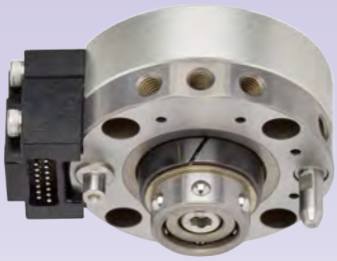
Robotic Hand Changer



Model SWR

PAT.

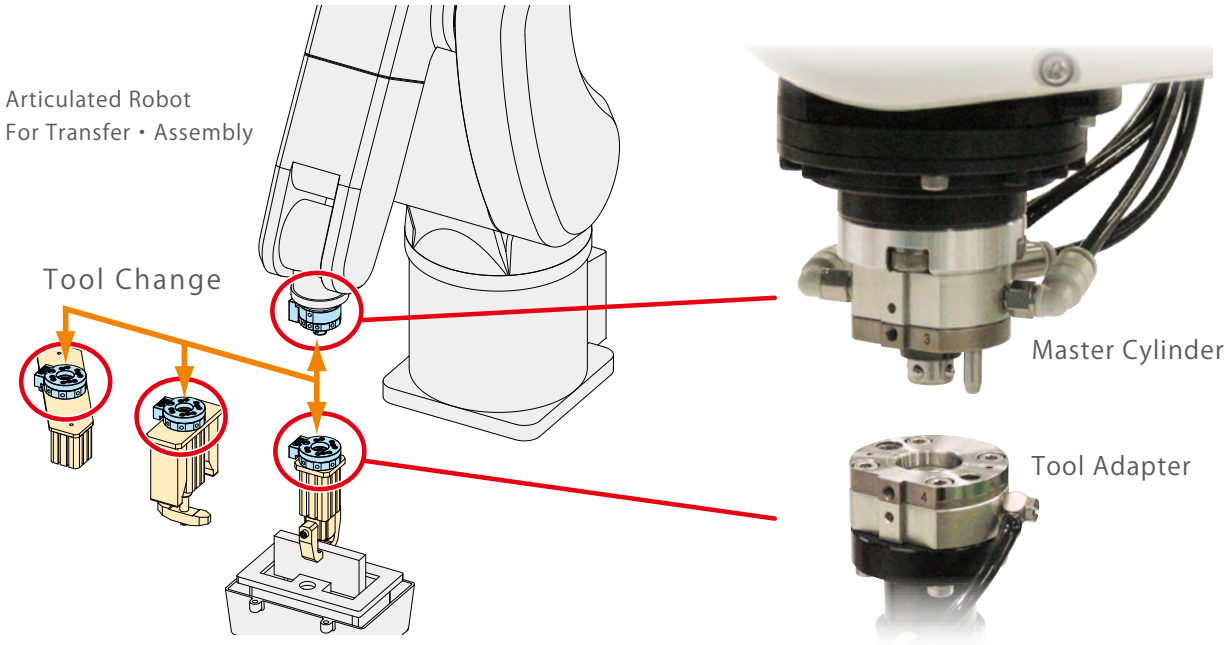
Smaller, Lighter, and Stronger!!

Payload：3kg , 7kg , 12kg , 25kg , 50kg , 75kg , 120kg , 230kg

Repeatability：3μm　High Rigidity：Zero Backlash

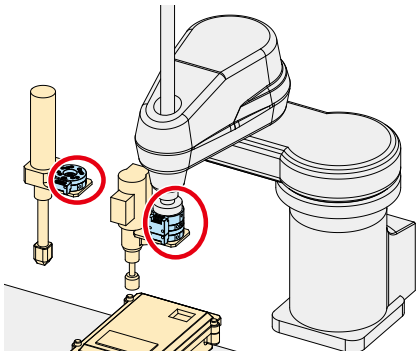
Long Life：Durability of more than One Million Cycles

High accuracy Robotic Hand Changer enables multiple functions of robots and setup time reduction.
It enhances the productivity of automated production line.

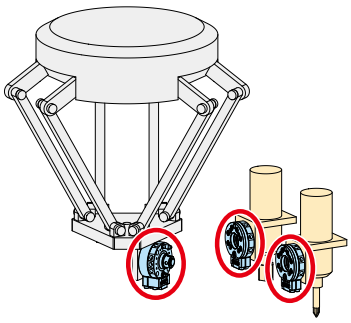


Application Examples

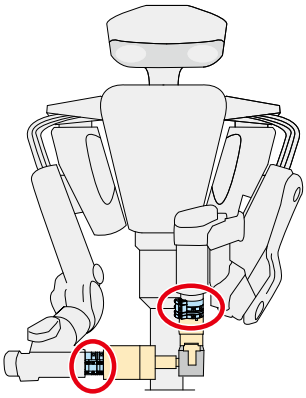
One robot performs multiple operations.



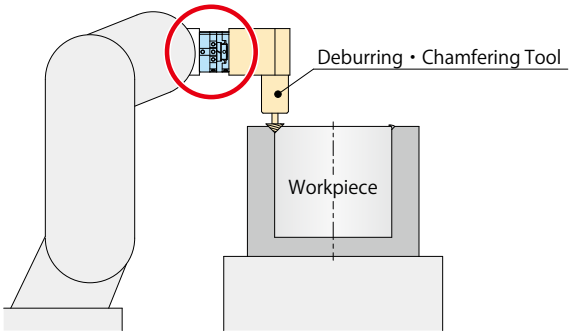
SCARA Robot
For Nut Runner Tool Change



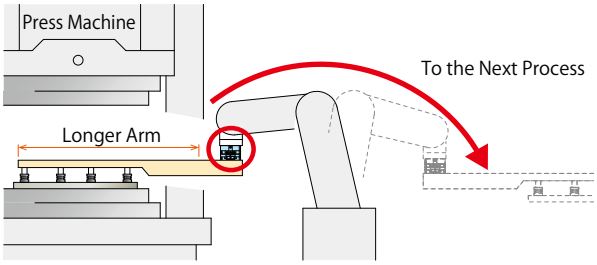
Parallel Link Robot
For Screw Tightening



Humanoid Robot
For Assembly



For Changing
Deburring and Machining Tools



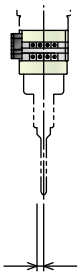
For Changing Transfer Robot Arms of
Automatic Line of Press Machines

High Accuracy Repeatability

Repeatability：3 μm
High accuracy locating with dual contact by the taper sleeve. It enables high accuracy repeatability.

Soldering

Sealing



Minimum Core Deflection

Minimum deflection of the tool end enables accuracy process.

Prevents Core Deflection and Chattering

No clearance or backlash with dual contact by the taper sleeve. It prevents core deflection and chattering due to the work load, and enhances productivity.

Deburring

Screw Tightening

Machining (Drilling)

Suitable for the work which generates high torque.

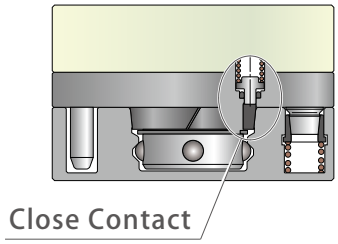
Features

Light • Compact

Suitable for robotic hands which are severe on weight limits. Light Weight yet Large Load Capacity!!

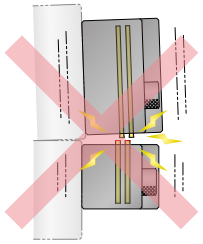
Long Life and High Rigidity

Zero backlash when connecting and the durability is 1 million cycles. Even after 1 million cycles, repeatability 3 μm is maintained.



Zero backlash prevents core deflection and chattering.

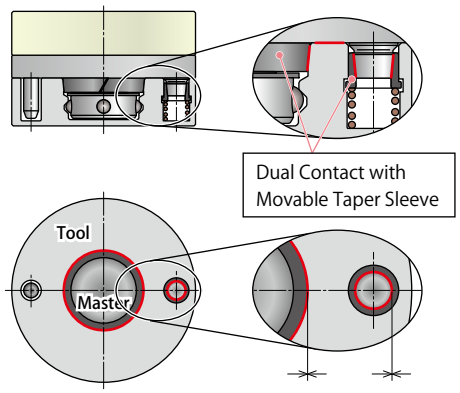
No clearance or backlash with dual contact by the taper sleeve.
It prevents core deflection and chattering due to the work load, and enhances productivity.



Prevents moment stops caused by electrode error.

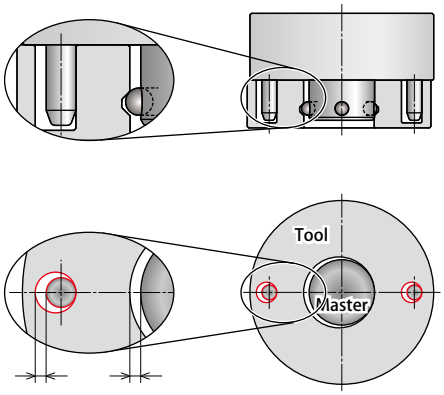
"Zero" backlash of robotic hand changer minimizes the vibration of electrode and prevents noise and friction. Highly reliable electrode prevents moment stops caused by communication error.

Kosmek Robotic Hand Changer

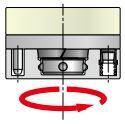


No Clearance
(Zero Backlash)

General Robotic Hand Changer

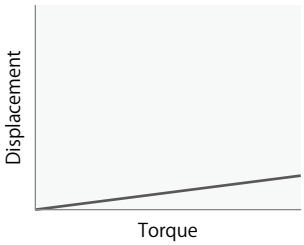


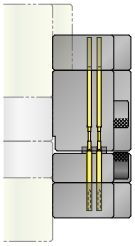
Clearance
(Backlash)



When torque acts in twisting direction,

No Initial Displacement

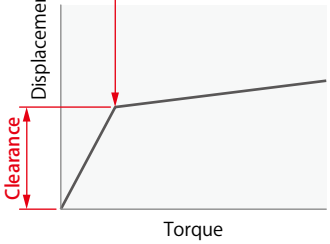


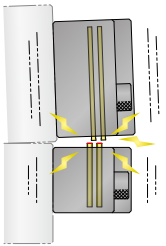


Zero Backlash

Moment Stop Reduced

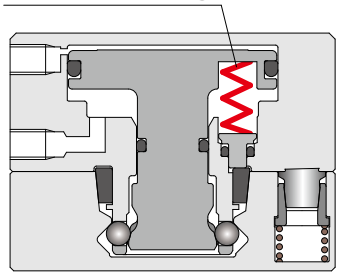
Initial Displacement





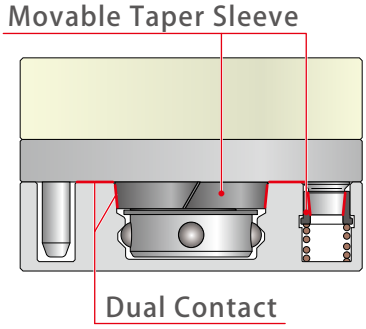
Backlash (Clearance) leads to noise • friction of a contact.

Moment Stop Occurs



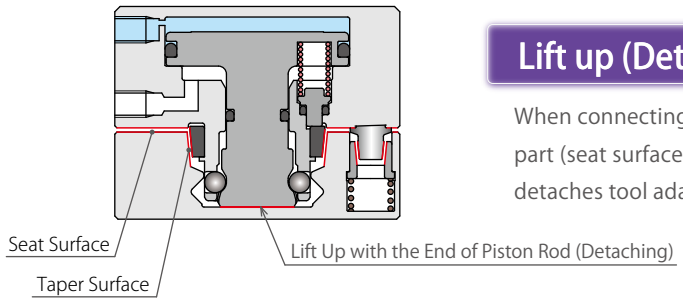
Self-Locking prevents tools from falling.

Even when pressure is at zero, self-locking function prevents tools from falling.
※ Usually it should be connected with spring force and air pressure.



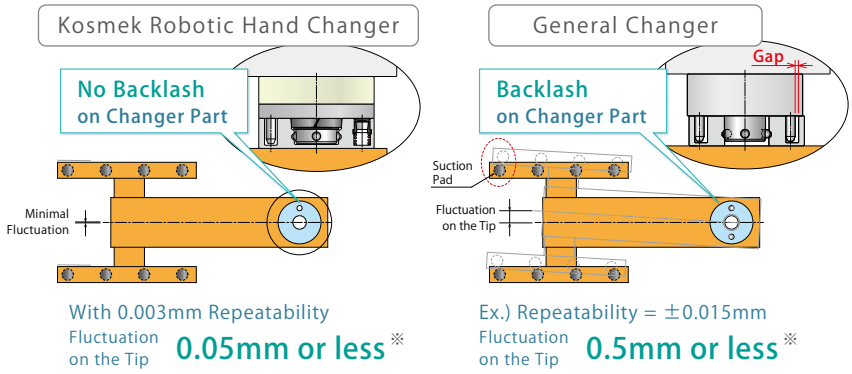
High Accuracy Repeatability 0.003mm

Repeatability is 3 μm.
Dual contact with movable taper sleeve enables high accuracy locating.
Only slight fluctuation at the end of tool allowing for precise operation.



Lift up (Detaching) function protects locating part.

When connecting, lift up function prevents damage of the locating function part (seat surface and taper surface). When disconnecting, the piston rod detaches tool adaptor preventing moment stop caused by adhesion and galling.



With 0.003mm Repeatability
Fluctuation on the Tip **0.05mm or less** ※

Ex.) Repeatability = ±0.015mm
Fluctuation on the Tip **0.5mm or less** ※

Minimal Fluctuation even with Longer Arm

With 3 μm repeatability, it minimizes fluctuation on the long arm tip, and prevents workpiece gripping errors or interference caused by displacement when transferring.

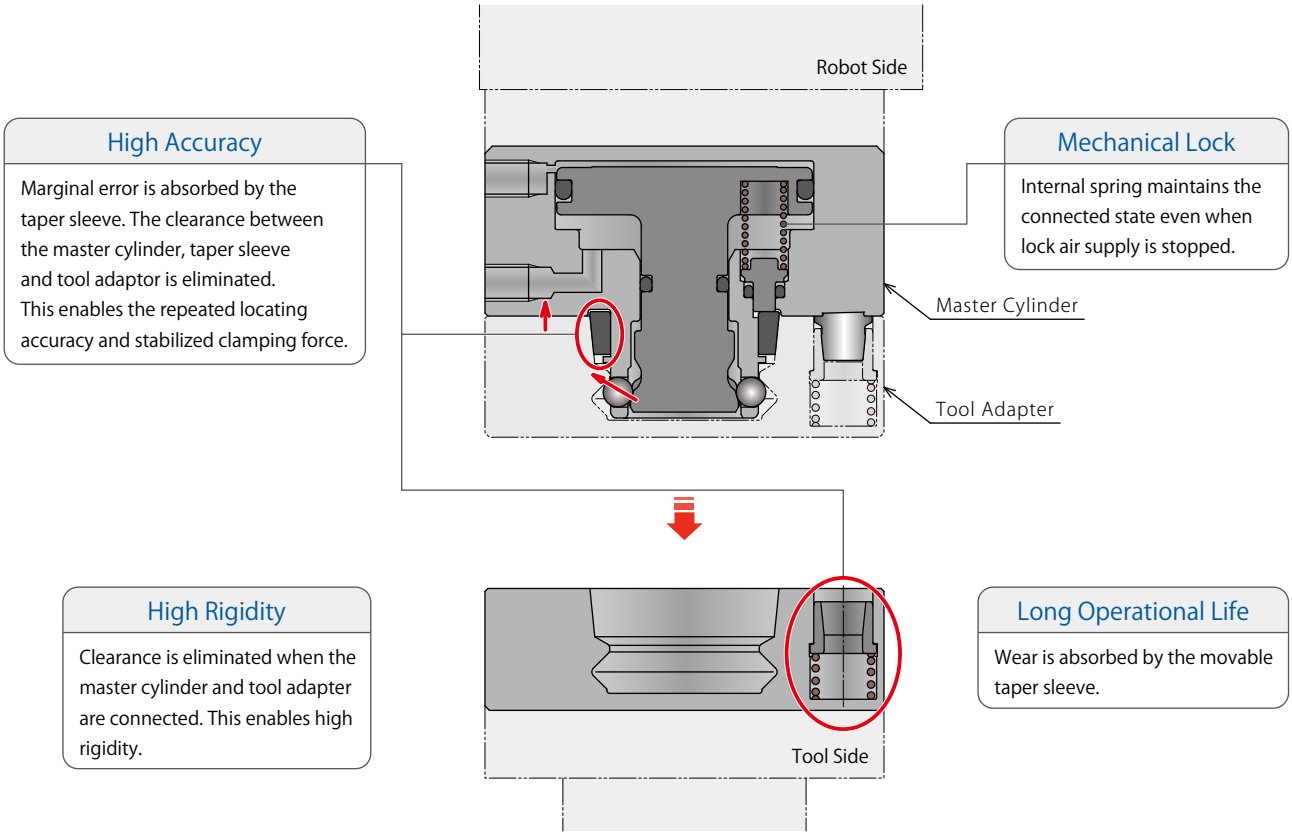
※Reference fluctuation value when the arm length =500mm with dimension conditions of SWR0250.
The result may differ depending on dimensions of a changer. Excluding displacement caused by load.

A Variety of Electrode/Air Joint Options

We offer a wide variety of options to meet your needs.

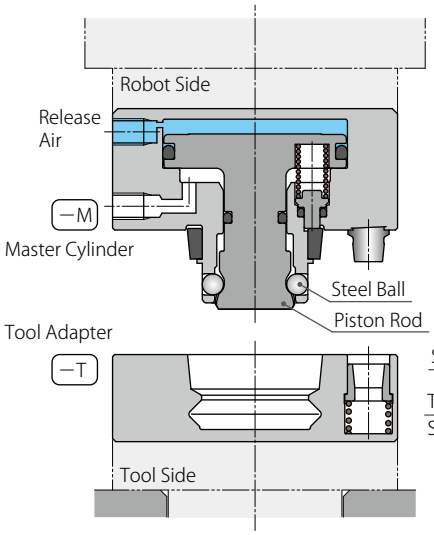
Cross Section

High Accuracy / High Rigidity / Long Operational Life



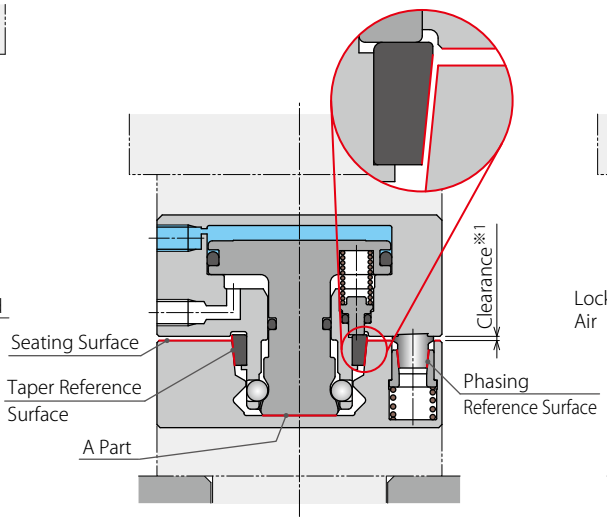
Action Description

Before Connected (Released State)



Supply air to the release side.
The piston rod is pushed down with thrust force caused by release air. At this time the steel balls are free to move (set inside).

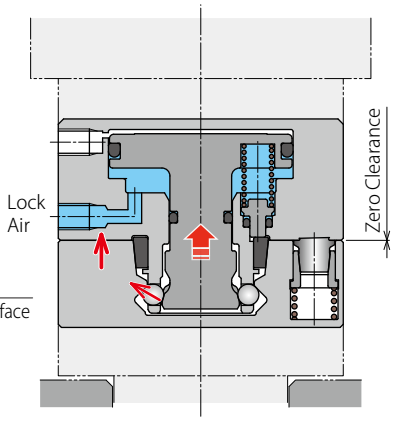
Lifted State (Detached State)



When the master cylinder is lowered and stopped at the amount of lift ~+0.5mm, it is in setting state. At this time there is a moderate gap at taper reference surface and seating surface. It prevents locating mechanism part from damage.
When detached, the piston pushes out A part to prevent moment stop caused by fixation or galling.

※1. Refer to the caution "Optimum Clearance between Master Cylinder and Tool Adapter at Lifted State" on P.75.

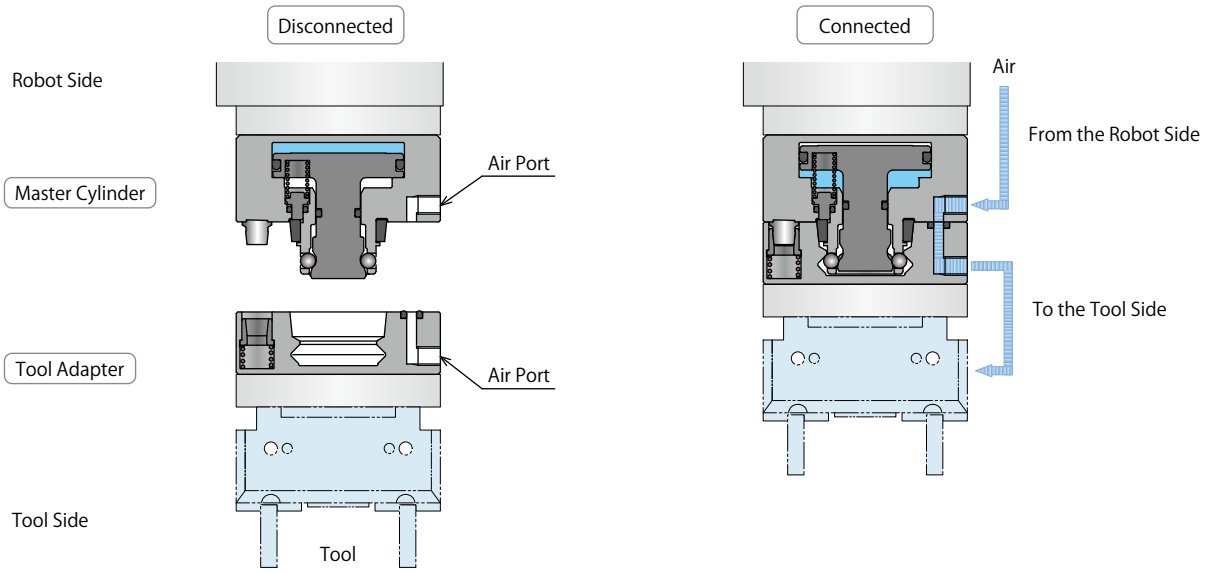
Connected State (Locked State)



Stop the release air pressure and supply air to the lock port. The piston rod will be pulled up with piston thrust and an internal spring, and the tool adapter will be pulled to the seating surface by the steel balls.
When the tool adapter is pulled, the taper reference surface and phasing taper sleeve are centered in a reference axis (body), and locating is completed.

Air Port Option (Joint Option)

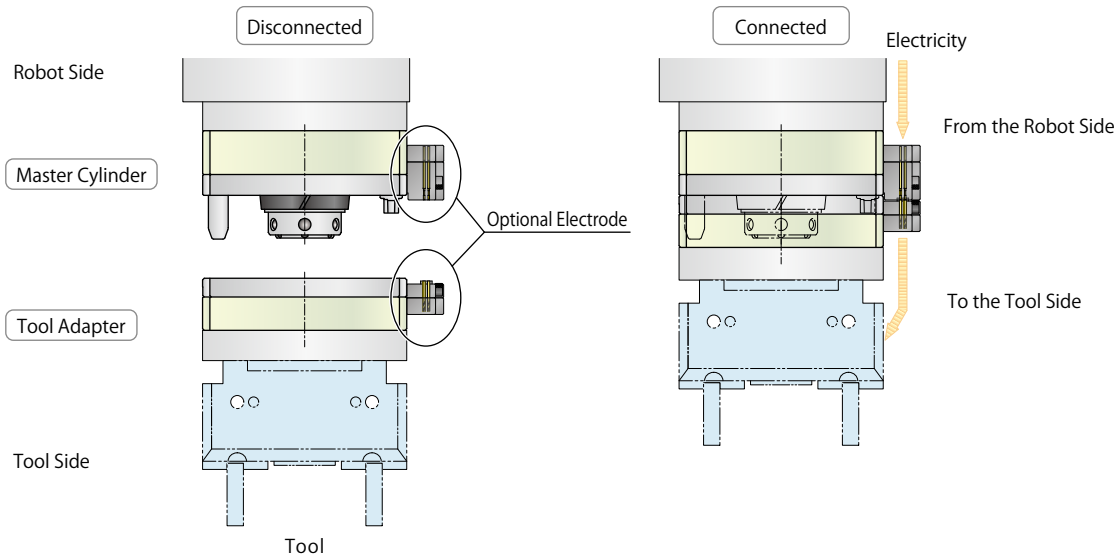
When the master cylinder and tool adapter are connected, the air port is at the connected state. At this time, it is able to supply air from the robot side to the tool side. Air port can be used for the operation of the actuator (positive pressure) and the suction pad (negative pressure).
The number of air ports depends on the option. Please refer to the specifications for further information.



Selectable from two air port joint options. ※ Refer to P.64 for further information.

Electrode Option

When the master cylinder and tool adapter are connected, the electrode (option) is in the connected state.
At this time, it is able to transmit electrical signal and supply electricity between the robot and tool.



Model No. Indication

Master Cylinder (Robot Side)

Payload 3kg ※ Refer to P.65 for SWRY0010 (with 6 air ports).

SWR [003] [0] - M - [B]
1 2 4

Payload 7kg ～ 75kg

SWR [007 / 012 / 025 / 050 / 075] [0] - M [F] - [B] - [ ]
1 2 3 4 5

Payload 120kg ～ 230kg

SWR [120 / 230] [0] - M [AF] - [B] - [ ]
1 2 3 4 5

Payload 0.5 ～ 1kg
SWR0010-M- [ ]

Refer to the product catalog for model：SWR0010 on our website.

Tool Adapter (Tool Side)

Payload 3kg ～ 75kg ※ Refer to P.65 for SWRY0010 (with 6 air ports).

SWR [003 / 007 / 012 / 025 / 050 / 075] [0] - T - [B]
1 2 4

Payload 120kg ～ 230kg

SWR [120 / 230] [0] - T - [B] - [ ]
1 2 4 5

Payload 0.5 ～ 1kg
SWR0010-T- [ ]

Refer to the product catalog for model：SWR0010 on our website.

1 Payload ※ Payload at 0.5MPa

003 : 3 kg
007 : 7 kg
012 : 12 kg
025 : 25 kg
050 : 50 kg
075 : 75 kg
120 : 120 kg
230 : 230 kg

001 : Refer to the product catalog for model：SWR0010 on our website.

2 Design No.

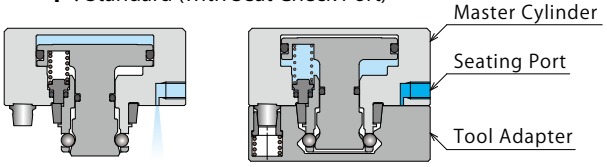
0 : Revision Number

3 Port Option ※ The port option is applicable to the master cylinder only.

Blank : No Port
(Only **Blank** can be chosen for SWR0030.)
F : Standard (with Seat Check Port)
A : With Air Blow Port
AF : With Air Blow Port + Seat Check Port
(Only **AF** option can be chosen for SWR1200/SWR2300.)

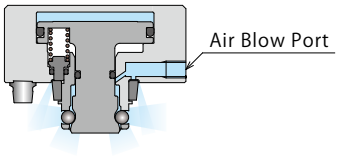
3 Port Option Symbol	●=Available Option							
	3kg	7kg	12kg	25kg	50kg	75kg	120kg	230kg
	SWR 0030	SWR 0070	SWR 0120	SWR 0250	SWR 0500	SWR 0750	SWR 1200	SWR 2300
Blank	●							
F		●	●	●	●	●		
A		●	●	●	●	●		
AF							●	●

F : Standard (with Seat Check Port)



Action confirmation can be conducted by detecting differential pressure with the air catch sensor.
※Refer to P.63 for further information.

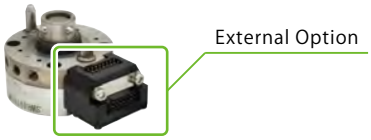
A : With Air Blow Port



Locating mechanism part can be cleaned with the air blow.
※Refer to P.63 for further information.

4 External Option Symbols (Electrode/Air Joint)

Refer to P.23 ～ P.24 for model number symbols.



5 Joint Option (Air Port Part) ※ Refer to P.64 for detail of the joint option.

Blank : No Check Valve (Standard)
S : With Check Valve

※ Option Symbol of Tool Adapter Side
Specify with "**-S**" only when selecting SWR1200 / SWR2300 with check valve.
Since the tool adapter of SWR0070 / SWR0750 is shared, the symbol is "**Blank**" regardless of the use of check valve.

	5 Joint Option Symbol		●=Available Option							
	Master	Tool	3kg SWR 0030	7kg SWR 0070	12kg SWR 0120	25kg SWR 0250	50kg SWR 0500	75kg SWR 0750	120kg SWR 1200	230kg SWR 2300
No Check Valve (Standard)	**Blank**	**Blank**	●	●	●	●	●	●	●	●
With Check Valve	**S**	**Blank**		●	●	●	●	●		
	S	**S**							●	●

Model No. Indication

Master Cylinder (Robot Side)

SWR 050 0 - M F - B - ☐
1 2 3 4 5
Refer to the list below.

Tool Adapter (Tool Side)

SWR 050 0 - T - B - ☐
1 2 4 5
Refer to the list below.

4 External Option Symbols (Electrode/Air Joint) ※1

Please select from the list below. ※ (Ex.) Solder Terminal 15 poles : **B**

• Electrode

Rated Voltage	Rated Current	External Options (Detail Page)	Number of Poles		4 Option Symbol	3kg SWR 0030	7kg SWR 0070	12kg SWR 0120	25kg SWR 0250	50kg SWR 0500	75kg SWR 0750	120kg SWR 1200	230kg SWR 2300
						●●=Available Option							
-	-	Standard : No External Attachment	–		Blank	●	●	●	●	●	●	●	●
DC24V	2A/1A ※2	Resin Connector P.37	16 Poles		J	●	●	●	●	●	●	●	●
	3A ※2	Solder Terminal P.41	15 Poles		B	●	●	●	●	●	●	●	●
			30 Poles (2 Sets of 15 Poles)		● BB ○ B2		●	●	●○	●○	●○	●○	●○
		Solder Terminal with Cable P.43	15 Poles	Cable 1m	C01	●	●	●	●	●	●	●	●
				Cable 2m	C02	●	●	●	●	●	●	●	●
			30 Poles (2 Sets of 15 Poles)	Cable 1m	● C01C01 ○ C012		●	●	●○	●○	●○	●○	●○
				Cable 2m	● C02C02 ○ C022		●	●	●○	●○	●○	●○	●○
		Simple Waterproof Electrode Only when connected : IP54 P.45	16 Poles	Cable 1m	U01	●	●	●	●	●	●	●	●
				Cable 2m	U02	●	●	●	●	●	●	●	●
		D-sub Connector P.47	15 Poles		D				●	●	●	●	●
		Circular Connector (Connector Based on JIS C 5432) P.48	15 Poles		G				●	●	●	●	●
AC200V DC200V	5A ※2	Compact Electric Power Transmission Option P.49	4 Poles		K	●	●	●	●	●	●	※3	●
			4 Poles + Electrode J		● JK ○ JK2		●	●	●○	●○	●○	※3	●○
			4 Poles + Electrode B		● BK ○ BK2		●	●	●○	●○	●○	※3	●○
			4 Poles + Electrode C01		● C01K ○ C01K2		●	●	●○	●○	●○	※3	●○
			4 Poles + Electrode C02		● C02K ○ C02K2		●	●	●○	●○	●○	※3	●○
		Power Transmission Option (Connector Based on MIL-DTL-5015) P.53	8 Poles		E				●	●	●	●	●
	13A ※2	High Current Transmission Option (Connector Based on MIL-DTL-5015) P.54	10 Poles		H				●	●	●	●	●
Noncontact Waterproof Electrode IP67 Compact Model P.55			Number of Signals : 4	NPN	W	●	●	●	●	●	●	※3	●
				PNP	WX※4	●	●	●	●	●	●	※3	●
Noncontact Waterproof Electrode IP67 P.57			Number of Signals : 12	NPN	V				●	●	●	●	●
				PNP	VX※5				●	●	●	●	●

※ Refer to P.24 "General Cautions for Selecting External Options".

• Air Joint

Number of Ports (Min. Passage Area)	External Options (Detail Page)	Additional Electrodes	4 Option Symbol	●● =Available Option							
				3kg SWR 0030	7kg SWR 0070	12kg SWR 0120	25kg SWR 0250	50kg SWR 0500	75kg SWR 0750	120kg SWR 1200	230kg SWR 2300
3 Ports (Equal to φ6×1 port / Equal to φ2×2 port)	Air Joint (Able to extend electrodes **J**/**B**/**C**) P.59	None (Air Joint Only)	**R**	●	●	●	●	●	●	※3	※3
		Electrode **J**	● **JR** / ● **JR2**		●	●	● / ●	● / ●	● / ●	※3	※3
		Electrode **B**	● **BR** / ● **BR2**		●	●	● / ●	● / ●	● / ●	※3	※3
		Electrode **C01**	● **C01R** / ● **C01R2**		●	●	● / ●	● / ●	● / ●	※3	※3
		Electrode **C02**	● **C02R** / ● **C02R2**		●	●	● / ●	● / ●	● / ●	※3	※3
4 Ports (Equal to φ1.6)	Air Joint (Able to extend electrodes **J**/**B**/**C**) P.61	None (Air Joint Only)	**P**		●	●	●	●	●	※3	※3
		Electrode **J**	● **JP** / ● **JP2**		●	●	● / ●	● / ●	● / ●	※3	※3
		Electrode **B**	● **BP** / ● **BP2**		●	●	● / ●	● / ●	● / ●	※3	※3
		Electrode **C01**	● **C01P** / ● **C01P2**		●	●	● / ●	● / ●	● / ●	※3	※3
		Electrode **C02**	● **C02P** / ● **C02P2**		●	●	● / ●	● / ●	● / ●	※3	※3
2 Ports (Equal to φ4)	Air Joint P.62	None (Air Joint Only)	**Q**				●	●	●	※3	※3

【 General Cautions for Selecting External Options 】

Difference between ● and ● is mounting positions of external options, because SWR0250 ~ SWR2300 have two mounting surfaces for external options. Refer to the following example of external option model number for further information.

※1. For the combination of external options, the symbols should be specified in alphabetical order. (Ex: 'JR2' and 'E', it is 'EJR2'.)

※2. For the electrode options, check the total current capacity and contact resistance shown in the specifications of each option.

※3. Please contact us for the options of SWR1200/SWR2300 marked with ※3.

※4. The option symbol '**WX**' is only for master cylinder. The option symbol of the tool adapter is '**W**' for both NPN/PNP.

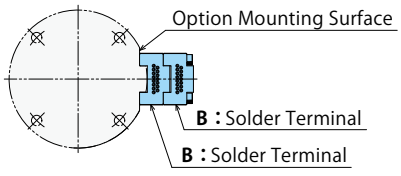
※5. The option symbol '**VX**' is only for master cylinder. The option symbol of the tool adapter is '**V**' for both NPN/PNP.

Option Mounting Surface and External Option Model No. Example

SWR0030 / SWR0070 / SWR0120 has Option Mounting Surface : 1 part

Example : Solder Terminal 30 Poles (2 sets of 15 poles)

(Ex.) Model : SWR0070 - MF - **BB**



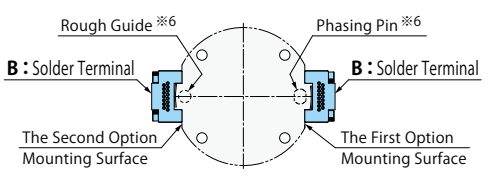
SWR0250 / SWR0500 / SWR0750 / SWR1200 / SWR2300 has Option Mounting Surface : 2 parts

(Ex. 1) When selecting '**BB**' for SWR0250~SWR2300, electrode '**B**' is mounted on each the first and second option mounting surface.

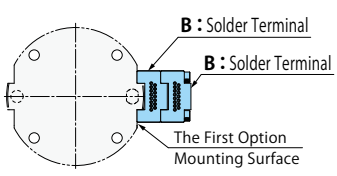
(Ex. 2) When selecting '**B2**' for SWR0250~SWR2300, electrode '**B**' is extended to electrode '**B**' on the first option mounting surface.

(Ex. 3) When selecting '**BK2**' and '**B**', the symbols should be specified in alphabetical order as '**B BK2**'. The arrangement is as follows : Electrode '**B**' on the first option mounting surface, electrode '**BK2**' ('**B**' extended to '**K**') on the second option mounting surface.

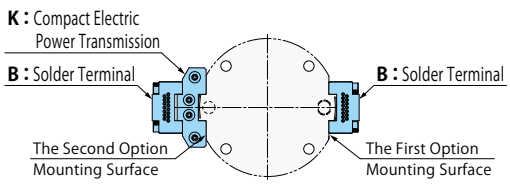
(Ex.1) Model : SWR0250 - MF - **BB**
(Model no. example of ●.)



(Ex.2) Model : SWR0250 - MF - **B2**
(Model no. example of ●.)



(Ex.3) Model : SWR0250 - MF - **BBK2**



※6. Check the external dimensions on P.34 for option mounting surface of SWR2300.

Specifications

Model No.			SWR0030	SWRY0010	SWR0070	SWR0120	SWR0250	SWR0500	SWR0750	SWR1200	SWR2300
Payload ※1	at 0.5MPa	kg	3		7	12	25	50	75	120	230
	at 0.7MPa	kg	-		-	-	-	-	-	-	360
	at 1MPa	kg	6		12	20	45	90	140	200	-
Repeatability		mm	0.003								
Lift Stroke (Detaching Stroke)		mm	0.8		0.8	0.8	1.0	1.0	1.0	1.0	1.0
Cylinder Capacity	Lock	cm3	0.64		1.50	2.38	6.08	14.38	22.98	38.44	89.54
	Release	cm3	0.72		1.72	2.69	6.68	15.39	25.45	42.76	100.73
Driving Air Pressure	Max. Operating Pressure	MPa	1.0		1.0						0.7
	Min. Operating Pressure	MPa	0.4		0.35						0.35
	Withstanding Pressure	MPa	1.5		1.5						1.05
Holding Force			Refer to P.26	Refer to P.66	Refer to P.26						Refer to P.26
Lifting Force (Detaching Force)			Refer to P.26	Refer to P.66	Refer to P.26						Refer to P.26
Allowable ※1 Static Moment	Bending (at 0.5MPa)	N·m	5		14	27	74	194	380	725	1800
	Bending (at 1.0MPa)	N·m	(10)		(25)	(45)	(135)	(350)	(700)	(1400)	-
	Twisting	N·m	15	12	23	45	100	175	300	700	1400
Max. Load ※2 Moment	Bending (at 0.5MPa)	N·m	10		28	54	148	388	760	1450	3600
	Bending (at 1.0MPa)	N·m	(20)		(50)	(90)	(270)	(700)	(1400)	(2800)	-
	Twisting	N·m	30	24	46	90	200	350	600	1400	2800
Operating Temperature		℃	0 ～ 70								
Usable Fluid			Dry Air								
Mass ※3	Master Cylinder	g	70	85	180	250	500	1000	1650	3800	7100
	Tool Adapter	g	45	60	120	160	300	750	1100	2600	4800
Number of Air Ports ※4	Thread Size × Number of Ports		M3×0.5×2 Ports ※5	M3×0.5×6 Ports	M5×0.8 ×6 Ports	M5×0.8 ×6 Ports	M5×0.8 ×6 Ports	M5×0.8 ×2 Ports Rc1/8×4 Ports	Rc1/8×9 Ports	Rc1/4×9 Ports	Rc3/8×10 Ports
Air Port Minimum Passage Area	5 Joint Option **Blank**	mm2	1.1 (Equal to ϕ1.2)	1.1 (Equal to ϕ1.2)	2.0 (Equal to ϕ1.6)	2.0 (Equal to ϕ1.6)	2.0 (Equal to ϕ1.6)	7.1 (Equal to ϕ3.0)	7.1 (Equal to ϕ3.0)	63.6 (Equal to ϕ9.0)	63.6 (Equal to ϕ9.0)
	5 Joint Option **S**	mm2	–	–	1.7 (Equal to ϕ1.5)	1.7 (Equal to ϕ1.5)	1.7 (Equal to ϕ1.5)	3.4 (Equal to ϕ2.1)	3.4 (Equal to ϕ2.1)	13.0 (Equal to ϕ4.1)	13.0 (Equal to ϕ4.1)
Electrode Option			Refer to P.37 ～ P.62								
Allowable Offset while Teaching			Refer to P.74								

Notes :

※1. Please consider both the payload and allowable static moment when selecting the product.

※2. The product must be used within Allowable Static Moment (※1). Using within Max. Load Moment will not fill the specifications.

※3. Mass of the body without external options.

※4. Refer to P.20 for air port use.

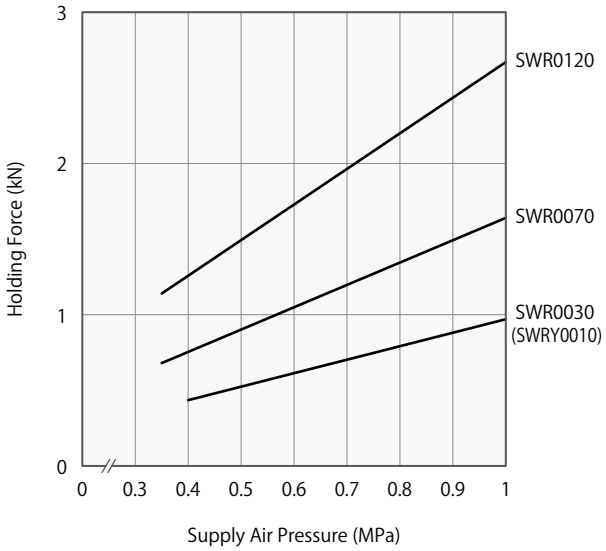
※5. We offer SWRY0010 with 6 air ports (see P.65) for those who require additional number of air ports for SWR0030.

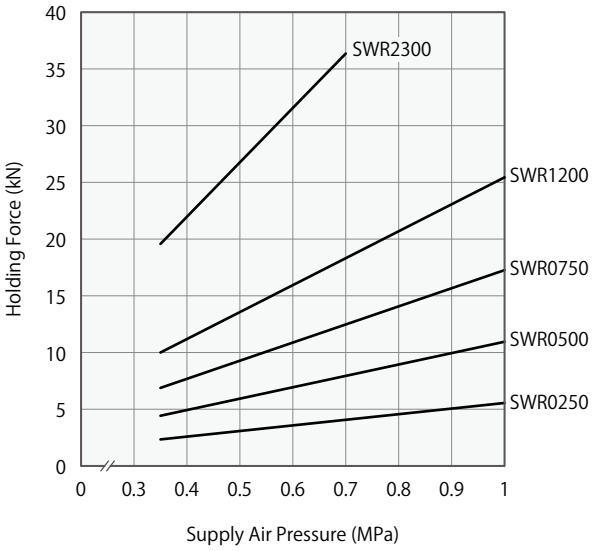
Holding Force Curve

Holding Force			SWR0030	SWRY0010	SWR0070	SWR0120	SWR0250	SWR0500	SWR0750	SWR1200	SWR2300
Holding Force	At 0MPa ※6	kN	0.12		0.15	0.32	0.57	0.95	1.29	1.97	2.78
	At 0.35MPa	kN	–		0.68	1.14	2.31	4.44	6.87	9.84	19.56
	At 0.4MPa	kN	0.45		0.75	1.26	2.56	4.94	7.67	11.00	21.96
	At 0.5MPa	KN	0.50		0.90	1.50	3.05	5.94	9.26	13.33	27.72
	At 1MPa	kN	0.90		1.64	2.67	5.53	10.92	17.24	24.95	–

Note :

※6. It indicates holding force when air pressure is at 0MPa after connecting and may not fill the specification.



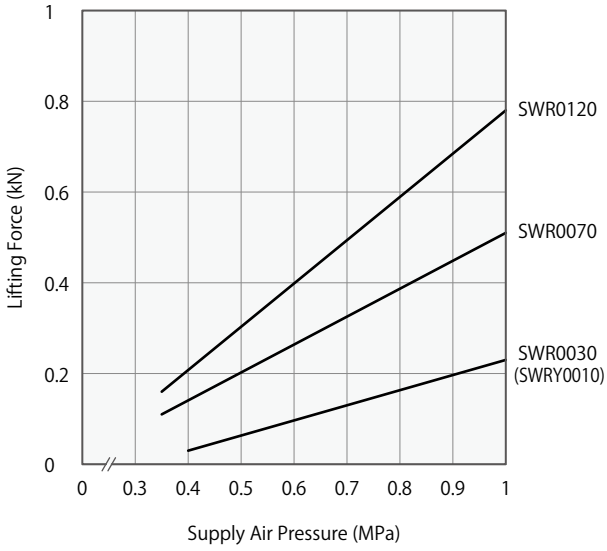


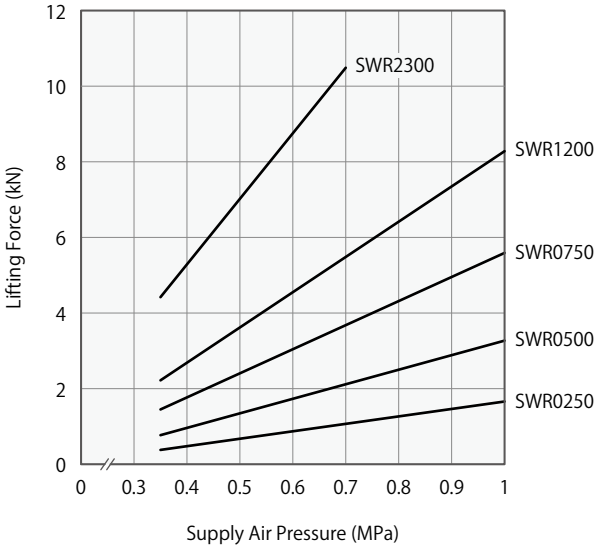
Note :

1. Tables and graphs shown are the relationship between supply air pressure (MPa) and holding force (kN).

Lifting Force (Detaching Force)

Model No.			SWR0030	SWRY0010	SWR0070	SWR0120	SWR0250	SWR0500	SWR0750	SWR1200	SWR2300
Lifting Force (Detaching Force)	At 0.35MPa	kN	(0.03 : at 0.4MPa)		0.11	0.16	0.38	0.77	1.45	2.22	4.53
	At 0.5MPa	kN	0.08		0.20	0.30	0.68	1.34	2.41	3.62	7.18
	At 1MPa	kN	0.23		0.51	0.78	1.66	3.27	5.59	8.28	–





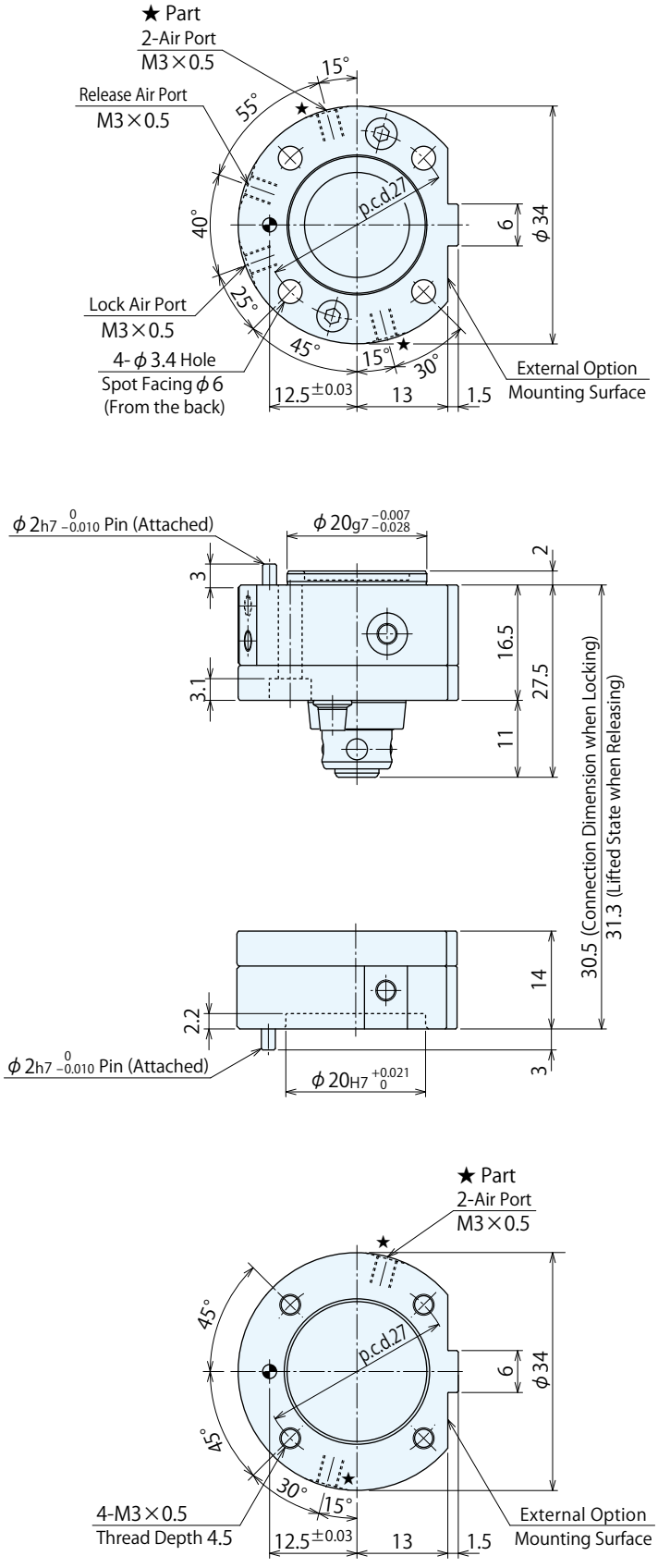
Note :

1. Tables and graphs shown are the relationship between supply air pressure (MPa) and lifting force (kN).

External Dimensions (SWR0030)

※ This drawing shows the released state of SWR0030. Refer to P.67 for External Dimensions of SWRY0010.

Master Cylinder
SWR0030-M

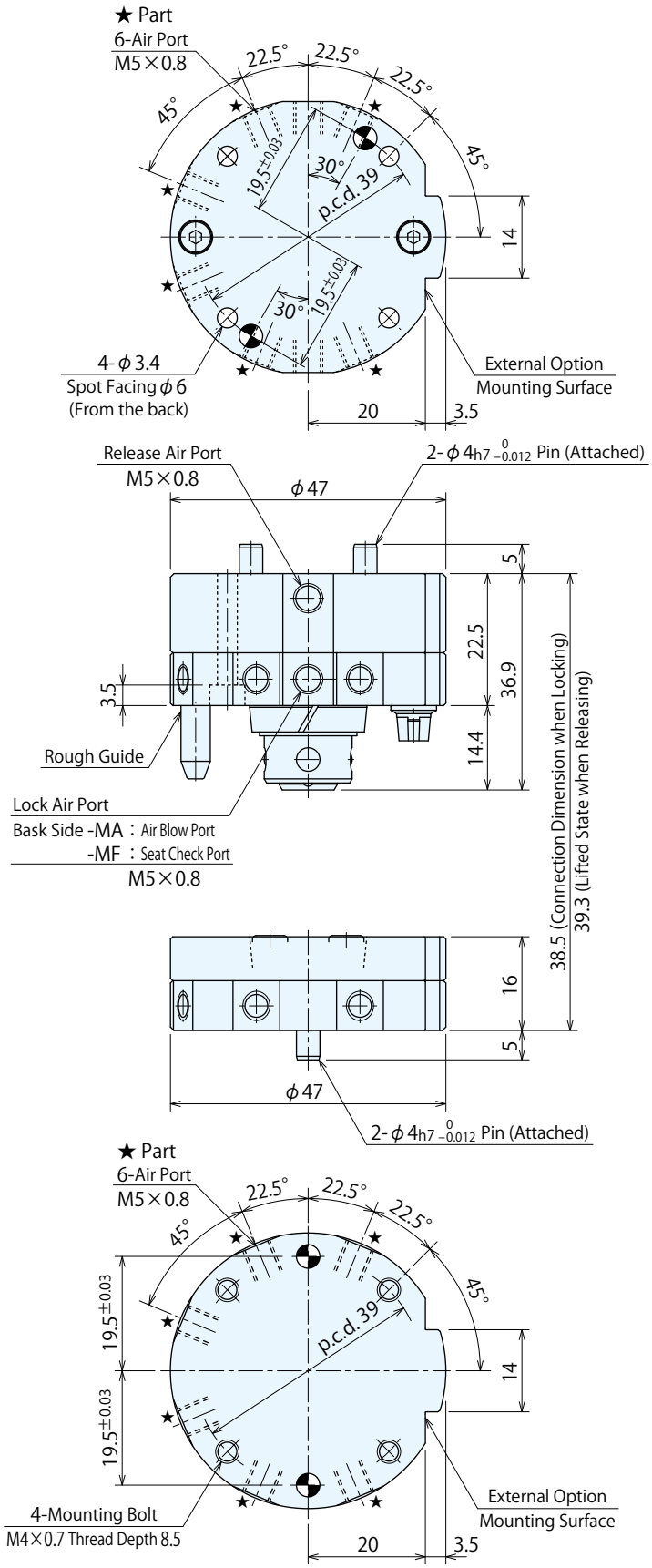


Tool Adapter **SWR0030-T**

External Dimensions (SWR0070)

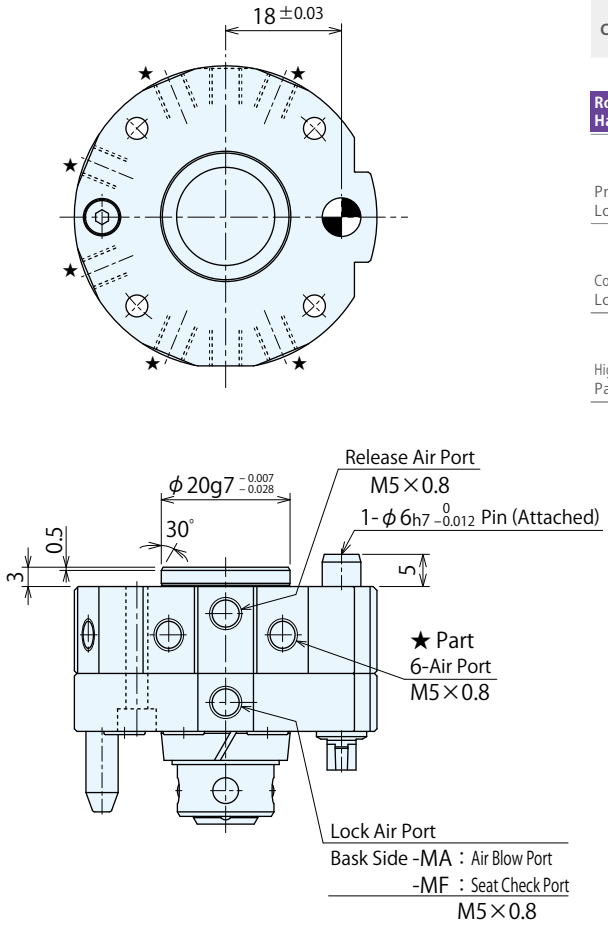
※ This drawing shows the released state of SWR0070.

Master Cylinder (Standard) **SWR0070-M□**



Master Cylinder (with Check Valve) **SWR0070-M□-S**

※ The air port positions and **mounting dimensions are different** from those of the standard option.
Different dimensions are described below.

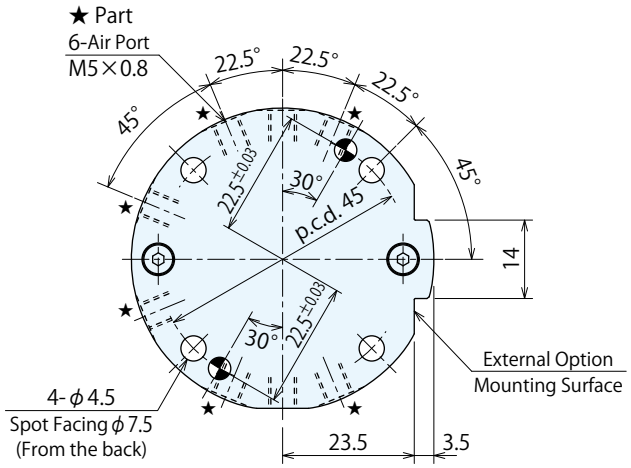


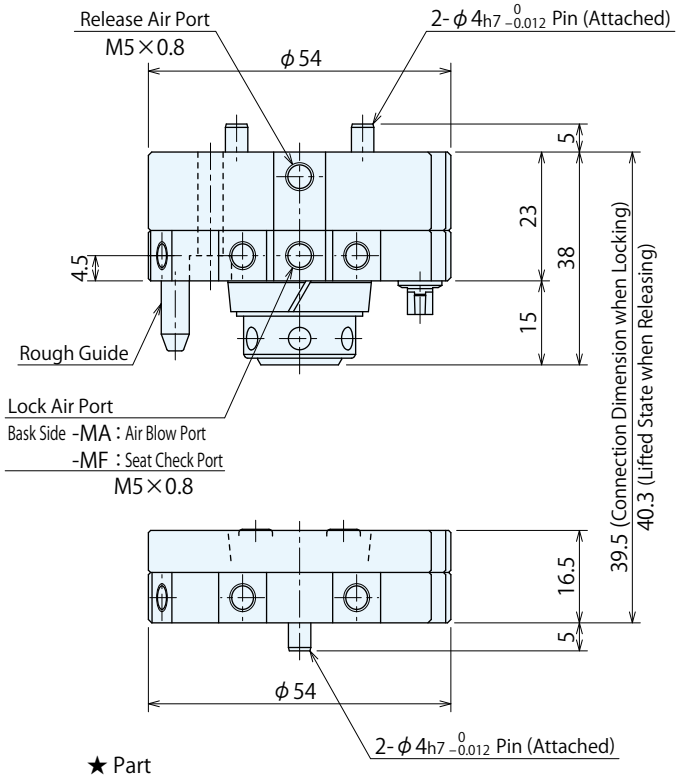
Tool Adapter **SWR0070-T**

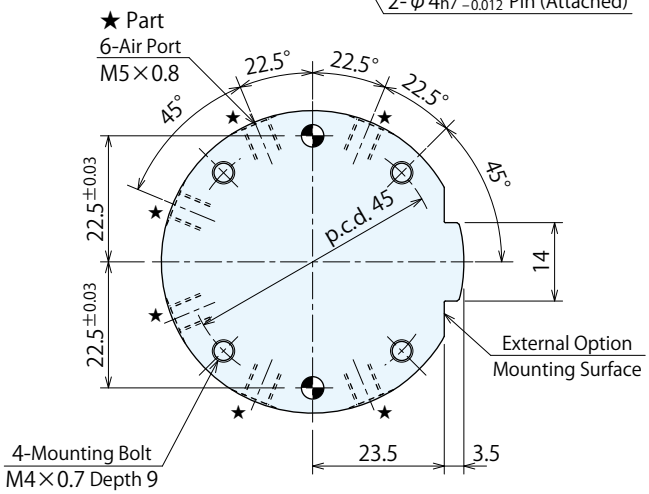
External Dimensions (SWR0120)

※ This drawing shows the released state of SWR0120.

Master Cylinder (Standard) **SWR0120-M□**

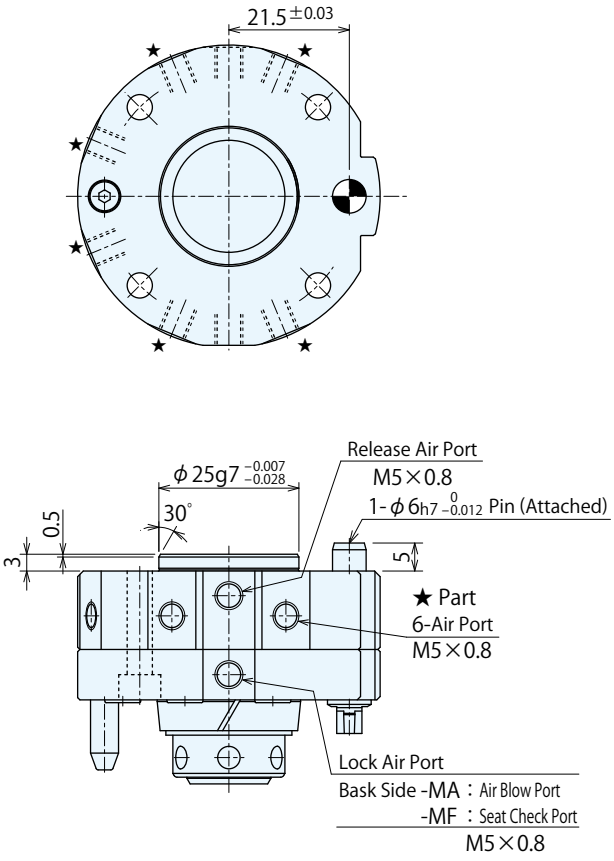






Master Cylinder (with Check Valve) **SWR0120-M□-S**

※ The air port positions and **mounting dimensions are different** from those of the standard option.
Different dimensions are described below.

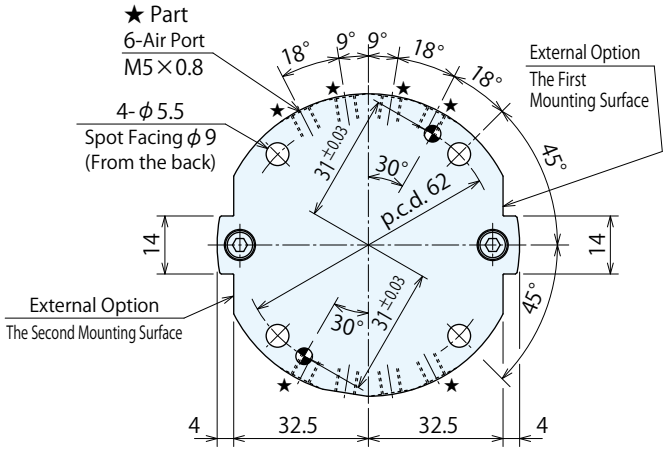


Tool Adapter **SWR0120-T**

External Dimensions (SWR0250)

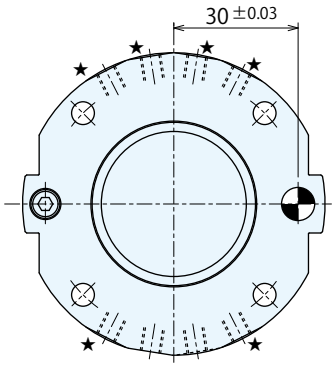
※ This drawing shows the released state of SWR0250.

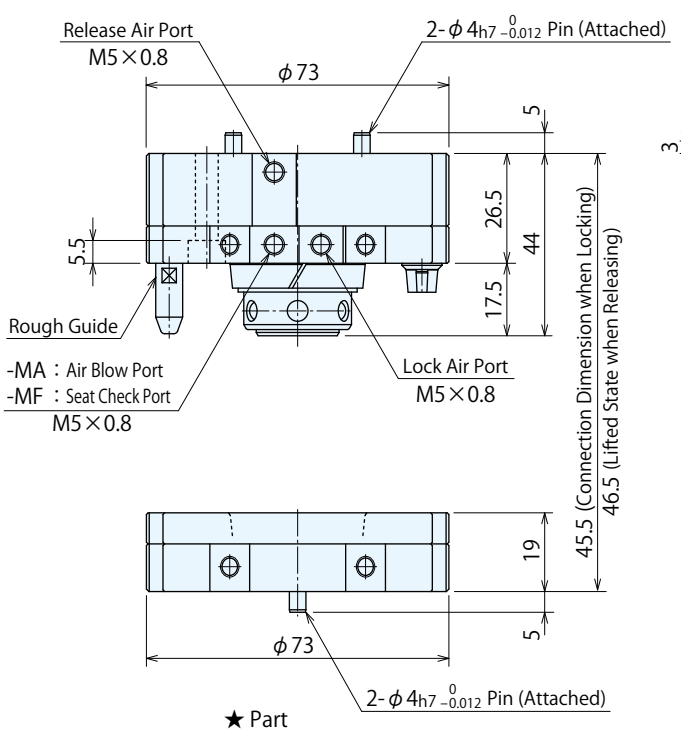
Master Cylinder (Standard) **SWR0250-M□**

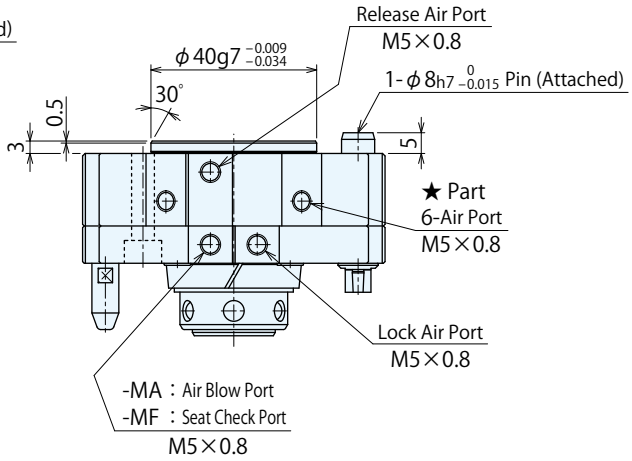


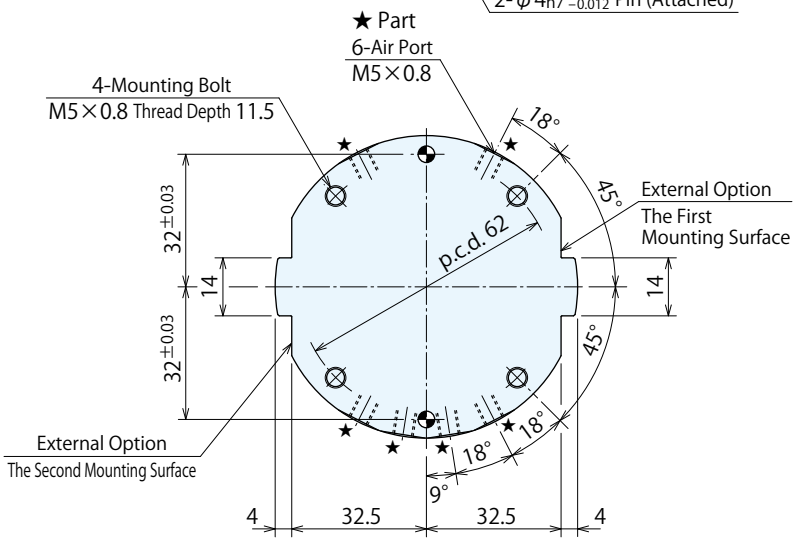
Master Cylinder (with Check Valve) **SWR0250-M□-S**

※ The air port positions and **mounting dimensions are different** from those of the standard option.
Different dimensions are described below.









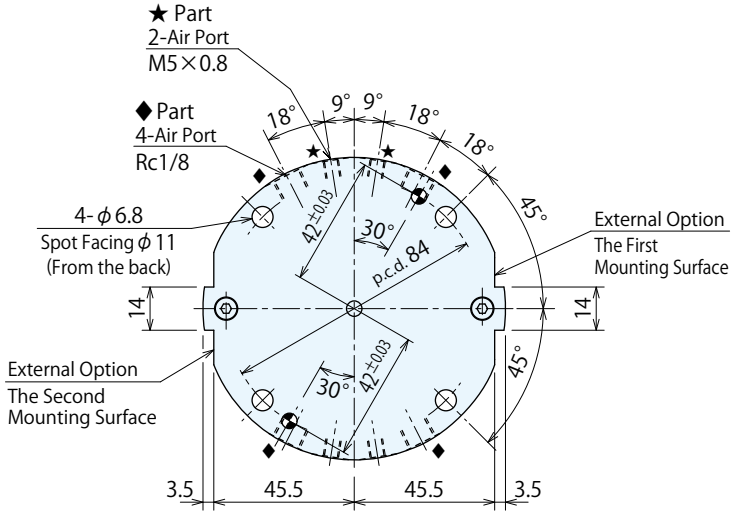
Tool Adapter **SWR0250-T**

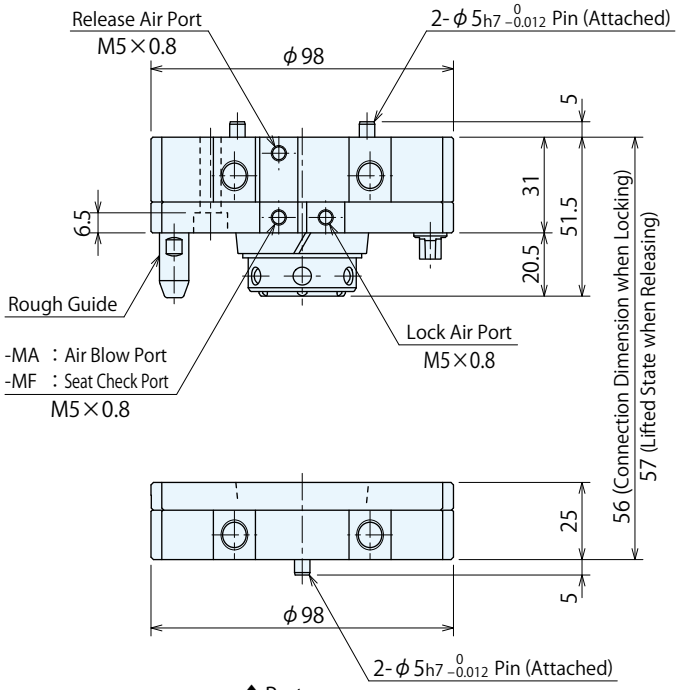
External Dimensions (SWR0050)

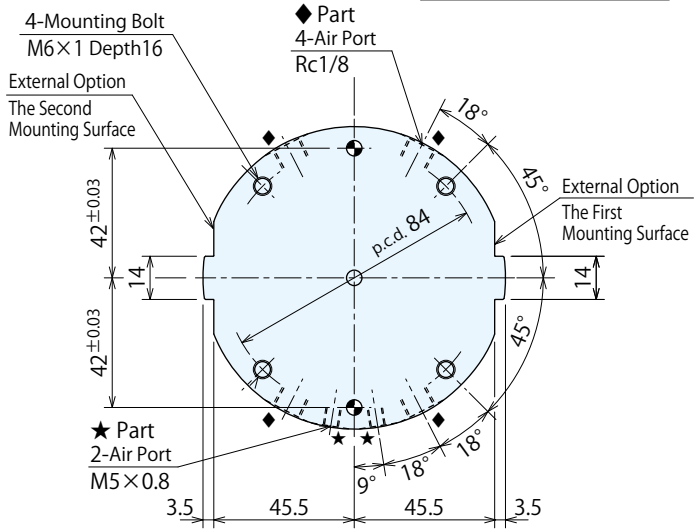
※ This drawing shows the released state of SWR0050.

Master Cylinder (Standard / with Check Valve)
SWR0500-M□ / SWR0500-M□-S

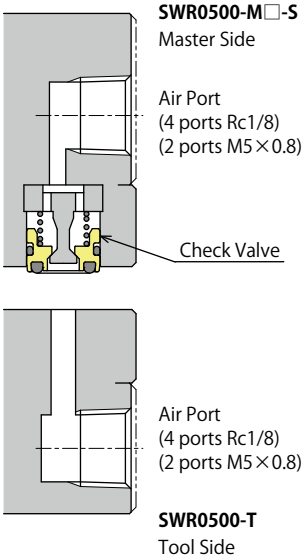
※ The different part between the standard and check valve option.
・The Joint Structure







SWR0500-M□-S (With Check Valve)
Joint Structure



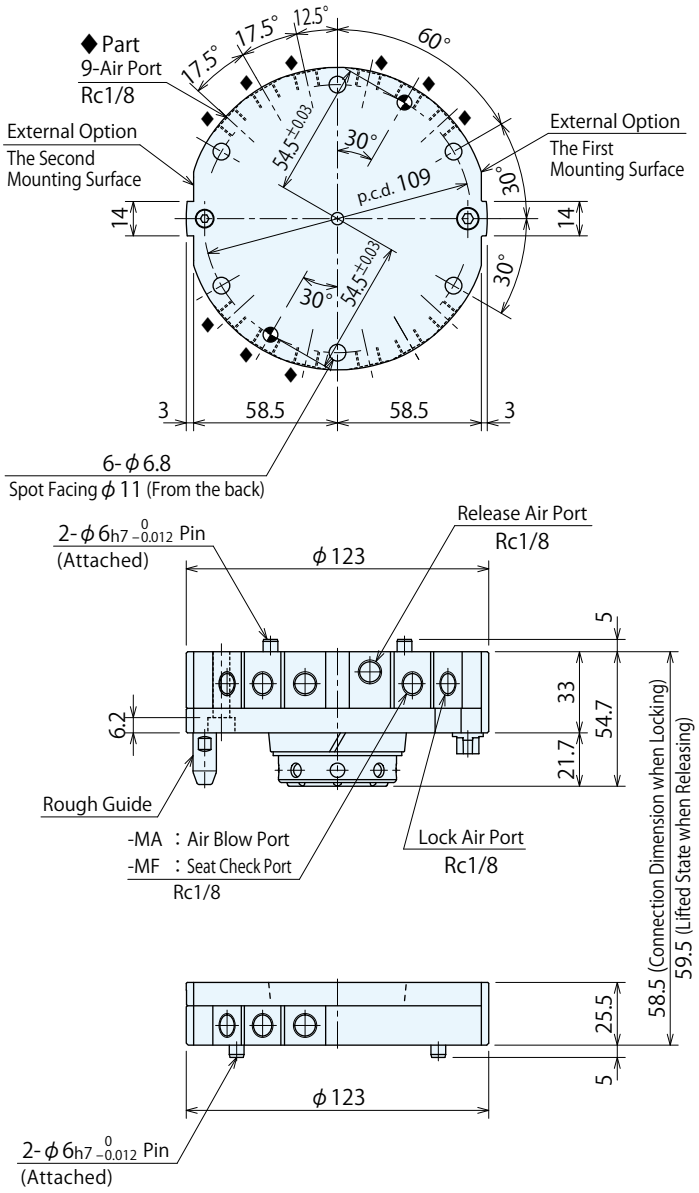
Tool Adapter **SWR0500-T**

External Dimensions (SWR0750)

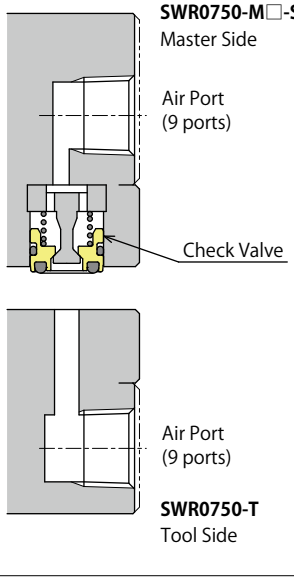
※ This drawing shows the released state of SWR0750.

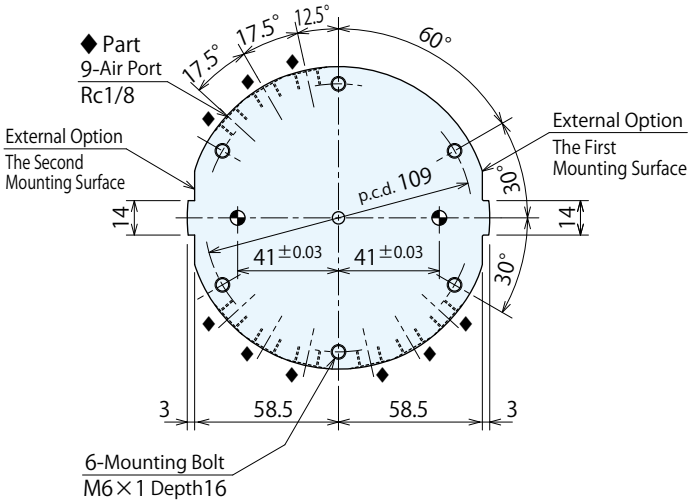
Master Cylinder (Standard / with Check Valve)
SWR0750-M□ / SWR0750-M□-S

※ The different part between the standard and check valve option.
・The Joint Structure



SWR0750-M□-S (With Check Valve)
Joint Structure





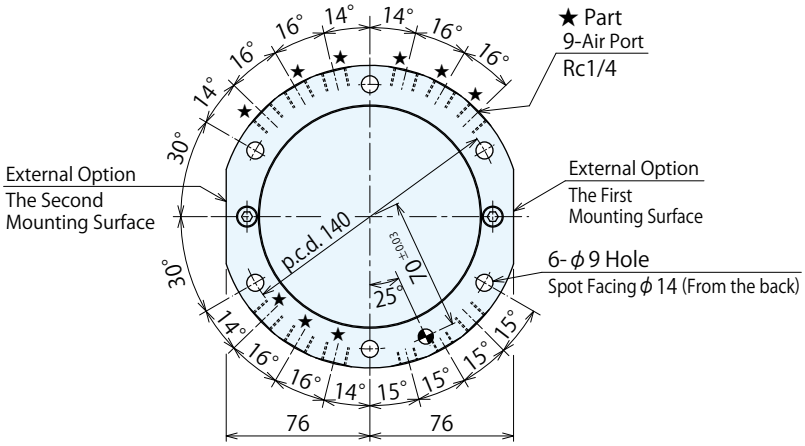
Tool Adapter **SWR0750-T**

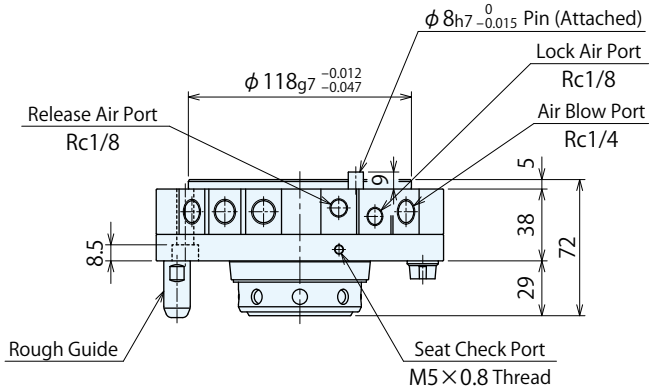
External Dimensions (SWR1200)

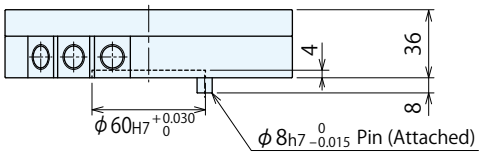
※ This drawing shows the released state of SWR1200.

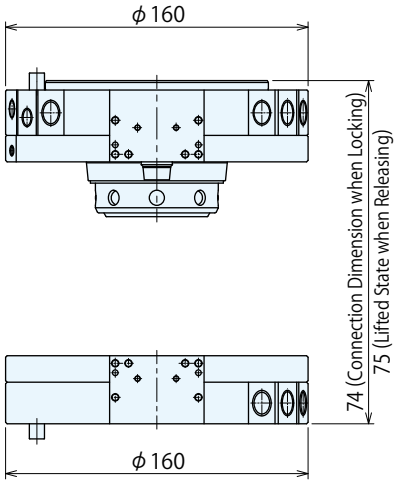
Master Cylinder (Standard / with Check Valve)
SWR1200-MAF-□ / SWR1200-MAF-□-S

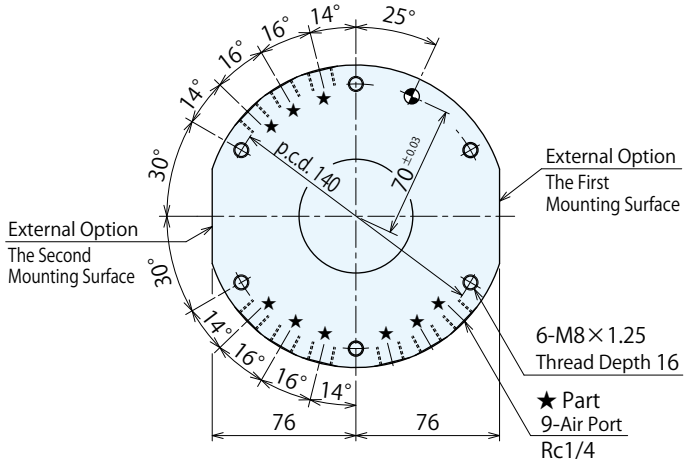
※ The different part between the standard and check valve option.
・The Joint Structure



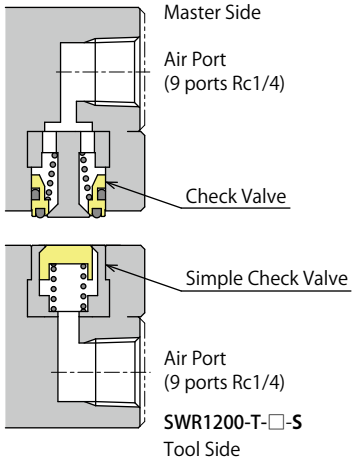








Joint Structure of Check Valve Option



Tool Adapter (Standard / with Check Valve)
SWR1200-T-□ / SWR1200-T-□-S

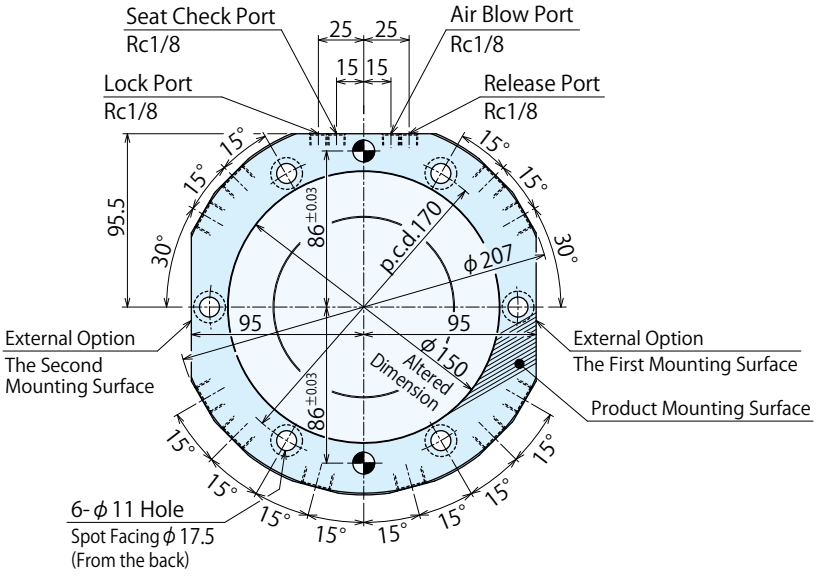
※ The different part between the standard and check valve option.
・The Joint Structure
(Make sure to select the same option as the master cylinder.)

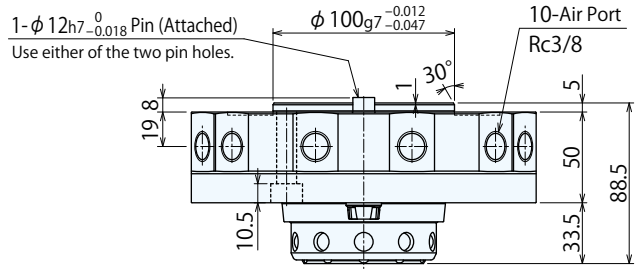
External Dimensions (SWR2300)

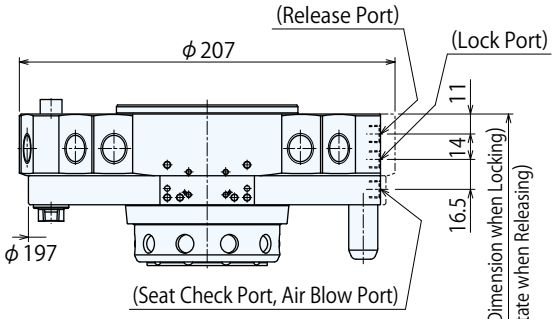
※ This drawing shows the released state of SWR2300.

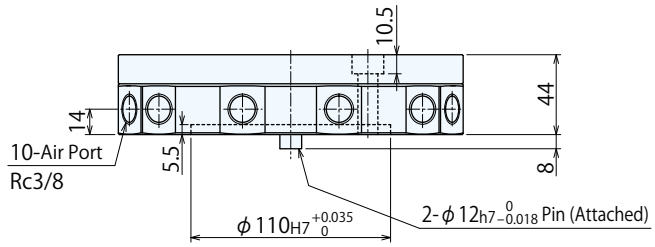
Master Cylinder (Standard / with Check Valve)
SWR2300-MAF-□ / SWR2300-MAF-□-S

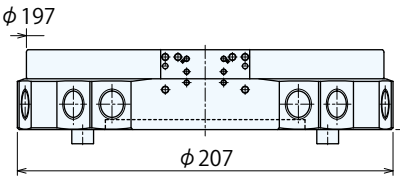
※ The different part between the standard and check valve option.
・The Joint Structure

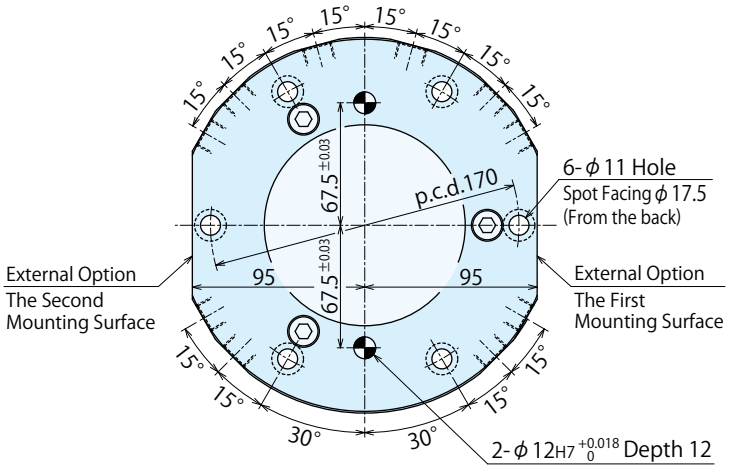




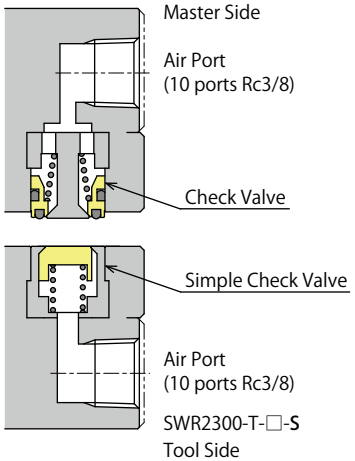








Joint Structure of Check Valve Option



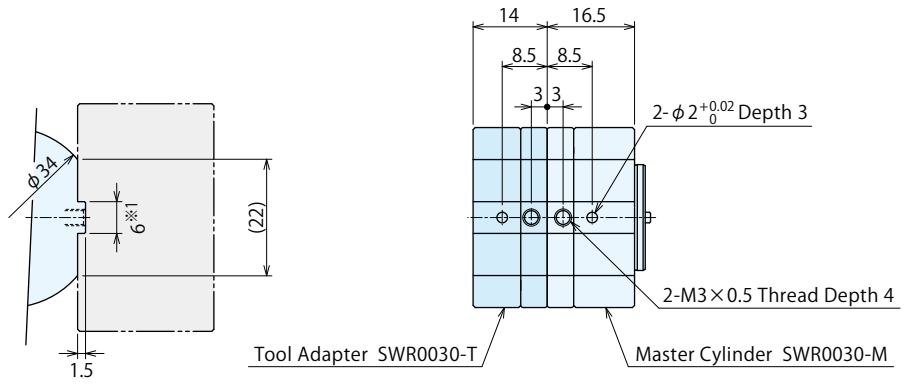
Tool Adapter (Standard / with Check Valve)
SWR2300-T-□ / SWR2300-T-□-S

※ The different part between the standard and check valve option.
・The Joint Structure
(Make sure to select the same option as the master cylinder.)

Option Mounting Dimensions (SWR0030～SWR0120)

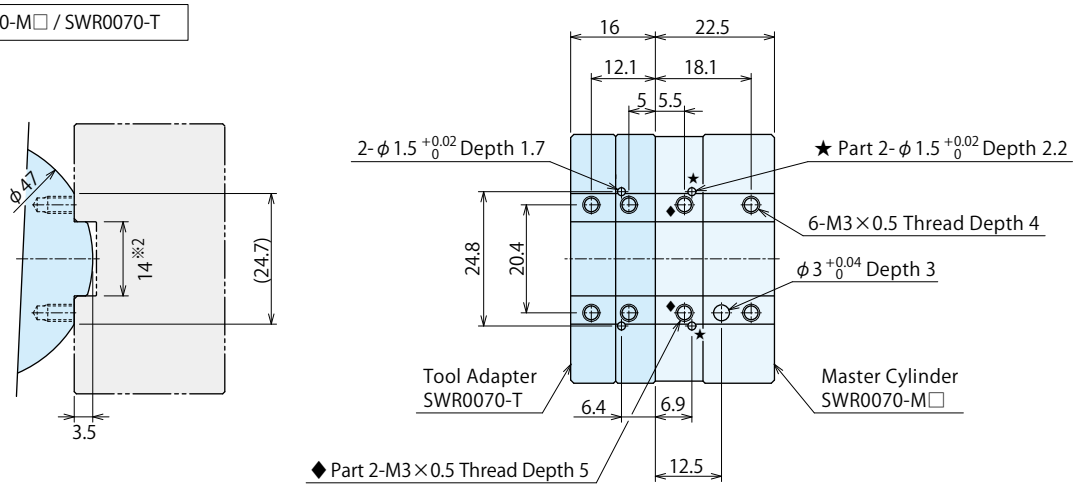
Electrodes and fixtures provided by other than Kosmek, can be mounted with option mounting bolts.
This drawing shows the connected state of the master side and tool side.

SWR0030-M / SWR0030-T



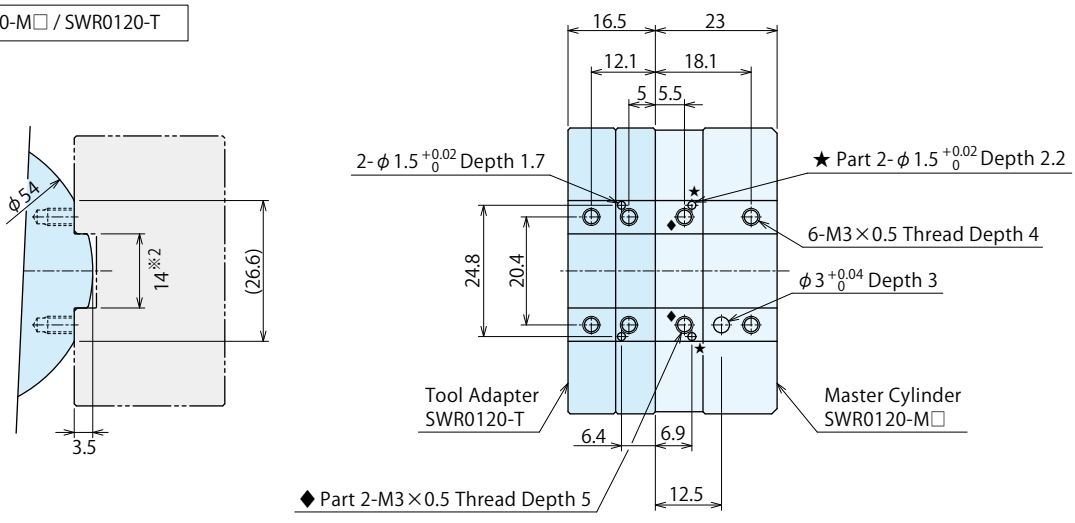
※1. Recommended width of option side is $6\ ^{+0.10}_{+0.05}$.

SWR0070-M□ / SWR0070-T



※2. Recommended width of option side is $14\ ^{+0.15}_{+0.05}$.

SWR0120-M□ / SWR0120-T

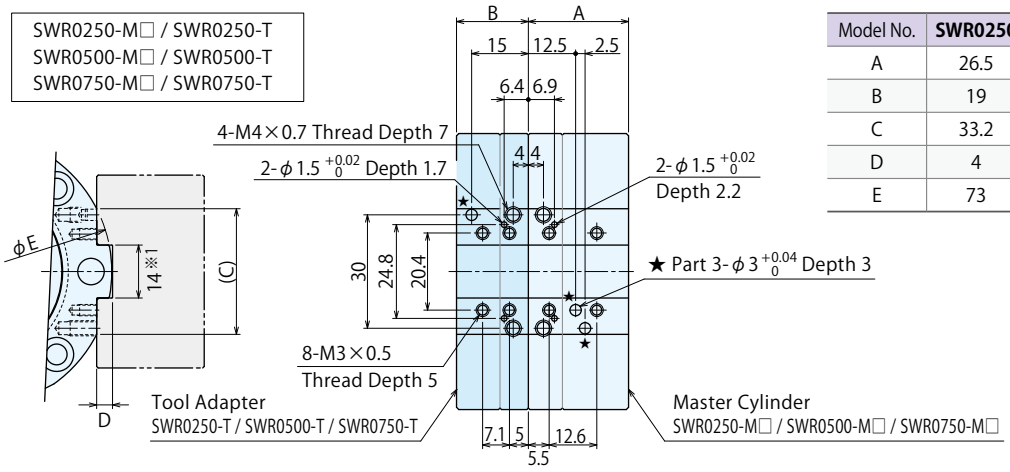


※2. Recommended width of option side is $14\ ^{+0.15}_{+0.05}$.

Option Mounting Dimensions (SWR0250～SWR2300)

Electrodes and fixtures provided by other than Kosmek, can be mounted with option mounting bolts.
This drawing shows the connected state of the master side and tool side.

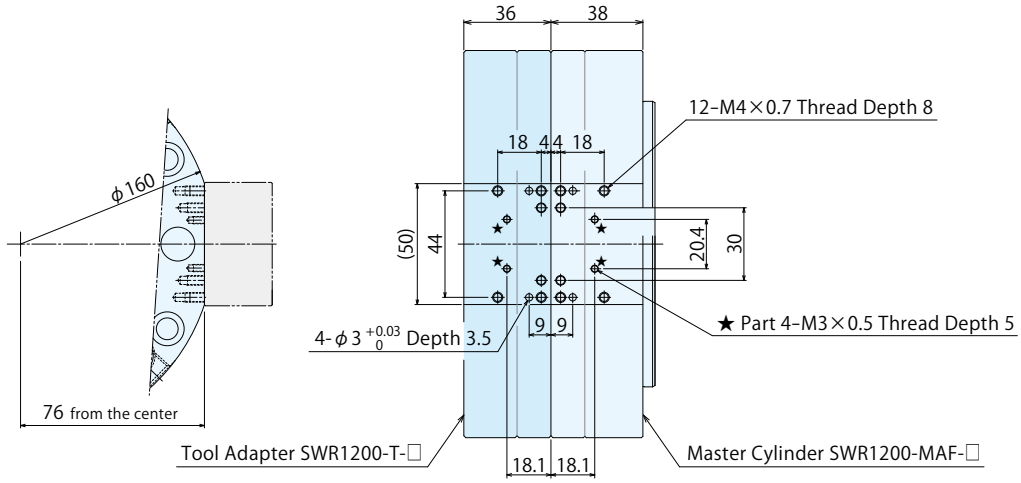
SWR0250-M□ / SWR0250-T
SWR0500-M□ / SWR0500-T
SWR0750-M□ / SWR0750-T



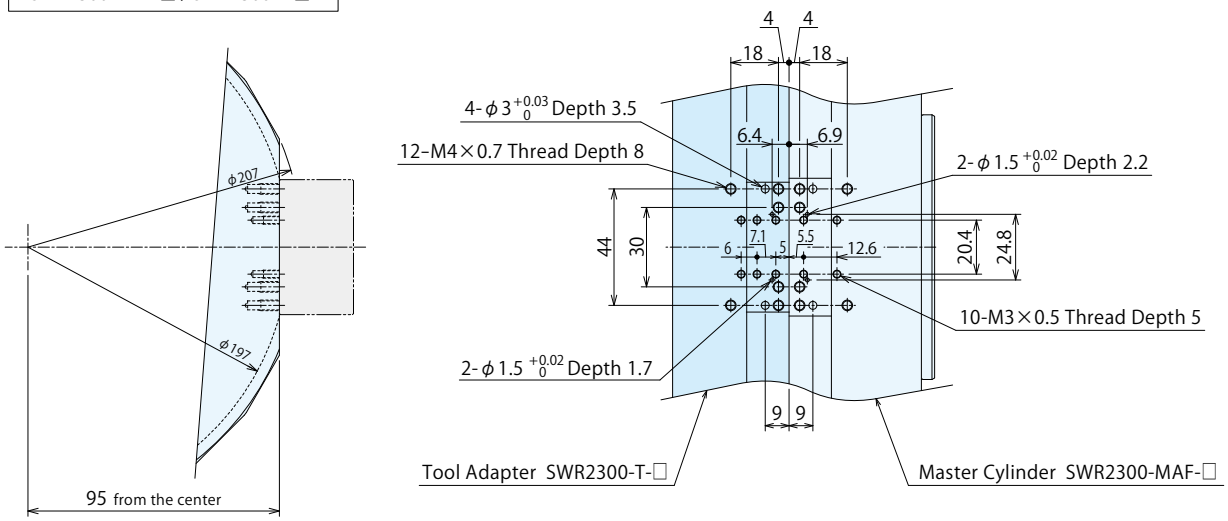
Model No.	SWR0250	SWR0500	SWR0750
A	26.5	31	33
B	19	25	25.5
C	33.2	36.4	38
D	4	3.5	3
E	73	98	123

※1. Recommended width of option side is 14 +0.15 +0.05 .

SWR1200-MAF-□ / SWR1200-T-□



SWR2300-MAF-□ / SWR2300-T-□



External Option：Resin Connector

External Option Symbol：J

Master Cylinder
model SWR□0-M□-J-□

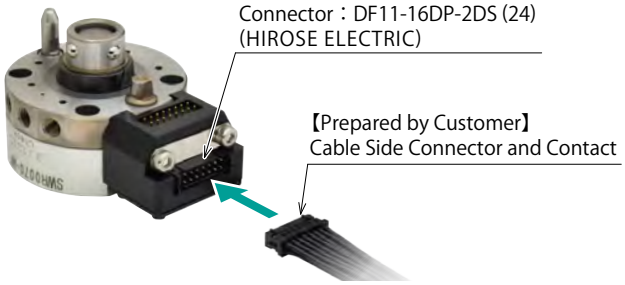
Tool Adapter
model SWR□0-T□-J

Specifications

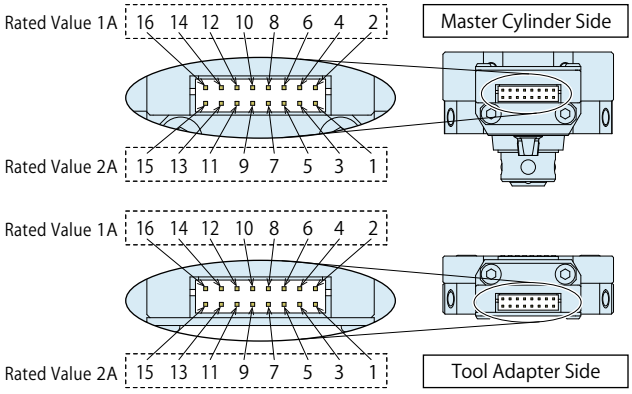
Rated Value (per contact)		DC 24V 2A：Pin 1,3,5,7,9,11,13,15 1A：Pin 2,4,6,8,10,12,14,16
Resin Connector		DF11-16DP-2DS(24) (HIROSE ELECTRIC)
Contact Resistance (Initial Value)		30mΩ or less
Total Current Capacity		10A
Number of Poles (per electrode)		16
Weight※1	Master Cylinder Side	Electrode 13g Bracket for SWR0030-M：10g Bracket for SWR1200-M：18g
	Tool Adapter Side	Electrode 11g Bracket for SWR0030-T：8g Bracket for SWR1200-T：16g
Cable with Applicable Connector (Sold Separately)		SWZ0J0-CL□ (Refer to P.39)

※1. Weight per electrode. Bracket weight shows the weight of SWRZ0S0-□, SWRZ0B0-120□B.

Connecting Cable



Pin Number



The cable side (connecter, contact, cable) is not included.
Please prepare the cable with applicable connector (SWZ0J0-CL□) on P.39, or design them yourself referring to the following list.

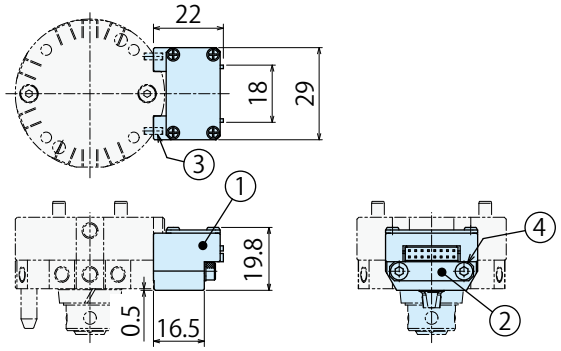
Cable Side Connector Model No.	Cable Side Contact Model No.	Recommended Wire Size	Protective Tool: Manual Crimping Tool	Protective Tool: Contact Removal Tool	Maker
DF11-16DS-2C	DF11-22SC	AWG22	DF11-TA22HC	DF-C-PO(B)	HIROSE ELECTRIC
	DF11-2428SC	AWG24 ～ 28	DF11-TA2428HC		

Notes： 1. Refer to HIROSE ELECTRIC catalogs for the detailed specifications and the rated current based on wire size.
2. Model Number of connectors required for the master cylinder and tool adapter is common.

External Dimensions (SWR0070/SWR0120/SWR0250/SWR0500/SWR0750/SWR2300)

Master Cylinder Side

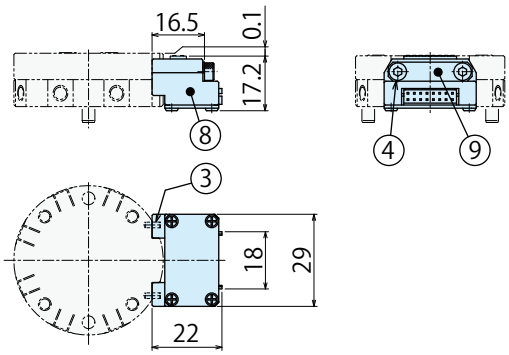
SWR0070-M□-**J** SWR0120-M□-**J** SWR0250-M□-**J** SWR0500-M□-**J**
SWR0750-M□-**J** SWR2300-MAF-**J**



Model No.	No.	Name	Quantity J：16 poles
SWRZ0J0-M	①	Electrode (Master Side)	1
	②	Spacer	1
	③	Parallel Pin φ1.5×4 B Type (SUS)	2
	④	Hexagon Socket Bolt M3×0.5×20 (SUS)	2

Tool Adapter Side

SWR0070-T-**J** SWR0120-T-**J** SWR0250-T-**J** SWR0500-T-**J**
SWR0750-T-**J** SWR2300-T-**J**



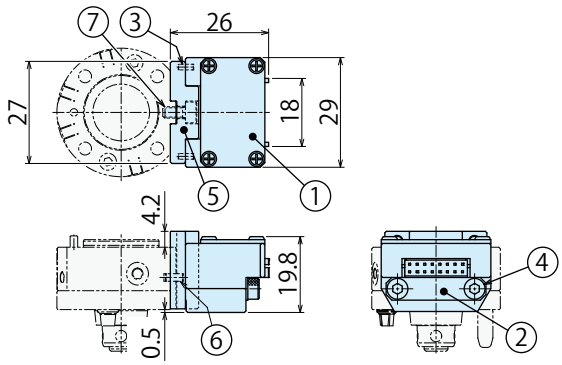
Model No.	No.	Name	Quantity J：16 poles
SWRZ0J0-T	⑧	Electrode (Tool Side)	1
	⑨	Spacer	1
	③	Parallel Pin φ1.5×4 B Type (SUS)	2
	④	Hexagon Socket Bolt M3×0.5×20 (SUS)	2

Notes :
1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0J0-**□：one set is one electrode.)
2. Prepare additional mounting bolts by customer when extending another electrode. See P.35 ~ P.36 for mounting thread depth.

● External Dimensions (SWR0030)

Master Cylinder Side

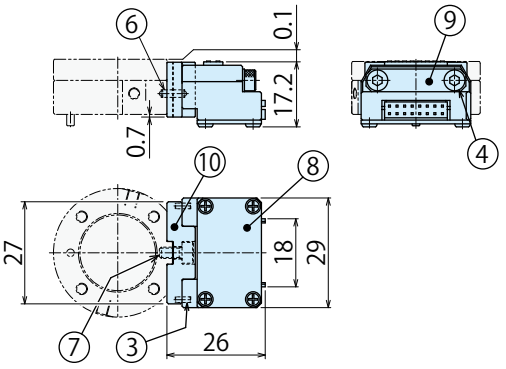
SWR0030-M-**J** ※ SWRZ0S0-M is mounted for SWR0030-M-J.



Model No.	No.	Name	Quantity J: 16 poles
SWRZ0J0-M	①	Electrode (Master Side)	1
	②	Spacer	1
	③	Parallel Pin ϕ1.5×4 B Type (SUS)	2
	④	Hexagon Socket Bolt M3×0.5×20 (SUS)	2
SWRZ0S0-M	⑤	Bracket (Master Side)	1
	⑥	Parallel Pin ϕ2×6 B Type (SUS)	1
	⑦	Hexagon Socket Bolt M3×0.5×6 (SUS)	1

Tool Adapter Side

SWR0030-T-**J** ※ SWRZ0S0-T is mounted for SWR0030-T-J.



Model No.	No.	Name	Quantity J: 16 poles
SWRZ0J0-T	⑧	Electrode (Tool Side)	1
	⑨	Spacer	1
	③	Parallel Pin ϕ1.5×4 B Type (SUS)	2
	④	Hexagon Socket Bolt M3×0.5×20 (SUS)	2
SWRZ0S0-T	⑩	Bracket (Tool Side)	1
	⑥	Parallel Pin ϕ2×6 B Type (SUS)	1
	⑦	Hexagon Socket Bolt M3×0.5×6 (SUS)	1

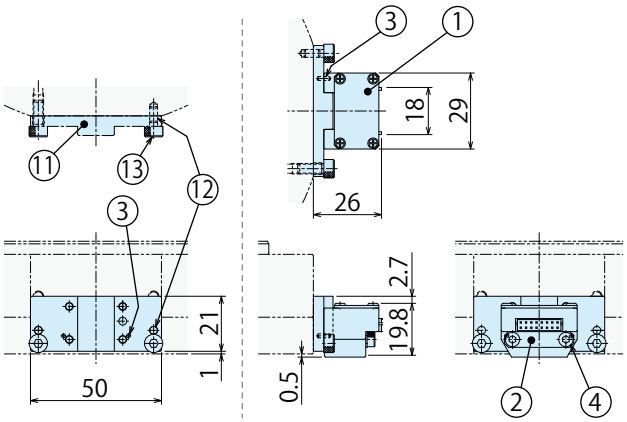
Note :

1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0J0-**□ : one set is one electrode.)

● External Dimensions (SWR1200)

Master Cylinder Side

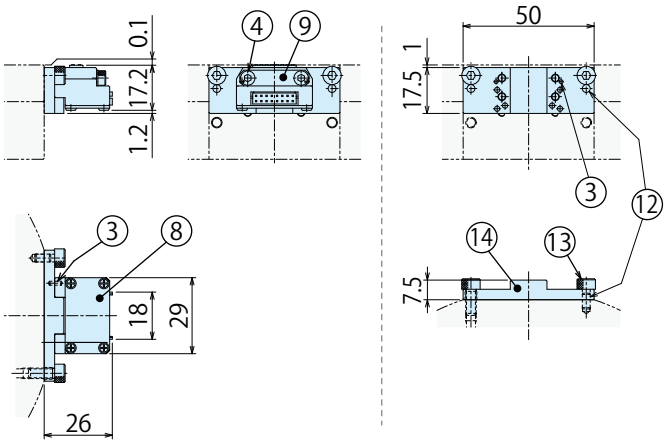
SWR1200-MAF-**J** ※ Please install SWRZ0B0-120MB only for SWR1200-MAF-J.



Model No.	No.	Name	Quantity J: 16 poles
SWRZ0J0-M	①	Electrode (Master Side)	1
	②	Spacer	1
	③	Parallel Pin ϕ1.5×4 B Type (SUS)	2
	④	Hexagon Socket Bolt M3×0.5×20 (SUS)	2
SWRZ0B0-120MB	⑪	Bracket (Master Side)	1
	⑫	Parallel Pin ϕ3×6 B Type (SUS)	1
	⑬	Hexagon Socket Bolt M4×0.7×10 (SUS)	1

Tool Adapter Side

SWR1200-T-**J** ※ Please install SWRZ0B0-120TB only for SWR1200-T-J.



Model No.	No.	Name	Quantity J: 16 poles
SWRZ0J0-T	⑧	Electrode (Tool Side)	1
	⑨	Spacer	1
	③	Parallel Pin ϕ1.5×4 B Type (SUS)	2
	④	Hexagon Socket Bolt M3×0.5×20 (SUS)	2
SWRZ0B0-120TB	⑭	Bracket (Tool Side)	1
	⑫	Parallel Pin ϕ3×6 B Type (SUS)	2
	⑬	Hexagon Socket Bolt M4×0.7×10 (SUS)	2

Notes :

1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0J0-**□ : one set is one electrode.)
2. Prepare additional mounting bolts by customer when extending another electrode. See P.36 for mounting thread depth.

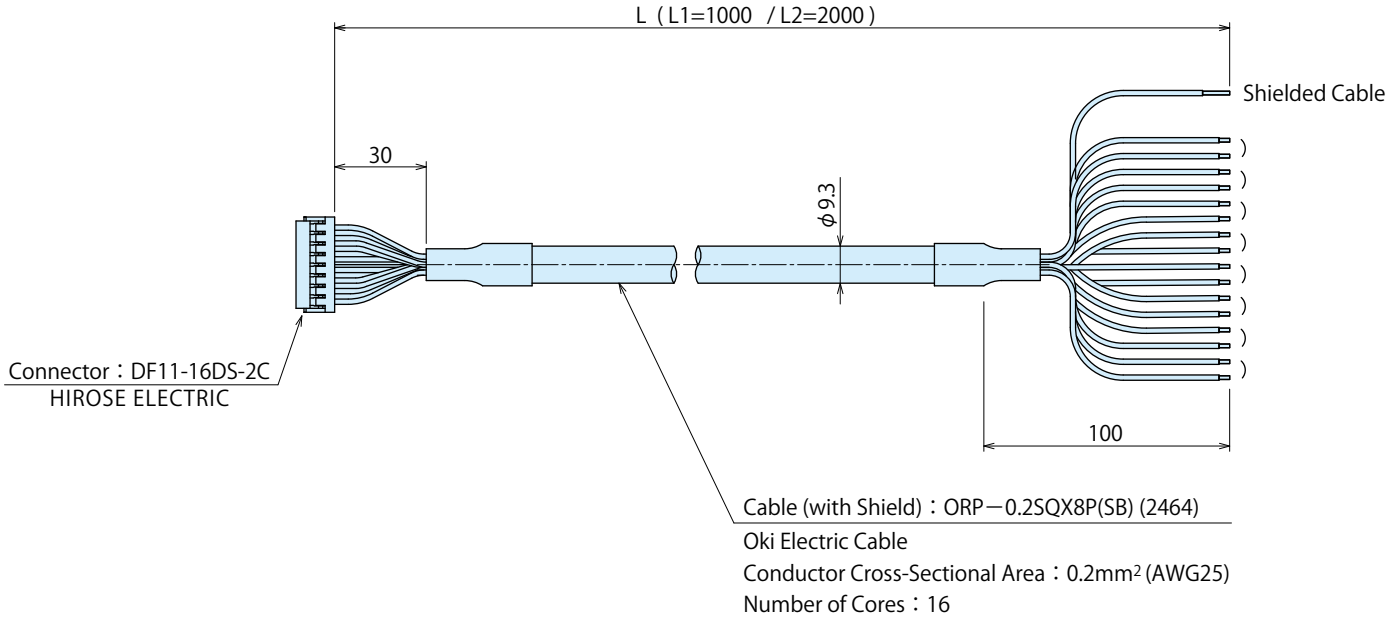
External Option：Cable with Connector for Resin Connector

This cable is an optional cable applicable to the Resin Connector Electrode (SWR External Option Symbol：**J**).

Model No. Indication

SWZ0J0-C **L1 / L2**

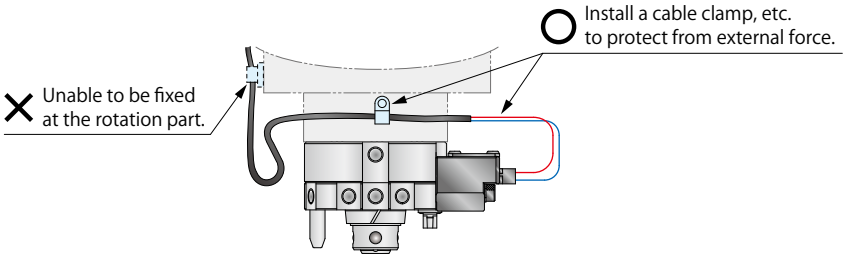
- Cable Length
  - L1：1m
  - L2：2m
- Design No. (Revision Number)



Rated Current	2A								1A							
Pin Number	1	3	5	7	9	11	13	15	2	4	6	8	10	12	14	16
Wire Color	Blue	White	Yellow	Brown	Green	Black	Red	Gray	Violet	Orange	Blue	Brown	Yellow	Black	Green	Gray
	Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair	

【Notes on Wire/Cable Procedure and Wiring】

- Make sure to fix the wire and cable so that they are not pulled while a robot is moving or turning around.
  External force should not be applied on the connector part since it leads to breaking of wire, detaching of connector and contact failure.



MEMO

External Option：Solder Terminal

External Option Symbol：B

Master Cylinder
model SWR□0-M□-B

Tool Adapter
model SWR□0-T□-B

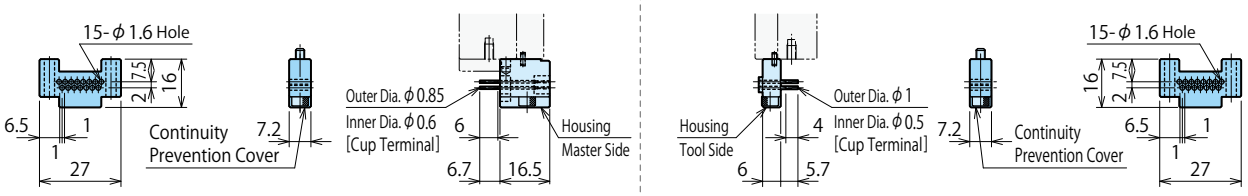
Specifications

Rated Value (per contact)		DC 24V 3A
Contact Resistance (Initial Value)		100mΩ or less
Total Current Capacity		10A
Number of Poles (per electrode)		15
Weight ※1	Master Cylinder Side	Electrode 15g Bracket for SWR0030-M：10g Bracket for SWR1200-M：18g
	Tool Adapter Side	Electrode 11g Bracket for SWR0030-T：8g Bracket for SWR1200-T：16g

※1. Weight per electrode. Bracket weight shows the weight of SWRZ0S0-□, SWRZ0B0-120□B.

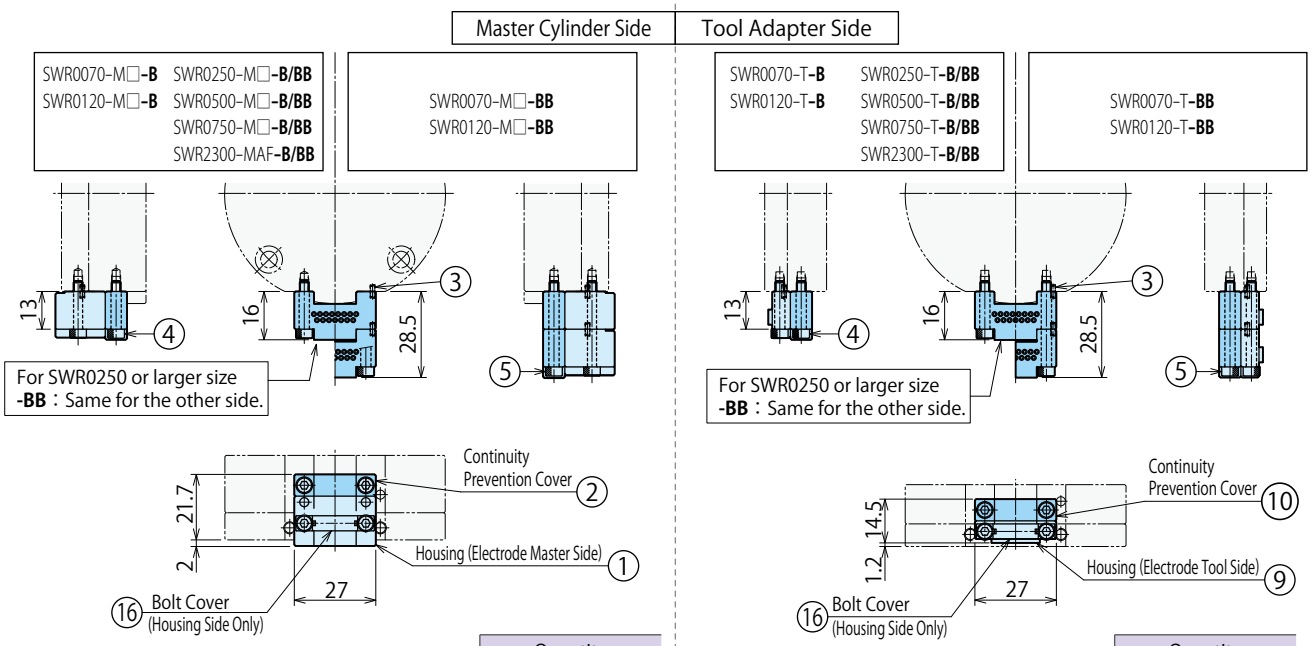
External Dimensions：Electrode

Master Cylinder Side | Tool Adapter Side



External Dimensions (SWR0070/SWR0120/SWR0250/SWR0500/SWR0750/SWR2300)

Master Cylinder Side | Tool Adapter Side



Model No.	No.	Name	Quantity B：15 poles	Quantity BB：30 poles SWR0120 or smaller	Quantity BB：30 poles SWR0250 or larger
SWRZ0B0-M	①	Electrode (Master Side)	1	2	
	②	Continuity Prevention Cover	1	2	
	③	Parallel Pin φ1.5×4 B Type (SUS)	2	4	
4SW101785-00※2	⑯	Bolt Cover	1	1	2
–※2	④	Hexagon Socket Bolt M3×0.5×16 (SUS)	4	-	8
–※2	⑤	Hexagon Socket Bolt M3×0.5×30 (SUS)	–	4	-

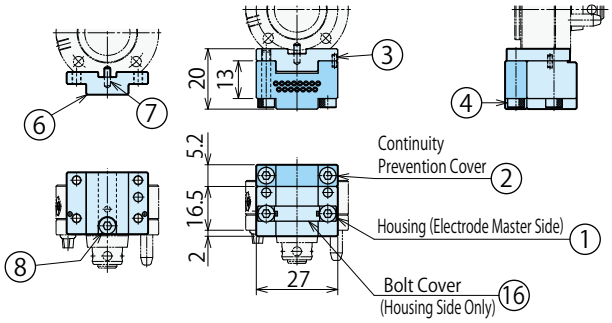
Model No.	No.	Name	Quantity B：15 poles	Quantity BB：30 poles SWR0120 or smaller	Quantity BB：30 poles SWR0250 or larger
SWRZ0B0-T	⑨	Electrode (Tool Side)	1	2	
	⑩	Continuity Prevention Cover	1	2	
	③	Parallel Pin φ1.5×4 B Type (SUS)	2	4	
4SW101785-00※2	⑯	Bolt Cover	1	1	2
–※2	④	Hexagon Socket Bolt M3×0.5×16 (SUS)	4	-	8
–※2	⑤	Hexagon Socket Bolt M3×0.5×30 (SUS)	–	4	-

Note： 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0B0-□**：one set is one electrode.)
For SWRZ0B0-M/SWRZ0B0-T, the bolt and bolt cover marked with ※2 are not included.

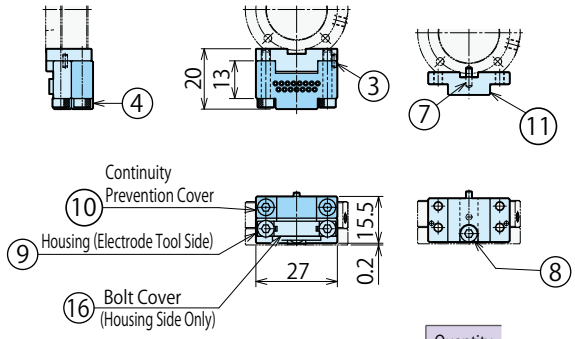
● External Dimensions (SWR0030)

Master Cylinder Side | Tool Adapter Side

SWR0030-M-**B** ※ Only for SWR0030-M-B, SWRZ0S0-M is mounted.



SWR0030-T-**B** ※ Only for SWR0030-T-B, SWRZ0S0-T is mounted.



Model No.	No.	Name	Quantity B : 15 poles
SWRZ0B0-M	①	Electrode (Master Side)	1
	②	Continuity Prevention Cover	1
	③	Parallel Pin φ1.5×4 B Type (SUS)	2
4SW101785-00 ※2	⑯	Bolt Cover	1
– ※2	④	Hexagon Socket Bolt M3×0.5×16 (SUS)	4
SWRZ0S0-M	⑥	Bracket (Master Side)	1
	⑦	Parallel Pin φ2×6 B Type (SUS)	1
	⑧	Hexagon Socket Bolt M3×0.5×6 (SUS)	1

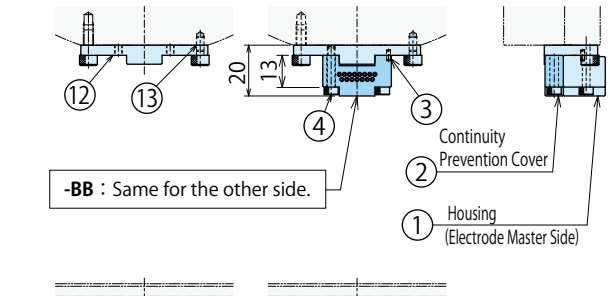
Model No.	No.	Name	Quantity B : 15 poles
SWRZ0B0-T	⑨	Electrode (Tool Side)	1
	⑩	Continuity Prevention Cover	1
	③	Parallel Pin φ1.5×4 B Type (SUS)	2
4SW101785-00 ※2	⑯	Bolt Cover	1
– ※2	④	Hexagon Socket Bolt M3×0.5×16 (SUS)	4
SWRZ0S0-T	⑪	Bracket (Tool Side)	1
	⑦	Parallel Pin φ2×6 B Type (SUS)	1
	⑧	Hexagon Socket Bolt M3×0.5×6 (SUS)	1

Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0B0-**□ : one set is one electrode.)
For SWRZ0B0-M/SWRZ0S0-M/SWRZ0B0-T/SWRZ0S0-T, the bolt and bolt cover marked with ※2 are not included.
2. For SWRZ0B0-M/SWRZ0B0-T, the bolt and bolt cover marked with ※2 are not included.

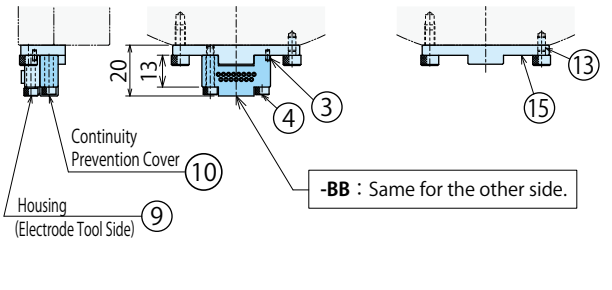
● External Dimensions (SWR1200)

Master Cylinder Side | Tool Adapter Side

SWR1200-MAF-**B/BB** ※ Only for SWR1200-MAF-B/BB, SWRZ0B0-120MB is mounted.



SWR1200-T-**B/BB** ※ Only for SWR1200-T-B/BB, SWRZ0B0-120TB is mounted.



Model No.	No.	Name	Quantity B : 15 poles	BB : 30 poles
SWRZ0B0-M	①	Electrode (Master Side)	1	2
	②	Continuity Prevention Cover	1	2
	③	Parallel Pin φ1.5×4 B Type (SUS)	2	4
4SW101785-00 ※2	⑯	Bolt Cover	1	2
– ※2	④	Hexagon Socket Bolt M3×0.5×16 (SUS)	4	8
SWRZ0B0-120MB	⑫	Bracket (Master Side)	1	2
	⑬	Parallel Pin φ3×6 B Type (SUS)	2	4
	⑭	Hexagon Socket Bolt M4×0.7×10 (SUS)	2	4

Model No.	No.	Name	Quantity B : 15 poles	BB : 30 poles
SWRZ0B0-T	⑨	Electrode (Tool Side)	1	2
	⑩	Continuity Prevention Cover	1	2
	③	Parallel Pin φ1.5×4 B Type (SUS)	2	4
4SW101785-00 ※2	⑯	Bolt Cover	1	2
– ※2	④	Hexagon Socket Bolt M3×0.5×16 (SUS)	4	8
SWRZ0B0-120TB	⑮	Bracket (Tool Side)	1	2
	⑬	Parallel Pin φ3×6 B Type (SUS)	2	4
	⑭	Hexagon Socket Bolt M4×0.7×10 (SUS)	2	4

Note : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0B0-**□ : one set is one electrode.)
For SWRZ0B0-M / SWRZ0B0-120MB / SWRZ0B0-T / SWRZ0B0-120TB, the bolt and bolt cover marked with ※2 are not included.

External Option：Solder Terminal with Cable

External Option Symbol：C01/C02

Master Cylinder
model SWR□0-M□- C01 C02

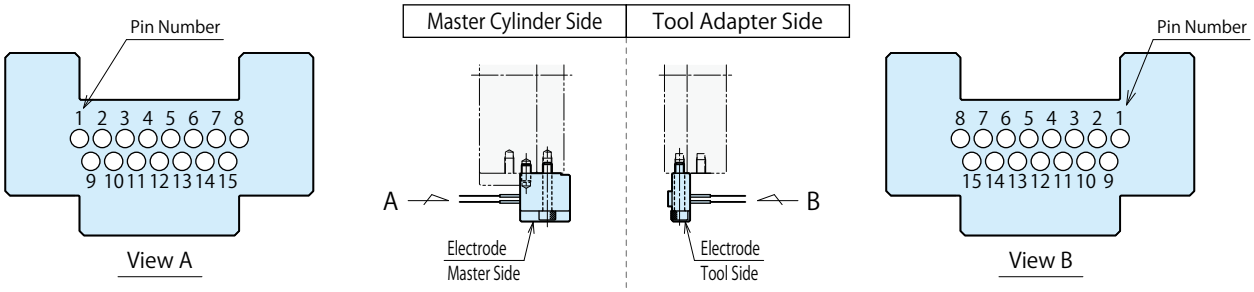
Tool Adapter
model SWR□0-T□- C01 C02

Specifications

Rated Value (per contact)		DC 24V 3A
Contact Resistance (Initial Value)		100mΩ or less
Total Current Capacity		10A
Number of Poles (per electrode)		15
Lead Wire Size※1		AWG25
Lead Wire Length	−C01	1m
	−C02	2m
Weight※2	Master Cylinder Side	Electrode -C01：120g / -C02：230g Bracket for SWR0030-M：10g Bracket for SWR1200-M：18g
	Tool Adapter Side	Electrode -C01：110g / -C02：220g Bracket for SWR0030-T：8g Bracket for SWR1200-T：16g

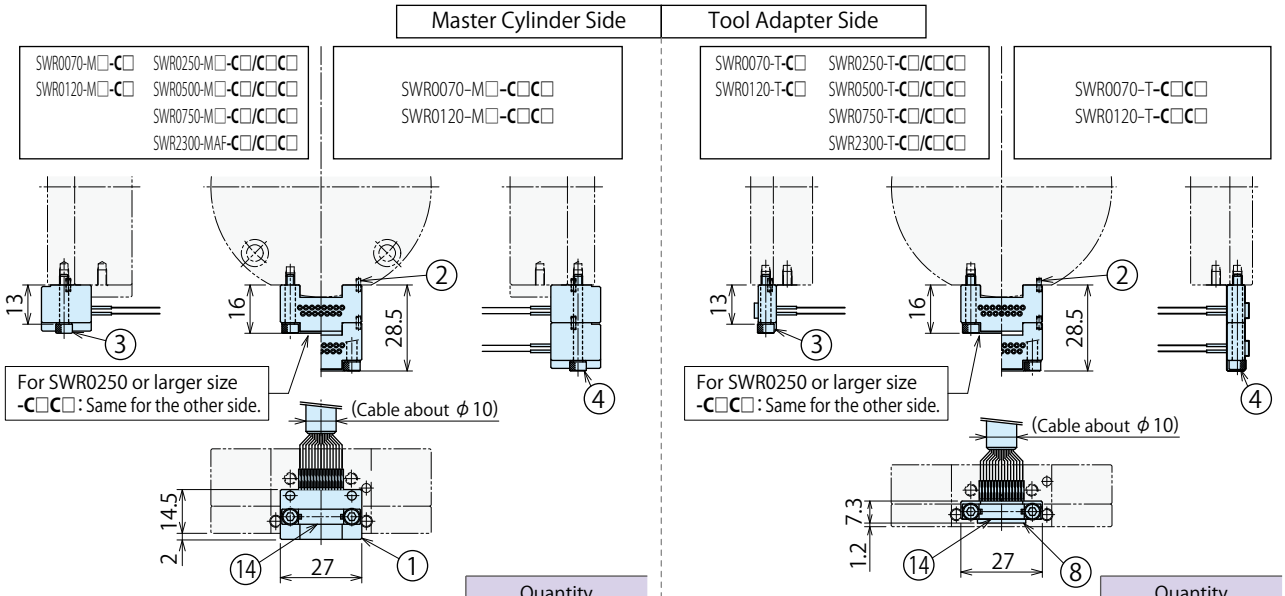
※1. The cable is Oki Electric Cable：ORP−0.2SQX8P(SB) (2464).
※2. Weight per electrode. Bracket weight shows the weight of SWRZ0S0-□, SWRZ0B0-120□B.

Pin Number and Wire Color



Pin Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Wire Color	Blue	White	Yellow	Brown	Green	Black	Red	Gray	Violet	Orange	Blue	Brown	Yellow	Black	Green
	Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		

External Dimensions (SWR0070/SWR0120/SWR0250/SWR0500/SWR0750/SWR2300)



Model No.	No.	Name	Quantity C□ 15 poles	Quantity C□C□: 30 poles SWR0120 or smaller	Quantity C□C□: 30 poles SWR0250 or larger
SWRZ0C0	①	Electrode (Master Side)	1	2	
−M01/M02	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2	4	
4SW101785-00※3	⑭	Bolt Cover	1	1	2
− ※3	③	Hexagon Socket Bolt M3×0.5×16(SUS)	2	-	4
− ※3	④	Hexagon Socket Bolt M3×0.5×30(SUS)	−	2	-

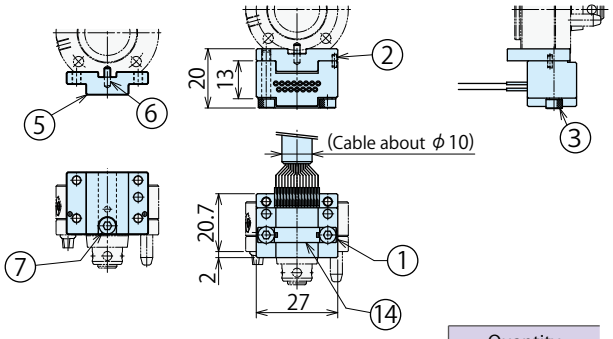
Model No.	No.	Name	Quantity C□ 15 poles	Quantity C□C□: 30 poles SWR0120 or smaller	Quantity C□C□: 30 poles SWR0250 or larger
SWRZ0C0	⑧	Electrode (Tool Side)	1	2	
−T01/T02	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2	4	
4SW101785-00※3	⑭	Bolt Cover	1	1	2
− ※3	③	Hexagon Socket Bolt M3×0.5×16(SUS)	2	-	4
− ※3	④	Hexagon Socket Bolt M3×0.5×30(SUS)	−	2	-

Notes：
1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0C0**-□：one set is one electrode.)
   For SWRZ0C0-M□ / SWRZ0S0-M, the bolt and bolt cover marked with ※3 are not included.
2. The connected part of the solder terminal and lead wire is isolated with a thermal contraction tube.
3. For SWRZ0C0-□01/02 the lead wire length is different from its shown in the specifications.
   (SWRZ0C0-□01：Lead Wire Length 1m, SWRZ0C0-□02：Lead Wire Length 2m)

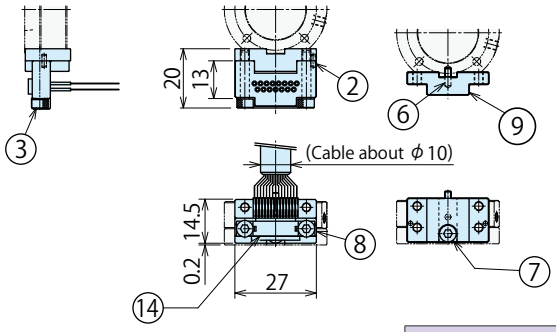
● External Dimensions (SWR0030)

Master Cylinder Side | Tool Adapter Side

SWR0030-M-**C**□ ※ Only for SWR0030-M-C□, SWRZ0S0-M is mounted.



SWR0030-T-**C**□ ※ Only for SWR0030-T-C□, SWRZ0S0-T is mounted.



Model No.	No.	Name	Quantity C□: 15 poles
SWRZ0C0 –M01/M02	①	Electrode (Master Side)	1
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2
4SW101785-00※3	⑭	Bolt Cover	1
– ※3	③	Hexagon Socket Bolt M3×0.5×16 (SUS)	2
SWRZ0S0-M	⑤	Bracket (Master Side)	1
	⑥	Parallel Pin ϕ2×6 B Type (SUS)	1
	⑦	Hexagon Socket Bolt M3×0.5×6 (SUS)	1

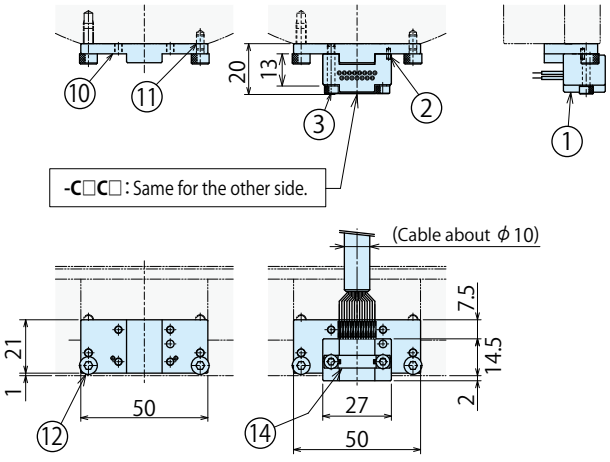
Model No.	No.	Name	Quantity C□: 15 poles
SWRZ0C0 –T01/T02	⑧	Electrode (Tool Side)	1
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2
4SW101785-00※3	⑭	Bolt Cover	1
– ※3	③	Hexagon Socket Bolt M3×0.5×16 (SUS)	2
SWRZ0S0-T	⑨	Bracket (Tool Side)	1
	⑥	Parallel Pin ϕ2×6 B Type (SUS)	1
	⑦	Hexagon Socket Bolt M3×0.5×6 (SUS)	1

Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0C0-**□ : one set is one electrode.)
For SWRZ0C0-M□ / SWRZ0S0-M / SWRZ0C0-T□ / SWRZ0S0-T, the bolt and bolt cover marked with ※3 are not included.
2. The connected part of the solder terminal and lead wire is isolated with a thermal contraction tube.
3. For SWRZ0C0-□01/02 the lead wire length is different from its shown in the specifications.
(SWRZ0C0-□01 : Lead Wire Length 1m, SWRZ0C0-□02 : Lead Wire Length 2m)

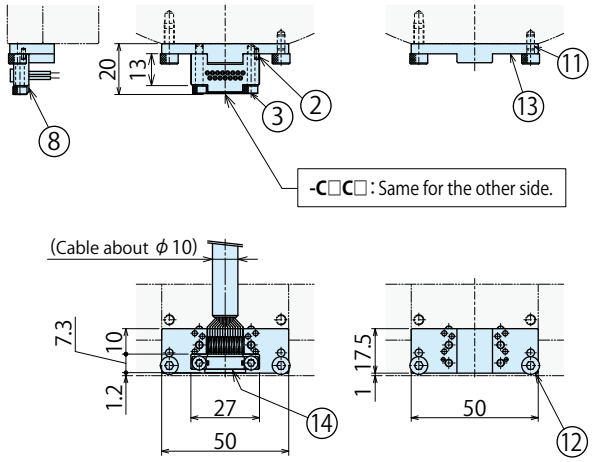
● External Dimensions (SWR1200)

Master Cylinder Side | Tool Adapter Side

SWR1200-MAF-**C**□/**C**□**C**□ ※ Only for SWR1200-MAF-C□/C□C□, SWRZ0B0-120MB is mounted.



SWR1200-T-**C**□/**C**□**C**□ ※ Only for SWR1200-T-C□/C□C□, SWRZ0B0-120TB is mounted.



Model No.	No.	Name	Quantity C□: 15 poles	C□C□: 30 poles
SWRZ0C0 –M01/M02	①	Electrode (Master Side)	1	2
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	1	4
4SW101785-00※3	⑭	Bolt Cover	1	2
– ※3	③	Hexagon Socket Bolt M3×0.5×16 (SUS)	2	4
SWRZ0B0-120MB	⑩	Bracket (Master Side)	1	2
	⑪	Parallel Pin ϕ3×6 B Type (SUS)	2	4
	⑫	Hexagon Socket Bolt M4×0.7×10 (SUS)	2	4

Model No.	No.	Name	Quantity C□: 15 poles	C□C□: 30 poles
SWRZ0C0 –T01/T02	⑧	Electrode (Tool Side)	1	2
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2	4
4SW101785-00※3	⑭	Bolt Cover	1	2
– ※3	③	Hexagon Socket Bolt M3×0.5×16 (SUS)	2	4
SWRZ0B0-120TB	⑬	Bracket (Tool Side)	1	2
	⑪	Parallel Pin ϕ3×6 B Type (SUS)	2	4
	⑫	Hexagon Socket Bolt M4×0.7×10 (SUS)	2	4

Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0C0-**□ : one set is one electrode.)
For SWRZ0C0-M□ / SWRZ0B0-120MB / SWRZ0C0-T□ / SWRZ0B0-120TB, the bolt and bolt cover marked with ※3 are not included.
2. The connected part of the solder terminal and lead wire is isolated with a thermal contraction tube.
3. For SWRZ0C0-□01/02 the lead wire length is different from its shown in the specifications.
(SWRZ0C0-□01 : Lead Wire Length 1m, SWRZ0C0-□02 : Lead Wire Length 2m)

External Option：Waterproof Electrode (Simple Waterproof Option)

External Option Symbol：U01/U02

Master Cylinder
model SWR□0-M□- U01 U02

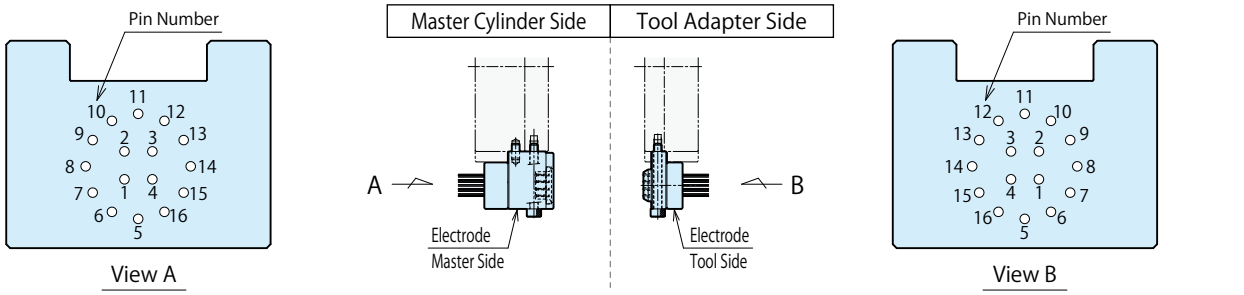
Tool Adapter
model SWR□0-T□- U01 U02

Specifications

Rated Value (per contact)		DC 24V 3A
Contact Resistance (Initial Value)		100mΩ or less
Total Current Capacity		10A
Number of Poles (per electrode)		16
Lead Wire Size※1		AWG25
Lead Wire Length	–U01	1m
	–U02	2m
Weight※2	Master Cylinder Side	Electrode -U01：140g / -U02：260g Bracket for SWR0030-M：10g Bracket for SWR1200-M：18g
	Tool Adapter Side	Electrode -U01：140g / -U02：250g Bracket for SWR0030-T：8g Bracket for SWR1200-T：16g
Protection Grade※3		Equivalent to IP54

※1. The cable is Oki Electric Cable：ORP－0.2SQX8P(SB) (2464).
※2. Weight per electrode. Bracket weight shows the weight of SWRZ0S0-□, SWRZ0B0-120□B.
※3. The protection grade is equivalent to IP54 at connected state (fit state) of the master cylinder and tool adapter.

Pin Number and Wire Color

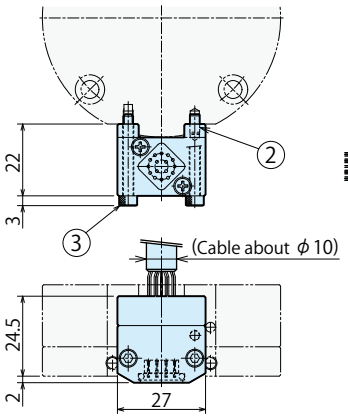


Pin Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Wire Color	Blue	White	Yellow	Brown	Green	Black	Red	Gray	Violet	Orange	Blue	Brown	Yellow	Black	Green	Gray
	Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair		Twisted Pair	

External Dimensions (SWR0070/SWR0120/SWR0250/SWR0500/SWR0750/SWR2300)

Master Cylinder Side

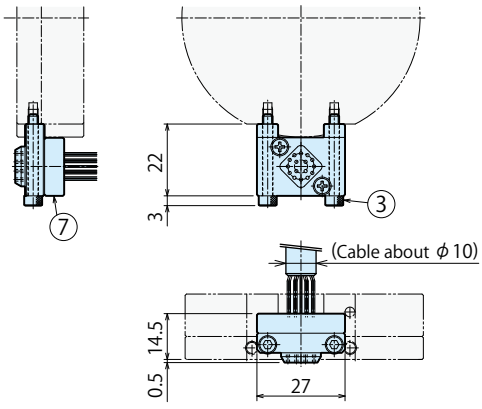
SWR0070-M□-**U**□ SWR0500-M□-**U**□
SWR0120-M□-**U**□ SWR0750-M□-**U**□
SWR0250-M□-**U**□ SWR2300-MAF-**U**□



Model No.	No.	Name	Quantity
SWRZ0U0 -M01/M02	①	Electrode (Master Side)	1
	②	Parallel Pin ϕ3×6 B Type (SUS)	1
	③	Hexagon Socket Bolt M3×0.5×25 (SUS)	2

Tool Adapter Side

SWR0070-T-**U**□ SWR0500-T-**U**□
SWR0120-T-**U**□ SWR0750-T-**U**□
SWR0250-T-**U**□ SWR2300-T-**U**□



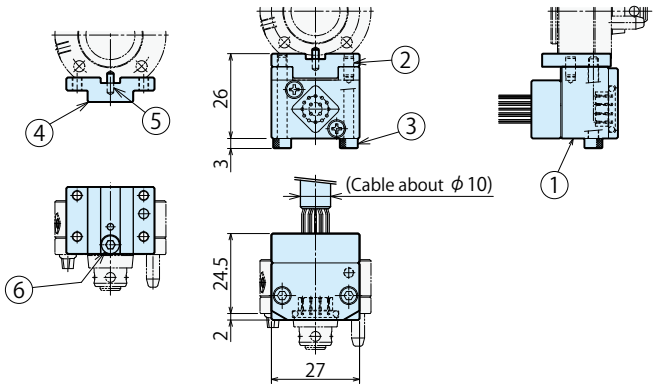
Model No.	No.	Name	Quantity
SWRZ0U0 -T01/T02	⑦	Electrode (Tool Side)	1
	③	Hexagon Socket Bolt M3×0.5×25 (SUS)	2

Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0U0-□** ：one set is one electrode.)
2. For SWRZ0U0-□01/02 the lead wire length is different from its shown in the specifications.
(SWRZ0U0-□01：Lead Wire Length 1m, SWRZ0U0-□02：Lead Wire Length 2m)

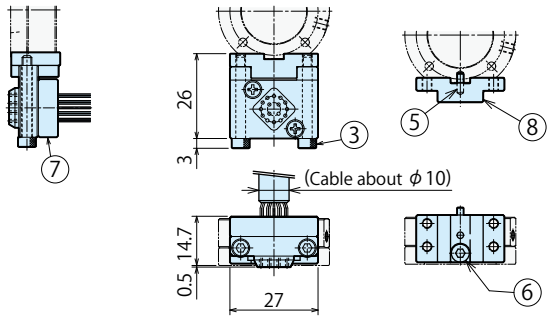
● External Dimensions (SWR0030)

Master Cylinder Side | Tool Adapter Side

SWR0030-M-**U**□ ※ Only for SWR0030-M-U□, SWRZ0S0-M is mounted.



SWR0030-T-**U**□ ※ Only for SWR0030-T-U□, SWRZ0S0-T is mounted.



Model No.	No.	Name	Quantity
SWRZ0U0 -M01/M02	①	Electrode (Master Side)	1
	②	Parallel Pin ϕ3×6 B Type (SUS)	1
	③	Hexagon Socket Bolt M3×0.5×25 (SUS)	2
SWRZ0S0-M	④	Bracket (Master Side)	1
	⑤	Parallel Pin ϕ2×6 B Type (SUS)	1
	⑥	Hexagon Socket Bolt M3×0.5×6 (SUS)	1

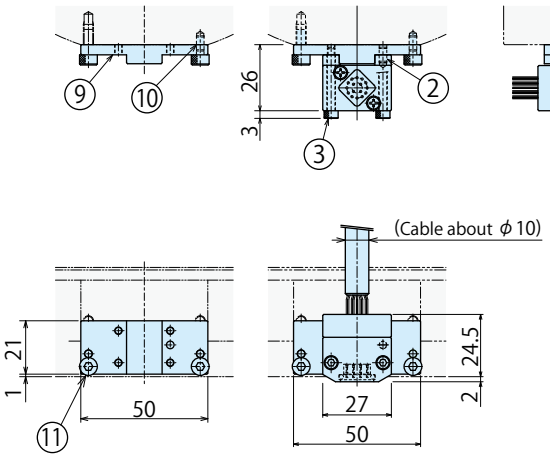
Model No.	No.	Name	Quantity
SWRZ0U0 -T01/T02	⑦	Electrode (Tool Side)	1
	③	Hexagon Socket Bolt M3×0.5×25 (SUS)	2
SWRZ0S0-T	⑧	Bracket (Tool Side)	1
	⑤	Parallel Pin ϕ2×6 B Type (SUS)	1
	⑥	Hexagon Socket Bolt M3×0.5×6 (SUS)	1

Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0U0-**□ : one set is one electrode.)
2. For SWRZ0U0-□01/02 the lead wire length is different from its shown in the specifications.
(SWRZ0U0-□01 : Lead Wire Length 1m, SWRZ0U0-□02 : Lead Wire Length 2m)

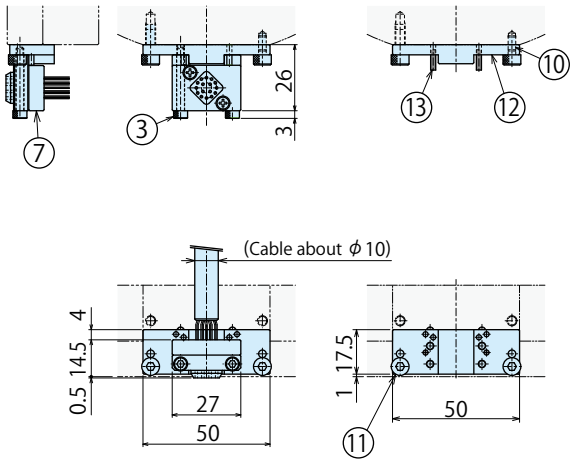
● External Dimensions (SWR1200)

Master Cylinder Side | Tool Adapter Side

SWR1200-MAF-**U**□ ※ Only for SWR1200-MAF-U□, SWRZ0B0-120MB is mounted.



SWR1200-T-**U**□ ※ Only for SWR1200-T-U□, SWRZ0B0-120TB is mounted.



Model No.	No.	Name	Quantity
SWRZ0U0 -M01/M02	①	Electrode (Master Side)	1
	②	Parallel Pin ϕ3×6 B Type (SUS)	1
	③	Hexagon Socket Bolt M3×0.5×25 (SUS)	2
SWRZ0B0-120MB	⑨	Bracket (Master Side)	1
	⑩	Parallel Pin ϕ3×6 B Type (SUS)	2
	⑪	Hexagon Socket Bolt M4×0.7×10 (SUS)	2

Model No.	No.	Name	Quantity
SWRZ0U0 -T01/T02	⑦	Electrode (Tool Side)	1
	③	Hexagon Socket Bolt M3×0.5×25 (SUS)	2
SWRZ0B0-120TB	⑫	Bracket (Tool Side)	1
	⑩	Parallel Pin ϕ3×6 B Type (SUS)	2
	⑪	Hexagon Socket Bolt M4×0.7×10 (SUS)	2
	⑬	Parallel Pin ϕ2×8 B Type (SUS)	2

Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0U0-**□ : one set is one electrode.)
2. For SWRZ0U0-□01/02 the lead wire length is different from its shown in the specifications.
(SWRZ0U0-□01 : Lead Wire Length 1m, SWRZ0U0-□02 : Lead Wire Length 2m)

External Option：D-SUB Connector

External Option Symbol：D

Master Cylinder
model SWR□0-M□-D

Tool Adapter
model SWR□0-T□-D

Specifications

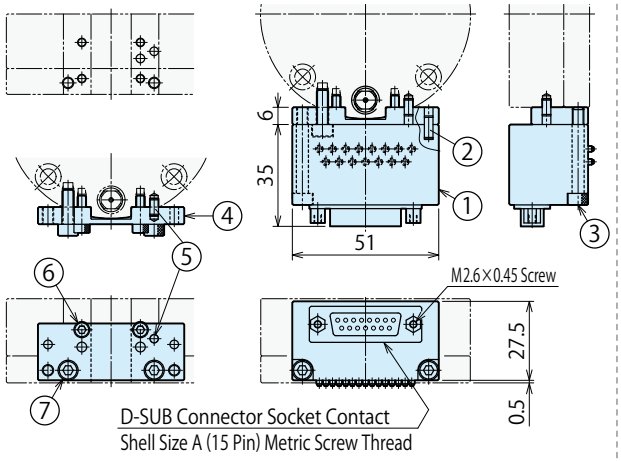
Rated Value (per contact)		DC 24V 3A
Contact Resistance (Initial Value)		100mΩ or less
Total Current Capacity		10A
Number of Poles (per electrode)		15
Weight※1	Master Cylinder Side	Electrode 80g / Bracket 17g
	Tool Adapter Side	Electrode 70g / Bracket 17g

※1. Weight per electrode.
Bracket weight shows the weight of SWRZ0Z0.

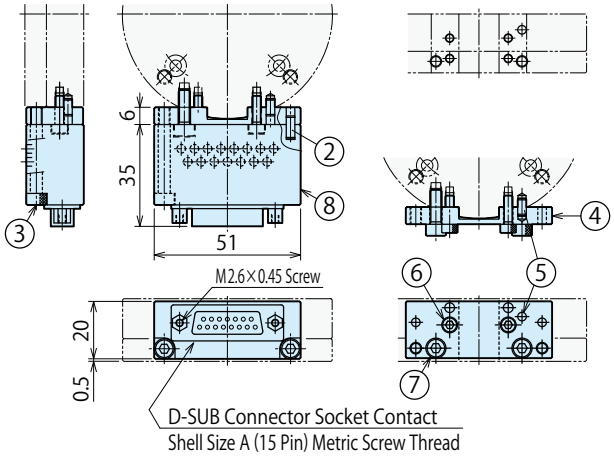
External Dimensions

Master Cylinder Side | Tool Adapter Side

SWR0250-M□-**D**
SWR0500-M□-**D**
SWR0750-M□-**D**

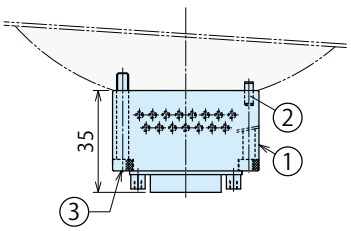


SWR0250-T-**D**
SWR0500-T-**D**
SWR0750-T-**D**



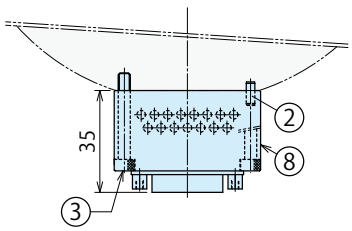
SWR1200-MAF-**D**
SWR2300-MAF-**D**

※ Dimensions not shown are the same as the drawing above.



SWR1200-T-**D**
SWR2300-T-**D**

※ Dimensions not shown are the same as the drawing above.



Model No.	No.	Name	Quantity
SWRZ0D0-M	①	Electrode (Master Side)	1
	②	Parallel Pin ϕ3×8 B Type (SUS)	2
	③	Hexagon Socket Bolt M4×0.7×30 (SUS)	2
SWRZ0Z0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Parallel Pin ϕ3×8 B Type (SUS)	1
	⑥	Hexagon Socket Bolt M3×0.5×10 (SUS)	2
	⑦	Hexagon Socket Bolt M4×0.7×12 (SUS)	2

Model No.	No.	Name	Quantity
SWRZ0D0-T	⑧	Electrode (Tool Side)	1
	②	Parallel Pin ϕ3×8 B Type (SUS)	2
	③	Hexagon Socket Bolt M4×0.7×30 (SUS)	2
SWRZ0Z0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Parallel Pin ϕ3×8 B Type (SUS)	1
	⑥	Hexagon Socket Bolt M3×0.5×10 (SUS)	2
	⑦	Hexagon Socket Bolt M4×0.7×12 (SUS)	2

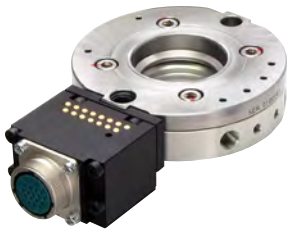
Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0D0-**□ : one set is one electrode.)
2. For SWR1200, SWRZ0Z0 is not required.

External Option：Circular Connector (Connector Based on JIS C 5432)

External Option Symbol：G

Master Cylinder
model SWR□0-M□-G

Tool Adapter
model SWR□0-T□-G



Specifications

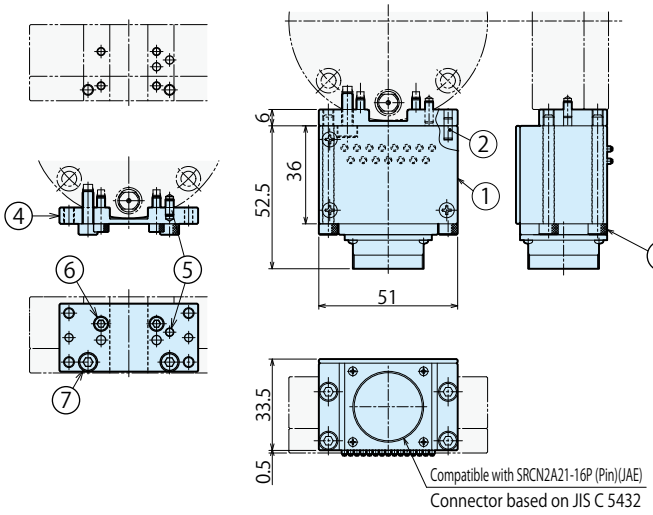
Rated Value (per contact)		DC 24V 3A
Contact Resistance (Initial Value)		100mΩ or less
Total Current Capacity		17A
Number of Poles (per electrode)		15
Weight※1	Master Cylinder Side	Electrode 100g / Bracket 21g
	Tool Adapter Side	Electrode 120g / Bracket 21g

※1. Weight per electrode.
Bracket weight shows the weight of SWRZ0E0.

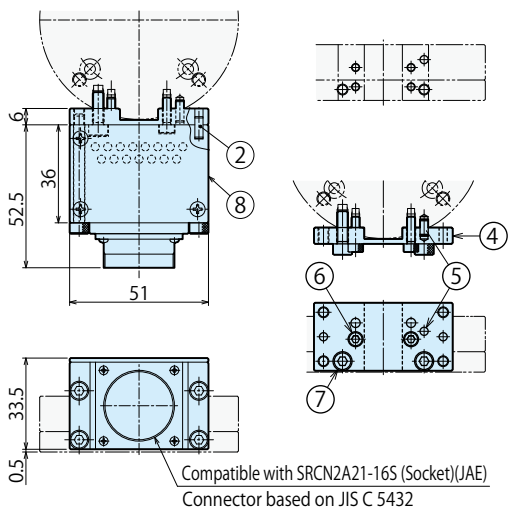
External Dimensions

Master Cylinder Side | Tool Adapter Side

SWR0250-M□-**G**
SWR0500-M□-**G**
SWR0750-M□-**G**

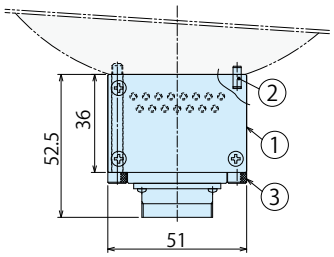


SWR0250-T-**G**
SWR0500-T-**G**
SWR0750-T-**G**



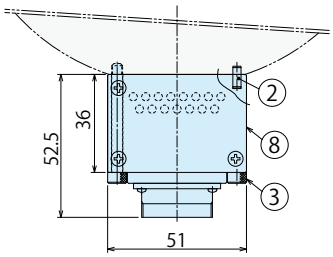
SWR1200-MAF-**G**
SWR2300-MAF-**G**

※ Dimensions not shown are the same as the drawing above.



SWR1200-T-**G**
SWR2300-T-**G**

※ Dimensions not shown are the same as the drawing above.



Model No.	No.	Name	Quantity
SWRZ0G0-M	①	Electrode (Master Side)	1
	②	Parallel Pin ϕ3×8 B Type (SUS)	2
	③	Hexagon Socket Bolt M4×0.7×40 (SUS)	4
SWRZ0E0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Parallel Pin ϕ3×6 B Type (SUS)	1
	⑥	Hexagon Socket Bolt M3×0.5×10 (SUS)	2
	⑦	Hexagon Socket Bolt M4×0.7×12 (SUS)	2

Model No.	No.	Name	Quantity
SWRZ0G0-T	⑧	Electrode (Tool Side)	1
	②	Parallel Pin ϕ3×8 B Type (SUS)	2
	③	Hexagon Socket Bolt M4×0.7×40 (SUS)	4
SWRZ0E0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Parallel Pin ϕ3×6 B Type (SUS)	1
	⑥	Hexagon Socket Bolt M3×0.5×10 (SUS)	2
	⑦	Hexagon Socket Bolt M4×0.7×12 (SUS)	2

Notes：
1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0G0-**□：one set is one electrode.)
2. For SWR1200, SWRZ0E0 is not required.

External Option：Compact Electric Power Transmission

Extensible Options :
Resin Connector, Solder Terminal

External Option Symbol：K

Master Cylinder
model SWR□0-M□- **K** or Model No. for Extensible Option

Tool Adapter
model SWR□0-T- **K** or Model No. for Extensible Option

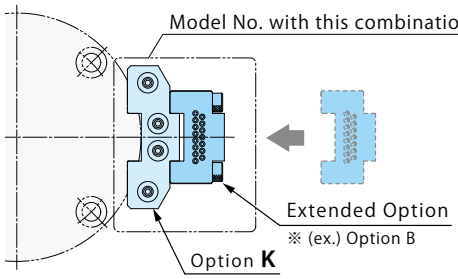
Specifications

Rated Value (per contact)		AC/DC 200V 5A
Total Current Capacity		12A
Number of Poles (per electrode)		4
Weight※1	Master Cylinder Side	Electrode 17g Bracket for SWR0030-M：10g
	Tool Adapter Side	Electrode 13g Bracket for SWR0030-T：8g
Cable with Applicable Terminal (Sold Separately)		SWZ0K0-CL□ (Refer to P.51)

※1. Weight per electrode.
Bracket weight shows the weight of SWRZ0S0-□.

Extensible Options

Additional electrode can be extended to the option：**K**.



Extendable Electrode	Model No. for Extensible Option						
	SWR 0030	SWR 0070	SWR 0120	SWR 0250	SWR 0500	SWR 0750	SWR 2300
J：Resin Connector	N/A	**JK**	**JK**	**JK2**	**JK2**	**JK2**	**JK2**
B：Solder Terminal		**BK**	**BK**	**BK2**	**BK2**	**BK2**	**BK2**
C0□：Cable with Solder Terminal		**C0**□**K**	**C0**□**K**	**C0**□**K2**	**C0**□**K2**	**C0**□**K2**	**C0**□**K2**

※ Please contact us for detailed dimensions for extensible options.

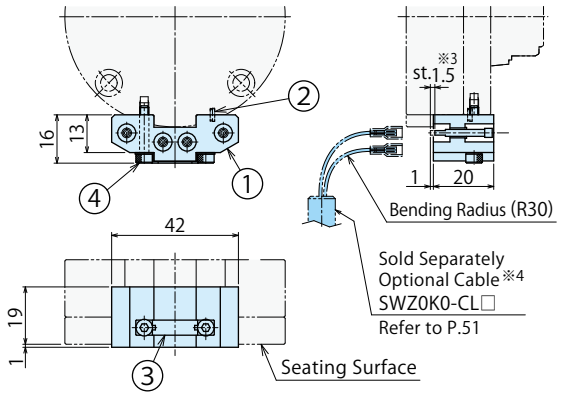
Applicable Cable

The cable with applicable terminal and applicable terminal are not included.
Please prepare the cable with applicable terminal (SWZ0K0-CL□) on P.51 or design it yourself referring to the applicable terminal on P.51.

External Dimensions (SWR0070/SWR0120/SWR0250/SWR0500/SWR0750/SWR2300)

Master Cylinder Side

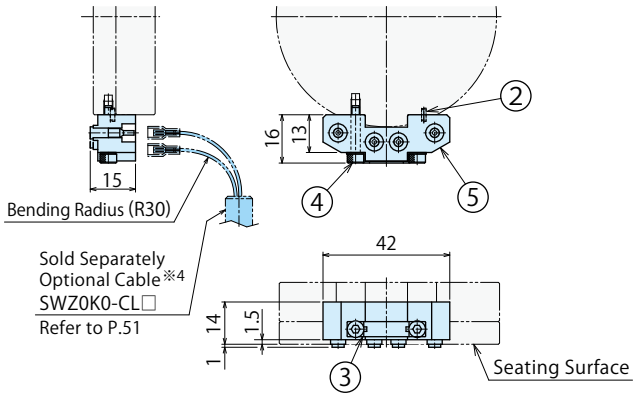
SWR0070-M□-**K** SWR0120-M□-**K** SWR0250-M□-**K** SWR0500-M□-**K**
SWR0750-M□-**K** SWR2300-MAF-**K**



Model No.	No.	Name	Quantity
SWRZ0K0-M	①	Electrode (Master Side)	1
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2
4SW101785-00 ※2	③	Bolt Cover	1
– ※2	④	Hexagon Socket Bolt M3×0.5×16 (SUS)	2

Tool Adapter Side

SWR0070-T-**K** SWR0120-T-**K** SWR0250-T-**K** SWR0500-T-**K**
SWR0750-T-**K** SWR2300-T-**K**



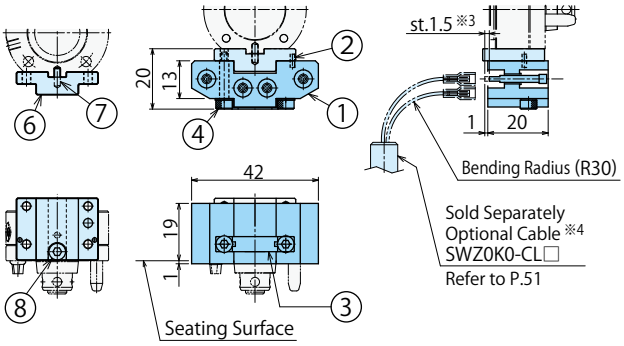
Model No.	No.	Name	Quantity
SWRZ0K0-T	⑤	Electrode (Tool Side)	1
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2
4SW101785-00 ※2	③	Bolt Cover	1
– ※2	④	Hexagon Socket Bolt M3×0.5×16 (SUS)	2

Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0K0-**□ : one set is one electrode.)
For SWRZ0K0-M / SWRZ0K0-T, the bolt and bolt cover marked with ※2 are not included.
2. The electrode probe on master side strokes 1.5mm (※3) when connecting with SWR.
When fixing the cable, make sure there is enough space for the probe operation.
3. The electrode stays connected when released, because its connecting stroke requires 1.5mm which is longer than SWR lift stroke.
※4. The optional cable and terminal are not included in the electrode. Please prepare them separately.

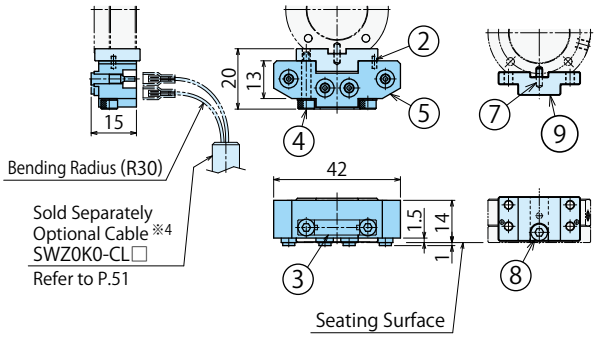
● External Dimensions (SWR0030)

Master Cylinder Side	Tool Adapter Side

SWR0030-M-**K** ※ Only for SWR0030-M-K, SWRZ0S0-M is mounted.



SWR0030-T-**K** ※ Only for SWR0030-T-K, SWRZ0S0-K is mounted.



Model No.	No.	Name	Quantity
SWRZ0K0-M	①	Electrode (Master Side)	1
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2
4SW101785-00 ※2	③	Bolt Cover	1
– ※2	④	Hexagon Socket Bolt M3×0.5×16(SUS)	2
SWRZ0S0-M	⑥	Bracket (Master Side)	1
	⑦	Parallel Pin ϕ2×6 B Type (SUS)	1
	⑧	Hexagon Socket Bolt M3×0.5×6(SUS)	1

Model No.	No.	Name	Quantity
SWRZ0K0-T	⑤	Electrode (Tool Side)	1
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2
4SW101785-00 ※2	③	Bolt Cover	1
– ※2	④	Hexagon Socket Bolt M3×0.5×16 (SUS)	2
SWRZ0S0-T	⑨	Bracket (Tool Side)	1
	⑦	Parallel Pin ϕ2×6 B Type (SUS)	1
	⑧	Hexagon Socket Bolt M3×0.5×6(SUS)	1

Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0K0-**□ : one set is one electrode.)
For SWRZ0K0-M / SWRZ0K0-T / SWRZ0S0-M / SWRZ0S0-T, the bolt and bolt cover marked with ※2 are not included.
2. The electrode probe on master side strokes 1.5mm (※3) when connecting with SWR.
When fixing the cable, make sure there is enough space for the probe operation.
3. The electrode stays connected when released, because its connecting stroke requires 1.5mm which is longer than SWR lift stroke.
※4. The optional cable and terminal are not included in the electrode. Please prepare them separately.

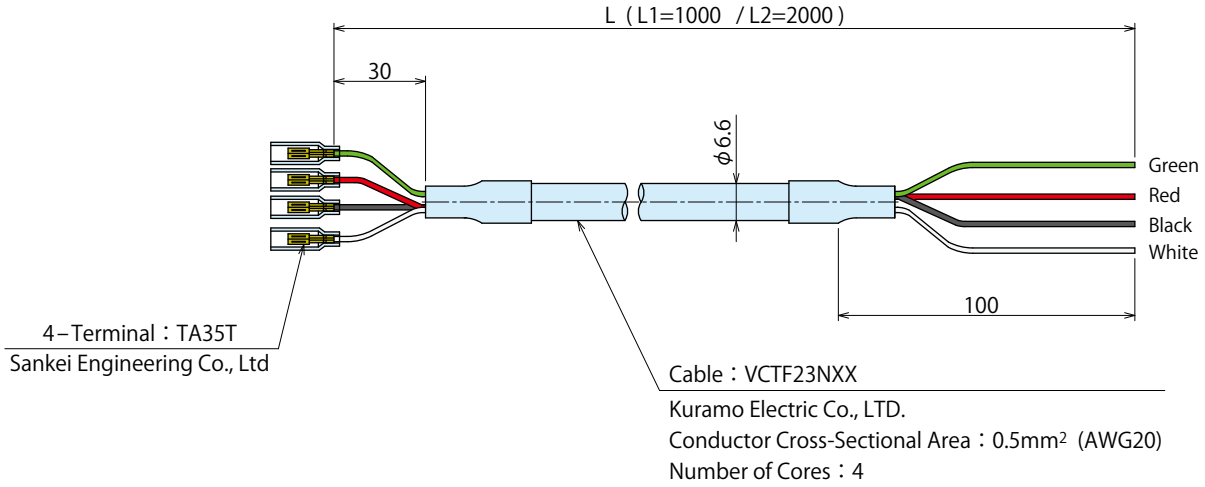
External Option：Cable with Terminal for Compact Electric Power Transmission

This cable is an optional cable applicable to the Compact Electric Power Transmission (SWR External Option Symbol：**K**).

Model No. Indication

SWZ0K0-C **L1 / L2**

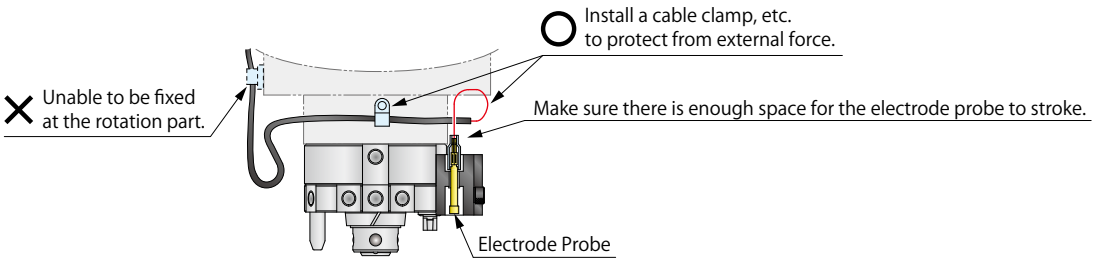
- Cable Length
  - L1：1m
  - L2：2m
- Design No. (Revision Number)



※ A crimp tool for crimping the applicable terminal (TA35T) is required when preparing a cable by yourself referring to this drawing.

【Notes on Wire/Cable Procedure and Wiring】

- Make sure to fix the wire and cable so that they are not pulled while a robot is moving or turning around.
  External force should not be applied on the connector part since it leads to breaking of wire, detaching of connector and contact failure.
  However, the electrode probe on master side strokes 1.5mm when connecting with SWR. When fixing the cable, make sure there is enough space for the probe to stroke.



- As for Compact Electric Power Transmission option, the electrode probes on both master cylinder and tool adaptor are exchangeable.
  The electrode probes will be fallen out if pushed from the cable connecting side with power stronger than a certain level.
  In case the electrode probes are pushed out after connecting the cable, make sure to push them back from the seating surface side before use.

MEMO

External Option：Power Transmission Option (Connector Based on MIL-DTL-5015)

External Option Symbol：E

Master Cylinder
model SWR□0-M□-E

Tool Adapter
model SWR□0-T□-E

Specifications

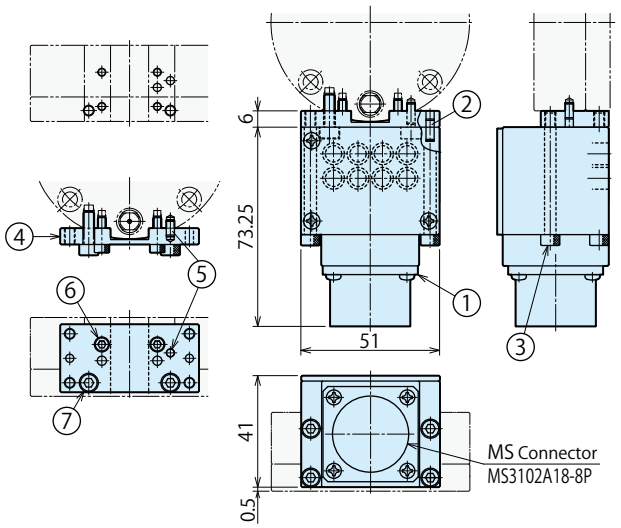
Rated Value (per contact)		AC/DC 200V 5A
Total Current Capacity		24A
Number of Poles (per electrode)		8
Weight※1	Master Cylinder Side	Electrode 140g / Bracket 21g
	Tool Adapter Side	Electrode 150g / Bracket 21g

※1. Weight per electrode.
Bracket weight shows the weight of SWRZ0E0.

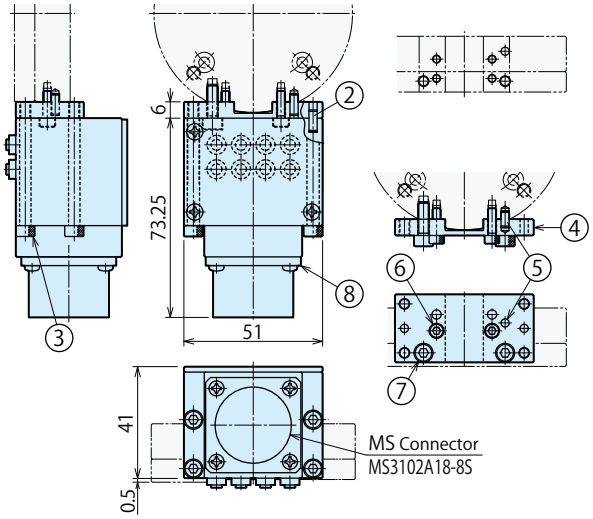
External Dimensions

Master Cylinder Side | Tool Adapter Side

SWR0250-M□-**E**
SWR0500-M□-**E**
SWR0750-M□-**E**

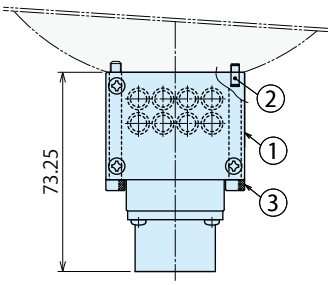


SWR0250-T-**E**
SWR0500-T-**E**
SWR0750-T-**E**



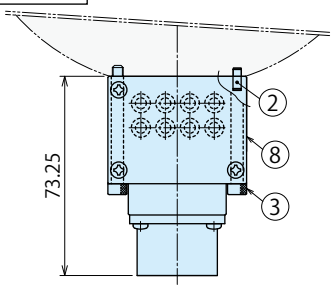
SWR1200-MAF-**E**
SWR2300-MAF-**E**

※ Dimensions not shown are the same as the drawing above.



SWR1200-T-**E**
SWR2300-T-**E**

※ Dimensions not shown are the same as the drawing above.



Model No.	No.	Name	Quantity
SWRZ0E0-M	①	Electrode (Master Side)	1
	②	Parallel Pin φ3×8 B Type (SUS)	2
	③	Hexagon Socket Bolt M4×0.7×45 (SUS)	4
SWRZ0E0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Parallel Pin φ3×6 B Type (SUS)	1
	⑥	Hexagon Socket Bolt M3×0.5×10 (SUS)	2
	⑦	Hexagon Socket Bolt M4×0.7×12 (SUS)	2

Model No.	No.	Name	Quantity
SWRZ0E0-T	⑧	Electrode (Tool Side)	1
	②	Parallel Pin φ3×8 B Type (SUS)	2
	③	Hexagon Socket Bolt M4×0.7×45 (SUS)	4
SWRZ0E0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Parallel Pin φ3×6 B Type (SUS)	1
	⑥	Hexagon Socket Bolt M3×0.5×10 (SUS)	2
	⑦	Hexagon Socket Bolt M4×0.7×12 (SUS)	2

Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0E0-**□ : one set is one electrode.)
2. For SWR1200, SWRZ0E0 is not required.

External Option：High Current Transmission Option (Connector Based on MIL-DTL-5015)

External Option Symbol：H

Master Cylinder
model SWR□0-M□-H

Tool Adapter
model SWR□0-T□-H

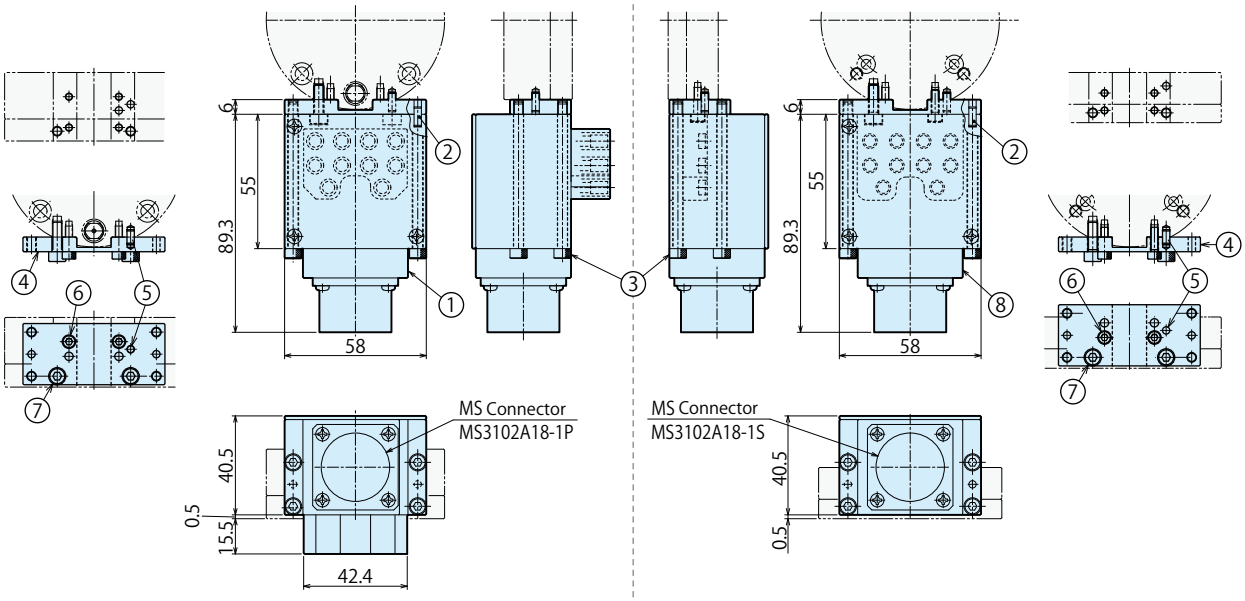
Specifications

Rated Value (per contact)		AC/DC 200V 13A
Total Current Capacity		57A
Number of Poles (per electrode)		10
Weight※1	Master Cylinder Side	Electrode 280g / Bracket 24g
	Tool Adapter Side	Electrode 210g / Bracket 24g

※1. Weight per electrode.
Bracket weight shows the weight of SWRZ0H0.

External Dimensions

Master Cylinder Side	Tool Adapter Side
SWR0250-M□-**H**　SWR1200-MAF-**H** SWR0500-M□-**H**　SWR2300-MAF-**H** SWR0750-M□-**H**	SWR0250-T-**H**　SWR1200-T-**H** SWR0500-T-**H**　SWR2300-T-**H** SWR0750-T-**H**



Model No.	No.	Name	Quantity
SWRZ0H0-M	①	Electrode (Master Side)	1
	②	Parallel Pin　ϕ3×8 B Type (SUS)	2
	③	Hexagon Socket Bolt　M4×0.7×60 (SUS)	4
SWRZ0H0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Parallel Pin　ϕ3×6 B Type (SUS)	1
	⑥	Hexagon Socket Bolt　M3×0.5×10 (SUS)	2
	⑦	Hexagon Socket Bolt　M4×0.7×12 (SUS)	2

Model No.	No.	Name	Quantity
SWRZ0H0-T	⑧	Electrode (Tool Side)	1
	②	Parallel Pin　ϕ3×8 B Type (SUS)	1
	③	Hexagon Socket Bolt　M4×0.7×60 (SUS)	4
SWRZ0H0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Parallel Pin　ϕ3×6 B Type (SUS)	1
	⑥	Hexagon Socket Bolt　M3×0.5×10 (SUS)	2
	⑦	Hexagon Socket Bolt　M4×0.7×12 (SUS)	2

Note :　1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0H0-**□ : one set is one electrode.)

External Option：Compact Waterproof Electrode (Noncontact Waterproof Option) IP67

External Option Symbol：W/WX

Master Cylinder
model SWR□0-M□- [W / WX]
W： NPN
WX：PNP

Tool Adapter
model SWR□0-T- [W]

Specifications

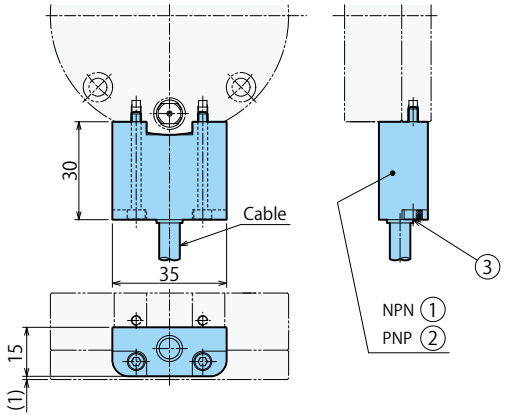
Number of Signals (per electrode)		4
Protection Grade ※1		IP67
Cable		PUR φ6.3 7×0.259mm²
Cable Length	Master Cylinder Side	2m
	Tool Adapter Side	1m
Weight ※2	Master Cylinder Side	Electrode 20g Cable 60g/m ×2m Bracket for SWR0030 8g
	Tool Adapter Side	Electrode 20g Cable 60g/m ×1m Bracket for SWR0030 8g

※1. Protection grade of the electrode part.
※2. Weight per electrode.
Bracket weight shows the weight of SWRZ0S0-T.

External Dimensions

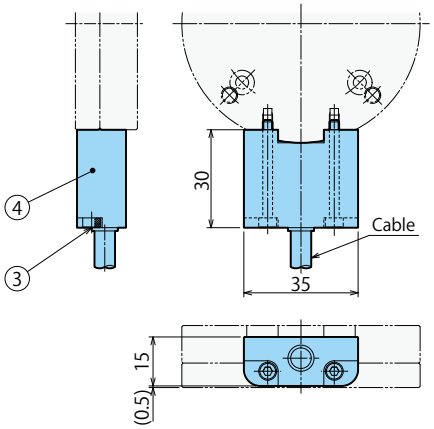
Master Cylinder Side

SWR0070-M□-**W/WX** SWR0500-M□-**W/WX**
SWR0120-M□-**W/WX** SWR0750-M□-**W/WX**
SWR0250-M□-**W/WX** SWR2300-MAF-**W/WX**

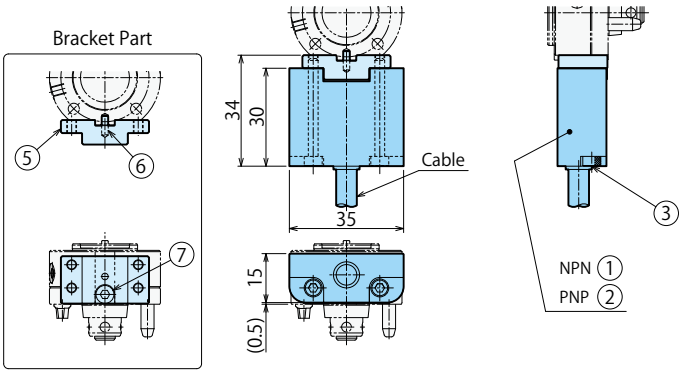


Tool Adapter Side

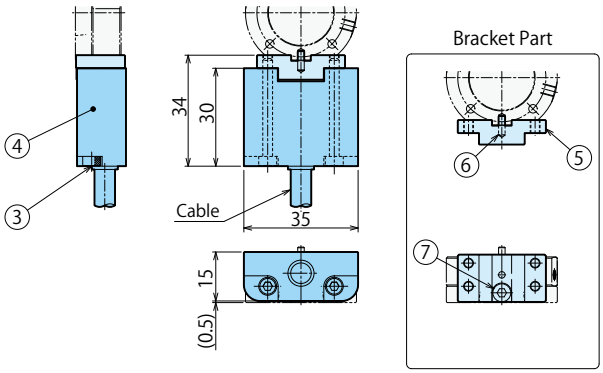
SWR0070-T-**W** SWR0500-T-**W**
SWR0120-T-**W** SWR0750-T-**W**
SWR0250-T-**W** SWR2300-T-**W**



SWR0030-M-**W/WX** ※ Only for SWR0030-M-W/WX, SWRZ0S0-T is mounted.



SWR0030-T-**W** ※ Only for SWR0030-T-W, SWRZ0S0-T is mounted.



Model No.	No.	Name	Quantity
SWRZ0W0-M	①	Electrode (Master Side) **NPN** (B & Plus)	1
	③	Hexagon Socket Bolt M3×0.5×30 (SUS)	2
SWRZ0WX0-M	②	Electrode (Master Side) **PNP** (B & Plus)	1
	③	Hexagon Socket Bolt M3×0.5×30 (SUS)	2
SWRZ0S0-T	⑤	Bracket (Common for Master/Tool Side)	1
	⑥	Parallel Pin φ2×6 B Type (SUS)	1
	⑦	Hexagon Socket Bolt M3×0.5×6 (SUS)	1

Model No.	No.	Name	Quantity
SWRZ0W0-T	④	Electrode (Tool Side)	1
	③	Hexagon Socket Bolt M3×0.5×30 (SUS)	2
SWRZ0S0-T	⑤	Bracket (Common for Master/Tool Side)	1
	⑥	Parallel Pin φ2×6 B Type (SUS)	1
	⑦	Hexagon Socket Bolt M3×0.5×6 (SUS)	1

Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0 W□ 0-□** ：one set is one electrode.)
2. SWR1200 has a bracket. Please contact us for further information.

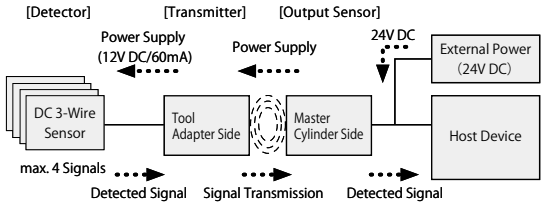
Details and Notes on External Option : Compact Noncontact Waterproof Electrode

Attention for Installation

(Read this section thoroughly before installation.)

- Ensure the power is switched off during installation or maintenance operations.
- Use a regulated power supply, e.g. switch-model type. Simpler power supplies, such as a full-wave rectification type, will cause the permissible ripple rating to be exceeded and may cause malfunction.
- Ensure correct connections by referencing the wiring diagram.
- To avoid malfunction caused by induction noise, cable should be kept apart from motor or other power cable.

System Configuration



【Function of Each Component】

Detector : Connects Detector Sensor (max. 4) and transmits the detected signals to Transmitter.

Transmitter : Provides power for Detector, also passes detected signals from Detector to Output Sensor.

Output Sensor : Puts out detected signal to external controller, also sends power for operating of Detector and Transmitter.

Electrode Specifications (Tool Adapter Side)

Model No.	SWR□0-T□-W	
Applicable Sensor	DC 3-Wire Sensor	
Drive Voltage	12V ±1.5V DC	
No. of Input Signals	4	
Drive Current	≦ 30mA	≦ 60mA
Operating Distance	0~3mm	0~2mm
Center Offset	± 2mm	± 1mm
Operating Temperature	0~+50℃	
Protection Grade	IP67	
Cable	PUR φ6.3 / 7x0.259mm² Hitachi Metals, Ltd. RBT-VUCTF	
Material	ABS	
Weight	Body 20g + Cable 60g/m	

Electrode Specifications (Master Cylinder Side)

Model No.	NPN	SWR□0-M□-W
	PNP	SWR□0-M□-WX
Supply Voltage		24V DC ± 10% (Including Ripple)
Current Consumption		≦ 200mA
No. of Output Signals		4 +1 (Inzone)
Load Current		≦ 50mA/1 Output
LED Indication		Status (Green), Inzone (Orange)
Circuit Protection		Short Circuit Protection, Converse Protection, Surge Suppression
Operating Temperature		0~+50℃
Protection Grade		IP67
Cable		PUR φ6.3 / 7x0.259mm² Hitachi Metals, Ltd. RBT-VUCTF
Material		ABS
Weight		Body 20g + Cable 60g/m

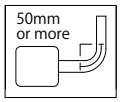
・Total current consumption of detectors must not exceed the rated drive current.
・Reduce the switches when the total current consumption exceeds the drive current.

Applicable Sensor

Supply Voltage	12V DC
Total Current Consumption	≦ 60mA
Residual Voltage	≦ 3.5V
Load Current	—

Bending Radius of Cable

The minimum bending radius for the sensors are 50mm.

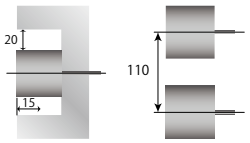


※ Do not pull the cable with excessive force when installing.

Installation Notes

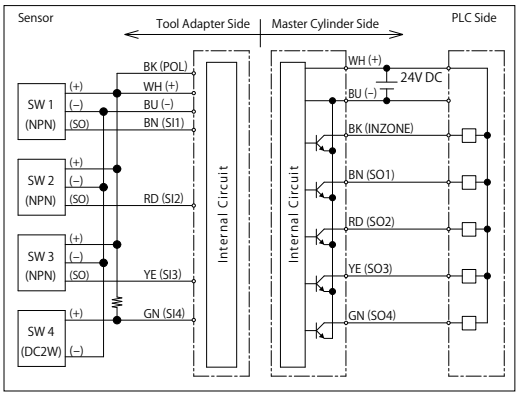
In order to avoid influence of surrounding metal, or to avoid mutual influence between parallel-mounted sensors, keep the minimum free zone as described on the right. (M3 Bolt Mounting Bolt Tightening Torque : 0.63N・m)

■Surrounding Metal ■Parallel Installation

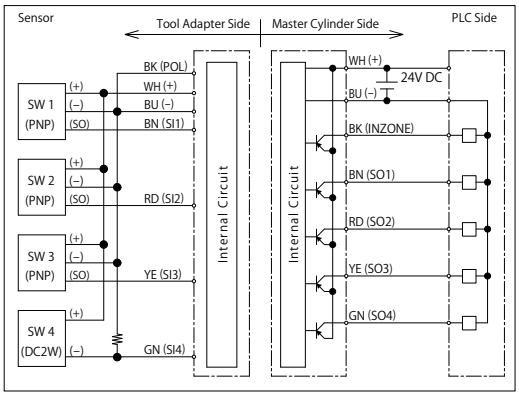


Wiring Diagram

SWR□0-M□-W : NPN



SWR□0-M□-WX : PNP

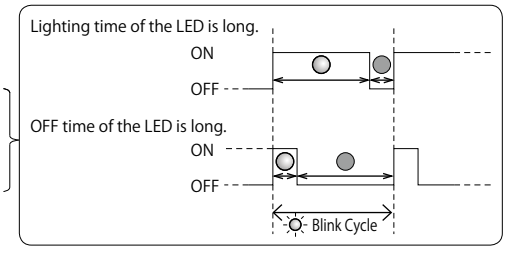


■ SW4 of the wiring diagram is an example of the DC-2 wire sensor wiring (Recommend resistance is 1~2KΩ). DC-3 wire sensor can also be used.

LED Indication

■ Status LED (Green)

LED	Blinking	Pattern	Meaning
ON	—	—	The power supply is supplied.
OFF	—	—	The power supply is not supplied.
Blink	Slow (1.5 sec.)	OFF time of the LED is long.	Anomalous Temperature
Blink	Mid. Speed (0.6 sec.)	OFF time of the LED is long.	Supply voltage is high.
Blink		Lighting time of the LED is long.	Supply voltage is low.
Blink	High Speed (0.2 sec.)	The LED flashes at the same interval.	Short Circuit Protection



■ Status LED (Orange) The master cylinder and tool adapter are opposed, LED is lit when you can communicate.

The information above is quoted from B & Plus K.K. Remote System User's Guide (No.T315201D).
Please contact B & Plus K.K. (TEL 81(0)-493-71-5160) for further information about electrodes (Model No. SWRZ0W0-M-_ _ / SWRZ0W0-T-_ _).

External Option：Waterproof Electrode (Noncontact Waterproof Option) IP67

External Option Symbol：V/VX

Master Cylinder
model SWR□0-M□- V / VX

Tool Adapter
model SWR□0-T□- V

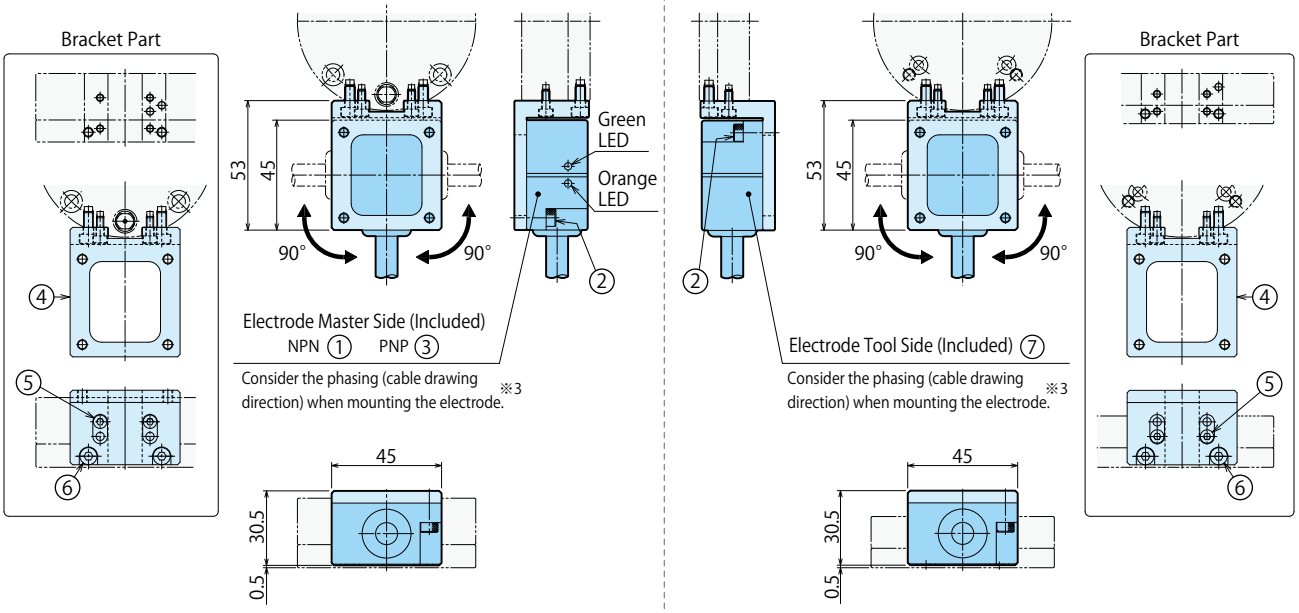
Specifications

Number of Signals (per electrode)		12
Protection Grade ※1		IP67
Cable		PUR φ8.6 2×0.5mm²+13×0.18mm²
Cable Length	Master Cylinder Side	2m
	Tool Adapter Side	1m
Weight ※2	Master Cylinder Side	Electrode+Bracket 130g Cable 105g/m ×2m
	Tool Adapter Side	Electrode+Bracket 130g Cable 105g/m ×1m

※1. Protection grade of the electrode part.
※2. Weight per electrode.

External Dimensions

Master Cylinder Side	Tool Adapter Side
SWR0250-M□-**V/VX** SWR1200-MAF-**V/VX** SWR0500-M□-**V/VX** SWR2300-MAF-**V/VX** SWR0750-M□-**V/VX**	SWR0250-T-**V** SWR1200-T-**V** SWR0500-T-**V** SWR2300-T-**V** SWR0750-T-**V**



Model No.	No.	Name	Quantity
SWRZ0V0-M	①	Electrode (Master Side) **NPN** Made by B & Plus RS12E-422N-PU-02	1
	②	Hexagon Socket Bolt M4×0.7×12 (SUS)	2
SWRZ0VX0-M	③	Electrode (Master Side) **PNP** Made by B & Plus RS12E-422P-PU-02	1
	②	Hexagon Socket Bolt M4×0.7×12 (SUS)	2
SWRZ0V0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Hexagon Socket Bolt M3×0.5×8 (SUS)	2
	⑥	Hexagon Socket Bolt M4×0.7×8 (SUS)	2

Model No.	No.	Name	Quantity
SWRZ0V0-T	⑦	Electrode (Tool Side) Made by B & Plus RS12T-422-PU-01	1
	⑧	Hexagon Socket Bolt M4×0.7×12(SUS)	2
SWRZ0V0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Hexagon Socket Bolt M3×0.5×8 (SUS)	2
	⑥	Hexagon Socket Bolt M4×0.7×8 (SUS)	2

Notes : 1. Inform us with the model number shown above if you require an electrode only. (**SWRZ0 V□ 0-□** ：one set is one electrode.)
※3. Even if the mounting phase of electrode on master and tool sides is different, signals can be transmitted.
Determine the mounting phase of electrodes based on the cable drawing direction.

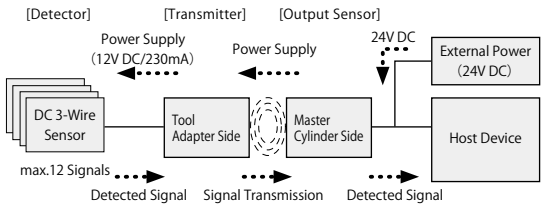
Details and Notes on External Option : Noncontact Waterproof Electrode

Attention for Installation

(Read this section thoroughly before installation.)

- Ensure the power is switched off during installation or maintenance operations.
- Use a regulated power supply, e.g. switch-model type. Simpler power supplies, such as a full-wave rectification type, will cause the permissible ripple rating to be exceed and may cause malfunction.
- Ensure correct connections by reference to the wiring diagram.
- To avoid malfunction caused by induction noise, cable should be kept apart from motor or other power cable.

System Configuration



【Function of Each Component】

Detector : Connects Detector Sensor (max. 12) and transmits the detected signals to Transmitter.

Transmitter : Provides power for Detector, also passes detected signals from Detector to Output Sensor.

Output Sensor : Puts out detected signal to external controller, also sends power for operating of Detector and Transmitter.

Electrode Specifications (Tool Adapter Side)

Model No.	SWR□0-T□-V
Applicable Sensor	DC 3-Wire Sensor
Drive Voltage	12V ±1.5V DC
Drive Current	≦ 230mA
No. of Input Signals	12
Operating Distance	2~5mm
Center Offset	± 3mm
Operating Temperature	0~+50℃
Protection Class	IP67
Material	ABS

Electrode Specifications (Master Cylinder Side)

Model No.	NPN	SWR□0-M□-V
	PNP	SWR□0-M□-VX
Supply Voltage		24V DC ± 10% (Including Ripple)
Current Consumption		≦ 600mA
No. of Output Signals		12 + 1 (Status)
Load Current		≦ 50mA/1 Output
LED Indication		Status (Green), Signal (Orange)
Circuit Protection		Short Circuit Protection, High Temperature Protection, Converse Protection, Surge Suppression
Operating Temperature		0~+50℃
Protection Class		IP67
Material		ABS

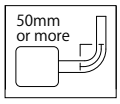
・Total current consumption of detectors must not exceed the rated drive current.
・Reduce the switches when the total current consumption exceeds the drive current.

Applicable Sensor

Supply Voltage	12V DC
Total Current Consumption	≦230mA
Residual Voltage	≦3.5V
Load Current	—

Bending Radius of Cable

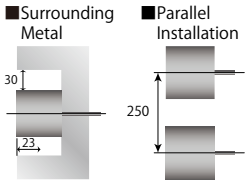
The minimum bending radius for the sensors are 50mm.



※ Do not pull the cable with excessive force when installing.

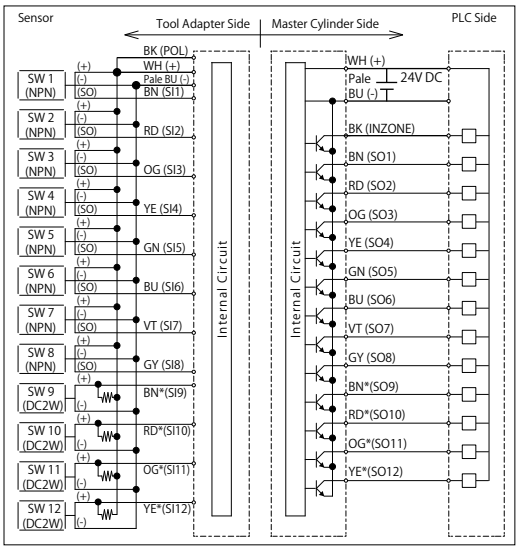
Installation Notes

In order to avoid influence of surrounding metal, or to avoid mutual influence between parallel-mounted sensors, keep the minimum free zone as described below.
(M4 Bolt Mounting Bolt Tightening Torque : 1.5N・m)

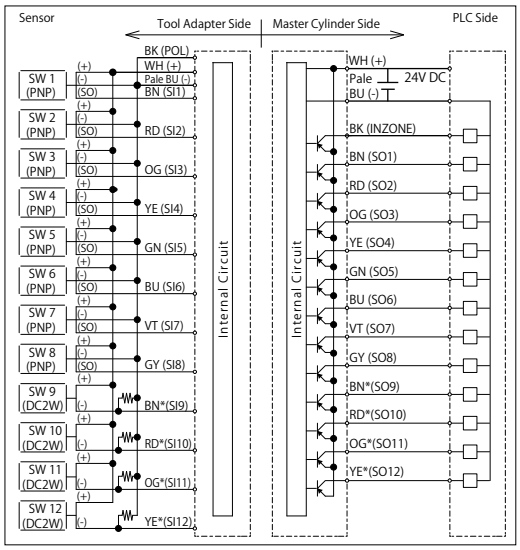


Wiring Diagram

SWR□0-M□-V : NPN



SWR□0-M□-VX : PNP

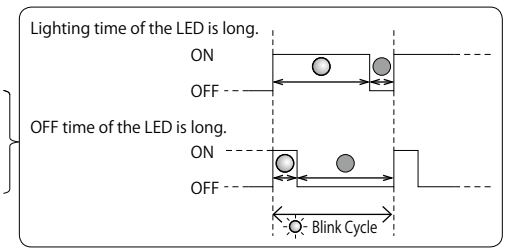


■ SW9~12 of the wiring diagram is an example of the DC-2 wire sensor wiring (Recommend resistance is 1~2KΩ). DC-3 wire sensor can also be used.
■ Cable GN* and BU* and VT* is not used.

LED Indication

■ Status LED (Green)

LED	Blinking	Pattern	Meaning
ON	—	—	The power supply is supplied.
OFF	—	—	The power supply is not supplied.
Blink	Slow (1.5 sec.)	OFF time of the LED is long.	Anomalous Temperature
Blink		Lighting time of the LED is long.	Oscillation Circuit Overcurrent
Blink	Mid. Speed (0.6 sec.)	OFF time of the LED is long.	Supply voltage is high.
Blink		Lighting time of the LED is long.	Supply voltage is low.
Blink	High Speed (0.2 sec.)	The LED flashes at the same interval.	Short Circuit Protection



■ Status LED (Orange) The master cylinder and tool adapter are opposed, LED is lit when you can communicate. When the output signal from each sensor and flash accordingly.

The information above is quoted from B & Plus K.K. Remote System User's Guide (No.T313A01E).
Please contact B & Plus K.K. (TEL 81(0)-493-71-5160) for further information about electrodes (Model No. RS12E-422□-PU-02 / RS12T-422-PU-01).

External Option：Air Joint (3-Port Option (1 Port Rc1/8))

Extensible Options :
Resin Connector, Solder Terminal

External Option Symbol：R

Master Cylinder
model SWR□0-M□- R or Model No. for Extensible Option

Tool Adapter
model SWR□0-T- R or Model No. for Extensible Option

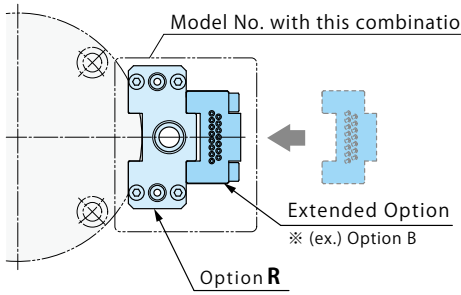
Specifications

Port Size		Rc1/8	M5
Number of Ports		1	2
Operating Pressure	SWR0070 or larger	max. 0.7MPa (Vacuum Available)	
	SWR0030	max. 0.5MPa (Vacuum Available)	
Withstanding Pressure		1.1MPa	
Min. Passage Area		28.3mm²	3.1mm²
Operating Temperature		0～70℃	
Usable Fluid		Dry Air	
Reaction Force (per port)	Pressure at 0.7 MPa	0.13 kN	0.04kN
	Pressure at 0.5 MPa	0.08 kN	0.02kN
	Pressure at P MPa	0.154×P+0.019 kN	0.047×P+0.008 kN
Weight ※1	Master Cylinder Side	Air Joint 51g Bracket for SWR0030-M : 10g	
	Tool Adapter Side	Air Joint 25g Bracket for SWR0030-T : 8g	

※1. Weight per joint.
Bracket weight is the weight of SWRZ0S0-□.

Extensible Options

Additional electrode can be extended to the option：**R**.



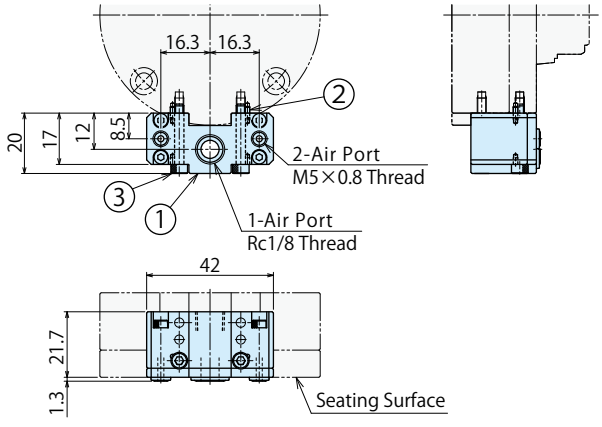
Extensible Electrode	Model No. for Extensible Option					
	SWR 0030	SWR 0070	SWR 0120	SWR 0250	SWR 0500	SWR 0750
J：Resin Connector	N/A	**JR**	**JR**	**JR2**	**JR2**	**JR2**
B：Solder Terminal		**BR**	**BR**	**BR2**	**BR2**	**BR2**
C0□：Cable with Solder Terminal		**C0**□**R**	**C0**□**R**	**C0**□**R2**	**C0**□**R2**	**C0**□**R2**

※ Please contact us for detailed dimensions for extensible options.

External Dimensions (SWR0070/SWR0120/SWR0250/SWR0500/SWR0750)

Master Cylinder Side

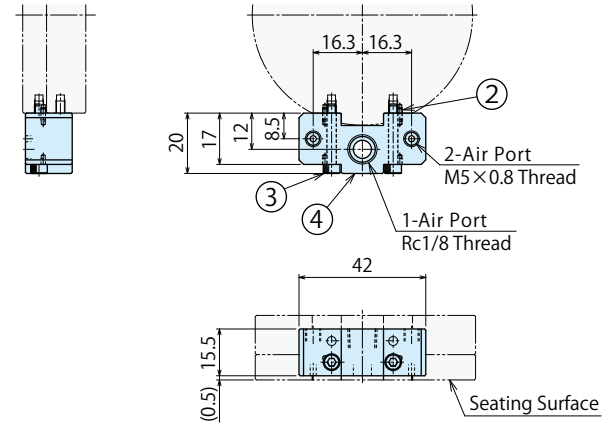
SWR0070-M□-**R** SWR0250-M□-**R** SWR0750-M□-**R**
SWR0120-M□-**R** SWR0500-M□-**R**



Model No.	No.	Name	Quantity
SWRZ0R0-M	①	Joint (Master Side)	1
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2
– ※2	③	Hexagon Socket Bolt M3×0.5×20 (SUS)	2

Tool Adapter Side

SWR0070-T-**R** SWR0250-T-**R** SWR0750-T-**R**
SWR0120-T-**R** SWR0500-T-**R**



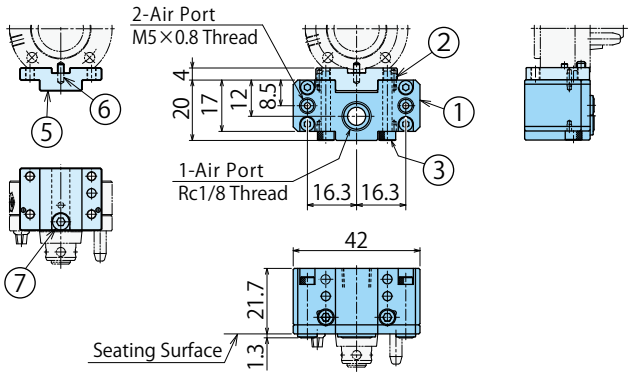
Model No.	No.	Name	Quantity
SWRZ0R0-T	④	Joint (Tool Side)	1
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2
– ※2	③	Hexagon Socket Bolt M3×0.5×20 (SUS)	2

Note : 1. Inform us with the model number shown above if you require an air joint only. (**SWRZ0R0-**□ : one set is one air joint.)
For SWRZ0R0-M / SWRZ0R0-T, the bolt marked with ※2 is not included.

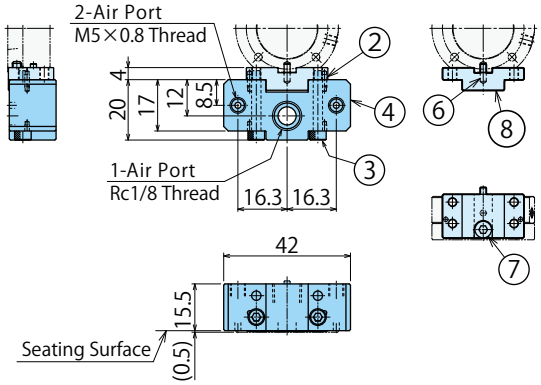
● External Dimensions (SWR0030)

Master Cylinder Side	Tool Adapter Side

SWR0030-M-**R** ※ Only for SWR0030-M-R, SWRZ0S0-M is mounted.



SWR0030-T-**R** ※ Only for SWR0030-T-R, SWRZ0S0-T is mounted.



Model No.	No.	Name	Quantity
SWRZ0R0-M	①	Joint (Master Side)	1
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2
– ※2	③	Hexagon Socket Bolt M3×0.5×20(SUS)	2
SWRZ0S0-M	⑤	Bracket (Master Side)	1
	⑥	Parallel Pin ϕ2×6 B Type (SUS)	1
	⑦	Hexagon Socket Bolt M3×0.5×6(SUS)	1

Model No.	No.	Name	Quantity
SWRZ0R0-T	④	Joint (Tool Side)	1
	②	Parallel Pin ϕ1.5×4 B Type (SUS)	2
– ※2	③	Hexagon Socket Bolt M3×0.5×20(SUS)	2
SWRZ0S0-T	⑧	Bracket (Tool Side)	1
	⑥	Parallel Pin ϕ2×6 B Type (SUS)	1
	⑦	Hexagon Socket Bolt M3×0.5×6(SUS)	1

Note : 1. Inform us with the model number shown above if you require an air joint only. (**SWRZ0R0-**□ : one set is one air joint.)
For SWRZ0R0-M / SWRZ0R0-T / SWRZ0S0-M / SWRZ0S0-T, the bolt marked with ※2 is not included.

External Option：Air Joint (4-Port, Solder Terminal Extensible Option)

Extensible Options :
Resin Connector, Solder Terminal

External Option Symbol：P

Master Cylinder
model SWR□0-M□- **P** or Model No. for Extensible Option

Tool Adapter
model SWR□0-T- **P** or Model No. for Extensible Option

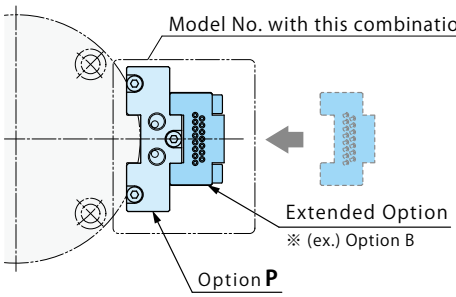
Specifications

Number of Ports		4
Operating Pressure		max. 1.0MPa (Vacuum Available)
Withstanding Pressure		1.5MPa
Min. Passage Area		2.0mm² (Equal to ϕ1.6)
Operating Temperature		0～70℃
Usable Fluid		Dry Air
Reaction Force (per port)	Pressure at 1 MPa	0.03 kN
	Pressure at 0.5MPa	0.02 kN
	Pressure at P MPa	0.027×P +0.004 kN
Weight ※1	Master Cylinder Side	Joint 43g
	Tool Adapter Side	Joint 26g

※1. Weight per joint.

Extensible Options

Additional electrode can be extended to the option：**P** .



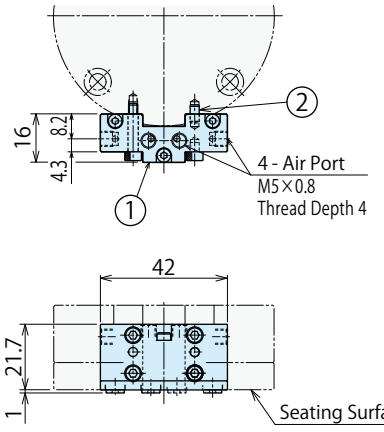
Extensible Electrode	Model No. for Extensible Option				
	SWR 0070	SWR 0120	SWR 0250	SWR 0500	SWR 0750
J：Resin Connector	**JP**	**JP**	**JP2**	**JP2**	**JP2**
B：Solder Terminal	**BP**	**BP**	**BP2**	**BP2**	**BP2**
C0□：Cable with Solder Terminal	**C0□P**	**C0□P**	**C0□P2**	**C0□P2**	**C0□P2**

※ Please contact us for detailed dimensions for extensible options.

External Dimensions

Master Cylinder Side

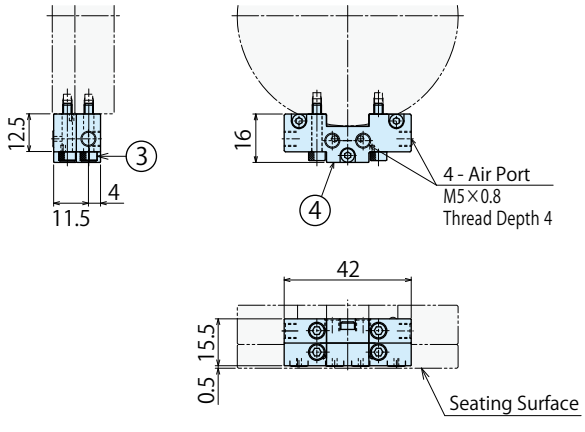
SWR0070-M□-**P** SWR0250-M□-**P** SWR0750-M□-**P**
SWR0120-M□-**P** SWR0500-M□-**P**



Model No.	No.	Name	Quantity
SWRZ0P0-M	①	Joint (Master Side)	1
	②	Parallel Pin ϕ3×6 B Type (SUS)	1
– ※2	③	Hexagon Socket Bolt M3×0.5×16 (SUS)	4

Tool Adapter Side

SWR0070-T-**P** SWR0250-T-**P** SWR0750-T-**P**
SWR0120-T-**P** SWR0500-T-**P**



Model No.	No.	Name	Quantity
SWRZ0P0-T	④	Joint (Tool Side)	1
– ※2	③	Hexagon Socket Bolt M3×0.5×16 (SUS)	4

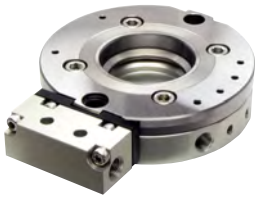
Notes : 1. Inform us with the model number shown above if you require an air joint only. (**SWRZ0P0-□**：one set is one air joint.)
For SWRZ0P0-M / SWRZ0P0-T, the bolt marked with ※2 is not included.
2. Please contact us for SWR1200.

External Option : Air Joint

External Option Symbol : Q

Master Cylinder
model SWR□0-M□-Q

Tool Adapter
model SWR□0-T□-Q



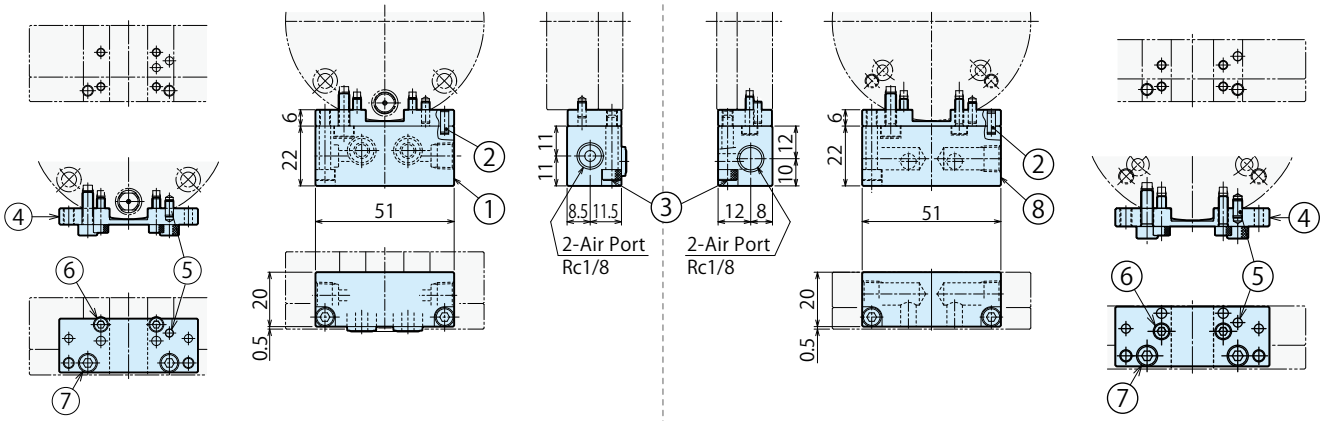
Specifications

Number of Ports		2
Operating Pressure		max. 1.0MPa (Vacuum Available)
Withstanding Pressure		1.5MPa
Min. Passage Area		12.6mm² (Equal to φ4)
Operating Temperature		0 ~ 70℃
Usable Fluid		Dry Air
Reaction Force (per port)	Pressure at 1 MPa	0.13 kN
	Pressure at 0.5MPa	0.07 kN
	Pressure at P MPa	0.117×P +0.01 kN
Weight ※1	Master Cylinder Side	Joint 70g / Bracket 17g
	Tool Adapter Side	Joint 60g / Bracket 17g

※1. Weight per joint.
Bracket weight is the weight of SWRZ0Z0.

External Dimensions

Master Cylinder Side	Tool Adapter Side
SWR0250-M□-**Q** SWR0500-M□-**Q** SWR0750-M□-**Q**	SWR0250-T-**Q** SWR0500-T-**Q** SWR0750-T-**Q**



Model No.	No.	Name	Quantity
SWRZ0Q0-M	①	Joint (Master Side)	1
	②	Parallel Pin φ3×8 B Type (SUS)	2
	③	Hexagon Socket Bolt M4×0.7×20 (SUS)	2
SWRZ0Z0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Parallel Pin φ3×8 B Type (SUS)	1
	⑥	Hexagon Socket Bolt M3×0.5×10 (SUS)	2
	⑦	Hexagon Socket Bolt M4×0.7×12 (SUS)	2

Model No.	No.	Name	Quantity
SWRZ0Q0-T	⑧	Joint (Tool Side)	1
	②	Parallel Pin φ3×8 B Type (SUS)	2
	③	Hexagon Socket Bolt M4×0.7×20 (SUS)	2
SWRZ0Z0	④	Bracket (Common for Master/Tool Side)	1
	⑤	Parallel Pin φ3×8 B Type (SUS)	1
	⑥	Hexagon Socket Bolt M3×0.5×10 (SUS)	2
	⑦	Hexagon Socket Bolt M4×0.7×12 (SUS)	2

Notes : 1. Inform us with the model number shown above if you require an air joint only. (**SWRZ0Q0-□** : one set is one air joint.)
2. Please contact us for SWR1200.

Port Option

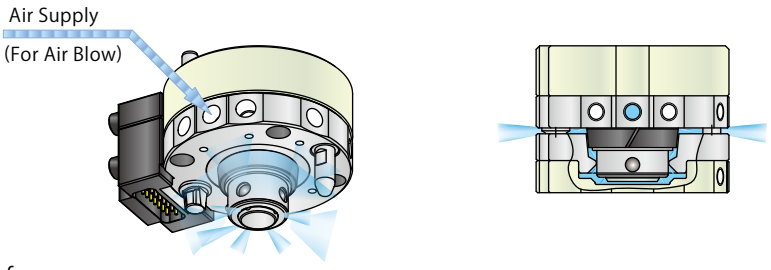
Master Cylinder Model No.

SWR	003	0	-	M	Blank	-		-	
SWR	007 012 025 050 075	0	-	M	A F	-		-	
SWR	120 230	0	-	M	AF	-		-	
	Payload				3 Port Option Symbol				

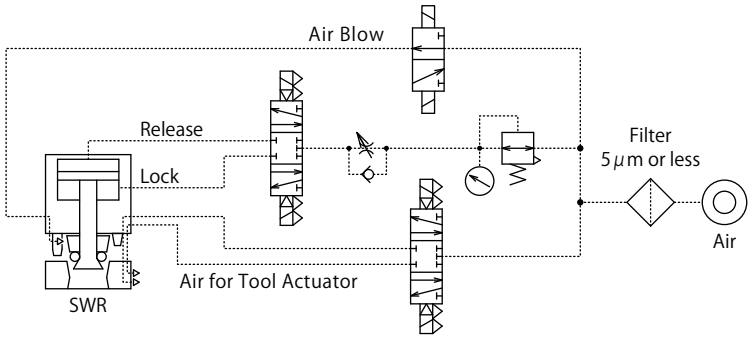
※ SWR0030 has no air blow port or seat check port.

● Port Option Symbol A : With Air Blow Port

When connecting, there is moderate clearance between the taper reference surface and seating surface that enables high accuracy. This allows for effective cleaning with air blow, foreign substance prevention and longer operational life.

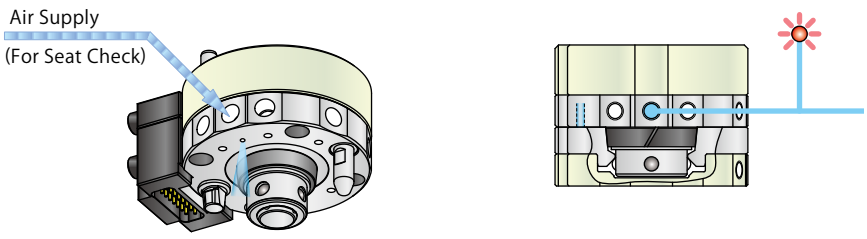


● Circuit Reference

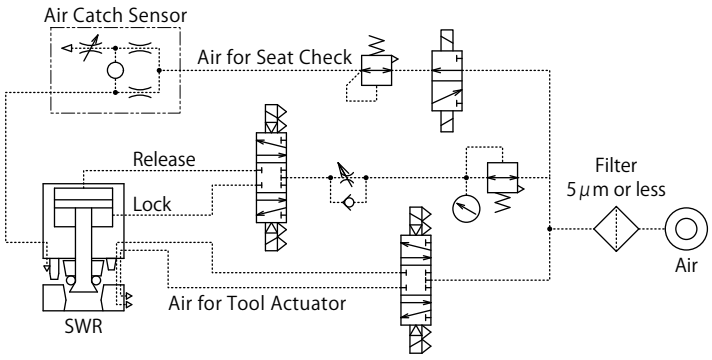


● Port Option Symbol F : With Seat Check Port

Close contact check detects secure connection of the master cylinder and tool adapter.
This prevents connection error of robotic hand changer.
Close contact check is conducted with the air catch sensor. (Air catch sensor must be installed separately.)



● Circuit Reference



Joint Option (Air Port Part)

Master Cylinder Model No.

SWR [003 / 007 / 012 / 025 / 050 / 075 / 120 / 230] 0 - M □ - □ - [Blank / S]

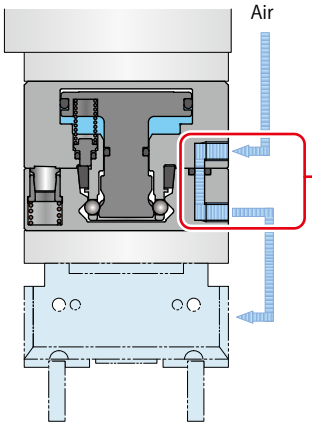
- Payload
- 5 Joint Option Symbol

Tool Adapter Model No.

SWR [003 / 007 / 012 / 025 / 050 / 075 / 120 / 230] 0 - T - □ - [Blank / S]

- Payload
- 5 Joint Option Symbol

When Connected



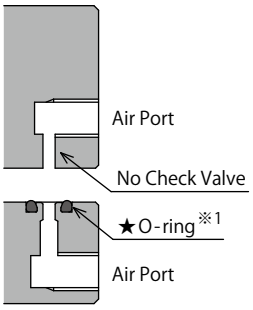
Air Joint Part

Selectable from two air port joint options.

Without Check Valve【Standard】

Joint Option Symbol **Blank**

Master Cylinder

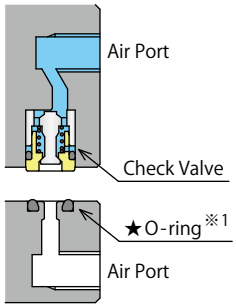


Tool Adapter

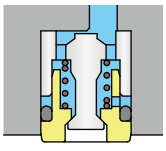
With Check Valve (No check valve option for SWR0030)

Joint Option Symbol **S**

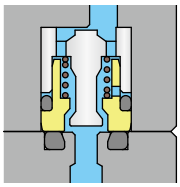
Master Cylinder



Tool Adapter
SWR0070-T ~ SWR0750-T is **Blank** ※2
SWR1200-T, SWR2300-T is **S** ※3



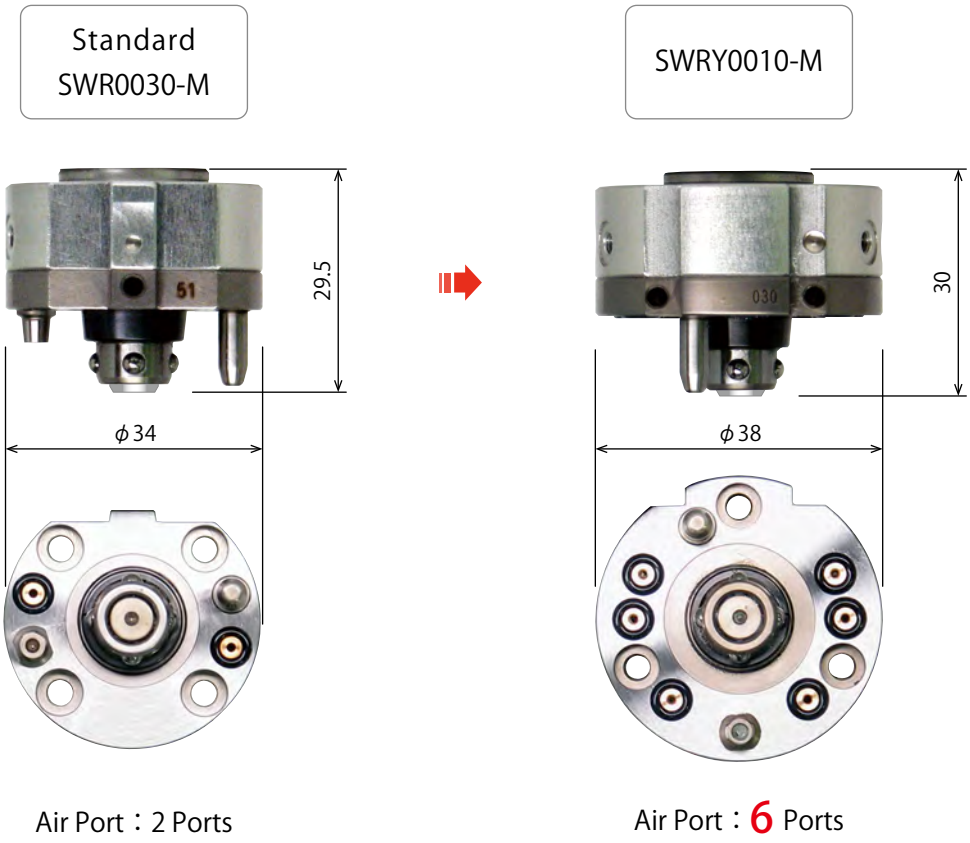
Disconnected
The check valve (metal seal) is sealed off.



Connected
The valve is opened and air is supplied to the tool adapter.

Notes : ※1. For SWR0500/0750/1200/2300, ★O-ring is installed to the master cylinder side.
Refer to the Joint Structure on External Dimensions (P.31 ~ P.33) for the structure of the check valve option.
※2. For SWR0070 ~ SWR0750, a check valve is installed to the master cylinder side only.
Since there is no check valve for the tool adapter side, the joint option symbol of SWR0030-T ~ SWR0750-T is **Blank**.
※3. For SWR1200, SWR2300 with the check valve option, since the master cylinder has a check valve and the tool adapter side has a simple check valve, the joint option symbol of SWR1200-T, SWR2300-T is **S**.

Payload 3kg • 6 Air Port Model SWRY0010



Slight increase in size enables to install 6 air ports in 3kg payload robotic hand changer.

● Model No. Indication：Master Cylinder

SWRY001 0 - M - B

1 2

● Model No. Indication：Tool Adapter

SWRY001 0 - T - B

1 2

1 Design No.

0 : Revision Number

2 External Options (Electrode • Air Joint)

Refer to P.37 ~ P.60 for the specifications of the external options.

Blank : No Electrode (Standard)
B : Solder Terminal (15 Poles)
C01 : Solder Terminal with Cable (15 Poles・Cable Length 1m)
C02 : Solder Terminal with Cable (15 Poles・Cable Length 2m)
J : Resin Connector (16 Poles)
K : Compact Electric Power Transmission (4 Poles)
R : Air Joint (3 Ports)
U01 : Simple Waterproof Electrode (16 Poles・Cable Length 1m)
U02 : Simple Waterproof Electrode (16 Poles・Cable Length 2m)
W : Noncontact Waterproof Electrode Compact Model (Number of Signals：4・NPN)
WX : Noncontact Waterproof Electrode Compact Model (Number of Signals：4・PNP) ※1

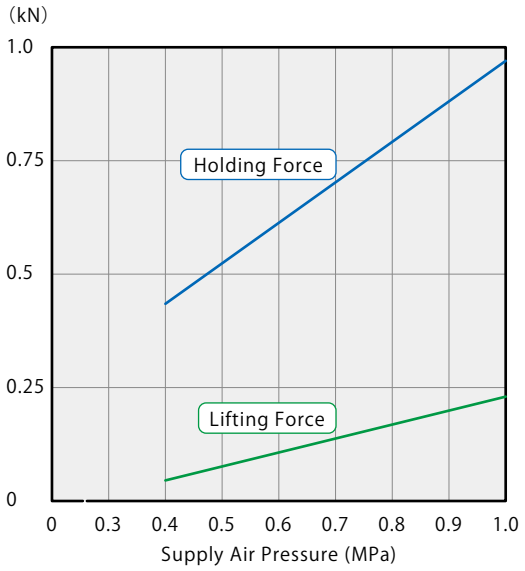
※1. The option symbol '**WX**' is only for master cylinder. The option symbol of the tool adapter is '**W**' for both NPN/PNP.

● Specifications

Payload	kg	3
Repeatability	mm	0.003
Lift Stroke (Detaching Stroke)	mm	0.8
Allowable Static Moment N・m	Bending	5
	Twisting	12
Air Pressure MPa	Max.	1.0
	Min.	0.4
	Withstanding Pressure	1.5
Operating Temperature	℃	0 ~ 70
Usable Fluid		Dry Air
Weight (Main Body) g	Master Side	85
	Tool Side	60
Air Port		M3×0.5×6 Ports

※ Refer to P.37 ~ P.60 for the specifications of the external options.

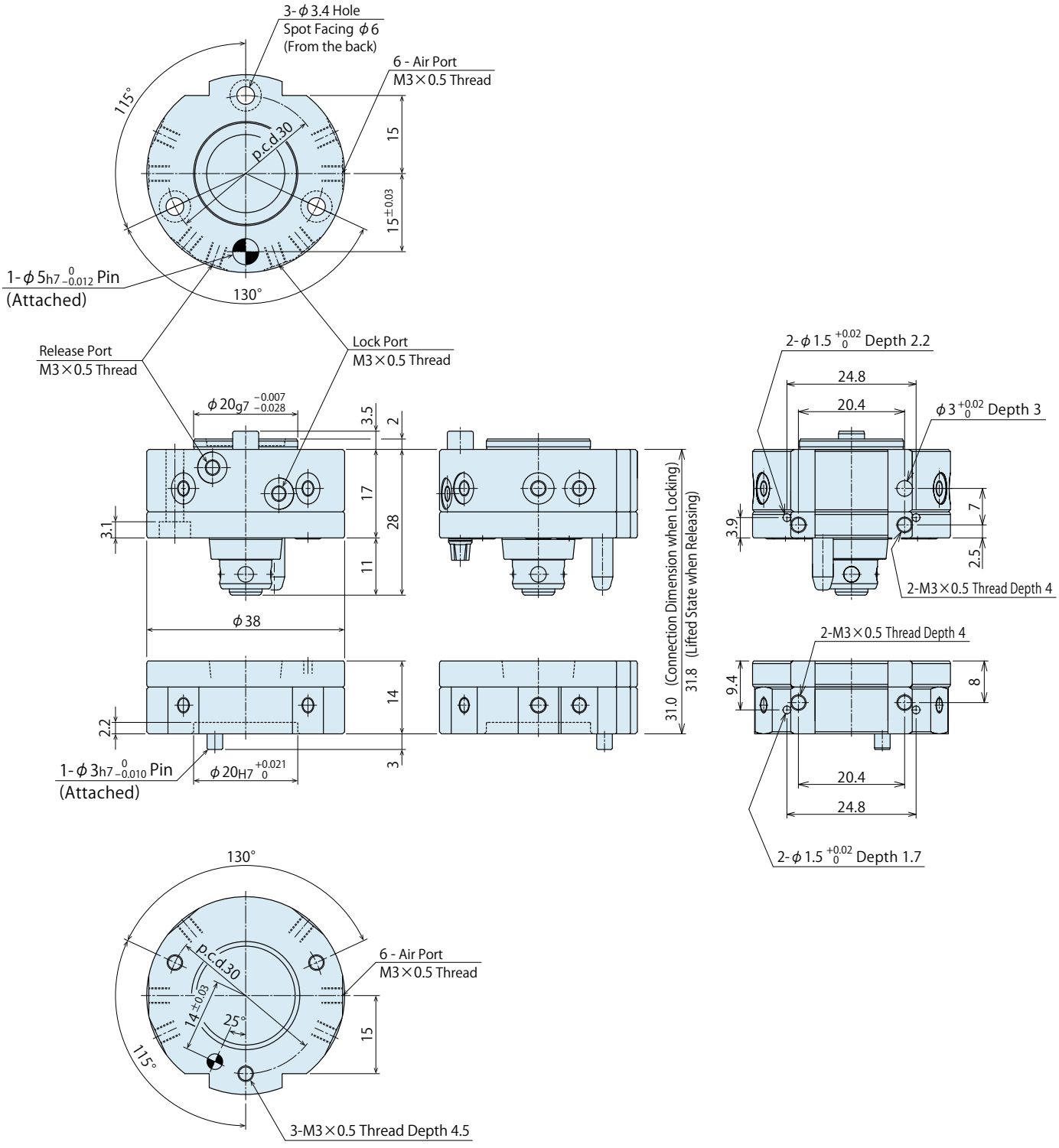
● Performance Curve



SWRY0010 External Dimensions

External Dimensions (without External Option)

Master Cylinder
SWRY0010-M



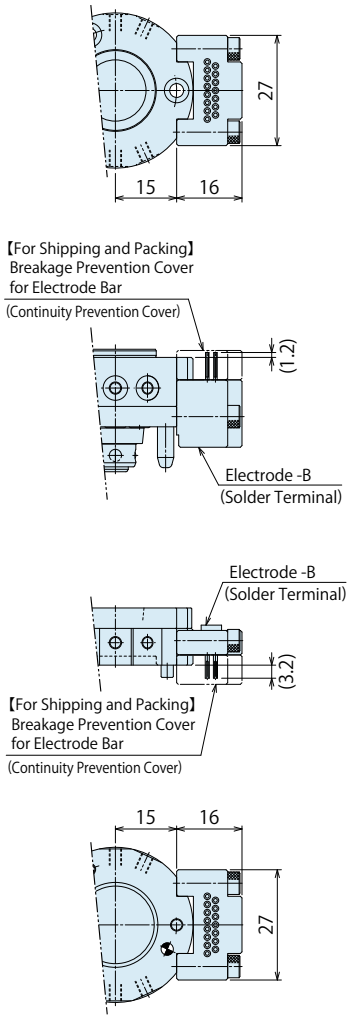
Tool Adapter
SWRY0010-T

External Dimensions of External Options

※ Refer to P.67 for unlisted dimensions.

Master Cylinder SWRY0010-M-B

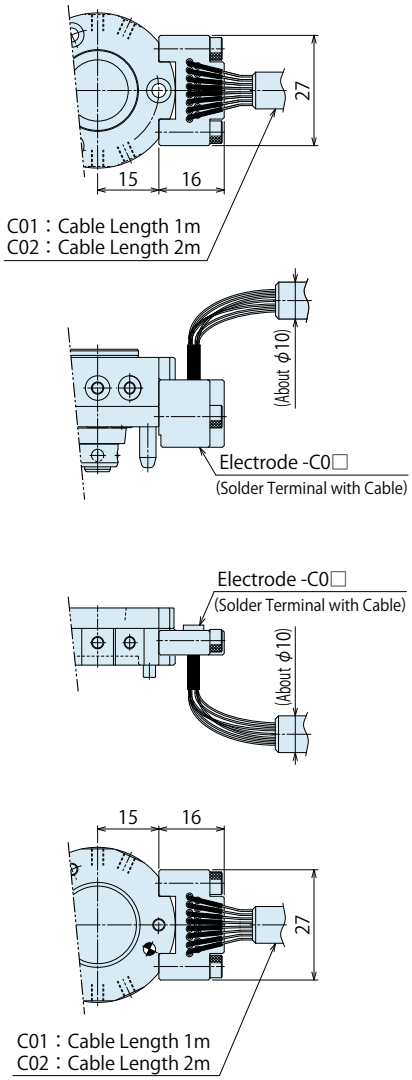
※ Refer to P.41 for the detailed electrode specifications.



Tool Adapter SWRY0010-T-B

Master Cylinder SWRY0010-M-C0□

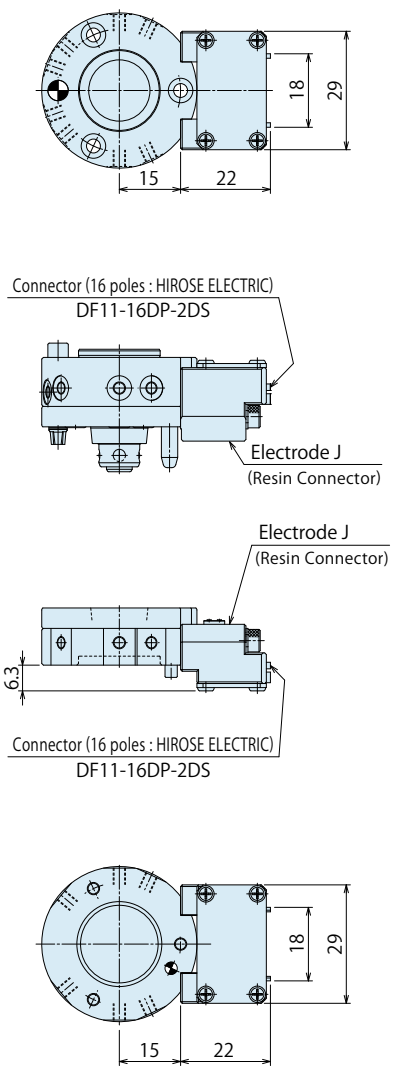
※ Refer to P.43 for the detailed electrode specifications.



Tool Adapter SWRY0010-T-C0□

Master Cylinder SWRY0010-M-J

※ Refer to P.37 for the detailed electrode specifications.



Tool Adapter SWRY0010-T-J

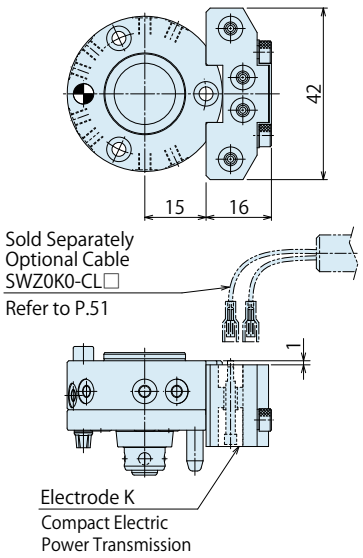
SWRY0010 External Dimensions

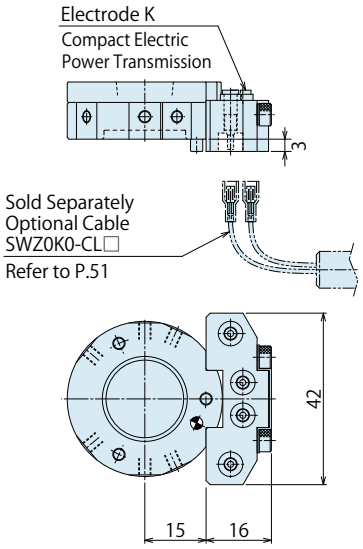
External Dimensions of External Options

※ Refer to P.67 for unlisted dimensions.

Master Cylinder
SWRY0010-M-K

※ Refer to P.49 for the detailed electrode specifications.

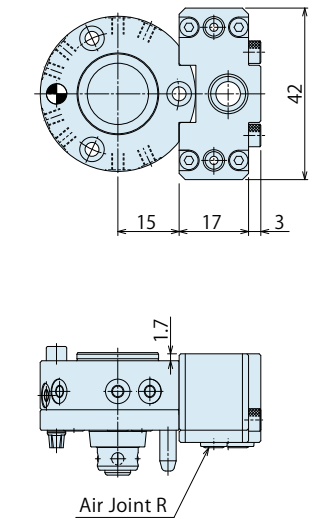


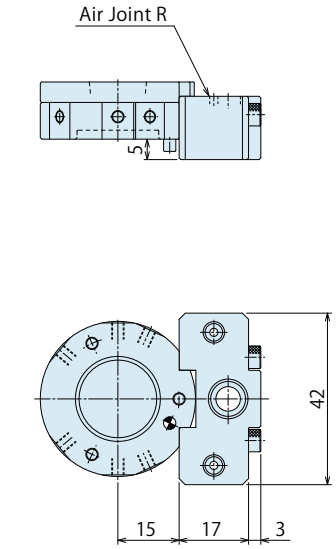


Tool Adapter
SWRY0010-T-K

Master Cylinder
SWRY0010-M-R

※ Refer to P.59 for the detailed air joint specifications.

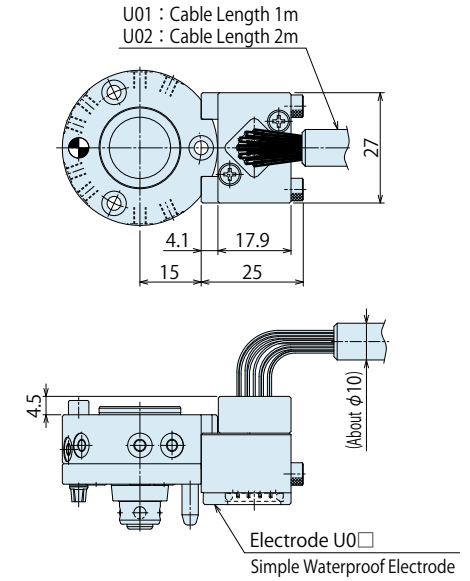


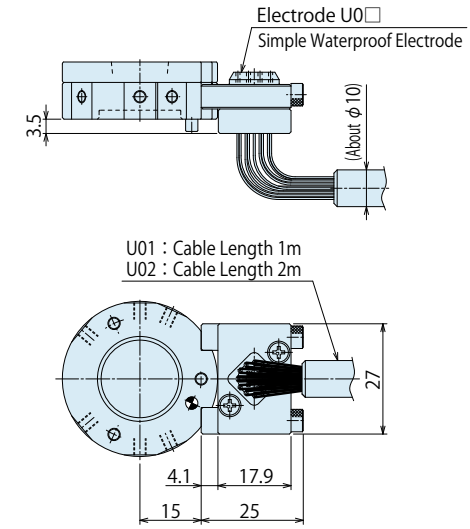


Tool Adapter
SWRY0010-T-R

Master Cylinder
SWRY0010-M-U□

※ Refer to P.45 for the detailed electrode specifications.

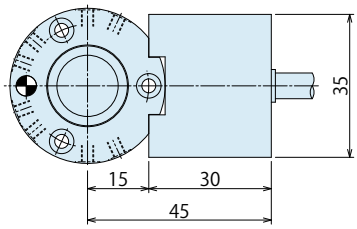




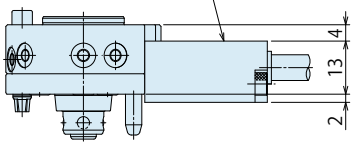
Tool Adapter
SWRY0010-T-U0□

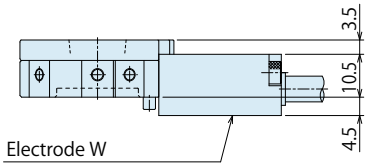
Master Cylinder
SWRY0010-M-W□

※ Refer to P.55 for the detailed electrode specifications.

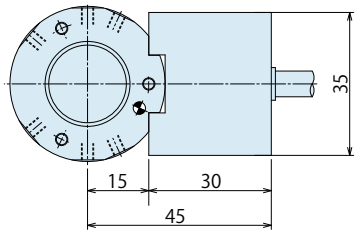


Electrode W / WX
Noncontact Waterproof Electrode
Compact Model





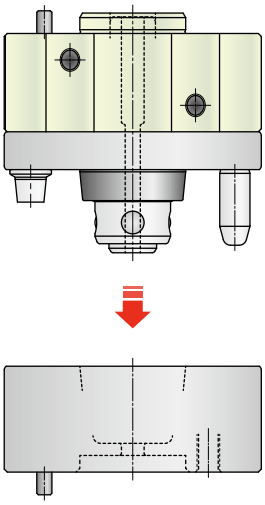
Electrode W
Noncontact Waterproof Electrode
Compact Model



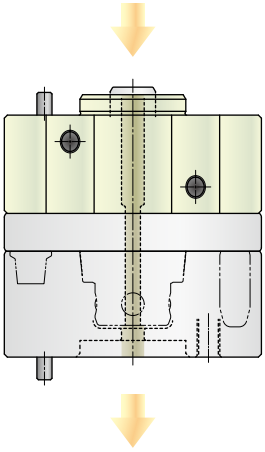
Tool Adapter
SWRY0010-T-W

Exclusive Cases ※ A Part of Exclusive Case Examples. Please contact us for further information.

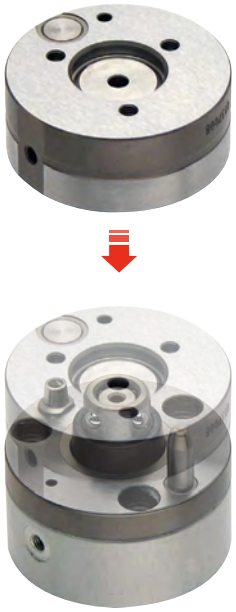
With Center Hole



Disconnected



Connected

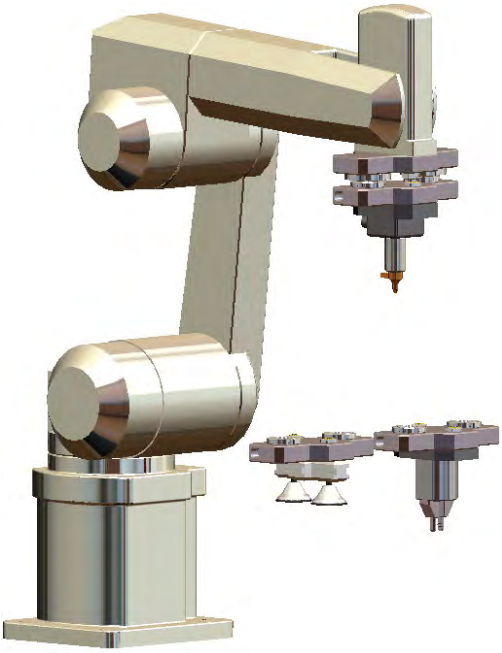


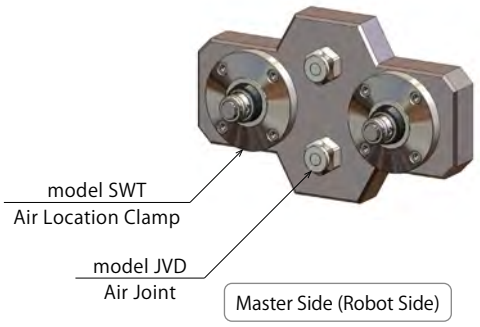
Center hole is provided for photoelectric detection and various purposes.

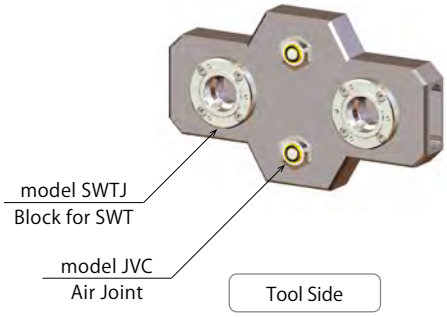
Exclusive Cases ※ A Part of Exclusive Case Examples. Please contact us for further information.

Increase in Payload with SWT Air Locating Clamp

By using Kosmek Air Locating Clamp SWT, Robotic Hand Changer can be used for larger robots.
It is able to install Kosmek Air Joint as well.







Cautions

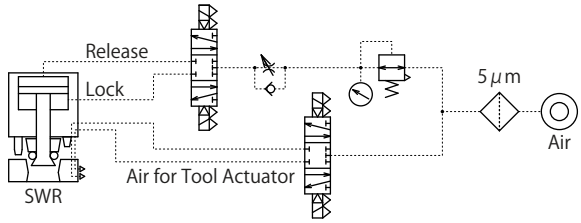
Notes for Design

1) Check Specifications

- Please use each product according to the specifications.
- Operating Air Pressure as follows :
  SWR0030, SWRY0010 : Max. 1.0 MPa and Min. 0.4MPa
  SWR0070 ~ SWR1200 : Max. 1.0 MPa and Min. 0.35MPa
  SWR2300 : Max. 0.7 MPa and Min. 0.35MPa

2) Air Pressure Circuit Reference

- SWR maintains clamping tools with mechanical lock (spring for maintain). However, for safety, when using 2-position solenoid valve, select the solenoid valve for SWR actuation that supplies air to the lock port when it is not energized.
  If air is supplied to the release port when the switch of solenoid valve is turned off, it is very dangerous since SWR may drop the tool (hand).



3) Operating Environment (External Option (Electrode))

- Do not use the product in the environment with water・vapor・liquid・scattering of chemicals・explosion・gas with causticity. Also, using in the environment with cutting chips・cutting fluid・dust・spatter scattering may lead to continuity error of electrode. We offer IP67-Compatible Noncontact Waterproof Electrode for the environment with water・vapor・liquid・cutting chips.

4) Electrification of Electrodes while Connecting/Disconnecting (External Option (Electrode))

- If connecting/disconnecting robotic hand changer while energized (hot swapping), there will be a discharge phenomenon (spark phenomenon) between the electrodes opposing each other. The tips of contact probes and electrode bars will be severely worn down due to the phenomenon, and the basis metal might be melted due to oxidation or abrasion of gold-plating leading to conduction failure. Electricity should be shut off while connecting/disconnecting the robotic hand changer.
  In case of continuous electrification with more than 40~60% of rated current, it is recommended to use multiple electrodes in a line. (In order to improve durability of contact probes.)

5) Note for Single Use of SWR Robotic Hand Changer

- Applying withstanding pressure without mounting on a robot or a plate leads to damage on the product. Make sure to supply air after setting SWR on a robot or a plate.

6) Hand Changing (Attaching/Detaching) in a Horizontal Position

- When connecting/disconnecting the Robotic Hand Changer in a horizontal position, make sure not to apply excessive moment on master cylinder. Please select an appropriate size of model cosidering robot payload with allowance fully taken into consideration. When connecting, make sure the tool side has no lifting or tilting that is larger than the allowable position offset range. Also, do not fix it completely on the tool stand, and make a margin (clearance) within the allowable position offset range. Otherwise, this will affect repeatability.

Installation Notes

1) Please supply filtered clean dry air.

- Make sure to supply filtered clean dry air.
- Oil supply with a lubricator etc. is unnecessary.

2) Procedure before Piping

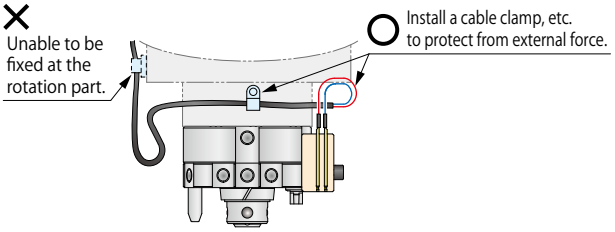
- The pipeline, piping connector and fixture circuits should be cleaned and flushed thoroughly.
  The dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
- There is no filter provided with this product for prevention of contaminants in the air circuit.

3) Applying Sealing Tape

- When using sealing tape, wrap with it 1 to 2 times following the screwing direction.
  When piping, be careful that contaminant such as sealing tape does not enter in products. Pieces of the sealing tape can cause air leaks and malfunction.

4) Notes on Wire/Cable Procedure and Wiring (External Options (Electrode))

- Make sure to fix the wire and cable so that they are not pulled while a robot is moving or turning around.
  External force should not be applied on the connector part since it leads to breaking of wire, detaching of connector and contact failure.



- When allocating each electric signal, imperceptible signal and power signal should be apart. Otherwise noise will be propagated from power signal to imperceptible signal.
  Also it is the same for wire and cable of external options (electrode).
  Make sure to keep imperceptible signal from power signal.

5) Installation/Removal of Master Cylinder/Tool Adapter

● Please follow the tightening torque below.
When mounting, use the attached pins and tighten them with bolts evenly not to incline the master cylinder and tool adapter.

	Model No.	Bolt Size	No. of Bolts	Tightening Torque (N·m)
Master Cylinder	**SWR0030-M**	M3 × 0.5	4	1.3
	SWRY0010-M	M3 × 0.5	3	1.3
	SWR0070-M	M3 × 0.5	4	1.3
	SWR0120-M	M4 × 0.7	4	3.2
	SWR0250-M	M5 × 0.8	4	6.3
	SWR0500-M	M6 × 1	4	10
	SWR0750-M	M6 × 1	6	10
	SWR1200-M	M8 × 1.25	6	25
	SWR2300-M	M10 × 1.5	6	50
Tool Adapter	**SWR0030-T**	M3 × 0.5	4	1.3
	SWRY0010-T	M3 × 0.5	3	1.3
	SWR0070-T	M4 × 0.7	4	3.2
	SWR0120-T	M4 × 0.7	4	3.2
	SWR0250-T	M5 × 0.8	4	6.3
	SWR0500-T	M6 × 1	4	10
	SWR0750-T	M6 × 1	6	10
	SWR1200-T	M8 × 1.25	6	20
	SWR2300-T	M10 × 1.5	6	50

Do not lose attached pins for installation/removal of the master cylinder/tool adapter.
If not using attached pins, moment quality may not be secured.

6) Installation of Optional Electrode

For electrode installation, apply screw lock glue (equivalent to 1401 made by ThreeBond) on the tip of the mounting bolt and tighten it with the tightening torque shown below.

- M3 Hexagon Socket Bolt：0.5N・m
- M4 Hexagon Socket Bolt：1.5N・m

7) Test Run Method

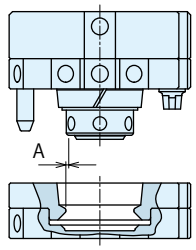
● If supplying a large amount of air just after installation, action time will be extremely fast leading to severe damage on robotic hand changer. Set the speed controller (Meter-in) and gradually supply air pressure.

8) Allowable Offset while Teaching

● Allowable offset of the master cylinder and tool adapter while teaching should be within the range shown below.
Tool adapter and tool placing stand should have space within the range of allowable offset.

① Allowable Position Offset in Horizontal Direction

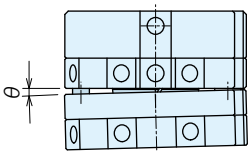
Model No.	Allowable Offset Amm
SWRY0010	±0.8 mm
SWR0030	±0.8 mm
SWR0070	±0.8 mm
SWR0120	±0.8 mm
SWR0250	±1.0 mm
SWR0500	±1.3 mm
SWR0750	±1.3 mm
SWR1200	±2.0 mm
SWR2300	±2.0 mm



① Horizontal Position Offset

② Allowable Position Offset in Tilt Direction

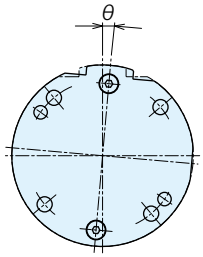
Model No.	Allowable Offset θ
SWRY0010	θ=1.5 deg
SWR0030	θ=1.5 deg
SWR0070	θ=1.5 deg
SWR0120	θ=1.5 deg
SWR0250	θ=1.2 deg
SWR0500	θ=1.0 deg
SWR0750	θ=1.0 deg
SWR1200	θ=0.9 deg
SWR2300	θ=0.6 deg



② Tilt Position Offset

③ Allowable Position Offset in Rotation Direction

Model No.	Allowable Offset θ
SWRY0010	θ=±3 deg
SWR0030	θ=±3 deg
SWR0070	θ=±3 deg
SWR0120	θ=±3 deg
SWR0250	θ=±2 deg
SWR0500	θ=±2 deg
SWR0750	θ=±2 deg
SWR1200	θ=±2 deg
SWR2300	θ=±1.5 deg



③ Rotation Position Offset

Continuing "Installation Notes" on the Next Page

※ Please refer to P.461 for common cautions. • Notes on Handling • Maintenance/Inspection • Warranty

Cautions

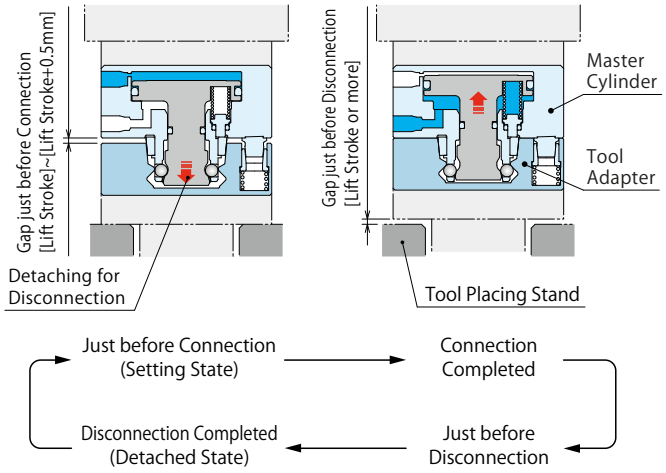
Installation Notes (Continued)

9) Most Suitable Gap between Master Cylinder and Tool Adapter Just Before Connection (When Setting)

- When connecting, the gap between master cylinder and tool adapter should be within the range of [Lift Stroke]~[Lift Stroke+0.5mm] shown on P.25. It may not be able to connect with more than the lift stroke + 0.5mm.

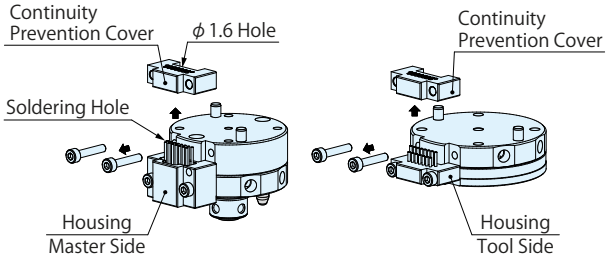
10) Most Suitable Gap between Tool Adapter and Tool Placing Stand Just Before Disconnection

- When detaching, the gap between the tool adapter and tool stand should be more than [Lift Stroke] shown on P.25. Tool adapter is forcibly detached with detaching (lifting) function of the master cylinder. It is recommended to install cushioning mechanism between the tool adapter and tool stand.



11) Connection Method for -B：Solder Terminal (External Option (Electrode))

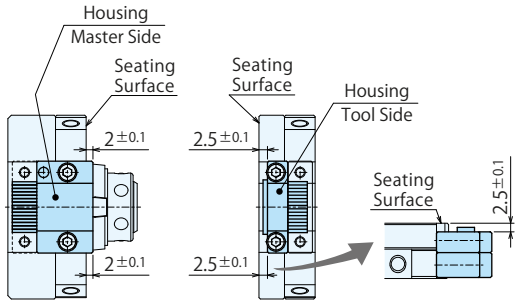
- For solder terminal option, the electric signal pin, wire and cable of both master cylinder and tool adapter are connected with soldering. Remove the continuity prevention cover before soldering. At this time, if removing the press-fitted housing of the electric signal pin, install it as shown in the following drawing【Mounting Height】considering the height from seating surface.



【Mounting Height】

Model：SWR0030/0070/0120/0250/0500/0750/1200/2300

※ Make sure not to tilt and adjust the height of both ends of the housing.



Soldering condition should be：280℃, within 3 seconds.

Make sure the outer diameter is ϕ1.6mm after soldering. If it exceeds ϕ1.6mm the continuity prevention cover cannot be installed.

【Recommended Wire Diameter】

Use wires with AWG26 size or smaller diameter. If you need electric current more than allowable flowing current of AWG26, use wires within the rated value of electrode. At this time, soldering hole and attached continuity prevention cover cannot be used. If required, insulate them with a thermal contraction tube etc.

Before installing the continuity prevention cover, apply screw lock glue (equivalent to 1401 made by ThreeBond) on the tip of M3 hexagon socket bolt.

・Tightening Torque of M3 Hexagon Socket Bolt：0.5N・m

12) Connection Method for -D/E/G/H/J：Connector (External Option (Electrode))

- A Connector must be fully inserted into the electrode. As for -D/E/G/H options, make sure to screw up the connector. If a connector is not fully inserted or screwed up, it will cause contact failure.

13) Notes for using -K：Compact Electric Power Transmission (External Option (Electrode))

- As for Compact Electric Power Transmission option, the electrode probes on both master cylinder and tool adaptor are exchangeable. The electrode probes will be fallen out if pushed from the cable connecting side with power stronger than a certain level. In case the electrode probes are pushed out after connecting the cable, make sure to push them back from the seating surface side before use.

Cautions

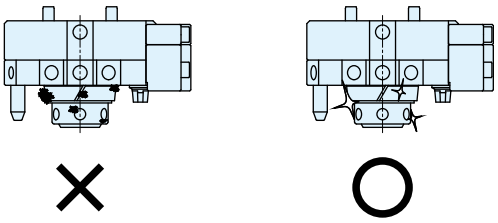
Maintenance・Inspection

1) Removal of the Machine and Shut-off of Pressure Source

- Before the machine is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
- Make sure there is no abnormality in the bolts and respective parts before restarting.

2) Cleaning of Master Cylinder・Tool Adapter

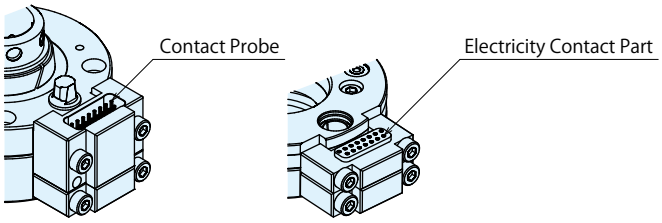
- If using the product when the taper reference surface or seat check surface of master cylinder/tool adapter are contaminated with dirt, it may lead to locating accuracy failure, malfunction or air leaks. (Do not apply grease on the taper reference surface.)



3) Regularly examine and retighten piping, mounting bolts and wires to ensure proper use.

4) Make an inspection before use and regularly.

- If there is dirt or dust on the electric contact part, electric signal is hard to conduct. Wipe it out with a cloth soaked in an organic solvent such as IPA.
- If there is a contact failure while in use, make an inspection mainly of the electricity connection part and clean it out. If the contact probe of master cylinder has abnormality, it has to be replaced. When installing an electrode after removing it, check the mounting height of -B：Solder Terminal connection method on P.75.



5) Make sure to supply filtered clean dry air.

6) Make sure there is smooth action and no air leaks.

- Especially when it is restarted after left unused for a long period, make sure it can be operated properly. If there is air leak while connecting, please contact us for overhaul and repair.

7) The products should be stored in the cool and dark place without direct sunshine or moisture.

8) Please contact us for overhaul and repair.

※ Please refer to P.461 for common cautions. • Notes on Handling • Maintenance/Inspection • Warranty

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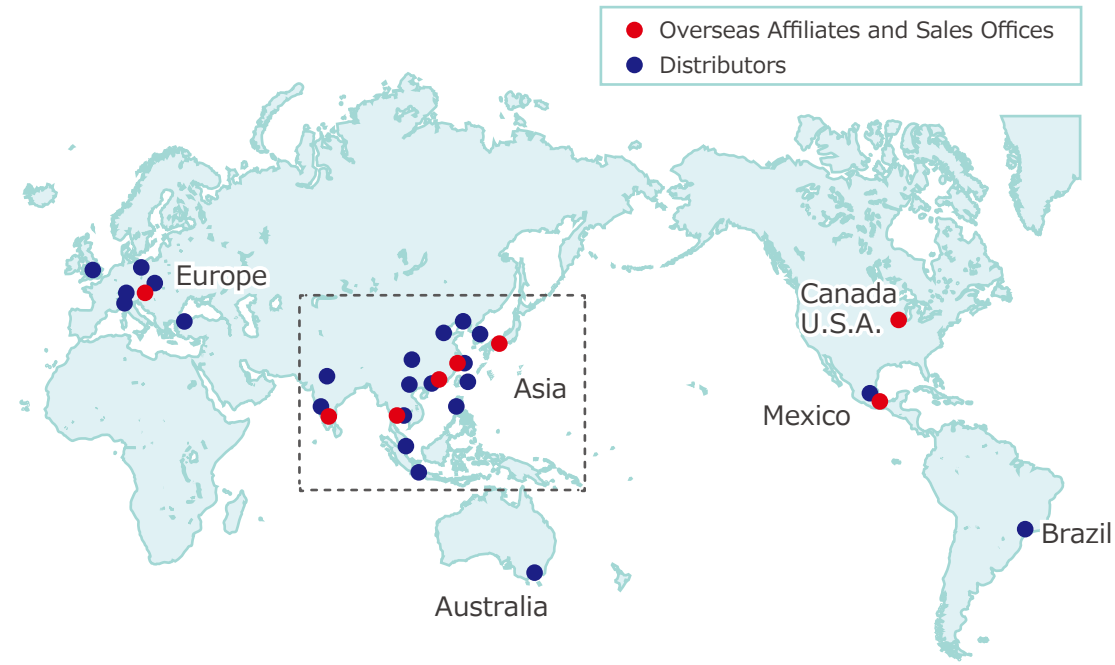
Global Network



Asia Detailed Map

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