

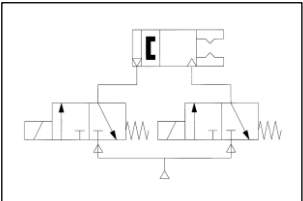
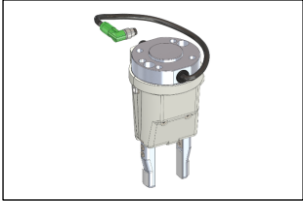


ORIGINAL INSTRUCTIONS

Instruction Manual

Air Gripper Unit for Collaborative Robots

JMHZ2-16D-X7400B-ASSISTA(-P)



The intended use of this parallel type air gripper is to convert the potential energy provided by compressed air into a force which causes mechanical linear motion of the fingers.

1 Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC) ⁽¹⁾, and other safety regulations.

⁽¹⁾ ISO 4414: Pneumatic fluid power - General rules relating to systems.
ISO 4413: Hydraulic fluid power - General rules relating to systems.
IEC 60204-1: Safety of machinery - Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots -Safety. etc.

- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

	Caution	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
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	Warning	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	Danger	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

Warning

- **Always ensure compliance with relevant safety laws and standards.**
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

2 Specifications

2.1 Product Specifications

Model	JMHZ2-16D-X7400B-ASSISTA(-P)	
Bore Size [mm]	16	
Fluid	Air	
Operating Pressure [MPa]	0.1 to 0.7	
Ambient and Fluid Temperature [C]	-10 to +50	
Repeatability [mm]	± 0.01	
Maximum Operating Frequency [c.p.m.]	120	
Lubrication	Non-Lube	
Action	Double Acting	
Holding Force (/per finger)	O.D. Force [N]	32.7
	I.D. Force [N]	43.5
Opening/Closing Stroke [mm]	10	
Weight [g]	680	
Auto Switch Model	D-M9(N/P)-5	
Standard for mounting interface	ISO9409-1-31.5-4-M5	
Connector configuration	M12 8Pin (Plug)	

2.2 Individual Specifications

2.2.1 Air Gripper

Model	JMHZ2-16D
Bore Size [mm]	16
Fluid	Air
Operating Pressure [MPa]	0.1 to 0.7
Ambient and Fluid Temperature [C]	-10 to +60
Repeatability [mm]	± 0.01

2 Specification - continued

Maximum Operating Frequency [c.p.m.]		120
Lubrication		Non-Lube
Action		Double Acting
Holding Force (/per finger)	O.D. Force [N]	32.7
	I.D. Force [N]	43.5
Opening/Closing Stroke [mm]		10
Weight [g]		128

2.1.1 3-Port Solenoid Valve

Model	V114-5LU
Fluid	Air
Ambient and Fluid Temperature [C]	-10 to +50 (No Freezing)
Response time (DC) [ms]	ON: 5 or less OFF: 4 or less
Maximum Operating Frequency [Hz]	20
Lubrication	Not Required
Mounting Position	Unrestricted
Impact / Vibration Resistance [m/s2]	150 / 30
Enclosure Rating	Dust proof
Electrical Entry	L-plug connector
Coil Rated Voltage [V]	24
Allowable Voltage Fluctuation	-10 to +10%
Power Consumption [W]	0.4
	[Starting 0.4, Hold. 0.1]
Indicator LED	LED

3 Installation

3.1 Installation

Warning

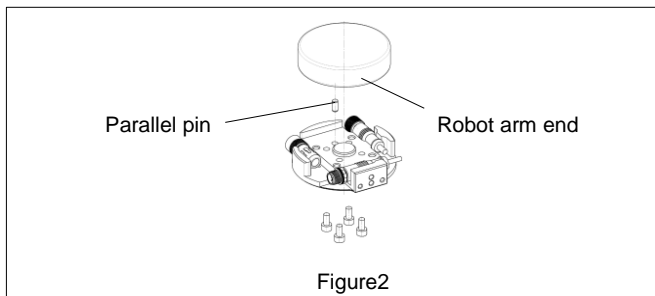
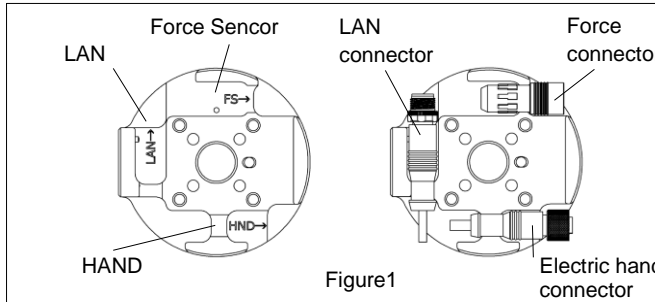
- Do not install the product unless the safety instructions have been read and understood.
- Install and operate the product only after reading and understanding its contents.
- Allow sufficient space for maintenance and inspection.
- Do not scratch or dent the air gripper by dropping or bumping it when mounting. Slight deformation can cause inaccuracies or a malfunction.

- Tighten the screw within the specified torque when mounting the attachment. Tightening with a torque above the limit can cause malfunction, while insufficient torque can cause slippage and dropping.

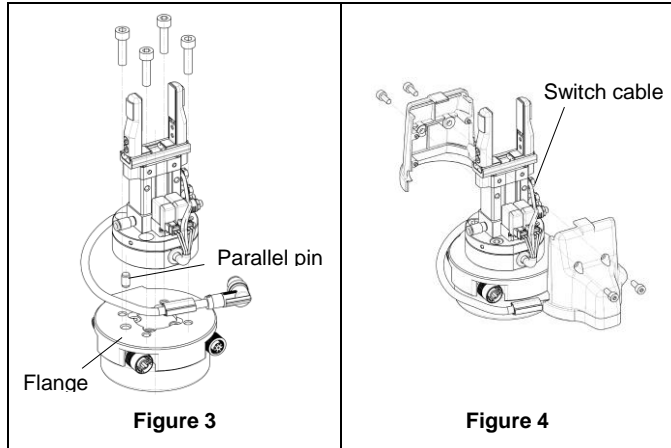
3.1.1 How to mount air gripper

- Set the three connectors at the end of the robot arm according to the Characters printed on the flange. As shown in Figure 1

- The hexagon socket head cap screws to a maximum tightening Torque of 3.0 Nm

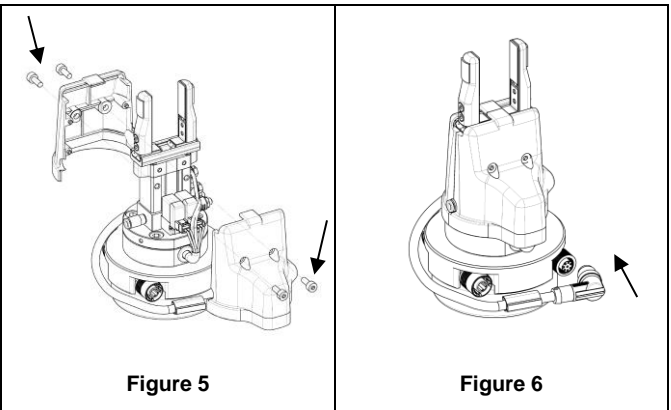


- Adjust the robot arm position before mounting so that the mounting is easy.
- Mount the air gripper to the robot arm as shown in **Figure 3**. The hexagon socket head cap screws to a maximum tightening torque of 6.3 N.m.
- Mount the cover as shown in **Figure 4**, taking care not to get the switch cable caught or trapped.

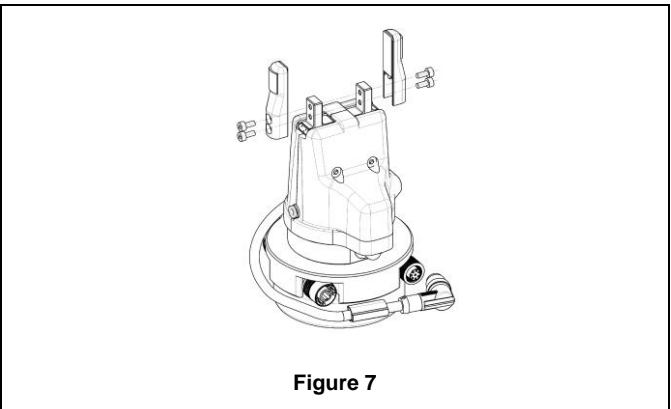


- Secure the cover, using cross recessed round head screws (M4x10) to a maximum tightening torque of 1.0 N.m, see **Figure 3**.
- Secure the connector as shown in **Figure 4**.
- Do not energise the product while securing the connector.
- Ensure that the connector is not loose.

3 Installation - continued



- Then mount the fingers as shown in **Figure 7**, and details in **Section 3.1.1**.



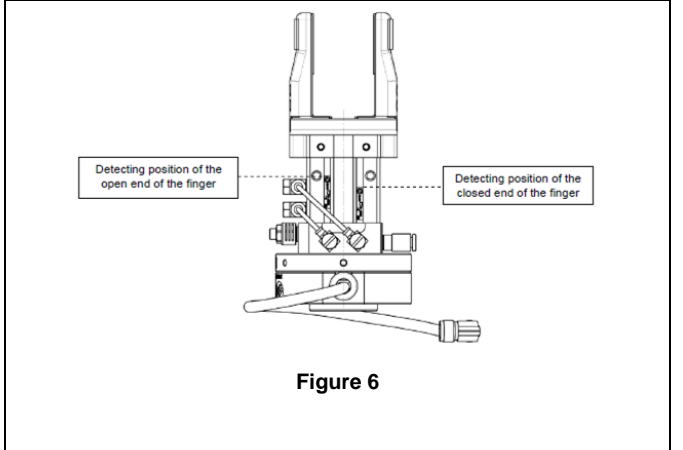
3.1.1 How to mount attachment to the finger

- Make sure to mount the attachments on fingers with the tightening torque in the table below by using bolts for the female threads on the fingers.

	Model	Bolt	Max. Tightening Torque [Nm]
	JMHZ2-16D	M3 x 0.5	0.59

3.1.2 Sensing Position

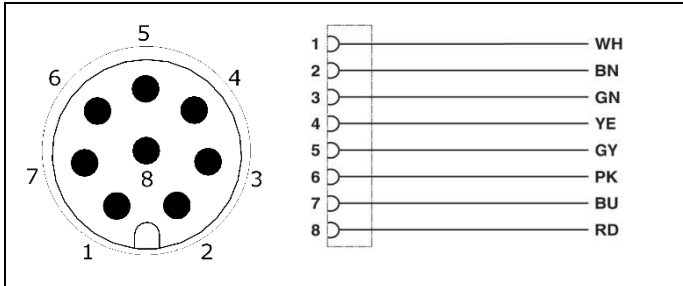
- The sensing position of the auto switch is fixed to the open end and closed end of the finger.
- When detecting the gripping position of the workpiece, secure the auto switch at the at the appropriate position according to the shape of the workpiece.
- For further details and example of setting the mounting position of the auto switch, please refer to the catalogue.



3 Installation - continued

- Make sure to mount the attachments on fingers with the tightening torque in the table below by using bolts for the female threads on the fingers.

3.1.3 Connector and Pin Layout



PIN #	Coating Colour	Function	Description
1	White	GND	Power supply for 0 VDC
2	Brown	+24V	Power supply for 24 VDC
3	Green	Valve On/Off (Finger Opening Direction)	-
4	Yellow	Valve On/Off (Finger Closing Direction)	-
5	Grey	-	-
6	Pink	-	-
7	Blue	Auto switch (Finger Closing Direction)	-
8	Red	Auto switch (Finger Opening Direction)	-

3.2 Environment

Warning

- Do not use in an environment where corrosive gases, chemicals, salt water or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.

3.3 Piping

Caution

- Before connecting piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1 thread exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.

3.4 Lubrication

Caution

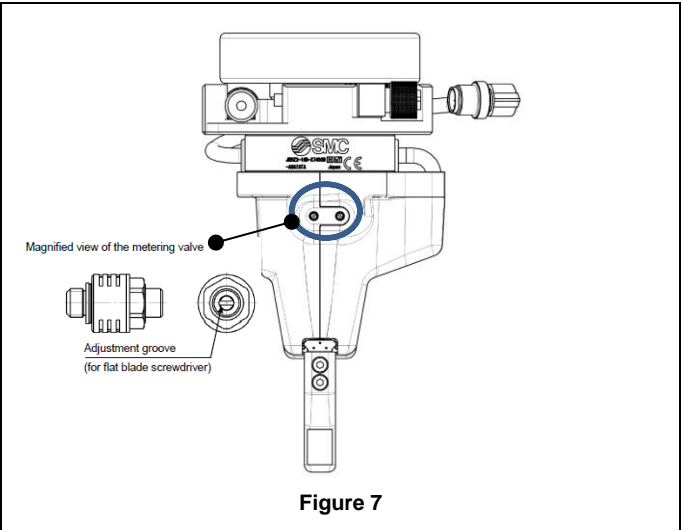
- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- If a lubricant is used in the system, refer to catalogue for details.

4 Settings

4.1 Finger Opening/Closing Speed Adjustment

- Use a flat blade screwdriver for adjusting the metering valves.
- Ensure that the restriction of the two metering valves is approximately the same. If they differ too much, the operation can become unstable.

4 Settings - continued



5 How to Order

Refer to the customer drawings for 'How to Order'.

6 Outline Dimensions (mm)

Refer to the customer drawings for outline dimensions.

7 Maintenance

7.1 General Maintenance

Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.

- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

Warning

- When air grippers are removed for maintenance, first confirm that measures are in place to prevent any workpieces from dropping, run-away of equipment. Then cut off the supply pressure and electric power and exhaust all compressed air from the system using the residual pressure release function. When the equipment is restarted, proceed with caution after confirming that appropriate measures are in place to prevent cylinders from sudden movement.
- Do not allow people to enter or place objects in the carrying path of the air gripper. Otherwise injury or accident may occur.
- Do not put hands in between the air gripper fingers or attachments.

8 Limitations of Use

8.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

9 Product disposal

This product should not be disposed of as municipal waste. Check your local regulations and guidelines to dispose this product correctly, in order to reduce the impact on human health and the environment.

10 Contacts

Refer to www.smcworld.com or www.smc.eu for contacts.

SMC Corporation

URL : [http:// www.smcworld.com](http://www.smcworld.com) (Global) [http// www.smc.eu](http:// www.smc.eu) (Europe)
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