



# OPERATING INSTRUCTIONS

## SoftGripper Fingers

### [Original instructions](#)

This document describes the usage of the SoftGripping Fingers in three possible setups: As SoftGripper, SoftGripper – Developer Edition and as a part of End of Arm Tooling

Revision 1.0.1  
Date of Revision: 2020-04-15



**Tip:** For your own safety, read the operating instructions and follow the warning and safety instructions on the device and in the operating instructions. Keep the operating instructions for future reference.



**Tip:** If you wish to get the operating manual in an additional language, please send us your request and the corresponding product code via Email.



**Warning!** Not reading the manual properly can lead to injuries. Please mind the warnings provided in the operating instructions.

Technical Support: Do you have questions about the installation or operation of your device?

Email: [info@soft-gripping.com](mailto:info@soft-gripping.com)

Publisher: Wegard GmbH  
Kirchenheide 18  
22395 Hamburg  
Germany

[www.soft-gripping.com](http://www.soft-gripping.com)  
[www.soft-gripping.shop](http://www.soft-gripping.shop)

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Original Instructions  
Errors and technical modification subject to change, you can find the newest version on our homepage.

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## 1. About this document

This document describes the usage of the product, certain aspects of the device are described in other documents and must be observed as well.

### 1.1. Applicable documents

You can find additional information in the Quick Installation Guides and data sheets. For all available documentation visit our website or contact us directly.

## 2. Safety

### 2.1. Intended use

SoftGripper, SoftGripper – Developer and SoftGripper Fingers for End of Arm Tooling are used in pick and place tasks of fragile objects or foods.

### 2.2. General safety information

- The product may only be used in its original status without unauthorized modifications.
- Only use the product if it is in perfect technical conditions.
- The use is intended inside building only.
- Take the ambient conditions at the location of use into consideration.

## 3. Service

Contact our regional SoftGripping partners if you need technical support.

## 4. Accessories

You can find all accessories in our catalogue and data sheets or on our website.

## 5. Product Overview

### 5.1. Design

SoftGrippers come in three editions: SoftGripper, SoftGripper – Developer Edition and SoftGripper EoAT.

**SoftGripper** – Built from one piece, you can switch fingers and adapter for the specific robot. Angle and base remain unchangeable – made for the selected gripping purpose.

**SoftGripper Developer** - For a wider range of different gripping products. Both angle adapters and connector to the robot can be rearranged. Made for experimentation or changing requirements.

**SoftGripper EoAT** - You can easily use SoftGripping fingers directly in your EoAT setup. Use the special adapter and fingers separately or chose a complete EoAT-Kit.

Additionally, you can use suction cups with every version of SoftGripper's

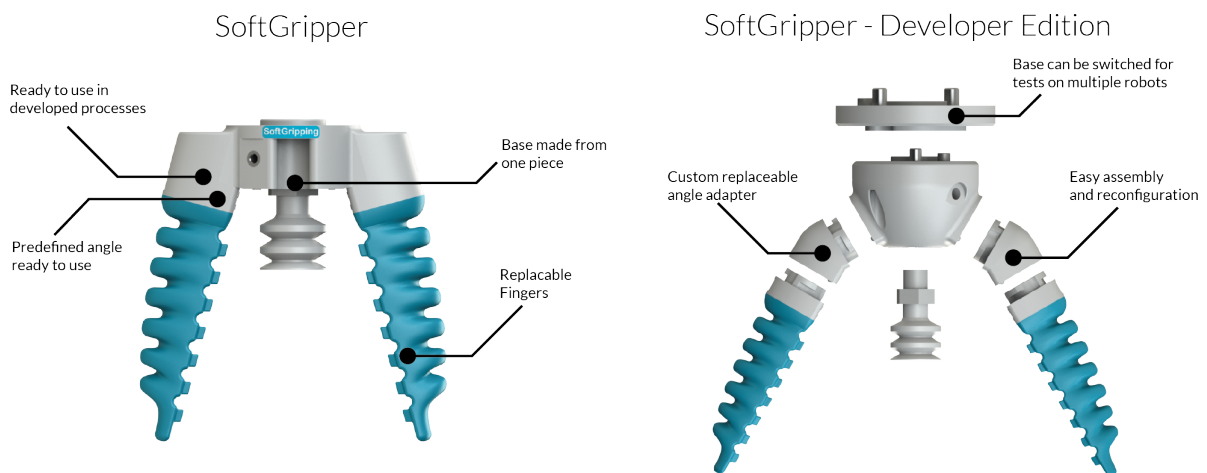


Figure 1: Difference between SoftGripper and SoftGripper – Developer Edition.

A special package of SoftGripper – Developer Edition is the Construction Kit. Here, we provide several bases, angle adapters, fingers and joining adapters to build a plethora of different SoftGrippers.

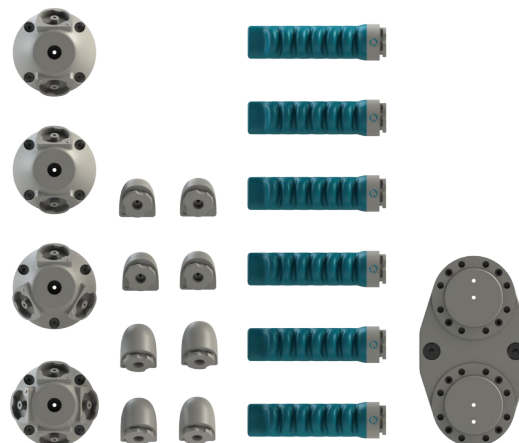


Figure 2: Construction Kit.

## 5.2. Soft Gripper – Developer Edition

To show the possible elements of a SoftGripper, let's suppose you have the components for the following SoftGripper at hand:



Figure 3: 4 Finger Parallel SoftGripper – Developer Edition, 60° Cone Angle (SG.D.4P.60D.50).

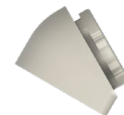
We take the Developer Edition as an example because you have a variety of building elements to choose from. On top we chose an ISO 9409-1-50-4-M6 connector to the robot itself. To build the 4 Finger Parallel SoftGripper – Developer Edition, you need to assemble the two 2 Finger SoftGrippers from following components first:



4 x Finger Shore A60  
SG.F60S



2 x 2 Finger Base  
SG.GB.D.2F.30D.31



4 x 60° Adapter  
SG.WA.60D

Connect them to get two 2 Finger Parallel SoftGrippers first, before moving on to building the whole gripper.



Figure 4: 2 Finger Parallel SoftGripper – Developer Edition, 60° Cone Angle (SG.D.2P.60D.31).

Using the following connectors, you first combine the two elements into one SoftGripper and then connect it to the robot using the adapter provided:



1 x Connector  
SG.C.2B.31



1 x Connector ISO 9409-1-50-4-M6  
SG.C.31.50

Combining the elements leads to the SoftGripper shown in Figure 3. All other SoftGrippers are built from similar components.

### 5.3. Soft Gripper

The number of individual parts varies between SoftGrippers and Editions. For example, a similar 4 fingered Gripper from the SoftGripper Edition for the same robot would have fewer parts to be assembled from.



SG.4P.60D.50



4 Finger Base  
60° Cone Angle  
SG.GB.4F.P.60D.31



4 x Finger Shore A60  
SG.F60S



Connector ISO 9409-1-50-4-M6  
SG.C.31.50

Figure 5: The assembled SoftGripper (left) and the parts needed (right).

This are the basic parts of any SoftGripper, you can find further SoftGrippers and the elements they are constructed from on the website and in the corresponding datasheets.

## 5.4. End of Arm Tooling



Figure 6: Example of an adapter for 20mm aluminium profile (SG.C.PR.20).

An additional way to use SoftGripper Fingers is in an End of Arm Tooling-Setup by connecting the fingers using adapters.

The adapter is installed to the profile using the bolting provided. The EoAT-Connector is locked by a M4 screw and a slot nut in the profile. The joint to the Finger is a bayonet lock as it is to all SoftGripper platforms.

To replace a Finger, turn it clockwise until you can take it out of the socket. A new one is then put in and turned counterclockwise until a click of the lock is reached.



After assembling an End of Arm Tooling-Setup, you can operate the fingers all at once or in specific groups according to your personal application. Keep in mind, that you can readjust the finger's position to find the optimal setup.



Please refer to Chapter 7: Installation before changing any setup and keep the risks of dealing with pneumatics in mind.



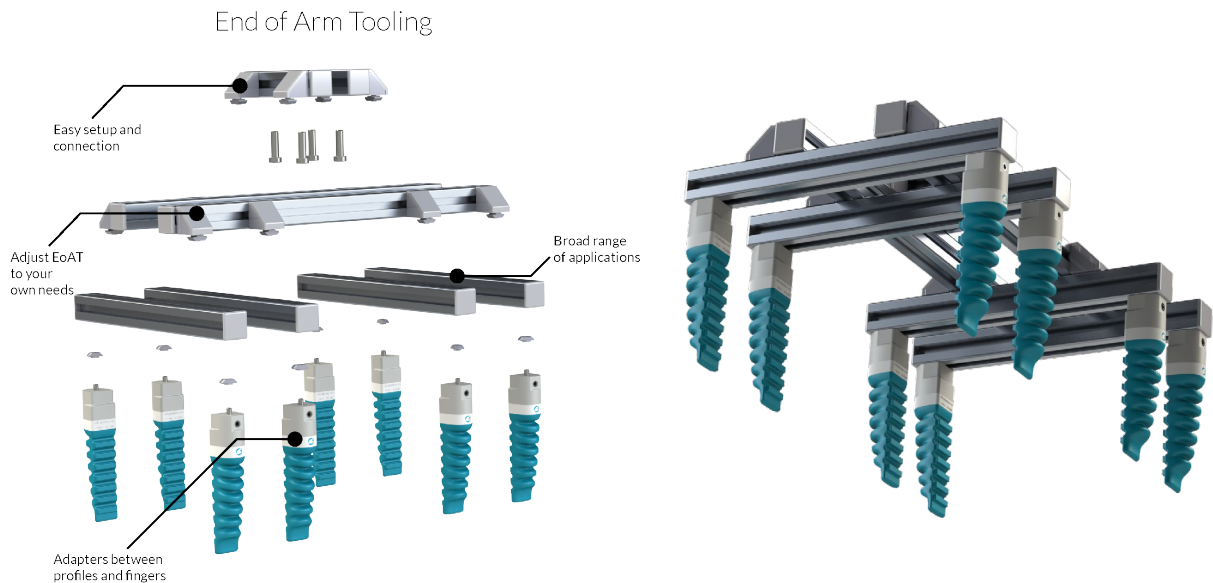


Figure 7: An EoAT-Setup with 8 SoftGripper Fingers.

All SoftGripper and SoftGripper Fingers can be operated using your accustomed pneumatic controller or our Control Box. We gladly provide a more detailed guide and data sheet on our Website or by Email.



Please refer to Chapter 5.5: Characteristics to make sure that your system operates within the set pneumatic boundaries.

## 5.5. Characteristics

Figure 8: Characteristics of a SoftGripper Finger

Finger Material	Silicone
Operating Pressure	- 0.5 to 1.0 bar
Grip Force per Finger	3,5 N
Durability	> 1 Mio. Cycles @1.0 bar, 0.5 Hz

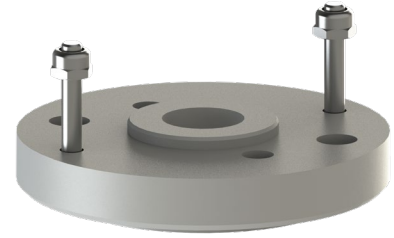
The connector for both SoftGripper and SoftGripper – Developer Edition is ISO 9404-1-31.5-2-M5. Provide a wide range of connectors for robots, some of which are listed below. If you cannot find the connector on our website, please contact us directly.



ISO 9409-1-40-4-M6  
SG.C.31.40



ISO 9409-1-50-4-M6  
SG.C.31.50



RBTX Delta-Robot  
SG.C.31.NE.17

## 5.6. Pneumatics

To control the grippers, you can use your accustomed setup, or our **Control Box** that can manage fingers and a suction cup separately. Please refer to the Control Box datasheet and operating instructions before using pneumatics. In fact, be sure to read it before you operate the fingers with your own setup to mind the risks of handling pneumatics. Moreover, the conditions provided by the Control Box should be respected and incorporated into your setup so that the SoftGripper Fingers are not harmed during operation.



Figure 9: Front panel of the SoftGripping Control Box.



Figure 10: Back panel of the SoftGripping Control Box.

## 6. Function

The Fingers are operated by compressed air in accordance with ISO 8573-1:2010 [7:4:4] and vacuum. In general, there are three positions to choose from. When applying compressed air to the fingers, the position “Grip” is set. Setting the fingers under vacuum leads to the “Release” position. The fingers are “Relaxed” when no pressure or vacuum is applied. Additionally, you can add suction cups to every SoftGripper setup.



Grip



Release



Relax

### 6.1. Pneumatic Components

The connectors for the pneumatics are incorporated inside the SoftGripper’s bases and the EoAT adapters. Channels and distributors inside the components lead to the fingers itself. A pneumatic seal is placed between every connection and should be replaced if damaged.

## 7. Installation

### 7.1. Mechanical

Connect the SoftGripper to your robot, either directly or via adapter. A variety of adapters can be found on our website.



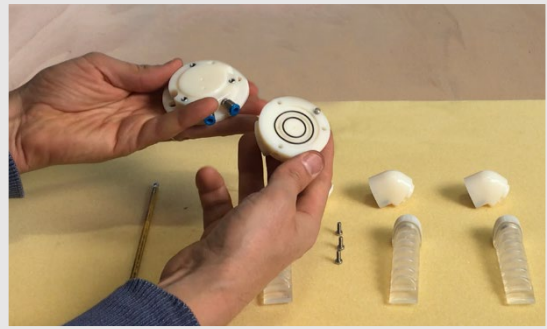
An unfavorable mounting position can impair the functionality of this product:

- Make sure to tighten the screws, so no parts can disconnect during operation.
- Be sure not to handle SoftGrippers near sharp items or in corrosive environments.

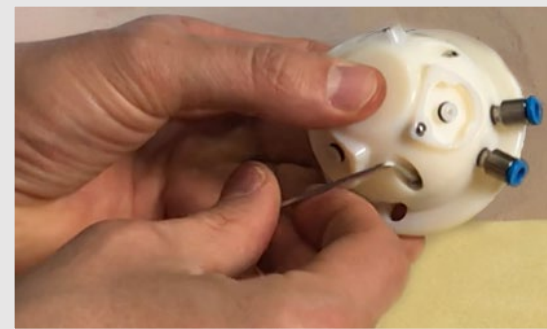


**Warning!** Turn off all pneumatics, robots and moving parts before attaching the SoftGripper or disassembling it.

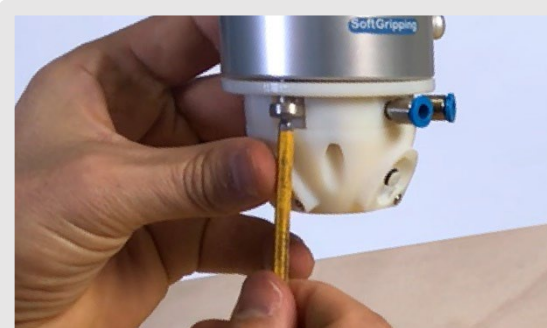
We have prepared two product lines: SoftGripper and SoftGripper - Developer Edition. Nevertheless, both versions can be controlled by the same Control Box. Make sure you have all parts ready before assembling and begin with the base and fingers for your robot. A step by step [video guide](#) is also available to lead you through the process.



Start by mounting your SoftGripper on the connector that corresponds to your robot (e.g. ISO 9409-1-40-4-M6).



The base and connector are then attached to the robot and fixed with screws.

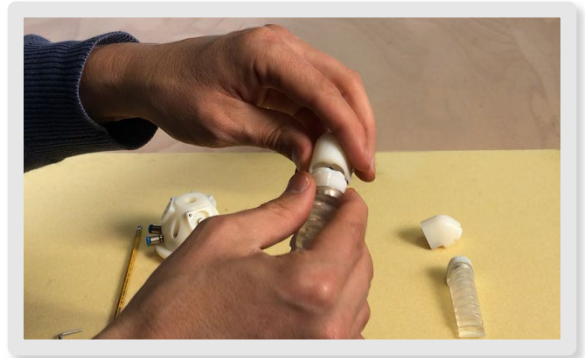


All SoftGrippers use replaceable fingers that can be connected and disconnected via pressure tight bayonet catch. To connect the fingers or replace them later, simply turn the finger clockwise into the grippers base until you hear the click of a latch. The fingers can be disconnected without any tools by turning it counterclockwise.

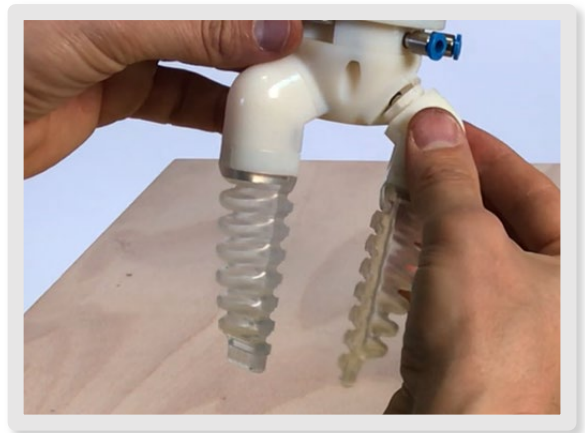


**Warning!** Turn off the pressure before replacing the fingers!

If you use angle adapters in the SoftGripper – Developer Edition, connect them to the fingers using the bayonet lock.



The fingers are then attached to the base using a bayonet lock as well. To do this, the finger is inserted into the appropriate opening and turned until it clicks into place.



The procedure for mount SoftGripper Fingers to End of Arm Tooling is described in Chapter 5.4: End of Arm Tooling.

## 7.2. Pneumatic

Make sure to use the right diameter of tubing and your pneumatic setup not to exceed the maximal operating pressure. Connect the tubing to the corresponding Fingers or suction cups. The amount of connections you have to make depends on the configuration of your SoftGripper. Verify, that all connections are made, before operating the setup. The compressed air to operate the SoftGripping Box, Fingers etc. must be in accordance with ISO 8573-1:2010 [7:4:4].



Keep the dangers of compressed air and the following points in mind:

- Make sure to connect and disconnect tubing while the compressor is turned off.
- Do not bend the tubing excessively. The flow must be provided at any time.
- Check the tubing for leaks and abrasions. Verify that you are using suitable tubing.
- Mind, that tubing with the right diameter must be used.
- The maximal input pressure should not be exceeded at any time.

Warning! Injury caused by pressurized system. To minimize risks of injuries while handling pneumatics:



- Wear personal protective equipment (PPE) such as hearing and eye protection at any time.
- and operate high pressure equipment behind a blast shield.

## 8. Starting Procedure

For starting the setup, please consult the Operating Instructions of the Control Box. If you are using your own setup make sure to control the applied pressure, before operating the fingers.

## 9. Operation

For operating the setup, please consult the Operating Instructions of the Control Box.



Make sure to control the SoftGripper regularly for signs of wear and change fingers when needed. The frequency in which the fingers must be changed depends on the task at hand.

## 10. Decommissioning

Turn off the air compressor. Before disconnecting any tubing, be sure that the system is not pressurized. Store the SoftGripper under dry conditions. Avoid abrasive and corrosive storing conditions.



Do not disconnect the pneumatics while the system is still pressurized.

## 11. Maintenance and Troubleshooting

If you find problems using the system, please follow the following steps checking the components:

1. Are all connections made?
2. Is the input pressure suitable?
3. Can you find leaks, excessive bends or ruptures in the tubing?
4. Are all pressure seals in proper conditions?

If you still have problems operating the device, please contact our service team.

## 12. Disassembly

All SoftGripper's are modular and are either screwed together or use a bayonet catch. You can disassemble the elements in order to change elements or wearing parts. Further disassembly of SoftGripper Fingers can lead to breaking or leakage and must be carried out by qualified personnel in order to guarantee the warranty.

## 13. Legal information

### 13.1. Damage in transit

The packaging of our devices ensures the best possible protection against transport damage. Check the packaging for transport damage. In case of damage, contact the manufacturer's technical customer service within three working days and inform the carrier.

### 13.2. Warranty and warranty conditions

The factory warranty for the device is contractually agreed. During the warranty period, the manufacturer will replace or repair free of charge any material or construction-related defects. Please inform yourself about our terms and conditions on the website.

Warranty claims will become void in the event of unauthorized intervention in the device. Also excluded from the warranty:

- Unintentional or intentional damage
- Damage or defects caused by third parties not contractually bound to the manufacturer at the time of damage
- Wearing parts
- Damage due to negligence or improper operation of the device
- Packaging and shipping damage

If your device malfunctions, contact the manufacturer directly:

Wegard GmbH  
Kirchenheide 18  
22395 Hamburg

Phone: +49 (0)40 319 76 995  
E-Mail: [info@soft-gripping.com](mailto:info@soft-gripping.com)

### **13.3. Declaration of Conformity**

The declaration of conformity can be obtained directly from the manufacturer.

### **13.4. Disposal**

Old devices or dismantled old assemblies can be returned to the manufacturer or a certified disposal company for proper disposal.