




DOBOT DT-MG400-4R075-01 Robot Arm Kit Desktop Instructions

[Home](#) » [Dobot](#) » DOBOT DT-MG400-4R075-01 Robot Arm Kit Desktop Instructions 

Contents

- 1 DOBOT DT-MG400-4R075-01 Robot Arm Kit Desktop
- 2 Product information
- 3 Product Usage Instructions
- 4 Intended use
- 5 Liability
- 6 Description of symbols
- 7 Safety instructions
- 8 Emergency
- 9 Transportation
- 10 Installation environment
- 11 Maintenance and repair
 - 11.1 Safety instructions
- 12 Declaration of Conformity (DOC)
- 13 Technical data
- 14 Documents / Resources
 - 14.1 References
- 15 Related Posts



DOBOT DT-MG400-4R075-01 Robot Arm Kit Desktop



Product information

Specifications

- **Product Name:** Dobot MG400
- **Model Number:** DT-MG400-4R075-01
- **Product number:** 2899514

Product Usage Instructions

Safety precautions

Follow the safety precautions below when operating and using the robot for the first time:

- **DANGER:** To prevent people from accidentally entering the robot arm's workspace, make sure to set up a safety fence that prevents people from entering the hazardous area.
- Ensure that the robot is in the appropriate packaging position and that the brakes on each axis are in normal condition before packaging.
- Ensure that the packaging area is free from obstacles so that personnel can evacuate it in case of an emergency.
- When transporting the robot, secure the packaging to ensure that the robot is in a stable position.
- To prevent people from accidentally entering the robot arm's workspace, erect safety barriers that prevent people from entering the hazardous area.
- Follow ESD regulations when disassembling the robot or the controller.
- Avoid disassembling the power supply system in the controller.
- After the controller is turned off, the power supply system may remain under high voltage for several hours.
- To avoid electric shock, turn off the protective switch and interrupt the main power supply before replacing parts.

Installation

When bringing the robot from the packaging to the installation site, hold the robot arm firmly until all fastening screws on the base of the robot are securely tightened.

Installation environment:

Keep the robot away from dust, moisture, and other contaminants.

Do not use it in a closed environment. A closed environment may cause a loss of programs, data, or files stored in the robot.

Maintenance and Repair:

Record all repairs and save them in the technical documentation to avoid losing programs, data, or files stored in the robot.

Return the robot to the packaging position after maintenance or repair.

Frequently Asked Questions (FAQ)

Q: Can the Li-Ion battery be replaced?

A: No, the Li-Ion battery is built-in and cannot be replaced.

Q: What safety precautions should be taken when using the robot?

A: The following safety precautions should be followed:

- Set up a safety fence to prevent people from entering the robot arm's workspace.
- Ensure the robot is in the appropriate packaging position before packaging.
- Keep the packaging area free from obstacles for easy evacuation.
- Erect safety barriers to prevent people from entering the hazardous area.
- Follow ESD regulations when disassembling the robot or controller.
- Turn off the protective switch and interrupt the main power supply before replacing parts to avoid electric shock.

Intended use

- Dobot MG400 is a collaborative robot only for general industrial use, such as processing or delivering products or parts through end tools. The Dobot MG400 may be used in educational settings.
- Dobot MG400 is equipped with special safety mechanisms including collision detection. These mechanisms are purposely designed for human-robot collaborative operation but only intended for non-hazardous applications after risk assessment, where tools, commodities, environments, and other machines have been demonstrated to be incapable of significant risk through application-specific risk assessments.
- Any use or application deviating from intended use is deemed to be impermissible misuse, including, but not limited to:
 - Use in potentially explosive environments.
 - Use in life-critical applications.

- Use before performing a risk assessment.
- Use over-stated specifications.
- In commercial institutions, the accident prevention regulations of the Employer's Liability Insurance Association for Electrical Systems and Operating Materials are to be observed.
- The product can be used in schools and training centers. The use must be supervised by trained personnel.
- The product is intended for indoor use only. Do not use it outdoors.
- Contact with moisture must be avoided under all circumstances.
- If you use the product for purposes other than those described, the product may be damaged.
- Improper use can result in short circuits, fires, electric shocks, or other hazards.
- The product complies with the statutory national and European requirements.
- For safety and approval purposes, you must not rebuild and/or modify the product.
- Read the safety instructions and any accompanying instructions carefully and store them in a safe place. Make this product available to third parties only together with the safety instructions and any accompanying instructions.
- All company names and product names are trademarks of their respective owners. All rights reserved.

Liability

Validity and Responsibility

- The information in this document does not cover designing, installing, and operating a complete robot system, nor does it cover all peripheral equipment that can affect the safety of the complete system. The complete system must be designed and installed per the safety requirements outlined in the standards and regulations of the country where the robot is installed.
- The integrators of Dobot are responsible for ensuring that the applicable safety laws and regulations in the country concerned are observed and that any significant hazards in the complete robot application are eliminated. This includes, but is not limited to:
 - Performing a risk assessment for the complete robot system.
 - Adding safety machines and mechanisms based on the risk assessment.
 - Setting up the appropriate safety settings in the software.
 - Ensuring that the user will not modify any safety measures.
 - Validating that the total robot system is designed and installed correctly.
 - Specifying instructions for use.
 - Marking relevant signs and contact information of the integrators on the robot.
 - Archiving relevant technical files.

Limitation of Liability

- Any safety information provided in this document should not be construed as a warranty by Dobot. The robot may cause injury or damage even if all safety instructions are observed.

Description of symbols

- The following symbols are on the product/appliance or are used in this document or the accompanying

operating/installation/maintenance instructions:

- The symbol warns of hazards that can lead to personal injury.
- The symbol warns of dangerous voltage that can lead to personal injury by electrical shock.

ATTENTION

- Indicates a potential risk, which, if ignored, may result in damage to the product, loss of data, or unpredictable results

WARNING

- Indicates a hazard with a medium level or low level of risk which, if not avoided, could result in minor or moderate injury.

DANGER

- Indicates a hazard with a high level of risk which, if not avoided, could result in death or serious injury.

NOTICE

- A situation that, if not avoided, can cause personal injury or damage to the equipment. For items marked with such signs, depending on the specific situation, there is sometimes a possibility of significant consequences.

NOTE

- Provides additional information to emphasize or supplement important points in the main text.

ELECTRICITY

- Dangerous levels of power consumption, which if not avoided, will cause personal injury or serious damage to the equipment.

HOT

- Hot surfaces that might cause personal injury if touched.

Safety instructions

- Read this document and the accompanying operating instructions carefully and especially observe the safety information.
- If you do not follow the safety instructions and information on proper handling, we assume no liability for any resulting personal injury or damage to property. Such cases will invalidate the warranty/guarantee.

General

- The product is not a toy. Keep it out of the reach of children and pets.
- Do not leave packaging material lying around carelessly. This may become dangerous playing material for children.
- If you have questions that remain unanswered by this information product, contact our technical support service or other technical personnel.
- Maintenance, modifications, and repairs must only be completed by a technician or an authorized repair center.

Handling

- Handle the product carefully. Jolts, impacts or a fall even from a low height can damage the product.

Operating environment

- Do not place the product under any mechanical stress.
- Protect the appliance from extreme temperatures, strong jolts, flammable gases, steam and solvents.
- Protect the product from high humidity and moisture.
- Protect the product from direct sunlight.
- Do not switch the product on after it has been taken from a cold to a warm environment. The condensation that forms might destroy the product. Allow the product to reach room temperature before you use it.

Operation

- Consult an expert when in doubt about the operation, safety or connection of the product.
- If it is no longer possible to operate the product safely, take it out of operation and protect it from any accidental use. DO NOT attempt to repair the product yourself. Safe operation can no longer be guaranteed if the product:
 - is visibly damaged,
 - is no longer working properly,
 - has been stored for extended periods in poor ambient conditions or
 - has been subjected to any serious transport-related stresses.

Power adapter

- Do not modify or repair mains supply components including mains plugs, mains cables, and power supplies. Do not use damaged components. Risk of death by electric shock!
- Connect the appliance to a wall socket that can be accessed easily.
- As a power supply, only use the supplied mains adaptor.
- Only connect the power adaptor to a normal mains socket connected to the public supply. Before plugging in the power adaptor, check whether the voltage stated on the power adaptor complies with the voltage of your electricity supplier.
- Never connect or disconnect power adaptors if your hands are wet.
- Never unplug the power adaptor from the mains socket by pulling on the cable; always use the grips on the plug.
- For safety reasons, disconnect the power adaptor from the main socket during storms.

- Do not touch the power adapter if there are any signs of damage, as this may cause a fatal electric shock! Take the following steps:
- Switch off the mains voltage to the socket containing the power adapter (switch off the corresponding circuit breaker or remove the safety fuse, and then switch off the corresponding RCD protective switch).
- Unplug the power adapter from the main socket.
- Use a new power adapter of the same design. Do not use the damaged adapter again.
- Ensure that cables are not pinched, kinked, or damaged by sharp edges.
- Always lay cables so that nobody can trip over or become entangled in them. This poses a risk of injury.

Li-ion battery

- The rechargeable battery is permanently built into the product and cannot be replaced.
- Never damage the rechargeable battery. Damaging the casing of the rechargeable battery might cause an explosion or a fire!
- Never short-circuit the contacts of the rechargeable battery. Do not throw the battery or the product into fire. There is a danger of fire and explosion!
- Charge the rechargeable battery regularly, even if you are not using the product. Due to the rechargeable battery technology being used, you do not need to discharge the rechargeable battery first.

General safety notes

- Follow the safety instructions below when starting and using the robot for the first time.

DANGER

- The robot system is electrical equipment. Non-professional technicians should not modify the circuit, otherwise, it may cause damage to devices or personal injury.
- Comply with the local laws and regulations when operating the robot. The security precautions in this document are only supplemental to the local laws and regulations.
- Use the robot in the specified environment scope. Exceeding the specifications or load conditions will shorten the service life of the robot, and even damage it.
- Ensure that the robot is operated under security conditions and there is no harmful object around the robot.
- Turning on or off the power continually may result in degraded performance of the main circuit components inside the controller. If turning on or off the power continually is required, keep the frequency less than once per minute.

NOTICE

- The personnel responsible for the installation, operation, and maintenance of equipment must first receive strict training, understand various safety precautions, and master correct operation and maintenance methods before they can operate and maintain equipment.
- Personnel without professional training shall not disassemble and repair the equipment without authorization. If the device fails, contact the Dobot technical support engineer in time.
- Be sure to carry out daily inspections and regular maintenance and replace faulty components in time to

ensure the safe operation of the equipment.

- If the equipment is scrapped, comply with relevant laws to properly handle industrial waste and protect the environment.
- To prevent personnel from accidentally entering the working space of the robot arm, be sure to set up a safety fence to prevent personnel from entering the hazardous area.
- Before operating the robot, make sure that no one is inside the safety fence. When operating the robot, be sure to operate outside the safety fence.
- Do not expose the robot to permanent magnetic fields all the time. Strong magnetic fields can cause damage to the robot.
- Dobot assumes no responsibility for robot damage or personal injury caused by failure to follow product instructions or other improper operations.
- Use appropriate and reliable lifting equipment during handling operations such as lifting rings and bridge crane. According to the relevant regulations of various countries, it must be carried out by personnel with operating qualification certificates or personnel authorized by the company.
- Make sure that there are no obstacles within 2 meters of the robot during transportation.
- Relevant personnel should stay away from the suspended robot. Dobot is not responsible for any damage caused during the transportation and handling of equipment.
- Make sure that the robot is in the packing posture before packaging, and the brakes on each axis are normal.
- Make sure that there are no obstacles around the packing area, so that the staff can leave in a timely manner in case of an emergency.
- When the robot is transported, the packaging needs to be fixed to ensure that the robot is stable.
- After removing the outer packaging, make sure that the robot maintains the original packing posture and the brakes of each axis are normal.
- During the commissioning process, make sure that no relevant personnel and equipment (include computer used for debugging) stay in the dangerous area of the machine.
- If necessary, wear corresponding safety protective equipment, such as safety helmets, safety shoes (with non-slip soles), face shields, protective glasses and gloves. Inappropriate clothing may cause personal injury.
- To prevent personnel from entering the working space of the robot arm by mistake, set up safety barriers to prevent personnel from entering the hazardous area.
- Do not enter the working space of the manipulator at will while operating the robot, otherwise cause injury to the robot or yourself.
- The personnel responsible for the installation, operation, and maintenance of the equipment must first undergo strict training, understand various safety precautions, and master the correct operation and maintenance methods before operating and maintaining the equipment.
- When an abnormality occurs in the mechanical arm, it is necessary to ensure that the machine is stopped and then checked.
- After the commissioning of the operator is completed, the test needs to be performed in the Manual mode first, and then it is automatically run after it is confirmed to be correct.
- If the controller needs to be restarted due to power failure, when restarting, the robot must be manually returned to the initial position of the automatic operation program before restarting the automatic operation.
- Before maintenance and wiring work, the power supply must be cut off, and the sign No power supply must be put on. Otherwise, electric shock and personal injury may result.
- Observe the ESD regulations when disassembling the robot or controller.
- Avoid dismantling the power supply system in the controller. After the controller is turned off, its power supply

system may still have high voltage for several hours.

- Contact our technical support staff for the disassembly and repair of the robot.
- Maintenance and repair work must be carried out by designated personnel, otherwise, electric shock and personal injury may result.
- If the brake is manually released, the robot may move because of the action of gravity.
- So, when manually releasing the brake, ensure that the robot body and the tools or workpieces installed on the robot are effectively supported.
- To prevent electric shock, when replacing parts, turn off the circuit breaker in advance and cut off the main power before proceeding.
- Turn off the main power supply for 5 minutes before replacing parts.
- The replacement operation must be performed by the specified operator.
- The robot is designed and tested according to the group I class A engineering medical robot standard. To reduce radio interference in light industry or family environment, take protective measures.
- It is prohibited to operate the robot in a strong radiation environment (such as an RF source without shielding), otherwise, it could interfere robot's work.

WARNING

- Before the operation, wear protective clothing, such as an antistatic uniform, protective gloves, and protective shoes.
- It is prohibited to modify or remove the nameplates, instructions, icons, and marks on the robot and the related equipment.
- Before operating the equipment, find and be familiar with the operation method of the emergency stop function to ensure that the robot arm can be stopped urgently in the case of sudden stress. The emergency stop function is Stop Category 1.
- Be careful when carrying or installing the robot. Follow the instructions on the packing box to put down the robot gently and place it correctly in the direction of the arrow.
- Use the matched cables when connecting a robot to internal or external equipment for personal security and equipment protection.
- Ensure that the robot and tools are installed correctly.
- Ensure that the robot has enough space to move freely.
- If the robot is damaged, do not continue to use it.
- Any impact will release a lot of kinetic energy, which is much higher than that under high speed and high load.

Personal safety

- When operating the robot system, strictly follow the general precautions listed below to ensure the personal safety of the operator.

WARNING

- Comply with local laws or regulations concerning the maximum weight one person is permitted to carry.
- Do not touch the terminal blocks or disassemble the equipment with the power ON. Otherwise, it may result in an electric shock.

- Confirm that the equipment is well grounded, otherwise, it will endanger personal safety.
- Do not touch the terminal blocks or remove the interval circuit components within 10 minutes after the power is shut off, to avoid an electric shock since there is residual capacitance inside the controller.
- Even if the power switch of the controller is already in the OFF status, touching the terminal blocks or removing the interval circuit components is not allowed, to avoid an electric shock since there is residual capacitance inside the controller.
- When working with robots, do not wear loose clothing or jewelry. When operating the robot, make sure that you have bundled your hair behind your head.
- If the robot appears to have stopped during the operation of the equipment, it may be because the robot is waiting for the start signal and is in the state of being about to move.
- In this case, the robot should also be considered to be in motion. Do not approach the robot.

Emergency

Emergency stop switch

- After you press the emergency stop switch in emergencies, the robot will immediately stop all motions and be locked.
- The emergency stop switch is not a safeguard. It is a complimentary protective measure and is not intended to prevent injury.

Emergency recovery

- The emergency stop switch will be locked after you press it. To unlock the switch, you need to rotate the switch according to the mark on the switch.

WARNING

- Please operate the robot to recover from the emergency only after the danger of the robot system is completely removed.

Forced joint movement

- In the unlikely event of an emergency, you may need to move the robot joint(s) when the robot power is either impossible or unwanted. In this case, you must push or pull the robot arm hard to move the joint(s).

WARNING

- Moving the locked joints forcefully may cause joint damage. Please operate only in emergencies.

Transportation

- The robot should be restored to its packaging posture during transportation, as shown below, and transported with its original packaging. The robot arm has four joints: J1, J2, J3, and J4, and the corresponding joint angles

of the factory posture are $J1 = 0^\circ$, $J2 = 0^\circ$, $J3 = 60^\circ$, $J4 = 0^\circ$. You can adjust the joint angles through jogging or programming. See the corresponding software guide for details.

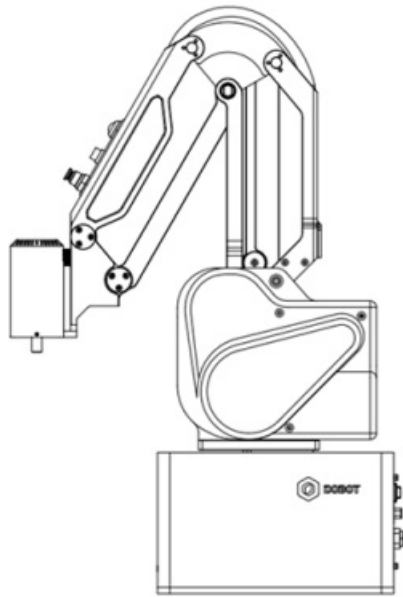


Figure 2.1 Packaging posture

- During transportation, ensure that the robot arm is stable and fixed by corresponding measures.
- During transportation and long-term storage, ensure that the ambient temperature ranges from -20°C to $+55^\circ\text{C}$, and the ambient humidity is no more than 95 % without condensation.
- When moving the robot from its packaging to the installation space, hold the robot arm in place until all mounting bolts are securely tightened at the base of the robot.
- After transportation, store the original package in a dry place for repacking and transporting it in the future.

WARNING

- Ensure that the operator is not unduly stressed on their back or other parts of the body when lifting the equipment and use appropriate lifting equipment if necessary.
- Dobot shall not be held responsible for any damage caused by the transportation of the equipment.
- Be sure to follow all installation instructions when installing the robot.

Installation environment

- To maintain the robot's performance and ensure safety, place it in an environment with the following conditions.

NOTICE

- Install indoors with good ventilation.
- Keep away from excessive and shock.
- Keep away from direct sunlight.
- Keep away from dust, oily smoke, salinity, metal powder, corrosive gases, and other contaminants.
- Do not use it in a closed environment. A closed environment may cause a high temperature of the robot and shorten its service life.
- Keep away from flammable.
- Keep away from cutting and grinding fluids.

- Keep away from sources of electromagnetic interference, including large transformers, large electromagnetic contactors, welding machines, etc.

Maintenance and repair

- Maintenance and repair must be performed in compliance with all safety instructions. The purpose of maintenance and repair is to ensure that the system is kept operational or to return the system to an operational state in the event of a fault.
- Repairing includes troubleshooting in addition to the actual repair itself.
- Repairing must be performed by an authorized system integrator or Dobot technical engineers.
- Before returning robots or parts to Dobot, follow the instructions below:
- Remove all parts that do not belong to Dobot.
- Make a backup copy of the files. Dobot shall not be responsible for the loss of programs, data, or files stored in the robot.
- Restore the robot to the packaging posture.

Safety instructions

- The following safety procedures and warnings must be observed during the operation of the robot or controller for maintenance and repair purposes:
- Replace faulty components using new components with the same article number or equivalent components approved by Dobot.
- Reactivate any deactivated safety measures immediately after the repairing is completed.
- Record all repairs and save them in the technical document with the robot system.
- Remove the main input cables from the back of the robot to ensure that it is completely unpowered. Take necessary precautions to prevent other persons from powering on the system during the repair period.
- Observe ESD regulations during the disassembly of the parts of the robot.
- Prevent water and dust from entering the robot.

Declaration of Conformity (DOC)



EC Declaration of Conformity

We

Shenzhen Yuejiang Technology Co., Ltd.

Company's address

*Room 1003, Building 2, Chongwen Park, Nanshan iPark, No.3370, Liuxian Blvd,
Nanshan District, Shenzhen City, Guangdong Province, China*

declares that the product described is in conformity with

The MD Directive(2006/42/EC), EMC Directive (2014/30/EU), RoHS Directive(2011/65/EU)

Applicable Harmonized standards:

*IEC 60204-1:2016 / EN 60204-1:2018, Annex I of 2006/42/EC,
EN ISO 12100:2010 , EN ISO 10218-1:2011,
EN IEC 61000-6-2:2019, EN IEC 61000-6-4:2019, EN IEC 61000-3-2:2014, EN IEC 61000-3-3:2013.*

Product Name

DOBOT MG400

Product Model

DT-MG400-4R075-01

Trade Mark



Name and address of the representative authorized to compile the technical file

*DOBOT Europe GmbH
Werner-Heisenberg-Str.2, 63263 Neu-Isenburg ,Germany*

Responsible for making this declaration is

Manufacturer ☒

Authorized representative established within the EU ☐

Aug. 14, 2023

Shenzhen City, China

YeWeizhi

Deputy Director of R&D

Issue date and Place

Name and position

Signature and company stamp

Disposal

- This symbol must appear on any electrical and electronic equipment placed on the EU market. This symbol indicates that this device should not be disposed of as unsorted municipal waste at the end of its service life.
- Owners of WEEE (Waste from Electrical and Electronic Equipment) shall dispose of it separately from unsorted municipal waste. Spent batteries and accumulators, which are not enclosed by the WEEE, as well as lamps that can be removed from the WEEE in a non-destructive manner, must be removed by end users from the WEEE in a non-destructive manner before it is handed over to a collection point.
- Distributors of electrical and electronic equipment are legally obliged to provide free takeback of waste. Conrad provides the following return options free of charge (more details on our website):
 - in our Conrad offices
 - at the Conrad collection points
 - at the collection points of public waste management authorities or the collection points set up by manufacturers

or distributors within the meaning of the ElektroG

- End users are responsible for deleting personal data from the WEEE to be disposed of.
- It should be noted that different obligations about the return or recycling of WEEE may apply in countries outside of Germany.

Technical data

Power supply

- **Mains power supply**..... 100 – 240 V/AC, 50/60 Hz
- **Input power supply** 48 V/DC, 150 W


Environment

- **Operating temperature** 0 to +40 °C
- **Storage temperature** -25 to +55 °C
- **Operating altitude** ≤1000 m

Others

- **Weight (approx.)** 8 kg
- **2899514_V1_0923_jh_ss_en 996580235-2**

Documents / Resources

	<p>DOBOT DT-MG400-4R075-01 Robot Arm Kit Desktop [pdf] Instructions DT-MG400-4R075-01, DT-MG400-4R075-01 Robot Arm Kit Desktop, Robot Arm Kit Desktop, A rm Kit Desktop, Desktop</p>
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References

- [User Manual](#)