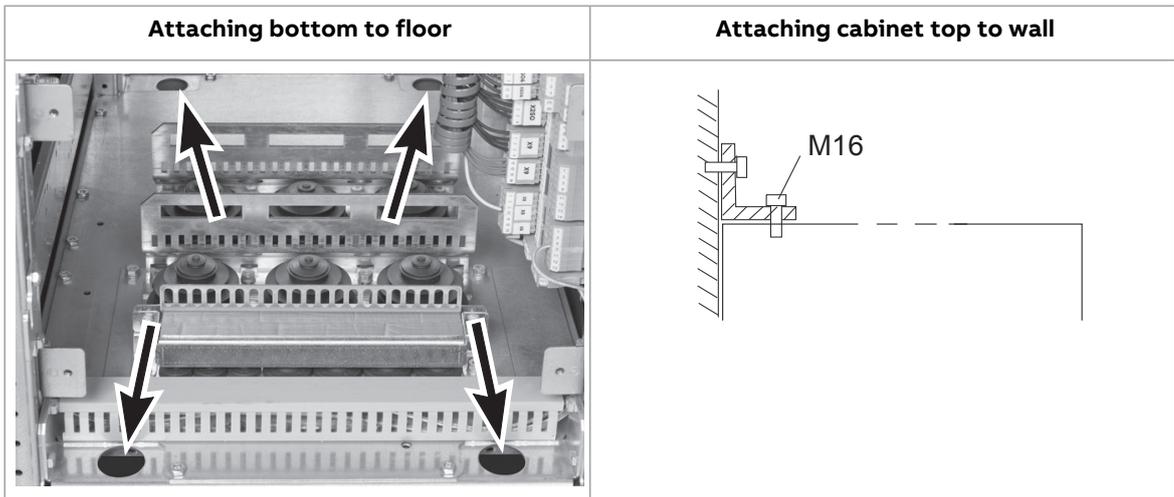
1. Insert the clamps (included) into the twin slots along the front and rear edges of the cabinet frame body and fasten them to the floor with a bolt. The recommended maximum distance between the clamps in the front edge is 800 mm (31.5”).
2. If floor mounting at the back is not possible, attach the top of the cabinet to the wall with L-brackets (not included in the delivery) bolted to the lifting eye/bar holes, and suitable hardware.

Clamping bottom to floor	Attaching top to wall
	
	



Alternative 2 – Using the holes inside the cabinet

1. Attach the cabinet to the floor through the bottom fastening holes with size M10...M12 (3/8" ...1/2") bolts. The recommended maximum distance between the front edge fastening points is 800 mm (31.5").
2. If the back fastening holes are not accessible, attach the top of the cabinet to the wall with L-brackets (not included in the delivery) bolted to the lifting eye/bar holes.

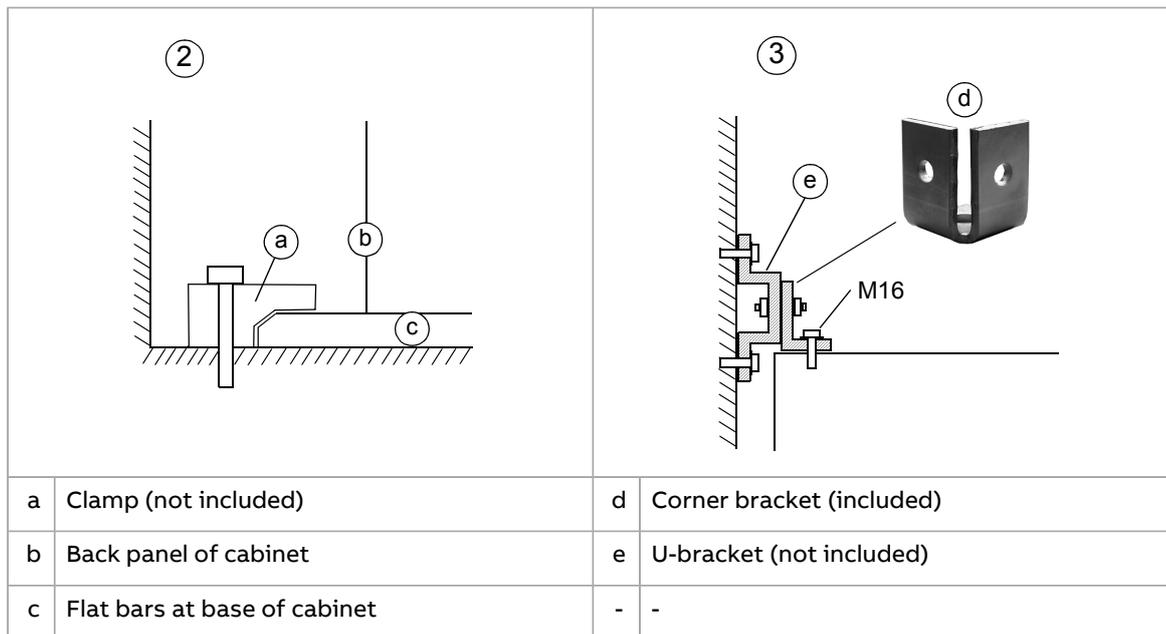


■ **Attaching the cabinet (marine units)**

See the dimension drawing delivered with the drive for details of the fastening points.

Fasten the cabinet to the floor and roof (wall) as follows:

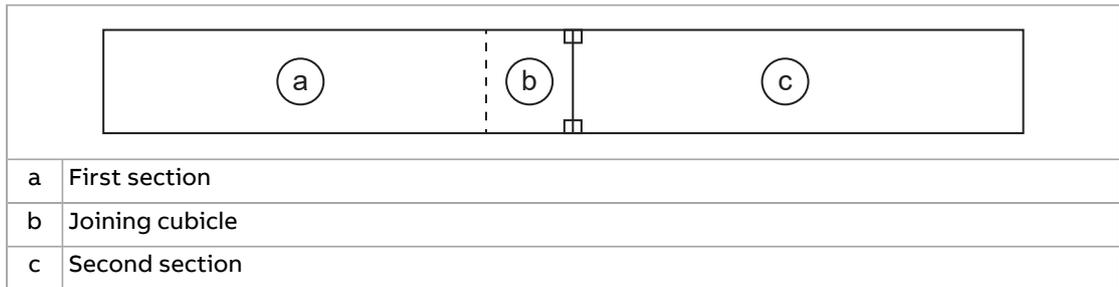
1. Bolt the unit to the floor through the flat bars at the base of the cabinet using M10 or M12 screws.
2. If there is not enough room behind the cabinet for installation, clamp (a) the rear edges of the flat bars (c) to the floor. See the figure below.
3. Attach corner brackets (d) to the lifting eye holes. Fasten the corner brackets to the rear wall and/or roof with suitable hardware such as U-brackets (e).



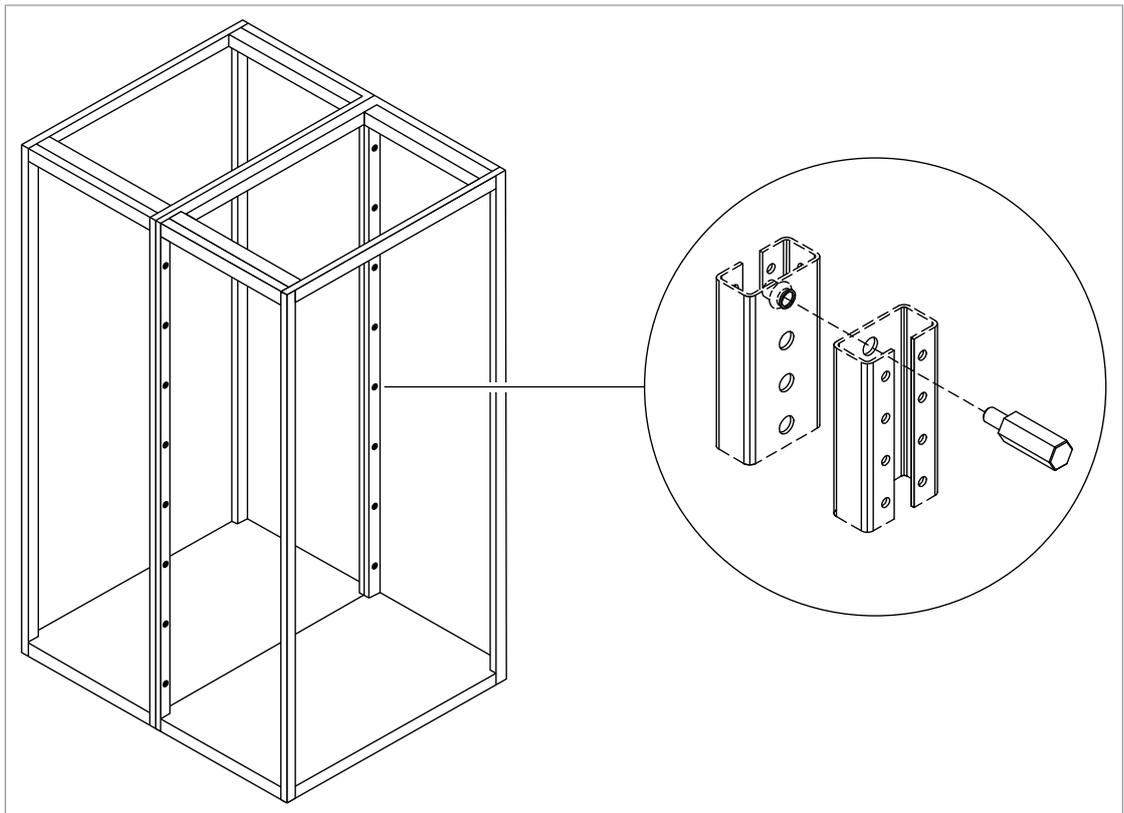
Joining cabinet sections together

Wide cabinet line-ups are delivered in multiple sections. The sections must be joined together at the installation site. There is a joining cubicle at the end of a section for this purpose. The screws for joining the sections are in a plastic bag inside the cabinet.

1. Attach the first section to the floor.
2. Remove any plates covering the rear post of the joining cubicle.
3. Align the two sections. The illustration below shows the placement of the sections.



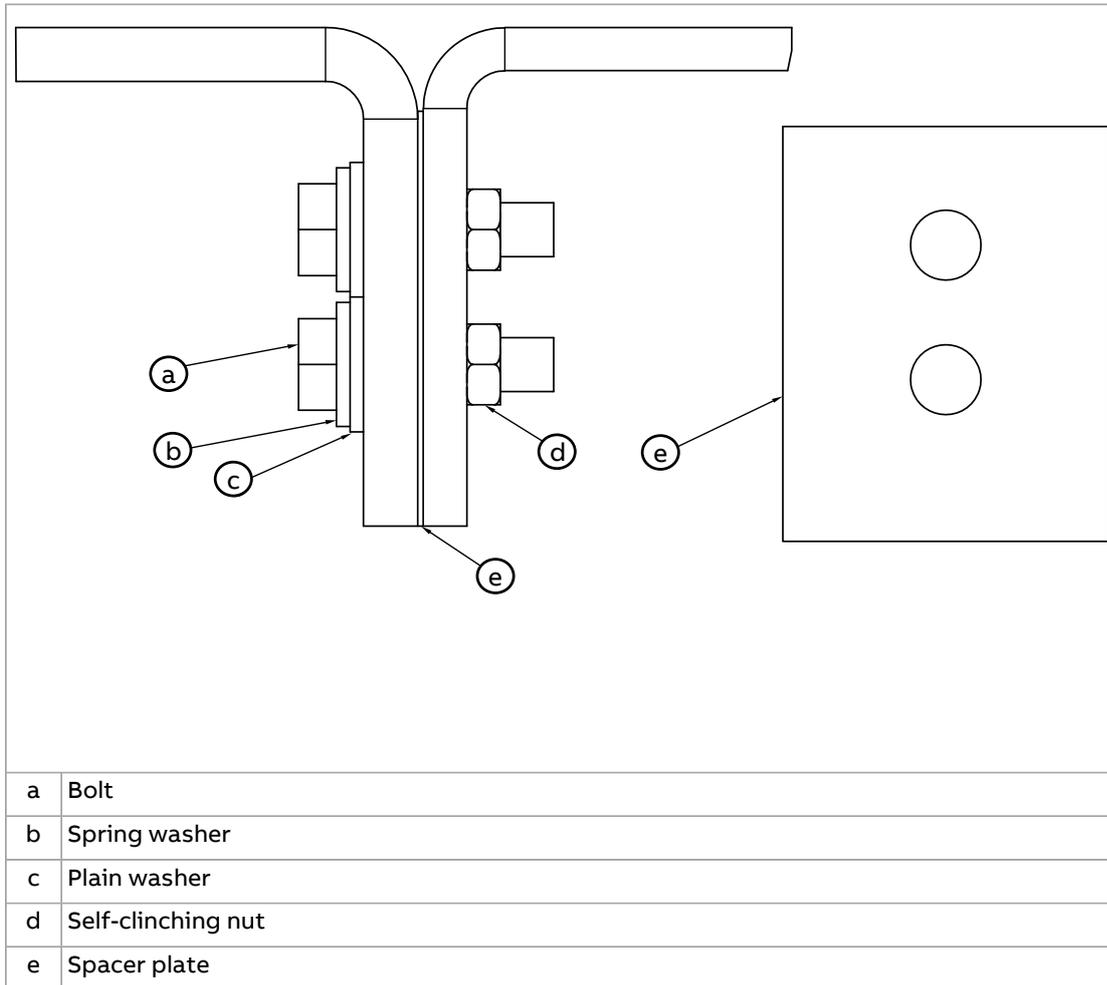
4. Attach the front and rear posts of the joining cubicle to the posts of the other section with 16 screws (8 per post). Tighten the screws to 5 N·m (3.7 lbf·ft).



5. Attach the second section to the floor.

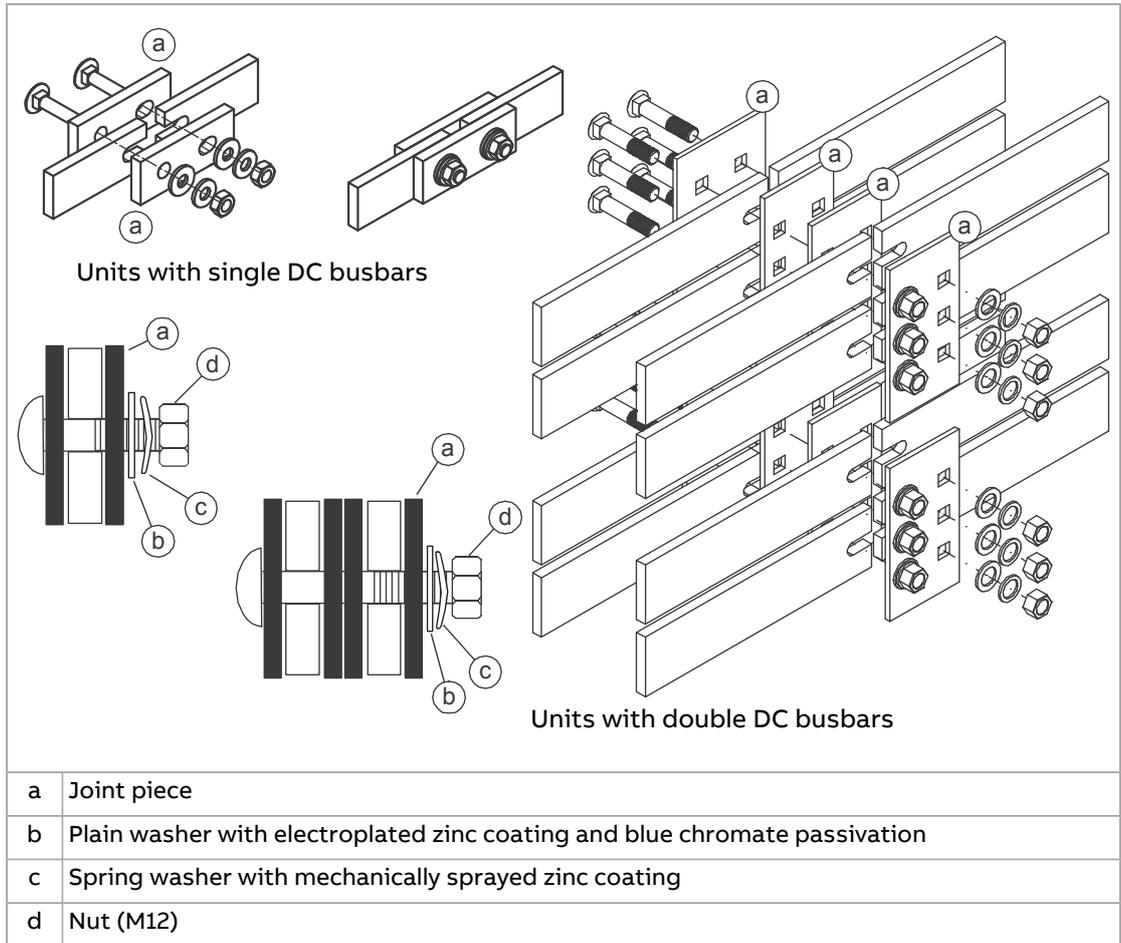
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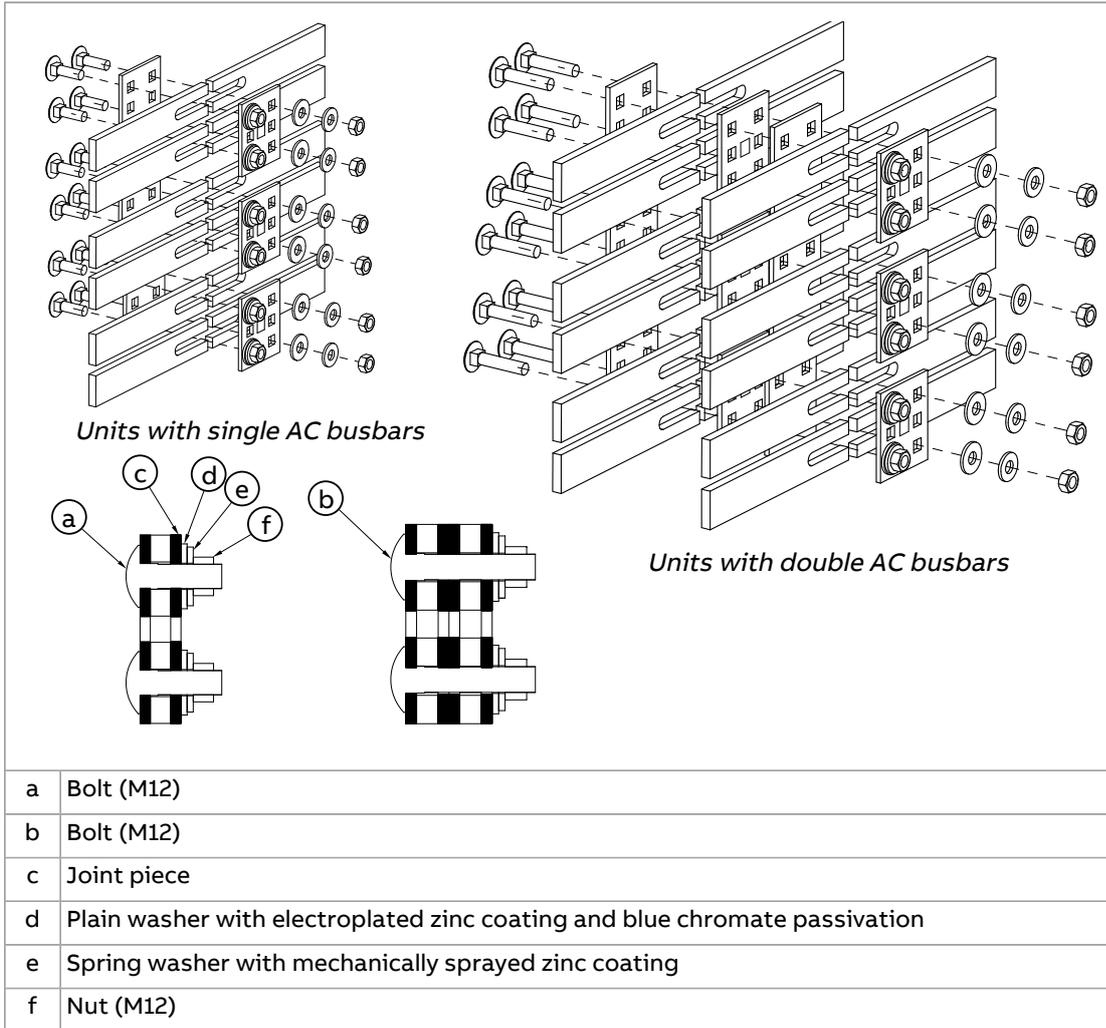
6. Connect the PE (ground) busbars using the M10 bolts included. Tighten to 35...40 N·m (25...30 lbf·ft). If necessary, adjust the connection between two PE busbars with the spacer plates (included in the delivery).



7. Remove the shroud covering the DC busbars in the joining cubicle.

8. Connect the DC and AC busbars. Tighten the bolts to 55...70 N·m (40...50 lbf·ft).





WARNING! Make sure that you install the washers in the correct order, as shown in the illustration. For example, placing an unpassivated zinc-coated spring washer directly against the joint piece will cause corrosion.

WARNING! Do not use any joining parts other than those delivered with the unit. The parts are carefully selected to match the material of the busbars. Other parts or materials can form a galvanic couple and cause corrosion.

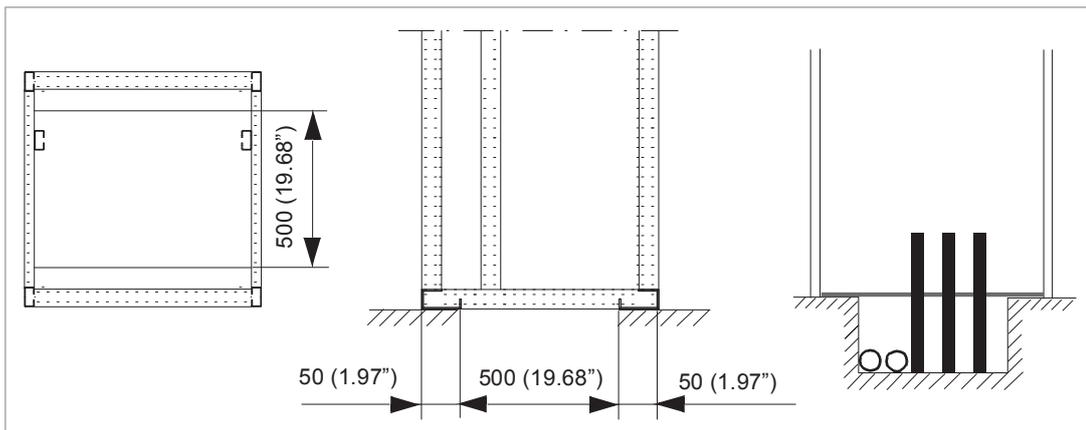
9. Reinstall any shrouding removed earlier.
10. Repeat procedure for any further sections.

Miscellaneous

■ Cable duct in the floor below the cabinet

A cable duct can be constructed below the 500 mm wide middle part of the cabinet. The cabinet weight lies on the two 50 mm wide transverse sections which the floor must carry.

Prevent the cooling air flow from the cable duct to the cabinet by bottom plates. To ensure the degree of protection for the cabinet, use the original bottom plates delivered with the unit. With user-defined cable entries, take care of the degree of protection, fire protection and EMC compliance.



■ Arc welding

ABB does not recommend attaching the cabinet by arc welding. However, if arc welding is the only option, connect the return conductor of the welding equipment to the cabinet frame at the bottom within 0.5 meters (1'6") of the welding point.

Note: The cabinet frame is zinc-plated.



WARNING!

Make sure that the return wire is connected correctly. Welding current must not return via any component or cabling of the drive. If the welding return wire is connected improperly, the welding circuit can damage electronic circuits in the cabinet.



WARNING!

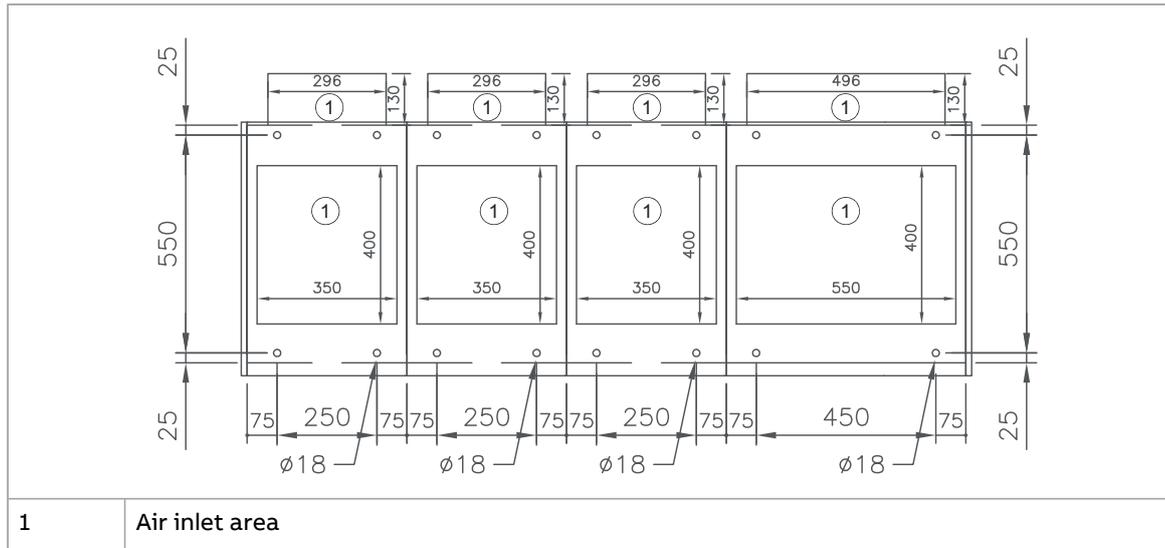
Do not inhale the welding fumes.

■ Air inlet through the bottom of the cabinet (option +C128)

Drives with air inlet through the bottom of the cabinet (option +C128) are intended for installation on an air duct in the floor. Each cubicle (except top entry adapter and joining cubicles) have an inlet through the bottom plate. The option also adds a 130 mm deep inlet area at the back of the cubicle.

An example of the air inlets in the cabinet bottom plate is shown below. Refer also to the dimension drawings delivered with the drive.

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Support the plinth of the cabinet all round.

The air duct must be able to supply a sufficient volume of cooling air. See technical data for the minimum air flow values.

Top cable entry adapter and joining cubicles have no air inlet.



WARNING!

Make sure that the incoming air is sufficiently clean. If not, dust goes into the cabinet. The outlet filter on the cabinet roof prevents dust from going out. The collected dust can cause drive malfunction and danger of fire.

■ Air outlet duct on the cabinet roof (option +C130)

The option adds air outlet ducts to each cubicle of the cabinet line-up. The outlet diameter (and quantity) of the ducts depend on the cubicle width. The ducts used are from the Veloduct series by FläktGroup.

Cubicle width (mm)	Outlet duct				Channel
	Veloduct type	Outer diameter (mm)	Inner diameter (mm)	Cross-sectional area (m ²)	Recommended inner diameter (mm)
300	BDEA-6-020	200	194	0.030	200.0 ... 200.7
400	BDEA-6-031	310	304	0.073	315.0 ... 315.9
500	BDEA-6-031	310	304	0.073	315.0 ... 315.9
600	BDEA-6-040	400	394	0.122	400.0 ... 401.0
700	BDEA-6-040	400	394	0.122	400.0 ... 401.0
800	2 × BDEA-6-031	310	304	0.145	315.0 ... 315.9
1000	2 × BDEA-6-031	310	304	0.145	315.0 ... 315.9

The ventilation system must keep the static pressure in the air outlet duct sufficiently below the pressure of the room where the drive is located in order that the cabinet fans can produce the required air flow through the cabinet. Make sure that no dirty

or moist air is able to flow backward to the drive in any case, even during off-time or while servicing the drive or the ventilation system.

Calculating the required static pressure difference

The required static pressure difference between the exit air duct and the drive installation room can be calculated as follows:

$$\Delta p_s = (1.5 \dots 2) \cdot p_d$$

where

$$p_d = 0.5 \cdot \rho \cdot v_m^2$$

$$v_m = q / A_c$$

p_d	Dynamic pressure
ρ	Air density (kg/m ³)
v_m	Average air velocity in the exit duct(s) (m/s)
q	Rated air flow of the drive (m ³ /s)
A_c	Cross-sectional area of the exit duct(s) (m ²)

Example

The cabinet has 3 exit openings of 315 mm diameter. The rated air flow of the cabinet is 4650 m³/h = 1.3 m³/s.

$$A_c = 3 \cdot 0.315^2 \cdot \pi / 4 = 0.234 \text{ m}^2$$

$$v_m = 1.3 / 0.234 = 5.5 \text{ m/s}$$

$$p_d = 0.5 \cdot \rho \cdot v_m^2 = 0.5 \cdot 1.1 \cdot 5.5^2 = 17 \text{ Pa}$$

The required pressure in the exit air duct is then $1.5 \dots 2 \cdot 17 \text{ Pa} = 26 \dots 34 \text{ Pa}$ below the pressure in the room.



Lifting lugs and bars

■ Certificate of conformity

The certificate is available in ABB Library at www.abb.com/drives/documents (document number 3AXD10001061361).

■ Declarations of conformity



EU Declaration of Conformity

Machinery Directive 2006/42/EC

We

Manufacturer: ABB Oy

Address: Hiomotie 13, 00380 Helsinki, Finland.

Phone: +358 10 22 11

declare under our sole responsibility that the following products:

Lifting bars, identified with material codes

64300971	64301284	64301411	64485342
64301047	64301306	64456695	64485351
64301063	64301314	64456725	64485369
64301080	64301322	64456822	64485377
64301101	64301331	64456881	64485458
64301136	64301349	64456890	68775558
64301152	64301357	64456920	68775540
64301187	64301365	64485296	3AUA5000013498
64301209	64301373	64485300	3AUA5000013504
64301250	64301381	64485318	3AUA0000055356
64301268	64301390	64485326	3AXD50000435524
64301276	64301403	64485334	3AXD50000435548

Lifting lugs, identified with material codes

64302621 64327151

used for lifting the following **frequency converters** and **frequency converter components**

ACS800LC types -x7LC, LC multidrives, -x07LC

ACS580, ACH580, ACQ580 types -07

ACS880 types -x7, multidrives, -x07, -xx07

ACS880LC types -x7LC, LC multidrives, -x07LC, -xx07

identified with serial numbers beginning with 1 or 8





are in conformity with all the relevant lifting accessory requirements of EU Machinery Directive 2006/42/EC.

Person authorized to compile the technical file:
Name and address: Vesa Tiihonen, Hiomotie 13, 00380 Helsinki, Finland

Helsinki, 16 Dec 2019

Signed for and on behalf of:

A blue ink signature of Peter Lindgren, consisting of stylized initials and a horizontal line.

Peter Lindgren
Vice President, ABB Oy

A blue ink signature of Vesa Tiihonen, consisting of stylized initials and a horizontal line.

Vesa Tiihonen
Manager, Product Engineering and Quality





Declaration of Conformity

Supply of Machinery (Safety) Regulations 2008

We

Manufacturer: ABB Oy

Address: Hiomotie 13, 00380 Helsinki, Finland.

Phone: +358 10 22 11

declare under our sole responsibility that the following products:

Lifting bars, identified with material codes

64300971	64301284	64301411	64485342
64301047	64301306	64456695	64485351
64301063	64301314	64456725	64485369
64301080	64301322	64456822	64485377
64301101	64301331	64456881	64485458
64301136	64301349	64456890	68775558
64301152	64301357	64456920	68775540
64301187	64301365	64485296	3AUA5000013498
64301209	64301373	64485300	3AUA5000013504
64301250	64301381	64485318	3AUA0000055356
64301268	64301390	64485326	3AXD50000435524
64301276	64301403	64485334	3AXD50000435548

Lifting lugs, identified with material codes

64302621	64327151
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ACS580, ACH580, ACQ580 types -07

ACS880 types -x7, multidrives, -x07, -xx07

ACS880LC types -x7LC, LC multidrives, -x07LC, -xx07

identified with serial numbers beginning with 1 or 8





are in conformity with all the relevant lifting accessory requirements of the Supply of Machinery (Safety) Regulations 2008.

Authorized to compile the technical file: ABB Oy, Hiomotie 13, 00380 Helsinki, Finland

Helsinki, 28 May 2021

Signed for and on behalf of:

Peter Lindgren

Peter Lindgren
Vice President, ABB Oy

Vesa Tiihonen

Vesa Tiihonen
Manager, Reliability and Quality, ABB Oy





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 www.abb.com/searchchannels.

Product training

For information on ABB product training, navigate to new.abb.com/service/training.

Providing feedback on ABB manuals

Your comments on our manuals are welcome. Navigate to new.abb.com/drives/manuals-feedback-form.

Document library on the Internet

You can find manuals and other product documents in PDF format on the Internet at www.abb.com/drives/documents.



www.abb.com/drives



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