

# **Omron TM Collaborative Robot: Mobile Workstation**

**User's Manual**



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## **Statement of Responsibilities for Cybersecurity Threats**

To maintain the security and reliability of the system, a robust cybersecurity defense program should be implemented, which may include some or all of the following:

### **Anti-virus protection**

- Install the latest commercial-quality anti-virus software on the computer connected to the control system and keep the software and virus definitions up-to-date.
- Scan USB drives or other external storage devices before connecting them to control systems and equipment.

### **Security measures to prevent unauthorized network access**

- Install physical controls so that only authorized personnel can access control systems and equipment.
- Reduce connections to control systems and equipment via networks to prevent access from untrusted devices.
- Install firewalls to block unused communications ports and limit communication between systems. Limit access between control systems and systems from the IT network.
- Control remote access and adopt multifactor authentication to devices with remote access to control systems and equipment.
- Set strong password policies and monitor for compliance frequently.

### **Data input and output protection**

- Backup data and keep the data up-to-date periodically to prepare for data loss.
- Validate backups and retention policies to cope with unintentional modification of input/output data to control

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systems and equipment.

- Validate the scope of data protection regularly to accommodate changes.
- Check validity of backups by scheduling test restores to ensure successful recovery from incidents.
- Safety design, such as emergency shutdown and fail-soft operations in case of data tampering and incidents.

#### **Additional recommendations**

- When using an external network environment to connect to an unauthorized terminal such as a SCADA, HMI or to an unauthorized server may result in network security issues such as spoofing and tampering.
- You must take sufficient measures such as restricting access to the terminal, using a terminal equipped with a secure function, and locking the installation area by yourself.
- When constructing network infrastructure, communication failure may occur due to cable disconnection or the influence of unauthorized network equipment.
- Take adequate measures, such as restricting physical access to network devices, by means such as locking the installation area.
- When using devices equipped with an SD Memory Card, there is a security risk that a third party may acquire, alter, or replace the files and data in the removable media by removing or unmounting the media.

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## Revision History Table

Revision	Date	Revised Content
01	October, 2018	Original release
02	June, 2019	Revise quantity of M4L6 screw & update Packing List
03	June, 2023	Minor updates



# 1. Product Function and Specification

## 1.1 Overview

TM Mobile Workstation is a convenient tool for users to organize and store the TM Robot, the control box, and other components. Users can move the TM Mobile Workstation with the TM Robot to different work cells for easy and flexible deployment.

## 1.2 Specification

Depth	754 mm
Width	700 mm
Height	800 mm
Weight	160 kg
Applicable Robot	TM5-700, TM5-900, TM7S, TM5S only
Applicable control box	HW3.0, HW3.1, HW3.2, HW5.0 AC version only
Max. Recommended* Profile (TM5-700/TM5-900)	Up to 80% of the maximum speed with the half maximum payload and the default acceleration rate (500 ms for Time to top speed).

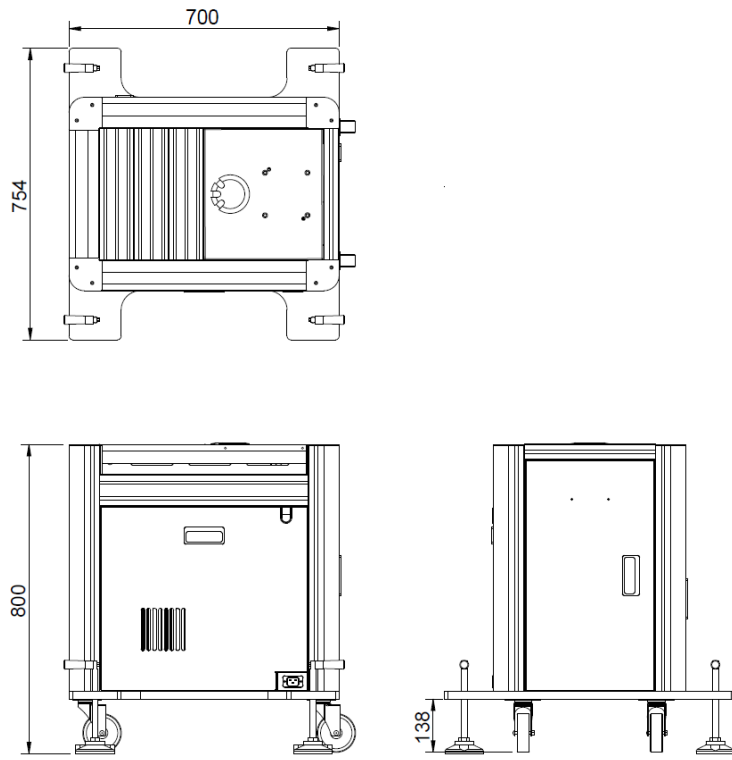
\*The Max. Recommended profile has a lot to do with the pose, the motion, the acceleration, and the characteristics of the ground surface.



### WARNING:

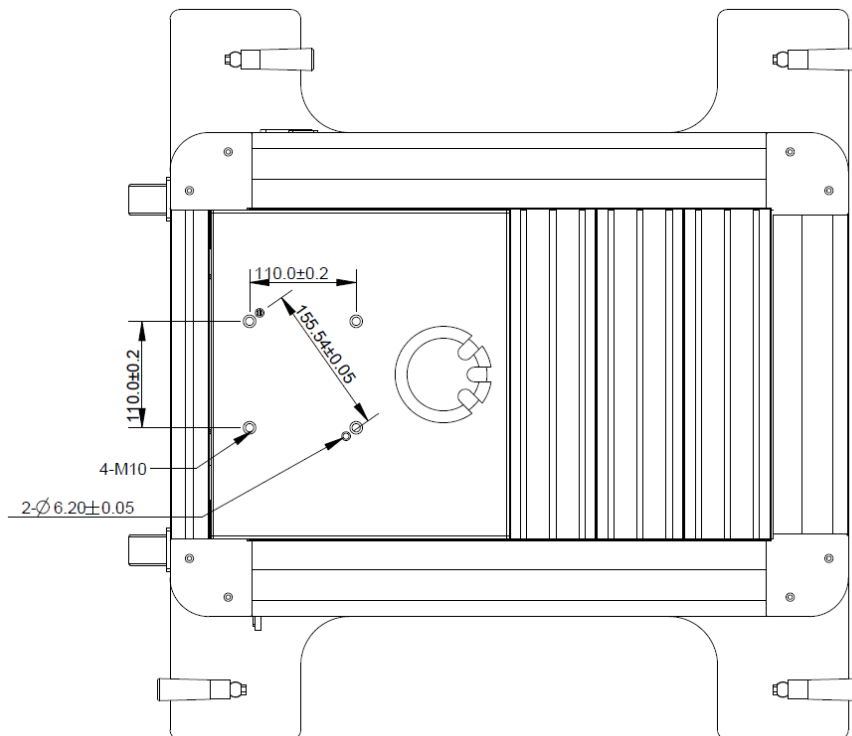
1. Before installing and using this product, users must first perform a risk assessment based on the conditions of use.
2. Due to its high center of gravity, the stability of the TM Mobile Workstation is largely affected by robot kinematics (including velocity, acceleration and poses) and the environment (including characteristics of the floor surface and structure).
3. The recommended maximum operating conditions and related data about the product can't be mistakenly regarded as the guarantee of the Corporation.
4. Operating the product without properly evaluating at risks, testing, and carefully reading the product's operating manual, the product would dump or pinch to the users, even cause the life-threatening dangers.
5. Failure to perform a proper risk assessment or comply with the TM product manuals may increase the risk of injury or death.

## 1.3 Three-view Diagram














\*The distances have the wheel range deducted.

#### 1.4 Flange Surface

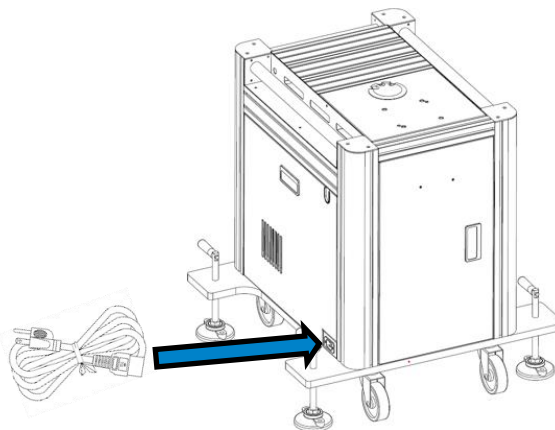


## 2. Packing List

TM Mobile Workstation comes with a TM Mobile Workstation and a box packaging with the following items:

#	Item	Description	Quantity
1.		Work Station	1
2.		Hand Grip Bracket	1
3.		Foot Stand Bracket for HW3.X	1
4.		Foot Stand Bracket for HW5.0	1
5.		Power Cable 1.8 m	1
6.		Desktop Cover	1
7.		Stick Bracket	1
8.		M4*8 mm Screw	10
9.		M5*8 mm Screw	2
10.		M10*30 mm Screw + Washer	4
11.		Handle	2

\*This power cord comes with the type B plug at one end and the IEC 60320 C-13 connector at the other end used in Taiwan, Japan, and North America. For the compatibility of the plugs and sockets regulated by the local government. It is favored to use the power cord coming with the TM Mobile Workstation to connect between the control box and TM Mobile Workstation and the power cord coming with TM Robot for external power.

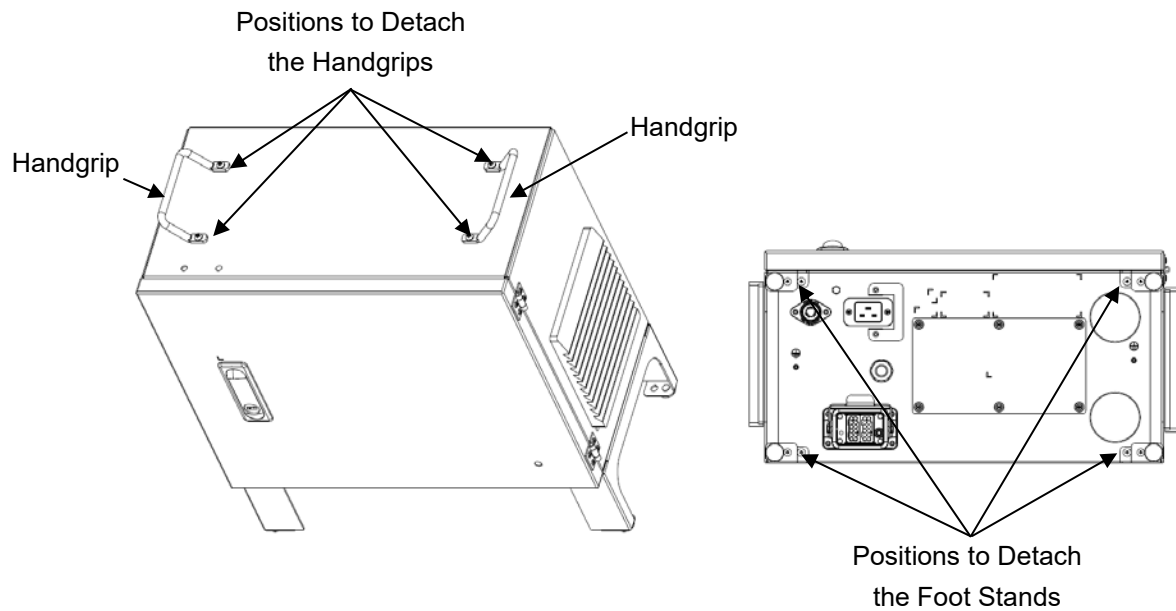


Follow the arrow in the picture to plug the power cord.

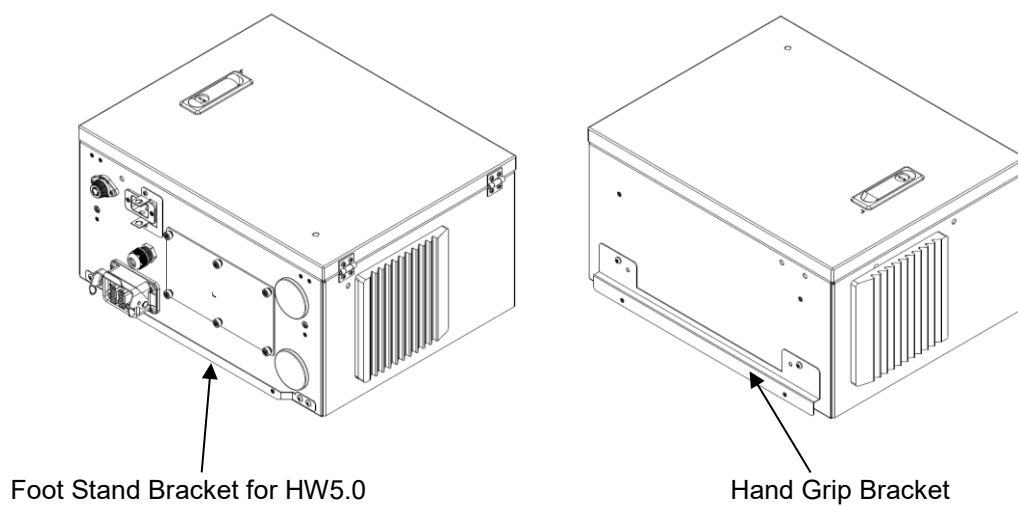
### 3. Installation

#### 3.1 Control Box Installation

1. Remove the handgrips and the foot stands of each side as shown.



2. Use the screws from the handgrips and the foot stands to mount the brackets on the control box. Note that Foot Stand Brackets for HW3.X and HW5.0 are different.



Foot Stand Bracket for HW5.0



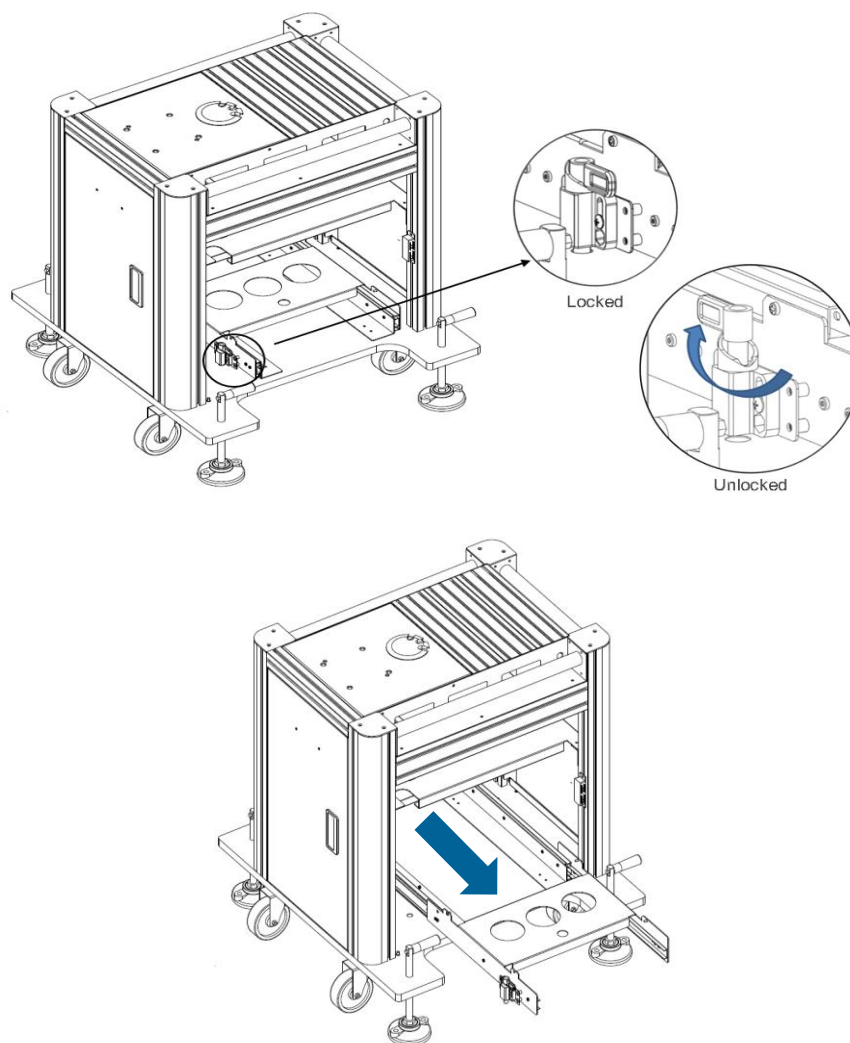
Foot Stand Bracket for HW3.X



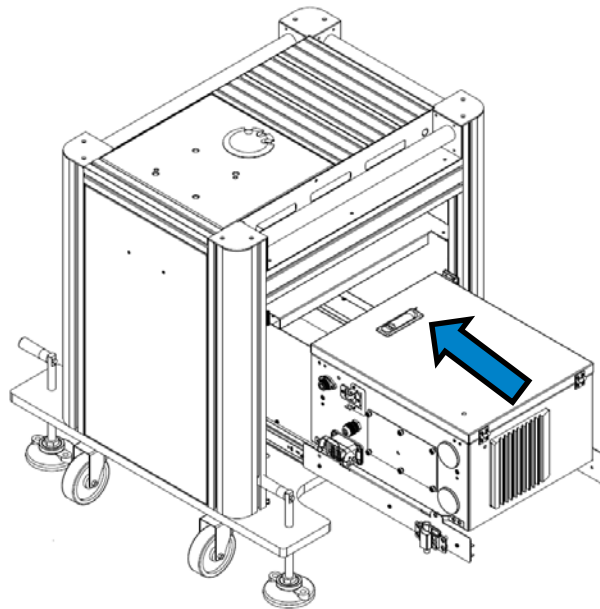
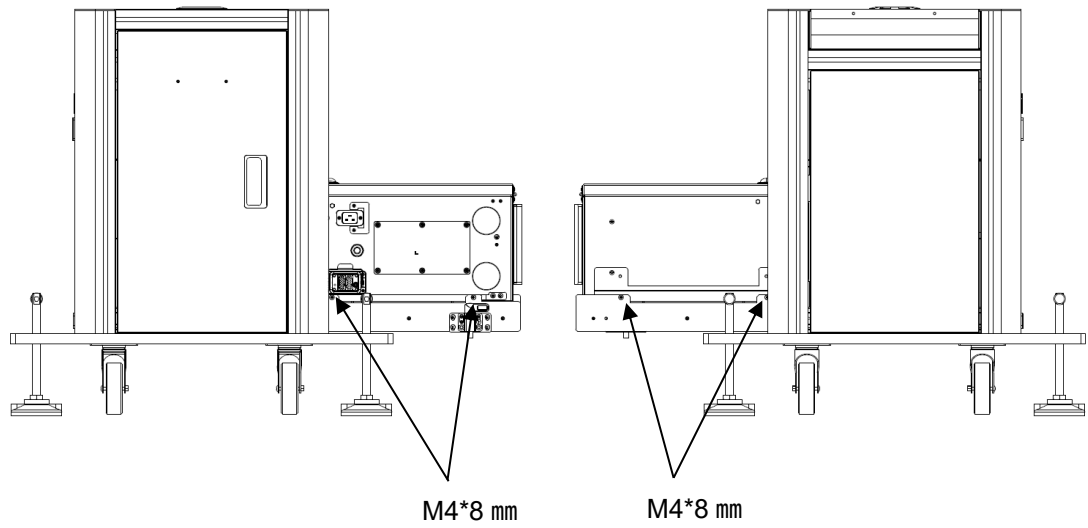
Hand Grip Bracket



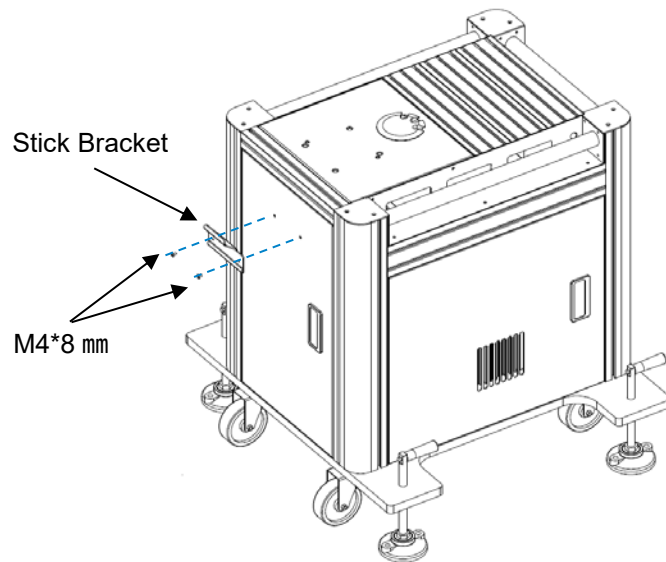
3. Unlock the drawer for the control box of the TM Mobile Workstation, and remove the drawer.



4. Use the screws M4\*8 mm to mount the control box on the drawer bracket.

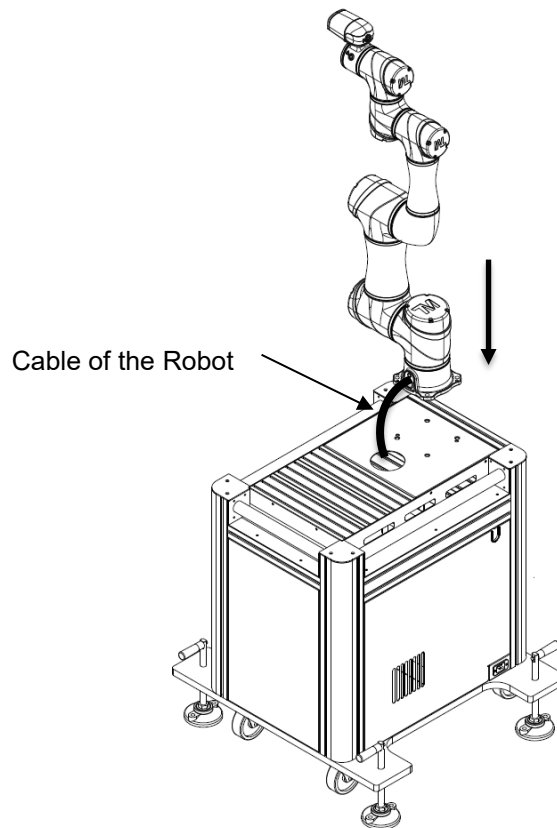


5. Use the screws M4\*8 mm to mount the stick bracket on the mobile station.

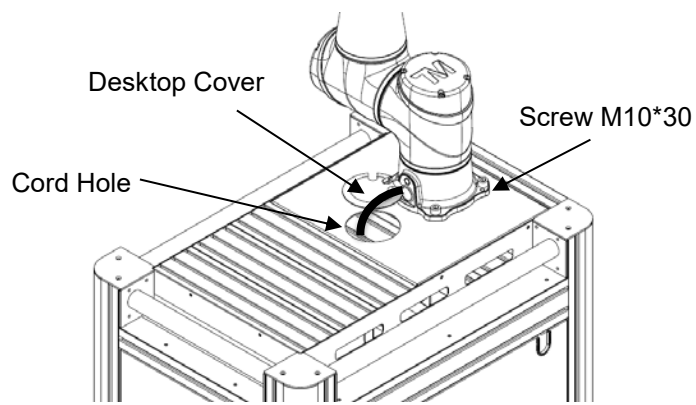


### 3.2 Robot Installation

1. Orient the cable of the robot towards the cord hole.
2. Secure TM Robot with M10\*30 mm screws and washers.

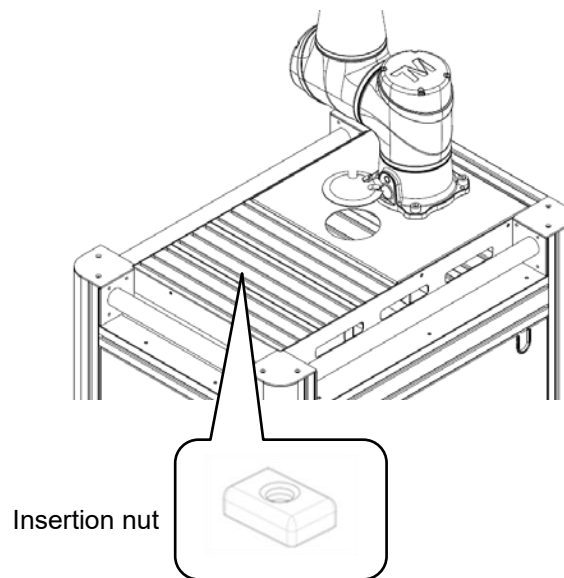


3. Pass the cable of the robot through the cord hole, connect to the control box, and cover the cord hole with a desktop cover.



### 3.3 TM Mobile Workstation Application

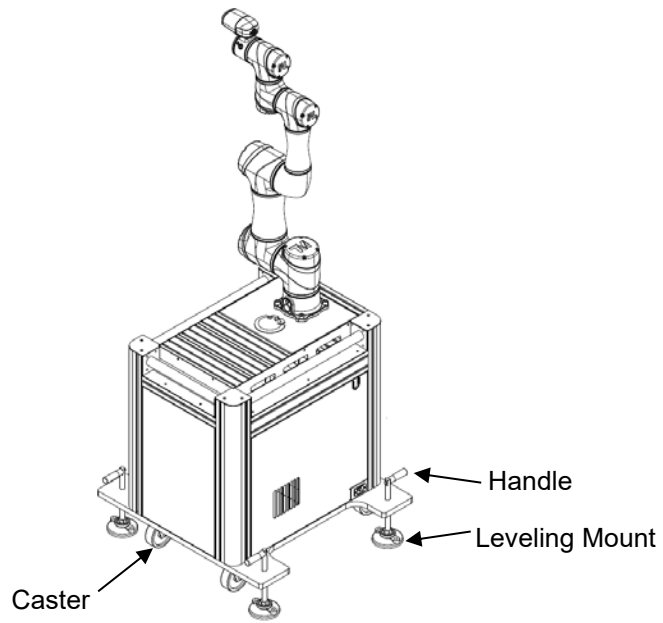
Users can put insertion stopper nuts into the slots at the top of the TM Mobile Workstation and thread the application with bolts together on the nuts. The recommended thread nominal of the insertion stopper nuts coming with 10 mm x 5 mm is M5 or M6.



### 3.4 Casters Setting

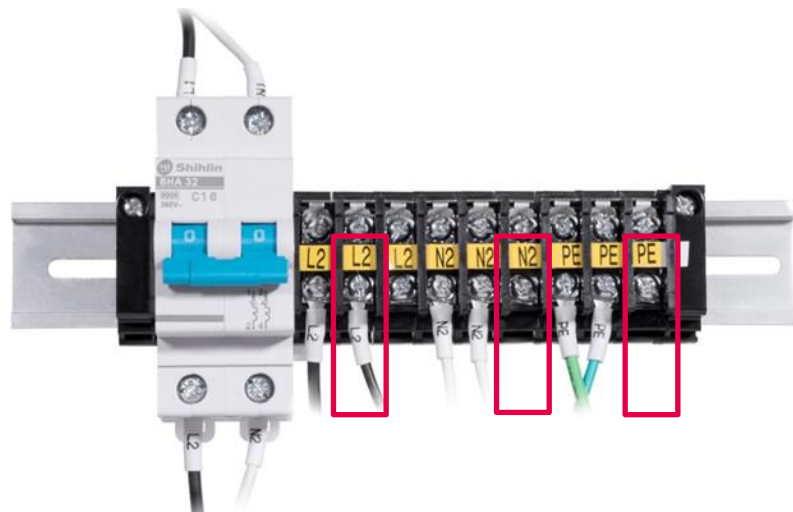
- To move the TM Mobile Workstation:  
Turn the handles counterclockwise until the casters touch the ground.
- To fix the TM Mobile Workstation:  
Turn the handles clockwise until the casters take off the ground.

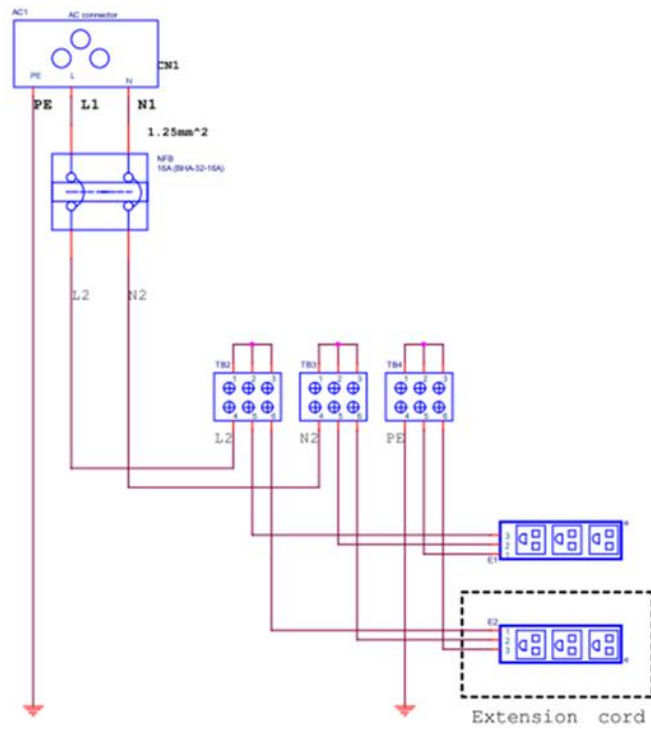




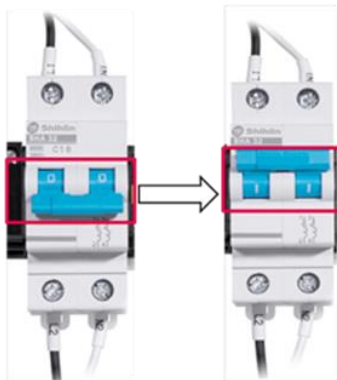
### 3.5 Terminal Block Wiring

1. After shutting down the control box and turning off the circuit breaker, connect L2, N2, and PE with the extension cord as shown.





2. Turn on the circuit breaker.



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19888-910C