

Hägglunds DUE

Drive Unit, in accordance with ATEX Directive 2014/34/EU

Explosion-proof

**ATEX Appendix
Installation and maintenance
manual
RE 15420-X-B2/12.2018**

Replaces:
RE 15420-X-B2/12.2018
English



The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.

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Changes in the equipment may occur. We therefore reserve the right to introduce amendments in the manual as we deem necessary without notice or obligations.

This Installation and maintenance manual is valid for drive units manufactured after 01.04.2012. For older drive units please contact your nearest Bosch Rexroth representative.

The cover shows an example configuration. The product supplied may therefore differ from the figure shown.

The original operating instructions were prepared in English.

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1 This documentation

1.1 Display of information

Standardized safety instructions, symbols, terms and abbreviations are used so that you can use this documentation to work quickly and safely with your product. To give you a better understanding they are explained in the sections below.

1.1.1 Safety instructions

This documentation includes safety instructions in chapter 2.6: *Product-specific safety instructions* and in chapter 3: *General instructions on material damage and product damage* and before a sequence of actions or an instruction for action involving a risk of personal injury or damage to equipment. The described danger prevention measures must be observed.

Safety instructions are formatted as follows:

SIGNAL WORD

Type of risk




Consequences of non-observance

▶ Safety precautions

▶ <List>

- **Warning sign:** Draws your attention to the hazard
- **Signal word:** Indicates the degree of hazard
- **Type of risk!:** Specifies the type and source of the hazard
- **Consequences:** Describes the consequences of non-compliance
- **Precaution:** Specifies how the hazard can be prevented



Table 1: Risk categories to ANZI Z535.6-2006

| Warning signs, signal word | Meaning |
|--|---|
|  DANGER | Indicates a dangerous situation which will result in death or serious physical injury unless averted. |
|  WARNING | Indicates a dangerous situation which could result in death or serious physical injury unless averted. |
|  CAUTION | Indicates a dangerous situation which could result in minor to moderate physical injury unless it is averted. |
| NOTICE | Material damage: the product or its environment could be damaged. |

1.1.2 Symbols

The symbols below indicate instructions which are not safety-relevant but help to make the documentation easier to understand.

Table 2: Key to symbols

| Symbol | Meaning |
|---|--|
|  | You will be unable to use or operate the product optimally unless this information is observed. |
| ▶ | Individual self-contained action (alternatives) |
| ▶ | |
| 1. 2. 3. | Numbered operating instruction: The numbers indicate the actions follow one another in sequence |
|  | Center of gravity Markings on packaging to indicate where the center of gravity are. |

2 Safety instructions

2.1 About this chapter

This product was made in accordance with the generally accepted rules of the art but there is a risk of personal injury and damage to property unless you follow this chapter and the safety instructions in this documentation.

- ▶ Read this documentation carefully through in full before using product.
- ▶ Keep this documentation so it is accessible to all users at all times.
- ▶ Always give products to third parties with the documentation required.

2.2 Intended use

The Hägglunds DUE is a hydraulic power unit. The drive unit fulfills the requirements in accordance with ATEX Directive 2014/34/EU. The drive unit and its components are not allowed to be rebuilt or exchanged to other than specified components as this will affect the ATEX certification. In the application the Hägglunds drive unit is classified as a partly completed machinery in the sense of the EU machine directive 2006/42/EC. A partly completed machinery is exclusively intended to form an incomplete or a complete machine together with other components or partly completed machineries. The Hägglunds drive unit may only be commissioned after it has been installed in the machine/system for which it is intended and the safety of the entire system has been established in accordance with the machine directive. Intended use includes having read and understood the complete documentation, especially the chapter 2: *Safety instructions*.

The product is intended for the following use:

- Create hydraulic flow in a closed loop hydraulic system.

Observe the technical data, application and operating conditions and performance limits as specified in the product-specific documentation and in the order confirmation.

2.3 Improper use

Any use other than that described as intended use shall be considered as improper and is therefore impermissible.

Bosch Rexroth shall accept no liability whatsoever for damage resulting from improper use. The user shall bear all risks arising from improper use.

Similarly, the following foreseeable faulty usages are also considered to be improper:

- Using outside the operating parameters approved in the product-specific data sheet or in the order confirmation (unless customer-specific approval has been granted)
- Use of fluids outside of the standards as specified in: *Data sheet RE 15414 Hydraulic fluid quick reference*.
- Modification of factory settings by non-authorized persons
- Use of add/on parts (e.g. mountable filter, control unit, valves) that are not specified by Bosch Rexroth has to be approved by contact at Bosch Rexroth.
- Extension or conversion is not permissible and has to be approved by contact at Bosch Rexroth.

2.4 Personnel qualifications

The activities described in this documentation require basic mechanical, electrical and hydraulic knowledge, as well as knowledge of the associated technical terms. For transporting and handling the product, additional knowledge is necessary with regard to working with a lifting device and the corresponding attachment equipment. In order to ensure safe use, these activities may therefore only be carried out by appropriate qualified personnel or an instructed person under the direction and supervision of qualified personnel.

Qualified personnel are those who can recognize possible hazards and institute the appropriate safety measures due to their professional training, knowledge, and experience, as well as their understanding of the relevant regulations pertaining to the work to be done. Qualified personnel must observe the rules relevant to the subject area and have the necessary hydraulic knowledge.

Hydraulic knowledge means, for instance:

- reading and fully understanding hydraulic diagram,
- fully understanding in particular the interrelationships regarding safety devices and having knowledge on the function and assembly of hydraulic components.



Bosch Rexroth offers training support for special fields. For more information about training, please contact your Bosch Rexroth representative.

2.5 General safety instructions

- Follow current accident prevention and environmental protection rules.
- Observe the safety rules and regulations of the country in which the product is used.
- Do not use Bosch Rexroth products unless they are in perfect working order.
- Follow all the instructions on the product.
- Before starting up new, rebuild or just worked on installations. All accessories and safety arrangement functions must be controlled/tested.
- Persons who install, operate, remove or maintain Bosch Rexroth products must not consume any alcohol, drugs or pharmaceuticals that may affect their ability to respond.
- Use only Bosch Hägglunds Rexroth spare parts to avoid the risk of personal injury through using unsuitable parts.
- Comply with the technical data and ambient conditions stated in the product documentation.
- If unsuitable products are fitted or used in safety-critical applications, unintended operating conditions may arise which could cause personal injury and damage to property. So do not use a product for safety-critical applications unless that use is specifically stated and allowed in the product documentation, e.g. in safety-critical controls (operating safety).
- You may only commission the product if it has been determined that the end product (e.g. machinery or a system) into which the Bosch Rexroth products are installed complies with the country-specific provisions, safety regulations and standards of the application.
- Use safety equipment like helmet, protective goggles, safety shoes and hearing protection.
- In emergency situations, use only fire-extinguisher adapted for use both to oil products and electric equipment.

2.6 Product-specific safety instructions

DANGER

Danger from suspended loads!

Danger to life or risk of injury, damage to equipment!

Improper transportation may cause the Hägglunds drive unit to fall down lead to injuries e.g. crushing or broken bones or damage to the product.

- ▶ Make certain that the forklift truck or lifting device has adequate lifting capacity.
- ▶ Never stand under or put you hands under suspended loads.
- ▶ Ensure your position is stable during transportation.
- ▶ Use your personal protective equipment (e.g. safety glasses, safety gloves, suitable working clothes, safety shoes).
- ▶ Use suitable lifting device for transport and storage, installation and for removal and repair. Make sure the motor is well mounted or anchored when the lifting device is disconnected.
- ▶ Observe the prescribed position of the lifting strap.
- ▶ Observe the national laws and regulations on work and health protection and transportation.

Pressurized machine/system!

Danger to life or risk of injury, serious injuries when working on machines/systems not shutdown! Damage to equipment!

- ▶ Do not disconnect any line connections, ports and components when the machine/system is pressurized.
- ▶ Always ensure that no energy is accumulated before any measures.
- ▶ Ensure that no pressure will enter the hydraulic system in the drive unit via the hydraulic motor e.g. loads on the shaft.

WARNING

Escaping oil mist!

Risk of explosion, fire, health hazard, environmental pollution!

- ▶ Depressurize the machine/system and repair the leak.
- ▶ Keep open flames and ignition sources away from the Hägglunds drive unit.

High voltage!

Danger to life or personal injury hazard through electrical shock!

- ▶ Prior to accessing electrical parts with a voltage higher than 50 volts always disconnect the device from the mains or power unit. Secure the electrical equipment against being switched on again by accident.
- ▶ Observe the general deployment regulations and the safety regulations for work on heavy-current equipment.
- ▶ The operation, maintenance and/or repair of such equipment is reserved to skilled personnel qualified to work on or with electrical equipment.
- ▶ Prior to switching the equipment on always check the protective earth conductor for reliable connection to all electrical equipment according to the connection diagram.
- ▶ Exclusively run the component/device - even for short-time measurements or tests - with the protective earth conductor reliably connected to the dedicated connection points.

Danger due to incorrect mounting and setting of electrical, hydraulic and mechanical functions as well as controls

Risk of personal injury or property damage.

- ▶ Follow instructions for delivered equipment.

Rotating parts!

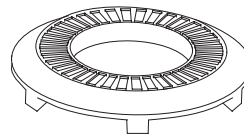
Risk of injury or serious injuries.

- ▶ Do not touch rotating parts or in the zone of rotating parts.

Lack of grounding

Risk of explosion that may cause severe injuries and even death.

- ▶ Remember the lock washer when remounting details.



Static discharge

Risk of explosion that may cause severe injuries and even death.

- ▶ Only filter types with antistatic function are allowed. See 6.5.
- ▶ Hydraulic fluid must have a minimum conductivity of 300 pS/m.

CAUTION

High noise development in operation!

Danger of hearing damage, deafness!

The noise emission of Hägglunds drive unit depends on speed, operating pressure and installation conditions.

- ▶ Always wear hearing protection when in the vicinity of the operating drive unit.

Hot surfaces on the drive unit!

Risk of burns!

- ▶ Allow the Hägglunds drive unit to cool down sufficiently before touching it.
- ▶ Wear heat-resistant protective clothing, e.g. gloves.

Improper routing of cables and lines!

Tripping hazard and damage to equipment!

- ▶ Lay cables and lines so that they can not be damaged and nobody can trip over them.

Contact with hydraulic fluid!

Hazard to health/health impairment e.g. eye injuries, skin damage, toxication during inhalation!

- ▶ Avoid contact with hydraulic fluids.
- ▶ When working with hydraulic fluids, strictly observe the safety instructions provided by the lubricant manufacturer.
- ▶ Use your personal protective equipment (e.g. safety glasses, safety gloves, suitable working clothes, safety shoes).
- ▶ If hydraulic fluid should, nevertheless, come into contact with your eyes or bloodstream or is swallowed, consult a doctor immediately.

Escaping hydraulic fluid due to machine/system leakage!

Risk of burns and risk of injury due to escaping oil jet!

- ▶ Depressurize the machine/system and repair the leak.
- ▶ Never attempt to block or seal the leak or oil jet with a cloth.

Operator error

Risk of personal injury or damage to the product!

- ▶ Check both the general and the custom technical documentation to identify the features of your unique Hägglunds drive unit

2.7 Personal protection equipment

Use safety equipment like helmet, protective goggles, safety shoes and hearing protection.

The personal protective equipment is the responsibility of the user of the Hägglunds drive unit. Observe the safety regulations and provisions of your country. All components of the personal protective equipment must be intact.

3 General instructions on material damage and product damage

NOTE

Danger from improper handling!

Product can be damaged!

- ▶ Do not expose the product to an impermissible mechanical load.
- ▶ Never use the product as a handle or step.
- ▶ Do not place/lay any objects on the product.
- ▶ Do not strike the Hägglands DUE or any part of it or its accessories.
- ▶ Do not strike fittings (e.g. sensors or valves).
- ▶ Do not strike sealing surfaces (e.g. main line ports).
- ▶ Leave the protective covers on the Hägglands DUE connections until shortly before the lines are connected.

Damage to equipment due to improper lubrication!

Product can be damaged or destroyed!

- ▶ Never operate the Hägglands DUE with insufficient hydraulic fluid.
- ▶ When commissioning a system, make sure that the hydraulic system is filled with hydraulic fluid and remain filled during operation.

Mixing of hydraulic fluids!

Product can be damaged!

- ▶ Any mixing of hydraulic fluids of different manufacturers or different types of the same manufacturer is not permissible in general.

Wrong voltage!

Electrical motor damage!

- ▶ All electrical supply levels shall be within the limits that the equipment is constructed for, see Hägglands DUE custom documentation and product identification.

NOTE

Contamination of the hydraulic fluid!

The cleanliness of the hydraulic fluid has a considerable impact on the cleanliness and service life of the hydraulic system. Contamination of the hydraulic fluid could cause premature wear and malfunctions!

- ▶ Make sure that the working environment at the installation site is fully free of dust and foreign substances in order to prevent contaminants, such as welding beads or metal cuttings, from getting into the hydraulic lines and causing product wear or malfunctions. The Hägglunds drive unit must be installed in a clean condition.
- ▶ Use only clean connections, hydraulic lines and attachments (e.g. measuring equipment).
- ▶ No contaminants may enter the connections when they are plugged.
- ▶ Before commissioning, make sure that all hydraulic connections are tight and that all of the connection seals and plugs are installed correctly to ensure that they are leakproof and fluids and contaminants are prevented from penetrating the product.
- ▶ Use a suitable filter system to filter hydraulic fluid during filling to minimize solid impurities and water in the hydraulic system.

Improper cleaning!

Product can be damaged!

- ▶ Plug all openings with the appropriate protective equipment in order to prevent detergents from entering the hydraulic system.
- ▶ Never use solvents or aggressive detergents. Use only water and, if necessary, a mild detergent to clean the Hägglunds drive unit.
- ▶ Do not point the power washer at sensitive components, e.g. electrical connections and components.
- ▶ Use lint-free cloths for cleaning.

Environmental pollution due to incorrect disposal!

Careless disposal of the Hägglunds drive unit and its fittings, the hydraulic fluid and the packaging material could lead to pollution of the environment!

- ▶ Dispose of the Hägglunds drive unit, hydraulic fluid and packaging in accordance with the national regulations in your country.
- ▶ Dispose of the hydraulic fluid in accordance with the applicable safety data sheet for the hydraulic fluid.

Escaping or spilling hydraulic fluid!

Environmental pollution and contamination of the ground water!

- ▶ Use an oil binding agent if hydraulic fluid is spilled.
- ▶ Observe the information in the safety data sheet for the hydraulic fluid and the specifications provided by the system manufacturer.

The warranty applies only to the delivered configuration.

The entitlement to warranty cover will be rendered void if the product is incorrectly installed, commissioned or operated, or if it is used or handled improperly.

4 Product identification

- 1 Ordering code
- 2 Serial number
- 3 Weight
- 4 Manufacturer
- 5 Max pressure

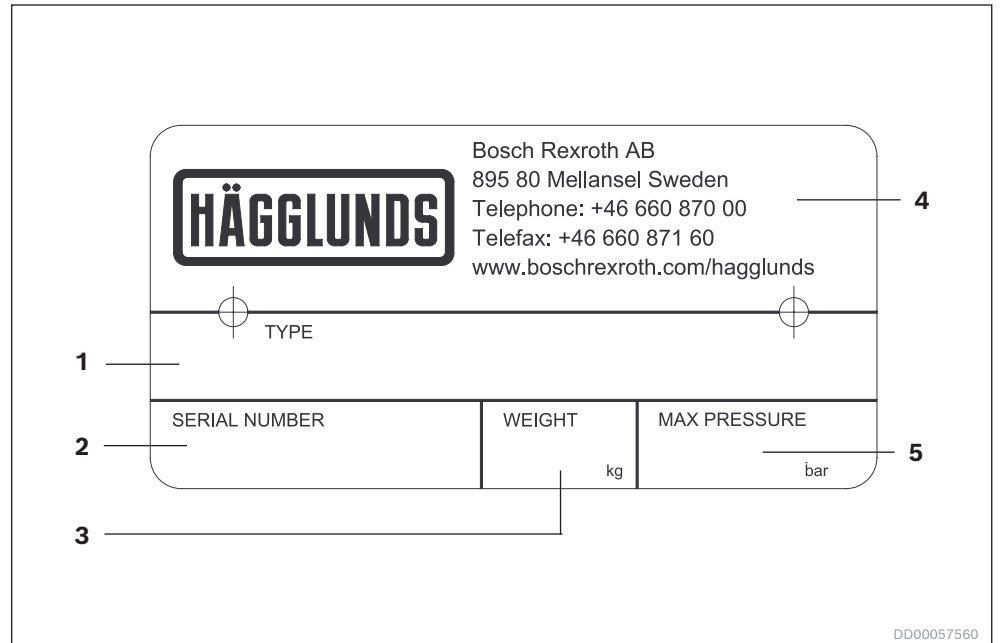


Fig. 1: Product identification

- 6 Mark of the certificate issuer
- 7 Year and reference for the certificate
- 8 ATEX classification
- 9 Year of manufacturing
- 10 CE marking acc. to ATEX directive

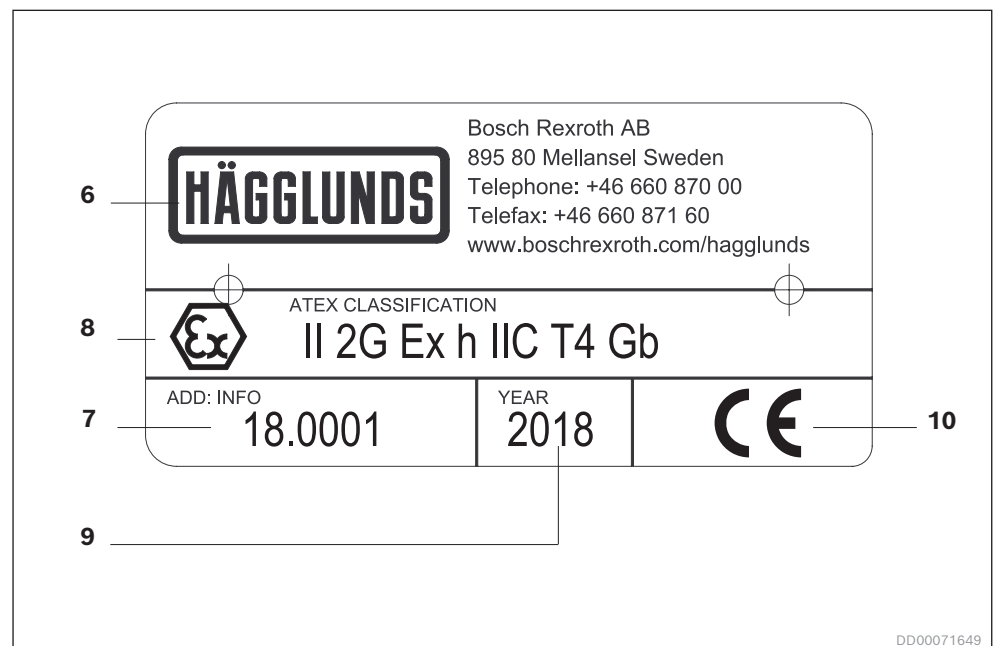


Fig. 2: Product identification example

5 Installation

5.1 Mounting of top cover

The Top cover parts are assembled during system erection. Serrated lock washers are delivered separately and must be used on each bolt in the top cover for voltage equalization. The tooth side of the washers shall be against the painted surface side. An equalization cable is prepared in the upper part of the frame inside the Drive Unit and must be connected to a bolt in the top cover.

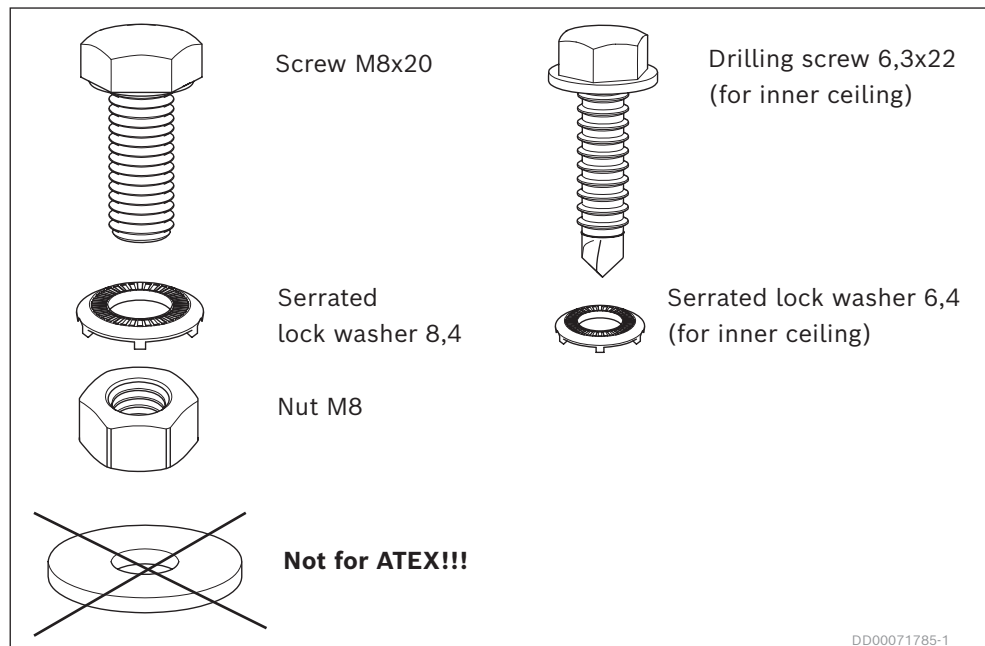


Fig. 3: Parts for assembly top cover

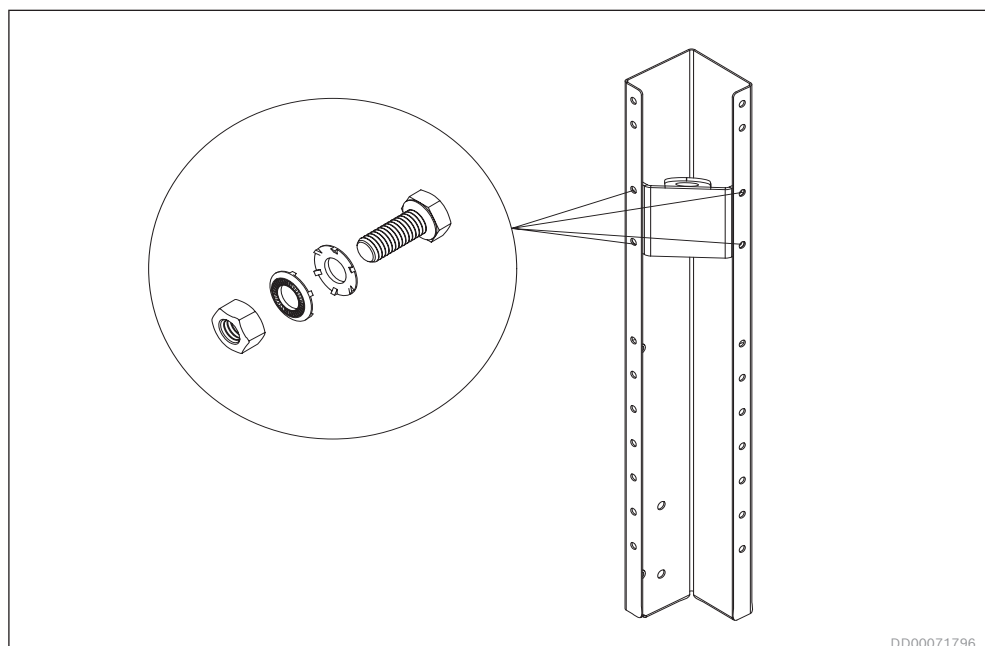


Fig. 4: Lift eyes

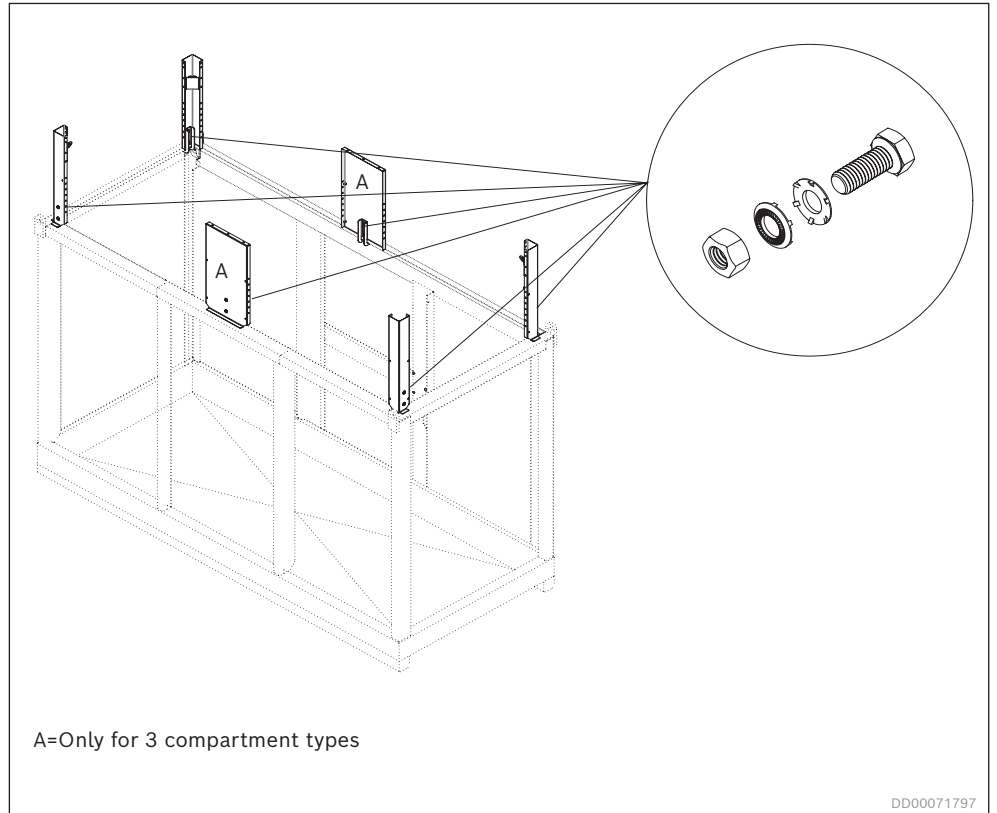


Fig. 5: Corner beams

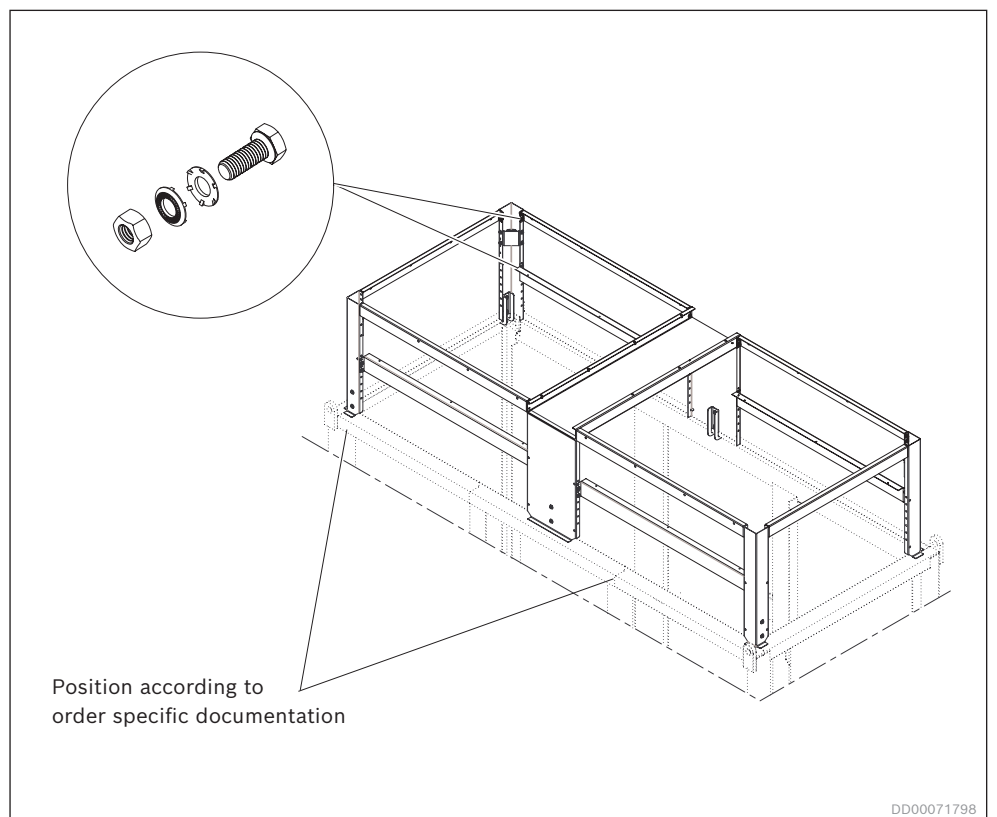


Fig. 6: Beams for roof and inner ceiling

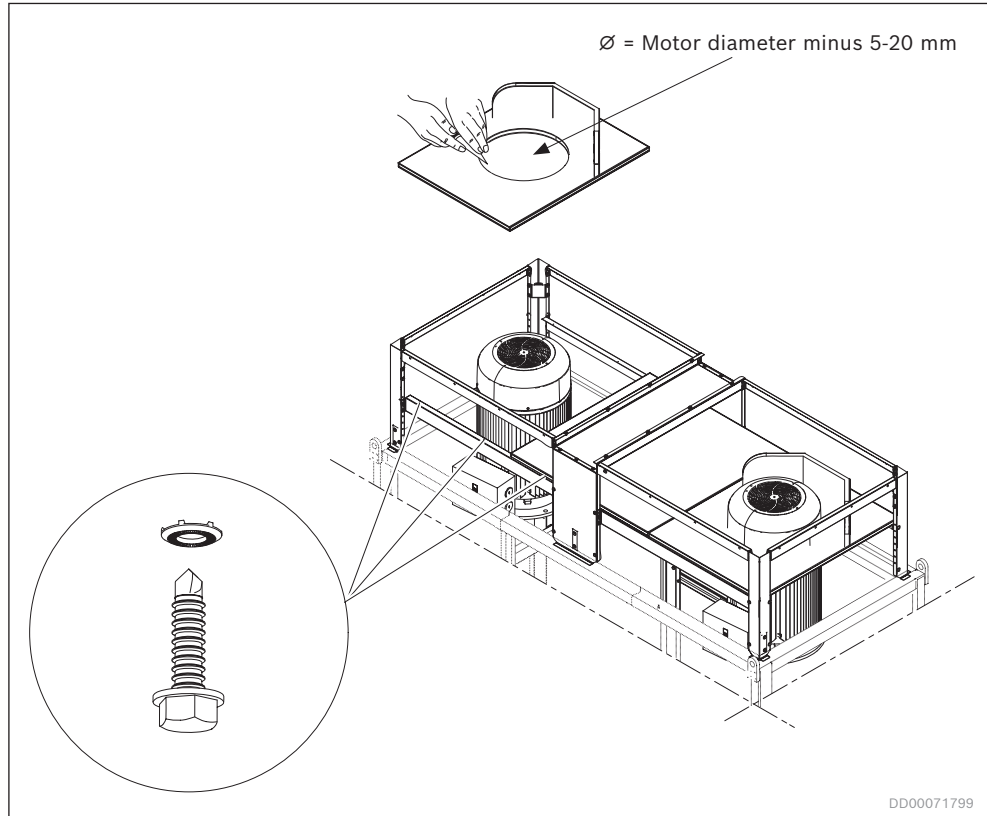


Fig. 7: Inner ceiling

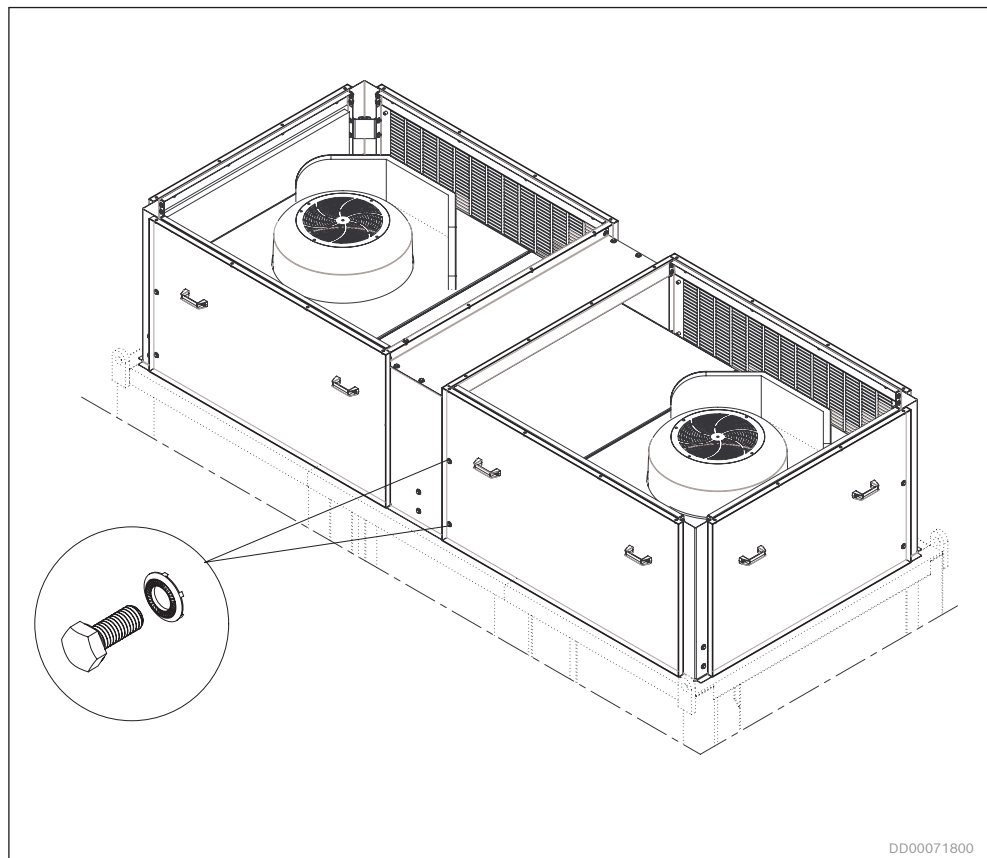


Fig. 8: Panels

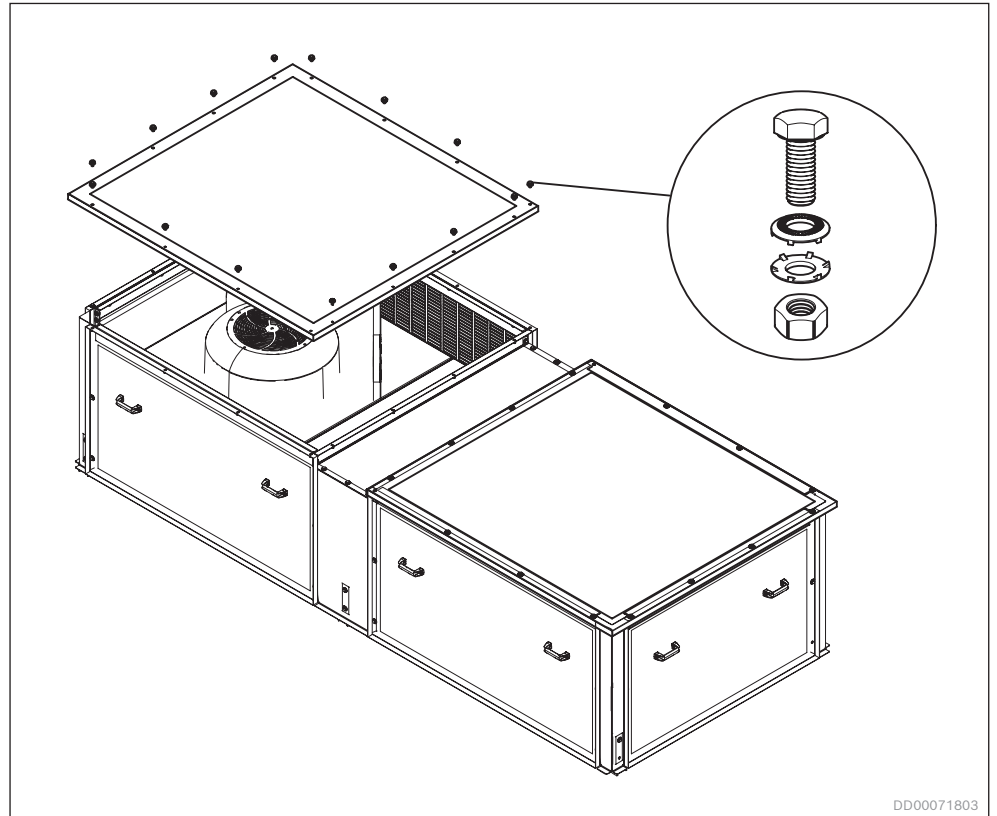


Fig. 9: Roof

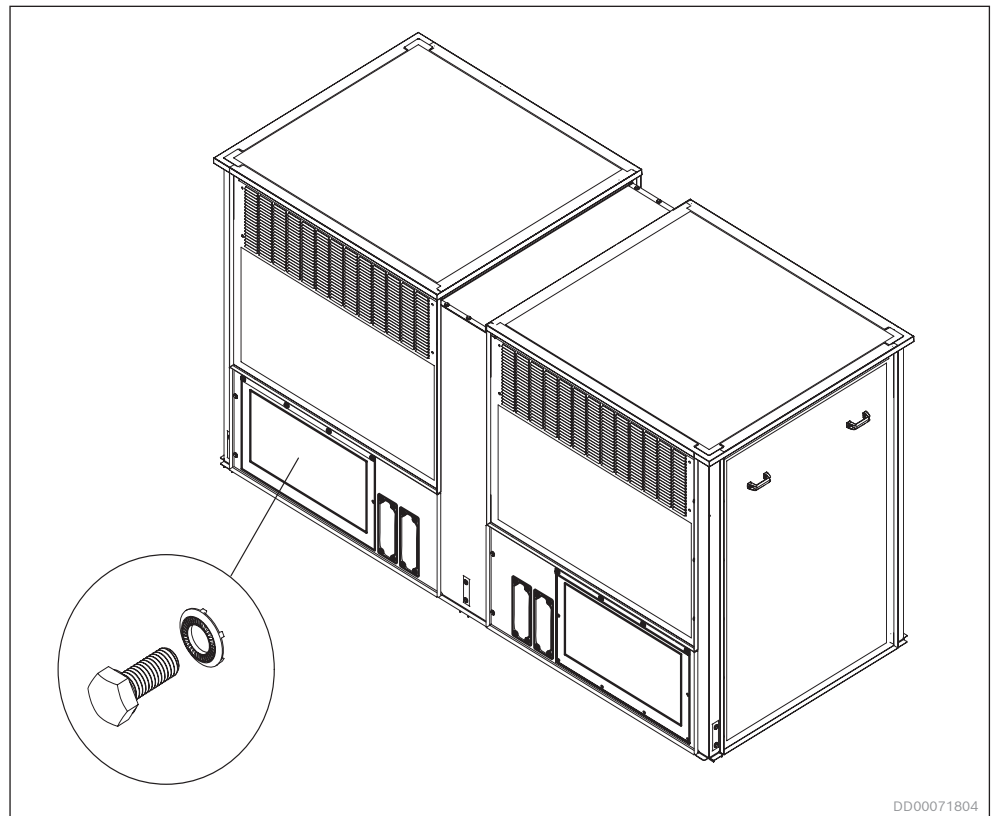


Fig. 10: Air outlet (only for top cover > 1000 mm)

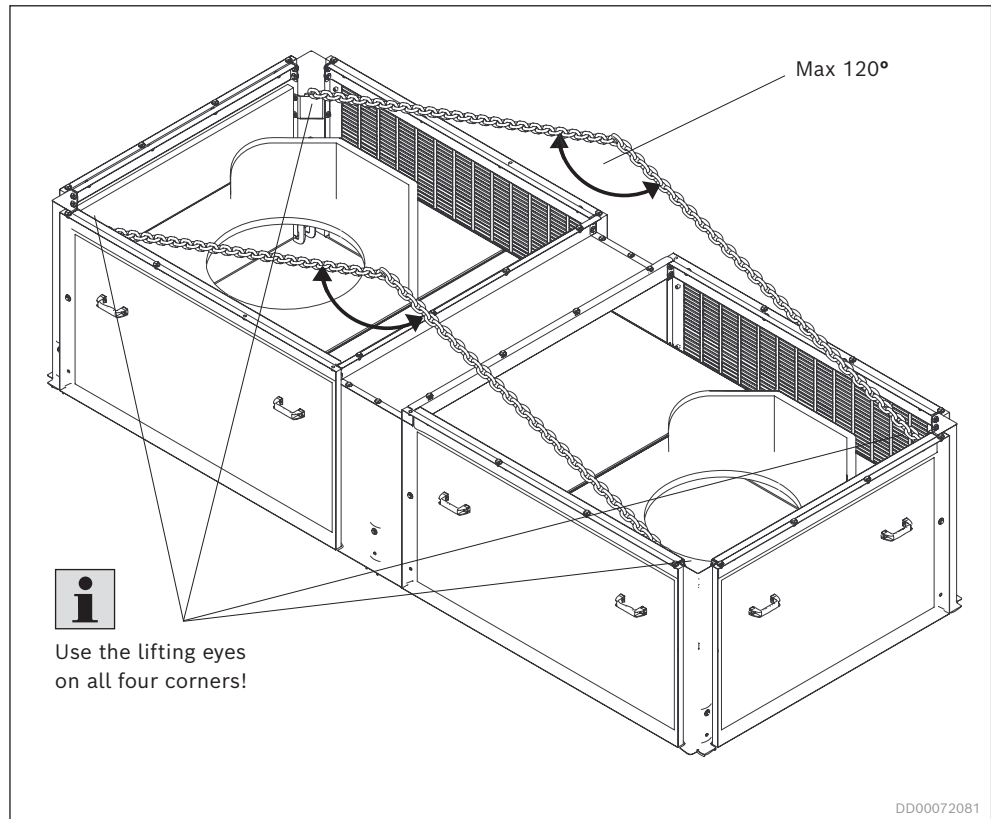


Fig. 11: Lifting top cover (If built on floor)

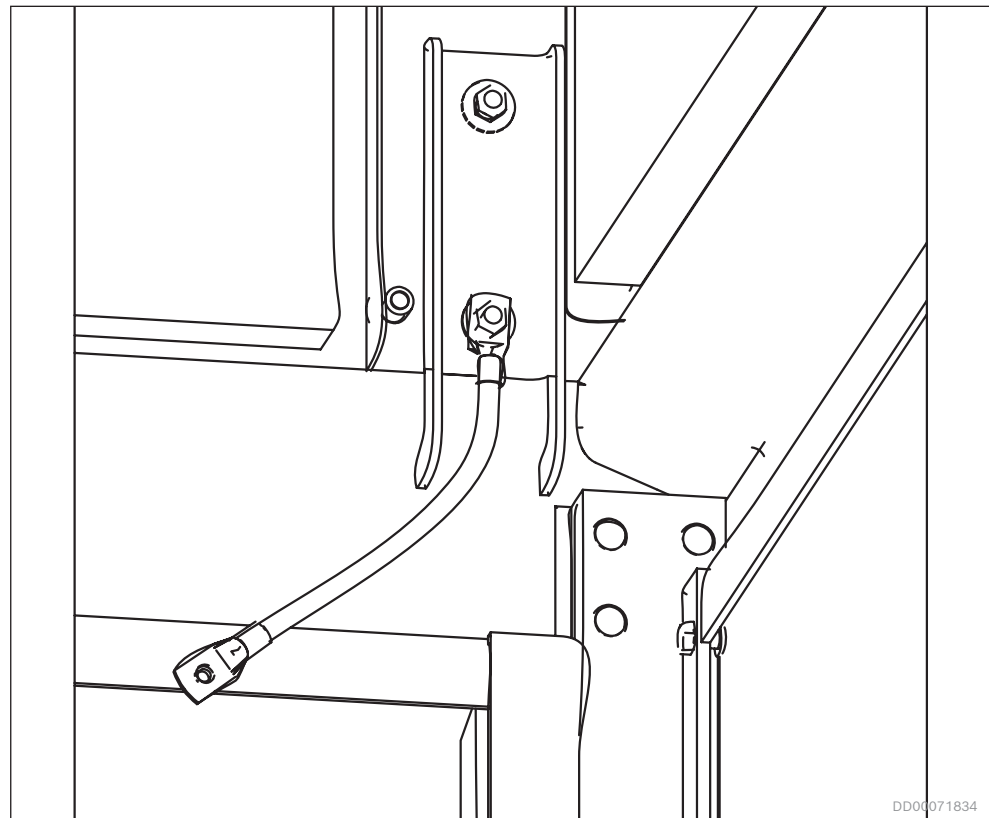


Fig. 12: Grounding of top cover

5.2 Voltage equalization

External connection

The Hägglunds drive unit must be connected to external ground for voltage equalization.

The connection point of the Hägglunds drive unit is on the backside of the frame to a M8 bolt. Minimum required cable area for equalization connection is 10mm².

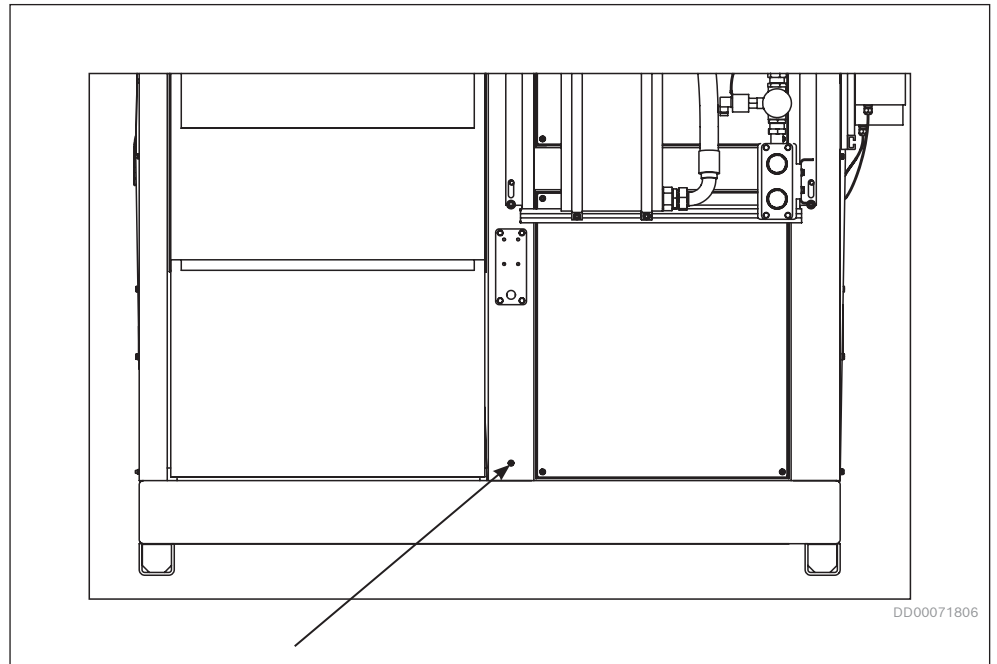


Fig. 13: Connection point

5.3 Control connection

Electrical control signals must be connected via energy limiting device outside explosive zone and according to order specific documentation.

6 Maintenance and repair

6.1 Pump

The pump house and the pump control coils are connected to the frame with separate equalization cables. Cable lugs must be reassembled with serrated lock washers after service if opened.

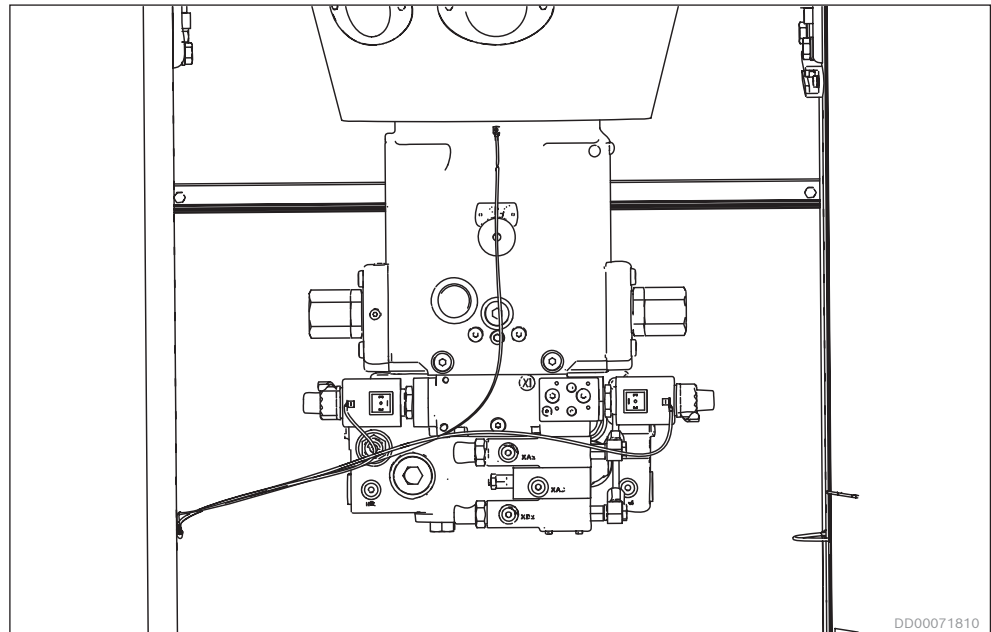


Fig. 14: Grounding of pump

6.2 Motor plate

The electric motor is connected to the frame with an equalization cable. Cable lugs must be reassembled with serrated lock washers after service if opened.

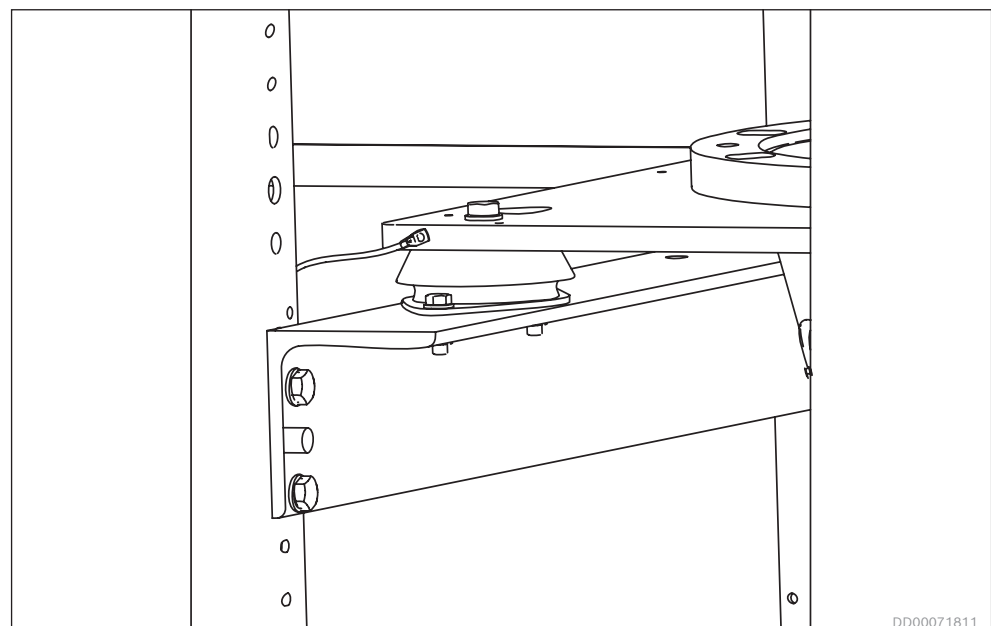


Fig. 15: Grounding of motor plate

6.3 Doors

The front doors are connected to the frame with equalization cables. Cable lugs must be reassembled with serrated lock washers after service if opened.

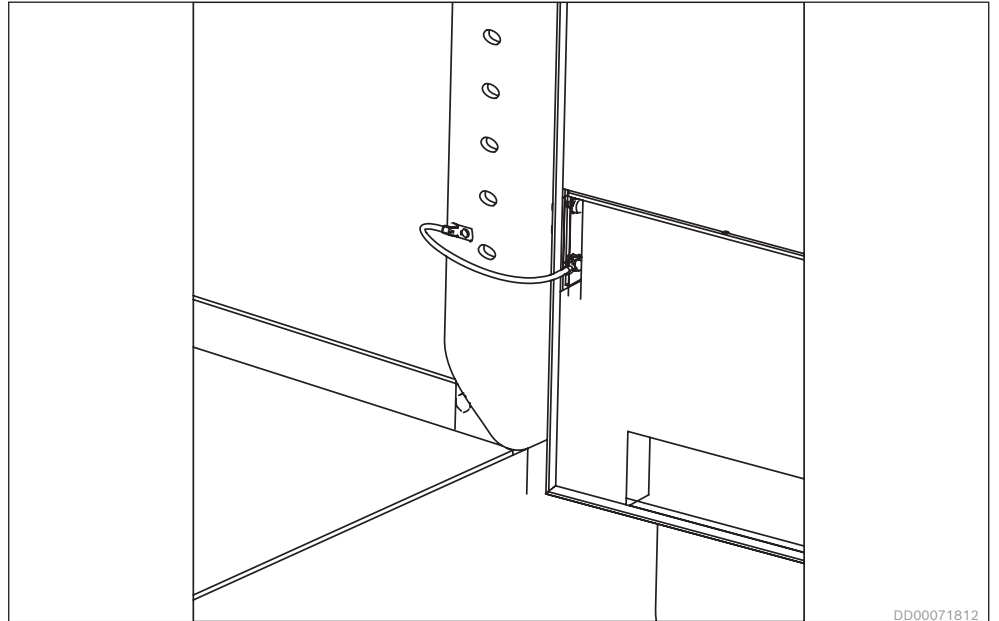


Fig. 16: Grounding of doors

6.4 Water valve

The water valve coil is connected to the frame with an equalization cable. Cable lugs must be reassembled with serrated lock washers after service if opened.

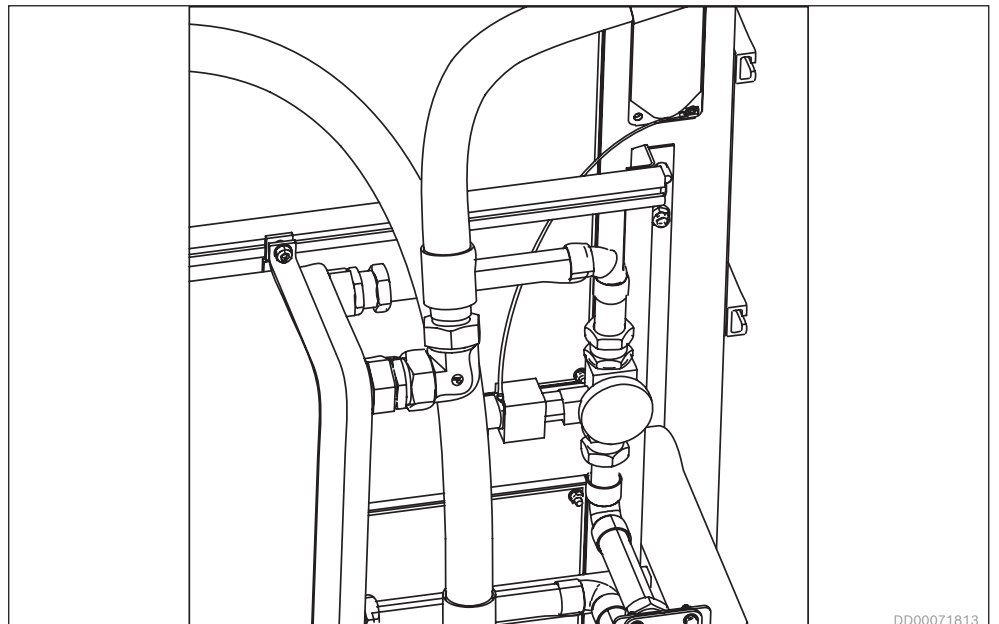


Fig. 17: Grounding of water valve

6.5 Oil filters

The oil filter housings are connected to the frame with equalization cables. Cable lugs and bolts must be reassembled with serrated lock washers after service if opened. Only filter cartridges with antistatic function are allowed for exchange.

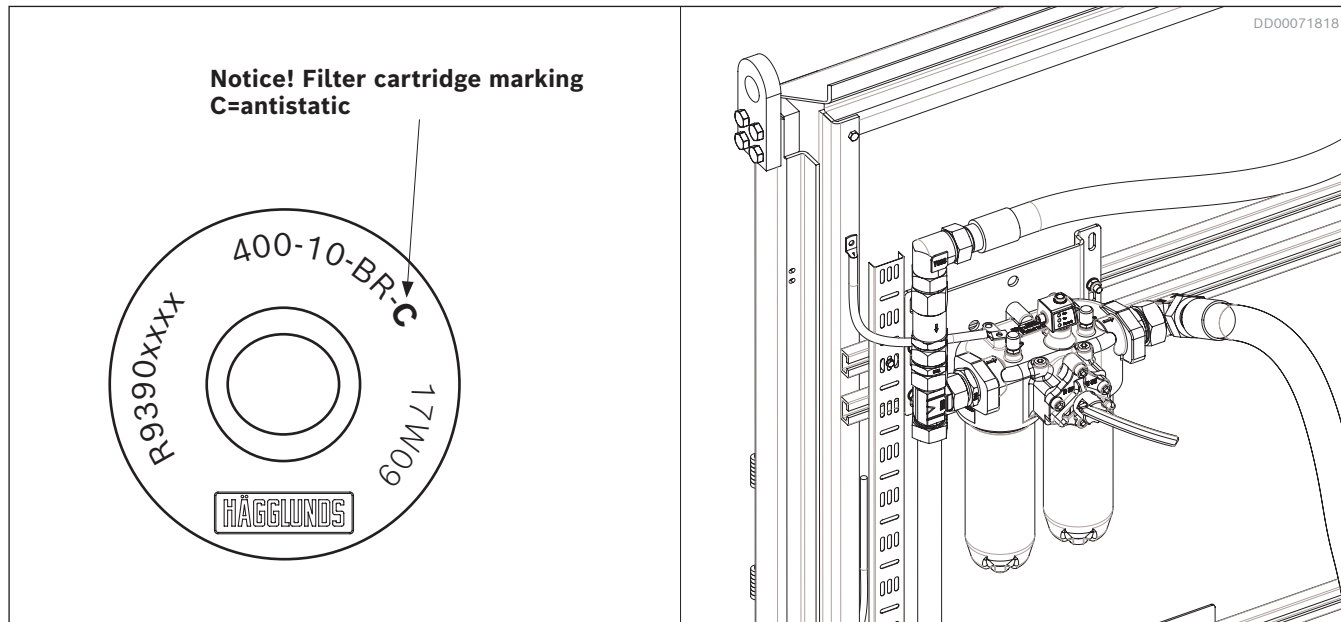


Fig. 18: Grounding of oil filters

6.6 Junction box

The electrical junction boxes are connected to the frame with an equalization cable. Cable lugs must be reassembled with serrated lock washers after service if opened.

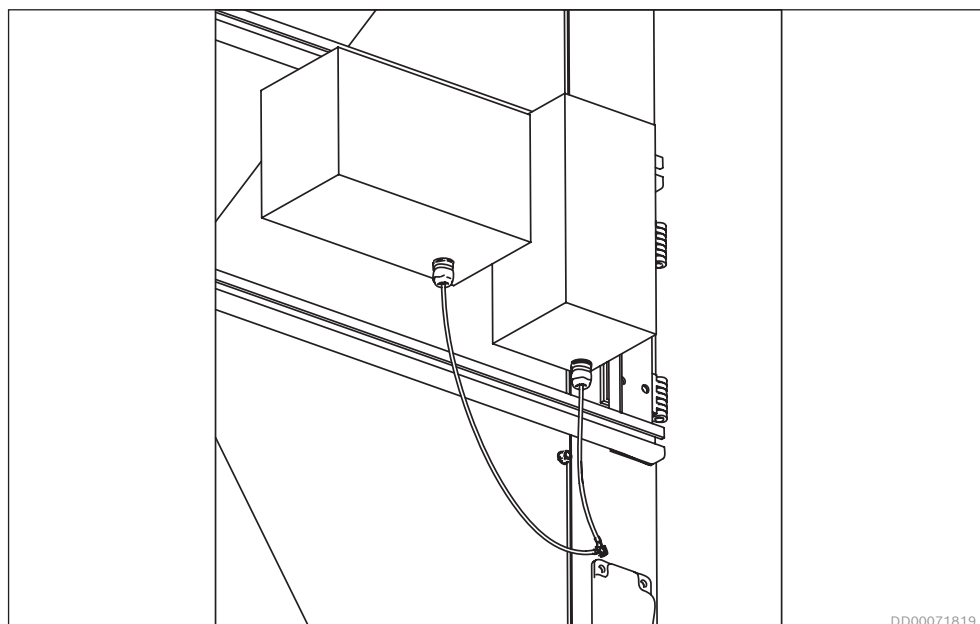


Fig. 19: Grounding of junction box

6.7 Panels

The panels are attached by studs to the frame. Spacers and serrated lock washers are used to secure the voltage equalization. Nuts and spacers must be reassembled with serrated lock washers after service if opened.

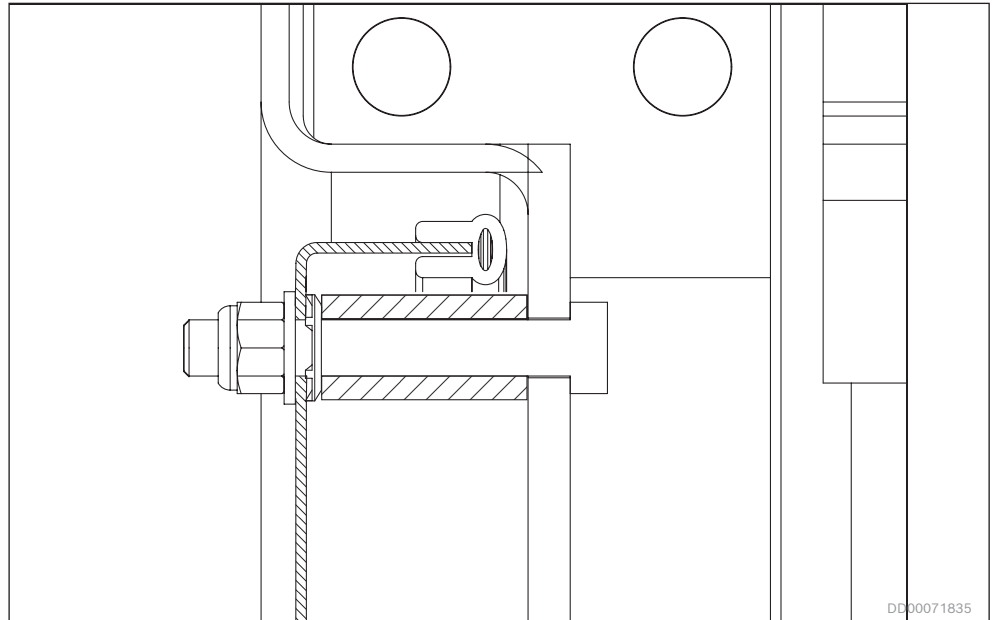


Fig. 20: Grounding of frame

6.8 Frame

All assembled bolted mechanical parts inside and outside the Hägglunds drive unit has serrated lock washers to secure voltage equalization to the frame. All washers must be reassembled after service if the mechanical parts are disassembled.

6.9 Parts

Only original type of parts and components according to bill of material are allowed at exchange.

6.10 Cleaning

Cleaning shall only be performed with stopped equipment and when the equipment not is exposed to explosive substances. To avoid static charge, use a wet rug for cleaning.

WARNING

Static discharge

Cleaning the DUE with a dry rug may lead to explosions through electrostatic discharge that may cause severe injuries and even death.

- ▶ Do not use a dry rug for cleaning!

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