Doc. no. DOC1091659

Operation Manual

PRODUCT NAME

Tool Changer / Auto Type

MODEL / Series / Product Number

RMTA Series

SMC Corporation

Contents

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: Manipulating industrial robots -Safety.
etc.

Caution	**Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
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

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results.

The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product.

This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly.

The assembly, operation and Maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1.The inspection and Maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.

2.When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.

3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.

2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.

3. An application which could have negative effects on people, property, or animals requiring special safety analysis.

4.Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Safety Instructions

⚠ Caution

The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.

If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.
Read and accept them before using the product.

Limited warranty and Disclaimer

1.The warranty period of the product is 1 year in service or 1.5 years after the product is delivered,whichever is first.
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

Compliance Requirements

1. **The use of SMC products with production equipment for the manufacture of weapons of Weight destruction(WMD) or any other weapon is strictly prohibited.**
2. **The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulation of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.**

⚠ Caution

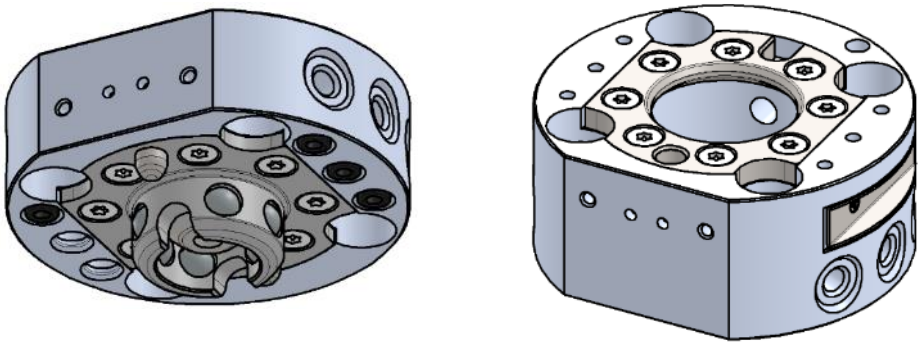
SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country.

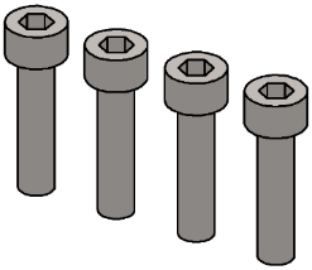
Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

1. Main plate・Tool plate

1-1.Included items

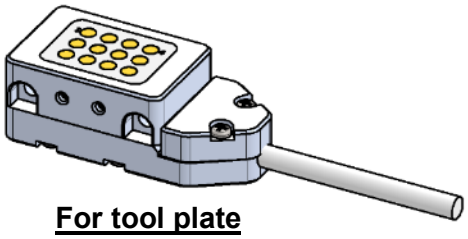


Main plate or Tool plate

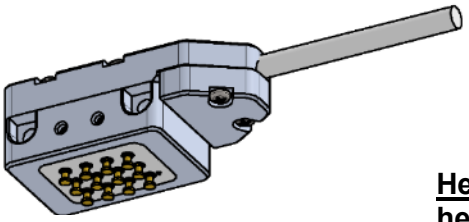


Mounting bolt 4 pcs.
*** These bolts do not come with the tool plate with female thread mounting.**

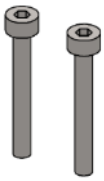
Positioning pin 1 pcs.



For tool plate



For main plate



Hexagon socket head cap screw 2 pcs.

Positioning pin 2 pcs.

Connector (option)

1-2.How to Order

■ Main plate

RMTA1 - 05 M 1 - C1 M

Work load

05	5kg
10	10kg
20	20kg

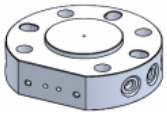
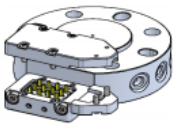
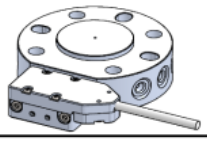
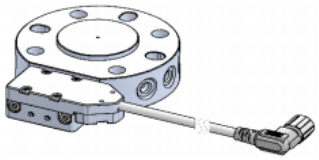
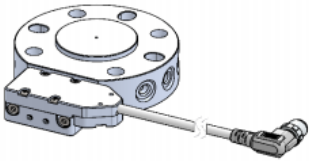
Body specifications

1	Basic

Length of C2 discrete wire specification cable

Nil	1m
M	3m
L	5m

Connector specifications

Symbol	Contents	Work load			Robot side tool I/O Directly-mountable robot
		5kg	10kg	20kg	
Nil	Without connector 	●	●	●	—
C1	Connector (Soldering specifications 12pin) 	●	●	●	—
C2	Connector (Discrete wire specifications Cable length1m,3m,5m) 	●	●	●	—
C3	Connector (M8 8 pin connector socket) 	—	●	—	UniversalRobots: UR□e series FANUC: CRX series YASKAWA Electric: MOTOMAN-HC□DTP series
C4	Connector (M8 8 pin connector plug) 	—	●	—	Omron/TECHMAN: TM series

■ Tool plate

RMTA1 - 05 T 1 - C1 M

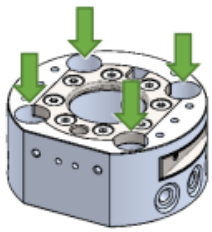
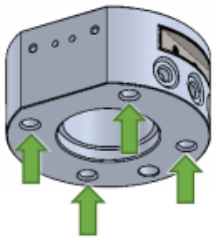
Work load

05	5kg
10	10kg
20	20kg

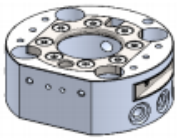
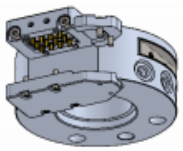
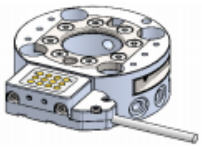
Length of C2 discrete wire specification cable

Nil	1m
M	3m
L	5m

Body specifications

1	Mounting : through hole 
2	Mounting : female thread 

Connector specifications

Symbol	Contents	Work load 5kg	Work load 10kg	Work load 20kg
Nil	Without connector 	●	●	●
C1	Connector (Soldering specifications 12pin) 	●	●	●
C2	Connector (Discrete wire specifications Cable length1m,3m,5m) 	●	●	●

1-3.Product Specifications

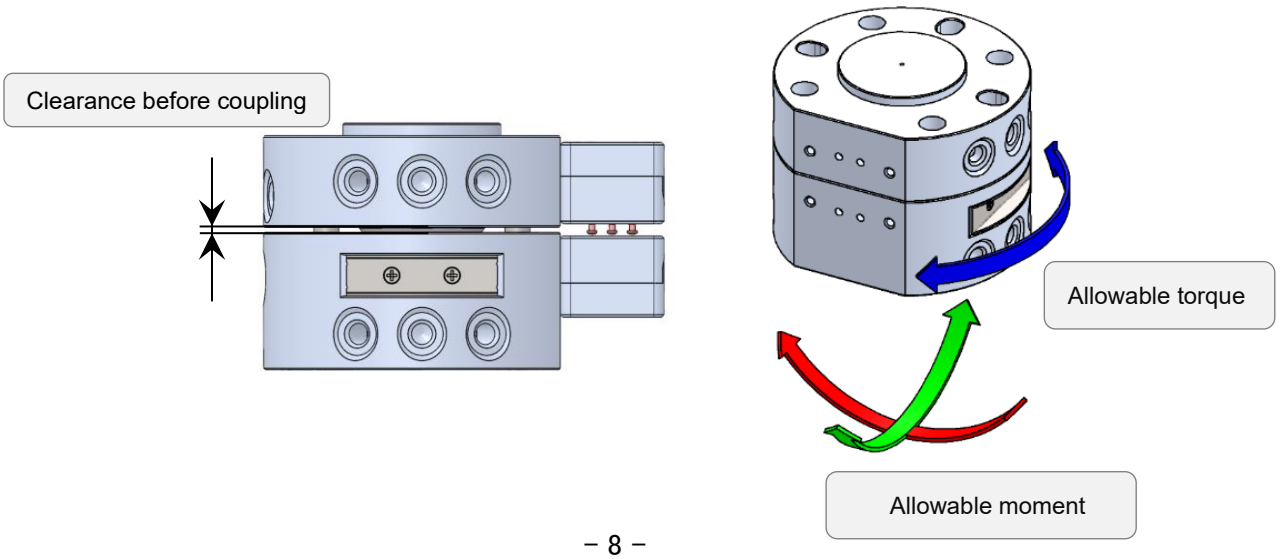
1-3-1.Specifications

Work load [kg]		5		10		20	
Fluid		Compressed air					
Action		Double acting					
Operating pressure range [MPa]		0.3 to 0.7		0.2 to 0.7			
Withstand pressure [MPa]		1.05					
Ambient and fluid temperature[℃]		0 to 60					
Recommended clearance before coupling*1[mm]		0.8 or less		1.0 or less		1.2 or less	
Repeatability[mm]		±0.01					
Combined axial force *2*3[N]		375		900		1500	
Allowable moment*3 [N・m]		4.0		18.0		41.0	
Allowable torque[N・m]		13		39		77	
Weight[g]	Main plate	71		176		445	
	Tool plate	T1	T2	T1	T2	T1	T2
		55	59	174	183	350	355
Air port for tool	Number of ports [pieces]	4		6		8	
	Port size	M5x0.8					
	Operating pressure range	-100kPa to 0.7MPa					
Electric contact	Electrode capacity	2 A/1 interface					
	Number of contact points	12					

※1 Clearance between main plate and tool plate to be coupled. The smaller the clearance, the lower the supply pressure required for coupling and the more stable the operation. See the coupling pressure graph on the next page for the detailed relationship between supply pressure, clearance during coupling, and coupling force.

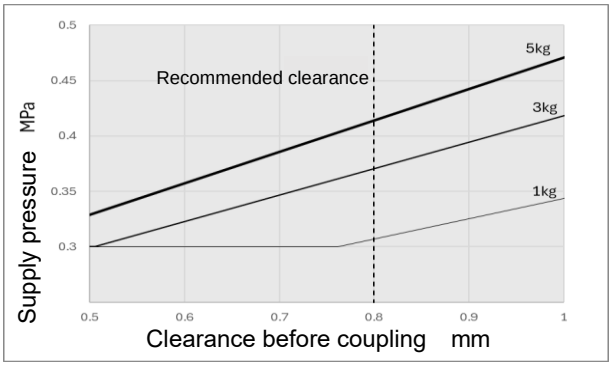
※2 This is the force applied in the direction of separation of the main plate and tool plate at which those plates in the connected state start to separate from each other.

※3 The values shown are those when connected at 0.5 MPa, and will vary depending on the supply pressure. For detailed relationship, please refer to the graph of allowable moment against supply pressure on the next page.

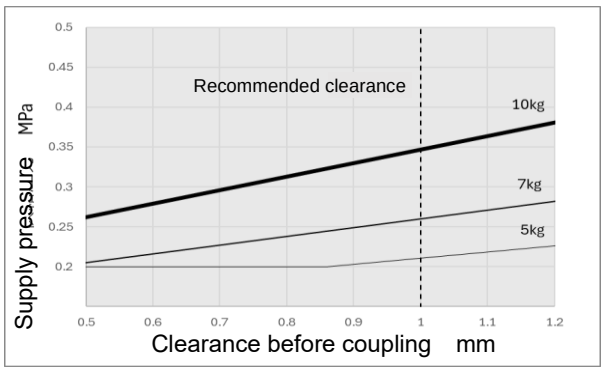


1-3-2.Connection pressure

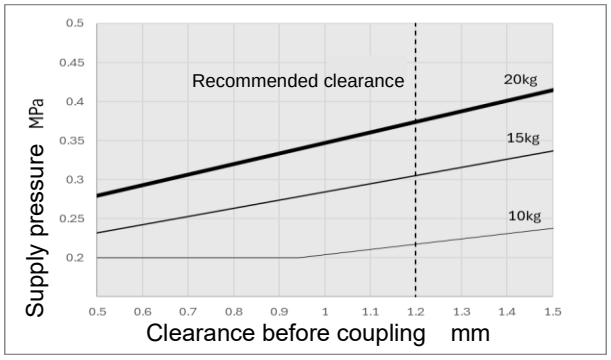
RMTA1-05**



RMTA1-10**



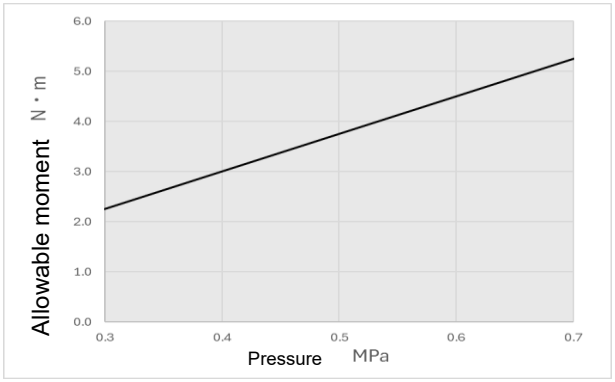
RMTA1-20**



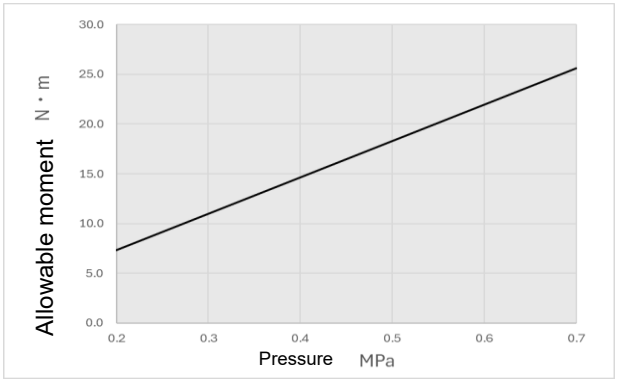
※The coupling pressure is a reference value based on the results of in-house experiments. Use only after confirming the actual Work load and the pressure at the clearance before coupling to ensure a reliable coupling.

1-3-3. Allowable moment for supply pressure

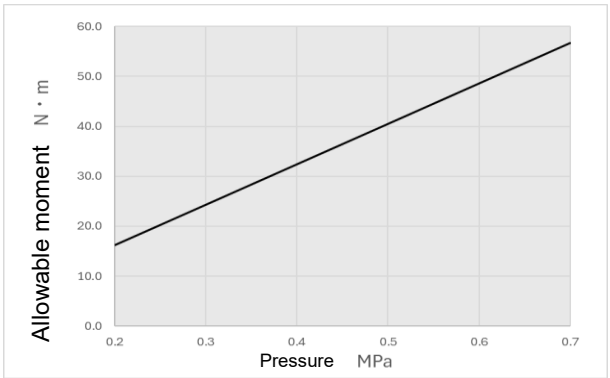
RMTA1-05**



RMTA1-10**



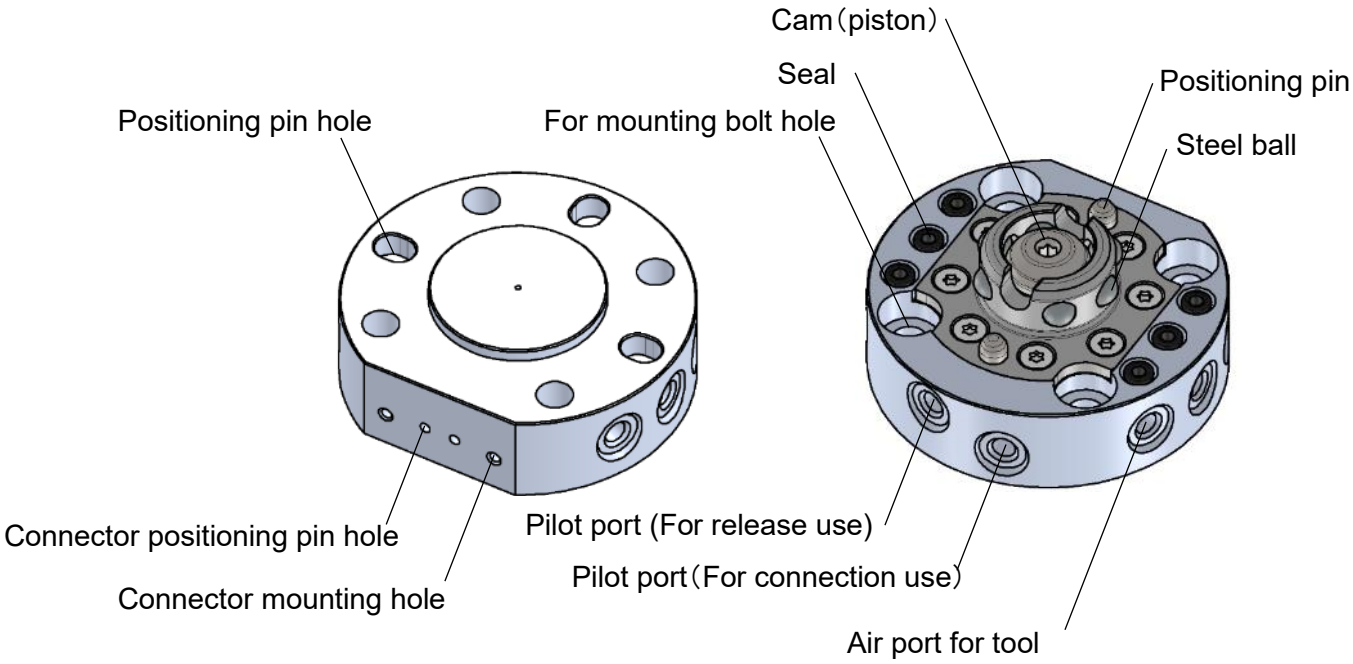
RMTA1-20**



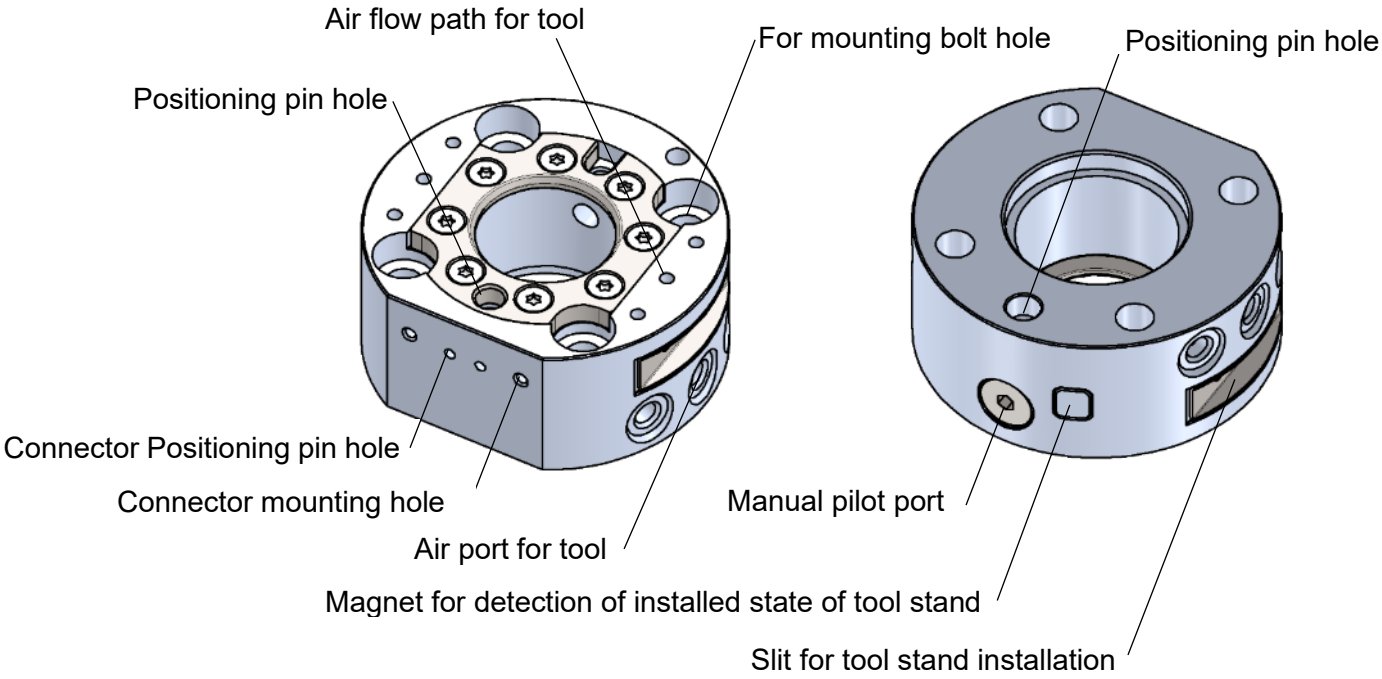
※Allowable moment value will be the design value.

1-3-4.Descriptions and functions of components of product

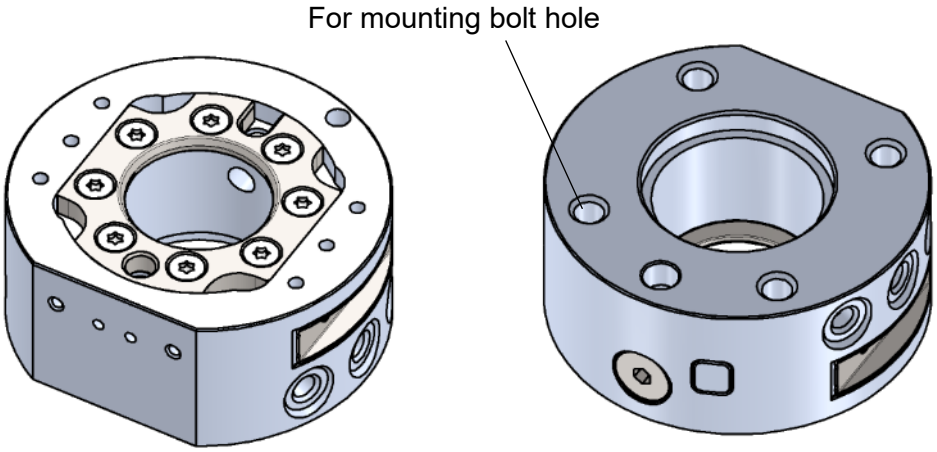
- Main plate



- Tool plate（Tool mounting method: Through hole）



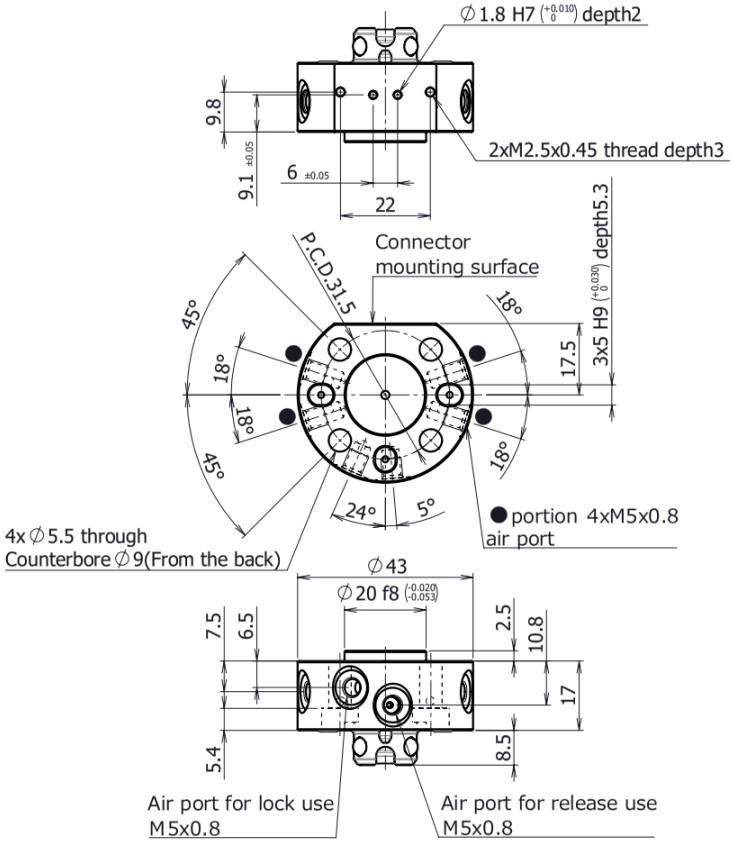
Tool plate (Tool mounting method: Female thread)



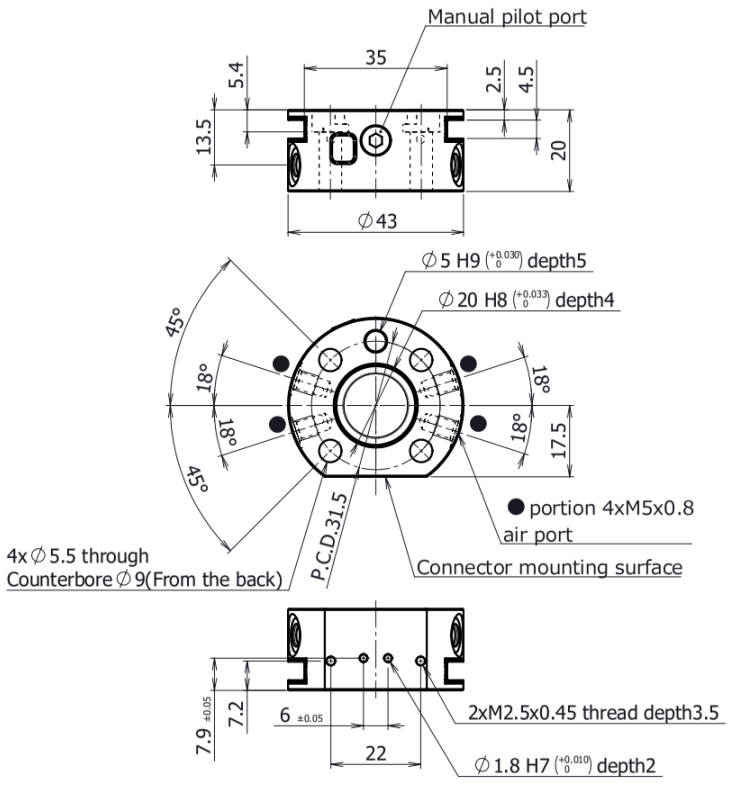
1-4.Dimensions

■ 5 kg carrying capacity／RMTA1-05

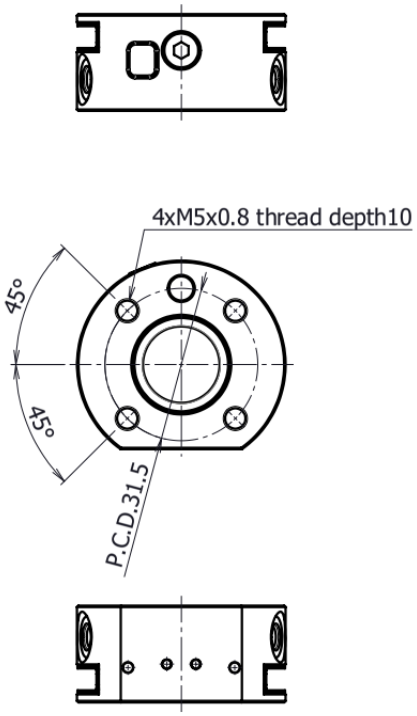
Main plate



Through hole mounting specifications

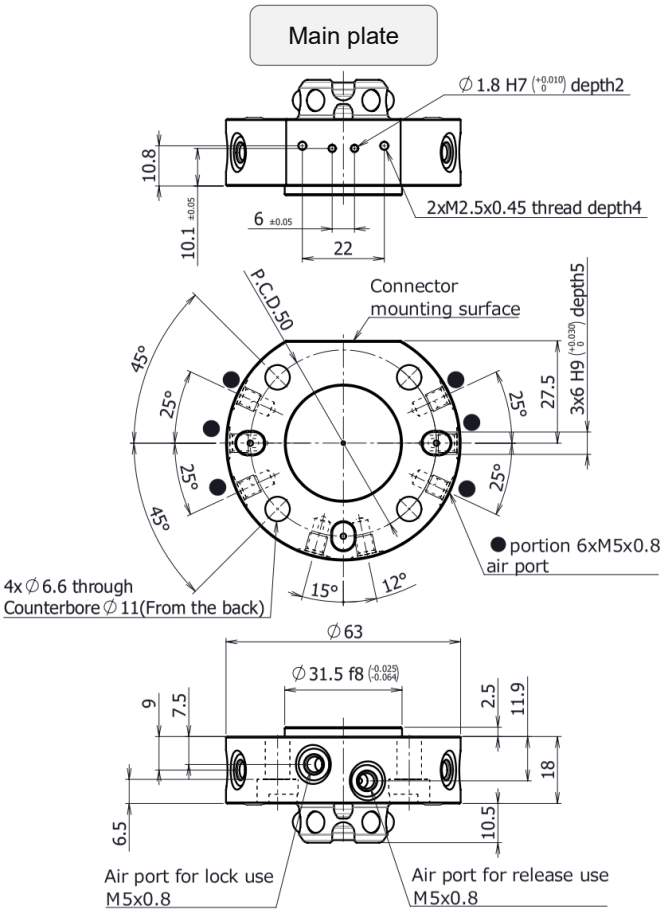


Female thread mounting specifications

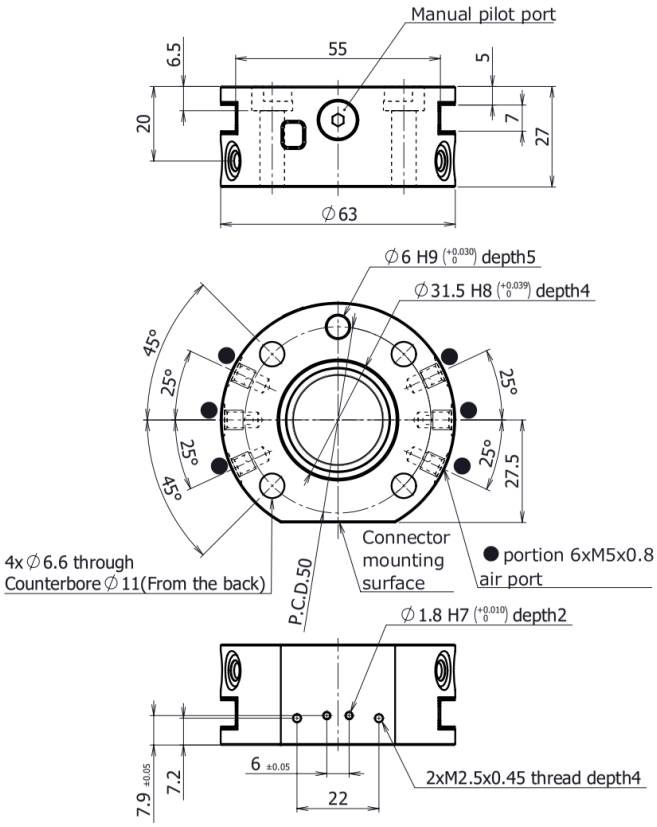


Tool plate

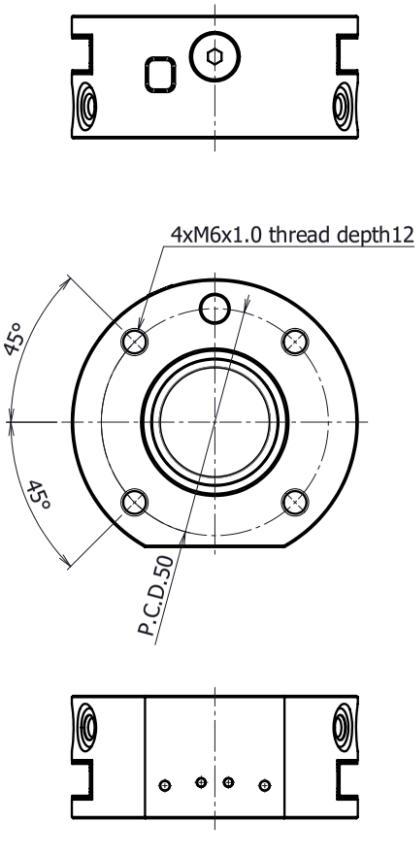
■ 10kg carrying capacity／RMTA1-10



Through hole mounting specifications



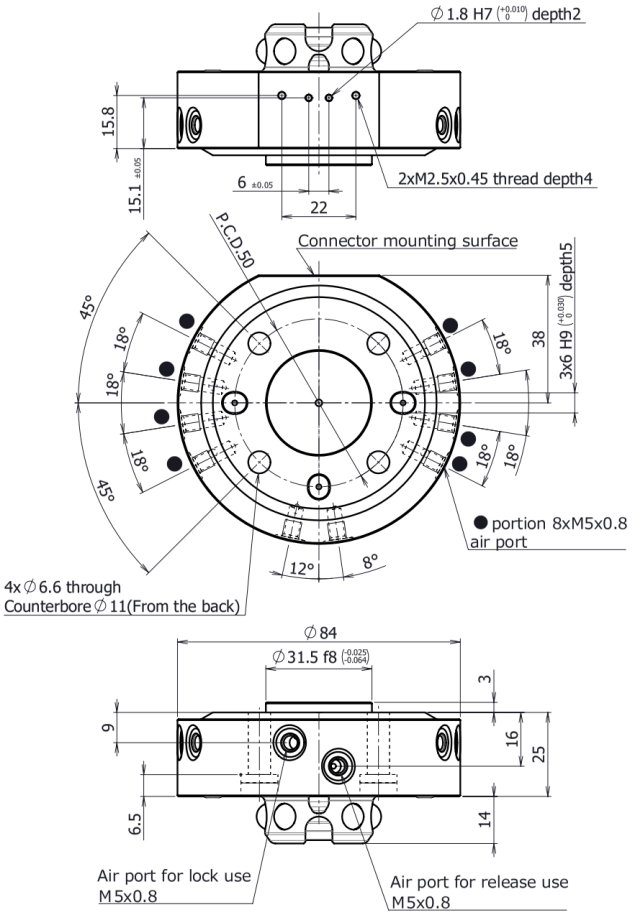
Female thread mounting specifications



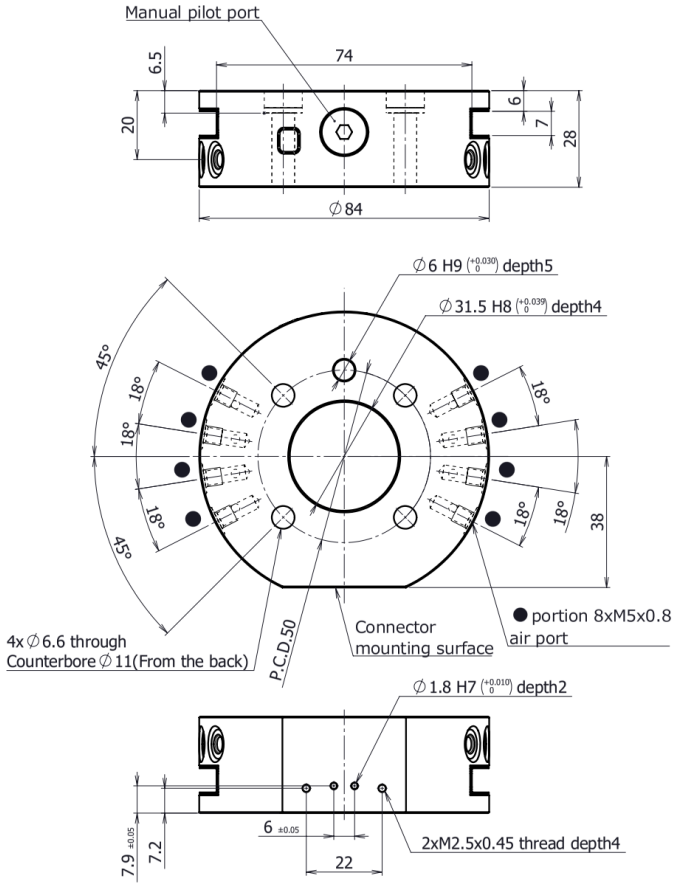
Tool plate

■ 20kg carrying capacity／RMTA1-20

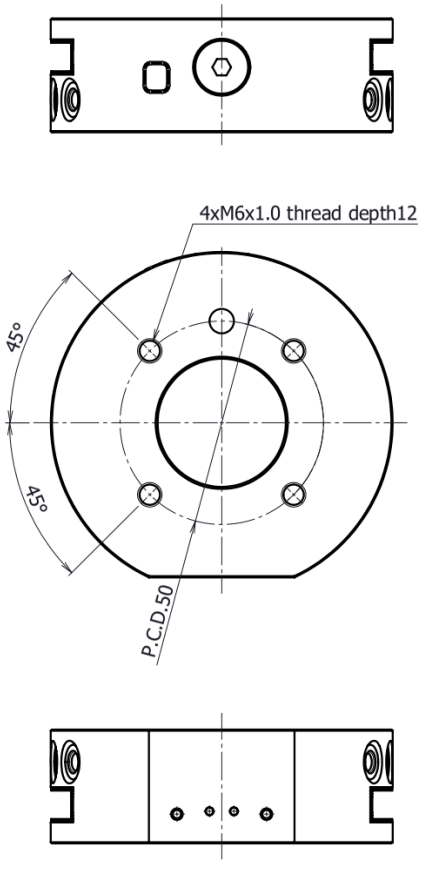
Main plate



Through hole mounting specifications



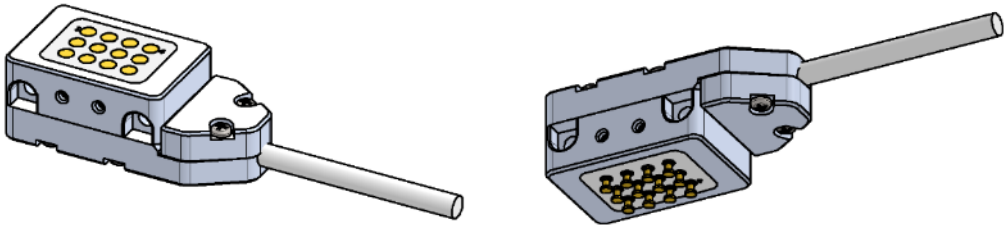
Female thread mounting specifications



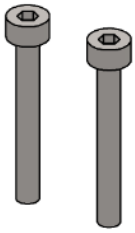
Tool plate

2. Connector

2-1.Included items



Connector



For mounting bolt 2 pcs.

Positioning pin 2 pcs.

2-2.How to Order

RMTA1 - M C1 M

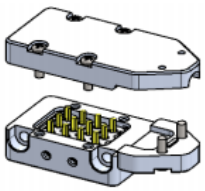
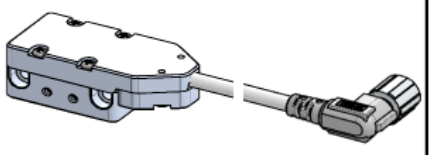
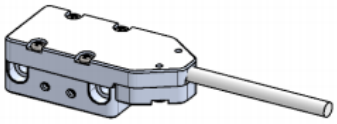
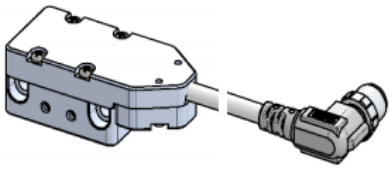
Mounting body

M	Main plate
T	Tool plate

Length of C2 discrete wire specification cable

Nil	1m
M	3m
L	5m

Connector specifications

Symbol	Contents		
C1	Connector (Soldering specifications 12pin) 	C3	Connector (M8 8 pin connector socket) 
C2	Connector (Discrete wire specifications Cable length1m,3m,5m) 	C4	Connector (M8 8 pin connector plug) 

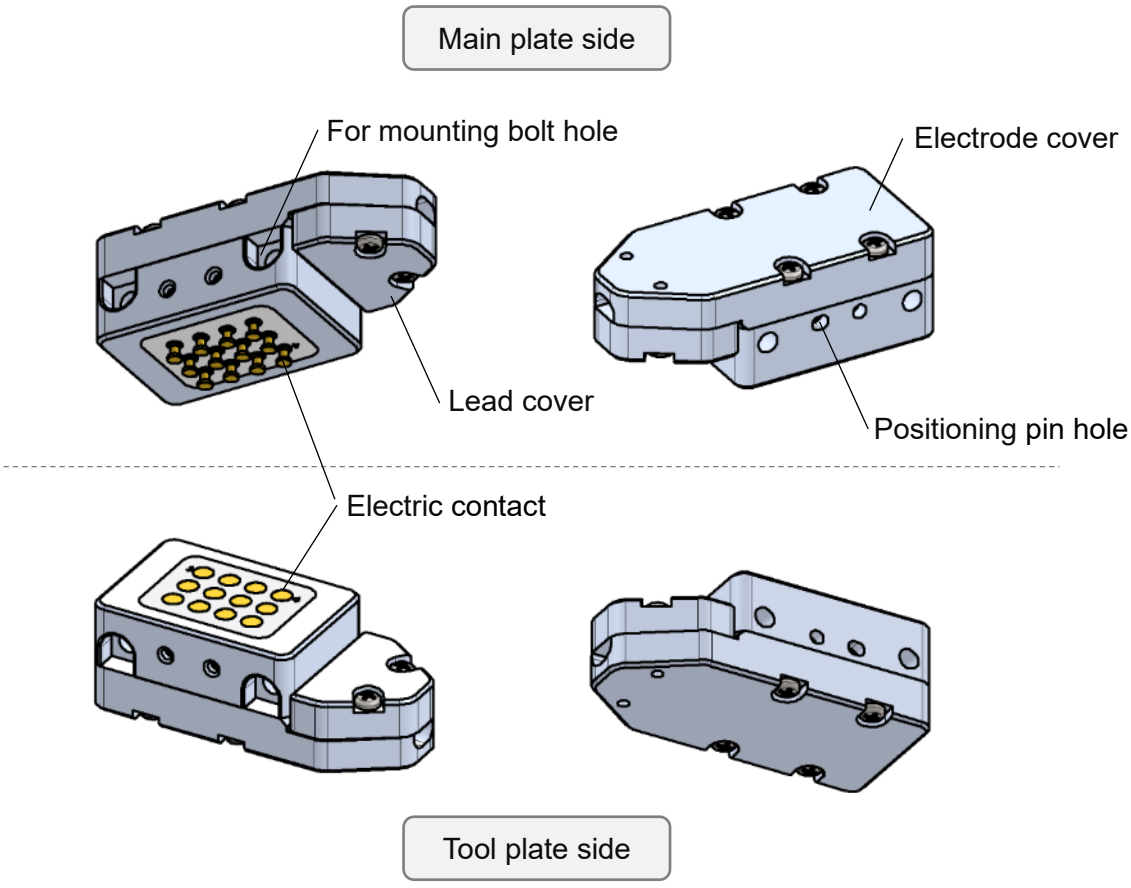
2-3.Product Specifications

2-3-1.Specifications

Main plate side		RMTA1-MC1	RMTA1-MC2	RMTA1-MC3	RMTA1-MC4
Tool plate side		RMTA1-TC1	RMTA1-TC2	-	-
Connection		Soldered terminal	Discrete wires	M8-8 pin socket	M8-8 pin plug
Electric contact	Electrode capacity	2 A/1 interface			
	Number of contact points	12	8 pcs. already wired (4 pcs. yet to be wired)		
Weight		26g*1			

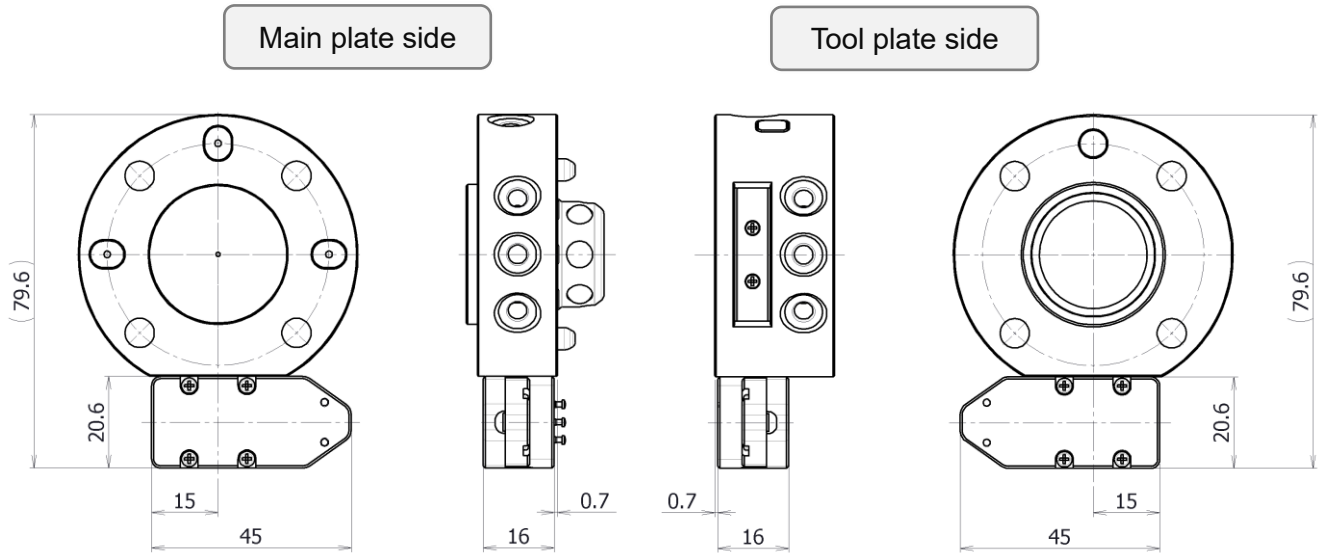
*1 Excluding bolts and cables for mounting use

2-3-2. Descriptions and functions of components of product

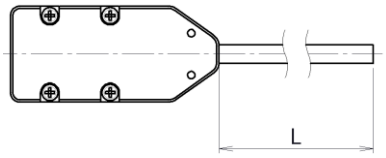


2-4.Dimensions

■ Soldering specifications／RMTA1-(M/T)C1

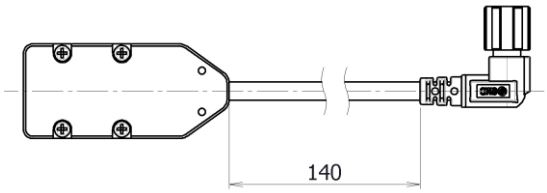


■ Discrete wire specifications／RMTA1-(M/T)C2

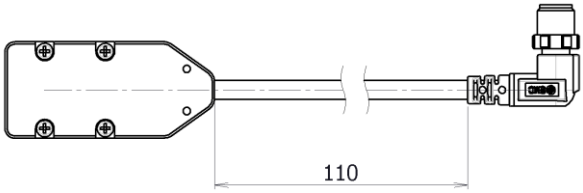


L	1m
	3m
	5m

■ M8-8 pin connector specifications（Socket）／RMTA1-MC3

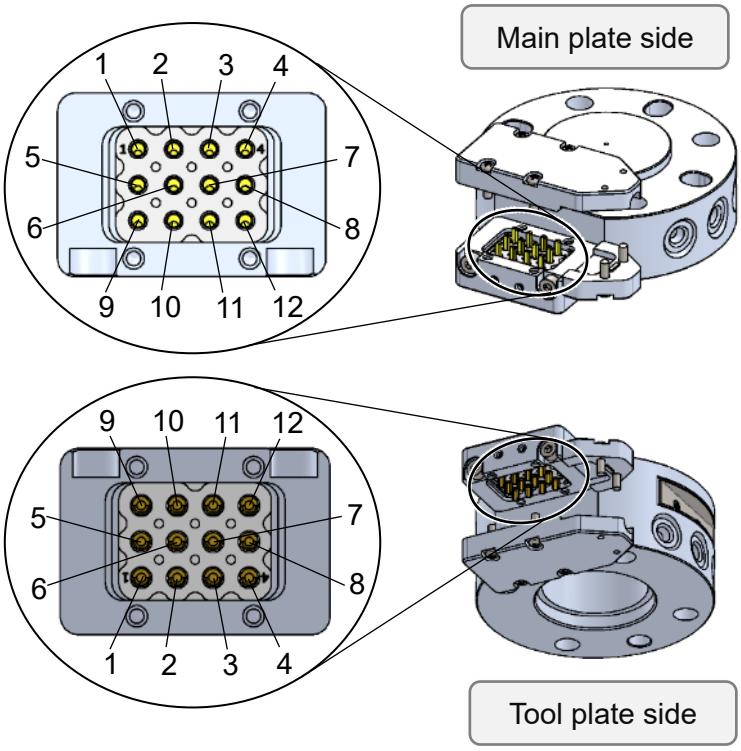


■ M8-8 pin connector specifications（Plug）／RMTA1-MC4



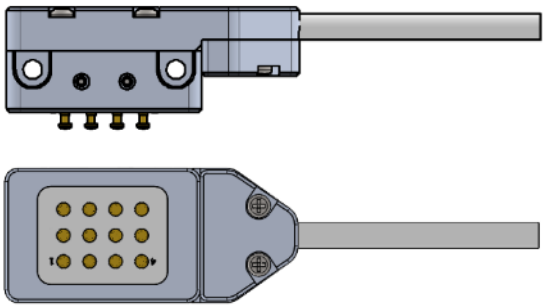
2-5.Pin assignment

2-5-1.Soldering Specifications



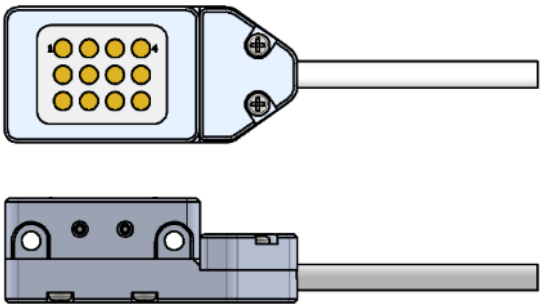
2-5-2.Discrete wire Specifications

Main plate side



Connector side	Contact number	Lead wire color	Discrete wire side
	1	White	
	2	Brown	
	3	Green	
	4	Yellow	
	5	Gray	
	6	Black	
	7	Blue	
	8	Red	
	9		
	10		
	11		
	12		

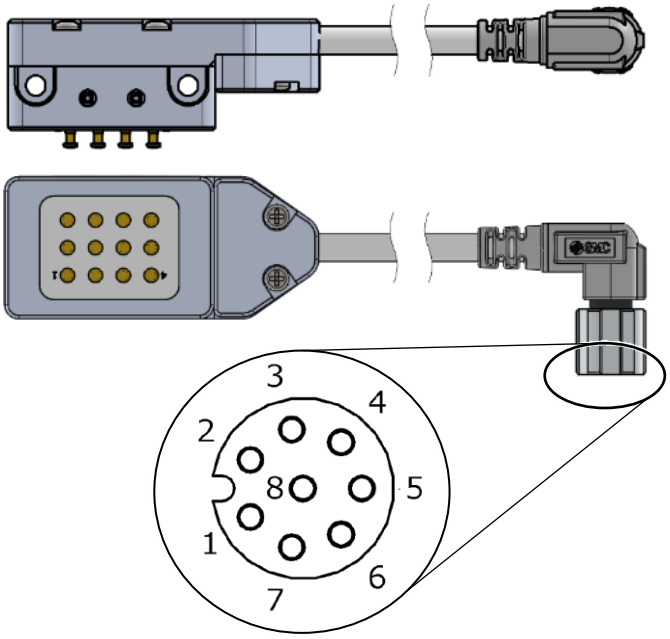
Tool plate side



Connector side	Contact number	Lead wire color	Discrete wire side
	1	White	
	2	Brown	
	3	Green	
	4	Yellow	
	5	Gray	
	6	Black	
	7	Blue	
	8	Red	
	9		
	10		
	11		
	12		

2-5-3.M8-8 pin connector specifications（Socket）

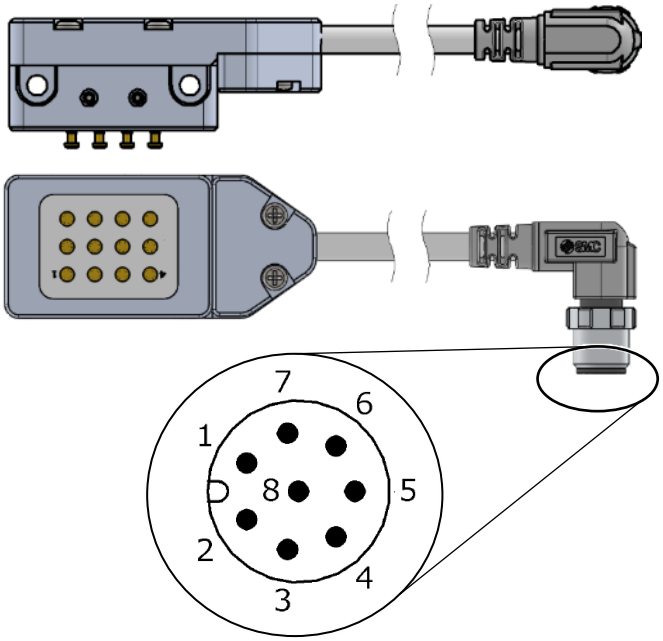
Main plate side



Connector side	Contact number	Lead wire color	M8-8 pin connector socket
	1	White	
	2	Brown	
	3	Green	
	4	Yellow	
	5	Gray	
	6	Black	
	7	Blue	
	8	Red	
	9		
	10		
	11		
	12		

2-5-4.M8-8 pin connector specifications（Plug）

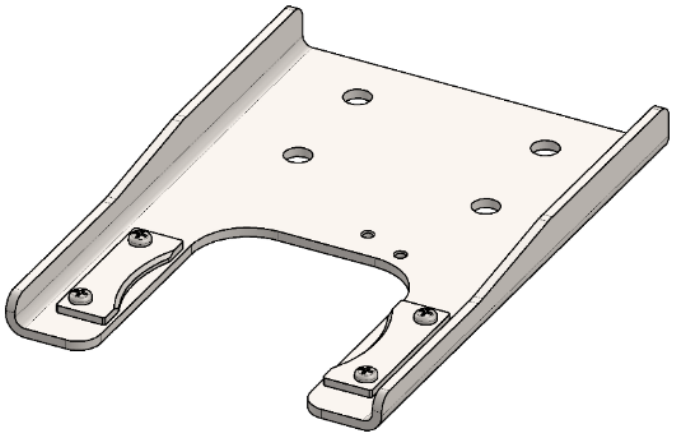
Tool plate side



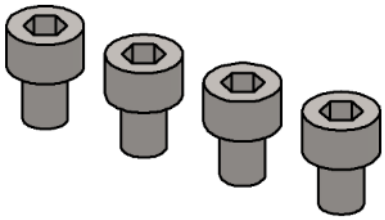
Connector side	Contact number	Lead wire color	M8-8 pin connector socket
	1	White	
	2	Brown	
	3	Green	
	4	Yellow	
	5	Gray	
	6	Black	
	7	Blue	
	8	Red	
	9		
	10		
	11		
	12		

3. Tool holder

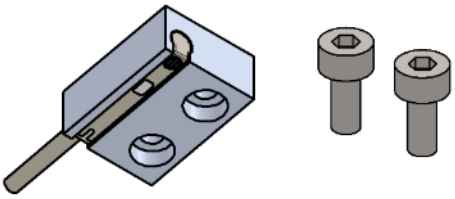
3-1.Included items



Tool holder



Bolts for mounting use 4 pcs.



Switch holder・auto switch（Option）

※The base and stand need to be prepared by the user.

3-2.How to Order

RMTA1 - 05 S1 A M9P

Work load

05	5kg
10	10kg
20	20kg

Auto switch

Nil	Without auto switch
M9□	Solid state auto switch

Switch holder

Nil	Without switch holder
A	With switch holder

Auto switch applicable part number

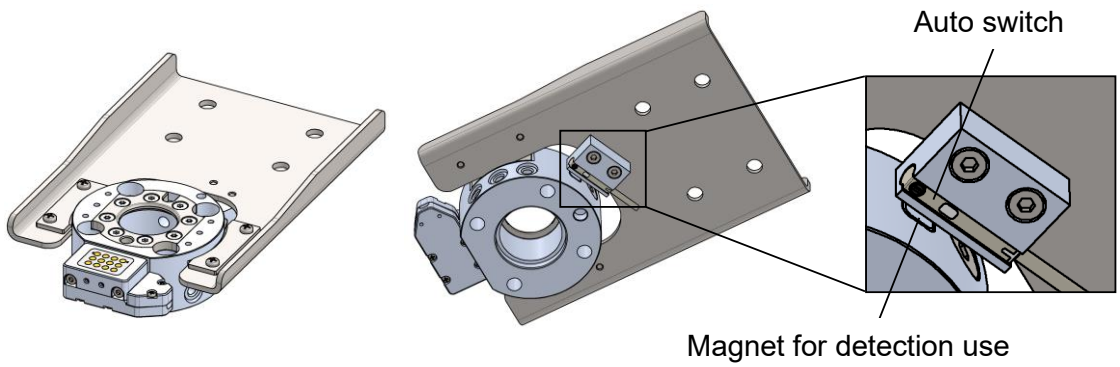
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model		Lead wire length (m)				Pre-wired connector	Applicable load	
					DC		AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	2 (L)	5 (Z)			
Solid state auto switch	-	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	-	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○		
				2-wire		12V		M9BV	M9B	●	●	●	○	○	-	
	Diagnosis (2-color indicator)			3-wire (NPN)		5V, 12V		M9NWV	M9NW	●	●	●	○	○	IC circuit	
				3-wire (PNP)				M9PWV	M9PW	●	●	●	○	○		
				2-wire		12V		M9BWV	M9BW	●	●	●	○	○	-	

※Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

※ Solid state auto switches marked with are produced upon receipt of order.
※ The auto switch is included in the same package (not assembled).

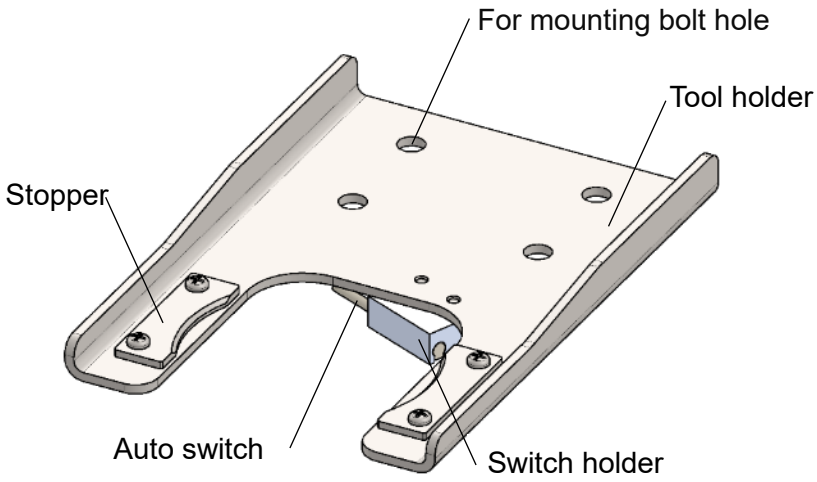
※Lead wire length symbols
0.5 m····· Nil (Example) M9NW
1 m····· M (Example) M9NWM
3 m····· L (Example) M9NWL
5 m····· Z (Example) M9NWZ

Switch holder (Installed state detection method)

Installed state detection	

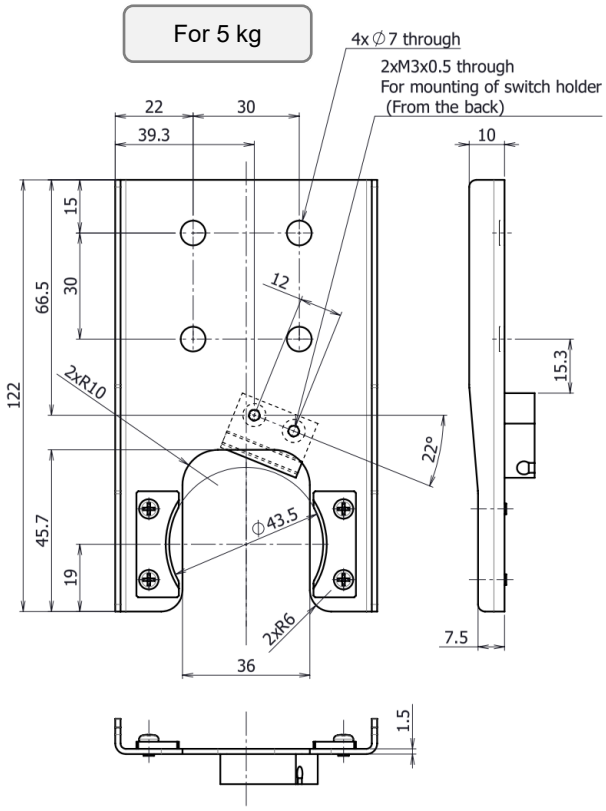
For details, refer to "6-8.How to use tool holder".

3-3.Descriptions and functions of components of product

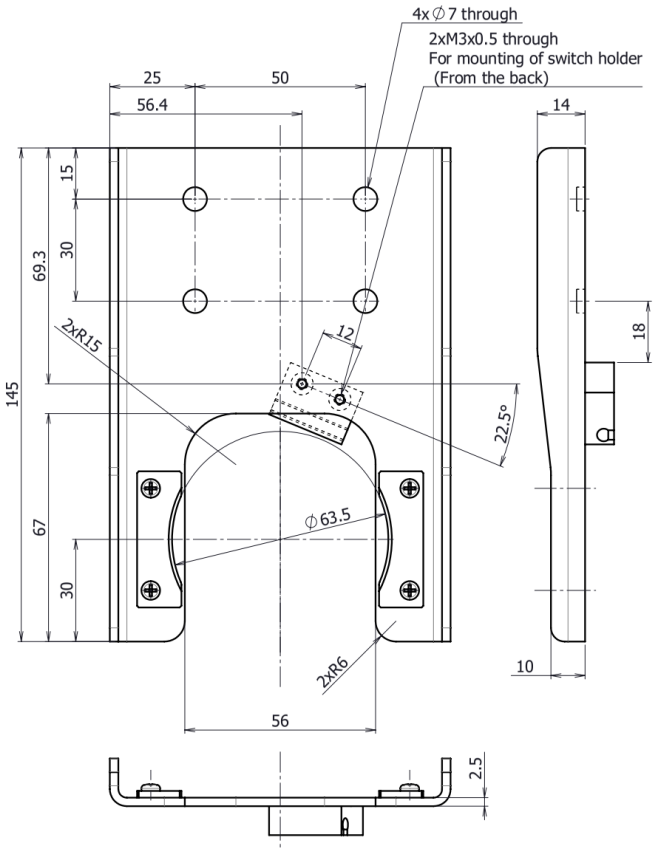


3-4.Dimensions

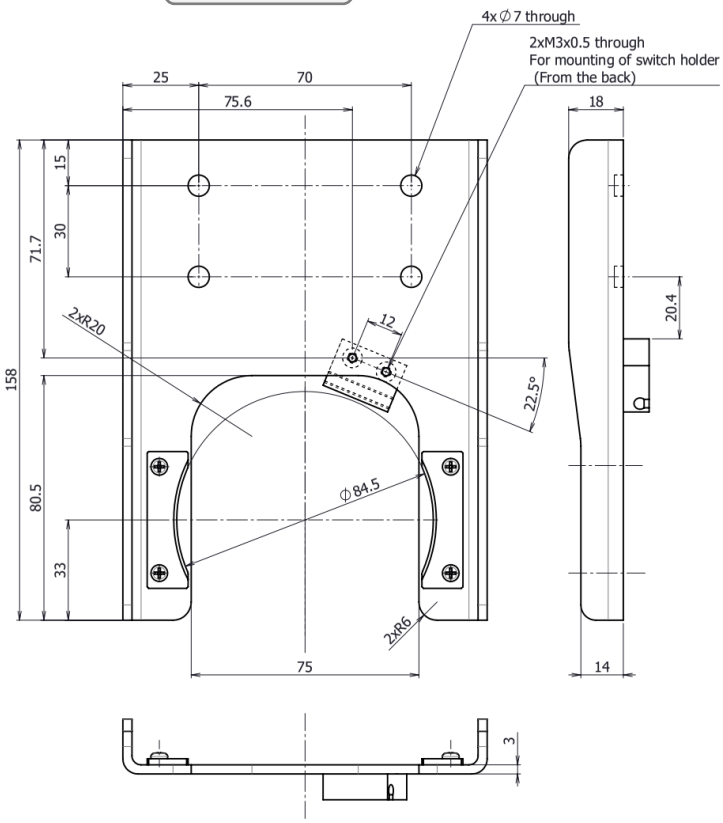
For 5 kg



For 10kg

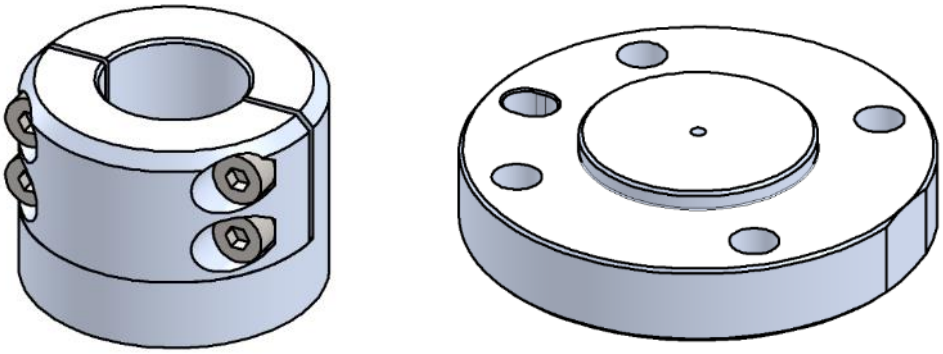


For 20kg

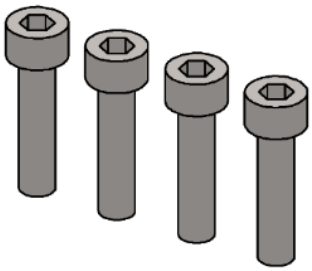


4. Robot adapter

4-1.Included items



Robot adapter



Bolts for mounting use 4

Positioning pin 1 pcs.
(For flange type only)

4-2.How to Order

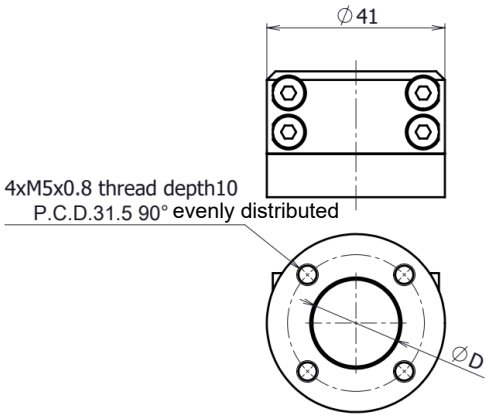
RMTA1 - 05CR16

Robot adapter

Symbol	Mounting main plate	Interface after conversion
05CR16	RMTA1-05M	For φ16 shaft
05CR20	RMTA1-05M	For φ20 shaft
05CR25	RMTA1-05M	For φ25 shaft
05C4	RMTA1-05M	For M6, 4 pcs. P.C.D.50
10C2	RMTA1-10M	For M5, 4 pcs. P.C.D.31.5
10C3	RMTA1-10M	For M6, 4 pcs. P.C.D.40
20C5	RMTA1-20M	For M6, 4 pcs. P.C.D.63
20C6	RMTA1-20M	For M6, 4 pcs. P.C.D.80

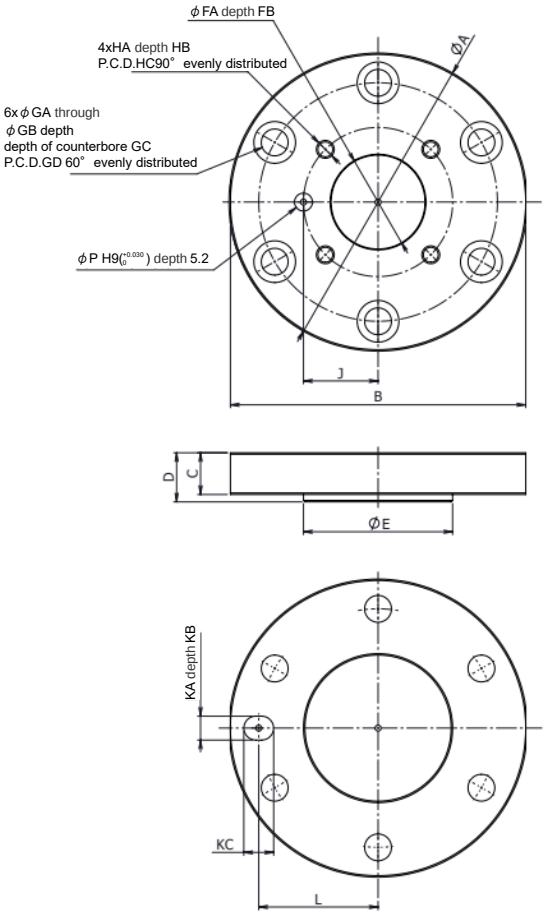
4-3.Dimensions

Shaft mounting

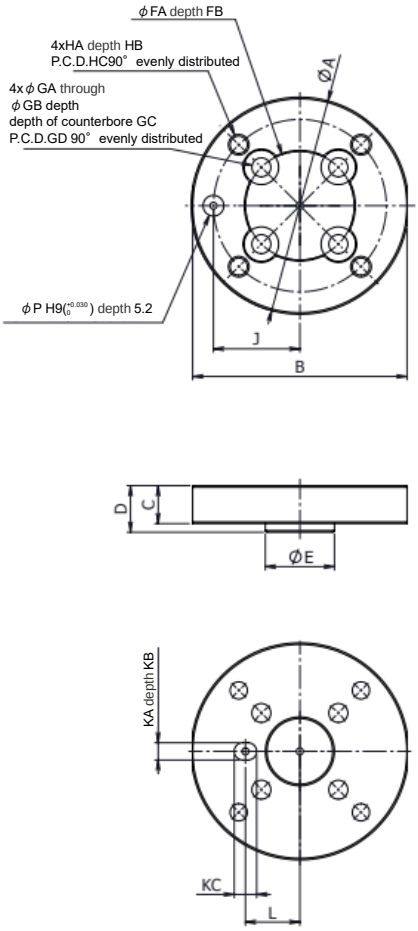


Model	ΦD
RMTA1-05CR16	16
RMTA1-05CR20	20
RMTA1-05CR25	25

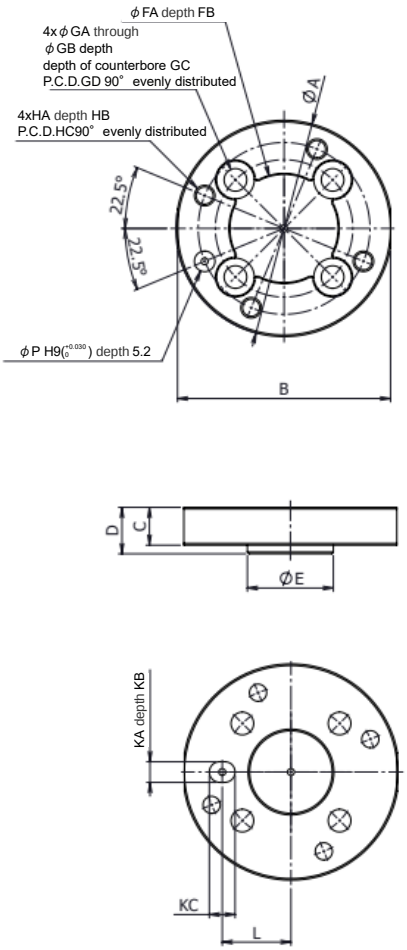
RMTA1-20C6



RMTA1-05C4
RMTA1-10C2



RMTA1-10C3
RMTA1-20C5



Model	A	B	C	D	E	FA	FB	GA	GB	GC	GD	HA	HB	HC	J	KA	KB	KC	L	P
RMTA1-05C4	63	62	11	13.5	Φ31.5f8 (-0.025 -0.064)	Φ20H8 (+0.033 0)	5	6.6	11	6.5	50	M5x0.8	7	31.5	15.75	6H9 (+0.030 0)	5.2	7.5	25	5
RMTA1-10C2	63	62	11	13.5	Φ20f8 (-0.020 -0.053)	Φ31.5H8 (+0.039 0)	3	5.5	10	8.4	31.5	M6x1	8	50	25	5H9 (+0.030 0)	5.2	6.5	15.75	6
RMTA1-10C3	63	62	11	13.5	Φ25f8 (-0.020 -0.053)	Φ31.5H8 (+0.039 0)	3	6.6	11	6.5	40	M6x1	8	50	-	6H9 (+0.030 0)	5.2	7.5	20	6
RMTA1-20C5	84	83	11	13.5	Φ40f8 (-0.025 -0.064)	Φ31.5H8 (+0.039 0)	3	6.6	11	6.5	63	M6x1	8	50	-	6H9 (+0.030 0)	5.2	7.5	31.5	6
RMTA1-20C6	100	99	14	16.5	Φ50f8 (-0.025 -0.064)	Φ31.5H8 (+0.039 0)	5	9	14	8	80	M6x1	8	50	25	8H9 (+0.036 0)	7.5	10	40	6

5.Installation

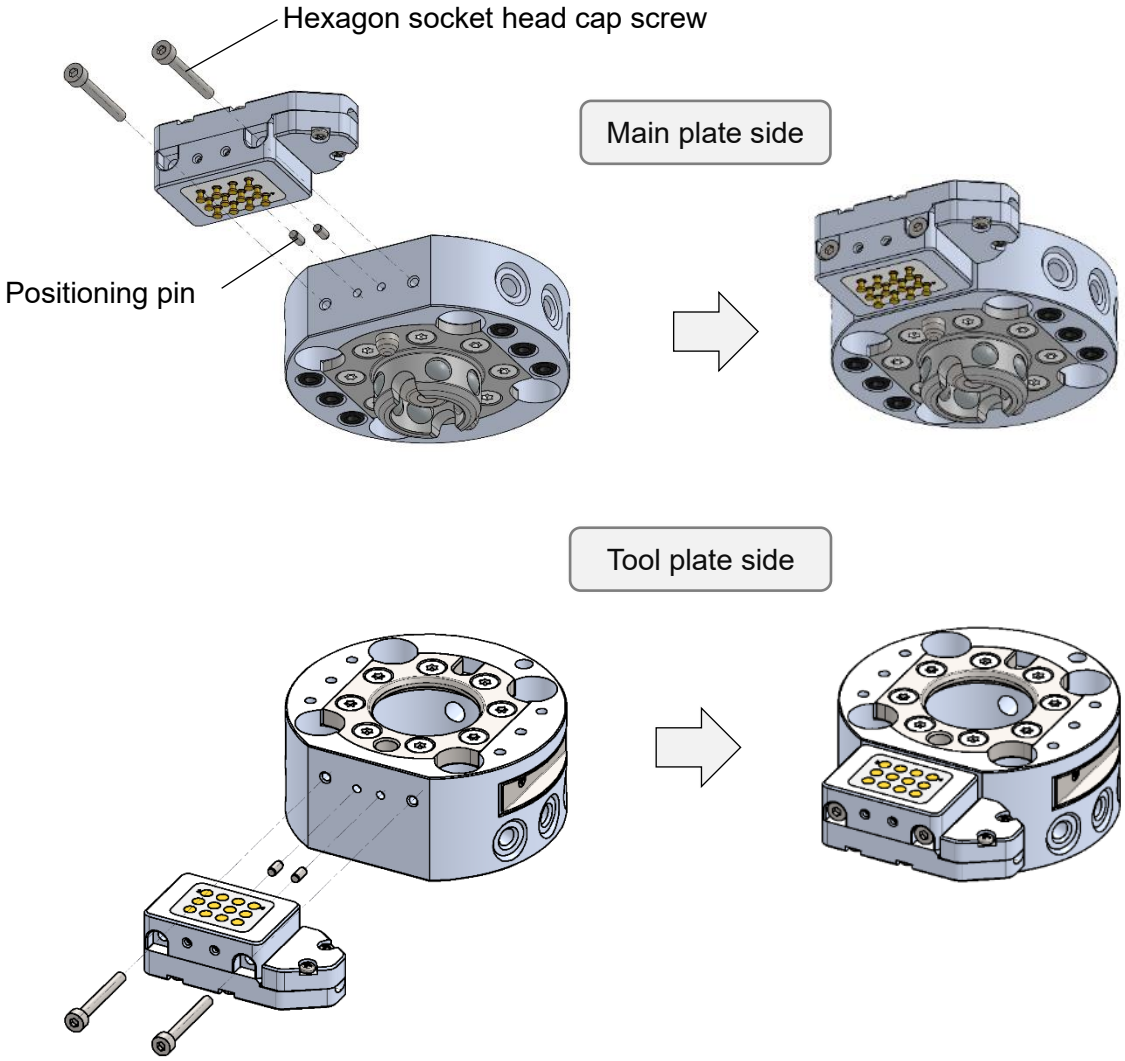
⚠ Warning

1. Install and operate the product only after reading the Operation Manual carefully and understanding its contents. Also, keep the manual where it can be referred to as necessary.
2. When installing the products, allow access for Maintenance.
3. Do not scratch or dent the product by dropping or bumping it when mounting. Slight deformation can cause inaccuracies or a malfunction.
4. When mounting the product, tighten the screws to the appropriate torque within the limiting range. Tightening with a torque above the range may cause malfunction, while insufficient tightening may cause slippage and dropping.

5-1. Connector

■ How to mount connector on main (tool) plate

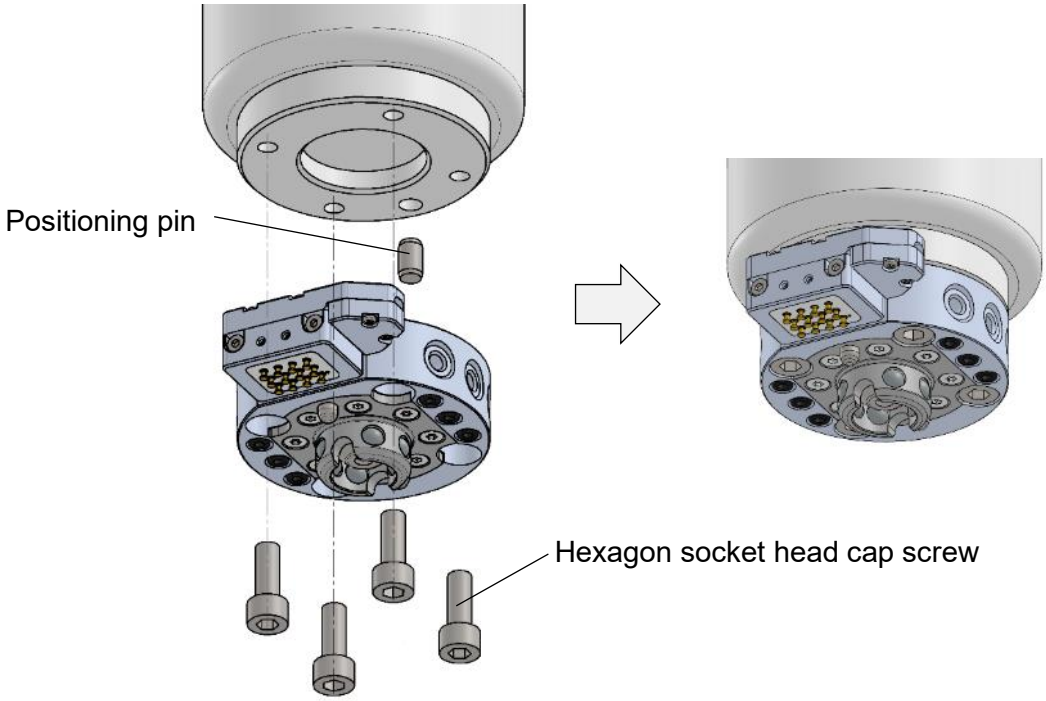
1) Set the positioning pins in the main (tool) plate. Pay attention not to lose the positioning pins.
2) Mount the connector on the main (tool) plate while aligning the positioning pins with the corresponding holes.
3) Fix the connector by using the hexagon socket head cap screws.（Tightening torque：0.36±0.03N・m）



5-2.Main plate・Tool plate

■ How to mount main plate

1) Set positioning pin on the mounting side of a component such as robot.
2) Mount the main plate while aligning the positioning pin with the corresponding hole.
3) Fix the connector by using the hexagon socket head cap screws.（Tightening torque：5.2±0.5N・m）

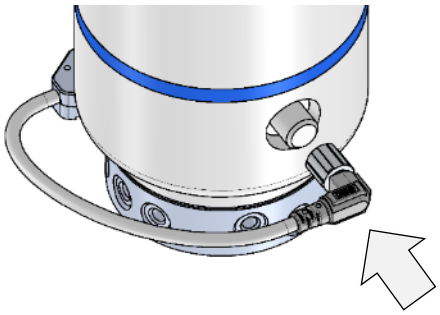


■ Mounting of M8 connector on tool I/O (for M8 connector specifications)

1) Insert the connector to the tool I/O and fix it by tightening the screw.

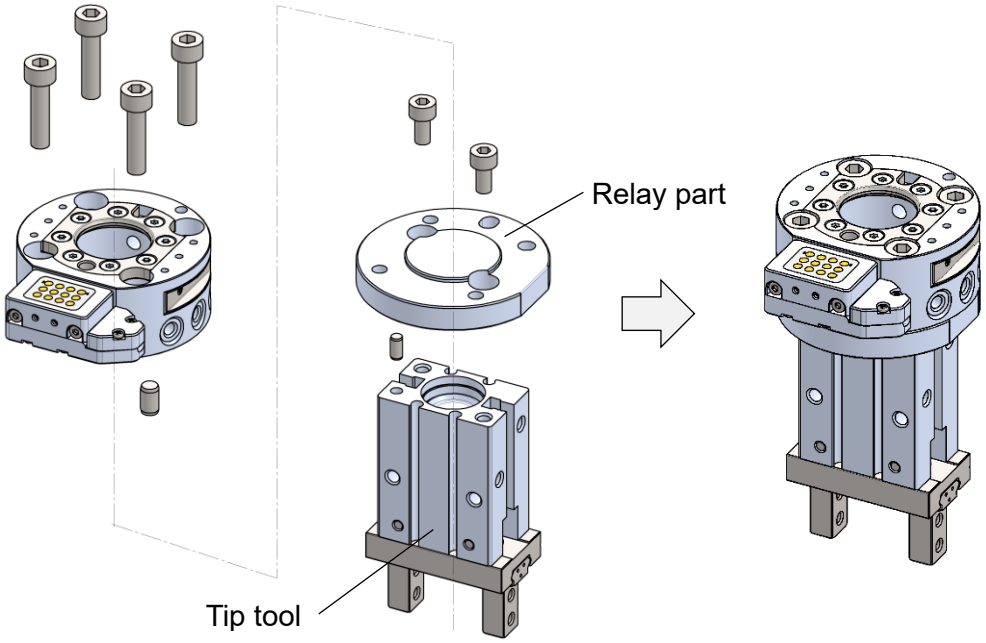
※Mount and dismount the connector when the product is not energized.

※When the soldering specifications or discrete wire specifications are selected, the user needs to conduct a wiring work to the robot controller.



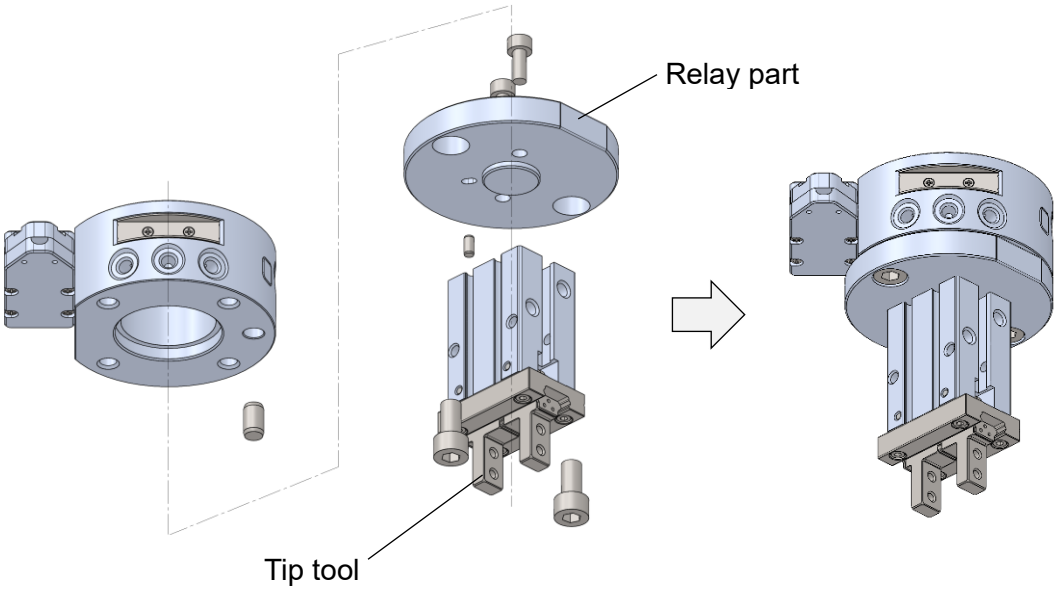
■ How to mount tool on tool plate（Mounting：through hole）

1) Prepare a relay part that suits the mounting pitch of the tool plate.
   If the tip tool is machined with a female thread conforming to ISO9409-1, a relay part is unnecessary.
2) Fix the tip tool to the relay part.
3) Set the positioning pin in the tool plate.
4) Mount the relay part while aligning the positioning pin with the corresponding hole.
5) Fix the relay part by using the hexagon socket head cap screws.（Tightening torque：5.2±0.5N・m）



■ How to mount tool on tool plate (mounting: female thread)

1) Prepare a relay part that suits the mounting pitch of the tool plate.
2) Fix the tip tool to the relay part.
3) Set the positioning pin in the tool plate.
4) Mount the relay part to the tool plate while aligning the positioning pin with the corresponding hole.
5) Fix the replay part by using the hexagon socket head cap screw.（Tightening torque：5.2±0.5N・m）

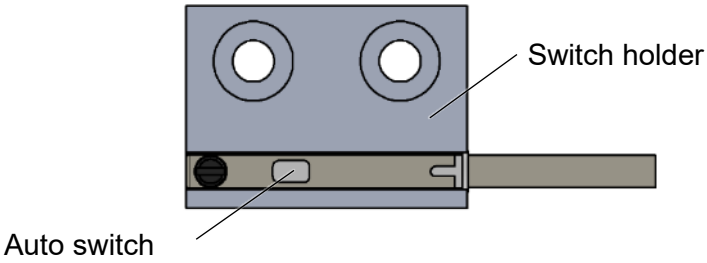


5-3.Tool holder

■ Mounting auto switch on switch holder

1） Mount the auto switch so that the end faces of the switch holder and auto switch are in contact with each other.

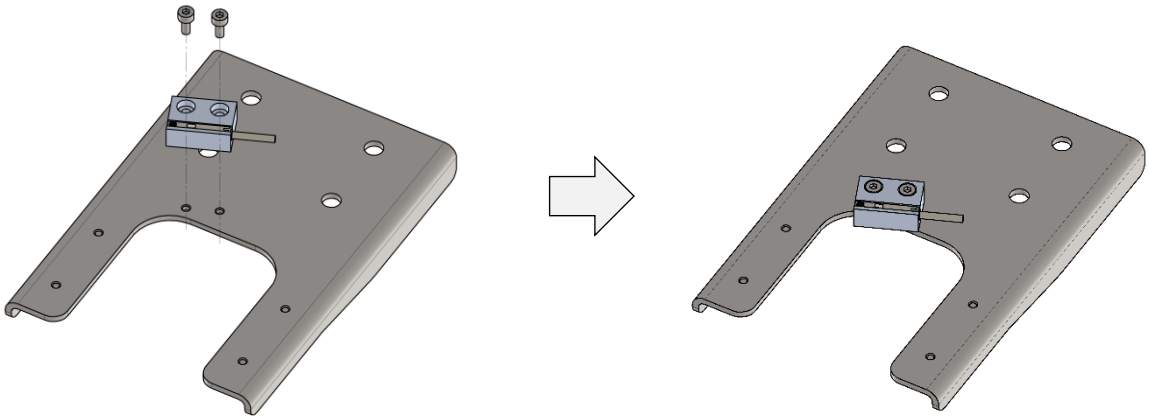
2） Tighten the screw of the auto switch.（Tightening torque：0.05～0.15N・m）



■ Mounting of switch holder on tool holder

1） Set the switch holder on the rear face of the tool holder.

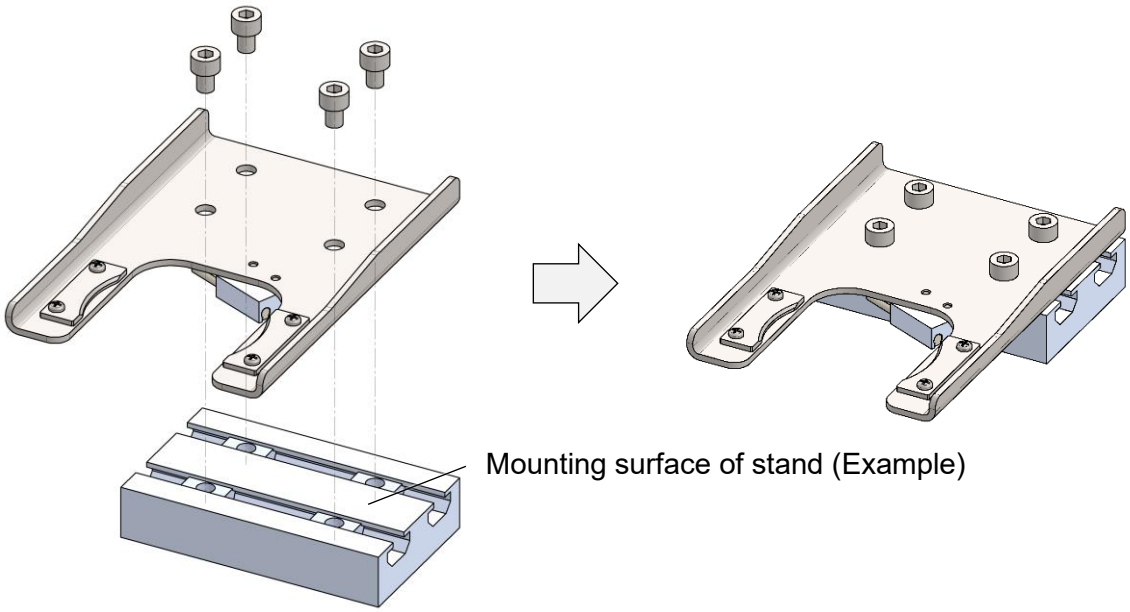
2） Fix the switch holder by tightening the hexagon socket head cap screws.
（Tightening torque：0.63±0.06N・m）
※If the response of the auto switch is poor, loosen the bolt and finely adjust the position of the switch.



■ Mounting of tool holder on stand

1） Set the tool holder on the stand.

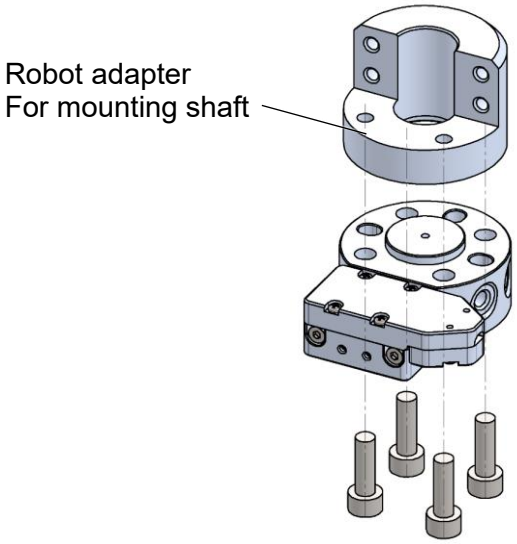
2） Fix the tool holder by tightening the hexagon socket head cap screws.（tightening torque：5.2±0.5N・m）
※The stand needs to be prepared by the user. For precautions concerning designing of the stand, refer to”6-8. How to use tool holder」”.



5-4.Robot adapter

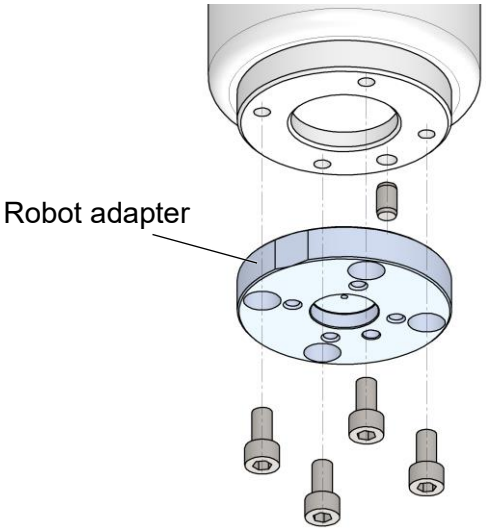
■ Mounting of robot adapter on main plate (Shaft mounting)

1) Set the main plate on the robot adapter.
2) Fix the main plate by using the hexagon socket head cap screws.（Tightening torque：3.0±0.3N・m）



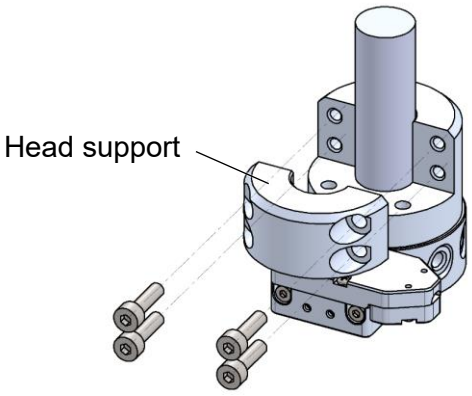
■ Mounting of robot adapter on robot (flange mounting)

1) Set the positioning pin in the robot.
2) Set the robot adapter on the robot.
3) Fix the robot adapter by tightening the hexagon socket head cap screws. (For tightening torque, refer to Table 1.)



■ Mounting of robot adapter on SCARA robot (shaft)

1) Insert the shaft to the robot adapter.
2) Fix the head support by tightening the hexagon socket head cap screws.



■ Mounting of main plate on robot adapter

1) Set the positioning pin in the robot adapter.
2) Set the main plate on the robot adapter.
3) Fix the main plate by tightening the hexagon socket head cap screws. (For tightening torque, refer to Table 1.)

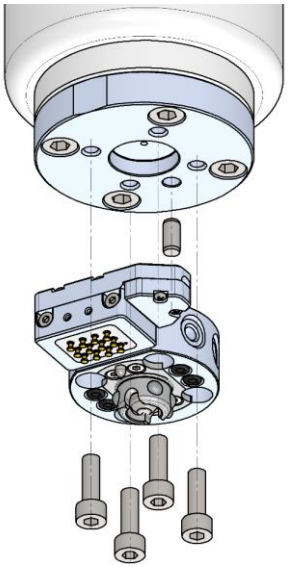
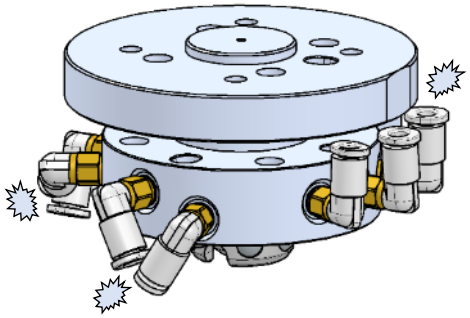


Table 1. Bolt sizes and tightening torques

Bolt size	Tightening torque[Nm]
M5x0.8	3.0±0.3
M6x1.0	5.2±0.5

5-5. Pipe fitting

- When you use union elbow fittings for piping use, a fitting may interfere with another fitting, robot, or adapter and the piping take-out direction may be restricted. Therefore, use extended male elbows: KQ2W or extension fittings as necessary. Refer to the catalog for details.



6. How to use or operate the product

6-1. Precautions for Design

⚠ Warning

1.The product is designed for use only in compressed air systems. Do not operate at pressures or temperatures, etc., beyond the range of the specifications, as this can cause damage or malfunction of the cylinder and other equipment. (Refer to the specifications.) Please contact SMC if using fluids other than compressed air. The product cannot be guaranteed if is used outside of the specification range.

2. When a moving workpiece may pose a danger to human body or there is a risk of pinching of hand or finger between the main plate and tool plate, take safety measures such as installation of protection cover.

3. There is a danger of workpieces dropping if there is a decrease in gripping force due to a drop in circuit pressure caused by a power failure, etc. It is necessary to take measures such as drop prevention so that injury and damage to machinery or equipment can be prevented.

4. If the product is used for a purpose other than the transportation of a workpiece such as positioning or clamping, please consult SMC.

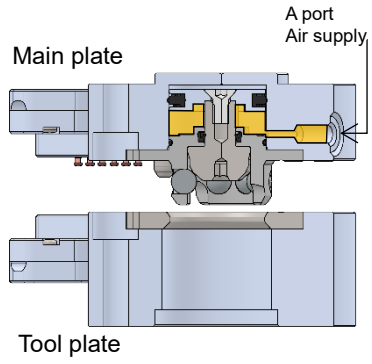
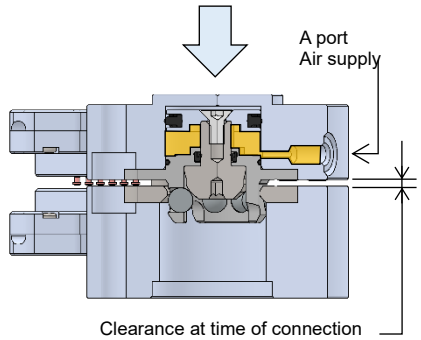
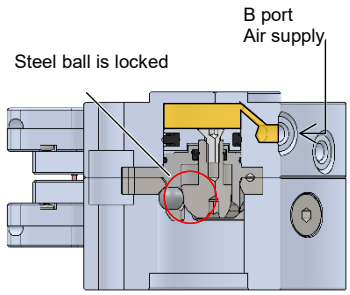
6-2.Procedures for connection and disconnection of main plate and tool plate

■ Connection from release state

1) Supply air to the A port.
2) Move the main plate to above the tool plate.
3) Put the main plate closer to the tool plate.
   Refer to the values in the table on the right for the clearances when close together.
4) Supply air to the B port. Now the connection has completed.

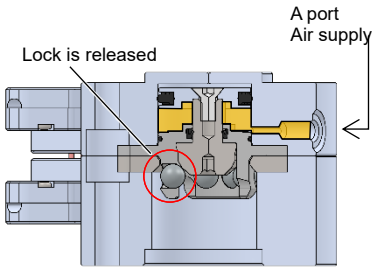
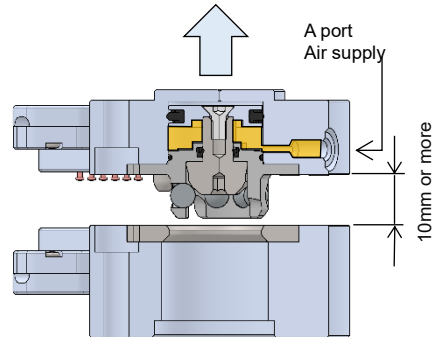
Recommended clearance before coupling

Model	Clearance
RMTA1-05*	0.8mm or less
RMTA1-10*	1.0mm or less
RMTA1-20*	1.2mm or less

1)～2)	3)	4)
		

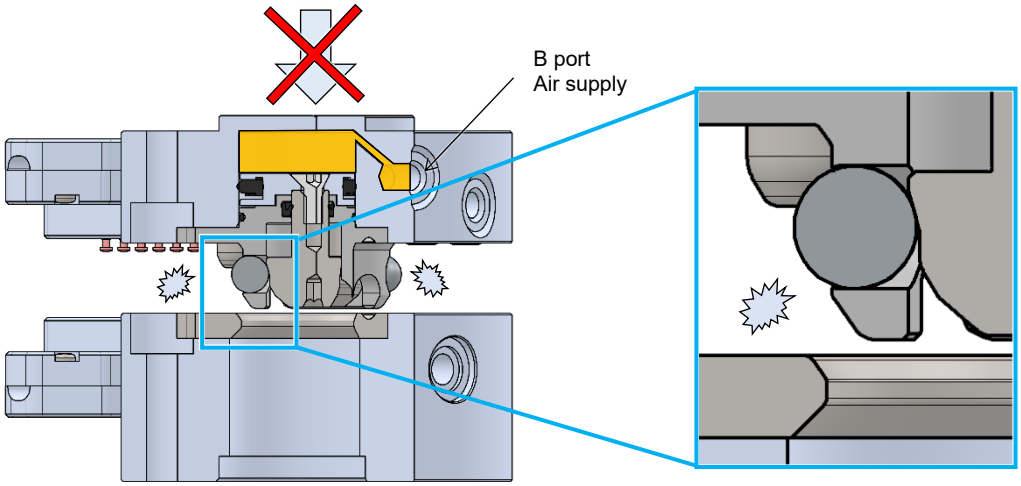
■ Release from connection state

1) Supply air to the A port.
2) Pull the main plate up by 10 mm or more.

1)	2)
	

⚠ Warning

If the connection operation is performed with pressure applied to the B port, the protruded steel ball collides with the tool plate. There is a risk of breakage of the product or failure of device. When performing a connection operation from the released state, be sure to first apply pressure to the A port.

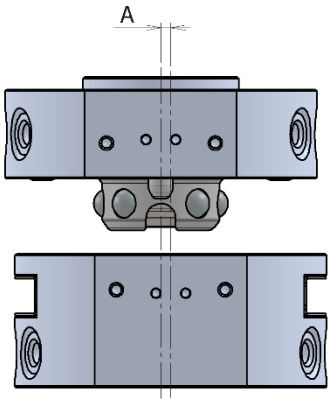


6-3.Position alignment between main plate and tool plate

When conducting a connection/release operation, perform position alignment in the following conditions.

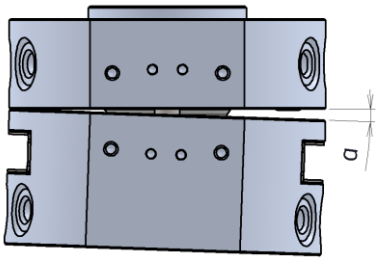
※This content shows the design value. When coupling, use the product with no misalignment or angular misalignment from the center as much as possible. High pressure is required for coupling, which will result in a less secure coupling.

■ Allowable positioning error



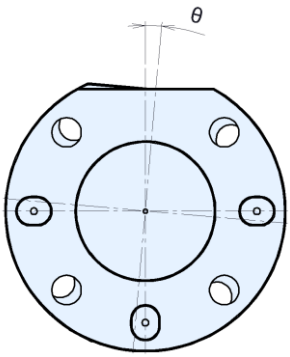
Model	RMTA1 -05(M/T)	RMTA1 -10(M/T)	RMTA1 -20(M/T)
Allowable positioning error A	±1.5mm	±2mm	±2mm

■ Allowable inclination angle



Model	RMTA1 -05(M/T)	RMTA1 -10(M/T)	RMTA1 -20(M/T)
Allowable inclination angle α	1.5°	1.5°	1.5°

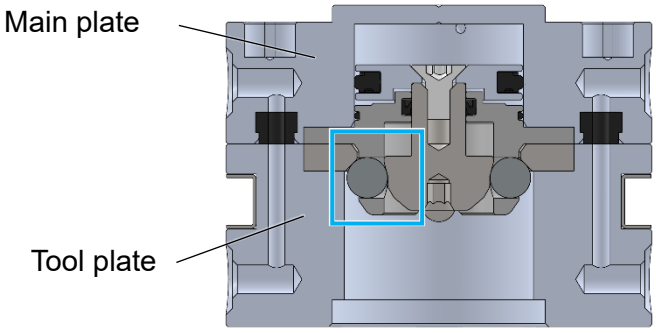
■ Allowable rotation angle

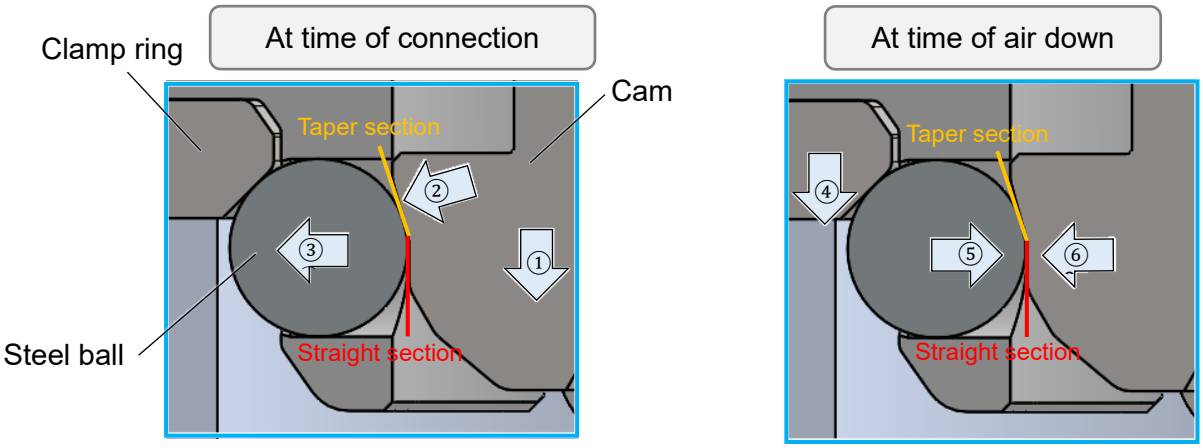


Model	RMTA1 -05(M/T)	RMTA1 -10(M/T)	RMTA1 -20(M/T)
Allowable rotation angle θ	±3°	±3°	±3°

6-4.Retention of connection at the time of air down

This product employs a mechanism that mechanically retains the connected state even when the air supply is shut off due to an unexpected trouble or power failure.





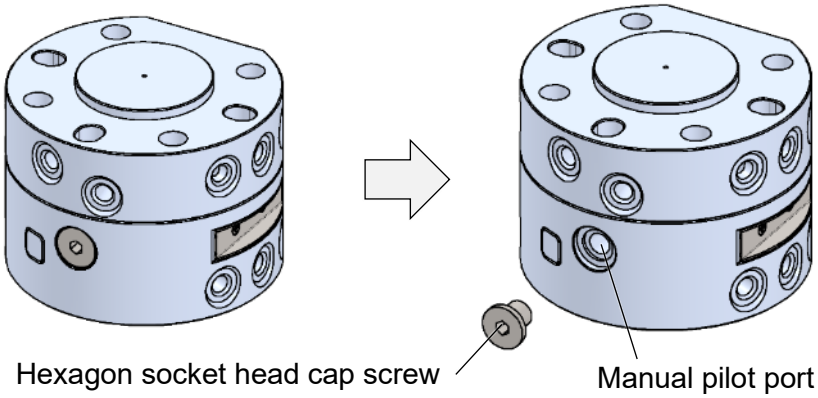
① Due to the force of the compressed air, the cam moves downward.
② The taper section of the cam pushes the steel ball out.
③ The steel ball is caught by the clamp ring to make connection.
④ When air supply is shut off, a force is applied in the direction in which the main plate and tool plate are separated from each other.
⑤ The steel ball attempts to move toward the cam.
⑥ The steel ball makes contact with the straight section of the cam, but no force is generated in the direction in which the cam moves, the connection is retained.

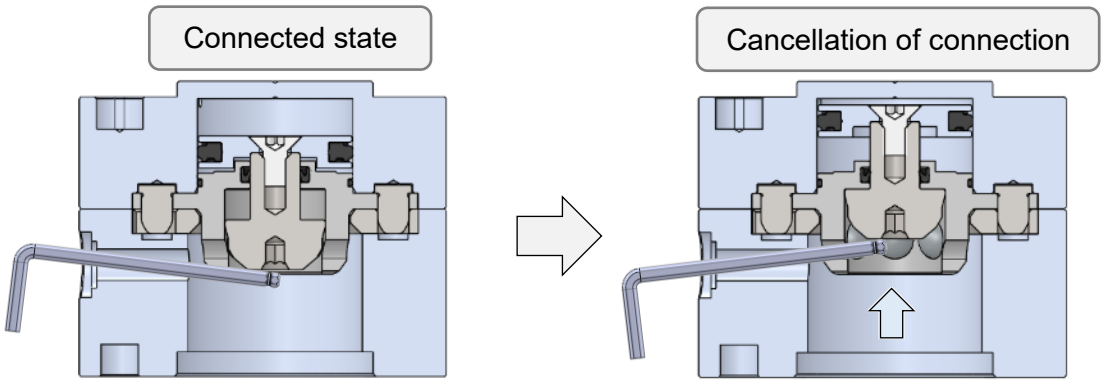
⚠ Warning

This mechanism aims at drop prevention in emergency. When the air supply is shut off, do not transfer the workpiece. Failure to follow this instruction may lead to breakage of internal parts.

6-5.Cancellation of connection by means of manual operation

When the tool plate with the through hole mounting specifications is used, the connection between the main plate and tool plate may not be able to be cancelled due to shutoff of air or for other reason in the event of emergency. In this case, use of the manual pilot port allows you to cancel the connection.



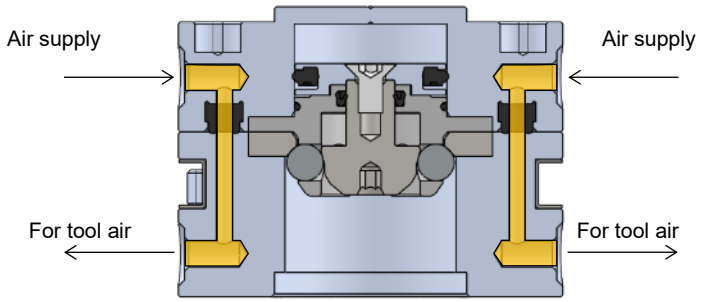


⚠ Warning

The tool plate may fall when the coupling is disconnected. Be sure to perform this operation with the tool plate in a condition that prevents it from falling.

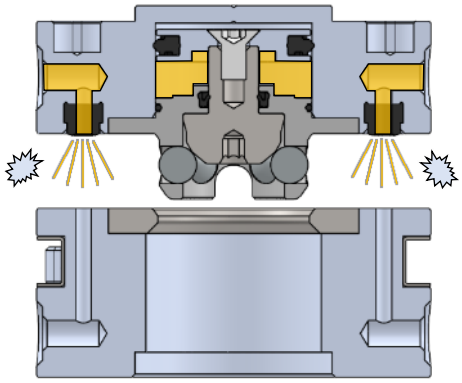
6-6.Air port for tool

As the main plate and tool plate are connected with each other, air supply to the airport for tool is enabled.



⚠ Warning

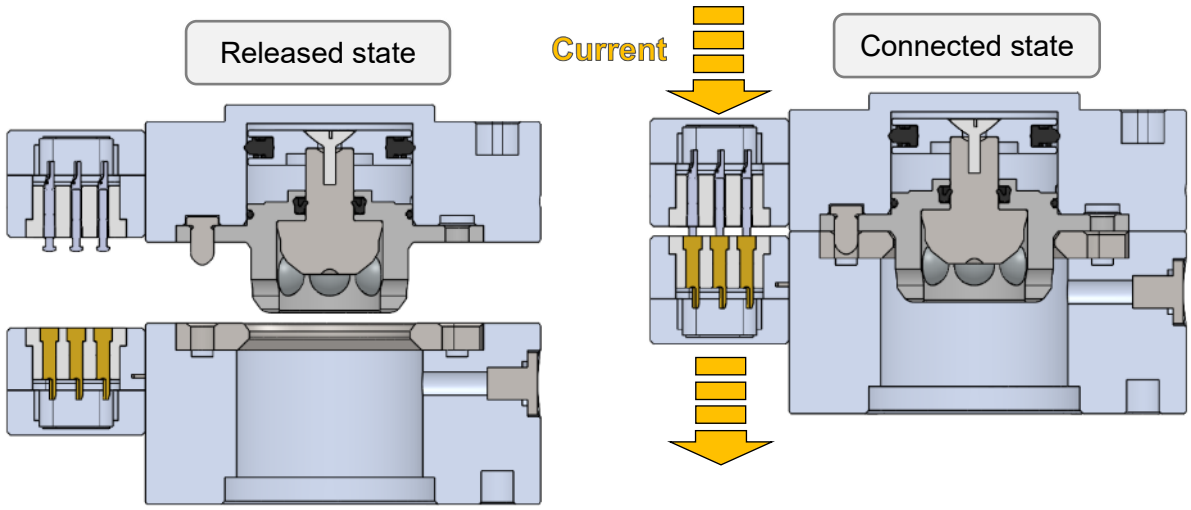
If you cancel the connection between the main plate and tool plate with air supplied to the airport for tool, the air will be released from the connection location, which poses a danger. When cancelling the connection, be sure to shut off air for tool.



6-7.Connector

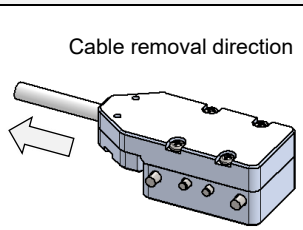
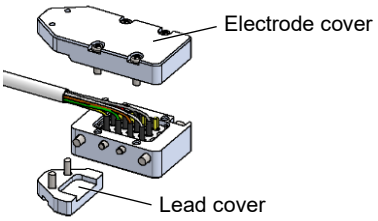
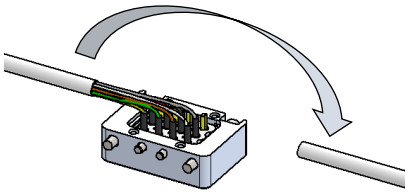
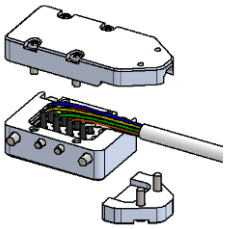
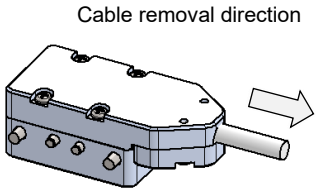
■ Continuity of connector

Due to connection between the main plate and tool plate, the connectors communicate with each other.



■ Change of cable removal direction

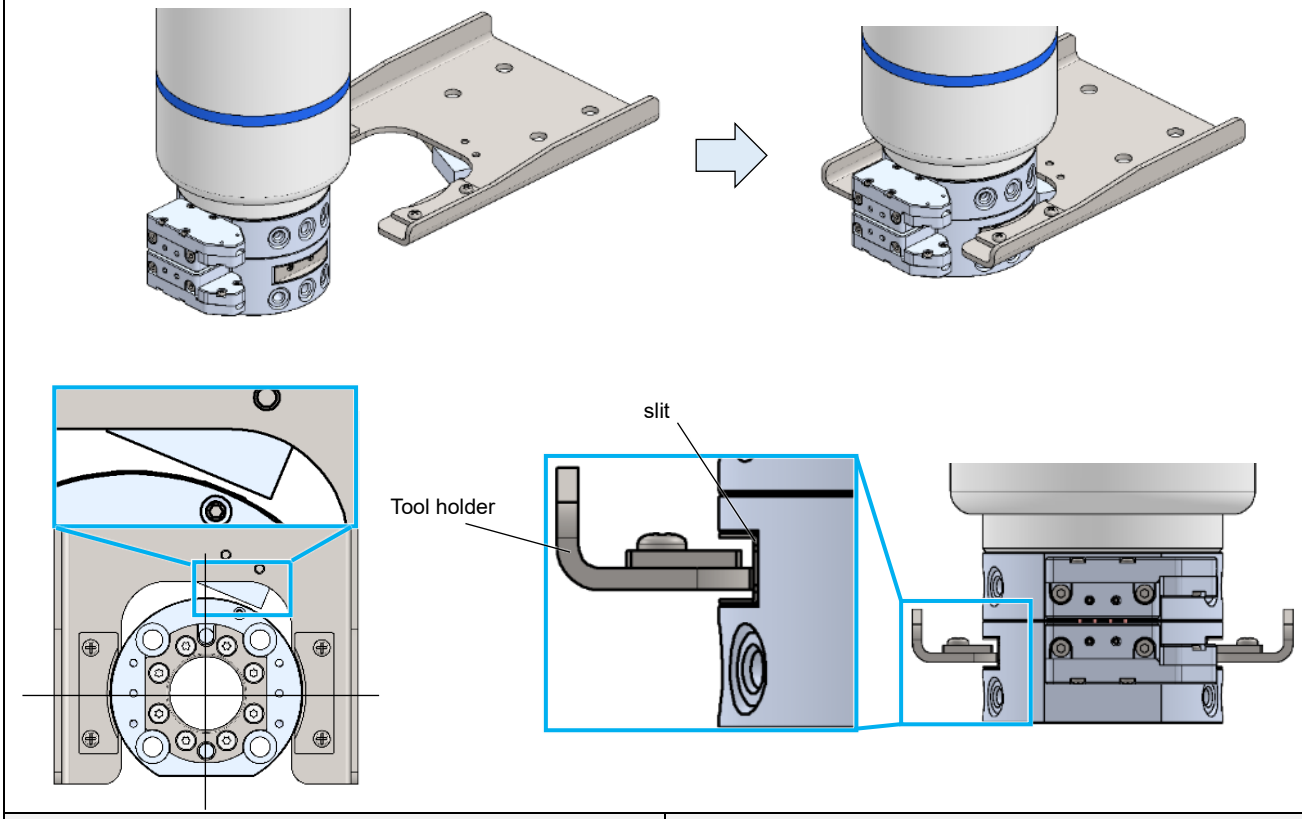
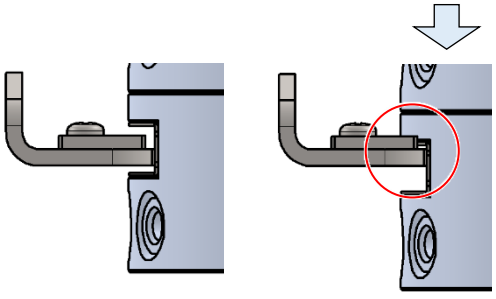
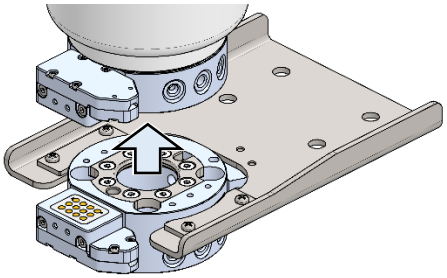
1) Dismount the electrode cover and lead cover.
2) Move the cable in the opposite direction.
※If you apply an excessive force, the soldered part may be broken. Carefully conduct this work.
3) Mount the electrode cover and lead cover.（Tightening torque：0.18±0.02N・m）

Condition at time of shipment	1)	2)
		
3)	After change	
		

6-8.How to use tool holder

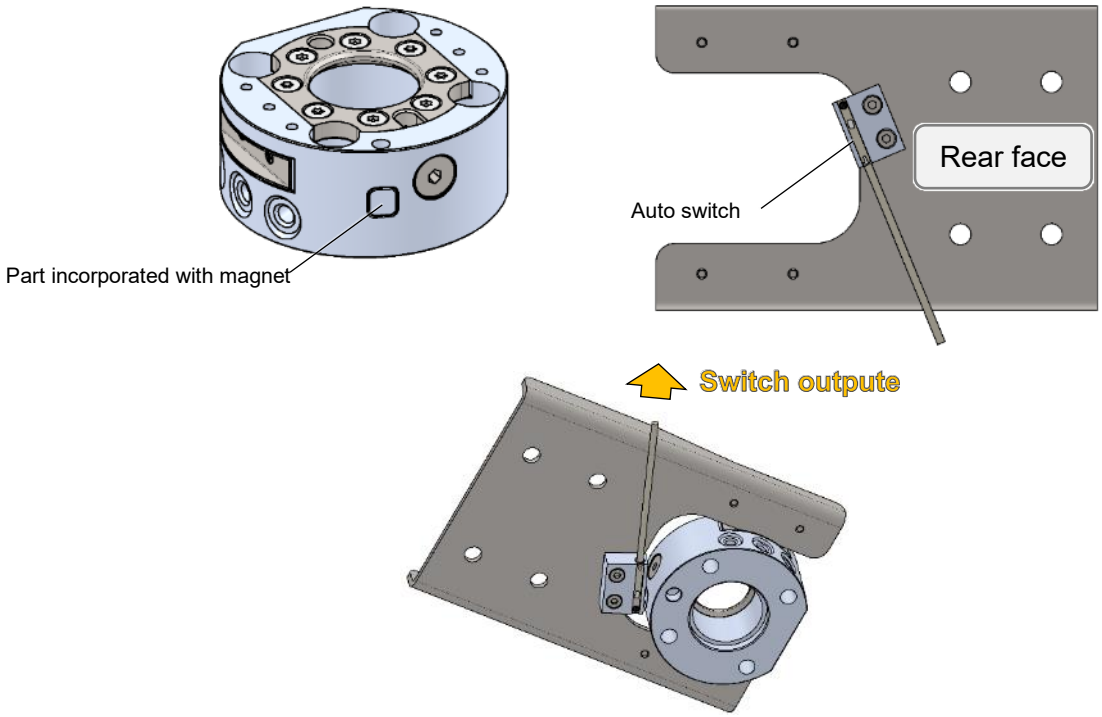
■ How to install tool plate on tool holder

1) Move the tool plate to the center of the tool holder. At this point, perform teaching of the robot so that the slit of the tool plate and the tool holder do not make contact with each other.
2) Move the tool plate closer to the tool holder.
3) Cancel the connection, and move the robot arm upward.

<table>
<tr><th colspan="2">1)</th></tr>
<tr><td colspan="2"> 
</td></tr>
<tr><th>2)</th><th>3)</th></tr>
<tr><td>Move down the tool plate as far as it does not contact the tool holder.
  </td><td>  </td></tr>
</table>

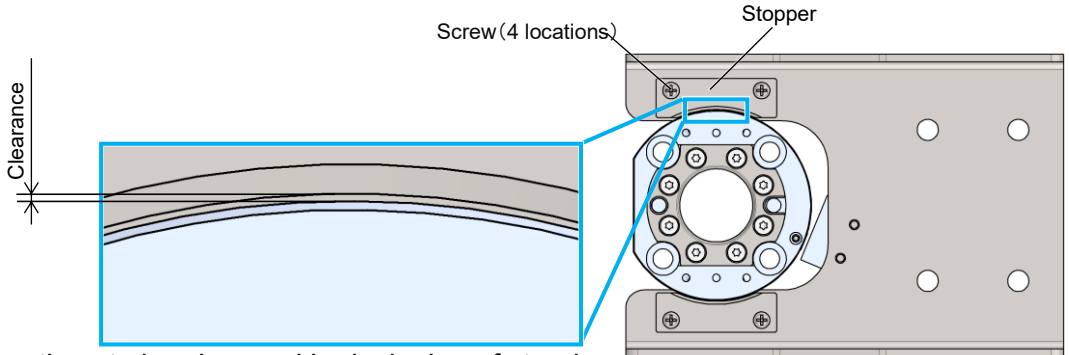
■ How to check the installation condition of tool plate on tool holder

The tool plate has a built-in magnet to detect its installation in the tool holder. An auto switch fixed to the tool holder reacts to the magnet to detect that the tool plate has been installed.



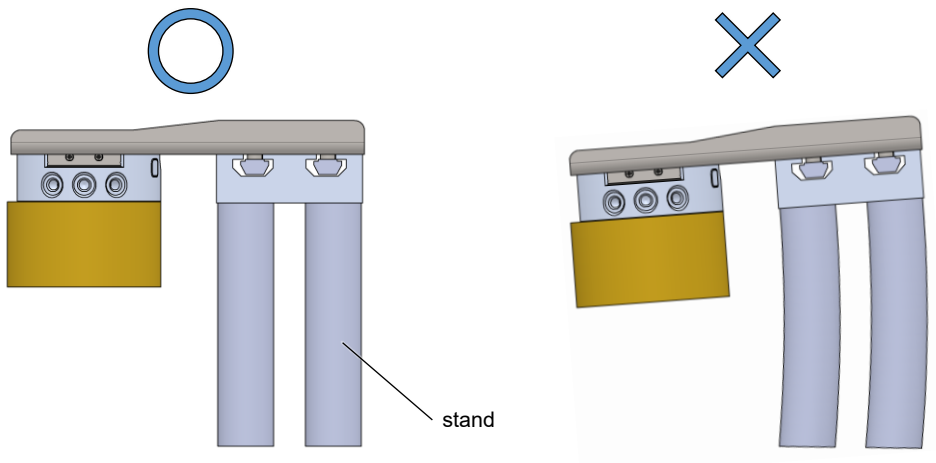
■ Fine adjustment of tool holder

The stopper fixed to the tool holder is fixed so as to allow a clearance when the tool plate is installed. Use the tool holder by adjusting the clearance as necessary depending on the application to be used.



■ Precautions to be observed in designing of stand

Design a stand with a sufficient rigidity so that the holder is kept horizontal even when a heavy workpiece is set on it.



6-9.Air supply

⚠ Warning

1. Please contact SMC when using the product in applications other than with compressed air.
2. Compressed air containing a large amount of condensate can cause malfunction of pneumatic equipment. An air dryer or water droplet separator should be installed upstream from filters.
3. If condensate in the drain bowl is not emptied on a regular basis, the condensate will overflow and allow it to enter the compressed air lines. This will cause a malfunction of pneumatic equipment. If the drain bowl is difficult to check and remove, installation of a drain bowl with an auto drain option is recommended.
4. Use clean air.
   Do not use compressed air that contains chemicals, synthetic oils including organic solvents, salt or corrosive gases, etc., as it can cause damage or malfunction.
   For detailed information regarding the quality of the compressed air described above, refer to SMC's "Air Cleaning Systems".

⚠ Caution

1. When extremely dry air is used as the fluid, degradation of the lubrication properties inside the equipment may occur, resulting in reduced reliability (or reduced service life) of the equipment. Please consult with SMC.
2. Install an air filter.
   Install an air filter upstream near the valve. A filtration degree of 5μm or less should be selected.
3. Install an aftercooler, air dryer or drain catch before the filter and take appropriate measures.
   Compressed air that contains excessive foreign material may cause malfunction of valves and other pneumatic equipment.
   Install an aftercooler, air dryer or drain catch before the filter and take appropriate measures.
4. Use the product within the specified fluid and ambient temperature range.
   When operating at temperatures 5°C or lower, water in the circuit may freeze and cause breakage of seals or malfunction. Measures should be taken to prevent freezing.
   For detailed information regarding the quality of the compressed air described above, refer to SMC's "Air Cleaning Systems".

6-10.Piping

⚠ Caution

1. Refer to the Fittings and Tubing Precautions (Best Pneumatics) for handling one touch fittings.
2. Before piping
   Before piping is connected, flush thoroughly with air or wash to remove chips, cutting oil and other debris from inside the pipe.

6-11.Operating environment

⚠ Warning

1. Do not use in an environment where corrosive gases, chemicals, sea water, water or steam are present.
2. Do not use in direct sunlight.
3. Do not operate in a location subject to vibration or impact.
4. Do not mount the product in locations where it is exposed to radiant heat.
5. Do not use this product in an area that is dusty, or in an environment in which water or oil splashes on the cylinder.

6-12.Lubrication

⚠ Caution

1. The non-lube type tool changer is lubricated at the factory, and can be used without any further lubrication.
   If a lubricant is used in the system, use turbine oil Class 1 (with no additive) ISO VG32.
   Furthermore, once lubrication is applied, it must be continued.
   If lubrication is later stopped, malfunction can occur due to loss of the original lubricant.

Refer to the Material Safety Data Sheet (MSDS) of the hydraulic fluid when supplying the fluid.

7. Maintenance

7-1. Precautions

⚠ Warning

1. Maintenance should be performed according to the procedure indicated in the Operation Manual. If handled improperly, malfunction and damage of machinery of equipment may occur.
2. If handled improperly, compressed air can be dangerous. Assembly, handling, repair and element replacement of pneumatic systems should be performed by a knowledgeable and experienced person.
3. Remove drainage moisture from air filter regularly.
4. When components are removed, first confirm that measures are in place to prevent any workpieces from dropping, run-away of equipment, etc. Then cut off the supply pressure and electric power, and exhaust all compressed air from the system using the residual pressure release function. Turn off the power supply, stop the air supply and exhaust all compressed air from the system.
5. Do not allow people to enter or place objects in the carrying path of the tool changer. This can cause an injury or accident.
6. Do not put your hand or other body part between the main plate and tool plate. This can cause an injury or accident.
7. When dismounting the tool changer, confirm that no workpiece is being transferred and then bleed the compressed air and dismount the tool changer. If a workpiece is still being held, there is a danger of it being dropped.

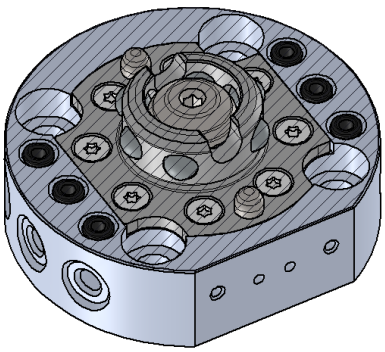
7-2.Cleaning of main plate and tool plate

If this product is used while wear particles, dirt, foreign matter, or other substance is adhered on the main plate, tool plate positioning pin, steel ball, or seating surface, an operation failure or air leakage may be caused.
Periodically wipe off dirt and apply grease (Multi Purpose No.2) for cleaning.

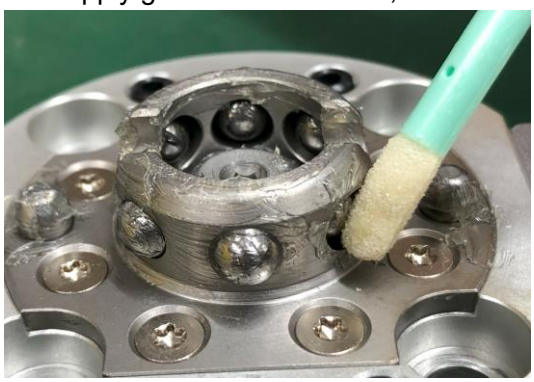
■ Main plate cleaning

1. Pressurize the operating port (for release) of the main plate, retract the cam (piston), and wipe off and clean the clamp base by rotating a steel ball from the surface/backside of the clamp base, wiping off any wear dust or dirt.

2. Wipe off and clean the contact area with the tool plate (shaded area in the figure below), cam surface, locating pin, packing, and any other dirty areas.
   (If necessary, pressurize the operation port (for coupling) of the main plate, and put the cam (piston) out.)



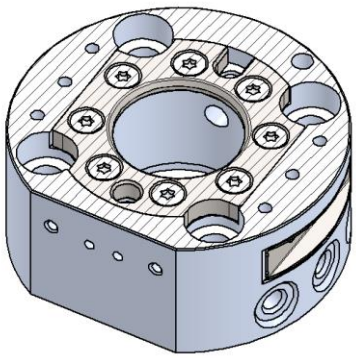
3. Apply grease to steel balls, cam surfaces, and locating pins, referring to 1 and 2.

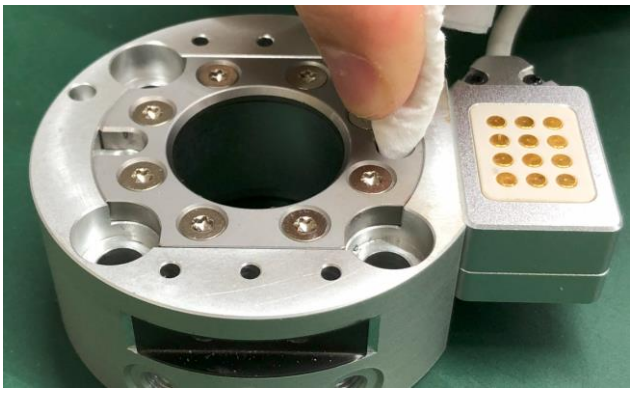


■ Tool plate cleaning

1. From the underside of the tool plate, access the steel ball contact area of the clamp ring and wipe off and clean any wear debris or dirt.

2. Wipe off and clean the contact area with the main plate (shaded area in the figure below), the positioning pin holes, and any other dirty areas.

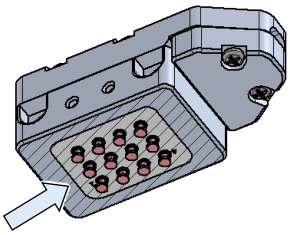




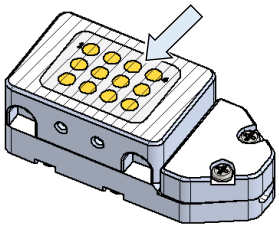
7-3.Cleaning of connector

When dirt adheres to the electric contact, conduction between contacts becomes unlikely to occur.
Periodically conduct cleaning by, for example, wiping off dirt.

Main plate side

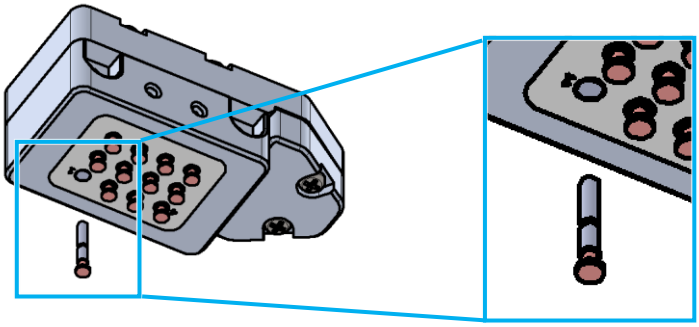


Tool plate side



7-4.How to replace connector probe pin

It is possible to replace the probe pin of the main plate side connector.



The probe pin can be easily pulled out.

Probe for replacement use

Description	Model	Item count
Probe set	RMTA1-A0029-01	1 pcs.
	RMTA1-A0029-06	6 pcs.