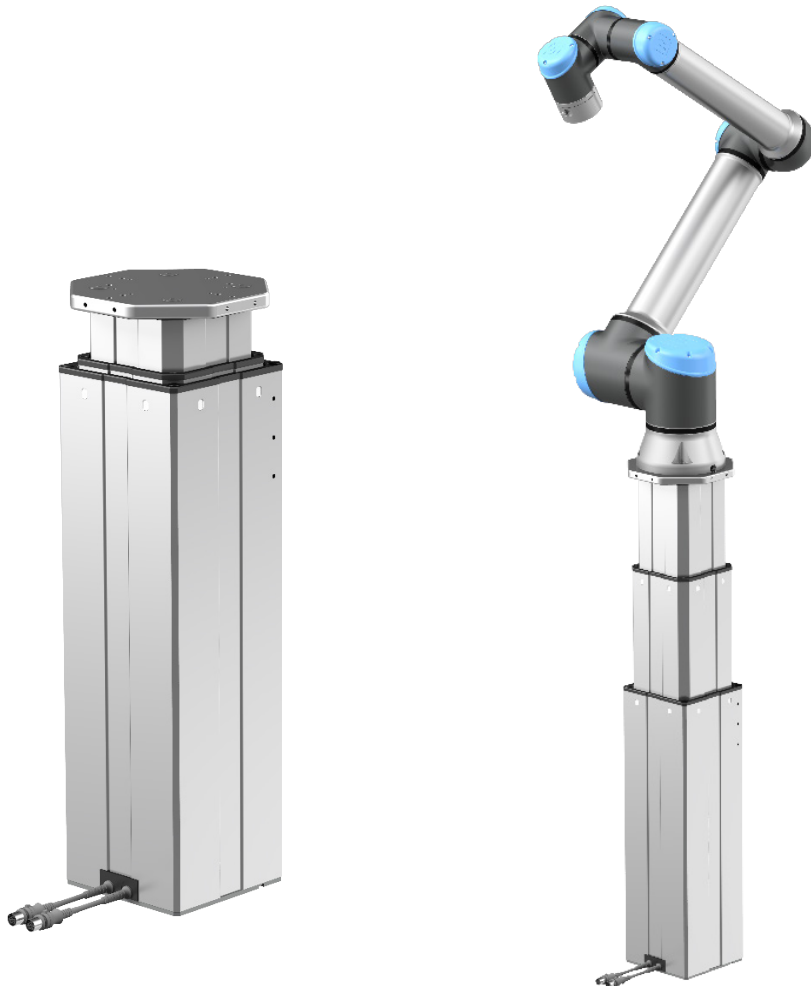


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INSTALLATION, OPERATION AND MAINTENANCE MANUAL

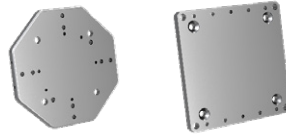
LIFTKIT-UR



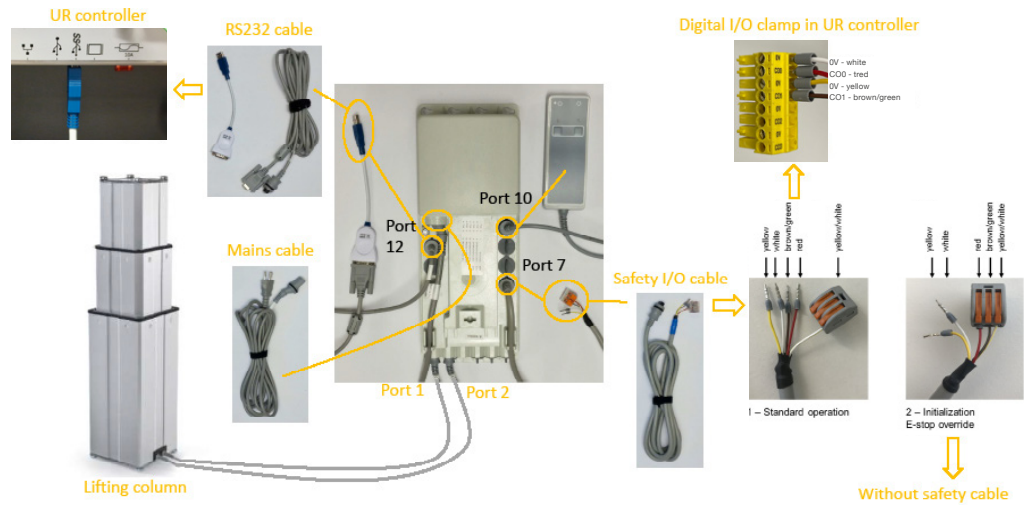
Quick start guide

For more details on each step, read the full instructions

1. Mount top and bottom interface plates to column



2. Connect all cables



3. Initialize LIFTKIT (First use only!).
Install and setup URCaps for safety and communication.
(www.ewellix.com/en/support/media-library)



- 3.1. Press both handswitch buttons simultaneously until the controller beeps
- 3.2. Press down-button until column stops at bottom end stop indicated by a beep
- 3.3. Press up-button until column stops at upper end stop indicated by a beep

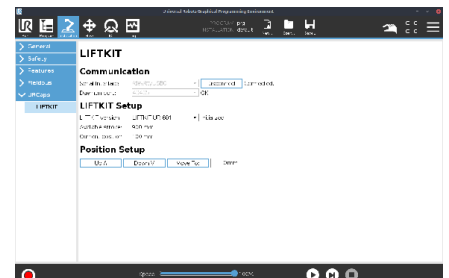
4. Screw robot onto top plate



5. Install and setup URCaps for safety and communication.
URCaps available at www.ewellix.com/en/support/media-library



5.1. Safety configuration



5.2. Setup interface and type in installation tab

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WARNING

Please read this manual before installing, operating or maintaining this lifting column. Failure to follow safety precautions and instructions could cause lifting column failure and result in serious injury, death or property damage. Keep this manual nearby for future reference.

1.0 General information

1.1 Information in this manual

This manual provides important information on how to work with the actuator (also called device or drive) safely and efficiently.

The manual is part of the device, must always be kept in the device's direct proximity and should be available for personnel to read at any time. All personnel working with the device must read and understand this manual before starting any work. Strict compliance with all specified safety notes and instructions is a basic requirement for safety at work.

Moreover, the accident prevention guidelines and general safety regulations applicable at the place of use of the device must also be complied with.

For a better representation of the circumstance of use, the illustrations used are not necessarily to scale and may vary from the actual design of the device.

1.2 Explanation of symbols and signal words

Safety precautions

Safety precautions are identified by symbols and signal words as shown to the right. The signal words indicate the severity of the hazard and the chance it could occur.

Follow these safety precautions and act cautiously in order to avoid accidents, personal injury and damage to property.

These installation instructions describe the setup and operation of LIFTKIT, a vertical lifting axis for collaborative robots.

DANGER

Indicates a dangerous situation, which will lead to death or serious personal injury, if the precautionary measures are ignored.

WARNING

Indicates a dangerous situation, which can lead to minor or moderate injury or property damage, if the precautionary measures are ignored.

CAUTION

Indicates a dangerous situation, which can lead to minor or moderate injury, if the precautionary measures are ignored.

NOTICE

Indicates information considered important, but not hazard-related (e.g. messages relating to property damage).



NOTE

Emphasizes useful hints and recommendations as well as information for efficient and trouble-free operation.

1.3 LIFTKIT designations

LIFTKIT contains a lifting column, a controller and additional accessories enabling easy integration with a collaborative robot. Depending on LIFTKIT typekey chosen, different configurations of these included products are possible (see **Ordering key**).

1.4 Related documents

This instruction manual does not replace the operating manuals of the included products, but adds additional instructions relevant to the setup and operation of the LIFTKIT's system related to collaborative robots.

For general information and safety instructions please refer to installation, operation and maintenance manuals available at www.ewellix.com/en/support/media-library about:

- THG-TLG-TLT operating manual: TC-08023-EN
- SCU operating manual: TC-08005-EN

1.5 Target audience

This manual is intended for qualified technical personnel who install and use LIFTKIT in their application. This manual and the corresponding operating manuals should be kept available for reference at all times.

Qualified personnel is able to carry out assigned work and to recognize and prevent possible dangers self-reliantly due to its professional training, knowledge and experience as well as profound knowledge of applicable regulations.

Ordering key



Robot
UR Universal Robots

Stroke	Stroke	Retracted length	Extended length
500	500 mm	525 mm	1 025 mm
600	600 mm	575 mm	1 175 mm
700	700 mm	625 mm	1 325 mm
800	800 mm	675 mm	1 475 mm
800*	800 mm	875 mm*	1 675 mm*
900	900 mm	725 mm	1 625 mm
A00	1 000 mm	775 mm	1 775 mm
B00	1 100 mm	825 mm	1 925 mm
C00	1 200 mm	875 mm	2 075 mm
D00	1 300 mm	925 mm	2 225 mm
E00	1 400 mm	975 mm	2 375 mm

Electrical options

11	120 V AC / US cable
22	230 V AC / EU cable
23	230 V AC / CN cable
24	230 V AC / UK cable
25	230 V AC / CH cable

Column type

601	TLT
620	TLT for UR20, UR30

* 620 TLT version is only available in 800 mm stroke, for other strokes, please contact Ewellix

2.0 Safety

This section provides safety aspects supplementary to the safety aspects described in the relevant operating manuals of the included devices. Failure to comply with the guidelines and safety instructions contained in this manual may result in serious hazards that could cause possible serious injury or death, or damage to the device or equipment.

The listed safety aspects must be reviewed and taken into account in the final application risk assessment prior to the use of LIFTKIT.

2.1 Intended use

LIFTKIT has been designed and built for the intended use as described in the operating manual of the column, with additional intended use defined as

- Lifting of a robot only in push-configuration to extend its operating range.

Any use that extends beyond the intended use or a use different than the one described above is deemed misuse.

Any type of claims resulting from damage caused by misuse are excluded.

2.2 Functional safety

The LIFTKIT system and its components TLT and SCU, are not functional safety systems compliant with EN ISO 13489-1 or IEC 62061. To integrate LIFTKIT into a functional safety chain, external safety devices have to be added to the overall system.

2.3 Safety mechanisms

The following measures have been integrated in LIFTKIT to reduce the risk of harm or damage

- The individual components have been designed and UL certified according to IEC 60601-1 – Safety of medical devices.
- The column has an integrated mechanical brake that prevents back-driving of the column in case of power loss or motor failure.
- A backup nut is installed to prevent a sudden collapse of the column in case of failure or wear of the nut.
- Pinching risk between the tube sections of the column and the UR attachment plate is minimized. In retracted position, the minimum gap is 40 mm.

- The LIFTKIT's SCU controller has to be connected to the Universal Robot (UR) safety I/O connection to operate. Activation of the UR emergency stop will trigger a stop of the LIFTKIT's SCU controller. If the UR system is turned off, LIFTKIT cannot be operated.
- The LIFTKIT's controller checks the RS232 connection to the UR controller. If this connection is lost, the column movement is automatically stopped.
- Stopping or failure of the UR software triggers a stop signal to the LIFTKIT's controller.

2.4 Application notes

- Integration with an emergency-stop is required for its intended use.
- Install emergency stop functions for the column and integrate them into the safety chain of the complete system prior to operating LIFTKIT.
- The emergency stop function has to be connected in such a way that a disruption of the power supply or the activation of the power supply after a power disruption cannot cause a hazardous situation for persons and objects.
- The emergency-stop systems must always be freely accessible.
- To integrate LIFTKIT into a functional safety system with a STO (Safe Torque Off) safe condition, an external safety relay has to be connected to the LIFTKIT controller power supply, triggered by a functional safety function, such as the UR safety I/O.

2.5 Potential risks

The following risks during LIFTKIT operation have to be considered in an application specific risk assessment

- The column does not detect an impact automatically and does not stop movement upon impact. This can lead to:
 - Crushing of a person or an object in the path of the column, causing serious injury or death or property damage.
 - Dynamic impact to a person or an object causing serious injury or death or property damage.
- It is possible that the column movement does not stop at the desired position and the UR control software does not recognize this
 - Movement of the robot can occur at a different position than intended, causing significant serious injury or death or property damage.

2.6 Stopping behavior

LIFTKIT stops differently depending on the stop mechanism triggered. The following stopping behaviors can occur:

Table 1

Stopping behavior

Stopping mechanism	Stop distance	Stop time
Power line to SCU controller is cut by safety relay (Category 0, LIFTKIT de-energized, uncontrolled stop)	28 mm	750 ms
Emergency stop button pressed on the Universal Robots system (Category 1, LIFTKIT energized, uncontrolled stop)	18 mm	200 ms
Software triggered stop in normal operation. LIFTKIT energized, controlled stop using speed ramp down	50 mm	800 ms

3.0 LIFTKIT components

3.1 Scope of delivery

The following enumerated parts are delivered and are depicted in Fig 1.

1. 1 Lifting column TLT
2. 1 Control unit SCU16/56/96
3. 1 Mains cable SCU EU/US/CH/CN
4. 1 RS232 interface cable M/0133976
5. 1 Adapter cable RS232 – USB M/0133972
6. 1 Cable for UR safety I/O connection M/0133975
7. 1 EHA31 operating handswitch M/0133980 (UR version)
8. 1 UR attachment plate M/0133933
9. 1 bottom mounting plate M/0133932
10. 8 M10x40 screws for mounting plates M/0102913
11. 8 screws M6x20 for UR3 robot / bottom plate M/0111860
12. 4 screws M8x25 for UR5/UR10/UR16 robot M/0111907
13. 4 screws M6x30 for UR3e robot M/0112009
14. 2 pins \varnothing 6x20 mm to align UR3 robot M/0207203
15. 2 pins \varnothing 8x20 to align UR5/UR10/UR16 robot M/0207200
16. 1 USB stick with URCaps software M/0133981
17. 1 Quick start guide

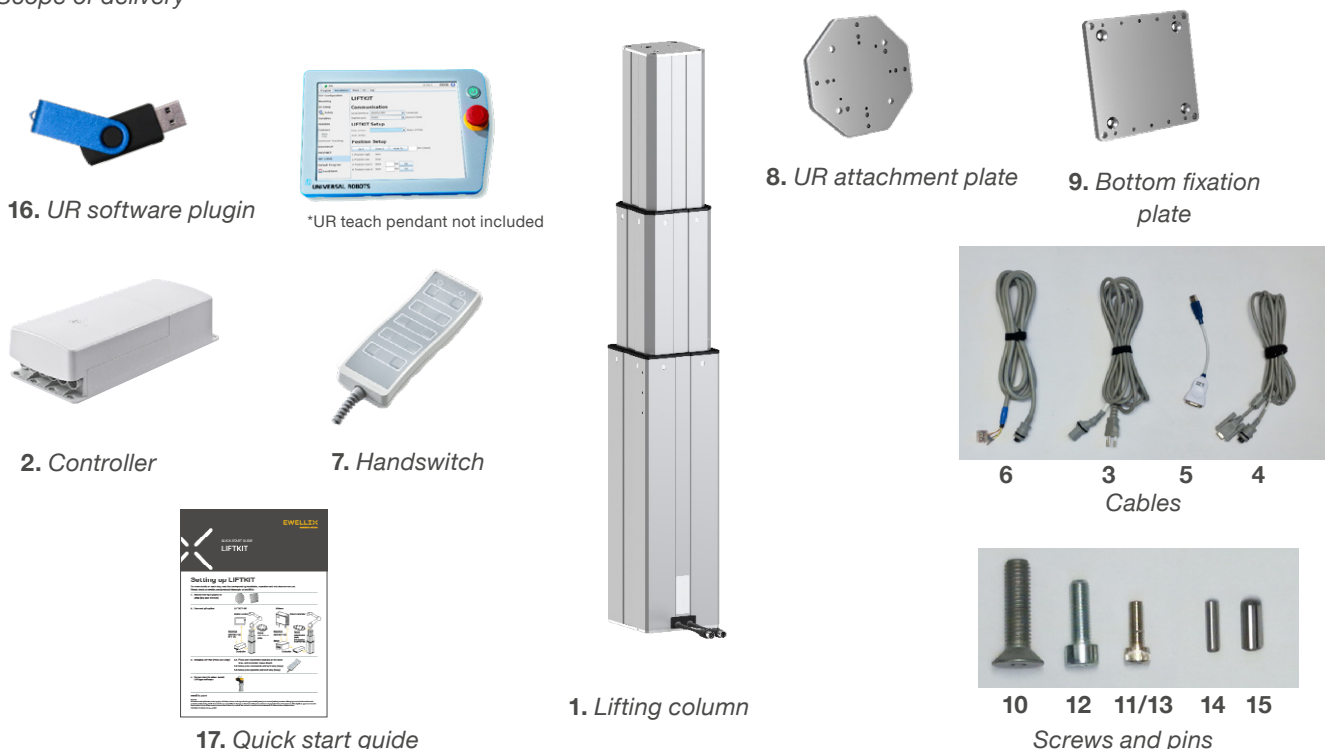
3.2 System requirements

The system requirements for the controller and the software are as follows:

- Robot compatibility: UR3, UR5, UR10, UR16 CB-Series, and e-series, UR20 and UR30
- UR controller: minimum CB 3.1 is required for the URCaps plugin
- Polyscope: minimum 3.6
- Power input (max) depending on the SCU power version chosen:
 - 24 V DC / 30 A
 - 120 V AC / 6,5 A
 - 230 V AC / 3,3 A

Fig. 1

Scope of delivery



4.0 Mechanical installation

4.1 Tools required

The following tools are required for the mechanical installation:

- Hex key size 5 and 6
- Screw driver 2 mm

4.2 LIFTKIT mechanical setup

Refer to the numbers in chapter [3.1 Scope of delivery](#) and in the **Fig. 2** for the preparation of the lifting column:

1. Take the lifting column out of the box
2. Loosen and remove 4 transport screws (1) at the bottom of the lifting column
3. Attach the bottom mounting plate (2) using 4 M10x40 screws (screw 10) on the outer guiding of the lifting column. Ensure a tightening torque of 40 Nm on these screws.
4. Fix the bottom (2) plate securely to the ground or a frame using at least four ground fixation holes on the plate (3)



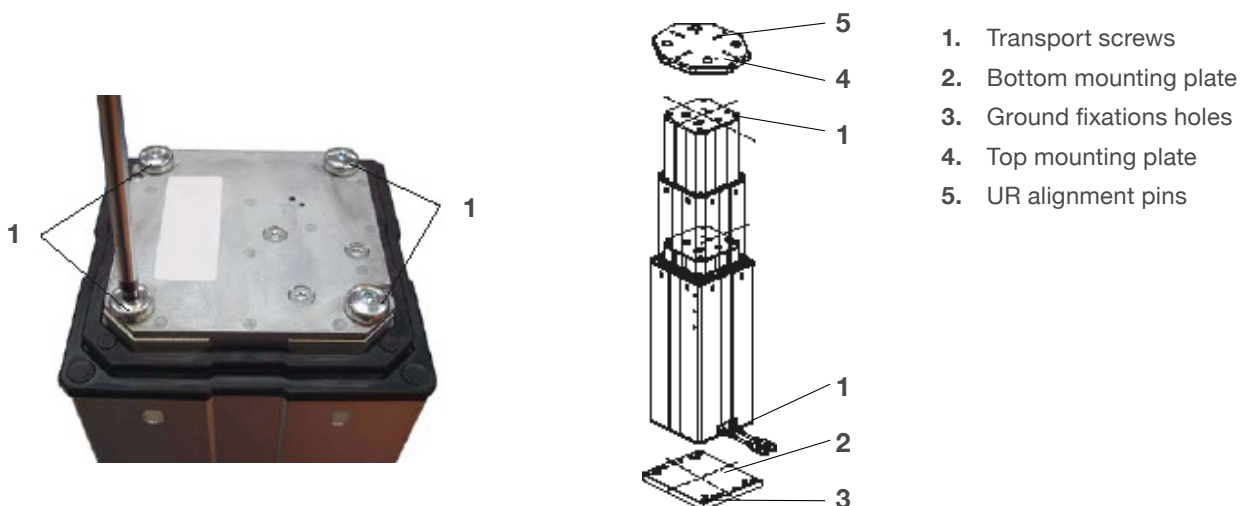
NOTE

Alternatively, if mounting to a SLIDEKIT, attach the bottom plate with 8x M6 screws to the LIFTKIT's attachment plate.

5. Loosen and remove 4 transport screws (1) at the top of the lifting column
6. Attach the top UR attachment plate (4) using 4 M10x40 screws (screw 10) on the inner guiding tube.

Fig. 2

Close up of transport screws (left) and the TLT (right)



5.0 Initialization of LIFTKIT and robot installation

LIFTKIT must be initialized before its first operation. For this, follow the steps below:

1. Connect the LIFTKIT like the following **figure 3**. It is recommended to do the initialization without the robot mounted on the column. The lifting column has to be plugged into port 1 and 2 of the SCU.
2. Override of the emergency stop link. Short-circuit the three wires with the provided clamp as shown in the **figure 4**, in order to override the emergency stop link.
3. Press both handswitch buttons simultaneously for about 5 seconds, until the SCU rattles and beeps. Now the column will run at 50% speed and force.
4. Move the column downwards until it hits the end position. The SCU controller beeps.
5. Move the column upwards to the top position until it hits the end position. The SCU controller beeps.

NOTE

The identified end positions are used as virtual limits, which will be approached by soft ramps. After successful initialization the lifting column will move at full speed and full force. If it does not reach its full stroke or continues to beep, then repeat the initialization procedure again.

NOTE

If the system connections are changed, a new initialization may be required

6. If required, insert the 2 alignment pins on the top plate and press them in (or use a plastic hammer) (Ø 6 mm for UR3 (pin 14 from scope of delivery), Ø 8 mm for UR5/10/16 (pin 15 from scope of delivery)
7. Align the robot with the alignment pins and fix the robot base with the four screws provided (M6x20 (screw 11 from scope of delivery) for UR3, M6x30 (screw 13 from scope of delivery) for UR3e, M8x25 (screw 12 from scope of delivery) for UR5/10/16).

Fig. 4

Zoom on the safety I/O cable to override emergency stop link with provided clamp

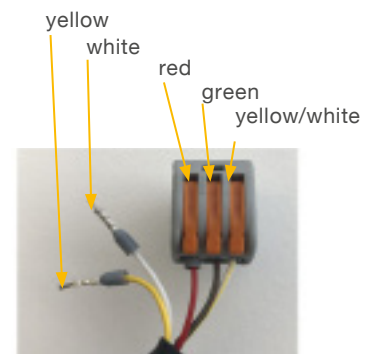
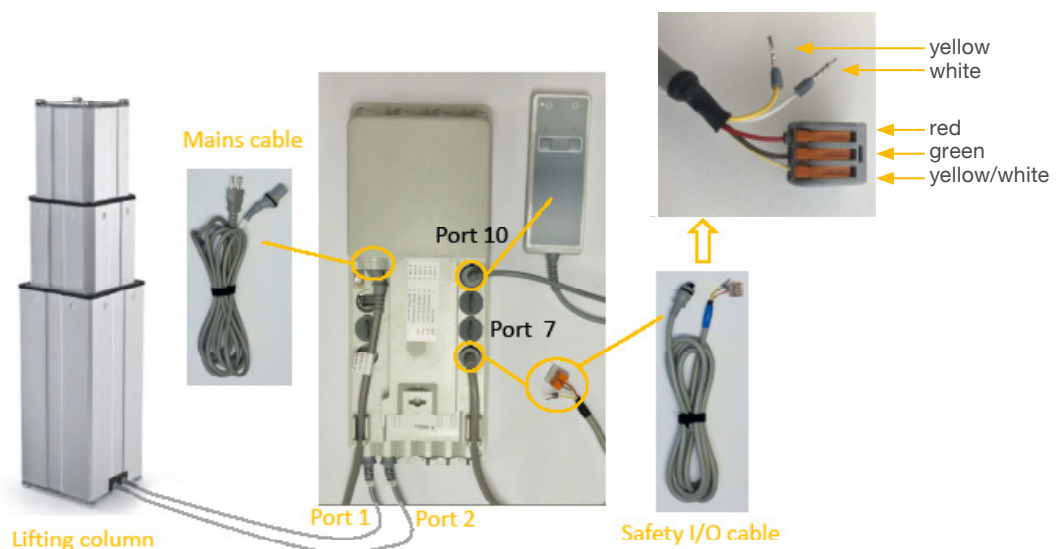


Fig. 3

Connection schema for LIFTKIT initialization



6.0 Electrical connection

6.1 Electrical connection

Refer to 3.1 Scope of delivery, and in the figure 5.

1. Connect the two DIN8 plugs of the motor cables of the lifting column in motor port (1) and (2) of the SCU controller
2. Connect the mains cable (cable 3) to the SCU controller to port (11)
3. Connect the RS232 cable (cable 4) to port (12)
4. Connect the EHA31 handswitch (handswitch 7) to port (10) (handswitch only needed to initialize the system or when troubleshooting)
5. Connect the UR safety I/O connection cable (cable 6) to port (7)
6. Connect the RS232 cable (cable 4) to the USB adapter (cable 5)

NOTE

If connecting LIFTKIT for the first time, LIFTKIT has to be initialized. Perform the initialization routine now, as described in Chapter 6, before continuing with the next steps!

7. Plug in USB adapter cable to UR controller USB port (13)
8. Attach the emergency stop cables to a safety I/O on the UR controller (14)

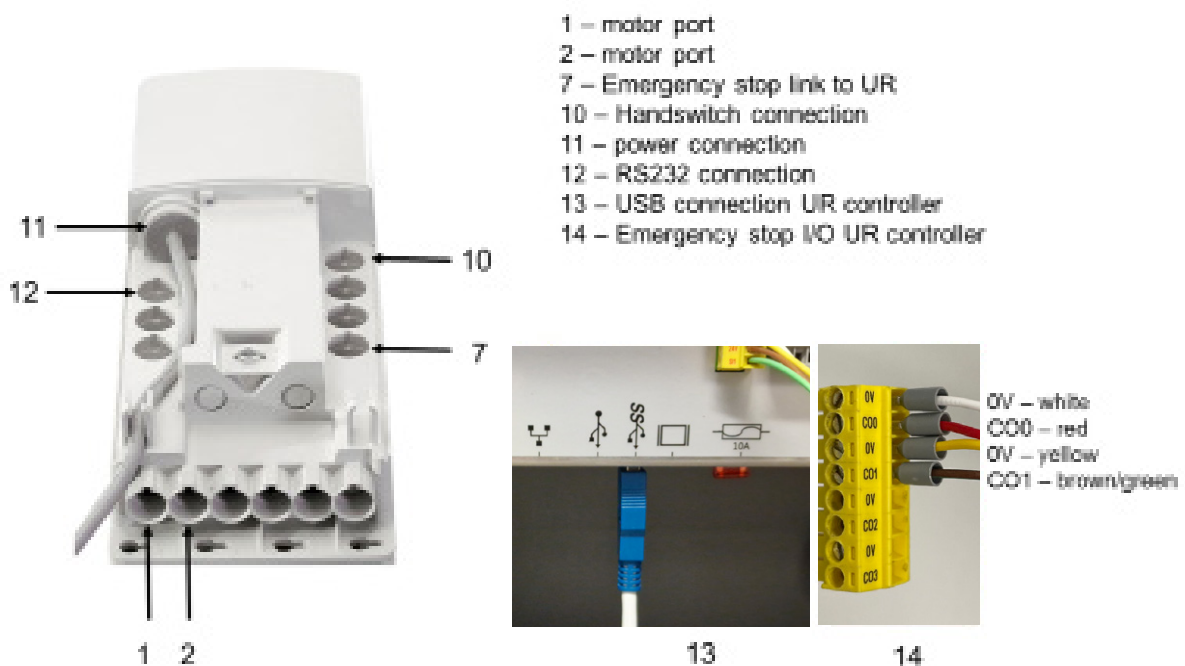


NOTE

The safety I/O has to be configured in the Safety menu of the Installation tab. Follow the instructions in Chapter 8.

9. Close SCU with SCU cover

Fig. 5



7.0 Software Installation

Make sure the newest URCaps version is used at all times.

Download the current version on
www.ewellix.com/en/support/media-library.

The software screen captures shown use the e-Series design. Functionality on the CB-Series is similar but might have a different appearance.

To install the LIFTKIT's URCaps, follow the described steps.

1. Go to the setup screen by pressing the top right corner hamburger menu
2. Insert the LIFTKIT's USB Drive into the USB port at the teach pendant
3. In the left side menu, choose System - URCaps. Then, press '+', choose the URCaps file from the LIFTKIT's USB drive, then press 'Restart'



8.0 Software operation

The LIFTKIT's URCaps enables movement of LIFTKIT directly in the UR Polyscope environment. When going into programming mode in Polyscope, the LIFTKIT's setup can be accessed in the installation tab. The movement of LIFTKIT can then be accessed directly in the Program tab.

8.1 LIFTKIT installation

The LIFTKIT's installation screen (shown below) allows to set up three aspects of the LIFTKIT's operation:

1. Communication
2. Type of LIFTKIT selection

8.1.1 Safety I/O setup on UR controller

To activate LIFTKIT, the safety I/O has to be configured correctly in the UR environment. In the Safety section of the installation tab, set the relevant safety output to 'System Emergency Stopped'.



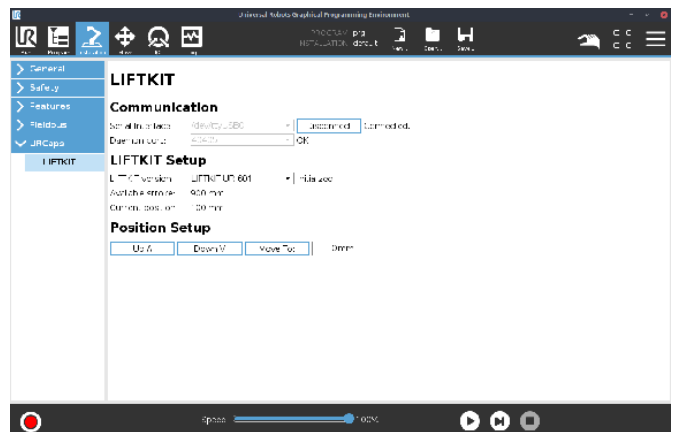
8.1.2 Communication

- **Serial interface:** Select the serial interface on the UR controller that enables the connection. In case other devices are connected, select a free serial port.
- **Daemon port:** Select a daemon port that is not used by another URCaps. If the same port is used for different URCaps, communication problems might occur and LIFTKIT cannot operate normally.

8.1.3 LIFTKIT setup

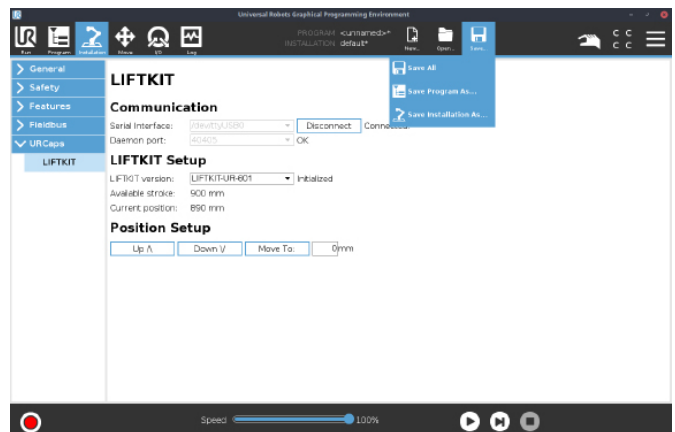
Column version: Select the correct column version from the drop-down menu. The important selection criteria are the last three digits, i.e. LIFTKIT-UR-601. By selecting a wrong configuration, a normal operation of LIFTKIT cannot be guaranteed! If the column has been initialized correctly, the maximum stroke accessible is displayed.

Check that this value corresponds with the product connected.



NOTE

Always save the installation after setup, so that it can be loaded upon the next boot of the controller



8.2 Accessing LIFTKIT positions

To access the programmed positions in the UR motion program, a URCaps command must be inserted in the program sequence, then the position can be accessed in this 'LIFT' command.

8.2.1 Insert a URCaps command

In the Structure tab (e-Series: left menu bar), choose URCaps and select LIFTKIT.

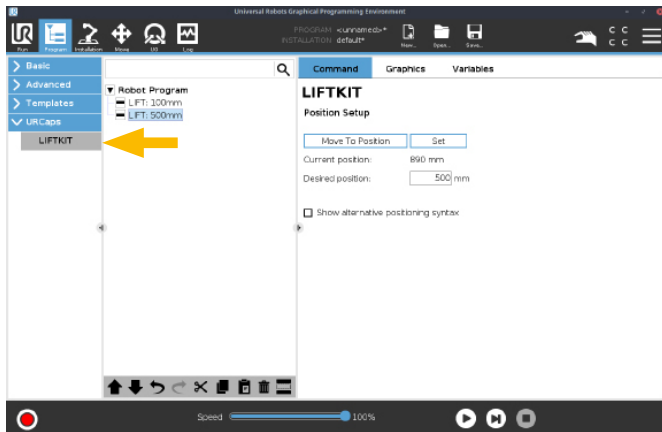
8.2.2 Set a LIFTKIT position

To set a LIFTKIT position, select the LIFT command in the Robot program from the URCaps window and select the Command tab.

Insert the target position in mm.

To move to the set position, keep the "Move To Position" button pressed until the position is reached.

Set the Current position as Desired position by pressing the "Set" button.



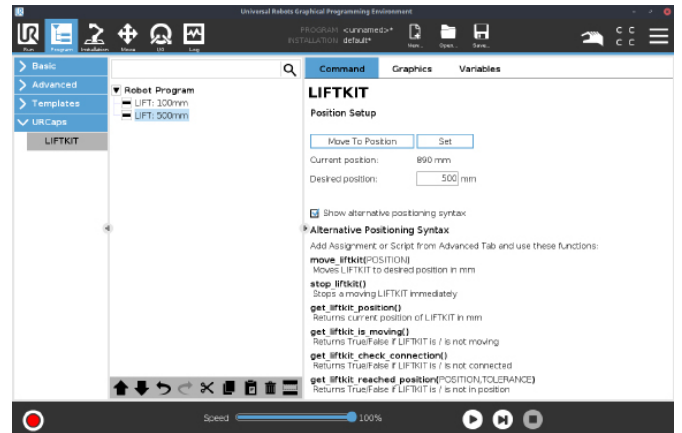
8.2.3 Alternative Positioning Syntax

The LIFTKIT URCaps allows to access internal functions via the help of scripts. The following commands are available:

- `move_liftkit(POSITION)`
- `stop_liftkit()`
- `get_liftkit_position()`
- `get_liftkit_is_moving()`
- `get_liftkit_check_connection()`
- `get_liftkit_reached_position(POSITION,TOLERANCE)`

The variable POSITION and TOLERANCE can be defined externally.

These commands are also visible directly on the teach pendant in the program node. A click on the check box will open the additional information as shown in figure below.



8.2.4 Play/resume program and Safeguard Stop

The pause state can be achieved in two ways. The first option is by using the pause button on the teach pendant. The second option is by using Safeguard Stop input.

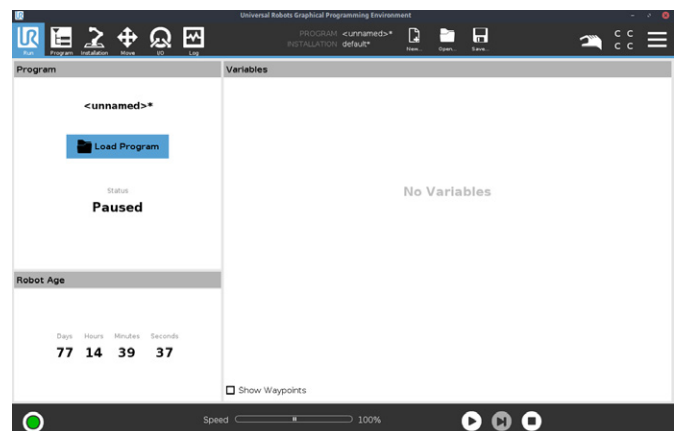
Pausing the Robot program will pause the LIFTKIT movement. The LIFTKIT's position will remain until the Play button is activated or the Safeguard Stop input is disabled.

Resuming the program will enable the LIFTKIT movement from the paused position and the LIFTKIT continues to the next target position in the queue.

This feature enables a quick and reliable pause and resume of the program.

NOTE

Always adhere to the regulations and norms when using the Safeguard Stop input.



9.0 Troubleshooting

Malfunction	Possible cause	What to do
The LIFTKIT does not move	Control unit not operational	Check if the green light on the side of the control unit is on
		Ensure that the RS232 cable is securely connected to the control unit and the UR USB port
		Ensure that the emergency stop link to the UR controller is securely connected to the control unit and the UR safety I/O
		Emergency stop must be released
	Robot not running	Turn on robot
	Obstacle in stroke area of the column	Remove all obstacles in the stroke area
	Motor has stopped due to high temperature	Observe duty cycle in technical specification. Wait 20 minutes and try again
	The communication port of the URCaps daemon (Installation tab) interferes with another URCaps	Change the port to an alternative daemon port and try again
The column stops before reaching its target position	The serial connection is not connected in the URCaps	Check all cable connections and re-start the robot controller
	Motor cables are plugged in wrong control unit ports	Ensure Motor cables are plugged into port 1 and port 2 in the control unit
The column moves at half the speed and the SCU controller beeps	Electrical connection is defective	Check cables connection and continuity
	Control unit cuts of power	We recommend to bring the center of gravity of the robot towards the center of the lifting column
The column moves at half the speed and the SCU controller beeps	Obstacle in the stroke area of the device	Remove all obstacles in the stroke area
		Controller is not initialized

9.1 Introduction

This Troubleshooting Guide is intended to provide guidance to the LIFTKIT end users in the detection and correction of programming issues within Polyscope’s robot program. It may also be useful to Ewellix support engineers who supports this project (application).

9.1.1 Prerequisites

LIFTKIT end-users and Ewellix support engineers must be experienced with the following:

- Polyscope software
- LIFTKIT as Polyscope’s extension
- Programming robot program in Polyscope application, with the aspect on LIFTKIT
- LIFTKIT hardware limitation
- LIFTKIT functional knowledge

9.2 Resolving known LIFTKIT program errors

9.2.1 LIFTKIT is not connected



Type of message: Error, Blocking
 Program halted: Yes
 Issue: Program cannot run since there is no connection with the LIFTKIT.
 Possible causes:

- LIFTKIT is not powered on or incorrect hardware connection
- Invalid serial interface selected in installation tab

Solutions(s):

- Check there is hardware connection between LIFTKIT and robot controller
- Check that SCU is powered
- Go to installation page and check that correct serial interface is selected

9.2.2 LIFTKIT is not initialized



Type of message: Error, Blocking
 Program halted: Yes
 Issue: Program cannot run because LIFTKIT is not initialized
 Possible causes:

- LIFTKIT configuration is not selected

Solutions(s):

- Go to installation page and select desired LIFTKIT configuration

9.2.3 LIFTKIT version is invalid



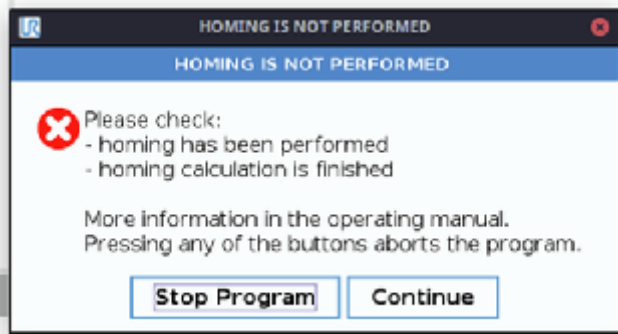
Type of message: Error, Blocking
 Program halted: Yes
 Issue: Program cannot run because invalid LIFTKIT version is selected
 Possible causes:

- Incorrect selection of LIFTKIT version in installation node
- LIFTKIT version checking is in progress (it takes several seconds to check LIFTKIT version validity)

Solutions(s):

- Go to installation page and check you have selected correct LIFTKIT version
- After you selected the LIFTKIT version, wait several seconds to be sure that validity check has finished

9.2.4 Homing is not calculated



Type of message: Error, Blocking

Program halted: Yes

Issue: Program cannot run because homing isn't calculated

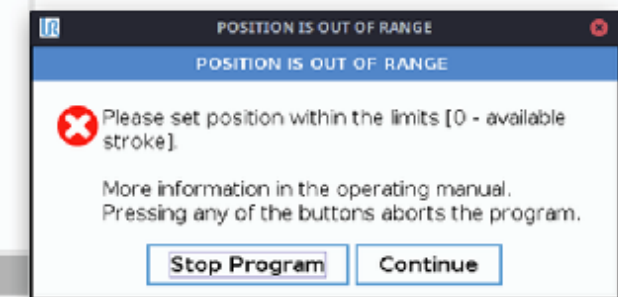
Possible causes:

- homing has not been performed manually by the operator
- homing calculation is in progress (it takes several seconds to calculate homing after correct LIFTKIT version is selected)

Solutions(s):

- Try to run program again. If same popup appears, check if homing has been performed by the operator.

9.2.5 Position is out of range



Type of message: Error, Blocking

Program halted: Yes

Issue: Program cannot run because the desired position is outside 0-maximum stroke range.

Possible causes:

- Program that contains step with desired liftkit position outside the range is loaded
- New homing has been performed with "shorter" maximum available stroke than before
- Graphical interface does not allow to enter value outside "0-maximum stroke" range. However, it is possible to create program with alternative syntax steps and pass desired position outside allowed range, as argument
- Solutions(s):
- Set the desired position with the limits

9.2.6 Unexpected connection loss



Type of message: Error, Blocking

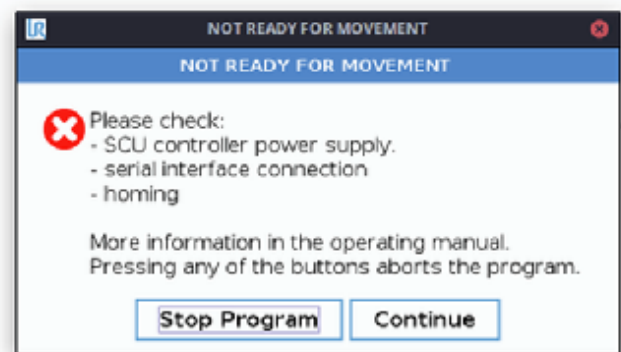
Program halted: Yes

Issue: Program cannot continue since connection loss occurs.

Possible causes:

- LIFTKIT SCU controller is not powered on
- LIFTKIT RS232 interface cable is unplugged
- LIFTKIT adapter cable RS232 - USB unplugged
- LIFTKIT RS232 interface cable or LIFTKIT adapter cable RS232 - USB is damaged
- LIFTKIT SCU controller power supply is unstable
- Solutions(s):
- Verify that hardware connection is valid (cables are not damaged, connectors are properly plugged in)
- LIFTKIT SCU controller is powered on and its power supply is stable

9.2.7 System is not ready for movement



Type of message: Error, Blocking

Program halted: Yes

Issue: Program cannot continue after safety or emergency feature is deactivated because system is not ready to perform movement.

Possible causes:

- Hardware connection issues (while safety or emergency feature was active, hardware connection is broken or LIFTKIT SCU controller is powered off)
- LIFTKIT version validity checking is not finished for predefined period of time
- Homing is broken or homing calculation is still in progress

- Very short power interrupted after system wasn't able to reach "ready" state for predefined period of time.
- Solutions(s):
- Provide stable hardware connection and power supply
- Make sure that safety sensors or emergency integration works properly
- Provide that safety or emergency feature are activated at least 5+ seconds

9.2.8 Position is not reached



Type of message: Error, Blocking
 Program halted: Yes
 Issue: Program is halted because position is not reached
 Possible causes:

- LIFTKIT SCU controller power supply is unstable, e.g. short power cut occur
- Weight of the payload exceeds the limits

Solutions(s):

- Provide stable hardware connection and power supply
- Make sure that weight of the payload doesn't exceeds the weight limits

9.3 Lifting column stops and starts frequently regardless the robot program steps

Type of message: no message
 Program halted: no
 Issue: Lifting column stops and starts by itself.
 Possible causes:

- Short power cut (less than 3 seconds) on LIFTKIT SCU controller, frequently

Solutions(s):

- Provide stable power supply for LIFTKIT SCU controller

 **NOTE**

If power cut occurs and back in a less than 3 seconds on LIFTKIT SCU controller, lifting column will continue movement. The end user will have impression like the step was shortly paused.

10.0 Specifications

Operating range extension

- Vertical lifting of the cobot by up to 1 400 mm with compact retracted height
- Robust column design for industrial use, vibration free motion and virtually maintenance free

Plug-and-play solution

- Hardware interface compatible with UR3, UR5, UR10 and UR16 robots and enhanced version for UR20 and UR30
- Universal Robots+ certified product
- Software control integrated with UR controller (URCaps) for easy motion programming
- Basic control option with digital I/O without the URCaps

Cost savings and higher productivity

Cobots combined with Ewellix LIFTKIT provide a cost-effective solution to upgrade an existing assembly shop, moving from a manual handled to a fully automatized line.



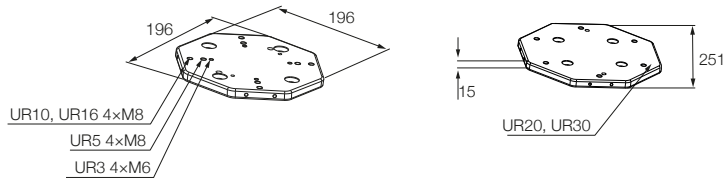
Technical data

	Unit	LIFTKIT-UR-601	LIFTKIT-UR-620
Column type	-	TLT	TLT
Performance Data			
Max. Push load	N	1 500	1 500
Max. Pull load	N	0	0
Max. static moment	Nm	3 000	3 000
Max. linear speed	mm/s	55 – 80	55 – 80
Duty cycle	-	10% (20% at 500N)	10%
Mechanical Data			
Screw type	-	Acme screw	Acme screw
Stroke range	mm	500 - 1 400	800
Retracted length (software controlled)	mm	Stroke/2 + 275	Stroke/2 + 475
Weight @ 0 mm stroke	kg	21	26 kg (stroke 800mm)
Δ weight per 500 mm stroke	kg	1,7	-
Robots compatibility	-	UR3, UR5, UR10, UR16, CB-Series and e-series	UR20, UR30
Cable management	-	Threads on column and interface plate to attach cable management	Threads on column and interface plate to attach cable management
Electrical			
Input Voltage/Current		120 VAC / 6,5 A 230 VAC / 3,3 A 24 VDC / 10 A	120 VAC / 6,5 A 230 VAC / 3,3 A 24 VDC / 10 A
I/O voltage	-	24 VDC	24 VDC
Emergency stop	-	Connection to UR safety I/O	Connection to UR safety I/O
Communication			
Control interface	-	URCaps plugin compatible with CB3.1 / Polyscope 3.6 or higher	URCaps plugin compatible with CB3.1 / Polyscope 3.6 or higher
Positioning, repeatability	mm	± 1	± 1
Accessible positions	-	any	any
Feedback	-	Position feedback via URCaps	Position feedback via URCaps
Soft start and stop	-	Implemented for smooth operation	Implemented for smooth operation
Software control	-	URcap	URcap
Environment			
Type of protection	-	IP40	IP40
Ambient temperature	°C	+10 to +40	+10 to +40
Max. humidity	%	85	85
Vibration	-	Stationary industrial environment	Stationary industrial environment

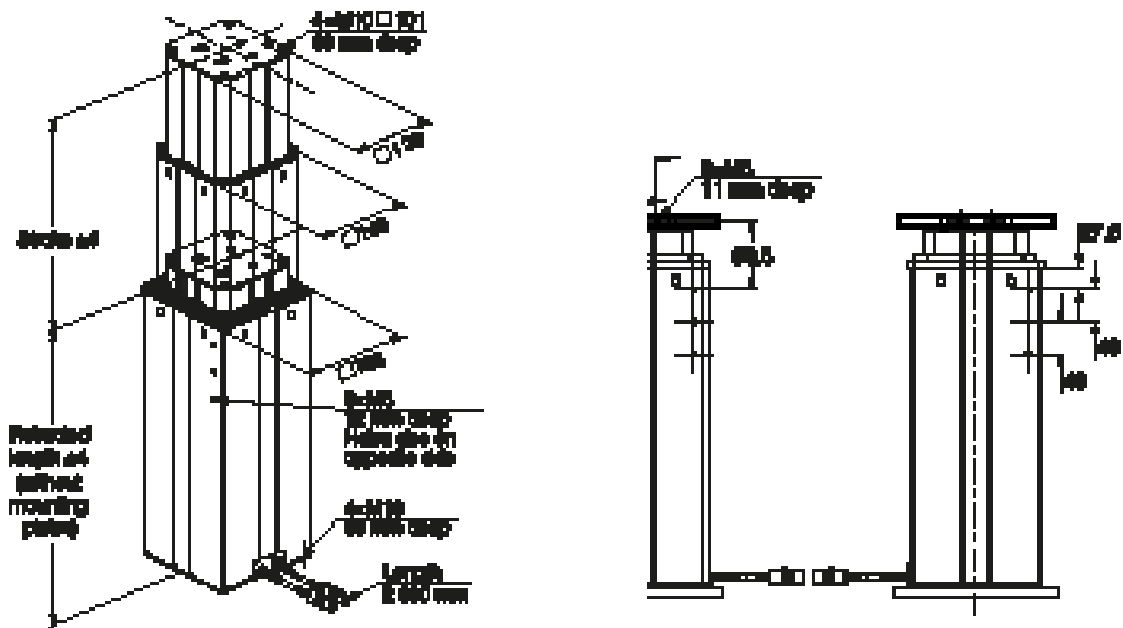
Dimensional drawing

TLT lifting column

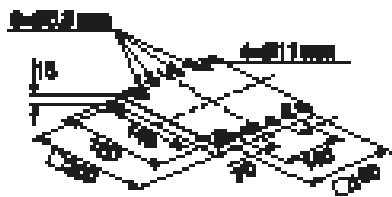
Robot attachment plate



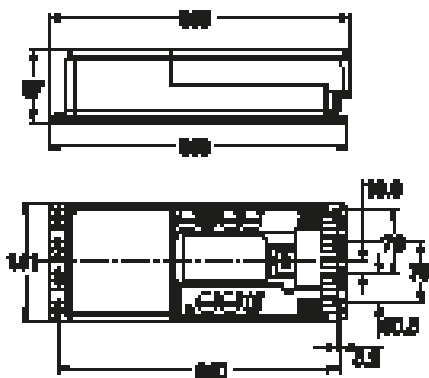
TLT Column



Bottom fixation plate



Controller





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PUB NUM TC-08038/7-EN-March 2024

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