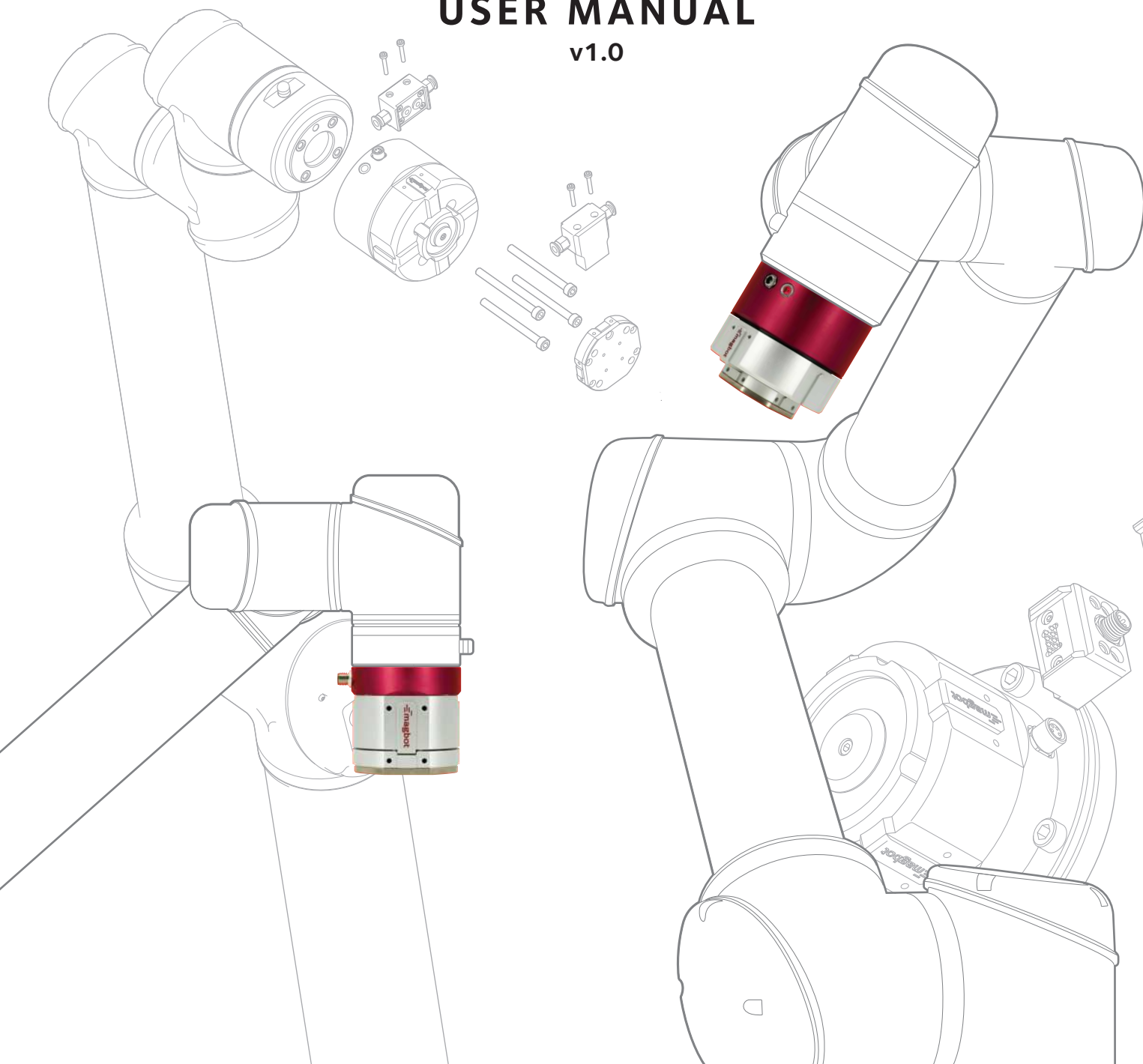


Emagbot

USER MANUAL

v1.0



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1 Introduction

1-1 User's Guide



Read the installation and operating instructions carefully before installing the product.

Installation and operating instructions contain important information for personal safety

1-2 Key Safety Instruction



Before operating the robot, the users must read, understand, and follow this manual, the robot manual, and the related equipment's safety instruction. If the users do not comply with safety concerns, it may result in death or severe injury.

1-3 Product & Component Version / Software Version

This manual contains the following details about Magbot product and components.

Tool changer	Version	Accessories	Version	Tool Stand	Version
TCV1	v 1.0	PPM	v 1.0	mTS1	v 1.0
TCV2	v 1.0	PPF	v 1.0	mTS2	v 1.0
TCW1	v 1.0	PMM	v 1.0		
		PMF	v 1.0		
		PPF-W1	v 1.0		
		PMF-W1	v 1.0		

This manual includes the following software version.

Software	CB3-Series	e-Series
URCap	v3.13	v5.80

2 Safety Instructions and Cautions



2-1 Safety



Robot users are responsible for ensuring compliance with safety laws and regulations applicable in their respective countries and eliminating most of the risks to the entire robotic application.

- To conduct a risk assessment for the entire robotic system.
- To make interface connection of other machines and additional safety devices, if defined by the risk assessment
- To do proper safety setup of the robot software
- To ensure that users do not modify safety measures
- To verify precise design and installation of the entire robot system
- To specify user instructions
- To check robot installation sign with the integrator's signature and contact information
- To store risk assessment and all documentation in technical files, including this manual

***In addition to the above, users are obligated to be careful not to cause any dangerous situations.**

2-2 Cautions



Cautions when using the Magbot as a tool changer

1. Qualified professionals should provide installation, commissioning, maintenance, and repair under this installation and operating instructions.
2. It is to be mounted on a collaborative robot machine and used to secure the tool.
 - >The following are examples of situations in which a tool changer can pose a risk.
 - The tool changer is not installed, used, or maintained properly.
 - The tool changer is not used for its intended purpose.
 - It fails to comply with local regulations (legislation, directives) such as the EC Machinery Directive.
 - It fails to comply with accident prevention regulations and installation and operation instructions.
3. The tool changer should be used under proper application and technical data.
(UND Co., Ltd. is not responsible for any damage caused by improper use.)
4. In case of use for other purposes, written approval from UND Co., Ltd. is required.
5. Before installing or repairing the tool changer, ensure to turn off the collaborative robot's power.
6. In case of maintenance, modification, or work of attachments, remove the tool changer from the machine and work outside the dangerous area.
7. Ensure that the tool changer does not operate by mistake during commissioning or testing.
8. The use of tool changers in extreme conditions such as severe liquids or abrasive dust requires prior approval of UND Co., Ltd..
9. Before operating Robot, secure the magbot TC to the proper position of Robot.
10. Do not install a damaged magbot on Robot
11. Do not connect the magbot to any power other than the system power specified in the user manual.
12. Fix the wire connecting the system to Robot arm, so it does not get caught when operating Robot
13. Make sure that no one/product in Robot and/or magbot path before initializing Robot routine.
14. Operate it below maximum payload of magbot.
15. For welding application, ensure that there are no magbot parts in the ground path of the welding power source.
16. Do not operate the magbot on humans and/or animals.
17. Install and use the magbot that matches the payload of Cobot.
18. Even if not specified otherwise, repairs to the magbot are performed by UND.
19. If Magbot malfunctions due to Robot system error, the system must be turned off immediately.
20. Sound is generated during grip and release operations, which is not a problem because it is a sound generated by the magbot changing its magnetic path to grip and release operations.

2-2 Cautions

21. For TCW1 model, be sure to fully charge the battery before using and operating.
22. TCW1's tool changer (master TC) and the controller should be located within 6meter.
23. TCW1 should be used after confirming that Green LED is turned on by pressing the power button on the tool changer (master TC). And once the battery warning light (RED LED) is on, be sure to recharge before use.
24. Do not place the controller of TCW1 in an enclosed area where RF is shielded.



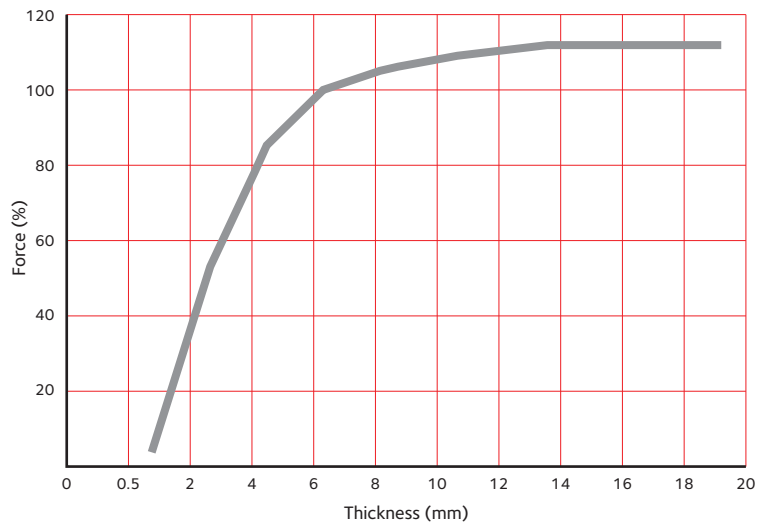
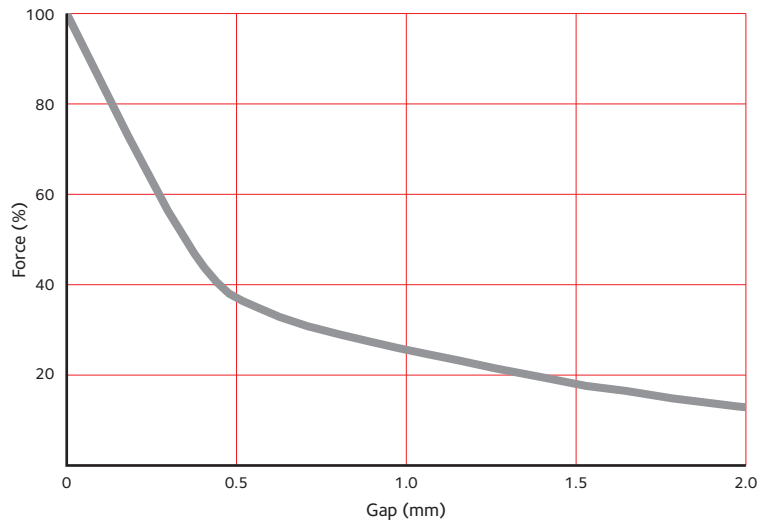
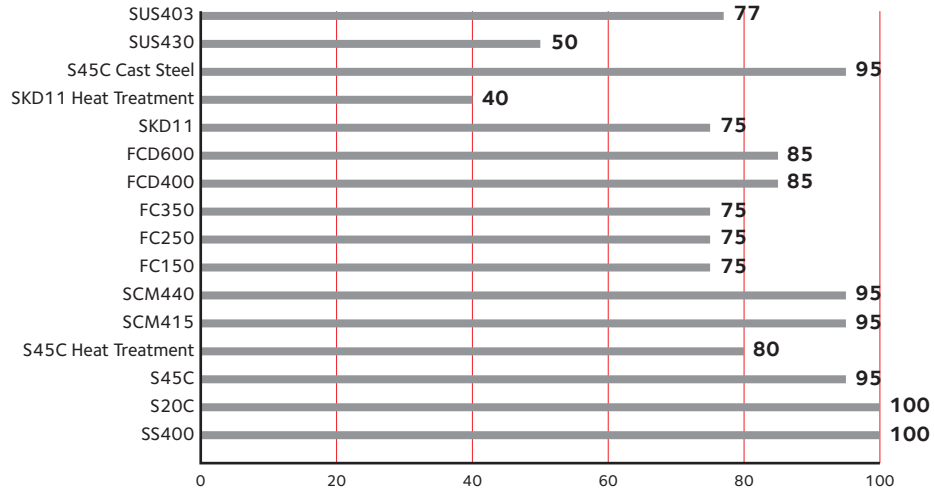
Cautions when using the Magbot as a magnetic gripper

1. Always wear gloves, safety shoes, and a hard hat when using the Magbot.
2. Do not put any part of the human body (hands, feet, head, body, etc.) under the conveyed object.
3. Before lifting the object to convey, inform the people around of the work to be carried out, and do not transport objects beside or over people.
4. The weight and dimensions of the conveyed object should not exceed the specified lifting capacity.
5. Avoid the use of damaged or demagnetized devices.
6. Lift one object at a time to transport, and the operator must keep an eye on it when lifting the object.
7. Use the Magbot in the range of -20~+50°C for both sucked objects and surroundings. If the target's temperature is 50°C or higher, the suction force of the Magbot decreases, causing the target to fall, which should be prevented. The environment around the Magbot should be less than 85% RH humidity and no condensation.
8. Before operating Robot, secure the magbot TC to the proper position of Robot.
9. Do not install a damaged macbot on Robot.
10. Do not connect the macbot to any power other than the system power specified in the user manual.
11. Fix the wire connecting the system to Robot arm, so it does not get caught when operating Robot
12. Make sure that no one/product in Robot and/or magbot path before initializing Robot routine.
13. Operate it below maximum payload of magbot.
14. For welding application, ensure that there are no magbot parts in the ground path of the welding power source.
15. Do not operate the magbot on humans and/or animals.
16. Install and use the magbot that matches the payload of Cobot.
17. Even if not specified otherwise, repairs to the magbot are performed by UND.
18. The magnetic gripper must be used to transport the ferromagnetic material only up-down/forward-backward/left-right after gripping. When the robot arm operates a pick-and-place process with Magbot magnetic gripper, the loaded object may fall if it is transferred to other than the path up-down/forward-backward/left-right like a crane or a hoist. The user must keep the transport path.
19. If Magbot malfunctions due to Robot system error, the system must be turned off immediately.
20. Sound is generated during grip and release operations, which is not a problem because it is a sound generated by the Magbot changing its magnetic path to grip and release operations.
21. Check the holding power(%) based on ferromagnet material's Type / Thickness / Surface roughness and Gap between Magbot and materials. Refer to the below tables.
22. For TCW1 model, be sure to fully charge the battery before using and operating.
23. TCW1's tool changer (master TC) and the controller should be located within 6meter.
24. TCW1 should be used after confirming that Green LED is turned on by pressing the power button on the tool changer (master TC). And once the battery warning light (RED LED) is on, be sure to recharge before use.
25. Do not place the controller of TCW1 in an enclosed area where RF is shielded.

2 Safety Instructions and Cautions



2-2 Cautions



2 Safety Instructions and Cautions

2-3 Cautions using Tool Stand



1. When assembling the tool stand, fix the parts as much as possible with bolts and nuts.
2. Secure the bottom surface to use as the tool stand may fall or move.
3. Make sure to level the tool stand to operate as it may not work as intended, if not.
4. For positioning repeatability, when assembling the tool stand, use a leveler to level the tool rack.

2-4 General Safety Instruction

In general, all national codes, ordinances and laws of the country in which it is installed must be complied. The product must be integrated and used in compliance with the cautions in this manual. In particular, please note the following:



Before operating the robot, the users must read, understand, and follow this manual, the robot manual, and the related equipment's safety instruction. If the users do not comply with safety concerns, it may result in death or severe injury.

This manual does not contain information on the design, installation, and operation of the entire robot application or other subsidiary devices that may affect the system's safety. The design and installation of the entire system must be secured according to the safety requirements stipulated in the country's standards and regulations in which the robot is installed.

The safety information specified in this manual should not be construed as a guarantee of UND Co., Ltd that the robotic application will not cause injury or damage even if all safety instructions for robotic applications are observed.

UND Co., Ltd. Is not responsible for any damages, alteration, and modification on the Magbot. UND Co., Ltd. is not liable for any damages to the Magbot tool changer, robot, or other devices due to programming errors or malfunction of Magbot tool changer.



The MagBot tool changer should not be exposed to condensing conditions when powered on or connected to a robot. Suppose condensation occurs or is suspected during transportation or storage. In that case, the Magbot should be placed at 20 to 40 degrees Celsius for 24 hours before applying power or connecting to the robot.

3-1 Risk Assessment



The robot user must perform a risk assessment for the entire robot application. Since the MagBot tool changer is only a component of the robotic application, it can be operated safely as long as the integrator considers the entire application's safety aspects.

Robot trajectories in collaborative applications are essential in safety concerns. Considering the angle to reach the people, the integrator needs to plan the direction of the Magbot tool changer and the workpiece so that the contact surface in the travel direction is as complete as possible. It is recommended that the Magbot tool changer's connector faces in the opposite direction of the workpiece.

The potential risk factors identified by UND Co., Ltd. for the integrator must consider as follows:

- Object that the Magbot tool changer misses the tool plate and flies
- Object that the Magbot tool changer misses the tool plate and falls
- Object that the Magbot magnetic gripper misses and flies
- Object that the Magbot magnetic gripper misses and falls
- Injuries caused by collisions between people and workpiece, Magbot tool changers, robots, or other obstacles
- Risk factors caused by loosening bolts
- Risk factors caused by the cable of the Magbot tool changer is stuck
- Risk factors in the workpiece itself

3-2 Purpose

Any use or application other than its intentions is considered unacceptable misuse.

1. Do not use in an explosive environment
2. Do not use in medical or life-saving application.
3. Do not use before performing the risk assessment
4. Do not use in conditions other than permitted operating conditions and specifications.
5. Do not use near people's head, face, or eyes.
6. Do not use as a climbing aid

***In addition to the above, UND is not responsible for any damages caused by other uses.**

3-3 Maintenance

1. Any foreign materials between the tool changer and the tool plate may degrade the performance. Check and remove regularly for foreign materials.
2. Any foreign objects on the bottom may wear or damage the bottom surface when using the product. Be aware that this may lower the performance than specified in the manual.
3. When using the tool changer as a magnetic gripper, do not move the product less than the proper thickness (0.5T) for transport.

4 Features



Magbot Tool Changer comes with everything you need to connect to your UR robot.

Check whether the ordered product has been delivered correctly by comparing it with the items below for each model.

4-1 TCV1



- 1 Tool Changer (1 EA)
- 2 Tool Plate (3 EA)
- 3 Tool Rail Bracket (3 EA)
- 4 M3 X 10 Socket Head Wrench Bolt (12 EA)
- 5 M3 X 25 Socket Head Wrench Bolt (2 EA)
- 6 M3 X 30 Socket Head Wrench Bolt (6 EA)
- 7 M6 X 45 Socket Head Wrench Bolt (4 EA)
- 8 4m Cable (1 EA)
- 9 0.3m Cable (1 EA)
- 10 Accessories (PPF,PPM,PMF,PMM each 1 EA) (*O-Ring color may be subject to change.)
- 11 USB Memory (User's Guide / URcap SW / Quick Start Guide)
- 12 Quick Start Guide
- 13 Tool Stand (Refer to Page 43)

4-2 TCV2



- 1 Tool Changer (1 EA)
- 2 Tool Plate (3 EA)
- 3 Tool Rail Bracket (3 EA)
- 4 Mounting Flange (1 EA)
- 5 M3 X 10 Socket Head Wrench Bolt (12 EA)
- 6 M3 X 25 Socket Head Wrench Bolt (2 EA)
- 7 M3 X 30 Socket Head Wrench Bolt (6 EA)
- 8 M6 X 15 Socket Head Wrench Bolt (4 EA)
- 9 M6 X 10 Socket Head Wrench Bolt (4 EA)
- 10 4m Cable (1 EA)
- 11 0.3m Cable (1 EA)
- 12 Accessories (PPF,PPM,PMF,PMM each 1 EA) (*O-Ring color may be subject to change.)
- 13 USB Memory (User's Guide / URcap SW / Quick Start Guide)
- 14 Quick Start Guide
- 15 Tool Stand (Refer to Page 43)

4-3 TCW1



- 1 Tool Changer (1 EA)
- 2 Tool Plate (3 EA)
- 3 Tool Rail Bracket (3 EA)
- 4 M3 X 10 Socket Head Wrench Bolt (12 EA)
- 5 M3 X 25 Socket Head Wrench Bolt (2 EA)
- 6 M3 X 30 Socket Head Wrench Bolt (2 EA)
- 7 M3 X 45 Socket Head Wrench Bolt (4 EA)
- 8 M6 X 70 Socket Head Wrench Bolt (4 EA)
- 9 1m Cable (1 EA)
- 10 0.3m Cable (1 EA)
- 11 24V / 2A Charger (1EA)
- 12 Controller(1 EA)
- 13 Accessories (PPF,PPM,PMF,PMM each 1 EA) (*O-Ring color may be subject to change.)
- 14 USB Memory (User's Guide / URcap SW / Quick Start Guide)
- 15 Quick Start Guide
- 16 Tool Stand (Refer to Page 43)

*TCV1/TCV2/TCW1 tool plate and 2 rail brackets, Two accessories, tool stand are provided free of charge for a limited period. This is a service product and is not covered by the product warranty.

5-1 TCV1 Product Specification

Tool Changer



Payload (Weight capability)		98N [10kg, 22.05lbs]
Compatible UR Series		UR3, UR5, UR10 & UR3e, UR5e, UR10e
Positioning Repeatability		±0.05mm
Size (Dimension)	Master TC (Robot-side TC)	Ø63 × 54mm [2.48 in × 2.087 in]
	Tool Plate (Tool-side TC)	Ø61 × 13.2mm [2.40 in × 0.52 in]
	Tool Changer (When coupled)	Ø63 × 60mm [2.48 in × 2.32 in]
Weight (Main product)	Master TC (Robot-side TC)	524g [1.16 lbs]
	Tool Plate (Tool-side TC)	136g [0.30 lbs]
	Tool Changer (When coupled)	660g [1.46 lbs]
Technology		Switch Magnetic Tech
Temperature and Humidity		-20°C~80°C [-4°F~176°F] 0~85% (no condensation)
IP Code (Ingress Protection)		IP56
Electric Spec		24V, 2A
TC accessory	Pogo Pin(8pin) Module	1A X 8EA (Electric Module)
	Pneumatic Module	6 Bar (M6 X 2EA)
Battery Charging Time		
Operating Numbers (On/Off times) with fully charged		
Battery waiting time (unused/sleep mode)		

***Gripper performance may vary depending on the workpiece's length, material, and surface condition. Must read the caution.**

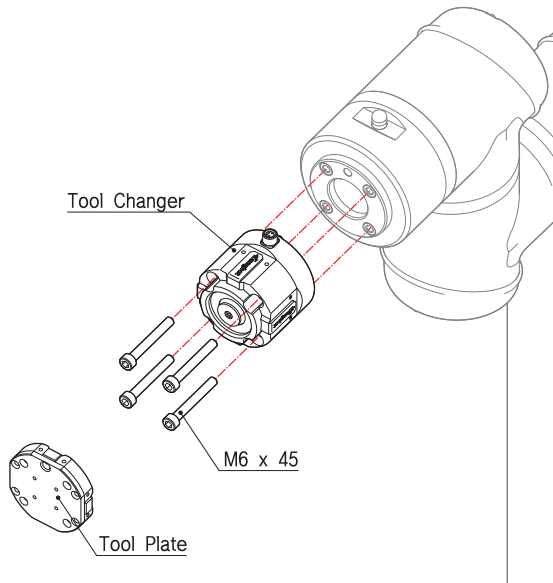
Magnetic Gripper



Weight Capability (Holding Force)	max 10Kg
Loading materials	Ferromagnet (Iron, etc)
Thickness of loading materials	over 0.5mm
Grip/Release Duration	0.2 sec
Electric spec	24V, 2A

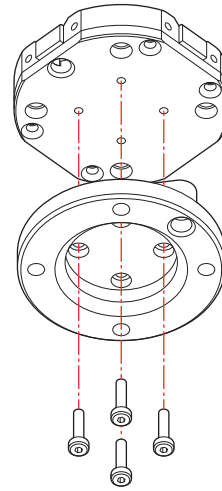
5-2 TCV1 Assembly Drawings

TCV1 Tool Changer Assembly



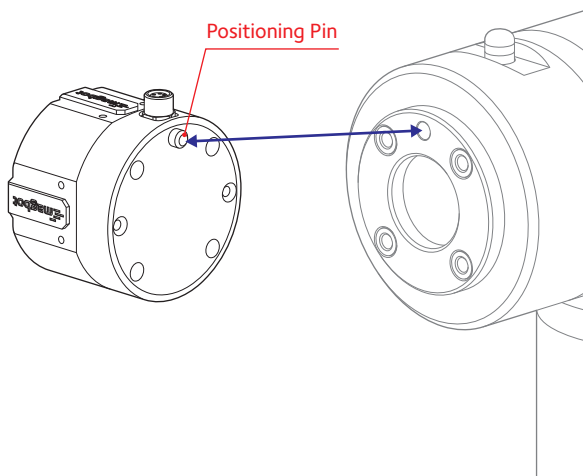
- 1) Insert the positioning pin located at the top of the tool changer into the robot flange.
- 2) Fix the four provided M6 X 45 bolts to 6 Nm.

TCV1 Tool Rail Assembly

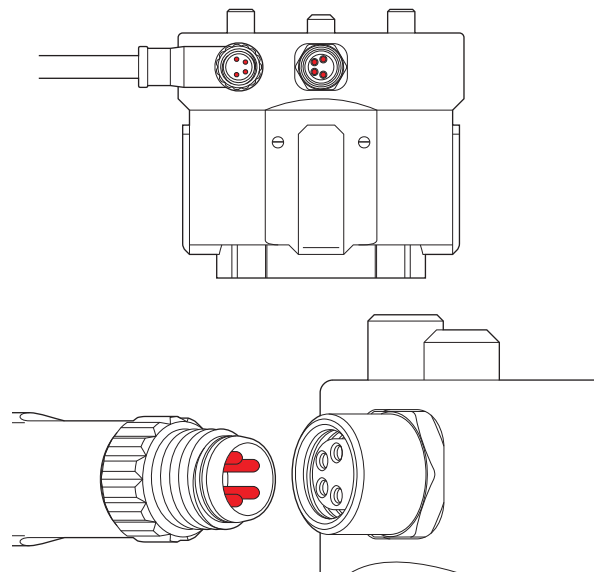


- 1) Attach the tool rail bracket to the bottom of the tool plate.
- 2) Fix four provided M3 X 10 bolts to 6 Nm.

TCV1 Tool Changer & UR Assembly



TCV1 Cable connection

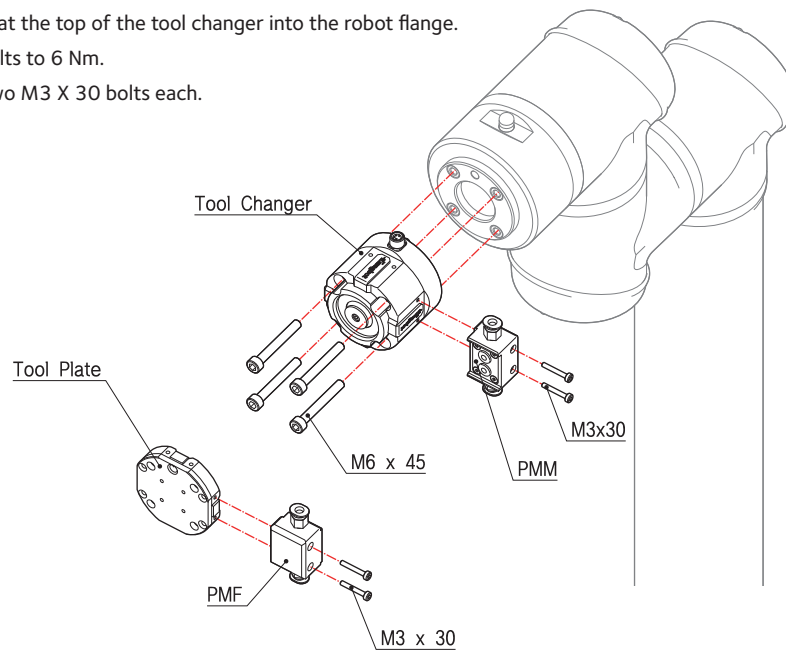


***When connecting the cables, check the direction of four pins and tighten them to secure.**

5-3 TCV1 Assembly Drawings (Accessories)

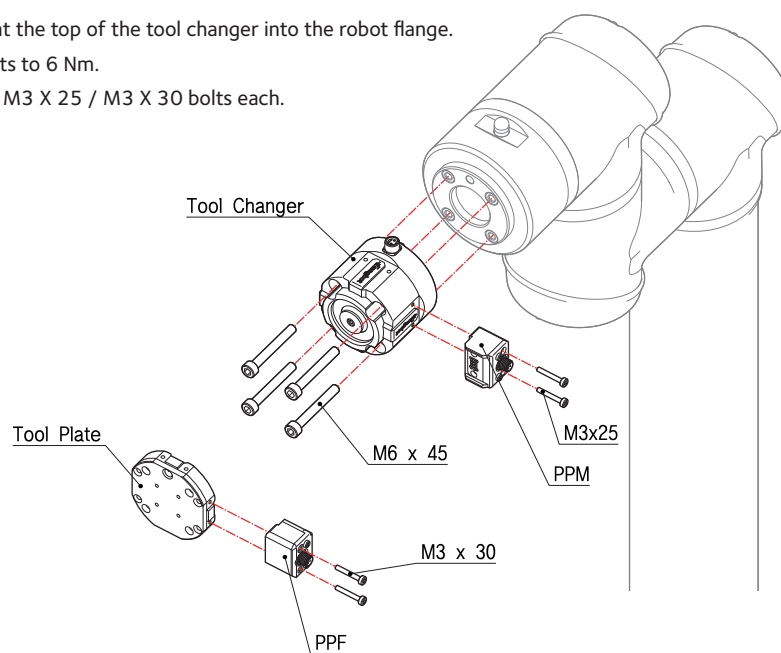
TCV1 Pneumatic module assembly drawing

- 1) Insert the positioning pin located at the top of the tool changer into the robot flange.
- 2) Fix the four provided M6 X 45 bolts to 6 Nm.
- 3) Fix the PMM and PMF parts by two M3 X 30 bolts each.



TCV1 Pogo pin module assembly drawing

- 1) Insert the positioning pin located at the top of the tool changer into the robot flange.
- 2) Fix the four provided M6 X 30 bolts to 6 Nm.
- 3) Fix the PPM and PPF parts by two M3 X 25 / M3 X 30 bolts each.

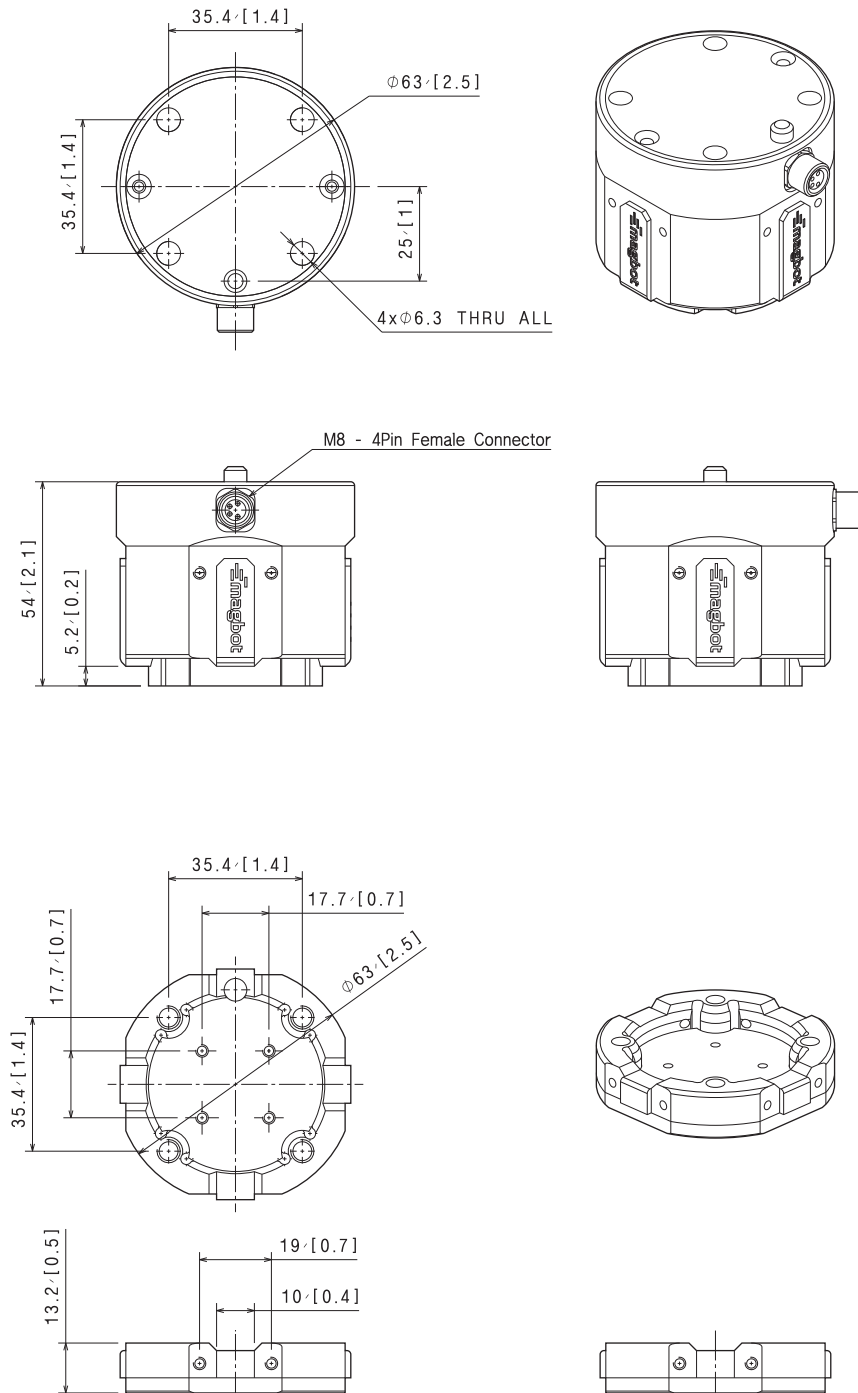


5 TCV1



5-4 TCV1 Drawing

mm / [inch]



5-5 TCV1 Accessories

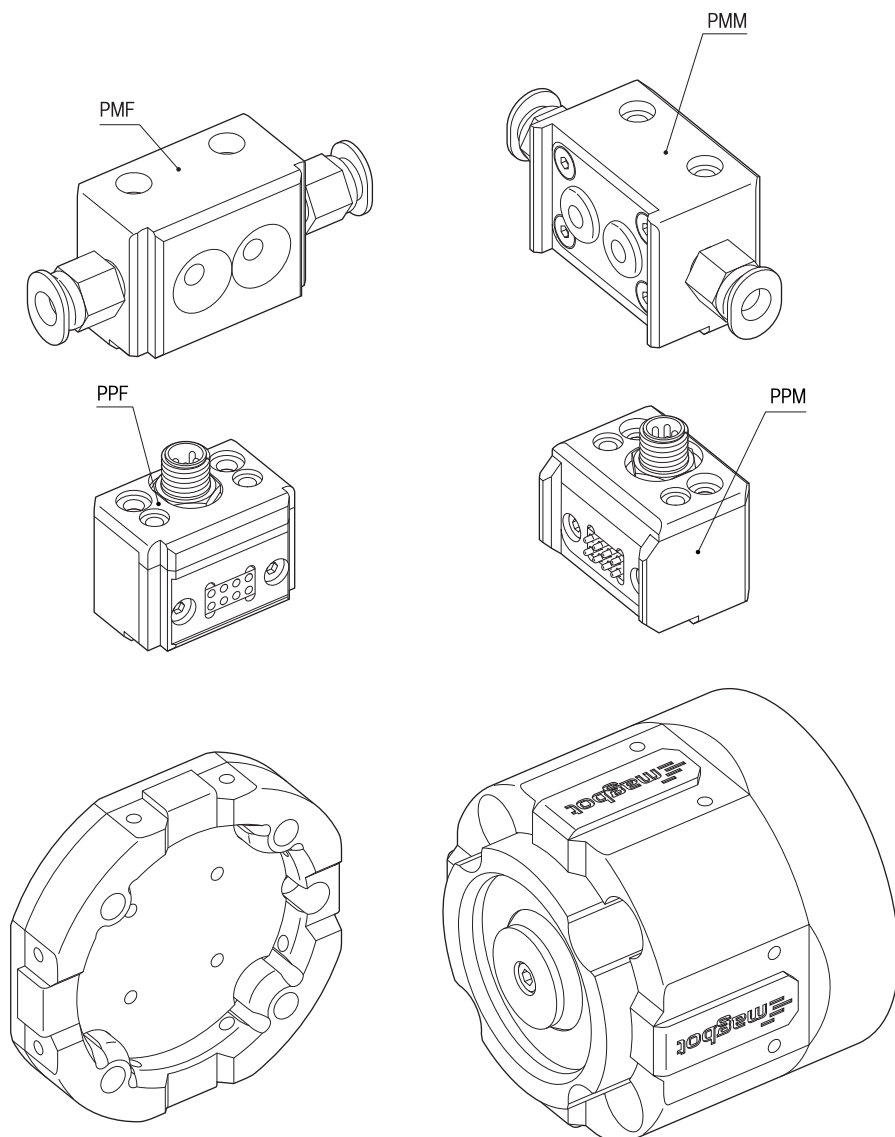
mTCA (magbot Tool Changer Accessory)

PPF : Pogo Pin Female

PPM : Pogo Pin Male

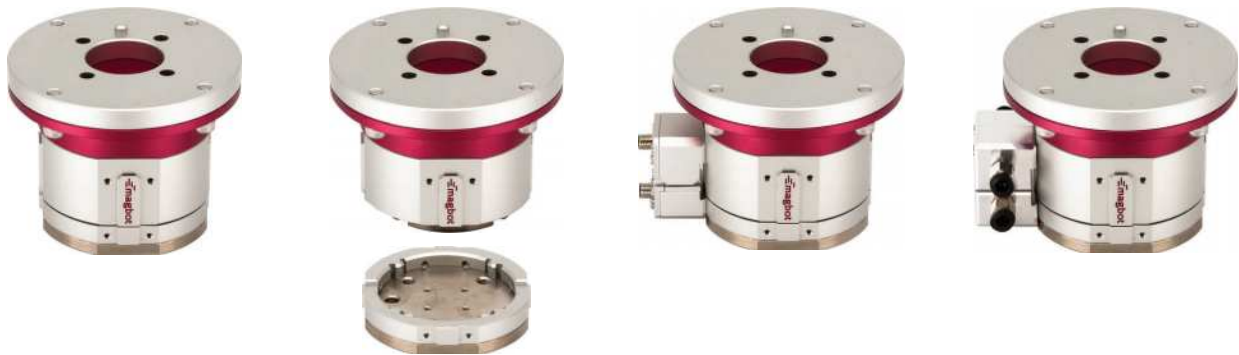
PMF : Pneumatic Female

PMM : Pneumatic Male



6-1 TCV2 Product Specification

Tool Changer



Payload (Weight capability)		157N [16kg, 35.27lbs]
Compatible UR Series		All UR CB & e Series (UR16e)
Positioning Repeatability		±0.05mm
Size (Dimension)	Master TC (Robot-side TC)	Ø80 × 62.5mm [3.15 in × 2.46 in]
	Tool Plate (Tool-side TC)	Ø78 × 15.2mm [3.07 in × 0.60 in]
	Tool Changer (When coupled)	Ø80 × 70.5mm [3.15 in × 2.78 in]
Weight (Main product)	Master TC (Robot-side TC)	1,146g [2.53 lbs]
	Tool Plate (Tool-side TC)	304g [0.67 lbs]
	Tool Changer (When coupled)	1450g [3.20 lbs]
Technology		Switch Magnetic Tech
Temperature and Humidity		-20°C~80°C [-4°F~176°F] 0~85% (no condensation)
IP Code (Ingress Protection)		IP56
Electric Spec		24V, 2A
TC accessory	Pogo Pin(8pin) Module	1A X 8EA (Electric Module)
	Pneumatic Module	6 Bar (M6 X 2EA)
Battery Charging Time		
Operating Numbers (On/Off times) with fully charged		
Battery waiting time (unused/sleep mode)		

***Gripper performance may vary depending on the workpiece's length, material, and surface condition. Must read the caution.**

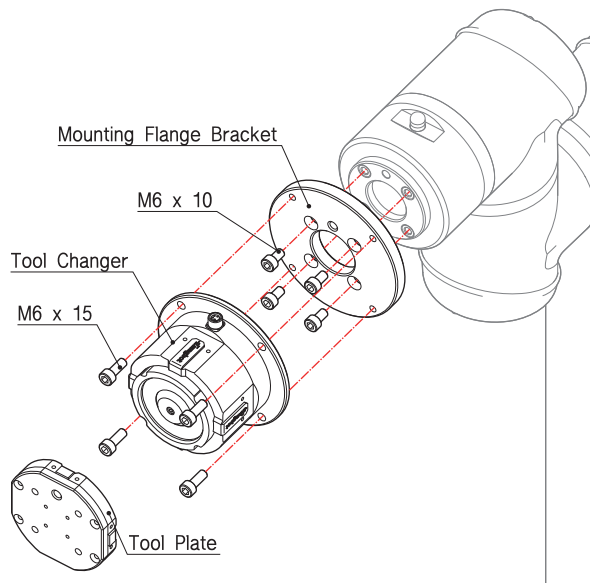
Magnetic Gripper



Weight Capability (Holding Force)	max 16Kg
Loading materials	Ferromagnet (Iron, etc)
Thickness of loading materials	over 0.5mm
Grip/Release Duration	0.2 sec
Electric spec	24V, 2A

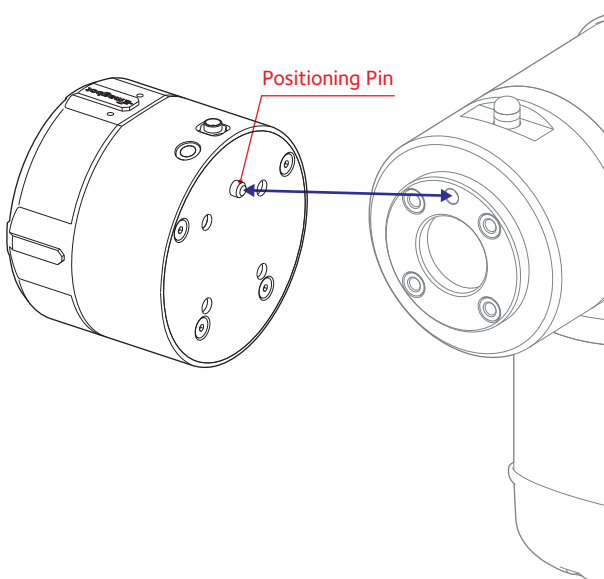
6-2 TCV2 Assembly Drawings

TCV2 Tool Changer Assembly

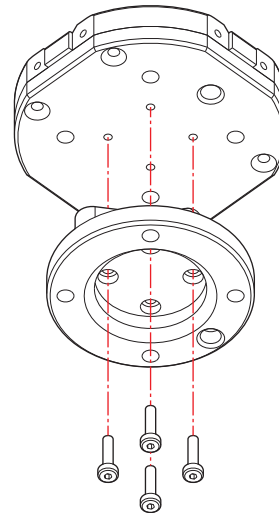


- 1) Fix the mounting flange to the robot flange with four M6 X 10 bolts.
- 2) Fix the tool changer to the mounting flange with four M6 X 15 bolts.

TCV2 Tool Changer & UR Assembly

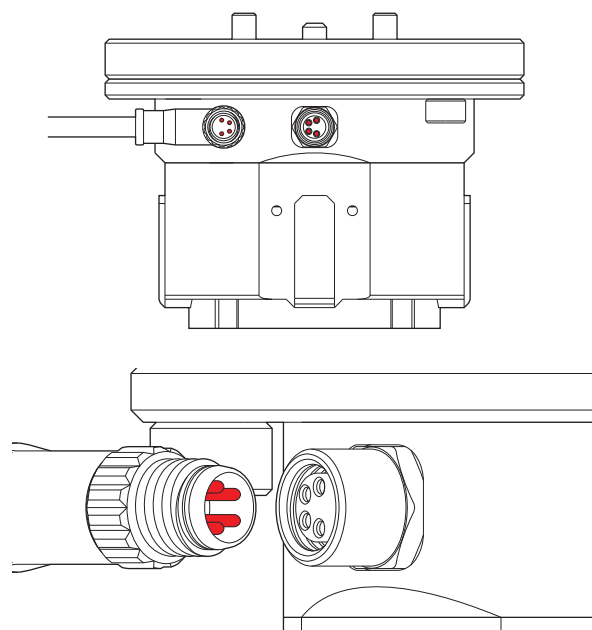


TCV2 Tool Rail Assembly



- 1) Attach the tool rail bracket to the bottom of the tool plate.
- 2) Fix the four provided M3 X 10 bolts to 6 Nm.

TCV2 Cable connection

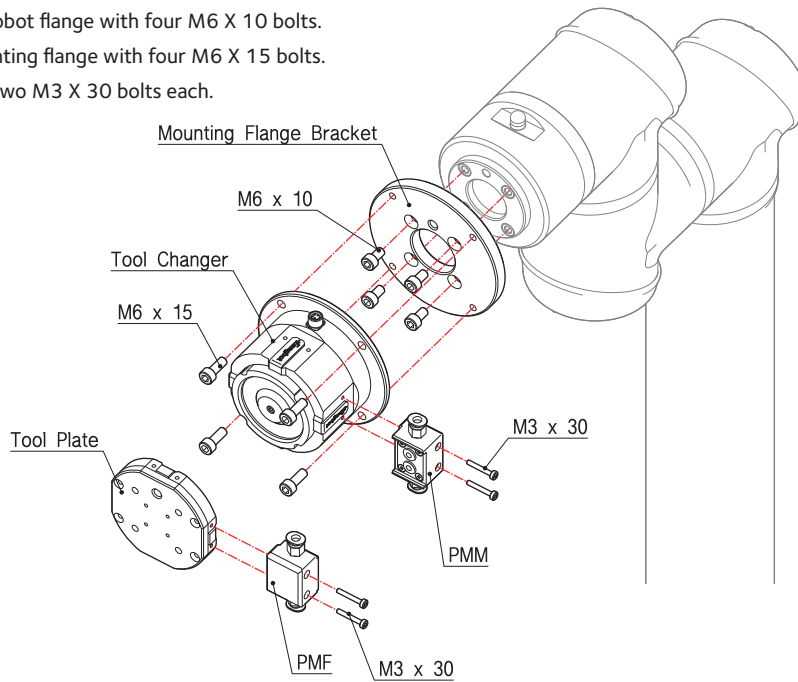


***When connecting the cables, check the direction of four pins and tighten them to secure.**

6-3 TCV2 Assembly Drawings (Accessories)

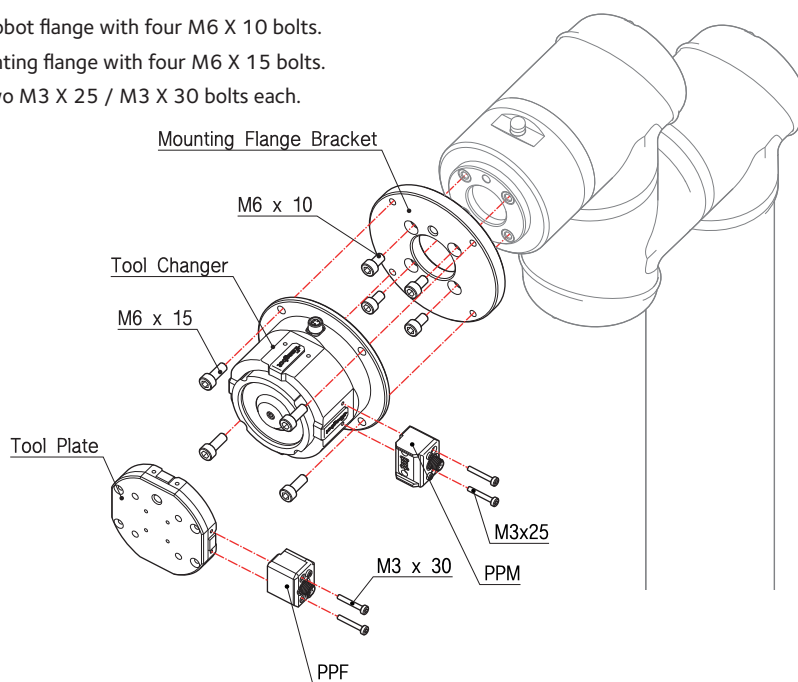
TCV2 Pneumatic module assembly drawing

- 1) Fix the mounting flange to the robot flange with four M6 X 10 bolts.
- 2) Fix the tool changer to the mounting flange with four M6 X 15 bolts.
- 3) Fix the PMM and PMF parts by two M3 X 30 bolts each.



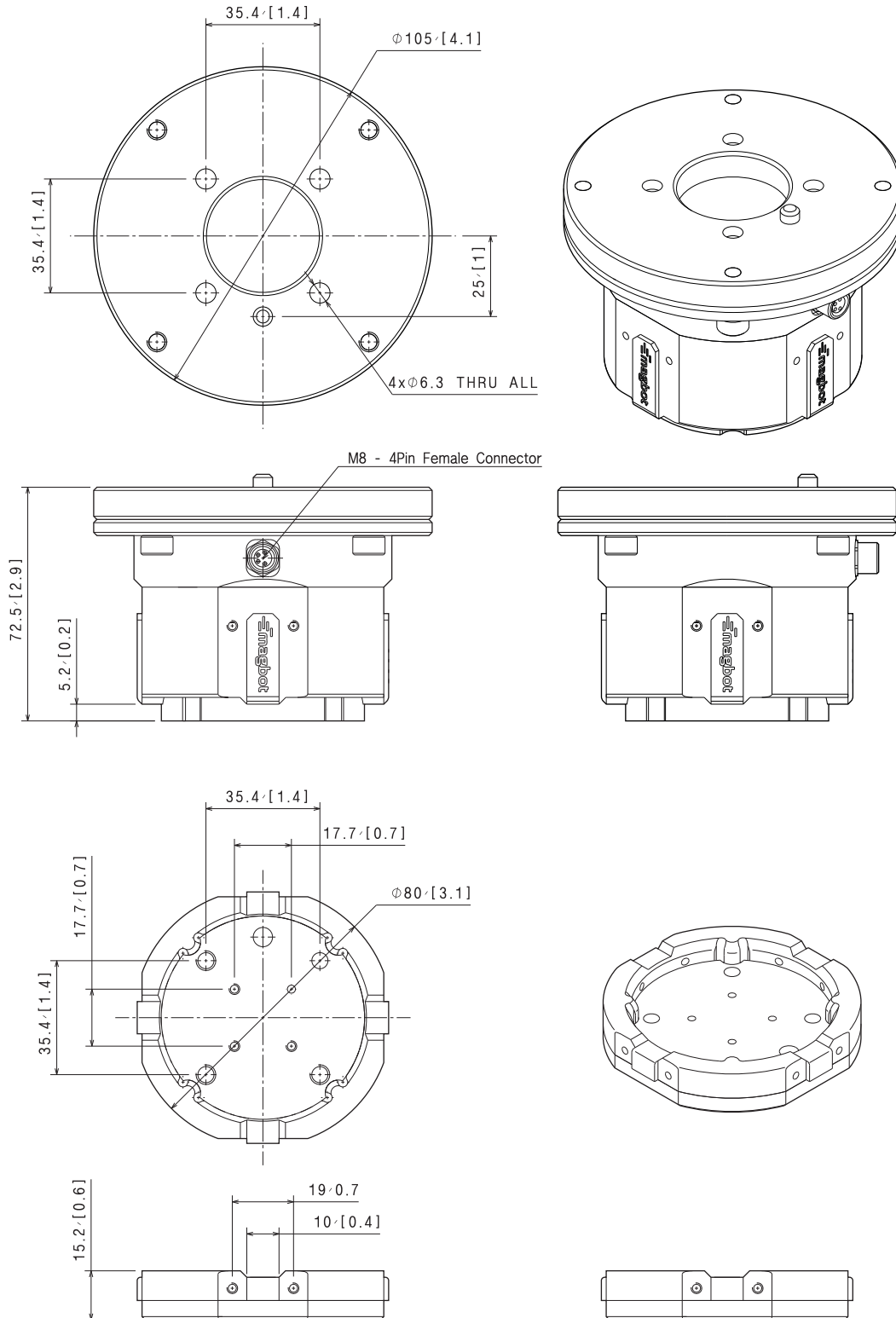
TCV2 Pogo pin module assembly drawing

- 1) Fix the mounting flange to the robot flange with four M6 X 10 bolts.
- 2) Fix the tool changer to the mounting flange with four M6 X 15 bolts.
- 3) Fix the PPM and PPF parts by two M3 X 25 / M3 X 30 bolts each.



6-4 TCV2 Drawing

mm / [inch]



6-5 TCV2 Accessories

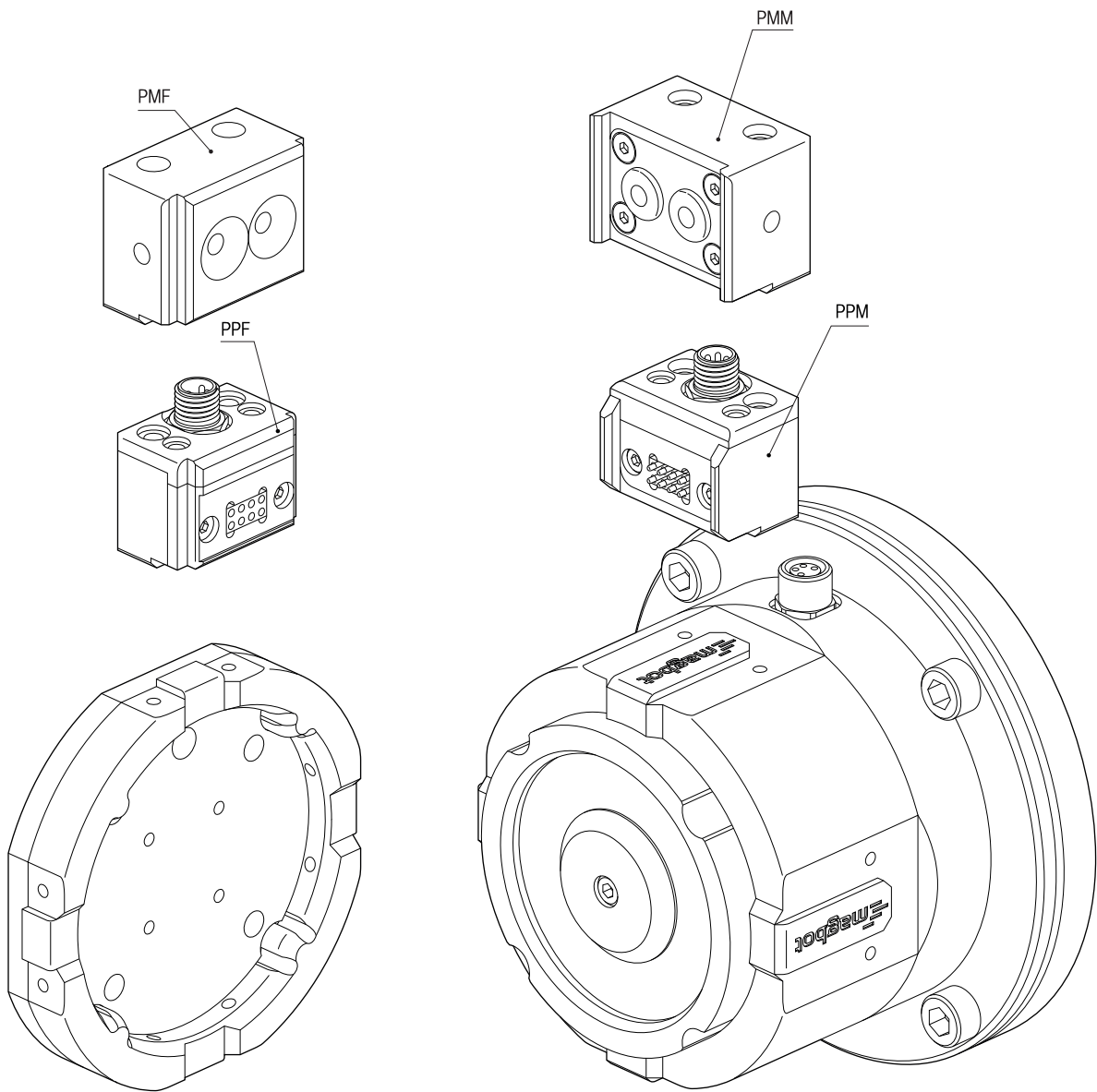
mTCA (magbot Tool Changer Accessory)

PPF : Pogo Pin Female

PPM : Pogo Pin Male

PMF : Pneumatic Female

PMM : Pneumatic Male



7-1 TCW1 Product Specification

Tool Changer



Payload (Weight capability)	98N [10kg, 22.05lbs]	
Compatible UR Series	UR3, UR5, UR10 & UR3e, UR5e, UR10e	
Positioning Repeatability	±0.05mm	
Size (Dimension)	Master TC (Robot-side TC)	Ø95 × 80.5mm [3.74 in × 3.17 in]
	Tool Plate (Tool-side TC)	Ø61 × 13.2mm [2.40 in × 0.52 in]
	Tool Changer (When coupled)	Ø95 × 86.5mm [3.74 in × 3.41 in]
Weight (Main product)	Master TC (Robot-side TC)	1,026g [2.26 lbs]
	Tool Plate (Tool-side TC)	136g [0.30 lbs]
	Tool Changer (When coupled)	1,162g [2.56lbs]
Technology	Switch Magnetic Tech	
Temperature and Humidity		-20°C~80°C [-4°F~176°F]
		0~85%(no condensation)
IP Code (Ingress Protection)	IP54	
Electric Spec	24V, 2A	
TC accessory	Pogo Pin(8pin) Module	1A X 8EA (Electric Module)
	Pneumatic Module	6 Bar (M6 X 2EA)
Battery Charging Time	About 2 Hours	
Operating Numbers (On/Off times) with fully charged		About 10,000 times
		Recharging when RED LED is On. After RED LED lights on, it can operate about 2,000 times
Battery waiting time (unused/sleep mode)	About 240 Hours (10days)	

***Gripper performance may vary depending on the workpiece's length, material, and surface condition. Must read the caution.**

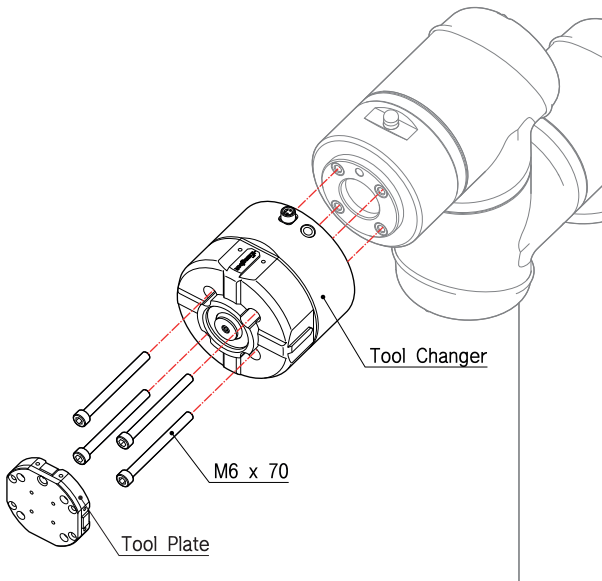
Magnetic Gripper



Weight Capability (Holding Force)	max 10Kg
Loading materials	Ferromagnet (Iron, etc)
Thickness of loading materials	over 0.5mm
Grip/Release Duration	0.2 sec
Electric spec	24V, 2A

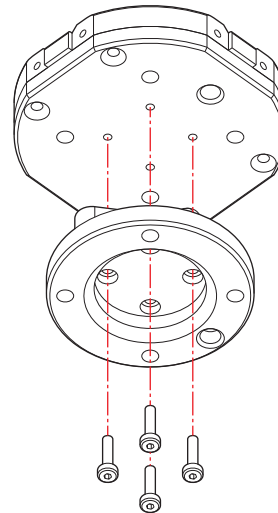
7-2 TCW1 Assembly Drawings

TCW1 Tool Changer Assembly



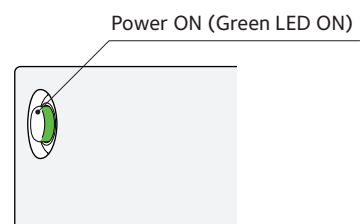
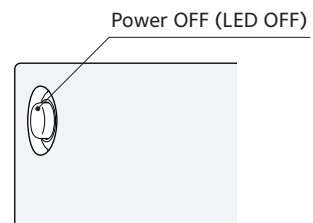
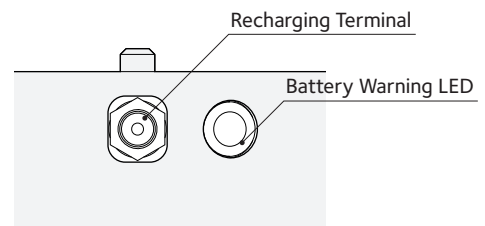
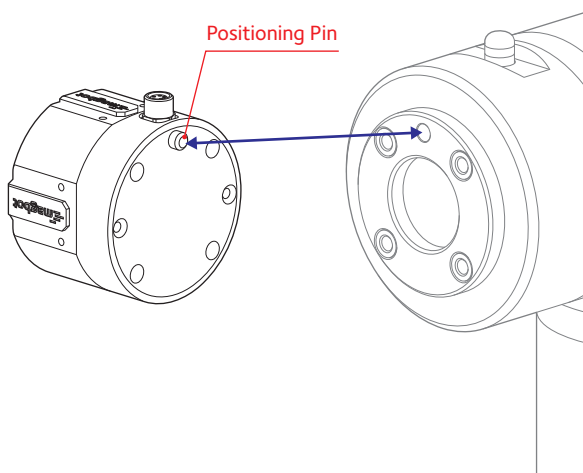
- 1) Insert the positioning pin located at the top of the tool changer into the robot flange.
- 2) Fix the four provided M6 X 70 bolts to 6 Nm.

TCW1 Tool Rail Assembly



- 1) Attach the tool rail bracket to the bottom of the tool plate.
- 2) Fix the four provided M3 X 10 bolts to 6 Nm.

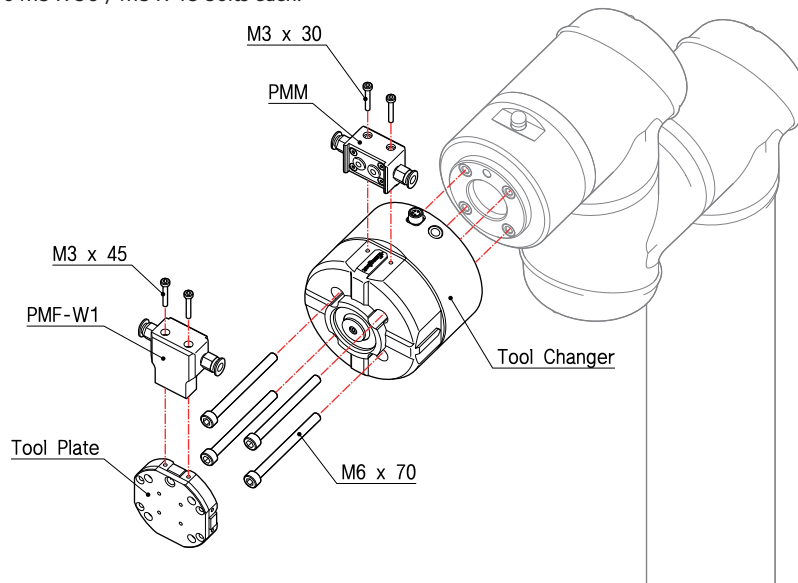
TCW1 Tool Changer & UR Assembly



7-3 TCW1 Assembly Drawings (Accessories)

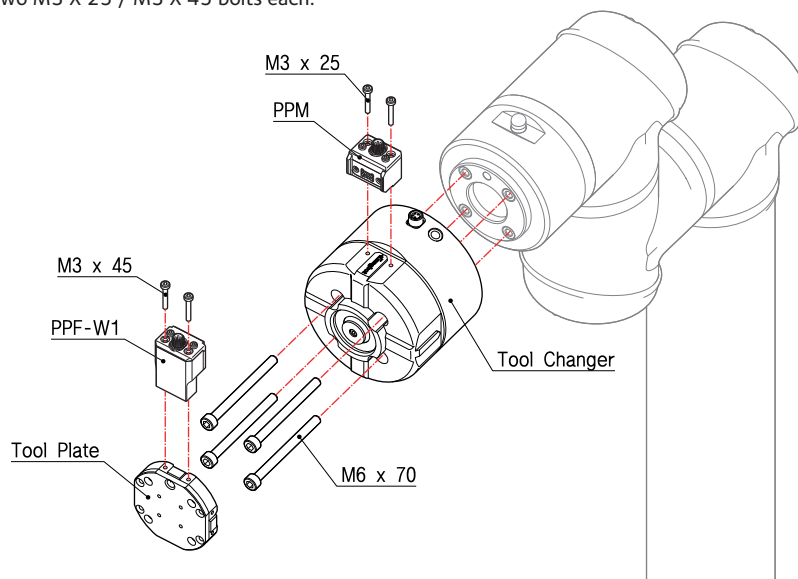
TCW1 Pneumatic module assembly drawing

- 1) Insert the positioning pin located at the top of the tool changer into the robot flange.
- 2) Fix the four provided M6 X 70 bolts to 6 Nm.
- 3) Fix the PPM and PPF parts by two M3 X 30 / M3 X 45 bolts each.



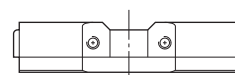
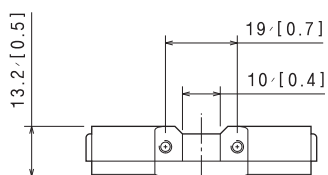
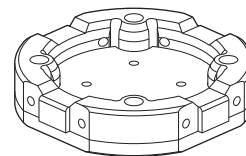
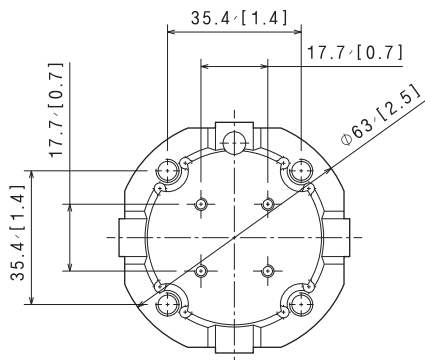
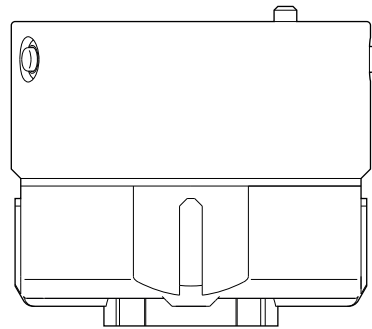
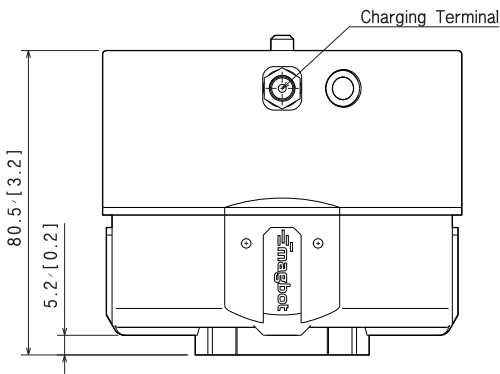
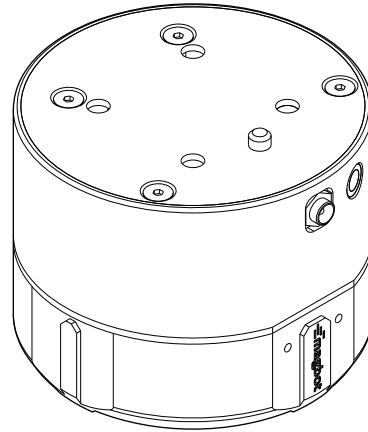
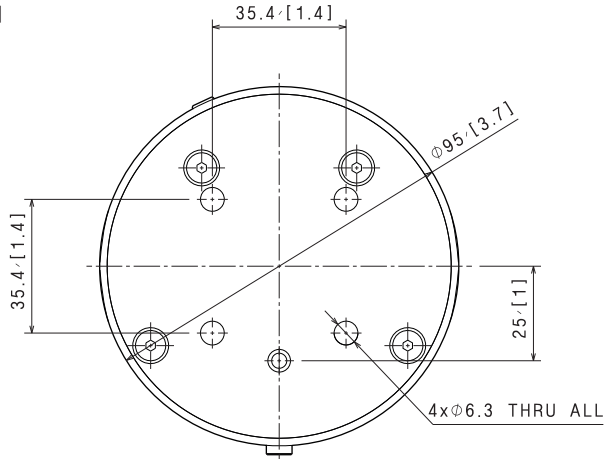
TCW1 Pogo pin module assembly drawing

- 1) Insert the positioning pin located at the top of the tool changer into the robot flange.
- 2) Fix the four provided M6 X 70 bolts to 6 Nm.
- 3) Fix the PPM and PPF parts by two M3 X 25 / M3 X 45 bolts each.



7-4 TCW1 Drawing

mm / [inch]



7-5 TCW1 Accessories

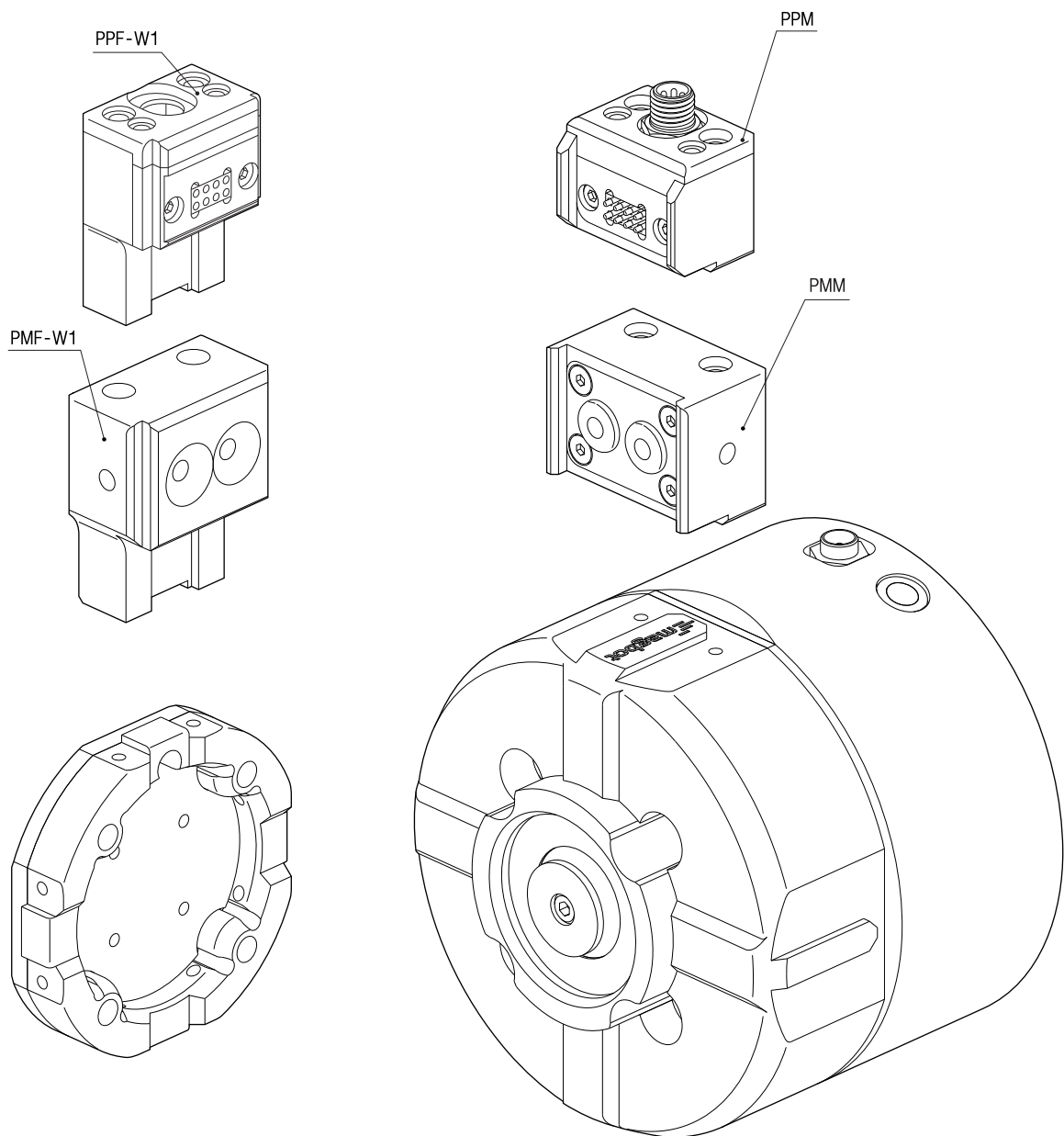
mTCA (magbot Tool Changer Accessory)

PPF : Pogo Pin Female

PPM : Pogo Pin Male

PMF : Pneumatic Female

PMM : Pneumatic Male



8 Magbot Wiring Diagram



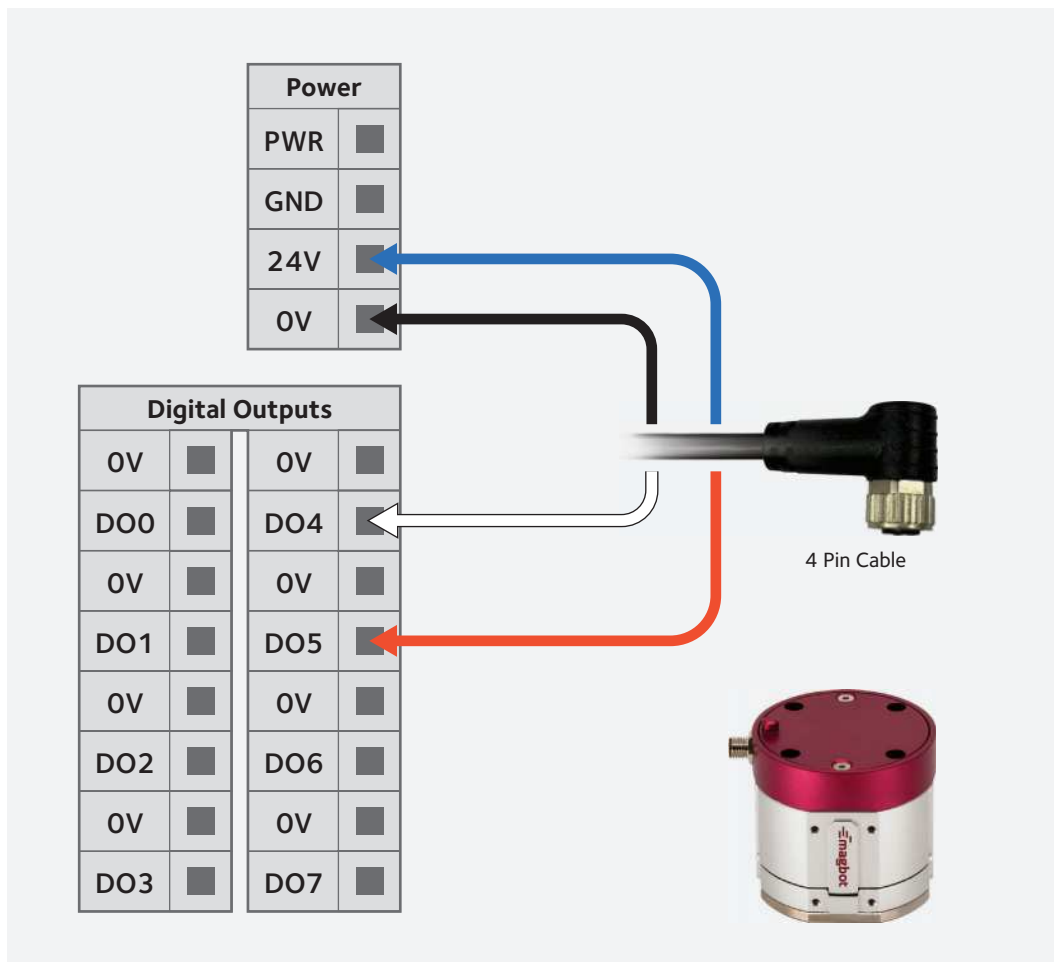
8-1 Magbot TCV1, TCV2 Control line Wiring Diagram



Make sure that Robot's power is turned off before proceeding

As shown in < Figure 1>, connect the provided 4 -pin cable (4m long) to UR's controller IO.

1. Connect the blue cable to the 24V terminal of the UR controller IO.
2. Connect the black cable to the 0V terminal of the UR controller IO.
3. Connect the white cable, which is the grip control cable, to any suitable terminal among DO0 to DO7.
4. Connect the brown cable, which is the release control cable, to any suitable terminal among DO0 to DO7.



<Figure 1>

	Magbot Function	Line Color	UR Digital Outputs
1	24V	Blue	24V
2	0V(GND)	Black	0V
3	Grip	White	DO0~DO7
4	Release	Brown	DO0~DO7

8 Magbot Wiring Diagram



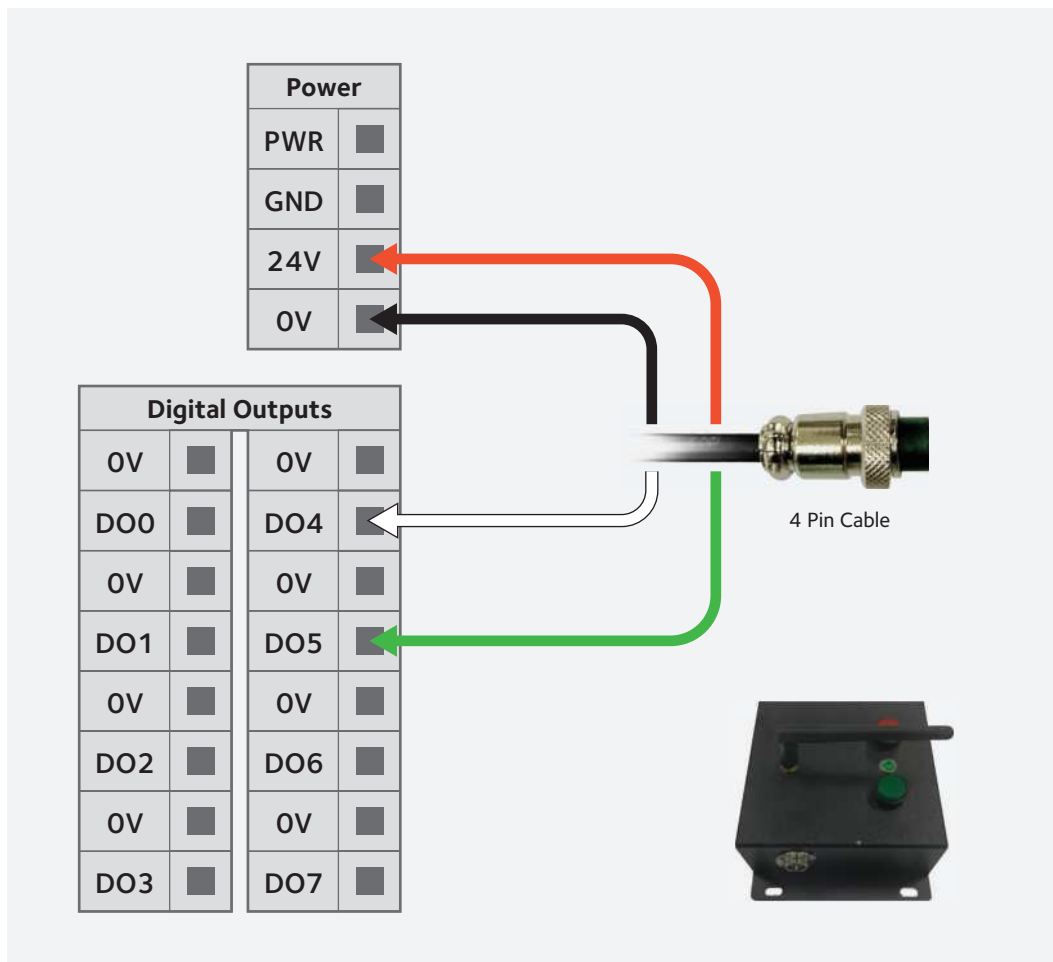
8-2 Magbot TCW1 Control line Wiring Diagram



Make sure that Robot's power is turned off before proceeding

As shown in < Figure 2>, connect the provided 4 -pin cable (4m long) to UR's controller IO.

1. Connect the red cable to the 24V terminal of the UR controller IO.
2. Connect the black cable to the 0V terminal of the UR controller IO.
3. Connect the white cable, which is the grip control cable, to any suitable terminal among DO0 to DO7.
4. Connect the green cable, which is the release control cable, to any suitable terminal among DO0 to DO7.



<Figure 2>

	Magbot Function	Line Color	UR Digital Outputs
1	24V	Red	24V
2	0V(GND)	Black	0V
3	Grip	White	DO0~DO7
4	Release	Green	DO0~DO7

9 URCap Installation & Setup

9-1 CB Series URCap Installation

*e-Series is from 37th page.

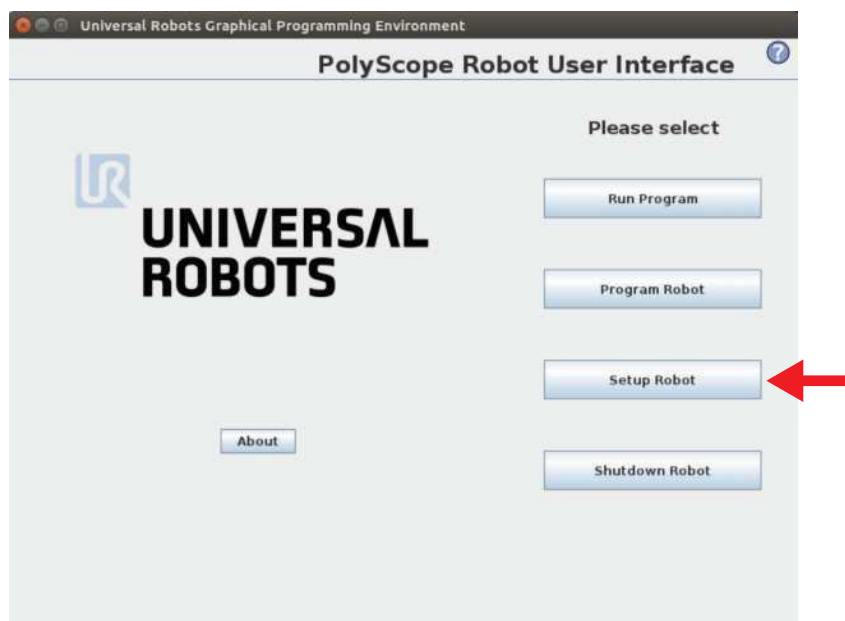
UR CB Series Installation

- NOTE**
- Compatible UR robots: UR3, UR5, UR10
 - UR Polyscope version 3.13 or later

1. Insert the USB drive into the USB slot on the right side of the teach pendant.



2. Select the **Robot Settings** option from the main menu.



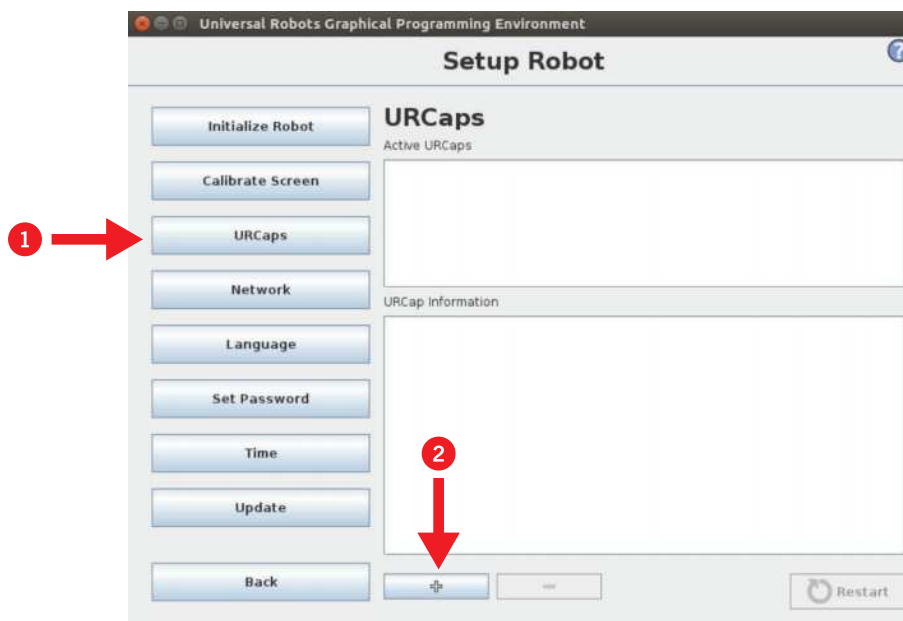
9 URCap Installation & Setup



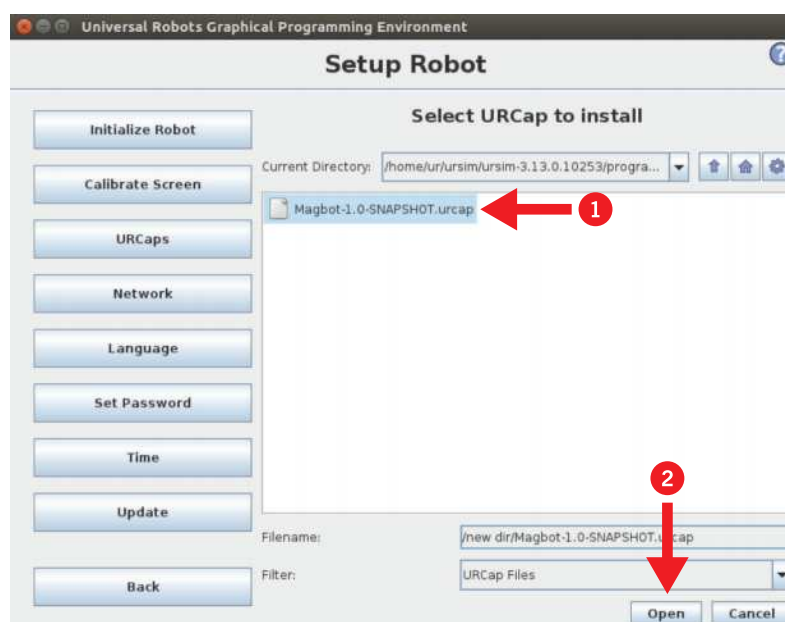
9-1 CB Series URCap Installation

UR CB Series Installation

3. In the Robot Settings menu, select the **URCaps** option and click the + symbol.



4. Browse to the **Magbot URCap** file and click **Open**.



9 URCap Installation & Setup



9-1 CB Series URCap Installation

UR CB Series Installation

5. The system must be restarted for the changes to take effect. Press **Restart** and wait for the system to restart.



6. Initialize the robot.

9 URCap Installation & Setup



9-1 CB Series URCap Installation

UR CB Series URCap Removal

Remove software

1. From the main menu, select the **Robot Settings** option and then the **URCaps** option.
2. Choose the **Magbot** URCap.
3. Press the - symbol to remove the Magbot URCap.
4. The system must be restarted for the changes to take effect. Press **Restart** and wait for the system to restart.
5. Initialize the robot.



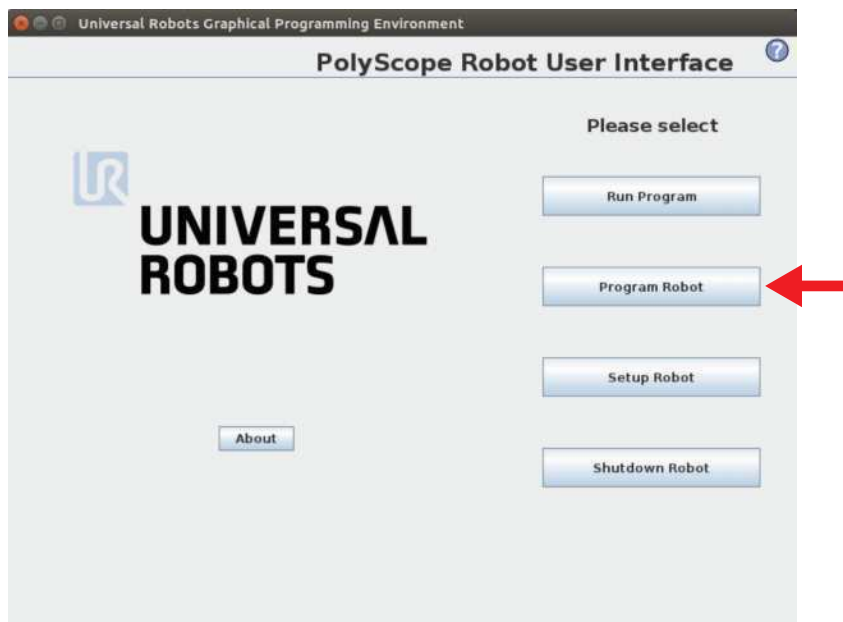
9 URCap Installation & Setup



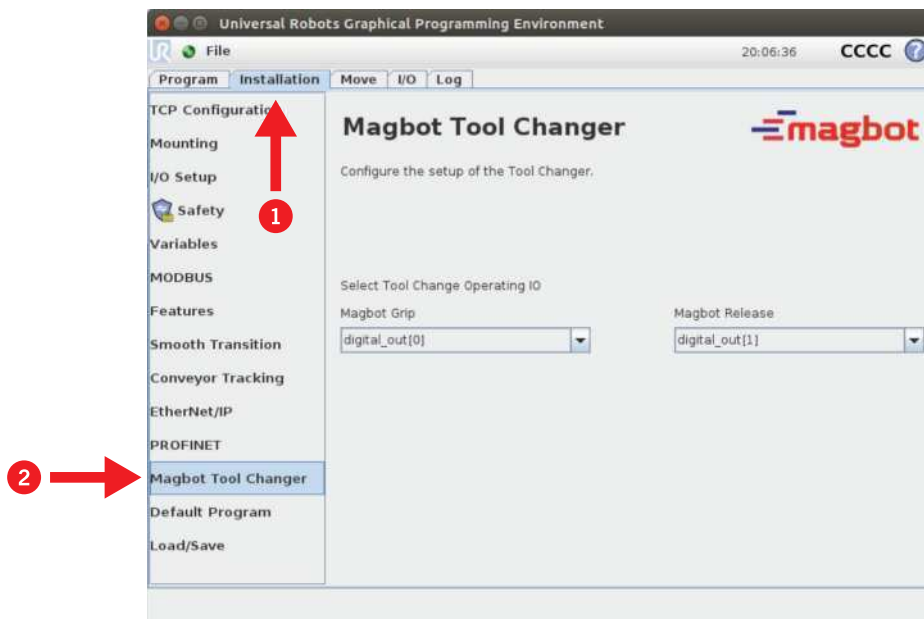
9-1 CB Series URCap Installation

UR CB Series DO Setup

1. From the main menu, select the **Program robot** option.



2. Select **Magbot Tool Changer** URCap from the **Installation** option.



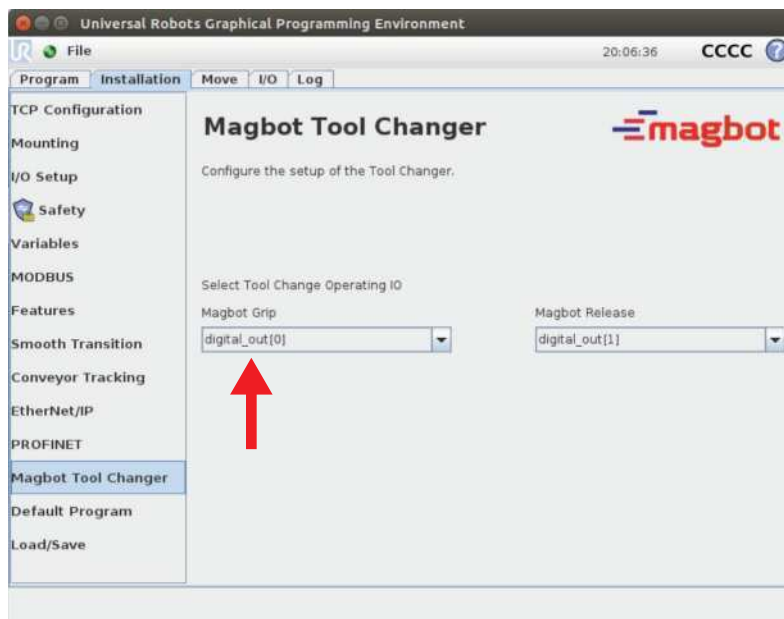
9 URCap Installation & Setup



9-1 CB Series URCap Installation

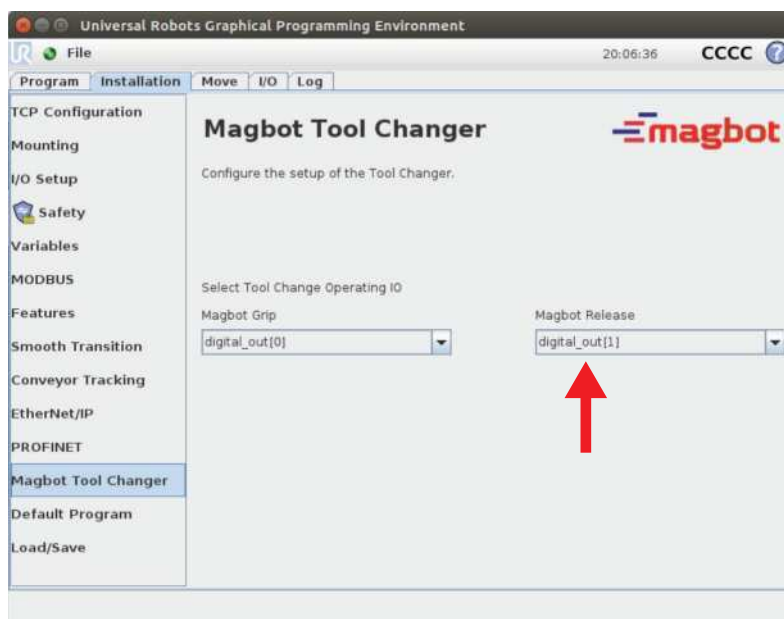
UR CB Series Grip DO Setup

3. In the Magbot Grip option, select the **DO terminal** (initial setting number 0) connecting the grip cable.



UR CB Series Release DO Setup

4. In the Magbot Release option, select the **DO terminal** (initial setting number 1) connecting the release cable.



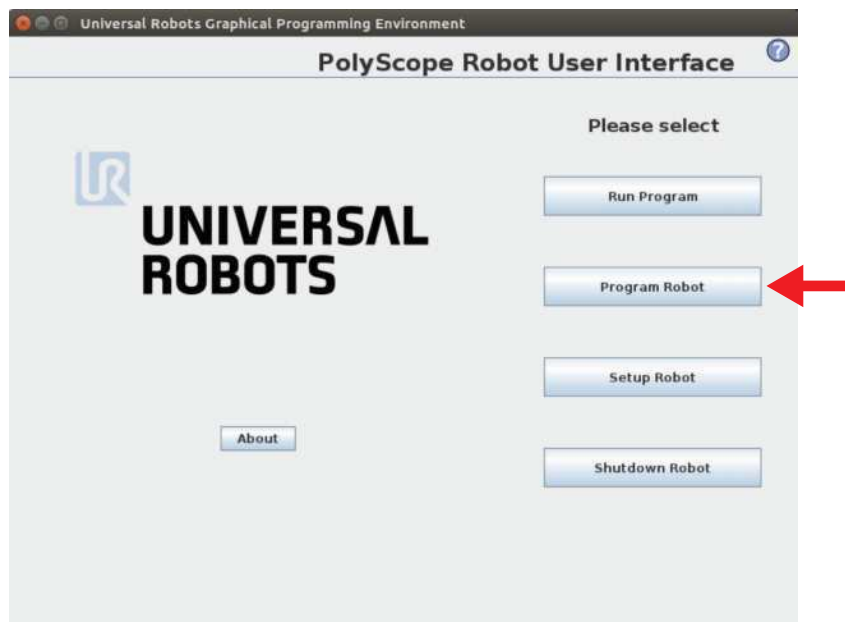
9 URCap Installation & Setup



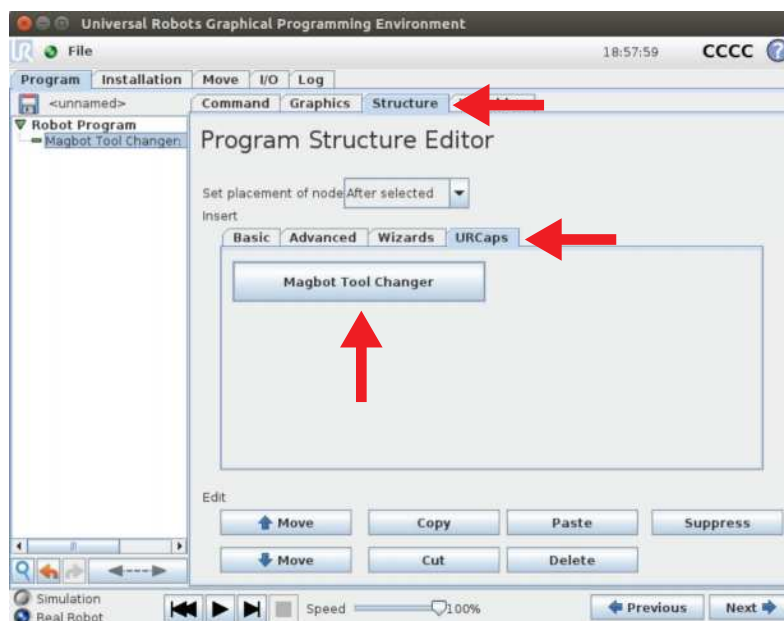
9-1 CB Series URCap Installation

UR CB Series Program

1. From the main menu, select the **Program robot** option.



2. Select the URcaps option from the **Structure** option and select **Magbot Tool Changer** URcap .



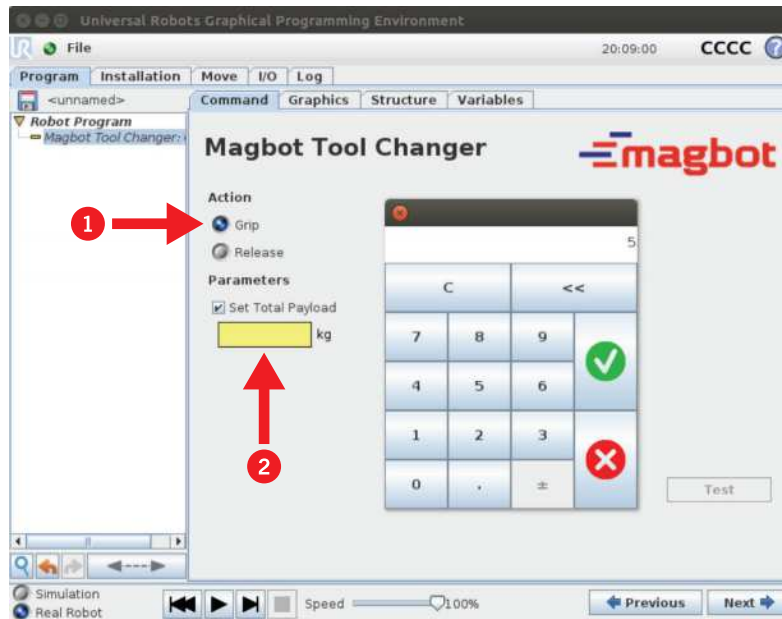
9 URCap Installation & Setup



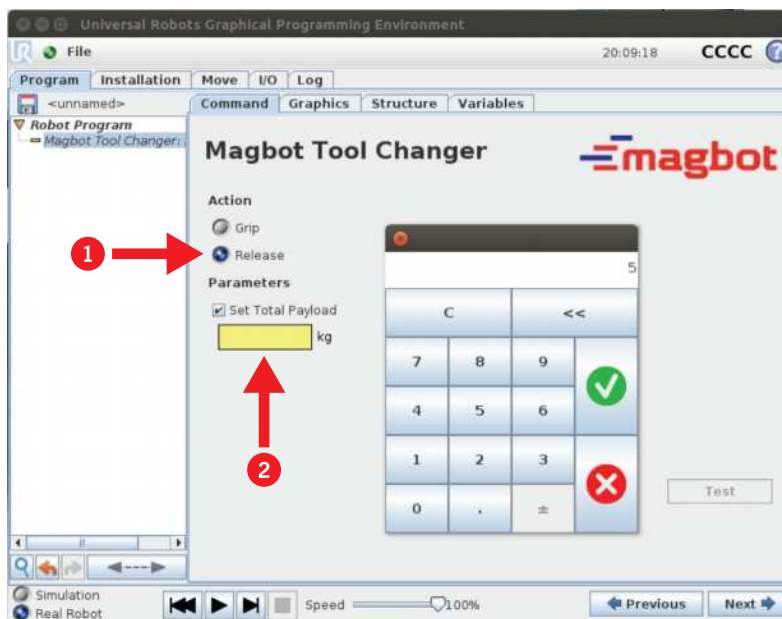
9-1 CB Series URCap Installation

UR CB Series Program

3. After selecting the Magbot Tool Changer URCap, select the **Grip** from the work items when gripping, and set the **Total Payload**.



4. After selecting the Magbot Tool Changer URCap, select the **Release** from the work items when releasing, and set the **Total Payload**.



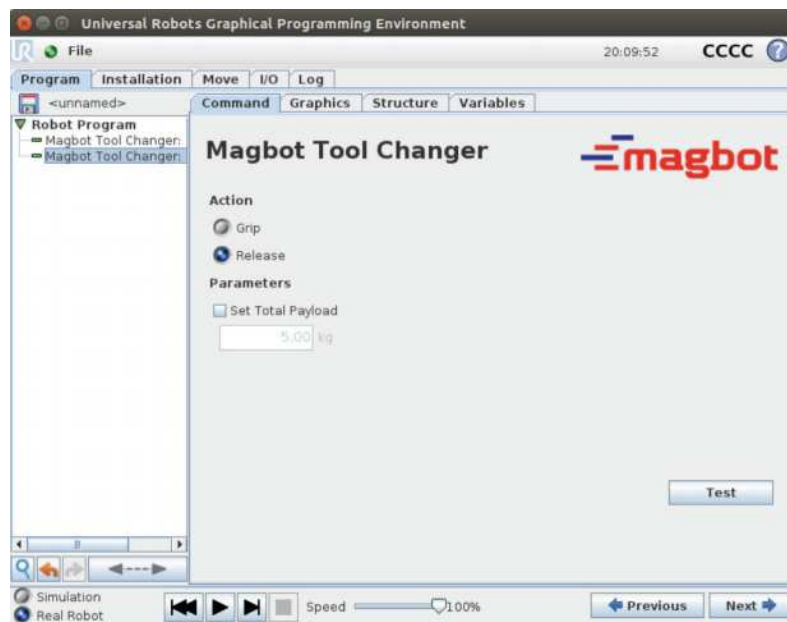
9 URCap Installation & Setup



9-1 CB Series URCap Installation

UR CB Series Program

5. Set Magbot Tool Changer URCap to grip or release at the appropriate position and run the program.

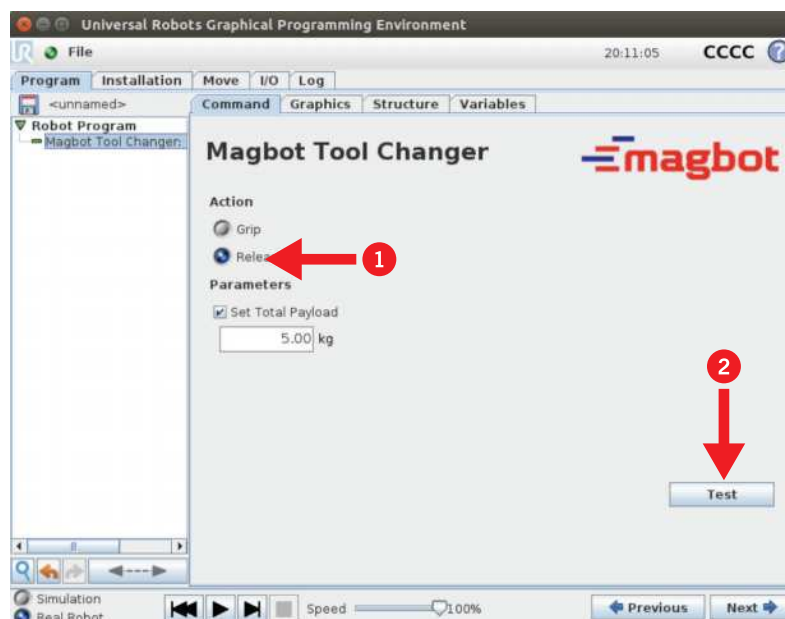
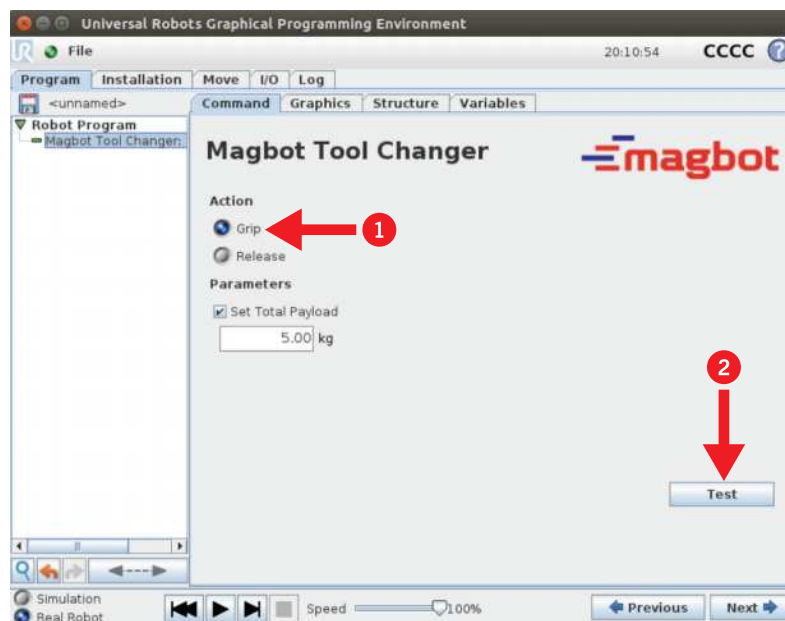


9-1 CB Series URCap Installation

UR CB Series initial setting

1. When you need to grip or release the Magbot to place the Magbot on the Magbot tool stand in the initial stage, use the test option to grip or release the Magbot after completing the DO terminal setting.
 - Select the **Grip** in the work items, select the **Test** option, and then it operates grasping action.
 - Select the **Release** in the work items, select the **Test** option, and then it operates releasing action.

***In the initial setting, the system may go down if using the DO terminal. Therefore, be sure to use URCap**



9 UR Cap Installation & Setup



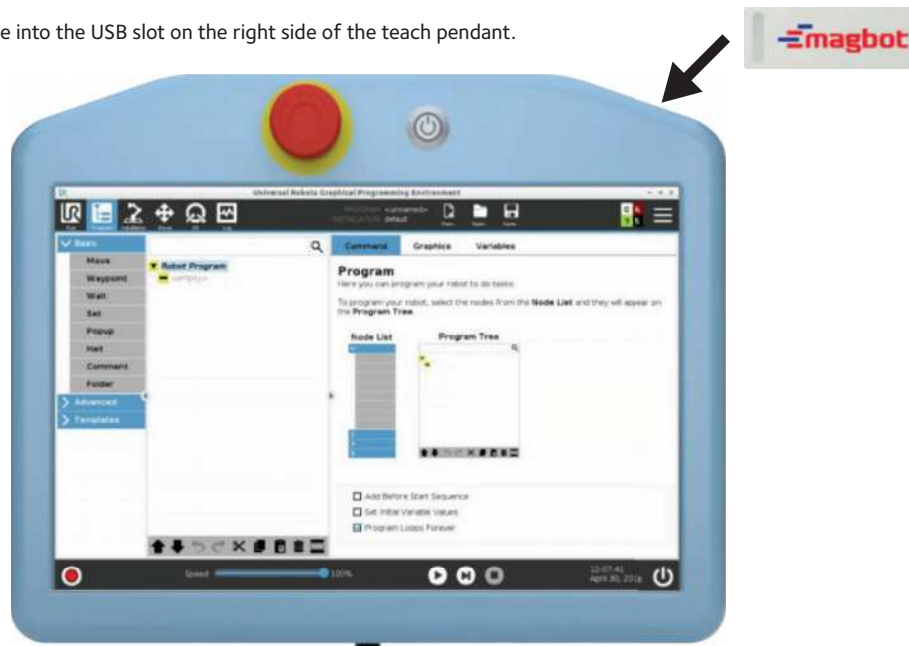
9-2 UR Cap Installation


*CB Series is from 27th page.

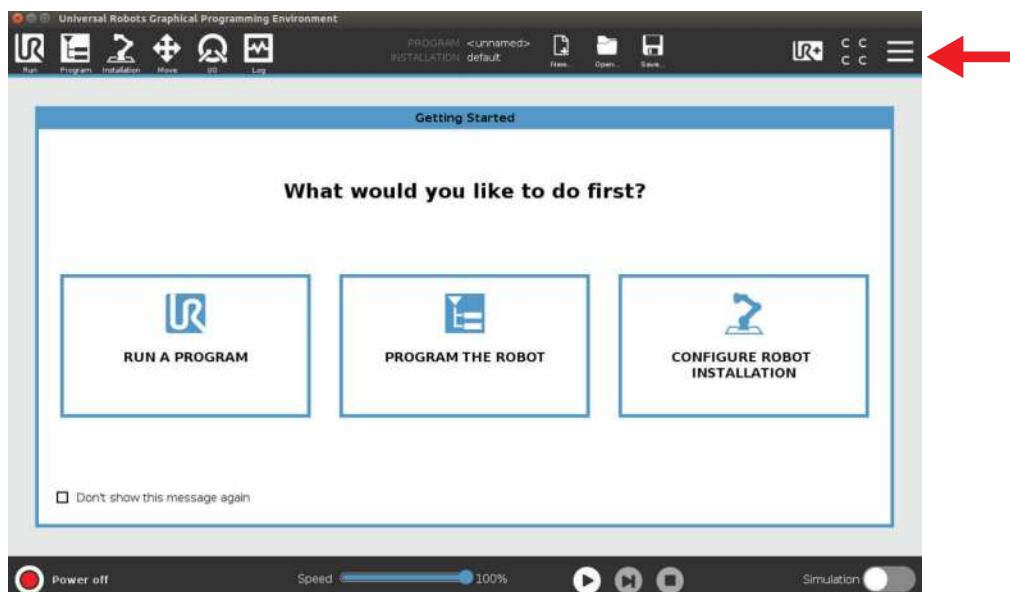
UR e-Series Installation

- NOTE**
- Compatible UR robots: UR3e, UR5e, UR10e, UR16e
 - UR Polyscope version 5.8 or later.

1. Insert the USB drive into the USB slot on the right side of the teach pendant.



2. Push the  menu (top right of the screen) and select the **Settings** option.



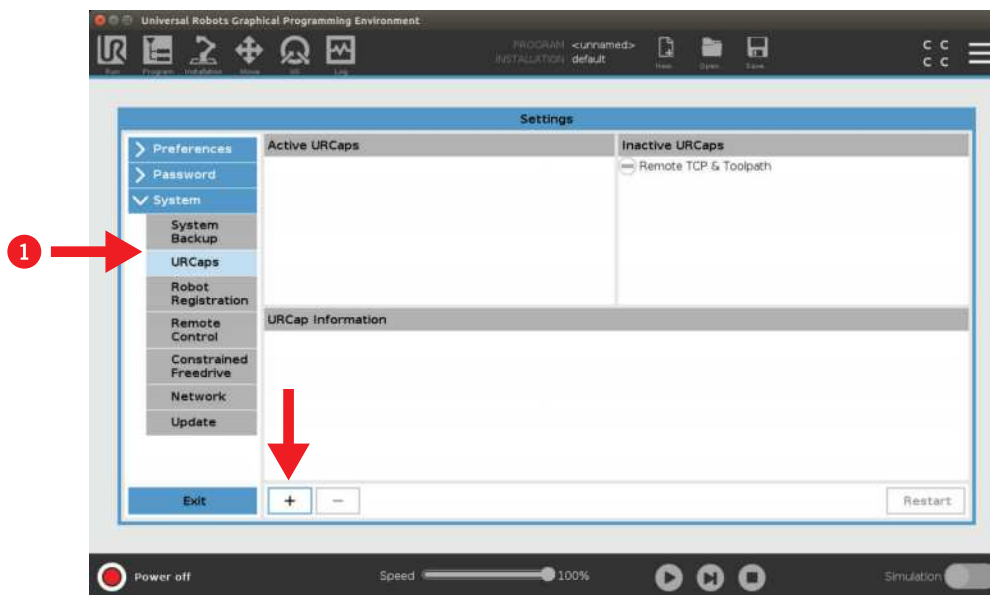
9 URCap Installation & Setup



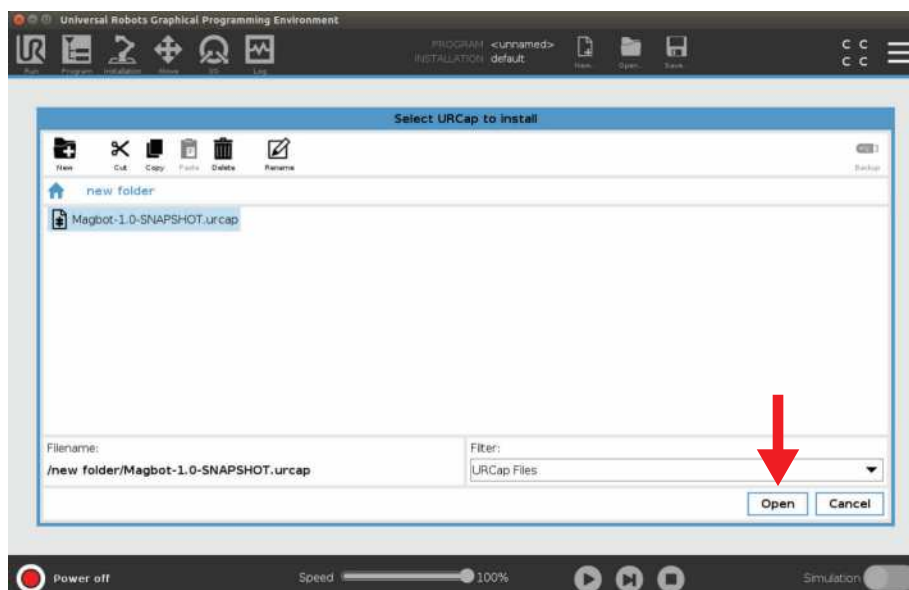
9-2 URCap Installation

UR e-Series Installation

3. Under the system options, select the **URCaps** option and click the + sign.



4. Browse to the **Magbot URCap** file and click **Open**.



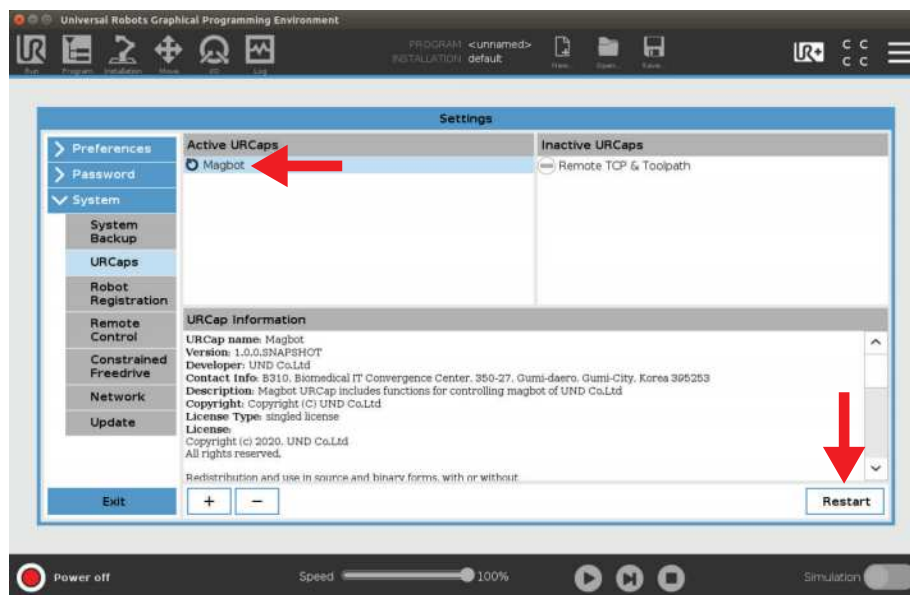
9 URCap Installation & Setup



9-2 URCap Installation

UR e-Series Installation

5. The system must be restarted for the changes to take effect. Press **Restart** and wait for the system to restart.



6. Initialize the robot.

9 URCap Installation & Setup

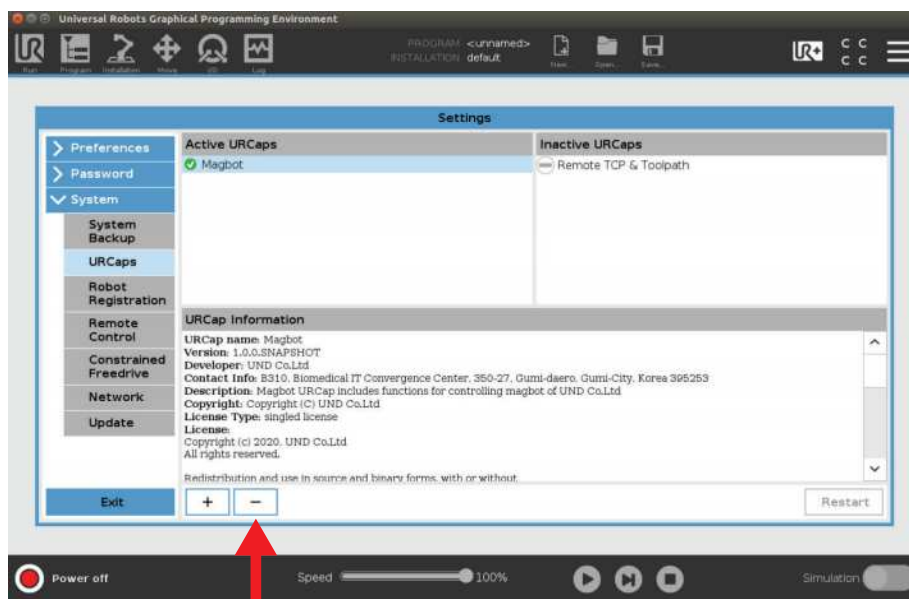


9-2 URCap Installation

UR e-Series URCap removal

Remove software

1. From the main menu, select the **Settings** option and then the **URCaps** option.
2. Choose the **Magbot** URCap.
3. Press the - symbol to remove the Magbot URCap.
4. The system must be restarted for the changes to take effect. Press **Restart** and wait for the system to restart.
5. Initialize the robot.



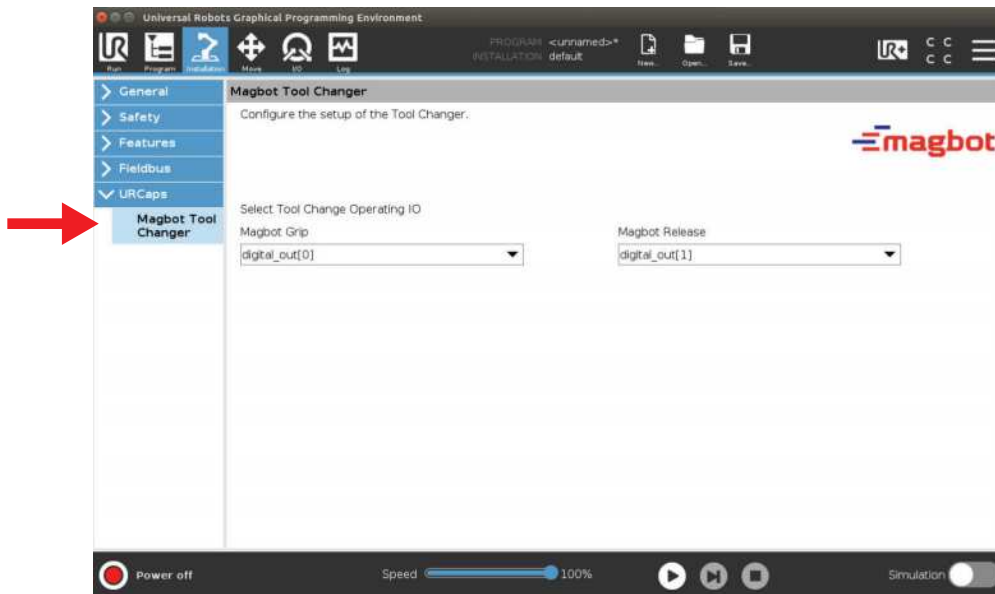
9 URCap Installation & Setup



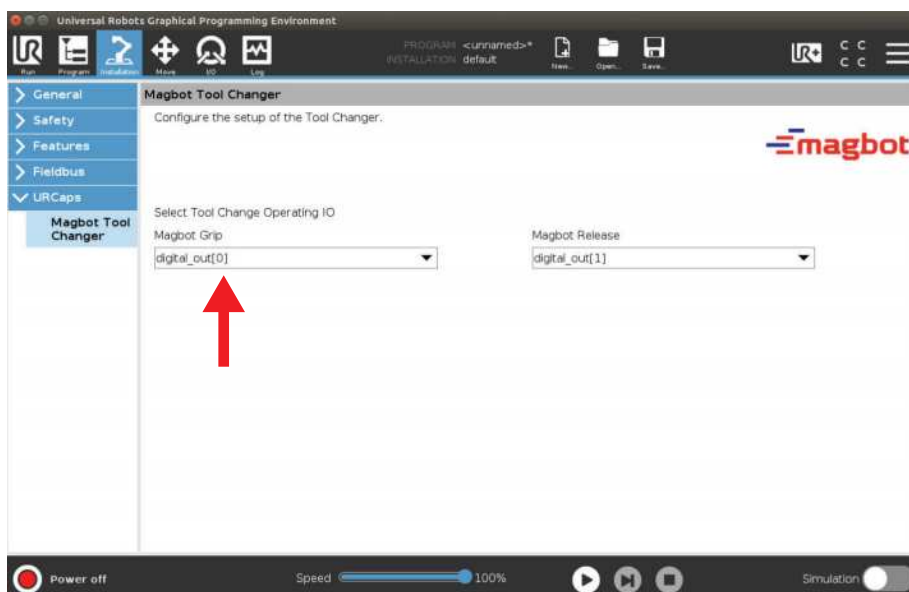
9-2 URCap Installation

UR e-Series DO Installation

1. Select  from the toolbar and select the **Magbot Tool Changer** from the URCaps options.



2. In the Magbot Grip option, select the **DO terminal** (initial setting number 0) connecting the grip cable.



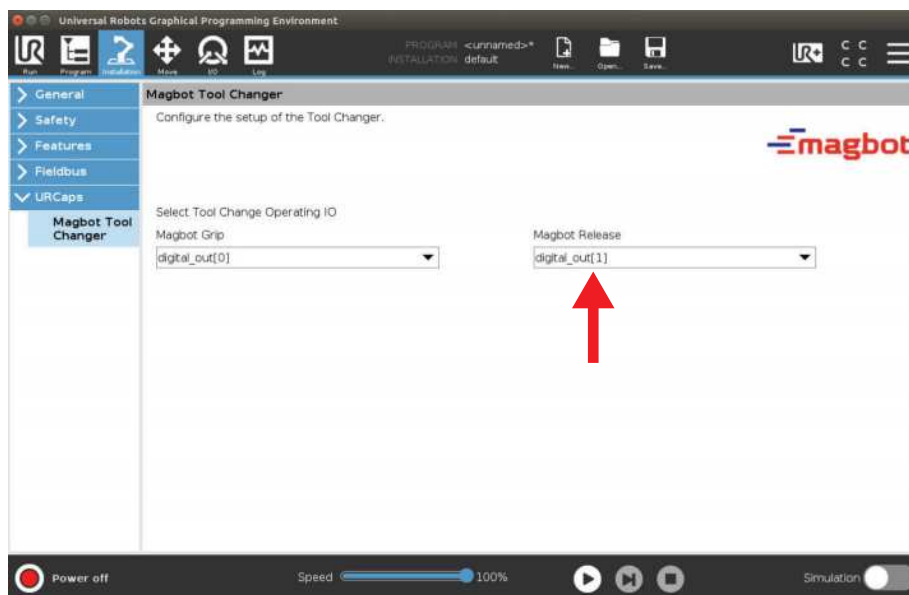
9 URCap Installation & Setup



9-2 URCap Installation

UR e-Series release DO Setup

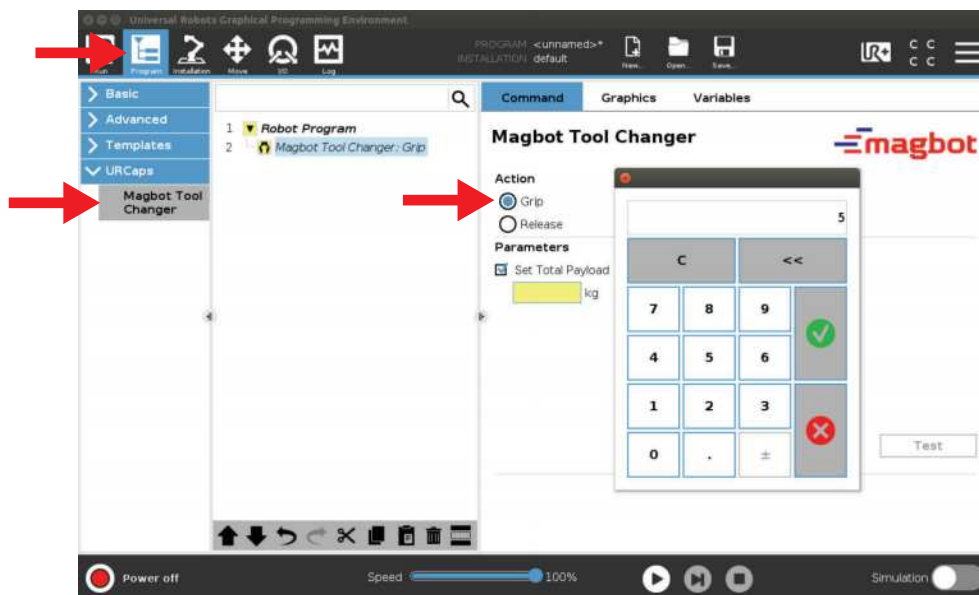
3. In the Magbot Release option, select the **DO terminal** (initial setting number 1) connecting the release cable.



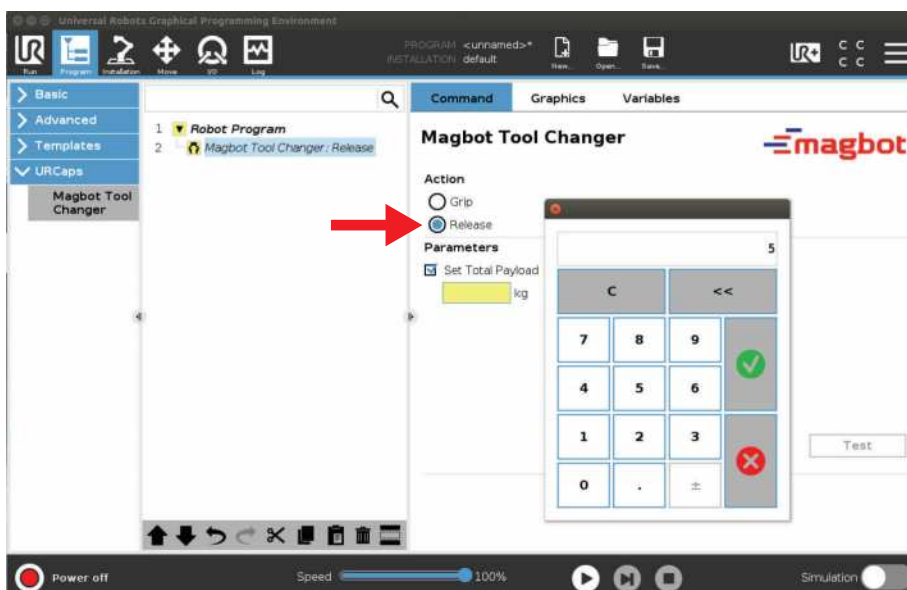
9-2 URCap Installation

UR e-Series Program

1. Select  from the toolbar and select the **Magbot Tool Changer** from the URCaps options. Select the Grip from the work items when gripping, and set the **Total Payload**.



2. After selecting the **Magbot Tool Changer** URCap, select the **Release** from the work items when releasing, and set the **Total Payload**.



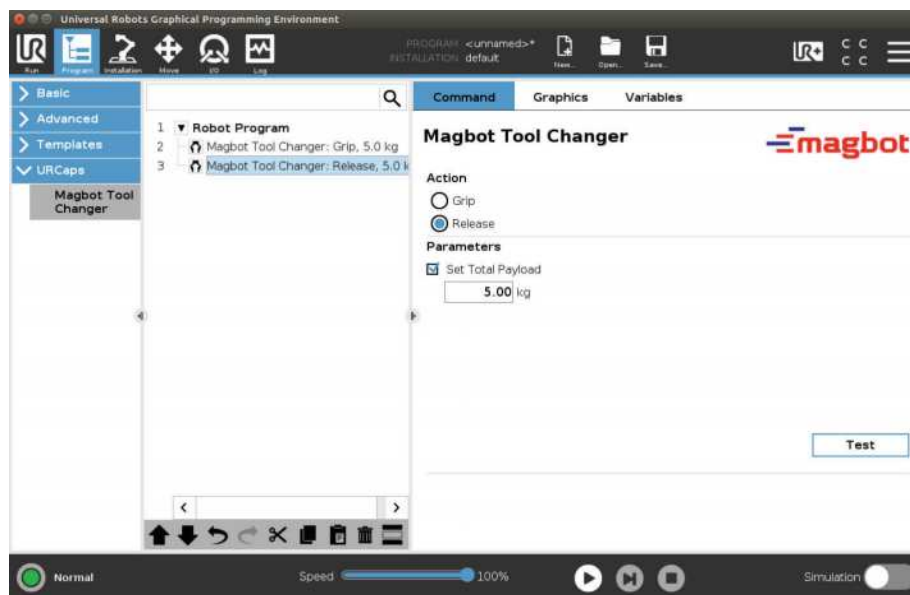
9 URCap Installation & Setup



9-2 URCap Installation


UR e-Series Program

3. Set **Magbot Tool Changer** URCap to grip or release at the appropriate position and run the program.

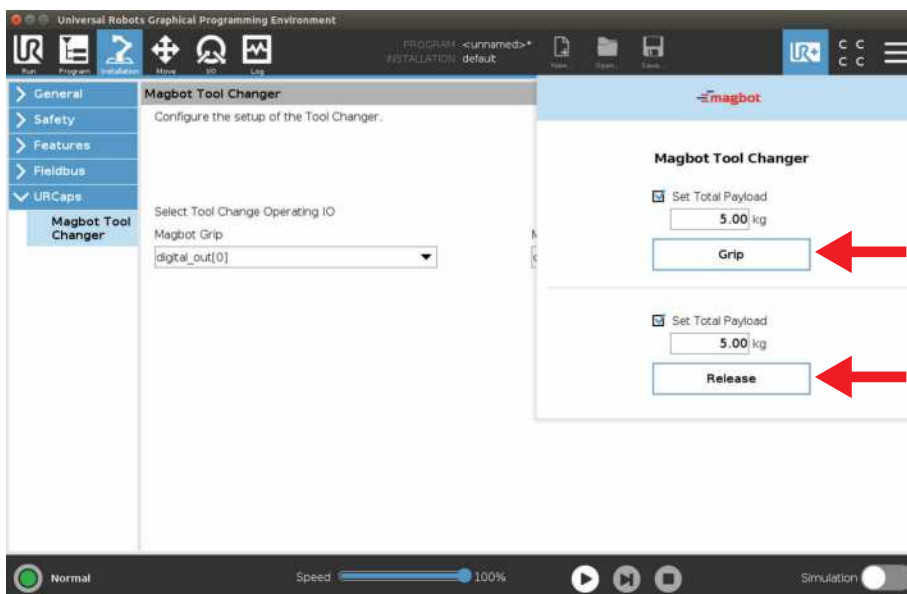


9-2 URCap Installation

UR e-Series initial setting

1. When you need to grip or release the Magbot to position the Magbot on the initial Magbot tool stand, select  after the DO terminal settings and select the Magbot Tool Changer URCap.
 - Selecting the **Grip** option operates grasping action.
 - Selecting the **Release** option operates releasing action..

***In the initial setting, the system may go down if using the DO terminal. Therefore, be sure to use URCap**



10 Tool Stand



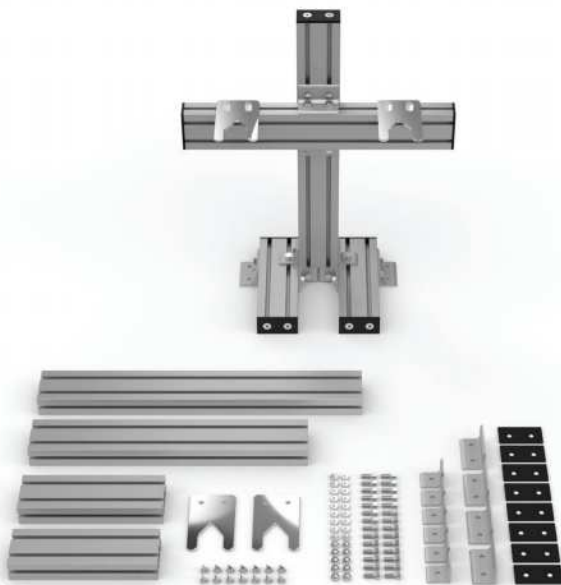
10-1 Feature

mTS1



1. Tool Rack (1 EA)
2. 40x80x350mm Vertical Frame (1 EA)
3. 40x40x200mm Base bar (2 EA)
4. 40x40 L-Type Bracket (6 EA)
5. 40x80 L-Type Bracket (3 EA)
6. T-Bolt (18 EA)
7. Flat-Head type Bolt (6 EA)
8. Round-Head type Bolt (2 EA)
9. Flange Nut (20 EA)
10. 40X40 End cap (4 EA)
11. 40X80 End cap (1 EA)

mTS2 (Default)

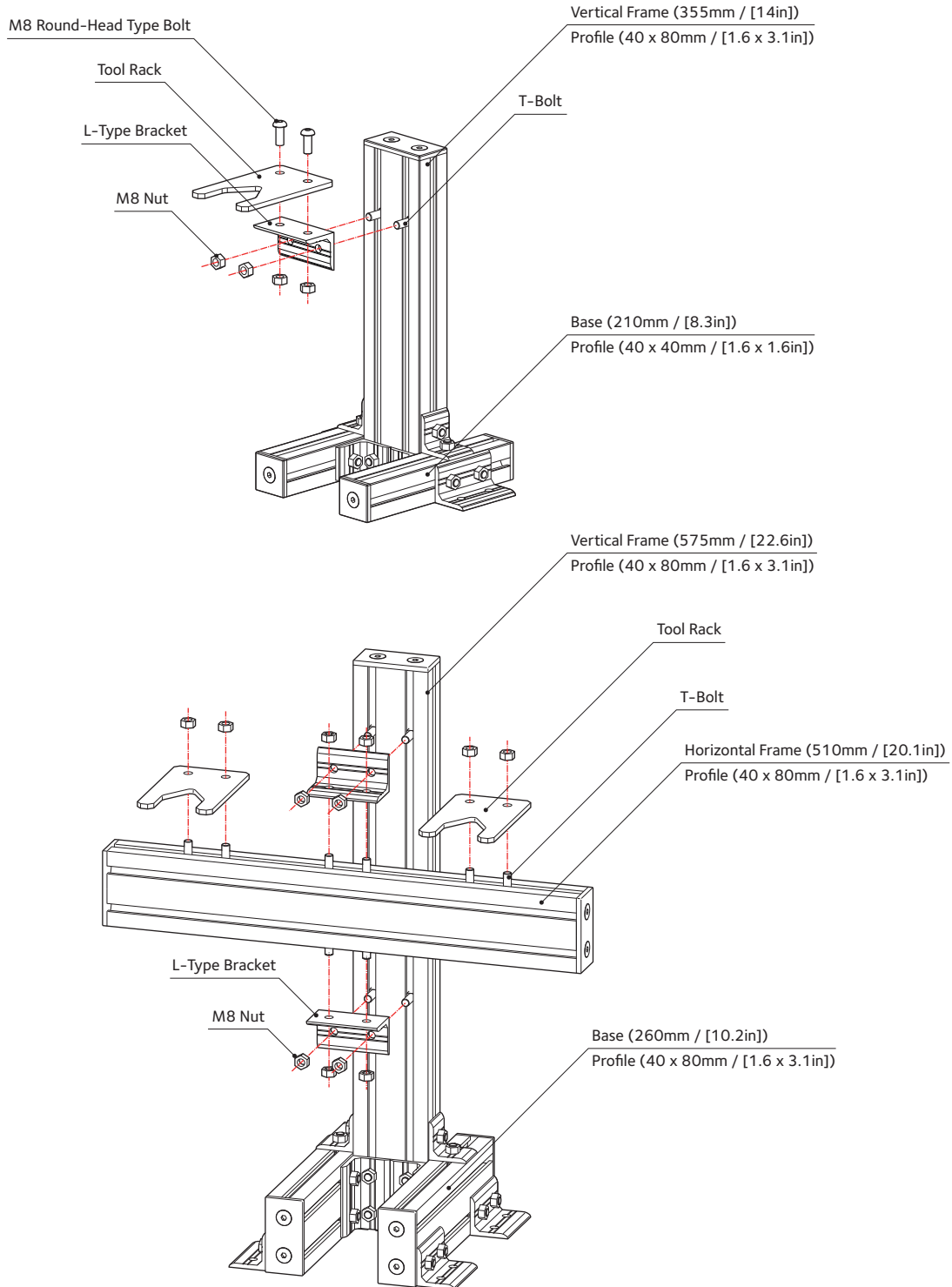


1. Tool Rack (2 EA)
2. 40x80x570mm Vertical Frame (1 EA)
3. 40x80x500mm Horizontal Frame (1 EA)
4. 40x80x250mm Base bar (2 EA)
5. 40x40 L-Type Bracket (6 EA)
6. 40x80 L-Type Bracket (10 EA)
7. T-Bolt (32 EA)
8. Flat-Head type Bolt(14 EA)
9. Flange Nut (32 EA)
10. 40X80 End cap (7 EA)

10 Tool Stand



10-2 Assembly Drawings



*See the homepage or YouTube for various assembly methods.

11 Environmental Safety & Warranty



11-1 Environmental Safety

UND products must be disposed of under applicable national laws, regulations, and standards.

Products are manufactured with restricted use of hazardous substances for environmental protection under the EU RoHS Directive 2011/65/EU.

Hazardous substances include mercury, cadmium, lead, chromium VI, polybrominated biphenyl, and polybrominated diphenyl ether.

Comply with the importer's domestic registration requirements per EU WEEE Directive 2012/19/EU.



11-2 Patent & Trademark Rights

Magbot products are protected by patent and trademark rights. Some patents are registered and in progress in individual countries and worldwide.

Manufacturers of all reproductions and similar products that violate any patent claims will be prosecuted.

11-3 Product Warranty Policy

Customers will receive the manufacturer's warranty in the event of manufacturing, and material defects or defects occur within 12 months of purchasing Magbot products (up to 18 months after shipment). In case of a warranty, a purchase receipt with the date of purchase should be submitted.

In the case of battery-powered product (ex. TCW1), the battery life is guaranteed for 300 cycles, but it may vary depending on the user's conditions and environment (Temperature, Humidity, etc)

Manufacturers and sellers must provide the necessary spare parts, and customer (users) will be required to provide working time to replace the spare parts. If repairs are not possible, and the product's defects are evident, we may offer a new replacement.

However, we do not guarantee product defects caused by improper handling of customers (users) and failure to comply with information such as user's guide and website notices.

There is no refund after unboxing the product packing, and if defective or abnormal is found, you must request replacement or repair to the seller. If the customer arbitrarily disassembles or attempts to disassemble the product, the manufacturer does not take any responsibility even within the warranty period.

11-4 Notice

UND CO., Ltd. has a right to upgrade the product without prior notice to continue to improve the reliability and performance of the product.

UND CO., Ltd. guarantees the accuracy and reliability of this manual's contents but is not responsible for any errors or omissions in the information.

12 Certificates





GERMAN CERT

Quality Management System Certificate

UND Co., Ltd.

310-ho, #350-27, Gumi-daero, Gumi-si, Gyeongsangbuk-do, Korea

German Cert Co., Ltd. Hereby certifies that the Quality Management System of the above organization has been evaluated and found to be in line with the requirements of the following standard:

ISO 9001:2015

For the scope of

Design and Manufacture of Magnetic Products

Certificate Number : **KorQ-194895**

Initial Certification Date : 13 December 2019
 Certification Date : 13 December 2019
 Expiry Date : 12 December 2022
 Issue Date : 13 December 2019

Daek Wooki

Scheme Manager






IAF, Unter den Eichen · StraÙe 49/50, Postfach 24, 10000 Berlin 40, Germany
 This certificate is a sole property of GERMAN CERT and therefore shall be returned to it upon its request. (04/19)



GERMAN CERT

Environmental Management System Certificate

UND Co., Ltd.

310-ho, #350-27, Gumi-daero, Gumi-si, Gyeongsangbuk-do, Korea

German Cert Co., Ltd. Hereby certifies that the Environmental Management System of the above organization has been evaluated and found to be in line with the requirements of the following standard:

ISO 14001:2015

For the scope of

Design and Manufacture of Magnetic Products

Certificate Number : **KorE-195850**

Initial Certification Date : 13 December 2019
 Certification Date : 13 December 2019
 Expiry Date : 12 December 2022
 Issue Date : 13 December 2019

Daek Wooki

Scheme Manager






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Accelerating the future of robotics for humans



Robot Automatic Tool Changer

www.magbot.kr

sales@unde.co.kr

UND Co.,Ltd.