



DOBOT

User Guide

Flexible Gripper Kit

User Guide

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Shenzhen Yuejiang Technology Co., Ltd.

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Preface

Purpose

This manual introduces the functions, parameters and installation of flexible gripper kit, which is convenient for users to understand and use flexible grippers.

Intended Audience

This document is intended for:





- Customer
- Sales Engineer
- Installation and Commissioning Engineer
- Technical Support Engineer

Change History

Date	Change Description
2020/07/30	The first release

Symbol Conventions

The symbols that may be founded in this document are defined as follows.

Symbol	Description
 DANGER	Indicates a hazard with a high level of risk which, if not avoided, could result in death or serious injury
 WARNING	Indicates a hazard with a medium level or low level of risk which, if not avoided, could result in minor or moderate injury, robot damage
 NOTICE	Indicates a potentially hazardous situation which, if not avoided, can result in equipment damage, data loss, or unanticipated result
 NOTE	Provides additional information to emphasize or supplement important points in the main text

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1. Introduction

1.1 Description

A flexible gripper kit contains four finger modules, three types of slide mounting plates and four types of soft beaks, as shown in [错误!未找到引用源。](#). Finger modules can be assembled to two-finger gripper, three-finger gripper and four-finger gripper, combined with different slide mounting plates, as shown in Figure 1.2 Finger gripper

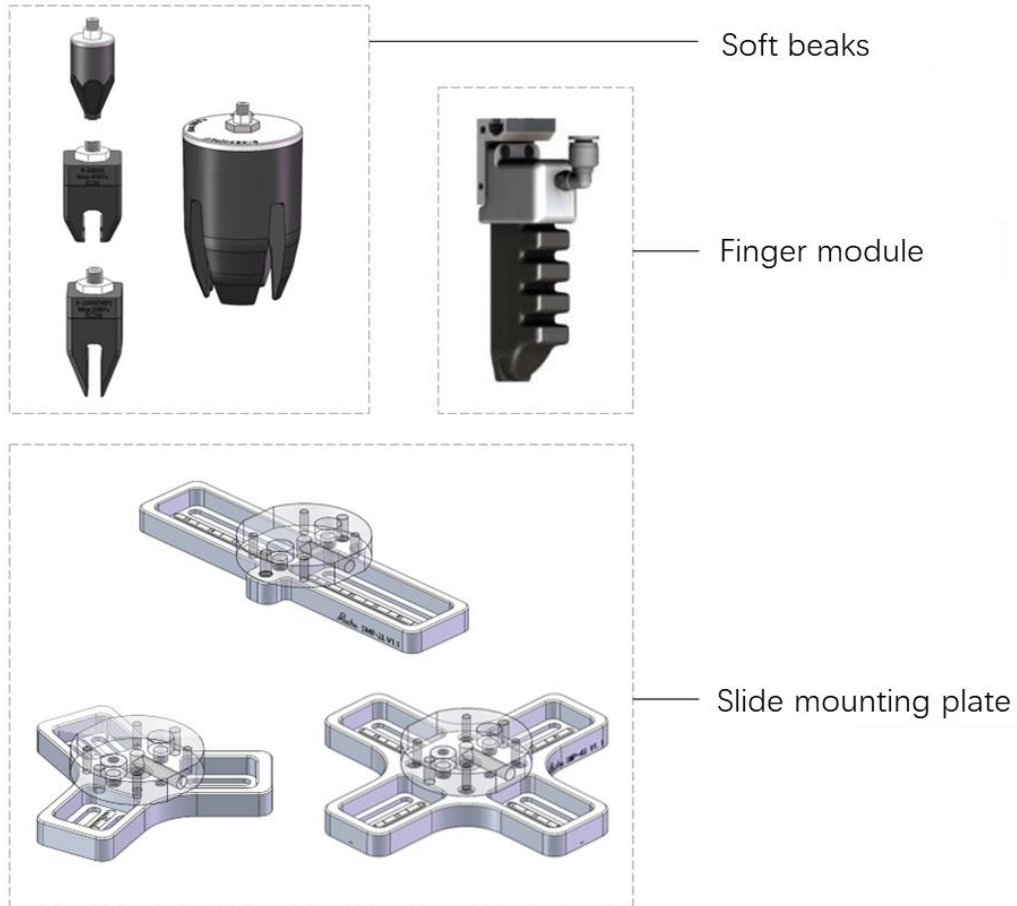


Figure 1.1 Flexible gripper kit

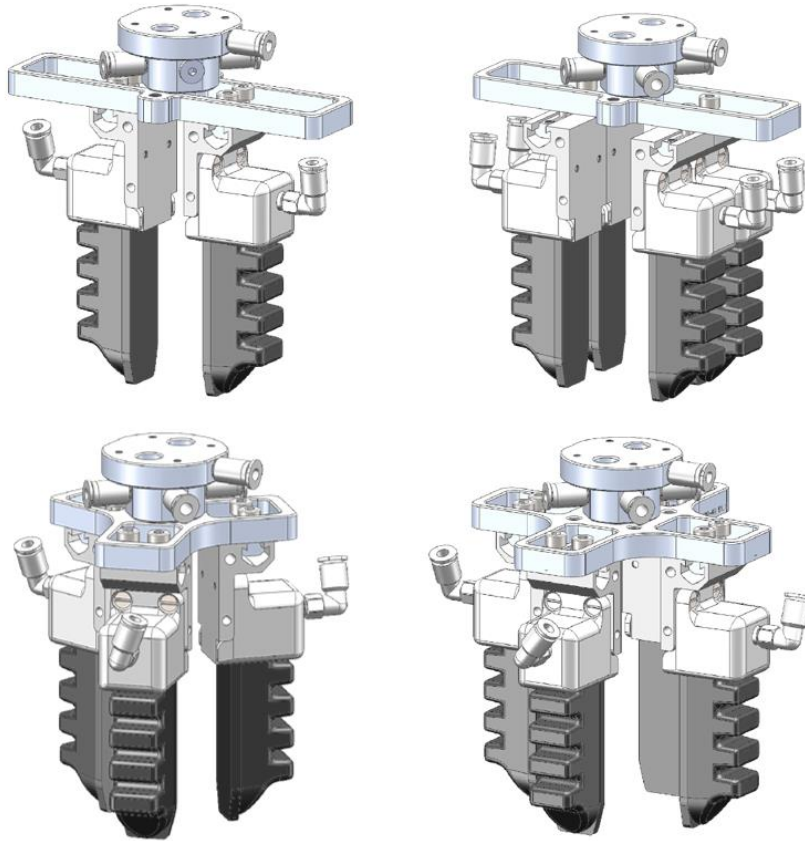


Figure 1.2 Finger gripper

In addition, the flexible gripper kit also includes a compact soft-touch gripper passive control unit. It is small in size, light in weight and easy to install, as shown in Figure 1.3. The control mode of the passive control unit is shown in Figure 1.4.

- It is compact and light, with built-in air source.
- With output pressure range of $-85\sim 100\text{kPa}$, it fully supports the drive from soft beak to fingers and suckers.
- It works under positive pressure. Negative working pressure can be adjusted in real time through the panel buttons.
- The panel integrates digital display and operation buttons.
- It has two control modes, manual (button) and automatic (I/O level signal), and is equipped with various mechanical arms and PLC terminals.
- With electrical protection level of IP54, it is waterproof and dustproof, suitable for various harsh working conditions; with intelligent alarm function, it is safe and stable, so you are needless to worry about misoperation.



Figure 1.3 Passive control unit

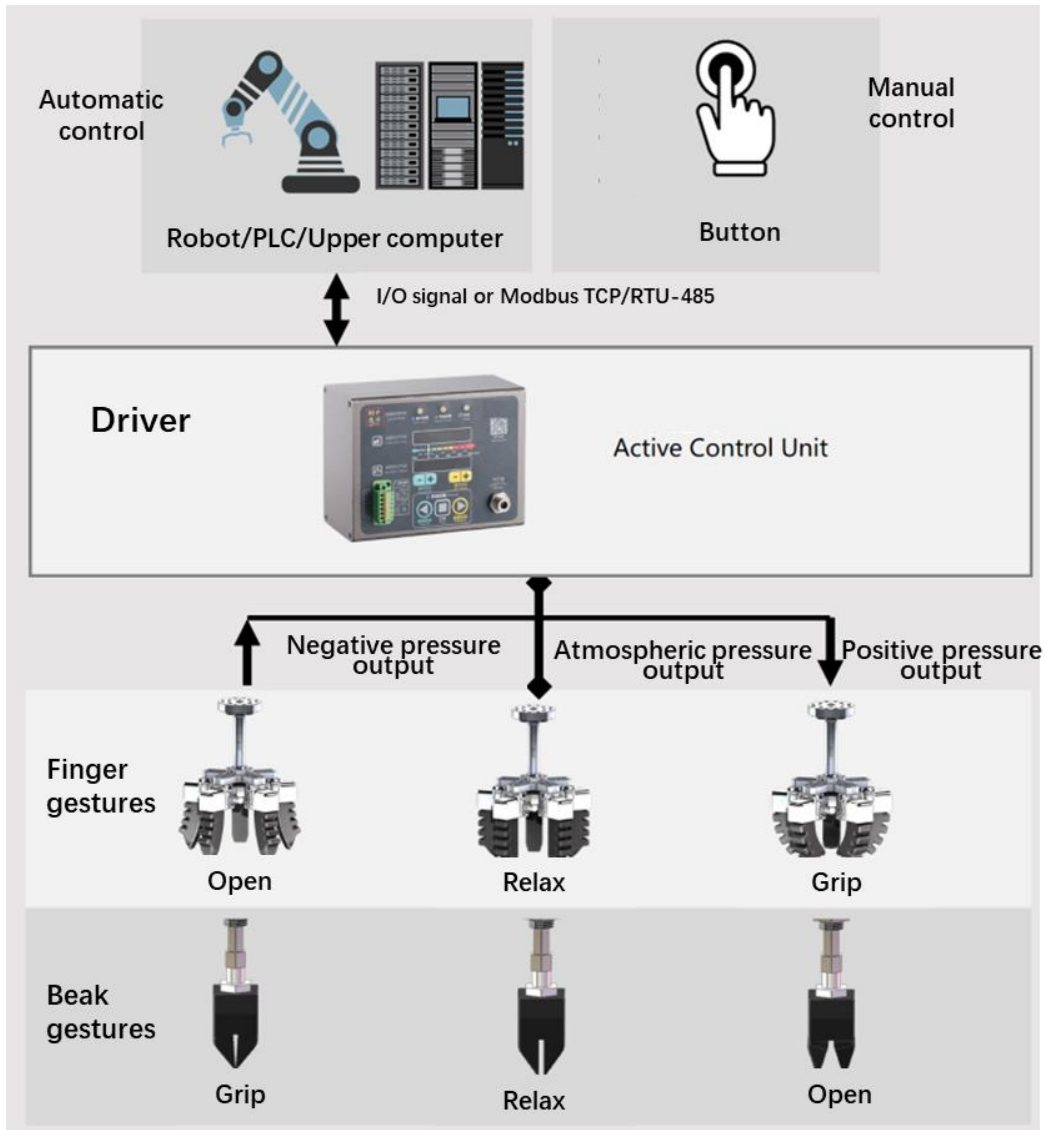


Figure 1.4 Control mode

1.2 Performance Parameter

The flexible beak and gripper can only be opened and closed during the gripping process, Due to their small size and simple control method, they can be applied to different fields.

1.2.1 Soft beak 1

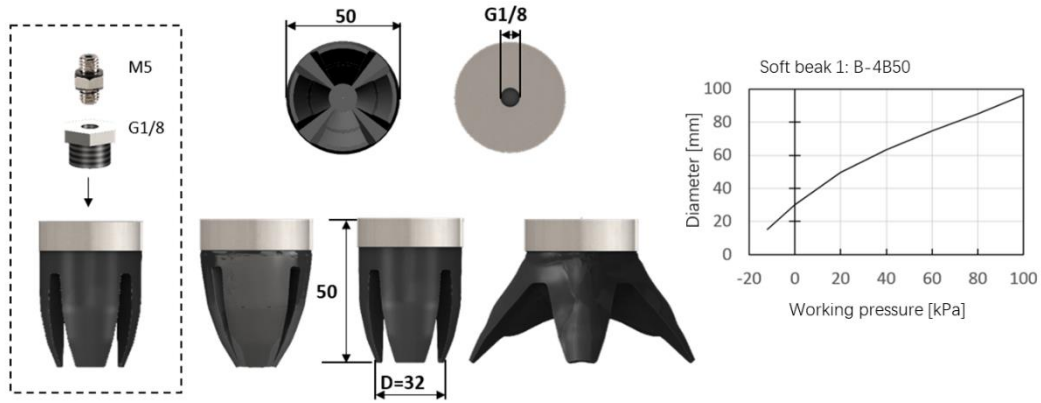


Figure 1.5 Soft beak 1

Table 1.1 Performance parameter of soft beak 1

Model	B-4B50	Diameter of armour clamp	M5
Maximum working frequency	300 times/min	Precision	0.5mm
Weight	78g	Maximum load	
Safe working pressure	100 kPa	Service life	1 million times

1.2.2 Soft beak 2

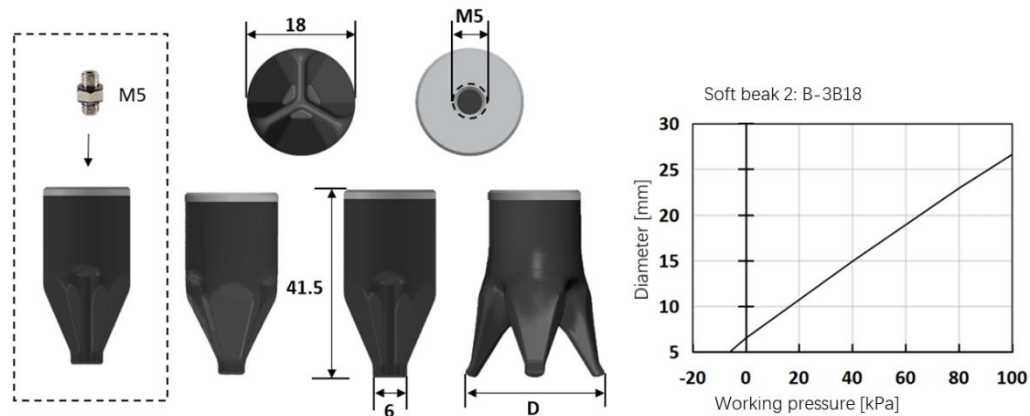


Figure 1.6 Soft beak 2

Table 1.2 Performance parameter of soft beak 2

Model	B-3B18	Diameter of armour clamp	M5
Maximum working frequency	300 times/min	Precision	0.05mm
Weight	12g	Maximum load	15g
Safe working pressure	+100 kPa	Service life	1.5 million times

1.2.3 Soft beak 3

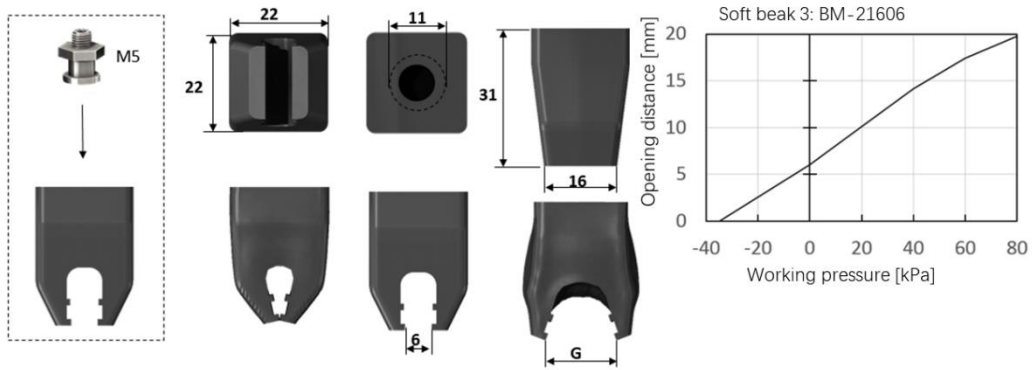


Figure 1.7 Soft beak 3

Table 1.3 Performance parameter of soft beak 3

Model	BM-21606	Diameter of armour clamp	11mm
Maximum working frequency	300 times/min	Precision	0.05mm
Weight	9.8g	Maximum load	50g
Safe working pressure	-100~80 kpa	Service life	0.5-1 million times

1.2.4 Soft beak 4

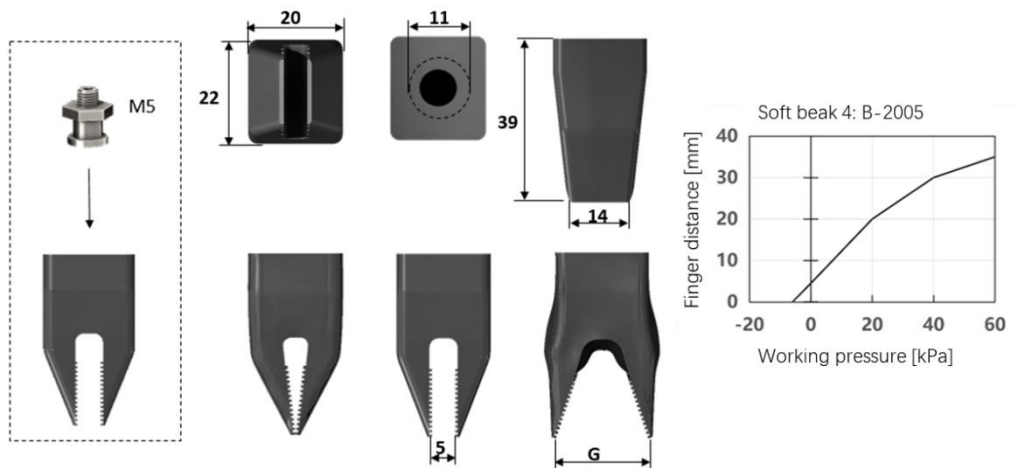


Figure 1.8 Soft beak 4

Table 1.4 Performance parameter of soft beak 4

Model	B-20005	Diameter of armour clamp	11 mm
Maximum working frequency	300 times/min	Precision	0.05mm
Weight	10g	Maximum load	30g
Safe working pressure	-100~80 kpa	Service life	1 million times

1.2.5 Gripper

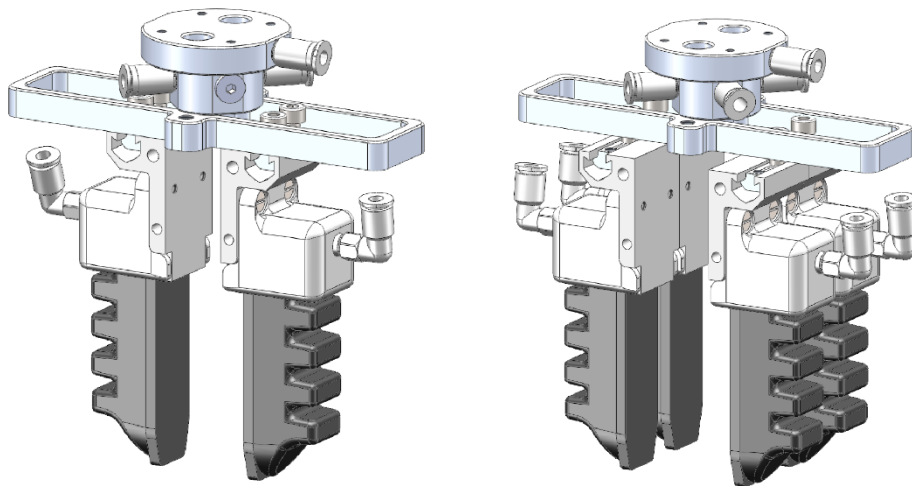


Figure 1.9 Two-finger gripper

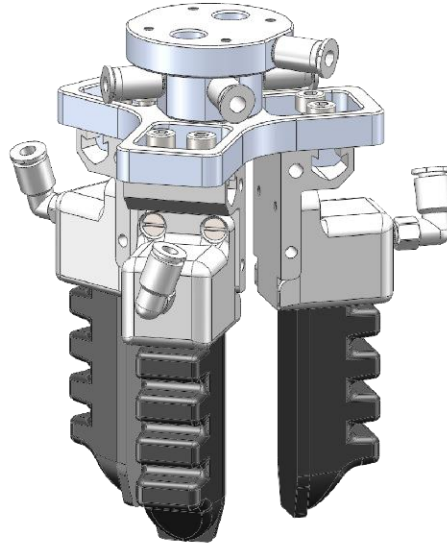


Figure 1.10 Three-finger gripper

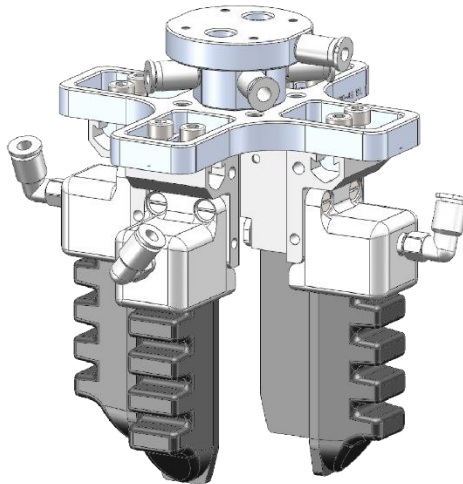


Figure 1.11 Four-finger gripper

Model	two-finger gripper/ three-finger gripper/ four-finger gripper	Gas connector diameter	4mm
Maximum working frequency	300 times/min	Precision	0.05mm
Safe working pressure	120 kpa	Service life	3 million times

1.2.6 Passive control unit



Figure 1.12 Port description of passive control unit

Table 1.5 Performance parameter of passive control unit

Nominal voltage	24 VDC	Material	aluminum alloy anodic oxidation
Nominal power	18 W	Size	158*120*75 mm
Output voltage	-85~100kPa	Weight	1.05 kg
Safe working pressure	120 kpa	Service life	3 million times
Ingress protection rating	IP54	Life	5000 hours
Positive pressure flow	4L/min	Control; mode	a. manual button
Negative pressure flow	4L/min		b. I/O level signal

2. Installation Instruction

2.1 Finger gripper installation

The way to install finger modules to Slide mounting plate-2L, Slide mounting plate-3S and Slide mounting plate-4S is similar. Here takes Slide mounting plate-4S as an example.

Step 1 Install finger modules to Slide mounting plate-4S, and tighten the screw.

Adjust the installation position of finger modules in Slide mounting plate-4S according to actual situation.

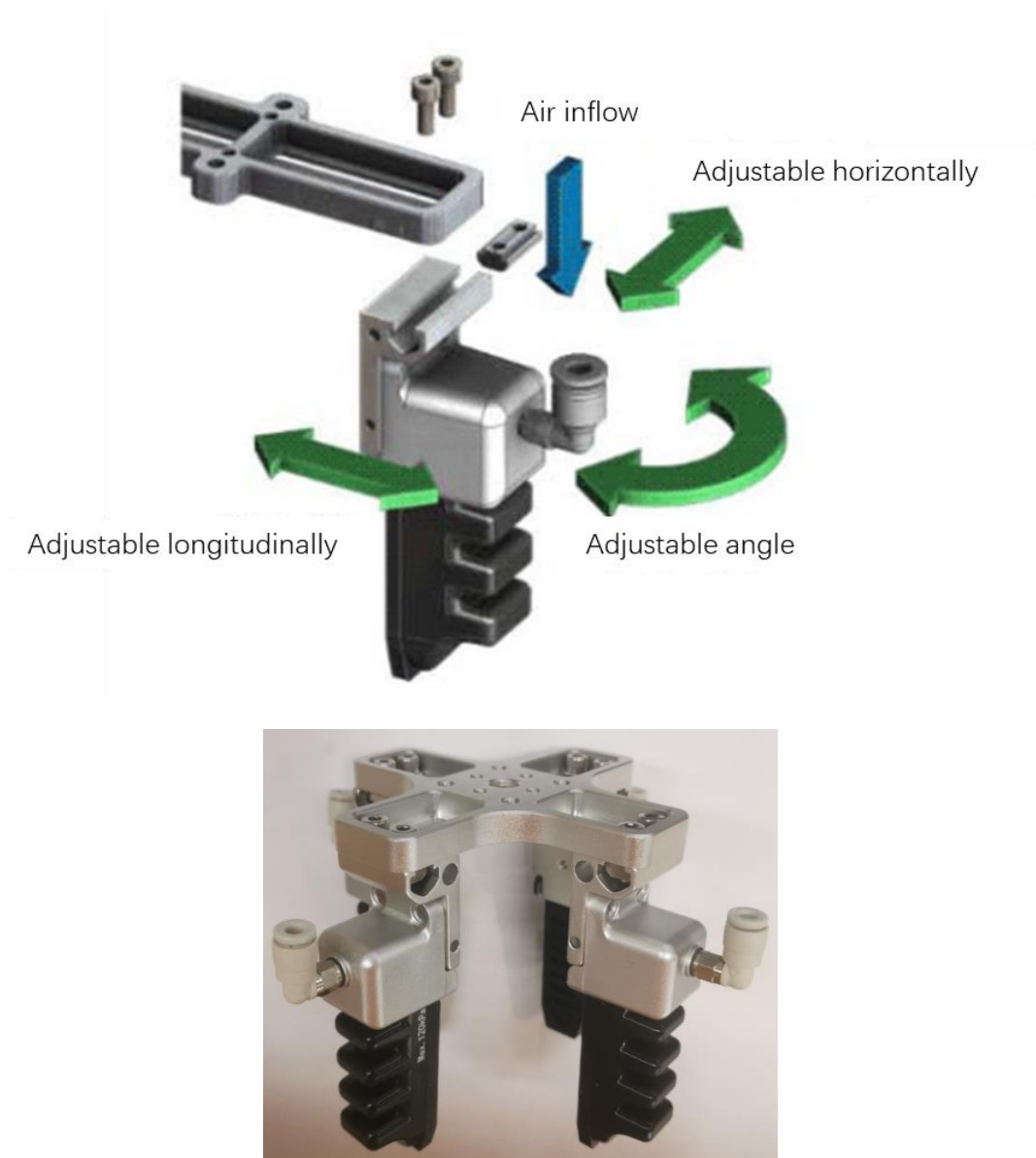


Figure 2.1 Install finger modules

Step 2 Install plugs to Slide mounting plate-4S and tighten them, as shown in Figure 2.2.

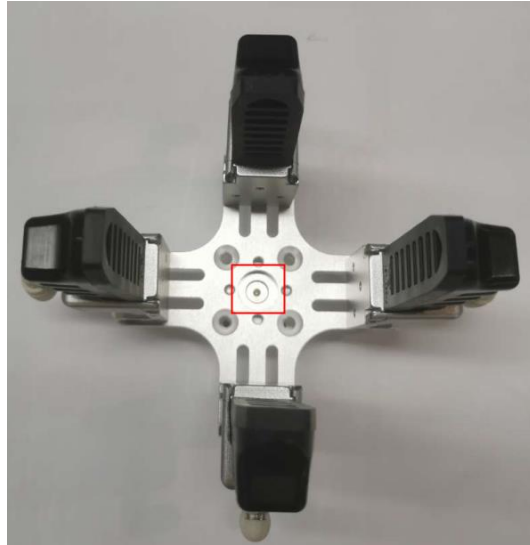


Figure 2.2 Install plugs

Step 3 Install the gas connector to connection block, as shown in Figure 2.3.



Figure 2.3 Install gas connector

Step 4 Install the connection block to the top of Slide mounting plate-4S, as shown in Figure 2.4.

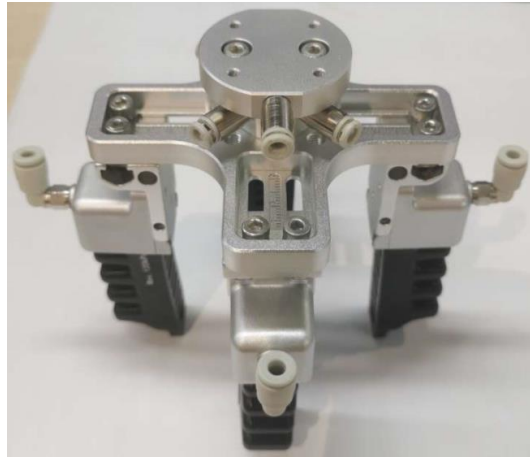


Figure 2.4 Install connection block

Step 5 Install the end flange of MG400 to connection block, and tighten four screws; install the PU tube, as shown in Figure 2.5.

Please cut the PU tube according to actual needs.

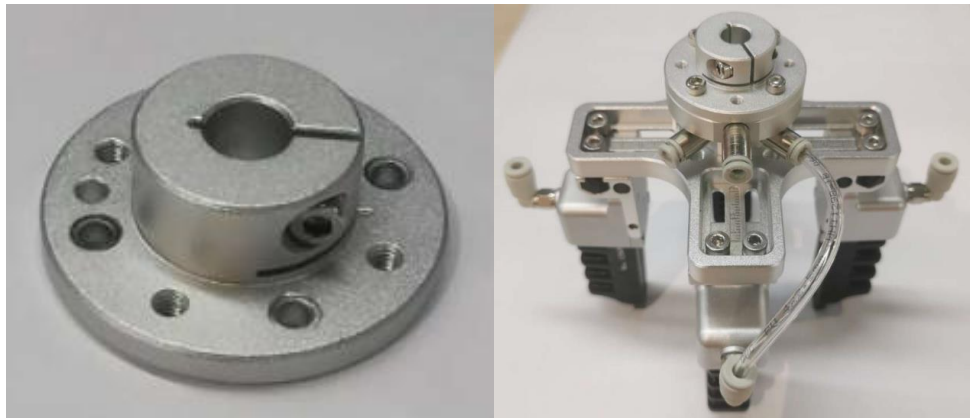


Figure 2.5 Install the end flange of MG400

Step 6 Install the four-finger gripper to MG400 through the end flange of MG400. Connect the PU tube, and tighten the screw on the side of flange, as shown in Figure 2.6.



Figure 2.6 Install four-finger gripper to MG400

Step 7 Connect the gripper cable to the passive control unit, as shown in Figure 2.7.



Figure 2.7 Connect gripper cable to the passive control unit

Step 8 Connect the gripper cable to MG400, as shown in Figure 2.8. Connect 24V and GND port of gripper cable to 24V and GND port of MG400 respectively. Connect Pressure and Vacuum port to any DO port of MG400.



Figure 2.8 Connect gripper cable to MG400

Step 9 Connect AIR port of MG400 to the gripper-end port of passive control unit with PU tube.

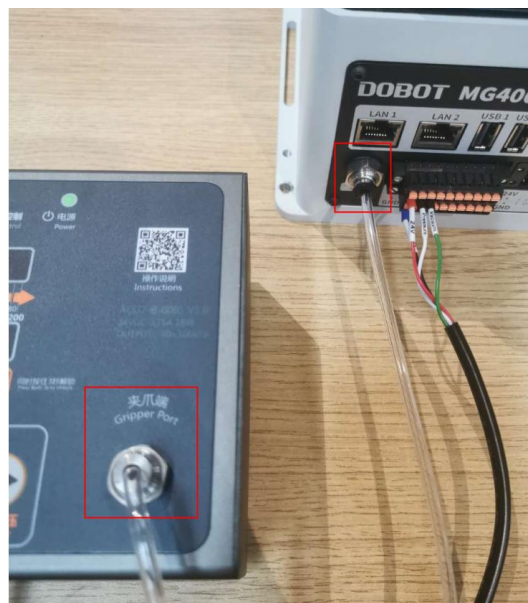


Figure 2.9 Connect PU tube

In addition, for two-finger gripper with double fingers each side, two finger modules need to be installed together, as shown in Figure 2.10. Then you can refer to Step 1 to install finger modules to Slide mounting plate.

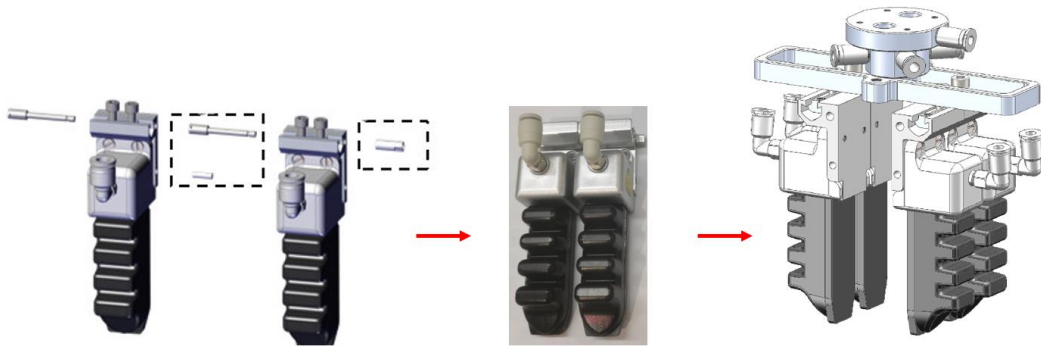


Figure 2.10 two-finger gripper with double fingers each side

2.2 Soft beak installation

As the way to install four soft beaks is similar, here takes soft beak 2 as an example.

Step 1 Install four plugs to the four holes of connection block, and install one gas connector to the hole on the side of connection block, as shown in Figure 2.11.

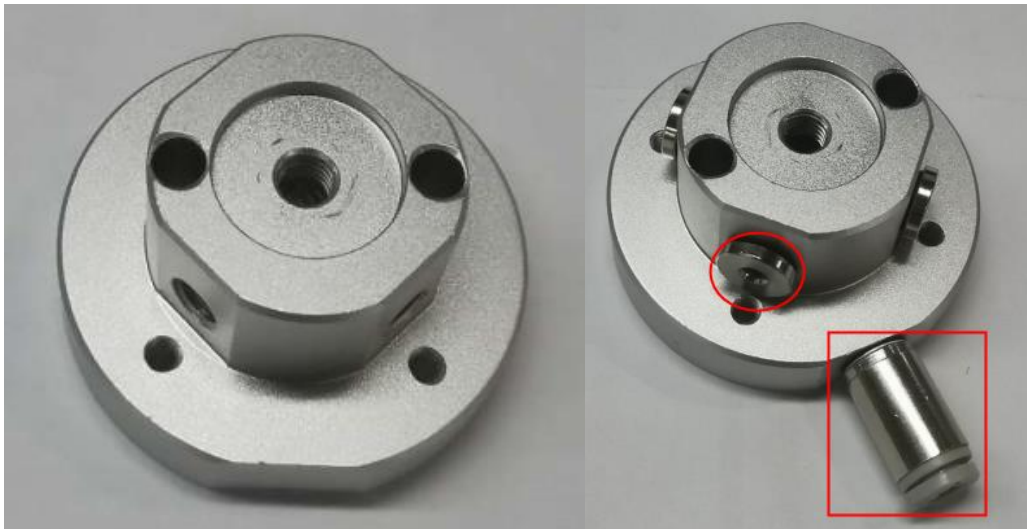


Figure 2.11 Install four plugs and gas connector

Step 2 Install the end flange of MG400 (accessory of MG400) to connection block, and tighten four screws, as shown in Figure 2.12.

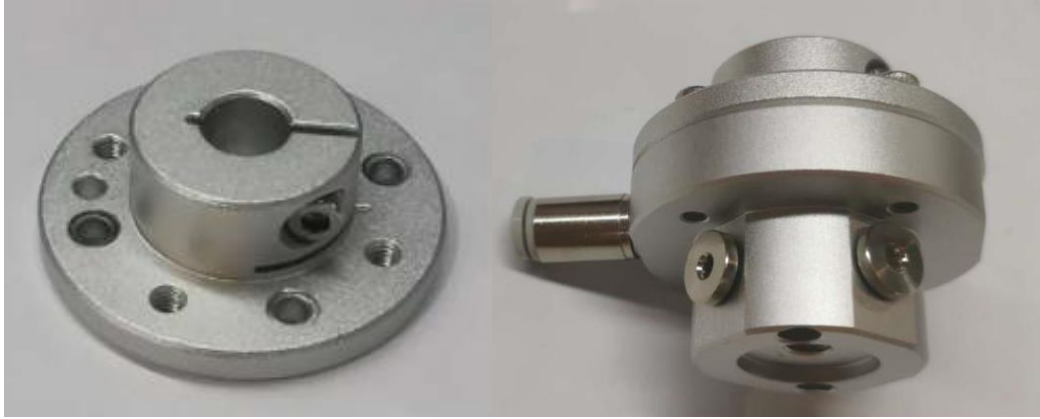


Figure 2.12 Install the end flange of MG400

Step 3 Install the soft beak 2 to connection block, as shown in Figure 2.13

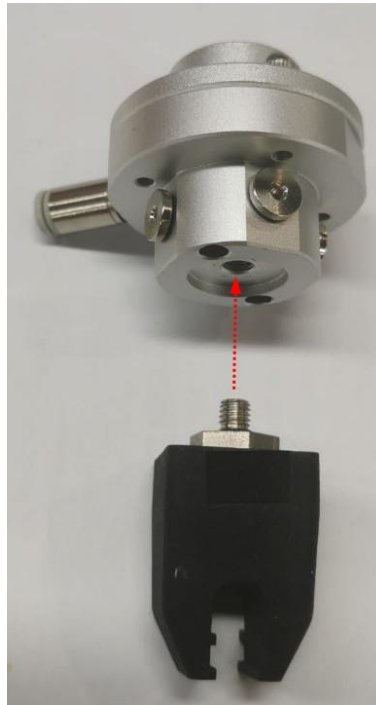


Figure 2.13 Install soft beak 2 to connection block

Step 4 Install the soft beak 2 to MG400 through the end flange of MG400. Connect the PU tube, and tighten the screw on the side of flange, as shown in Figure 2.14.

Please cut the PU tube according to actual needs.



Figure 2.14 Install soft beak 2

Step 5 Connect the gripper cable to passive control unit, as shown in Figure 2.15.



Figure 2.15 Connect gripper cable to passive control unit

Step 6 Connect the gripper cable to MH400, as shown in Figure 2.16. Connect 24V and GND port of gripper cable to 24V and GND port of MG400 respectively. Connect Pressure and Vacuum port to any DO port of MG400.

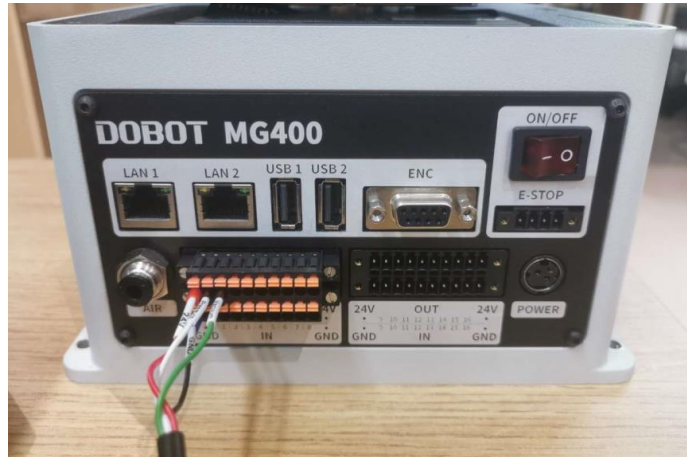


Figure 2.16 Connect gripper cable to MH400

Step 7 Connect AIR port to the gripper-end port of passive control unit with PU tube.

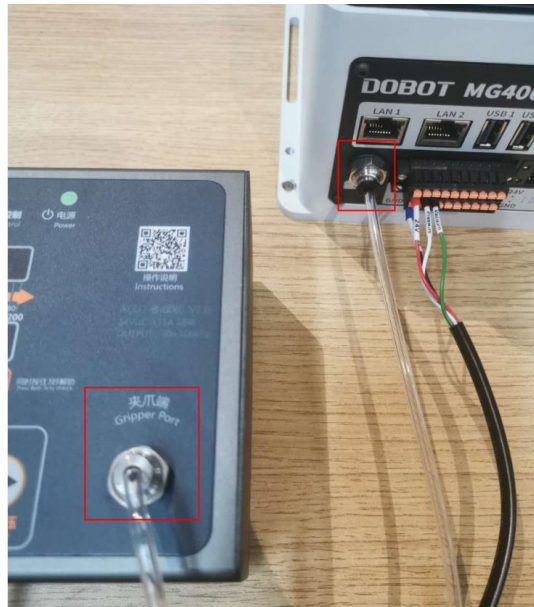


Figure 2.17 Connect AIR port to passive control unit