INOVANCE

FORWARD, ALWAYS PROGRESSING

MD580 Series Low-Voltage High-Performance Engineering AC Drive (690 V)

Maintenance Guide

Industrial Automation | Intelligent Elevator | New Energy Vehicle | Industrial Robot | Rail Transit

Data code 19012182 A00

Preface

Introduction

The MD580 series is a low-voltage high-performance engineering AC drive (690 V) that can control permanent magnet synchronous motors and AC asynchronous motors. Adopting the high-performance vector control technology, the MD580 series features high torque output at a low speed, excellent dynamic characteristics, superior overload capabilities, and stable performance. It provides rich and powerful combined functions, such as user programming and software monitoring, and supports multiple communication buses and encoder types.

The MD580 series is a new-generation AC drive (single-drive system) designed for single-drive applications in the end user (EU) heavy industry and in the traditional original equipment manufacturer (OEM) industry. It is widely applied in industries such as petrochemical engineering, metallurgy, papermaking, printing, packaging, woodworking machine tool, food and beverage, logistics and warehousing, textile printing and dyeing, fans, and water pumps.

This guide describes the routine maintenance and component replacement.

More Documents

Document Name	Data Code	Description
MD580 Series Low-Voltage High-Performance Engineering AC Drive (690 V) Hardware Guide	19012181	This guide describes the system composition, technical specifications, components, dimensions, options (including installation accessories, cables, and peripheral electrical components), expansion cards, certifications, and standards of the AC drive.
MD580 Series Low-Voltage High-Performance Engineering AC Drive (690 V) Installation Guide	19012183	This guide describes the installation and wiring of the drive, including pre-installation preparations, unpacking and transportation, mechanical installation, and electrical installation.
MD580 Series Low-Voltage High-Performance Engineering AC Drive (690 V) Maintenance Guide	19012182	This guide describes the routine maintenance and component replacement.
MD580 Series Low-Voltage High-Performance Engineering AC Drive Communication Guide	19011708	This guide describes the communication expansion card in brief, composition, size, installation, electrical connection, and parameter configuration.

Document Name	Data Code	Description
MD580 Series Low-Voltage High-Performance Engineering AC Drive Function Guide	19011709	This guide describes function applications, fault codes, and parameters of the AC drive.
MD580 Series Low-Voltage High-Performance Engineering AC Drive Commissioning Guide	19012184	This guide describes the parameters, troubleshooting, operating panel, commissioning software, and commissioning flow and steps.

Revision history

Date	Version	Revision
March 2023	A00	First release

How to Obtain

This guide is not delivered with the product. You can obtain the PDF version by the following method:

Visit *www.inovance.com*, click Download under Support and enter a keyword to search.

Warranty Agreement

If your product becomes defective under normal use conditions, we will offer guaranteed repair services within the warranty period. You will be charged for any repair work after the warranty period expires.

The warranty does not cover any damage caused by:

- The user does not perform operations in compliance with the user manual of the product.
- The product is damaged due to fire, flood, and abnormal voltage.
- The user uses the product for abnormal functions.
- The user uses the product outside the specified specification range.
- The product is damaged by force majeure, such as natural disasters, earthquakes, or lightning strikes.
- The user uses the product outside the general process specification range, or the product is damaged after the product is used in the environment with corrosive gases (such as sulfide gas, acid gas, conductive dust, etc.) or with high humidity.

The maintenance fee is charged according to the latest Maintenance Price List of Inovance. If otherwise agreed upon, the agreed terms and conditions shall prevail.

Table of Contents

Fundamental Safety Instructions

Safety Disclaimer

- This chapter explains the safety precautions that need to be paid attention to when using this product correctly. Before operating the equipment, read through the guide and comprehend all the safety instructions. To ensure the safety of humans and equipment, follow the signs on the equipment and all the safety instructions in this user guide. Failure to comply may result in severe personal injuries or even death or equipment damage.
- "CAUTION", "WARNING", and "DANGER" items in the user guide do not indicate all safety precautions that need to be followed; instead, they just supplement the safety precautions.
- Use this product in environments meeting the design and specification requirements; otherwise, a fault may occur. Noncompliance-caused malfunction or damage to parts are not covered in product quality warranty.
- Inovance shall take no responsibility for any personal injuries or property damage caused by improper usage.

Safety Levels and Definitions

Indicates that failure to comply with the notice can result in death or severe personal injuries.

Indicates that failure to comply with the notice may result in death or severe personal injuries.

Indicates that failure to comply with the notice may result in minor or moderate personal injuries or equipment damage.

General Safety Instructions

- Drawings in the guide are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions.
- The drawings in the guide are shown for illustration only and may be different from the product you purchased.

Unpacking

- Do not install the equipment if you find damage, rust, or indications of use on the equipment or accessories.
- Do not install the equipment if you find water seepage, component missing or damage upon unpacking.
- Do not install the equipment if you find the packing list does not conform to the equipment you received.

- Check whether the packing is intact and whether there is any sign of damage, water seepage, dampness, and deformation.
- Unpack the package by following the unpacking sequence. Do not strike the package violently.
- Check whether there is any sign of damage or rust on the surfaces of the equipment and accessories.
- Check whether the package contents are consistent with the packing list.

Storage and Transportation

- Allow only qualified professional personnel to carry large-scale or heavy products by using professional loading and unloading device. Failure to comply will result in injuries or product damage.
- Before you vertically lift the product, confirm that structural components of the product such as the front cover and terminal block have been firmly fixed with screws. Failure to comply will result in component drop-off, causing personnel injuries or product damage.
- Never stand or stay below the product when it is lifted by hoisting device.
- When you hoist the product with a steel rope, hoist it at even speed stably to protect the product against vibration or impact. Do not turn the product or hoist the product for a long period. Failure to comply may result in personal injuries or damage to the device.

- Handle the equipment with care during transportation and mind your steps to prevent personal injuries or equipment damage.
- When carrying the equipment with bare hands, hold the equipment casing firmly with care to prevent parts from falling. Failure to comply may result in personal injuries.
- Store and transport this product in strict accordance with the storage and transportation requirements. Failure to comply may result in damage to the product.
- Do not store or transport the equipment in environments exposed to water splash, rain, direct sunlight, strong electric field, strong magnetic field, and strong vibration.
- Avoid storing this product for more than three months. Long-term storage requires stricter protection and necessary inspections.
- Pack the equipment strictly before transportation. Use a sealed box for long-distance transportation.
- Never transport the equipment with other equipment or materials that may harm or have negative impacts on this equipment.

Installation

- Installation must be carried out by the specialists who have received the necessary electrical training and understood Ensure no unprofessional person has access to the equipment.

- Read through the guide and safety instructions before installation.
- Do not install this equipment in places with strong electric or magnetic fields.
- Before installation, ensure that the installation position has sufficient mechanical strength to support the weight of the device. Failure to comply will result in a mechanical danger.
- To avoid electric shock, do not wear loose clothes or accessories.
- When this equipment is installed in a cabinet or final equipment, use a cooling device (such as a fan or air conditioner) to cool the environment down to the required temperature. Failure to comply may result in equipment over-temperature or a fire.
- Do not retrofit this equipment.
- Do not fiddle with the bolts used to fix equipment components or the bolts marked in red.
- When this product is installed in a cabinet or terminal device, protection measures such as a fireproof enclosure, an electrical enclosure, or a mechanical enclosure must be provided. The IP rating must meet IEC standards and local laws and regulations.
- Before installing devices with strong electromagnetic interference, such as a transformer, install a shielding device for the equipment to prevent malfunction.
- Install the equipment onto flame retardant materials, such as metal. Keep the equipment away from combustible objects. Failure to comply will result in a fire.

- During installation, use a piece of cloth or paper to cover the top of the product to prevent metal chippings, oil, and water from entering into the product when drilling holes. Failure to comply will cause product malfunctions. After installation, remove the cloth or paper for effective ventilation and cooling.
- If the device running at a constant speed begins to run at variable speeds, resonance may occur. In this case, install the vibration-proof rubber under the motor frame or use the vibration suppression function to reduce resonance.

Wiring

- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed by only professionals.
- Before wiring, cut off all the power supplies of the equipment. Wait as specified on the product warning sign before further operations because residual voltage exists after power-off. Measure the DC voltage of the main circuit and make sure that it is below the safety voltage. Failure to comply will result in an electric shock.
- Never perform wiring, remove the product cover, or contact the PCB at power-on. Failure to comply will result in an electric shock.
- Check that the equipment is grounded properly. Failure to comply will result in an electric shock.

- Do not connect the input power supply to the output end of the equipment. Failure to comply can result in equipment damage or even a fire.
- When connecting a drive to the motor, make sure the phase sequence of the drive and motor are consistent to prevent motor reverse rotation.
- Cables used for wiring must meet cross sectional area and shielding requirements. The shield of the cable must be reliably grounded at one end.
- Fasten the terminal screws with the tightening torque specified in the manual. Insufficient or excessive tightening torque may result in overheat and damage of connecting parts, causing fires.
- Ensure that all cables are connected correctly. Cable sheath is not damaged, and no screw or washer is left inside the equipment. Otherwise, electric shock or equipment damage may occur.

- During wiring, follow the proper electrostatic discharge (ESD) procedure and wear an antistatic wrist strap. Failure to comply can result in damage to the equipment or internal circuits.
- In wiring the control circuit, use shielded twisted pair cable and connect the shield to the PE terminal. Otherwise, the equipment may not function properly.

Power-on

- Before power-on, check that the equipment is installed properly, the wiring is secure and the motor can be restarted.
- Before power-on, check that the power supply meets equipment requirements to prevent equipment damage or even a fire.
- After power-on, do not open the cabinet door or protective cover of the equipment. Do not touch any wiring terminals, or remove any part of the equipment at power-on. Failure to comply will result in an electric shock.

- Perform a trial run after wiring and parameter setting to ensure that the equipment operates safely. Failure to comply may result in personal injuries or equipment damage.
- Before power-on, ensure that the nominal voltage of the equipment is consistent with the power supply voltage. Improper power supply voltage will cause a fire.
- Before power-on, check that no one is near the equipment, motor, or other mechanical parts. Failure to comply may result in personal injuries or even death.

Operation

- Only qualified professionals are allowed to run the equipment. Failure to comply can result in injury or death.
- Do not touch any wiring terminals or remove any part of the equipment during operation. Failure to comply will result in an electric shock.

- Do not touch the equipment enclosure, fan, or resistor to sense the temperature. Failure to comply may result in burns.
- Prevent metal or other objects from falling into the device during operation. Failure to comply may result in a fire or product damage.

Maintenance

- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed by only professionals.
- Do not perform maintenance on the equipment with power ON. Failure to comply can result in the risk of electric shock.
- Before maintenance, cut off all power supplies of the device and wait for a period specified on the warning label of the device.
- When a PM motor rotates, its terminals will produce induced voltage even if the motor is powered off. Failure to comply will result in an electric shock.

- Perform routine and periodic inspection and maintenance on the equipment according to maintenance requirements and keep a maintenance record.

Repair

- Equipment installation, wiring, maintenance, inspection, or parts replacement must be performed by only professionals.
- Do not repair the equipment after power-on. Failure to comply can result in the risk of electric shock.
- Before device inspection and repair, cut off all power supplies of the device and wait for a period specified on the warning label of the device.

WARNING

- Submit the repair request according to the warranty agreement.
- When the fuse is blown, the circuit breaker trips, or the earth leakage circuit breaker (ELCB) trips, wait for a period specified on the warning label of the device before you energize or operate the device. Failure to comply may result in personnel injuries or damage to the device.
- When the device is faulty or damaged, require professionals to perform troubleshooting and repair by following repair instructions and keep a repair record.
- Replace quick-wear parts of the equipment according to the replacement instructions.
- Do not operate damaged device. Failure to comply may result in personnel injuries or death or greater damage to the device.
- After replacing the equipment, perform wiring inspection and parameter settings again.

Disposal

WARNING

- Dispose of retired equipment in accordance with local regulations and standards. Failure to comply may result in property damage, personal injuries, or even death.
- Recycle retired equipment by observing industry waste disposal standards to avoid environmental pollution.

Safety Labels

For safe equipment operation and maintenance, comply with safety labels on the equipment. Do not damage or remove the safety labels. See the following table for descriptions of the safety labels.

Safety Label	Description
	• Read through the safety instructions before operating the equipment. Failure to comply may result in death, personal injuries, or equipment damage. • Do not touch the terminals or remove the cover with power ON or within 10 min after power-off. Failure to comply will result in an electric shock.

1 Precautions for Maintenance and Repair

Precautions for Maintenance and Repair

- Allow only professional technicians to maintain and repair the AC drive.
- Wait for at least 15 minutes after power-off and confirm that the DC bus voltage is approximately 0 V before any maintenance and repair. Otherwise, the residual charge on the capacitors may cause personal injuries.
- Be aware of the inertia of the fan.
- Check that the AC drive has been powered off and cooled down before maintenance and repair.
- Mount and wire the AC drive in accordance with national standards, industry standards, and local safety regulations. Use only instruments that comply with the withstand voltage requirements and keep the housing of the instruments well grounded.
- Check that no voltage exists before any operations. Residual voltage is still present in the cabinet after the input breaker is switched off.
- Be careful when measuring components inside cabinets. Prevent meter leads from touching each other or other terminals.

Safety Cautions

Take the following necessary electrical safety measures before maintenance and repair:

1. Obtain operation authorization from the person responsible for electrical installation.
2. Clearly identify the work site and equipment.
3. Disconnect all possible voltage sources, make sure that they cannot be reconnected, and lock and label them during maintenance and repair.
   a. Disconnect the main disconnector or circuit breaker of the drive.
   b. Disconnect the disconnector of the supply transformer.
   c. If the drive is connected to a permanent magnet motor, disconnect the motor from the drive by using a safety switch or other means.
   d. Disconnect the control circuit from external hazardous voltage.
   e. Wait for at least 15 minutes after power-off and confirm that the DC bus voltage is approximately 0 V before any maintenance and repair.
4. Avoid contact with any live parts in the workplace during maintenance and repair.
5. Take special precautions when working near bare conductors.

6. Determine that the equipment is powered off by measuring. Remove or disassemble the shield or other cabinet structures when taking measurements, and act in compliance with local laws and regulations concerning live-line working (including but not limited to protection against electric shock and arcing).
   - Make sure that the voltage between the drive input terminals (R, S, and T) and the ground (PE) busbar is close to 0 V.
   - Make sure that the voltage between the drive DC busbar (+ and –) and the ground (PE) busbar is close to 0 V.
7. Install temporary grounding as required by local codes.

- Be aware that the AC drive works with high voltage.
- No connection work can be conducted unless the AC drive is powered off.
- Only trained personnel can perform maintenance and repair on the AC drive. Failure to comply may result in substantial property damage or severe personal injuries or even death.
- You must be especially careful to work on the equipment when it is opened. The power supply and terminals may be live even when the motor is not running due to possible presence of external power voltages.
- The AC drive must be handled by trained personnel with care. Incorrect hoisting or transportation may result in substantial property damage or severe personal injuries or even death.

2 Maintenance Cycle

To ensure normal use of AC drives for long time, regular maintenance and inspection must be performed on the electronic components inside the drive according to their service life. The general service life of the internal components is listed in the following table.

Table 2–1 Service life of components

Name	Standard Service Life
Fan	8 years

Note

The actual maintenance and inspection period is determined by the equipment mounting environment and operating conditions.

3 Routine Maintenance

3.1 Routine Maintenance

The AC drive is mostly composed of electrical components. Therefore, it is necessary to inspect and maintain worn electrical components.

3.1.1 Routine Inspection Checklist

Perform routine inspection according to the following checklist.

Table 3–1 Routine inspection checklist

☑	No.	Routine Inspection Item
☐	1	Check whether the AC drive produces abnormal vibration or noise.
☐	2	Check whether the grid voltage falls within the range of 525 VAC to 690 VAC (–15% to +10%).
☐	3	Check whether the AC drive has no peculiar smell.
☐	4	Check for fibers adhered to the air inlet.
☐	5	Check for intrusion of unwanted objects on the AC drive load end.

3.1.2 Routine Cleaning Checklist

Perform routine cleaning according to the following checklist.

Table 3–2 Routine cleaning checklist

☑	No.	Routine Cleaning Item
☐	1	Clear the dust especially metallic dust on the equipment surface to prevent the dust from entering the drive.
☐	2	Always keep the vents and cooling air ducts of the AC drive cabinets unobstructed, and ensure that the cooling fans are functioning properly.

Note

- Ensure that the dust inside the AC drive is cleared regularly and thoroughly by qualified professionals in compliance with relevant safety regulations.
- Clear dust at least once a year (or more frequently, depending on the service environment).
- Use a brush and vacuum cleaner, and use dry compressed air (max. 1 bar) where reach is impossible.

3.2 Periodic Inspection Checklist

Table 3–3 Periodic inspection checklist

☑	No.	Periodic Inspection Item
☐	1	Check whether the cable terminals and screws are secure.
☐	2	Check wiring.
☐	3	Check whether any component of the AC drive is damaged.

3.3 Common Maintenance Operations

3.3.1 Insulation Test of Main Circuits

Before measuring insulation resistance with a 500 VDC megameter, disconnect the main circuit from the AC drive. Do not test the control circuit insulation with an insulation ohmmeter. Refer to the figure below to measure the insulation resistance between the main circuit and the enclosure. The measured resistance is required to be greater than 5 MΩ. Never perform the high voltage (> 500 V) test, which has been completed before delivery.

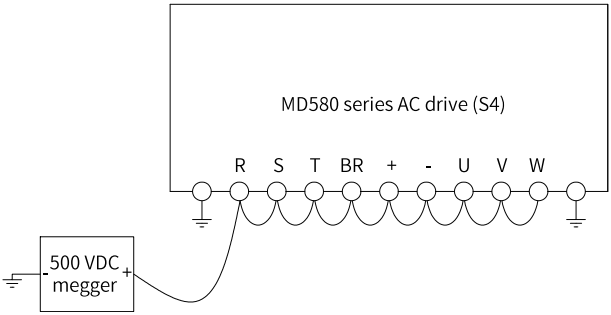

Figure 3-1 Main circuit insulation test of the MD580 series AC drive (S4)

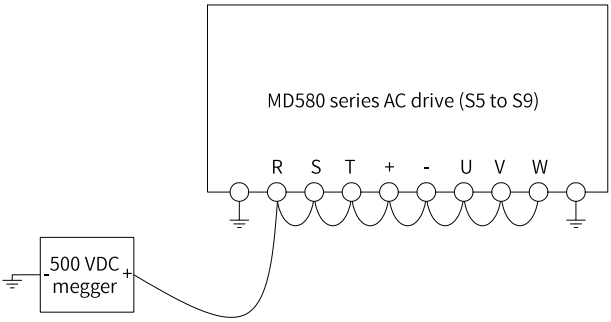

Figure 3-2 Main circuit insulation test of the MD580 series AC drive (S5 to S9)

3.3.2 Equipment Ventilation and Cleaning

Cleaning the Exterior of the AC Drive

Danger

Follow the safety instructions of the AC drive to prevent personal injuries or equipment damage. Note that only qualified electricians can perform installation, commissioning, or maintenance.

1. Take electrical safety precautions before operation by referring to *" Precautions for Maintenance and Repair" on page 10*.
2. Clean the exterior of the AC drive by using:
   - Vacuum cleaner with anti-static tube and nozzle
   - Soft brush

- Dry or damp (non wet) cleaning cloth (moistened with water or a mild detergent, pH 5–9 for metals)

Prevent water from entering the AC drive to cause damage. Do not use a hose or too much water, and be cautious of steam.

Cleaning the Heatsink

If not cleaned, the heatsink fins will be blocked, causing the AC drive overheating alarm or fault. Therefore, clean the heatsink as follows when necessary.

Wear personal protective equipment (PPE). Wear protective gloves and long sleeves to prevent injury as some parts have sharp edges.

Use a vacuum cleaner with an anti-static tube and nozzle, and wear a grounding wrist strap. An ordinary vacuum cleaner can generate electrostatic discharges that can damage the circuit board.

1. Take electrical safety precautions before operation by referring to *" Precautions for Maintenance and Repair" on page 10*.
2. Remove the fan. For details, see *"4.3 Replacing the Fan" on page 17*.
3. Blow in dry, clean, and oil-free compressed air from the bottom up while using a vacuum cleaner at the air outlet to collect dust. If there is a risk of dust entering adjacent equipment, clean the corresponding cabinet too.
4. Reinstall the fan.

4 Parts Replacement

The influence of the ambient temperature, humidity, dust, and vibration will cause aging of components inside the AC drive, which may result in potential faults or shorten the service life of the AC drive. Therefore, it is essential to carry out routine and periodic maintenance on the AC drive.

4.1 List of Maintainable Components

Table 4–1 List of maintainable components

No.	Name	Structure
1	Fan	S4 to S9
2	Communication expansion card	S4 to S9
3	EMC board	S6 to S9
4	Power board	S6 to S9
5	Drive board	S5

4.2 Maintenance Tools

The following tools may be required for repair and component replacement.

Structure	Tool
S4	Phillips screwdriver (PH2), torque wrench, and socket wrench (#10)
S5	Phillips screwdriver (PH2), torque wrench, and socket wrench (#10)
S6 and S7	Phillips screwdriver (PH2), torque wrench, and socket wrench (#10 and #13)
S8 and S9	Phillips screwdriver (PH2), torque wrench, and socket wrench (#10, #13, #16, and #18)

Note

A socket wrench set with two extensions is recommended.

4.3 Replacing the Fan

The steps for replacing the fans of the S4 to S9 models are exactly the same. The following takes the S5 models as an example.

1. Take electrical safety precautions before operation by referring to *" Precautions for Maintenance and Repair" on page 10*.

2. Unplug the fan terminal.

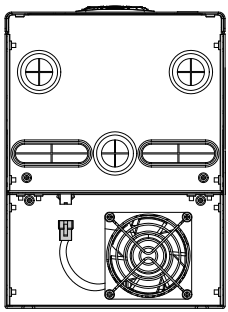

Figure 4-1 Unplugging the fan terminal

3. Remove the four M4 screws with a screwdriver to disassemble the fan component.

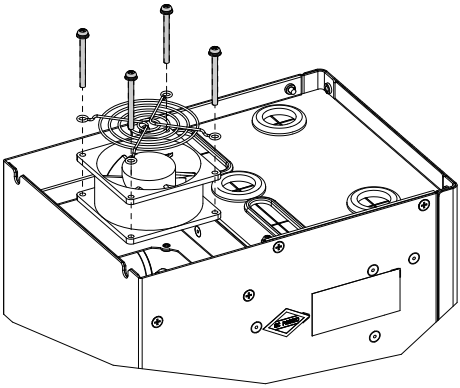

Figure 4-2 Removing the fan

4. Install a new fan of the same specifications in reverse order.

4.4 Replacing the Communication Expansion Card

The steps for replacing the communication expansion card of the S4 to S9 models are exactly the same. The following takes the S5 models as an example.

1. Take electrical safety precautions before operation by referring to *" Precautions for Maintenance and Repair" on page 10*.
2. Remove the two M4 bolts fixing the cover of the AC drive and lift the cover.

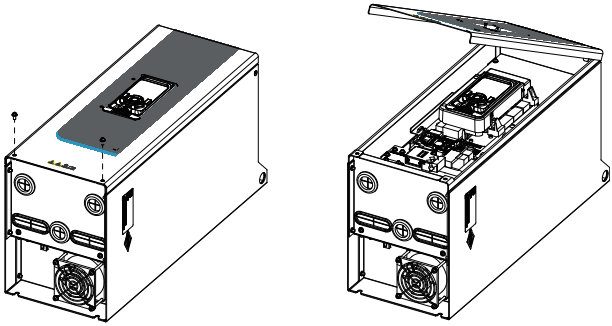

Figure 4-3 Removing the cover

3. Unplug the terminal, remove one M4 screw with a screwdriver, and disassemble the communication expansion card.

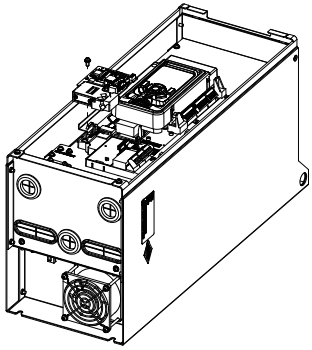

Figure 4-4 Removing the communication expansion card

4. Install a new communication expansion card in reverse order.

4.5 Replacing the EMC Board

To replace the EMC board on an S6 or S7 model, perform the following steps:

1. Take electrical safety precautions before operation by referring to *" Precautions for Maintenance and Repair" on page 10*.
2. Remove the two M5 bolts fixing the cover of the S6 or S7 model and lift the cover.

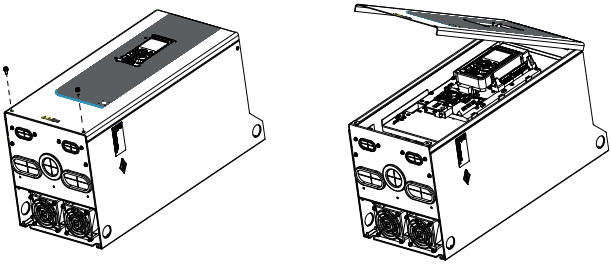

Figure 4-5 Removing the cover

3. Remove the cables connecting to the control circuit terminals ①, ②, ③, and ④ (terminals as shown in the dashed box in *"Figure 4–7 Removing control terminal cables" on page 21*) of the AC drive.

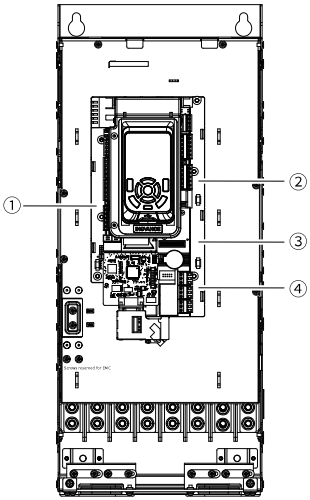

Figure 4-6 Positions of control terminals

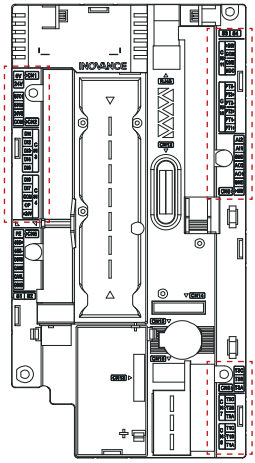

Figure 4-7 Removing control terminal cables

4. Remove the six M4 fixing bolts for the control component.

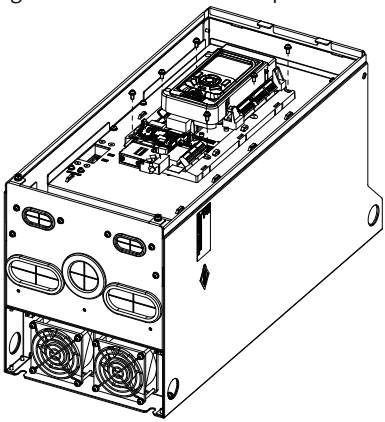

Figure 4-8 Removing the control component

5. Lift the control component and remove the three terminals on the back of the control board.

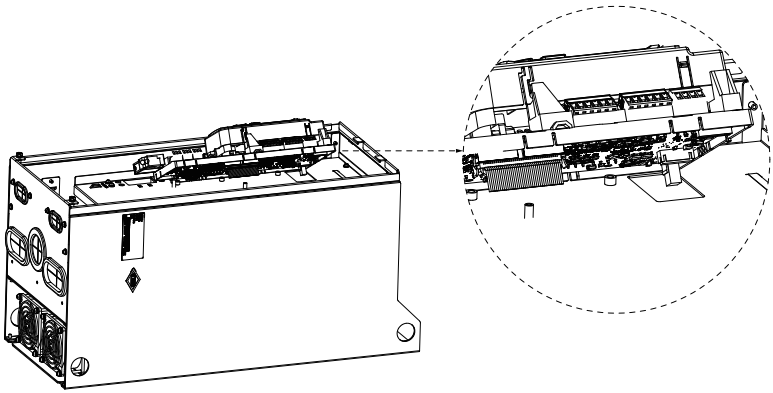

Figure 4-9 Removing the terminals on the back of the control board

6. Remove the six M4 fixing bolts for the control chamber cover.

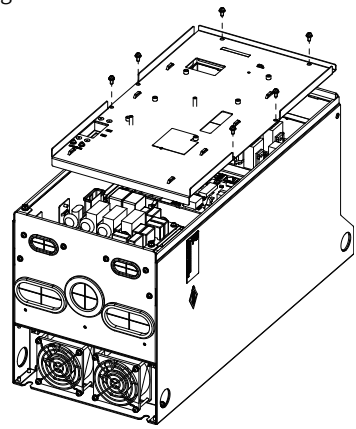

Figure 4-10 Removing the control chamber cover

7. Remove the seven M4 fixing bolts and two M4 ground bolts for the EMC board.

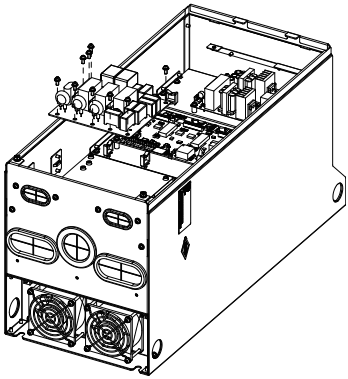

Figure 4-11 Removing the EMC board

8. Install an EMC board of the same specifications in reverse order.

To replace the EMC board on an S8 or S9 model, perform the following steps:

1. Take electrical safety precautions before operation by referring to *" Precautions for Maintenance and Repair" on page 10*.
2. Remove the two M5 bolts fixing the cover of the S8 or S9 model and lift the cover.

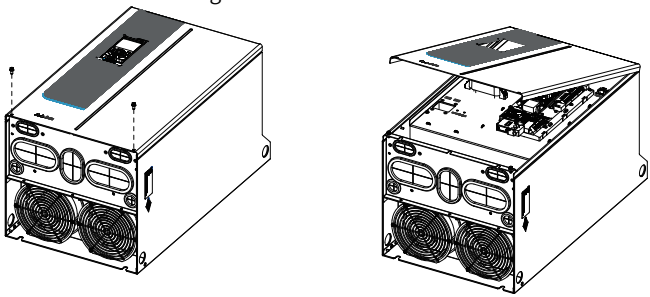

Figure 4-12 Removing the cover

3. Remove the cables connecting to the control circuit terminals ①, ②, ③, and ④. For details about the control circuit terminals, see the control circuit terminal description section in the *MD580 Series Low-Voltage High-Performance Engineering AC Drive Hardware Guide (690 V)*.

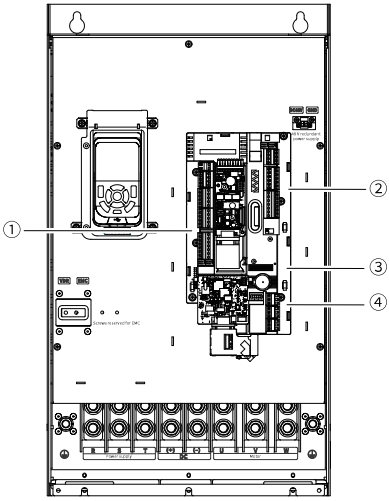

Figure 4-13 Removing control terminals

4. Remove the five M4 fixing bolts for the control board bracket (including the control board and operating panel on the bracket).

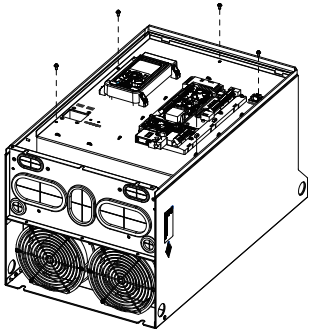

Figure 4-14 Removing the control module

5. Lift the control component and remove the four terminals on the back of the control board (marked ①, ②, ③, and ④ in the following figure).

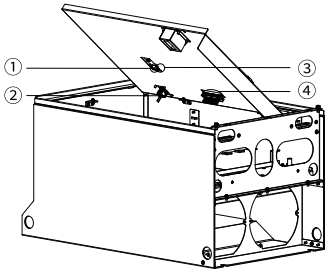

Figure 4-15 Removing terminals on the back of the control module

6. Remove the seven M4 fixing bolts for the EMC board.

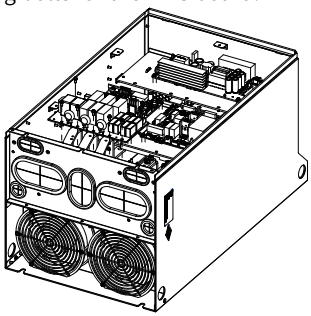

Figure 4-16 Removing the EMC board

7. Install an EMC board of the same specifications in reverse order.

4.6 Replacing the Power Board

To replace the power board on an S6 or S7 model, perform the following steps:

1. Take electrical safety precautions before operation by referring to *" Precautions for Maintenance and Repair" on page 10*.
2. Remove the two M5 bolts fixing the cover of the S6 or S7 model and lift the cover.

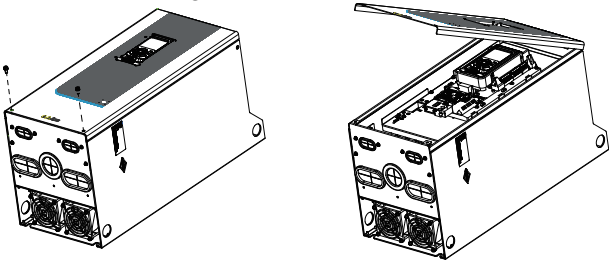

Figure 4-17 Removing the cover

3. Remove the cables connecting to the control circuit terminals ①, ②, ③, and ④ (terminals as shown in the dashed box in *"Figure 4–19 Removing control terminal cables" on page 26*) of the AC drive.

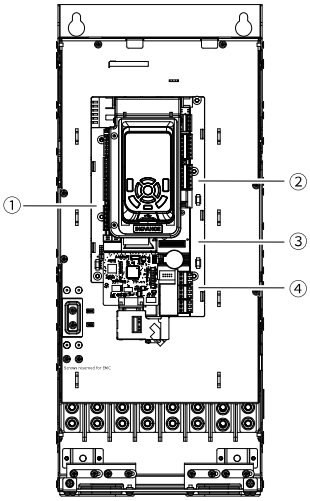

Figure 4-18 Positions of control terminals

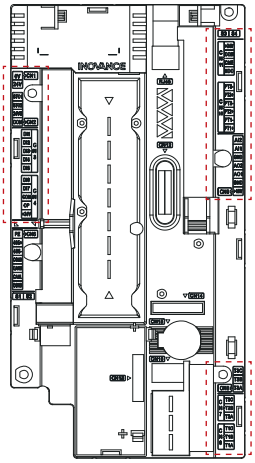

Figure 4-19 Removing control terminal cables

4. Remove the six M4 fixing bolts for the control component.

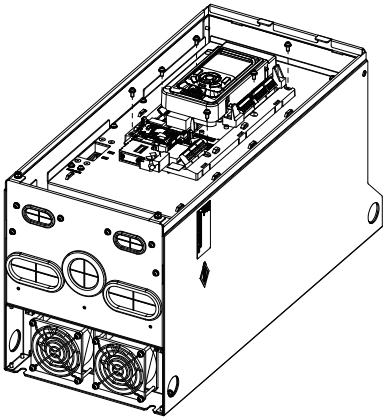

Figure 4-20 Removing the control component

5. Lift the control component and remove the three terminals on the back of the control board.

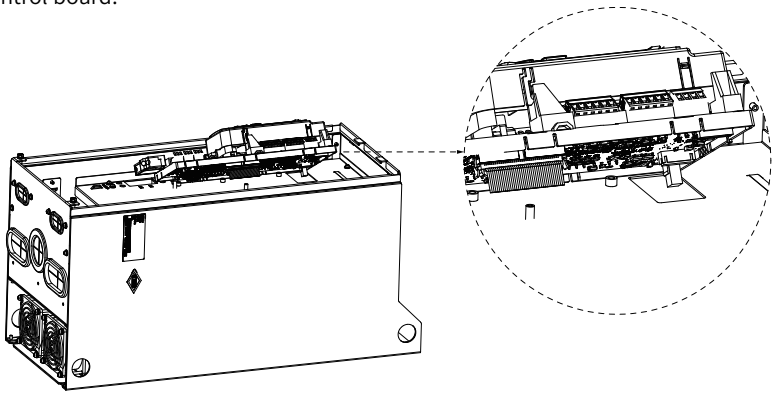

Figure 4-21 Removing the terminals on the back of the control board

6. Remove the six M4 fixing bolts for the control chamber cover.

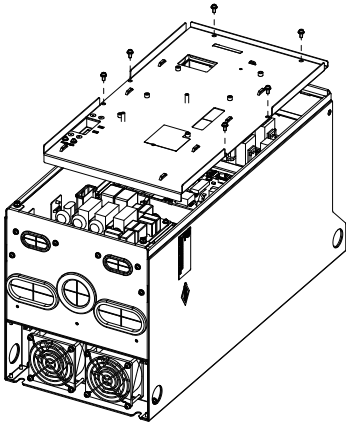

Figure 4-22 Removing the control chamber cover

7. Remove all terminals of the power board and the five M4 fixing bolts.

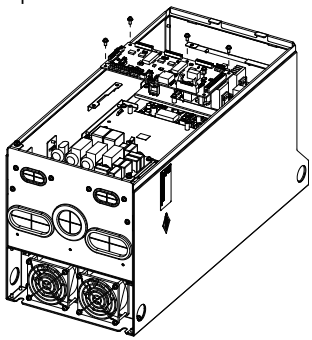

Figure 4-23 Removing the power board

8. Install a power board of the same specifications in reverse order.

To replace the power board on an S8 or S9 model, perform the following steps:

1. Take electrical safety precautions before operation by referring to *" Precautions for Maintenance and Repair" on page 10*.
2. Remove the two M5 bolts fixing the cover of the S8 or S9 model and lift the cover.

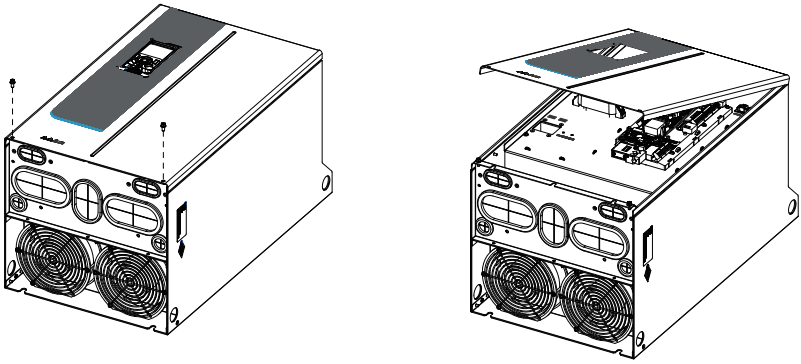

Figure 4-24 Removing the cover

3. Remove the cables connecting to the control circuit terminals ①, ②, ③, and ④. For details about the control circuit terminals, see the control circuit terminal description section in the *MD580 Series Low-Voltage High-Performance Engineering AC Drive Hardware Guide (690 V)*.

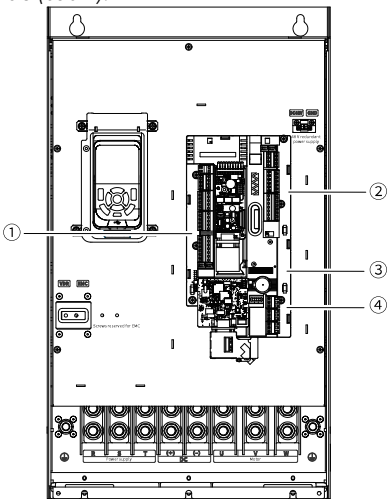

Figure 4-25 Removing control terminals

4. Remove the five M4 fixing bolts for the control board bracket (including the control board and operating panel on the bracket).

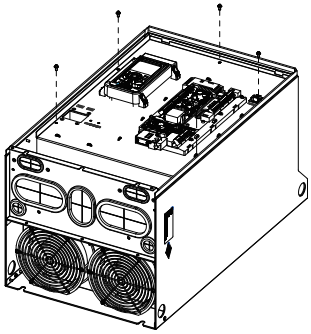

Figure 4-26 Removing the control module

5. Lift the control component and remove the four terminals on the back of the control board.

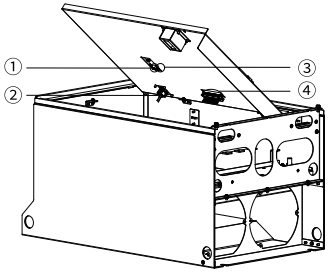

Figure 4-27 Removing terminals on the back of the control module

6. Remove all terminals of the power board and the five M4 fixing bolts.

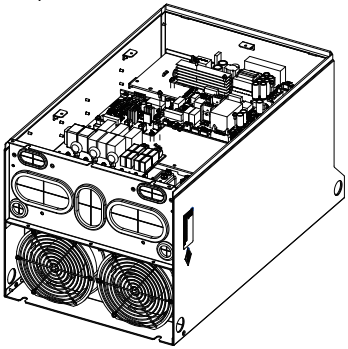

Figure 4-28 Removing the power board

7. Install a power board of the same specifications in reverse order.

4.7 Replacing the Drive Board

To replace the drive board on an S5 model, perform the following steps:

1. Take electrical safety precautions before operation by referring to *" Precautions for Maintenance and Repair" on page 10*.
2. Remove the two M4 bolts fixing the cover of the AC drive and lift the cover.

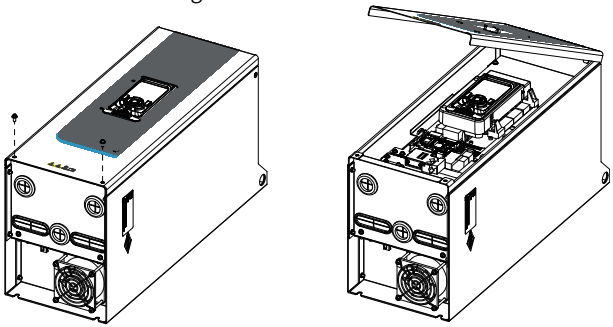

Figure 4-29 Removing the cover

3. Remove the cables connecting to the control circuit terminals ①, ②, ③, and ④ (terminals as shown in the dashed box in *"Figure 4–31 Removing control terminal cables" on page 32*) of the AC drive.

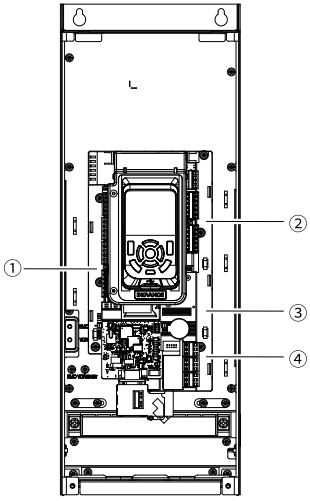

Figure 4-30 Positions of control terminals

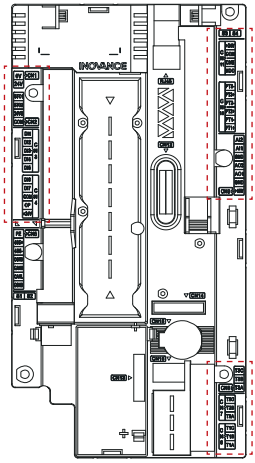

Figure 4-31 Removing control terminal cables

4. Remove the six M4 fixing bolts for the control component.

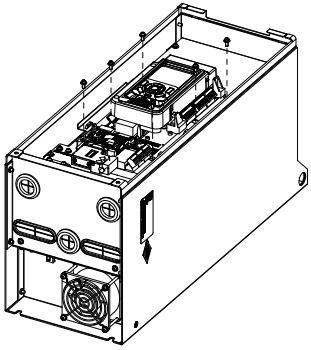

Figure 4-32 Removing the control component

5. Lift the control component and remove the three terminals on the back of the control board.

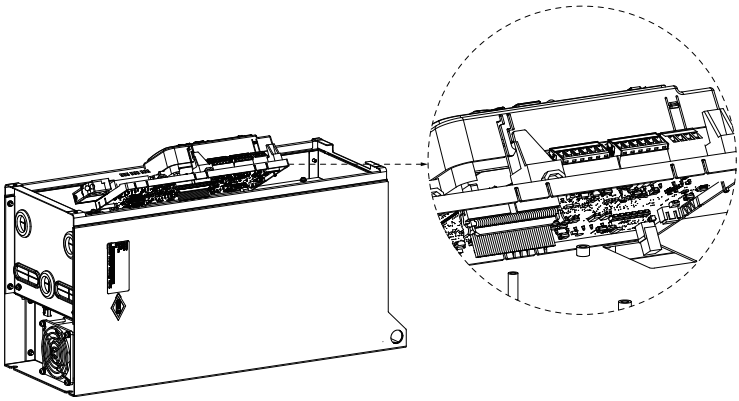

Figure 4-33 Removing the terminals on the back of the control board

6. Remove the six M4 fixing bolts for the control chamber cover.

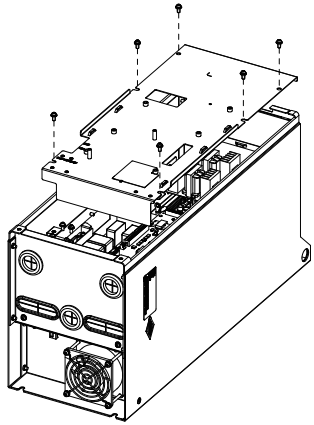

Figure 4-34 Removing the control chamber cover

7. Remove all terminals of the drive board as well as the four M4 fixing bolts and three plastic hexagonal prisms.

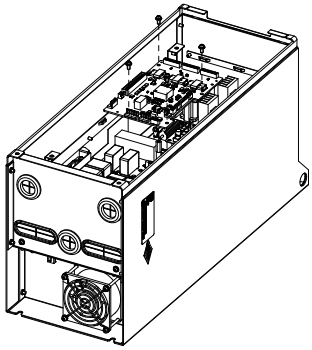

Figure 4-35 Removing the drive board

8. Install a drive board of the same specifications and the plastic hexagonal prisms in reverse order.

5 Storage and Warranty

Storage

To store the AC drive properly, observe the following:

- Pack the drive into the original packing box provided by Inovance.
- Do not expose the drive to an environment with moisture, high temperature, or direct sunlight for a long time.
- Long-time storage will cause degradation of the electrolytic capacitor. Therefore, the drive must be switched on once for at least five hours every six months. Increase the input voltage gradually to the rated value using a regulator. Contact professionals for technical support if necessary.

Warranty

Free warranty covers only the AC drive itself. Inovance provides an 18-month warranty (subject to the barcode on the AC drive or contract if there is any) to the equipment from the date of shipment for the failure or damage under normal use conditions. When the warranty period expires, reasonable maintenance fee will be charged.

Within the 18-month warranty period, reasonable maintenance fee will also be charged for the following reasons:

- Operations not following the instructions in the user guide
- Fire, flood, abnormal voltage, or other disasters
- Using the AC drive for any non-intended applications
- Using the AC drive beyond permissible specifications
- Force majeure (natural disaster, earthquake, and lightning strike) and second damage caused thereof The maintenance fee is charged according to the latest Maintenance Price List of Inovance. If otherwise agreed upon, the agreed terms and conditions shall prevail.

6 Disposal and Recycle

Contact a qualified electronic and electrical waste equipment disposal company to recycle and dispose of the retired equipment and dispose of it according to local regulations.

19012182A00

Shenzhen Inovance Technology Co., Ltd.

www.inovance.com

Add.: Inovance Headquarters Tower, High-tech Industrial Park, Guanlan Street, Longhua New District, Shenzhen
Tel: (0755) 2979 9595 **Fax:** (0755) 2961 9897

Suzhou Inovance Technology Co., Ltd.

www.inovance.com

Add.: No. 16 Youxiang Road, Yuexi Town, Wuzhong District, Suzhou 215104, P.R. China
Tel: (0512) 6637 6666 **Fax:** (0512) 6285 6720