Doc. no. DOC1152215

Operation Manual

PRODUCT NAME

Vacuum Gripper System
(Suction Cup Type)

MODEL / Series / Product Number

ZGP**-*-****

SMC Corporation

Contents

Safety Instructions

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

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1:Robots
etc.

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

Warning

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

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

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

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

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

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

Safety Instructions

⚠ Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.
Use in non-manufacturing industries is not covered.
Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.
The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/Compliance Requirements

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

Limited warranty and Disclaimer

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

***2) Suction cups are excluded from this 1 year warranty.**
A suction cup is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the suction cup or failure due to the deterioration of rubber material are not covered by the limited warranty

Compliance Requirements

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

■Explanation of Symbols

Symbol	Definition
	Things you must not do. Instructions are provided as a drawing or sentence next to the symbol.
	Things you must do Instructions are provided as a drawing or sentence next to the symbol.

■Operator

1. This Operation Manual is intended for those who have knowledge of machinery using pneumatic equipment, and have sufficient knowledge of assembly, operation and maintenance of such equipment.
   Only those persons are allowed to perform assembly, operation and maintenance.
2. Read and understand this Operation Manual carefully before assembling, operating or providing maintenance to the product.

■Safety Instructions

⚠Warning	
 Disassembly prohibited	Do not disassemble, modify (including the replacement of board) or repair other than instructed in this manual. Otherwise, an injury or failure can result.
 Do not	Do not operate the product outside of the specifications. Do not use for flammable or harmful fluids. Fire, malfunction, or damage to the product can result. Please check the specifications before use.
 Do not	Do not use in an atmosphere containing flammable or explosive gases. Fire or an explosion can result. The product is not designed to be explosion proof.
 Do not	Do not use the product in a place where static electricity is a problem. Otherwise failure or malfunction of the system can result.
 Do not	Do not cut off the power and compressed air supplied to this product while it is operating. Otherwise it can cause injury due to dropping of workpieces or damage to the system.
 Instruction	If using the product in an interlocking circuit - Provide a double interlocking system, for example a mechanical system. - Check the product for proper operation. Otherwise malfunction can result, causing an accident.
 Instruction	The following instructions must be followed during maintenance - Turn off the power supply - Stop the air supply, exhaust the residual pressure in piping and verify that the air is released before performing maintenance work. It may cause an injury.

⚠ Caution	
 Do not touch	Do not touch the terminals and connectors while the power is on. Otherwise electric shock, malfunction or damage to the switch can result.
 Instruction	Perform sufficient trial run. Otherwise, injury or damage to the system can result due to suction failure depending on the conditions of the suction of the workpiece. Perform sufficient verification before using this product.
 Instruction	After maintenance is complete, perform appropriate functional inspections and leak test. Stop operation if the equipment does not function properly or there is leakage of fluid. If there is leakage from parts other than the piping, the product might be broken. Cut off the power supply and stop the fluid supply. Do not supply fluid if there is leakage. Safety cannot be assured in the case of an unexpected malfunction.

■Precautions for Handling

Follow the instructions given below for selecting and handling of the vacuum gripper system.

Product specifications

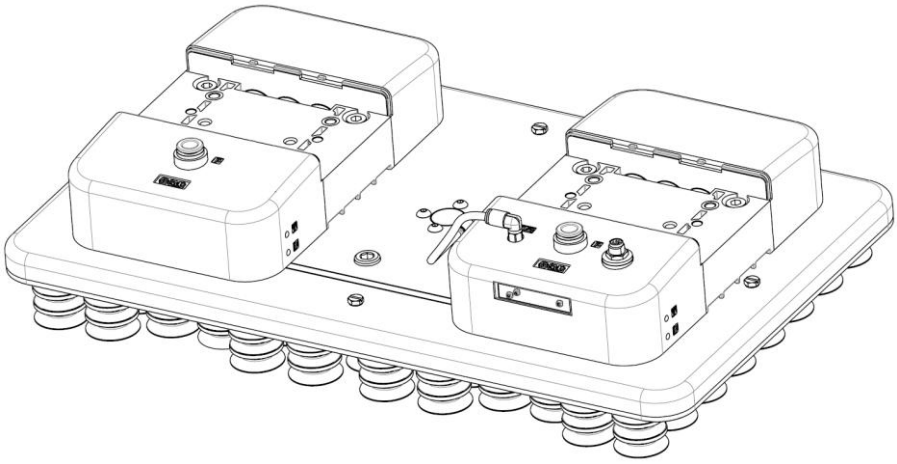
- Ensure to provide enough space for maintenance.
  Design the system allowing the required space for maintenance.
- Use the specified voltage. Otherwise, failure or malfunction can result.
- Design the product to prevent reverse current when the circuit is opened, or the product is forced to operate for operational check. Reverse current can cause malfunction or damage the product.

Operating environment

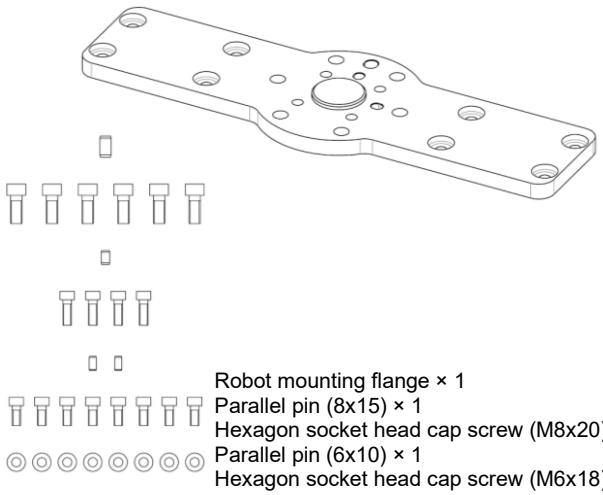
- Do not use the product in environments where the following atmospheres exist:
  1. Corrosive gases, chemicals, sea water, water, water stream, or where there is contact with any of these
  2. Flammable gases or explosive gases
  3. Oil or chemicals
  4. Thermal cycles other than normal temperature changes
  5. Direct sunlight (ultraviolet rays) or outdoor
  6. Ambient temperature exceeds the operating temperature range (refer to the specification table)
  7. A source of heat, causing radiant heat
- Do not use the product in an area where surges are generated.
  When there are machines or equipment that generate a large surge near the product (magnetic type lifter, high frequency inductive furnace, motor, etc.), this can result in deterioration and damage of the internal elements. Take measures against the surge sources and prevent the lines from coming into close contact.
- Do not use the product in an area where a strong magnetic field or strong electric field is generated; this can result in damage to internal parts and product malfunction.
- Do not allow oil, moisture, particles, dust, cutting chips, spatter, or other foreign objects to enter inside the product; this can result in deterioration in product performance or malfunction. Provide appropriate protection when using the product in an environment where contamination may occur.
- Do not apply vibration or impact to the product. Handle the product with care as vibration and impact may cause deterioration in product performance or malfunction.

1. Parts included in the package

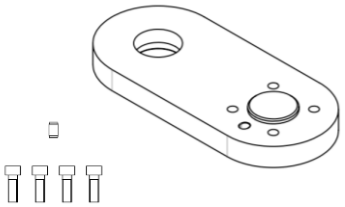
400mmx240mm



Vacuum Gripper System x 1



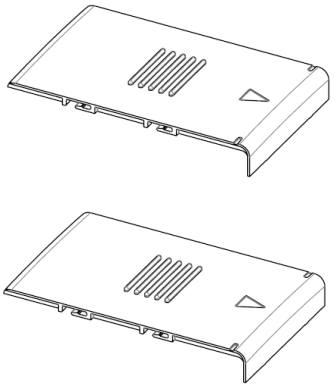
Robot mounting flange × 1
Parallel pin (8x15) × 1
Hexagon socket head cap screw (M8x20) × 6
Parallel pin (6x10) × 1
Hexagon socket head cap screw (M6x18) × 4
Parallel pin (5x10) × 2
Hexagon socket head cap screw (M6x14) × 8
Washer (M6) × 8
(When “Basic type” or “Basic type + Offset flange is selected)



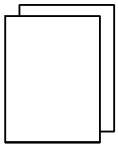
*)

Offset flange × 1
Parallel pin (6x10) × 1
Hexagon socket head cap screw (M6x23) × 4
(When “Basic type + Offset flange” is selected)

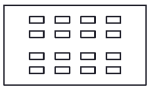
Connector cable x 1
(When “With connector cable” is selected.)
Refer to how to order for attached cable.



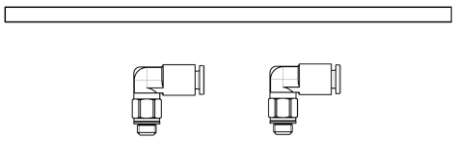
Flange cover x 2



Operation manual
(For pressure switch) x1



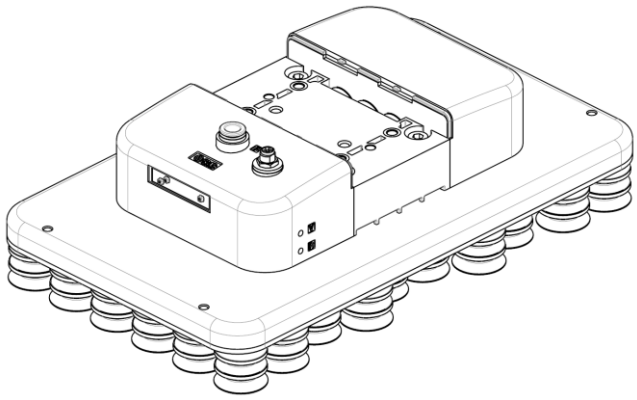
Unit label x 1 or 2
(When “Pressure switch with unit switching function" is selected.)



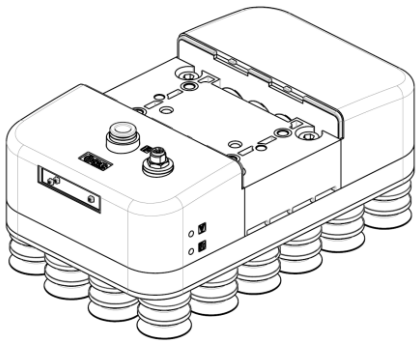
Tube (Length : 200mm) x 1
One touch fitting x 2
(When “Two pressure switches” is selected.)

*) When ordering ZGP012P∗-400240∗∗∗-∗∗2∗ (Robot mounting flange: Basic type + Offset flange) which is for UR20 and UR30, it comes with Flange U. For Flange U, refer to Page 10.

300mmx180mm, 200mmx120mm

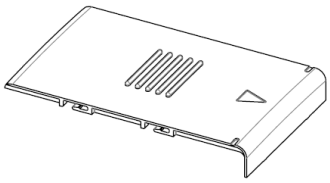


300mm x 180mm

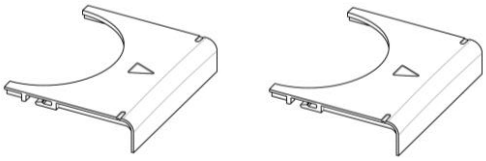


200mm x 120mm

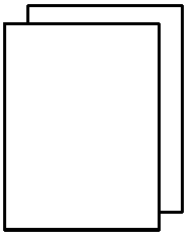
Vacuum Gripper System x 1



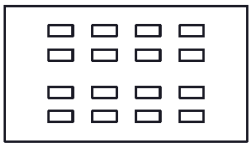
Flange cover x 1
(For offset flange)



Tool plate cover x 2
(For flanges other than offset flange)



Operation manual x 1
(For pressure switch)

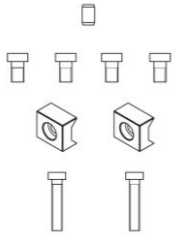


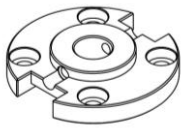
Unit label x 1
(When “Pressure switch with unit switching function" is selected.)

Connector cable x 1
(When “With connector cable” is selected.)
Refer to how to order for an attached cable.

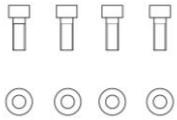
*) For other parts included with robot mounting flange, please refer to the next page.

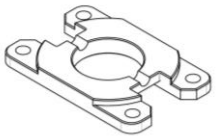
When model "Robot mounting flange : Tool plate and Main plate" is selected





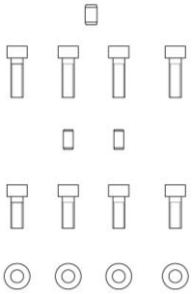
Main plate x 1
Parallel pin (6x10) x 1
Hexagon thin socket head screw (M6x10) x 4
Clamper x 2
Hexagon thin socket head screw (M5x25) x 2

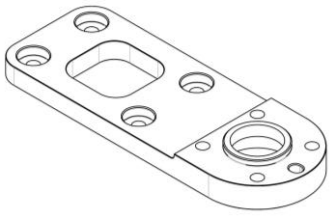




Tool plate x 1
Hexagon socket head cap screw (M6x16) x 4
Washer (M6) x 4

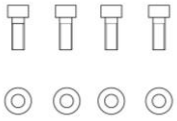
When model "Robot mounting flange : Offset flange" is selected

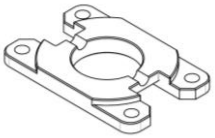




Offset flange x 1
Parallel pin (6x10) x 1
Hexagon socket head cap screw (M6x20) x 4
Parallel pin (5x10) x 2
Hexagon socket head cap screw (M6x16) x 4
Washer (M6) x 4

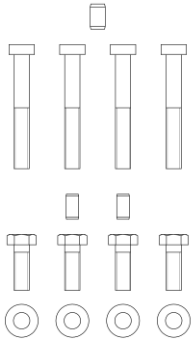
When model "Robot mounting flange : Tool plate only" is selected

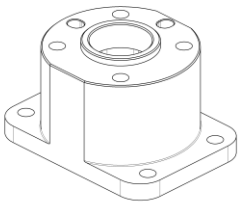




Tool plate x 1
Hexagon socket head cap screw (M6x16) x 4
Washer (M6) x 4

When model "Robot mounting flange : Straight flange" is selected

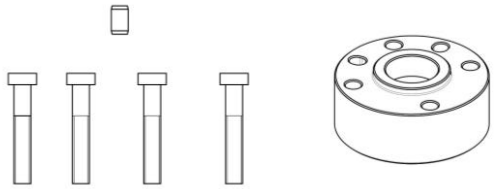




Straight flange x1
Parallel pin (6x10) x1
Hexagon thin socket head screw (M6x45) x 4
Parallel pin (5x10) x2
Hexagon head screw (M6x18) x 4
Washer (M6) x4

Additional Flanges

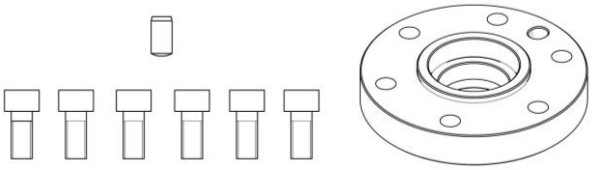
When model "Compatible robot : 043P/043N" is selected



<When "Tool plate + Main plate" is selected>
Flange Y x 1
Hexagon thin socket head screw (M6x35) x 4
Parallel pin (6x10) x 1

<When “Offset flange” is selected>
Flange Y x 1
Hexagon socket head cap screw (M6x45) x 4
Parallel pin (6x10) x 1

When model "Compatible robot : 012P" is selected



Flange U x 1
Hexagon socket head cap screw (M8x18) x 6
Parallel pin (8x15) x 1

2. How to order

ZG P | N | P | K | - | 3 0 0 1 8 0 | A | 2 5 | 2 | - | R | Y | 1 | C8

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿

❶Compatible robot

Symbol		Robot manufacturer	Supported model	Switch output	Valve polarity
Identification symbol	Output type				
N	P	–	Geberal purpose	PNP	−COM
	N			NPN	+COM
	H			IO-Link	
011	P	UNIVERSAL ROBOTS	UR3e	PNP	−COM
			UR5e		
			UR10e		
			UR16e		
012			UR20		
			UR30		
021	N	OMRON/ TECHMAN ROBOT	TM5(S)	NPN	+COM
			TM7S		
			TM12(S)		
			TM14(S)		
			TM16		
			TM20		
			TM25S		
			TM30S		
043	P	YASKAWA Electric	MOTOMAN-HC10(S)DTP MOTOMAN-HC20(S)DTP MOTOMAN-HC30PL	PNP	−COM
	N		MOTOMAN-HC10(S)DTP MOTOMAN-HC20(S)DTP MOTOMAN-HC30PL	NPN	+COM
051	P	FANUC	CRX-5iA CRX-10iA(L) CRX-20iA CRX-25iA CRX-30iA	PNP	−COM

※Use robot of appropriate size depending on vacuum gripper system and weight of workpiece.

❷Supply valve / Release valve

Symbol	Supply valve	Release valve
B	N.O. (2-position single)	N.C.
K	N.C. (2-position single)	N.C.
W	2-position double	N.C.
Nil	None	None

※When output type "H" is selected for ①Compatible robot, "W" and "Nill" cannot be selected.

❸Size

Symbol	Size
400240	400mmx240mm
300180	300mmx180mm
200120	200mmx120mm

❹Cup specifications

Symbol	Cup form	Cup material	With inner ring	With vacuum saving valve
A	2.5-stage bellows	FS61	Yes	Yes
P	Plug			

※When symbol "P" is selected, product comes with plugs instead of suction cups.

❺Cup diameter

Symbol	Cup size
25	φ25
50	φ50

※Even if symbol "P" is selected for

❻Number of ejector assemblies

For 400mmx240mm size

Symbol	Number of ejector assemblies
2	2 pcs.
4	4 pcs.
6	6 pcs.

For 300mmx180mm size

Symbol	Number of ejector assemblies
1	1 pc.
2	2 pcs.
3	3 pcs.

For 200mmx120mm size

Symbol	Number of ejector assemblies
1	1 pc.
2	2 pcs.

❼Connector cable for compatible robot

Symbol	Connector cable for compatible robot
Nil	With cable (For compatible robot)
R	With cable (Discrete wire)
N	Without cable

※When symbol "NP" or "NN" is selected for ①Compatible robot, "Nil: With cable (For compatible robot)" cannot be selected. In addition, when symbol "NH" is selected for ①Compatible robot, only "N: Without cable" can be selected.

❽Pressure switch unit specifications

For 400mmx240mm size

Symbol	Number of pressure switches	Switch unit
W	1 switch	With unit switching function
Y		SI unit only
C	2 switches	With unit switching function
M		SI unit only

※When symbol "H" is selected for ①Compatible robot, only "W" or "Y" can be selected.
※Under the New Measurement Act, switches with the unit switching function are not permitted for use in Japan. (For use in Japan, symbol "Y" or "M" can be selected.)
※Suction cup type uses only one switch. If switching foam type is considered, select two switches.

For 300mmx180mm size and 200mmx120mm

Symbol	Switch unit
W	With unit switching function
Y	SI unit only

※Under the New Measurement Act, switches with the unit switching function are not permitted for use in Japan. (For use in Japan, only symbol "Y" can be selected.)

❾Robot mounting flange

For 400mmx240mm size

Symbol	Robot mounting flange
Nil	Without robot mounting flange
1	Basic type (Conforming to ISO9409-1-50-4-M6)
2	Basic type (Conforming to ISO9409-1-50-4-M6) + Offset flange

※When symbol 021N (OMRON/TECHMAN ROBOT) is selected for ①Compatible robot, only "Nil" or "2" can be selected.

For 300mmx180mm size and 200mmx120mm

Symbol	Robot mounting flange
Nil	Without robot mounting flange ※2
1	Tool plate + Main plate ※3
2	Offset flange ※2
3	Tool plate only ※4
4	Straight flange

※1 Depending on ①Compatible robot, an additional flange is provided. See the Robot Mounting Flange options for details.
※2 When symbol 021N (OMRON/TECHMAN ROBOT) is selected for ①Compatible robot, only "Nil" or "2" can be selected.
※3 When "Tool plate + Main plate" is selected, liffting force may be limitted.
※4 Tool plate only is available for users who already have the main plate (ZGS-PL3-7-A).

❿Air pressure supply (P) port

Symbol	Air pressure supply (P) port		
C8	Metric	Straight	Φ8 One-touch fitting
C10			Φ10 One-touch fitting
N9	Inch	Straight	Φ5/16" One-touch fitting
N11			Φ3/8" One-touch fitting

■400mmx240mm

Table 1-1. ❾ Robot mounting flange part numbers (With link)

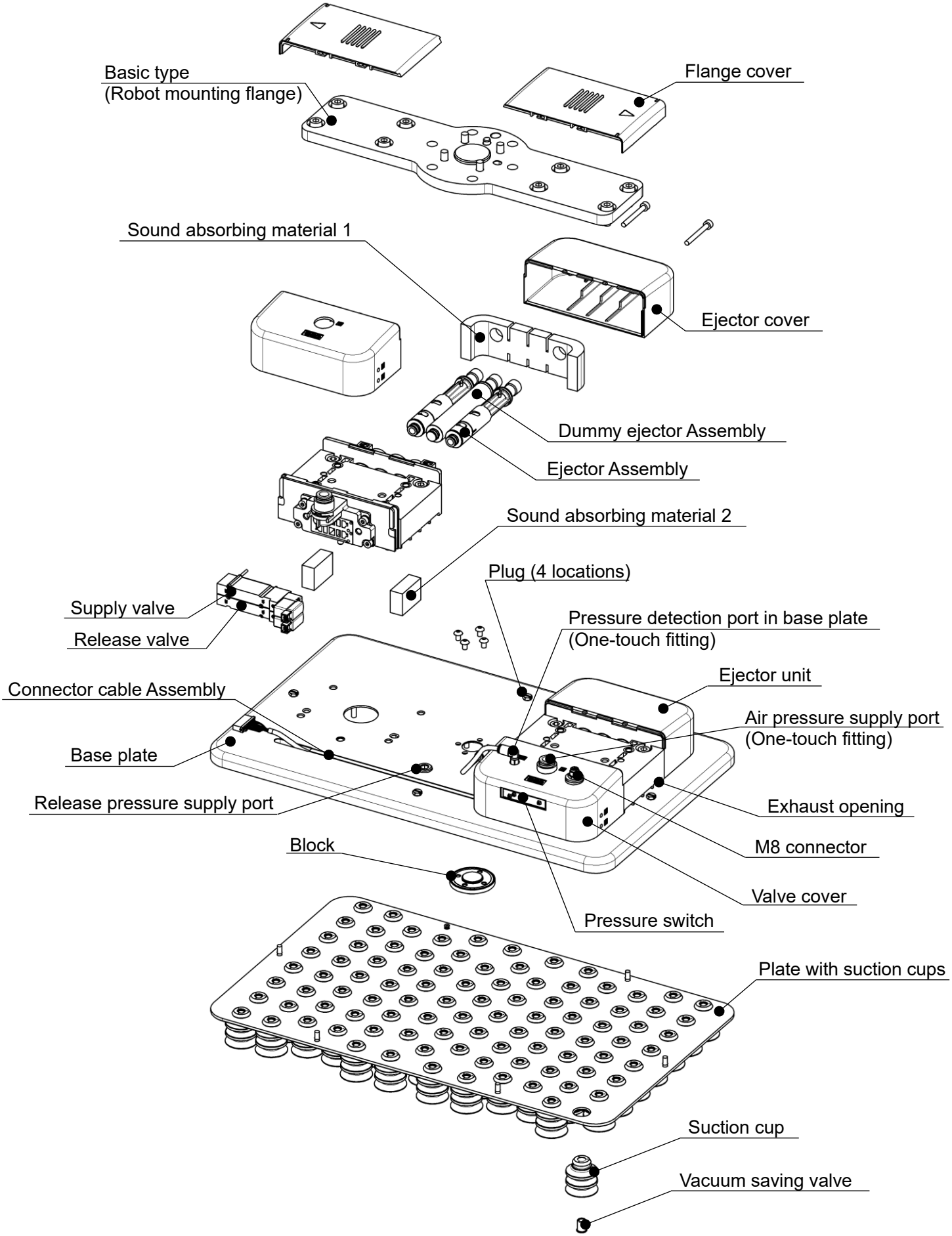
Compatible robot ❶	Robot mounting flange ❾	Dimensions	Flange part number			Assembly Procedure
			ZGS-PL3-1-A Basic type	ZGS-PL5-1-A Offset flange	ZGS-PL3-5-A Flange U	
N 011 043 051	1	■	■	–	–	■
	2	■	■	■	–	■
012	1	■	■	–	–	■
	2	■	■	■	■	■
021	2	■	■	■	–	■
N 011 012 021 043 051	Nil	■	–	–	–	–

■300mmx180mm, 200mmx120mm

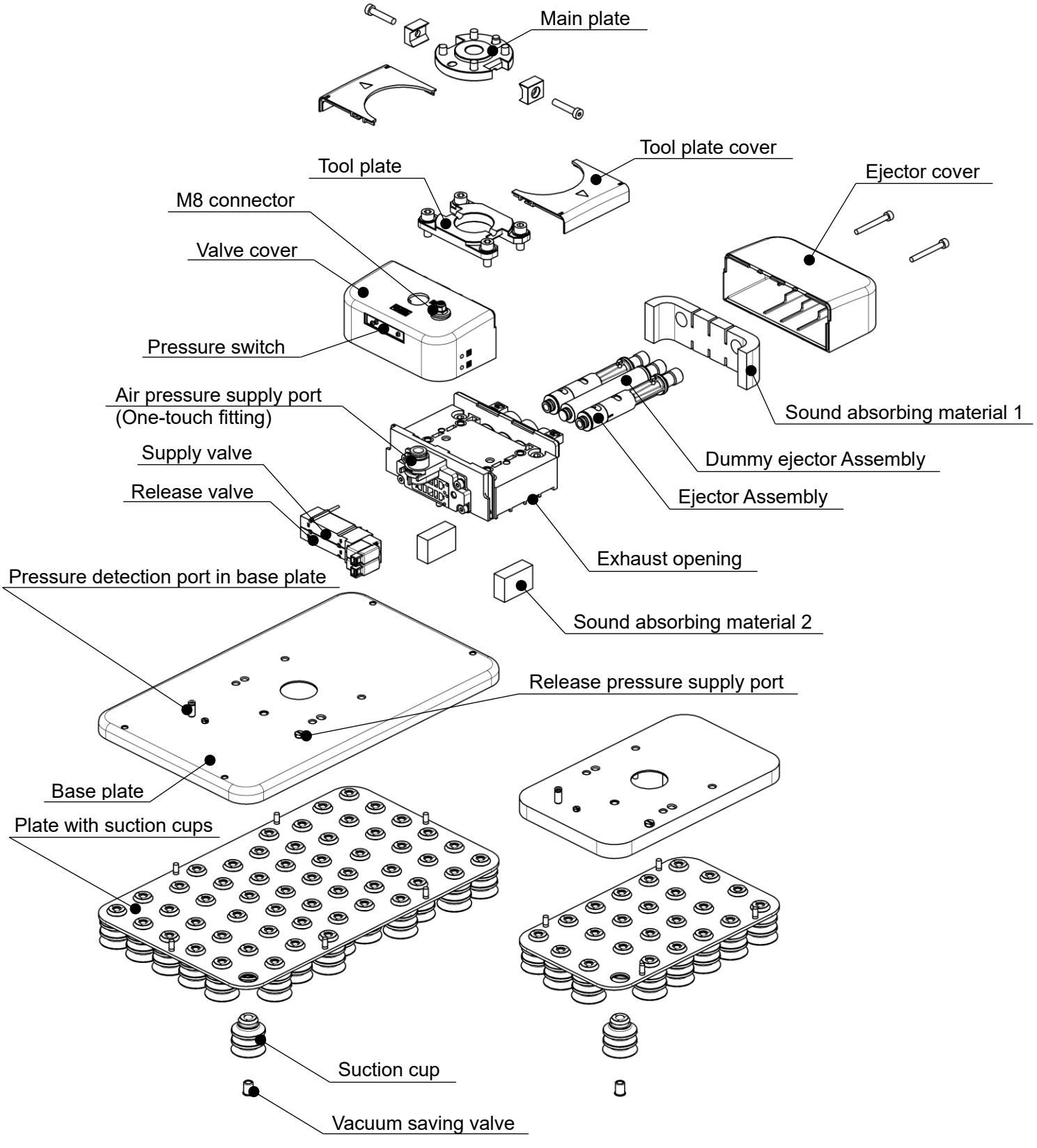
Table 1-2. ❾ Robot mounting flange part numbers (With link)

Compatible robot ❶	Robot mounting flange ❾	Dimensions		Flange part number							Assembly Procedure
		300x180	200x120	ZGS-PL3-3-A Tool plate	ZGS-PL3-7-A Main plate	ZGS-PL3-4-A Offset flange	ZGS-PL3-5-A Flange U	ZGS-PL3-6-A Flange Y	ZGS-PL3-6-1-A Flange Y	ZGS-PL3-8-A Straight flange	
N 011 051	1	■	■	■	■	–	–	–	–	–	■
	2	■	■	–	–	■	–	–	–	–	■
012	1	■	■	■	■	–	■	–	–	–	■
	2	■	■	–	–	■	■	–	–	–	■
	4	■	■	–	–	–	■	–	–	■	■
043	1	■	■	■	■	–	–	■	–	–	■
	2	■	■	–	–	■	–	–	■	–	■
021	2	■	■	–	–	■	–	–	–	–	■
N 011 012 043 051	3	–	–	■	–	–	–	–	–	–	–
N 011 043 051	4	■	■	–	–	–	–	–	–	■	■
N 011 012 021 043 051	Nil	■	■	–	–	–	–	–	–	–	–

3. Summary of Product Parts



The above figure shows ZGP∗∗(B, K)-400240A254-N(W, Y)1∗



Size: 300x180mm

Size: 200x120mm

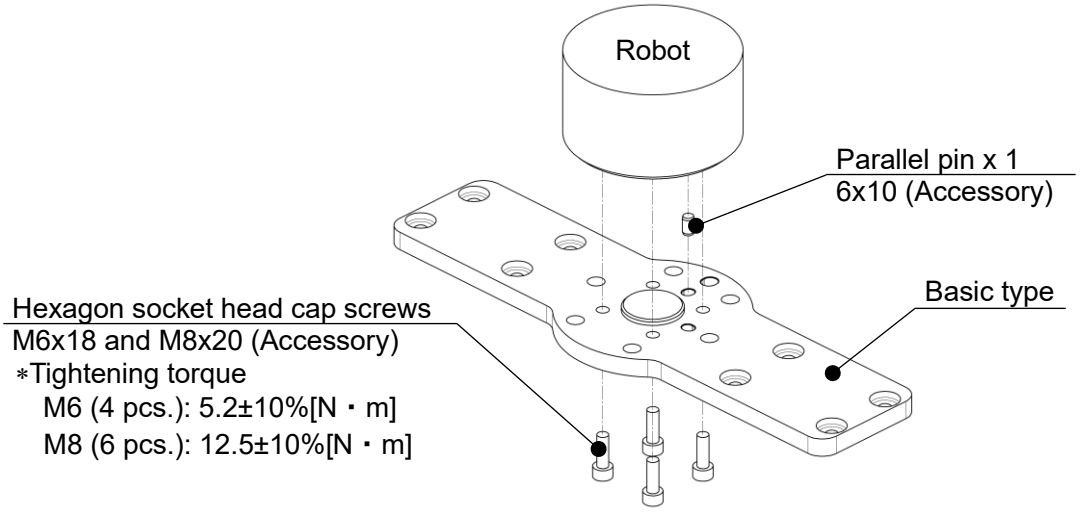
The above figure shows ZGP∗∗(B, K)-(300180, 200120)A254-N(W, Y)1∗

4. Mounting

■400mmx240mm

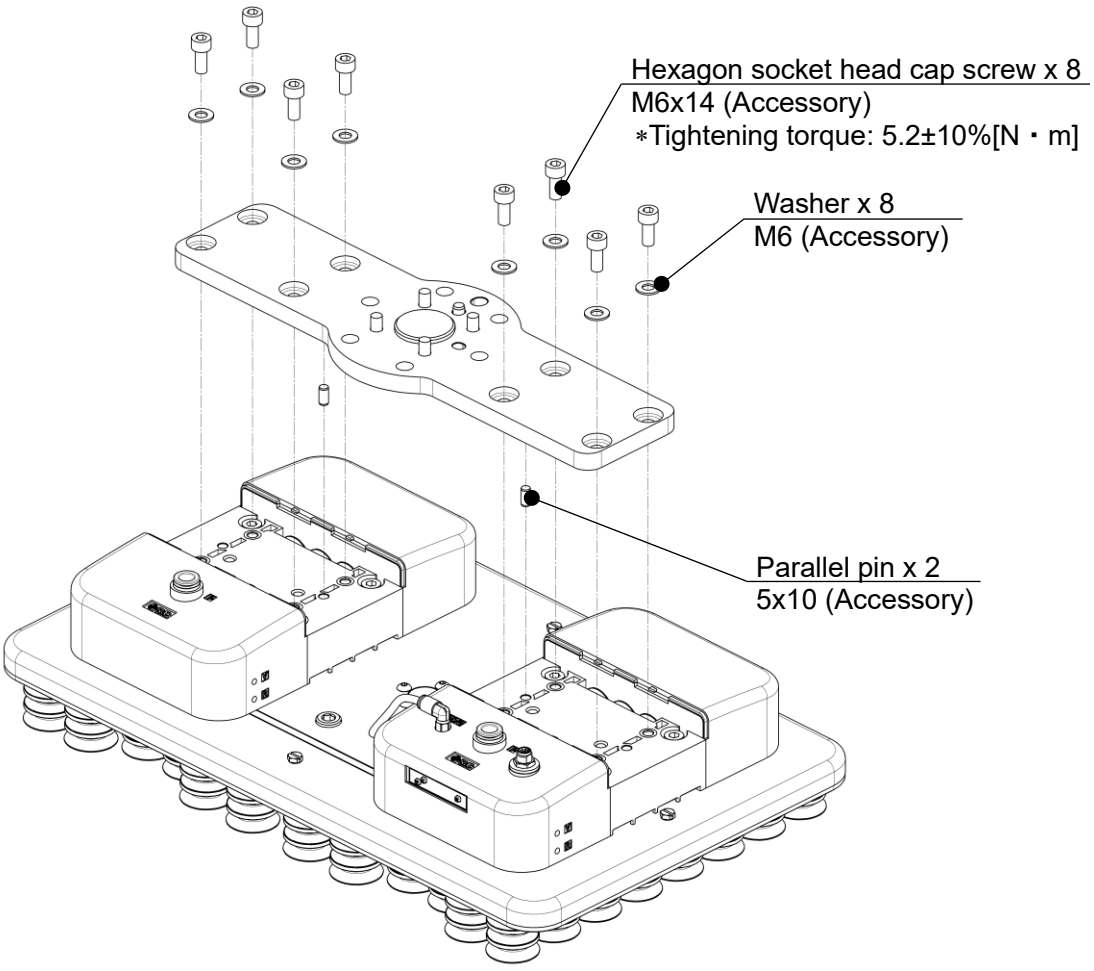
4.1. Robot mounting flange: Basic type

Step1

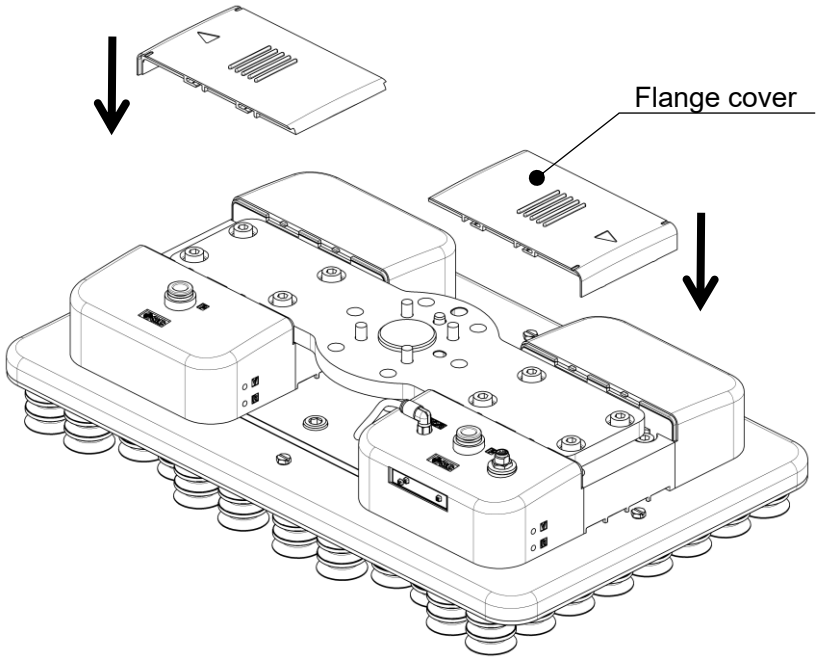


*) If the screw length does not match the robot, please prepare the screws yourself.

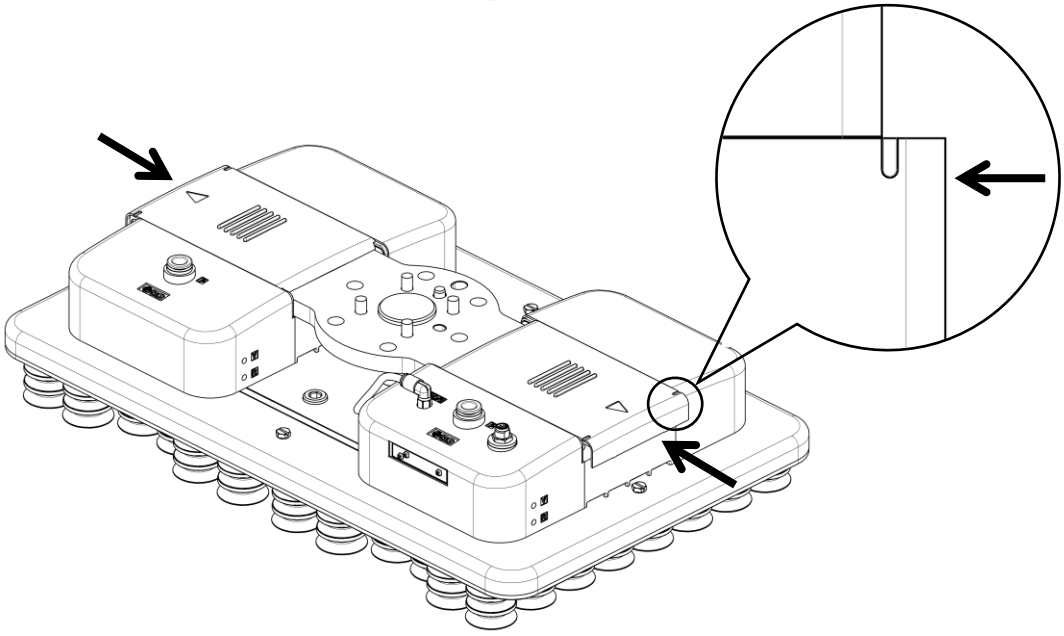
Step2



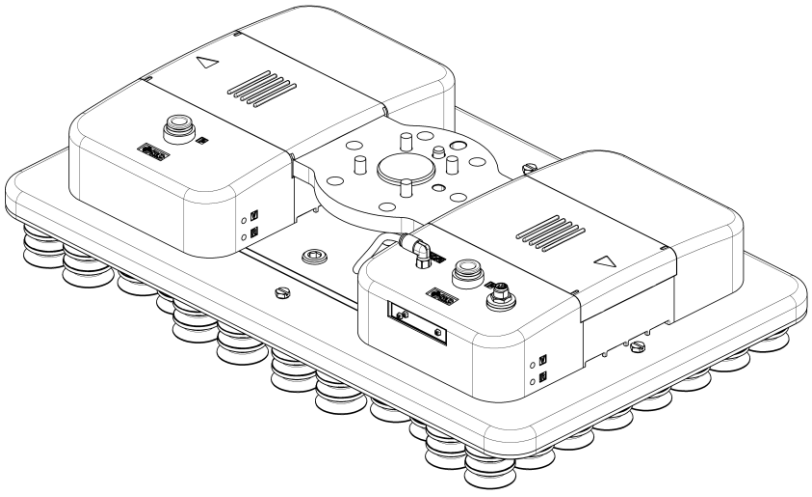
Step3



Step4



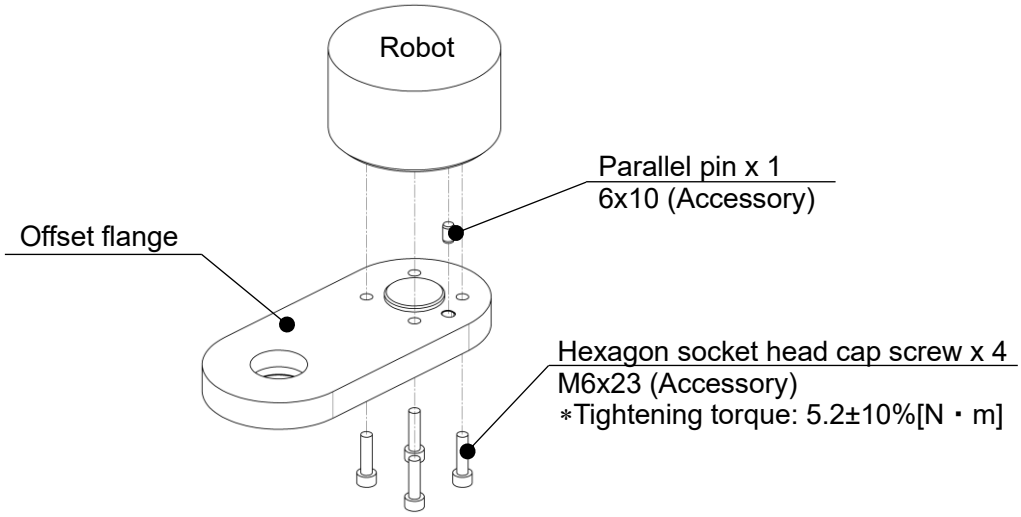
Step5



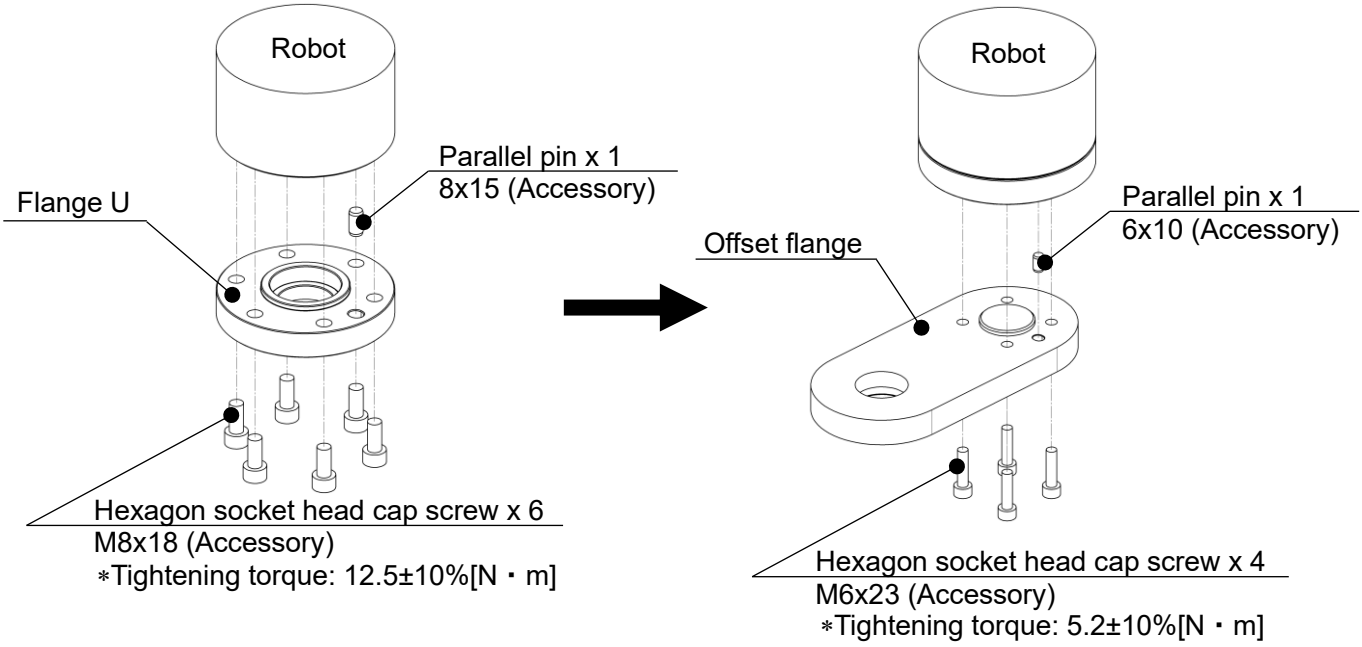
4.2. Robot mounting flange: Basic type + Offset flange

Step1

No additional flange

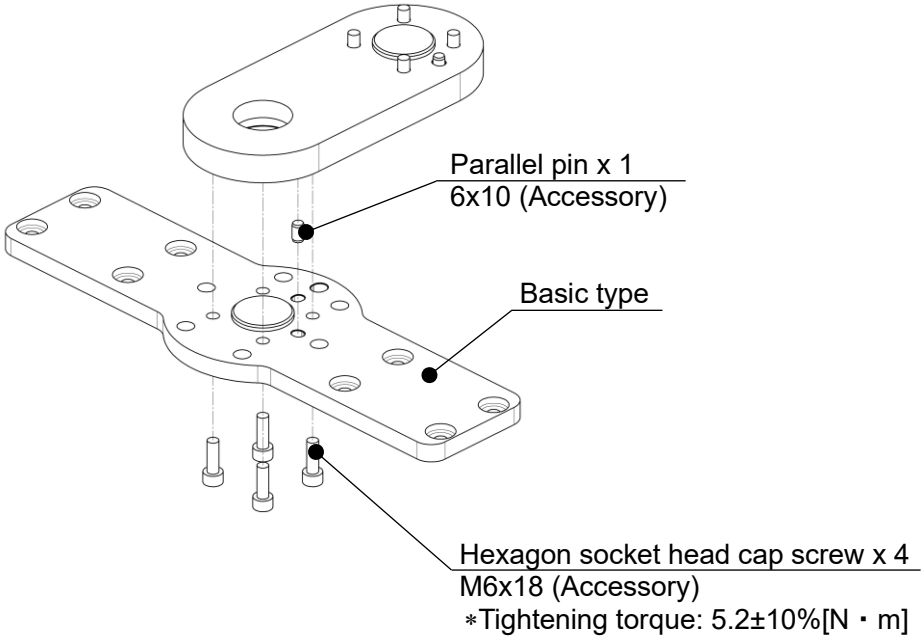


Flange U

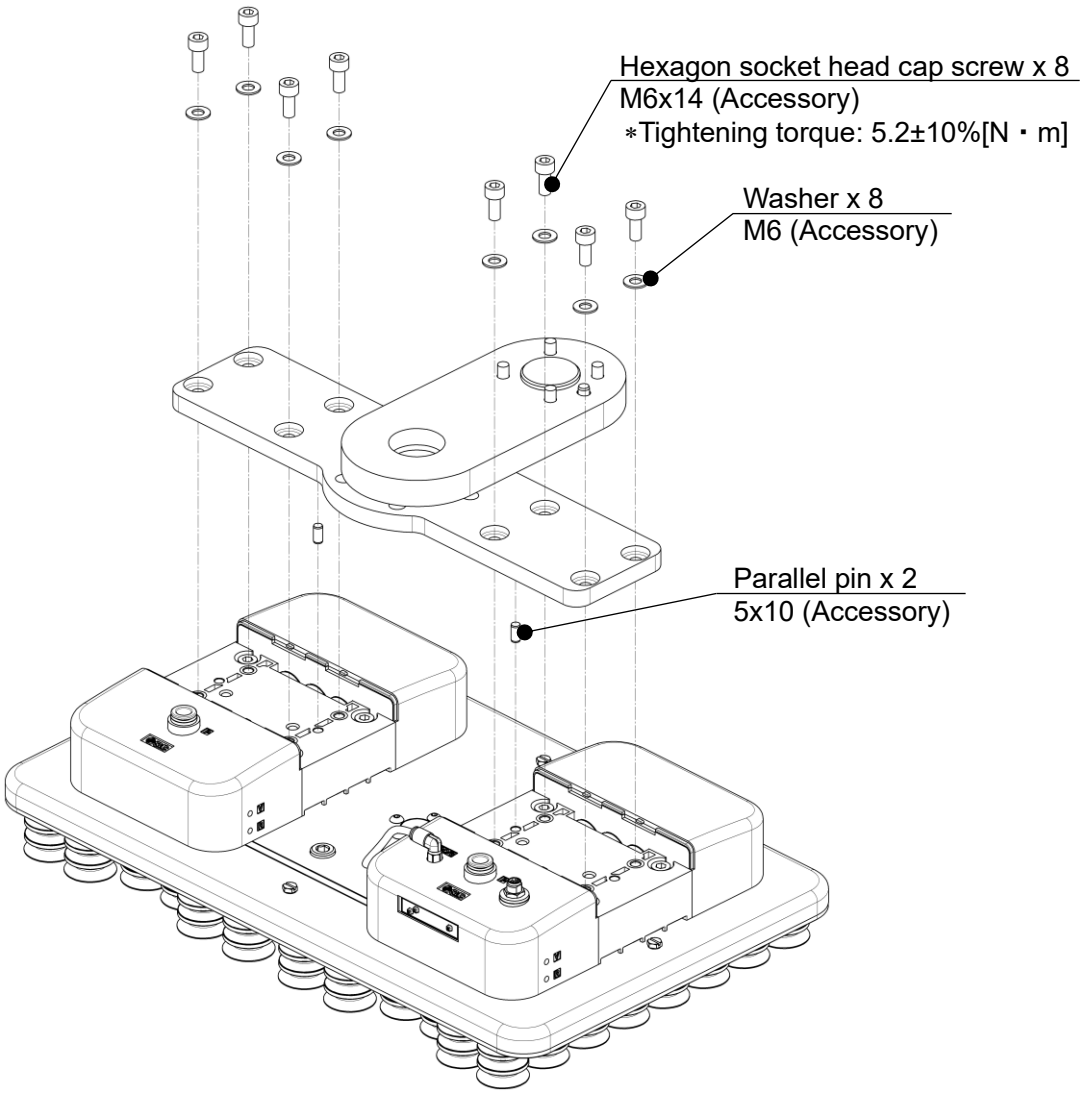


*) If the screw length does not match the robot, please prepare the screws yourself.

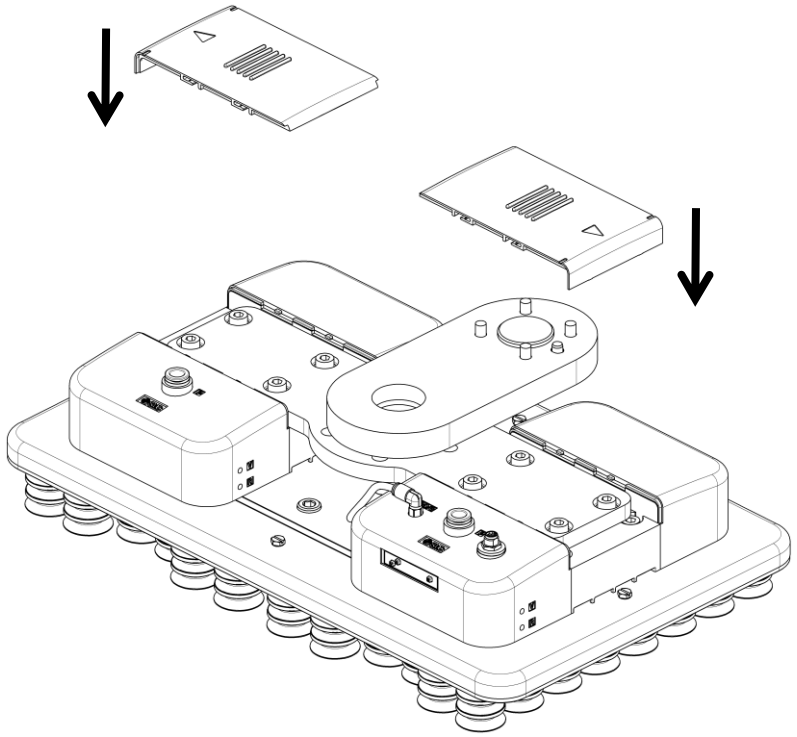
Step2


Parallel pin x 1
6x10 (Accessory)
Basic type
Hexagon socket head cap screw x 4
M6x18 (Accessory)
∗Tightening torque: 5.2±10%[N・m]

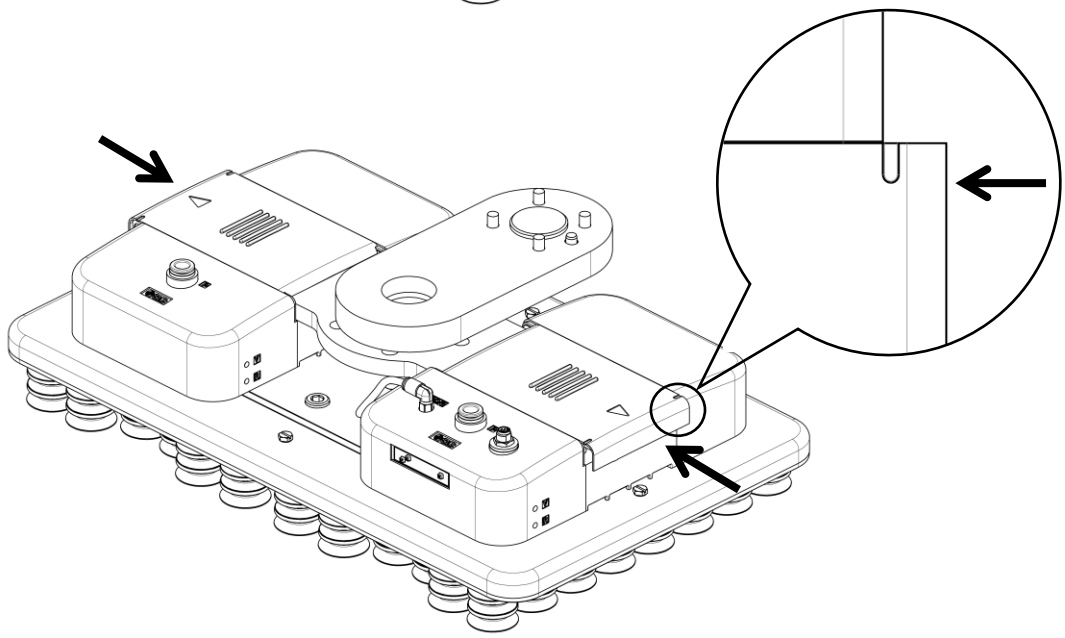
Step3


Hexagon socket head cap screw x 8
M6x14 (Accessory)
∗Tightening torque: 5.2±10%[N・m]
Washer x 8
M6 (Accessory)
Parallel pin x 2
5x10 (Accessory)

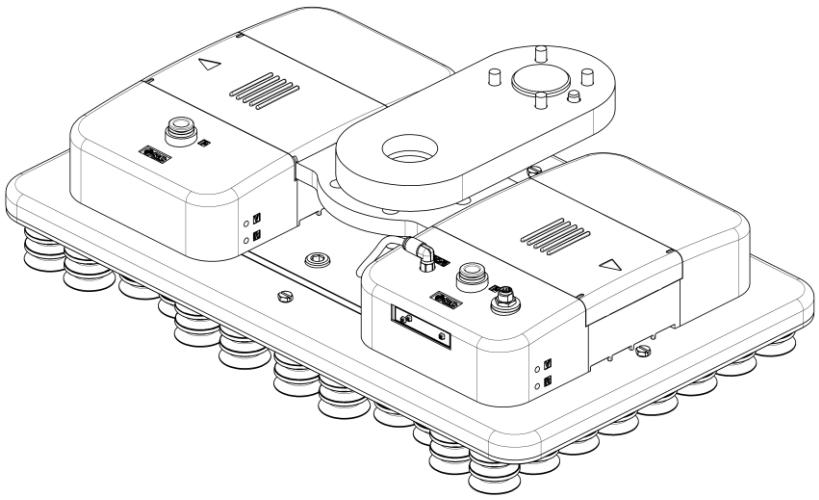
Step4



Step5



Step6

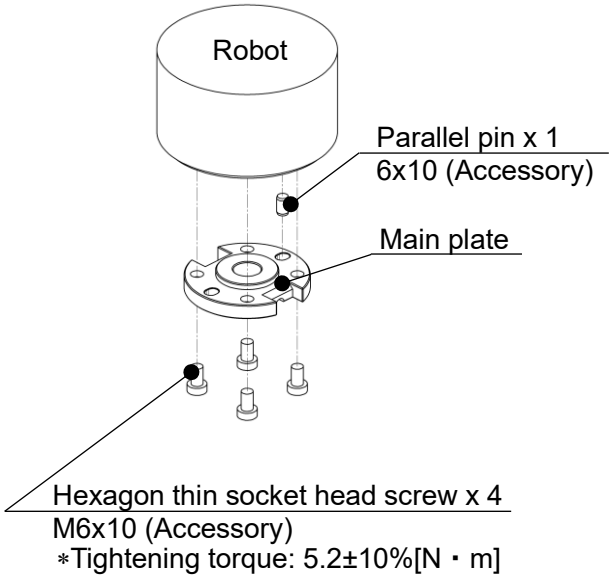


■300mmx180mm, 200mmx120mm

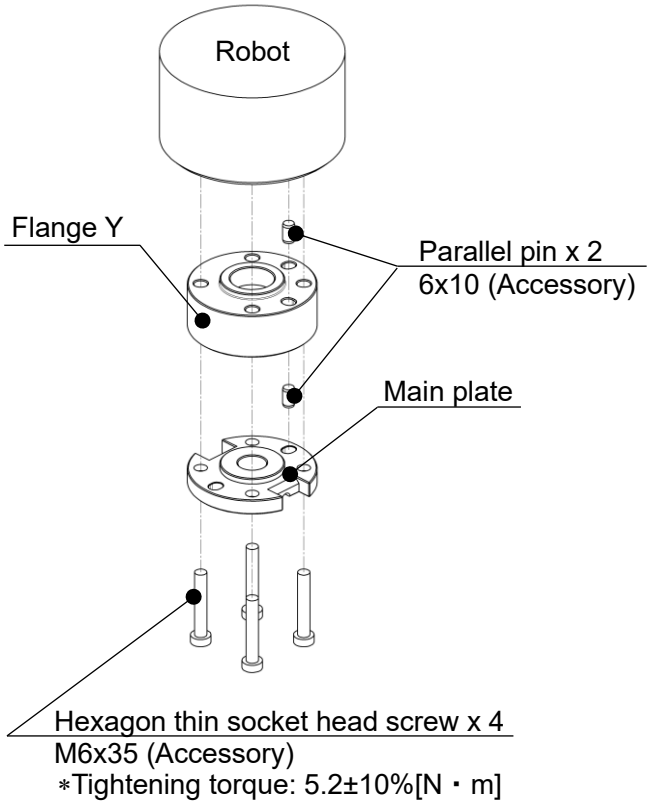
4.3. Robot mounting flange: Tool plate + Main plate

Step1

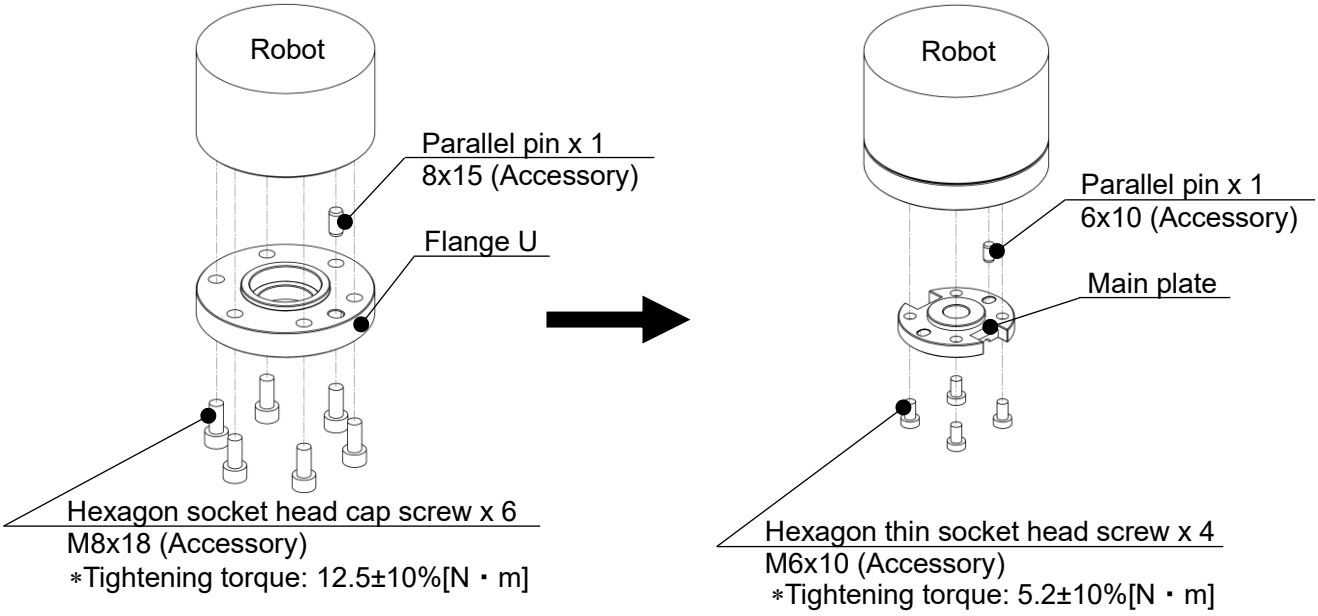
No additional flange



Flange Y

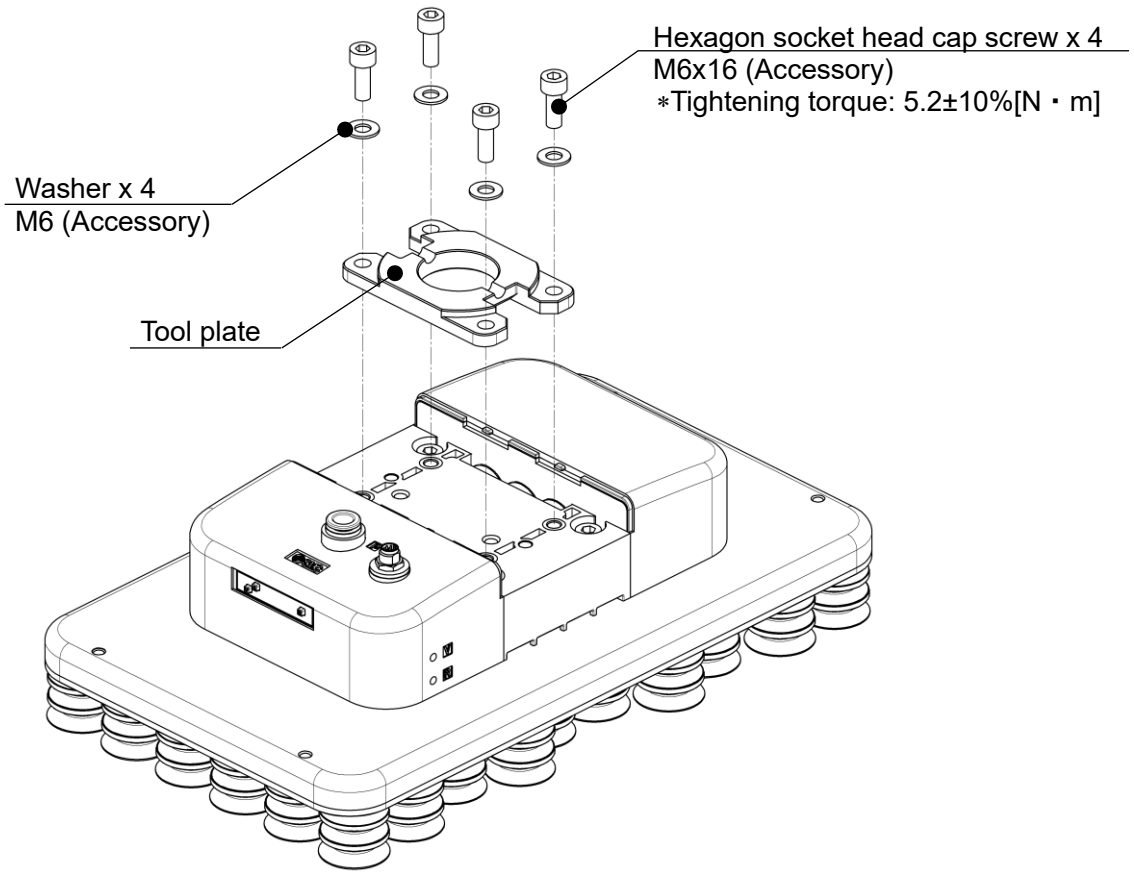


Flange U

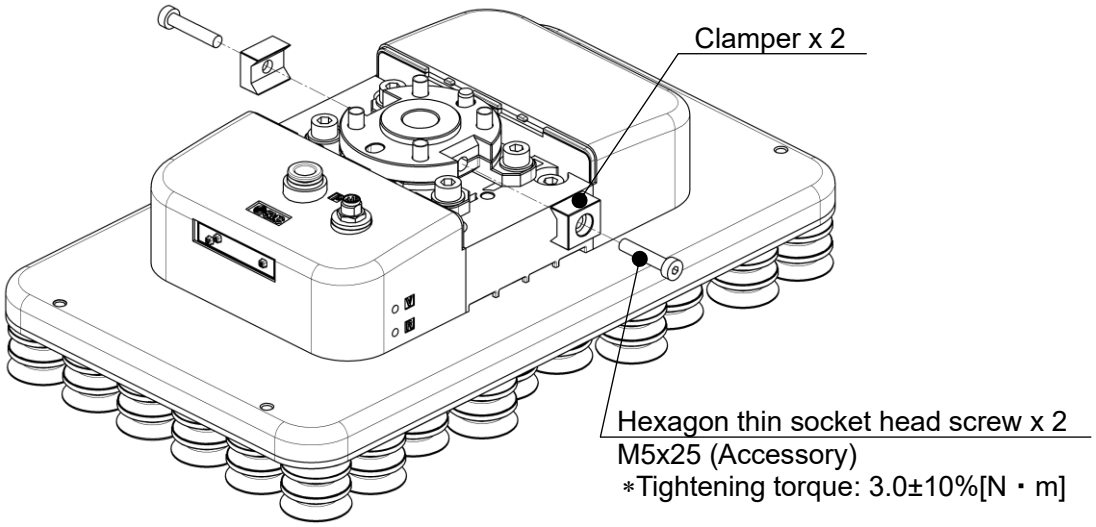


*) If the screw length does not match the robot, please prepare the screws yourself.

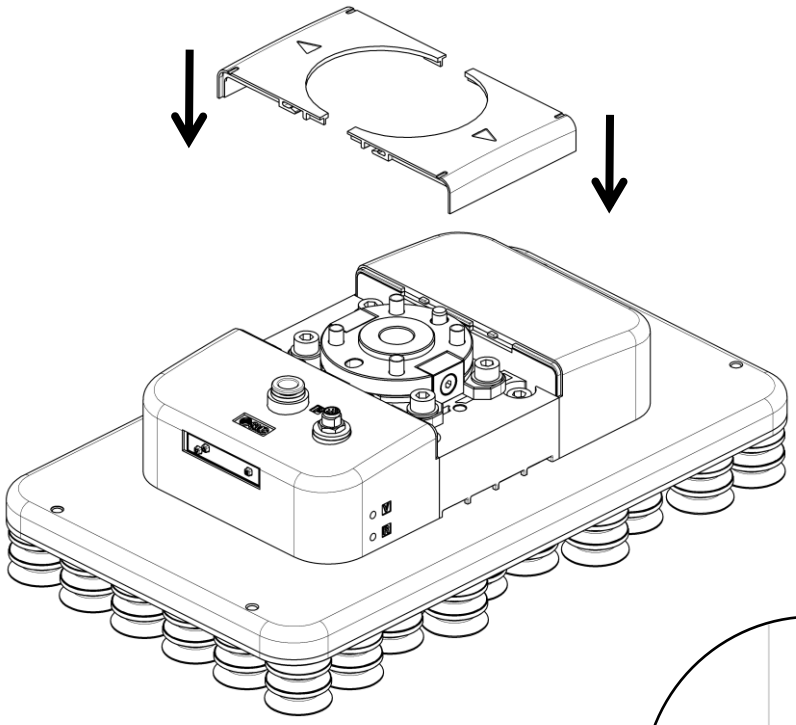
Step2


Hexagon socket head cap screw x 4
M6x16 (Accessory)
∗Tightening torque: 5.2±10%[N・m]
Washer x 4
M6 (Accessory)
Tool plate

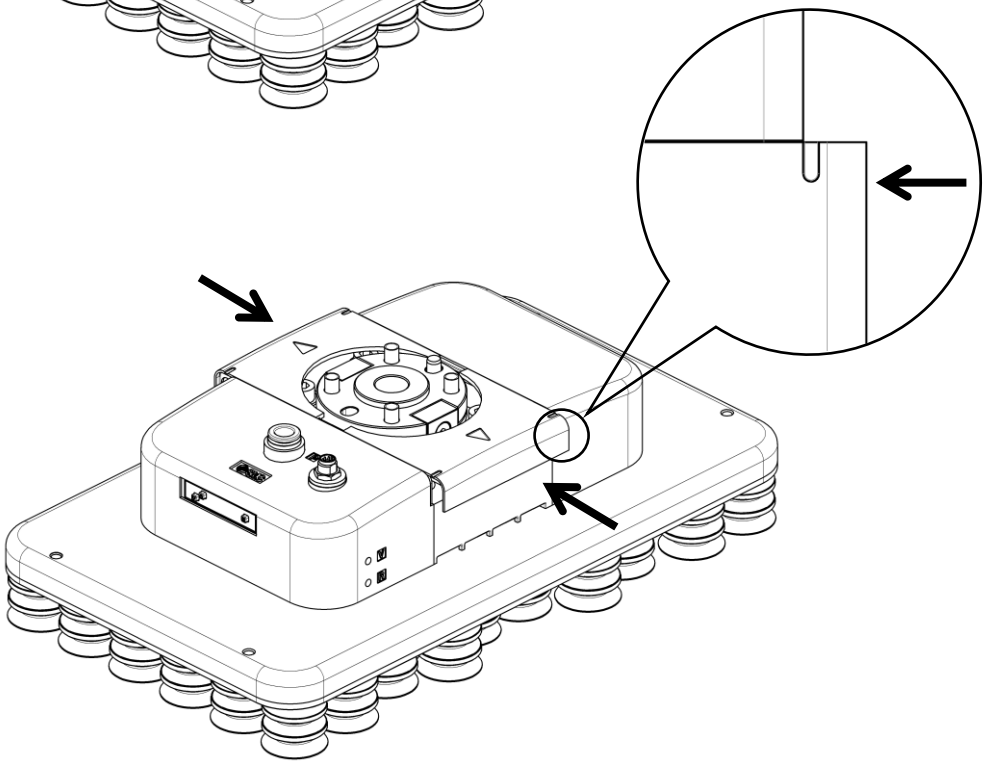
Step3


Clamper x 2
Hexagon thin socket head screw x 2
M5x25 (Accessory)
∗Tightening torque: 3.0±10%[N・m]

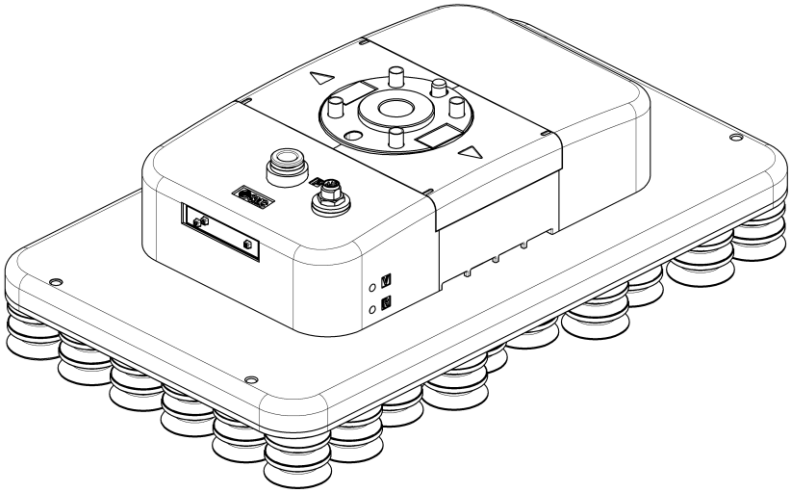
Step4



Step5



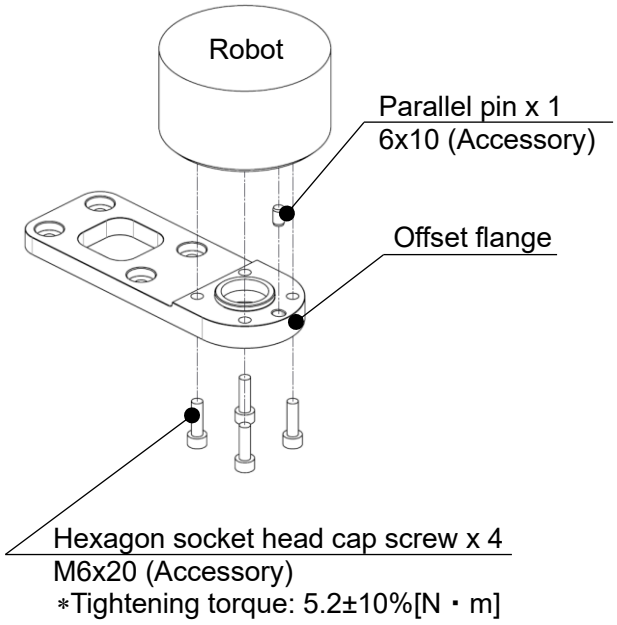
Step6



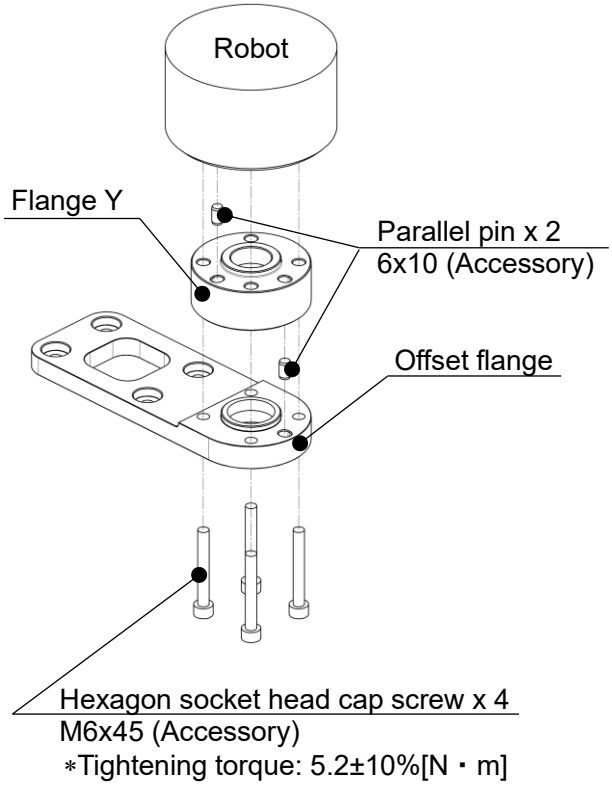
4.4. Robot mounting flange: Offset flange

Step1

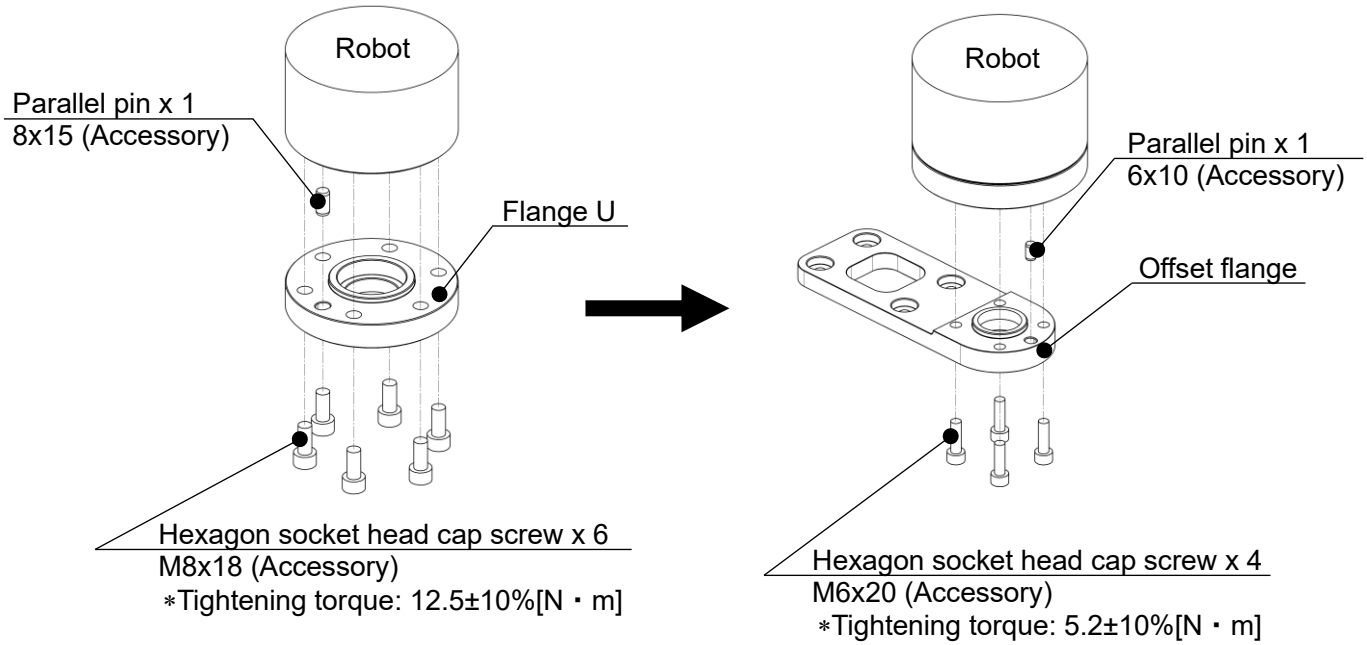
No additional flange



Flange Y

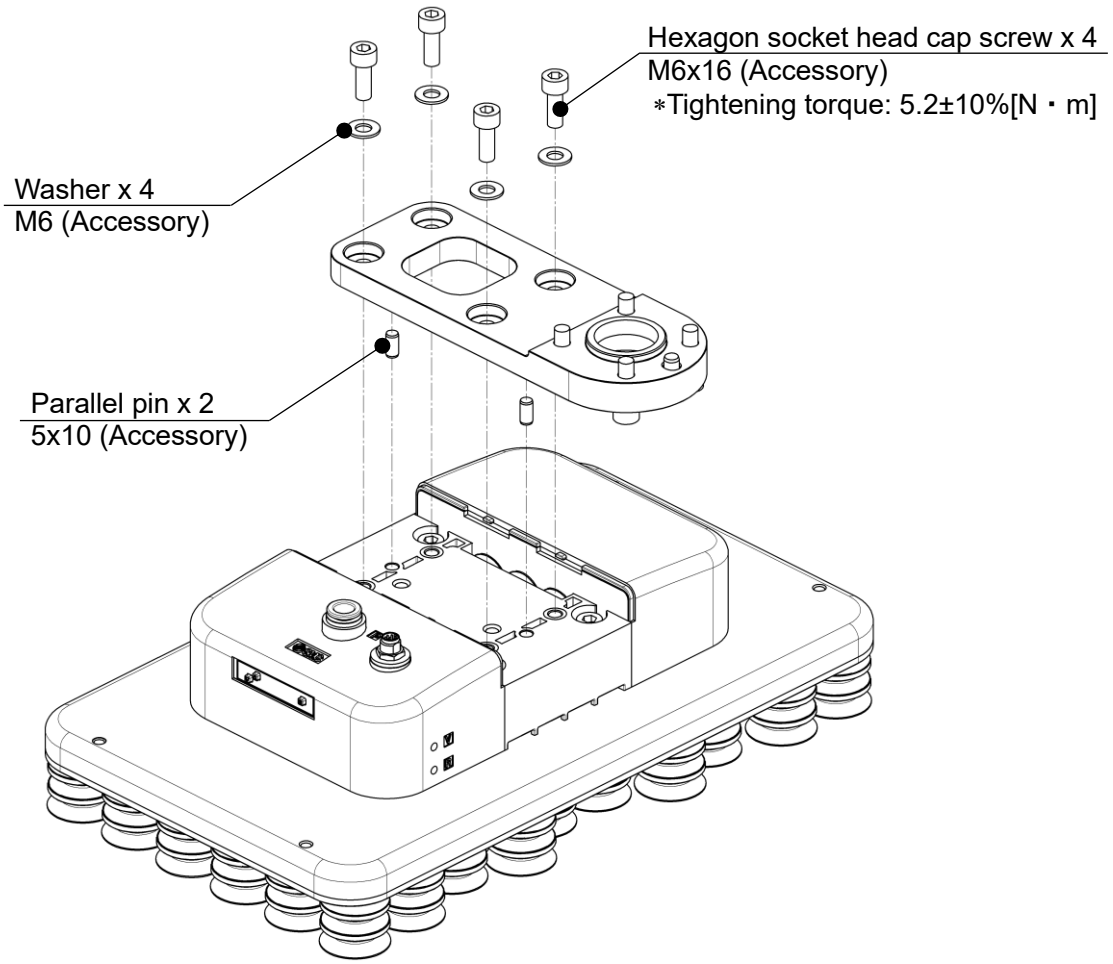


Flange U

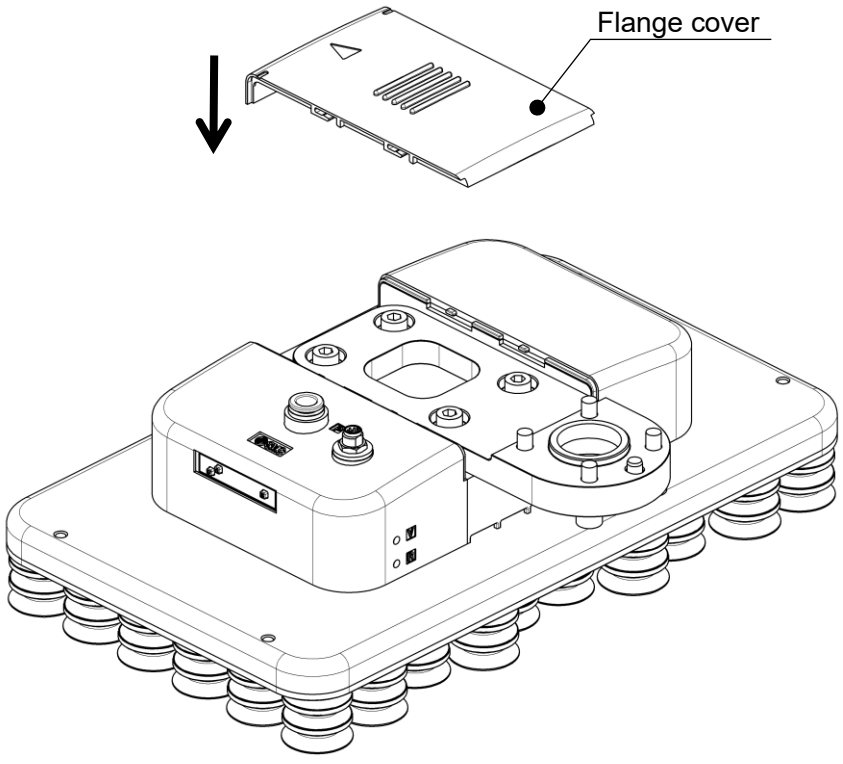


*) If the screw length does not match the robot, please prepare the screws yourself.

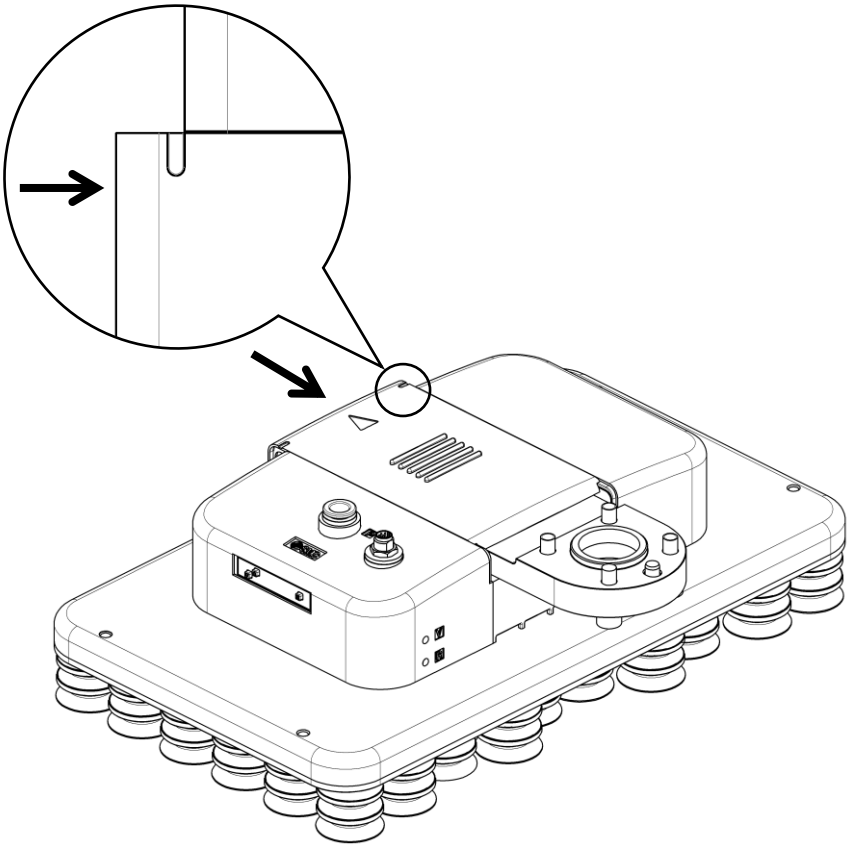
Step2


Hexagon socket head cap screw x 4
M6x16 (Accessory)
∗Tightening torque: 5.2±10%[N・m]
Washer x 4
M6 (Accessory)
Parallel pin x 2
5x10 (Accessory)

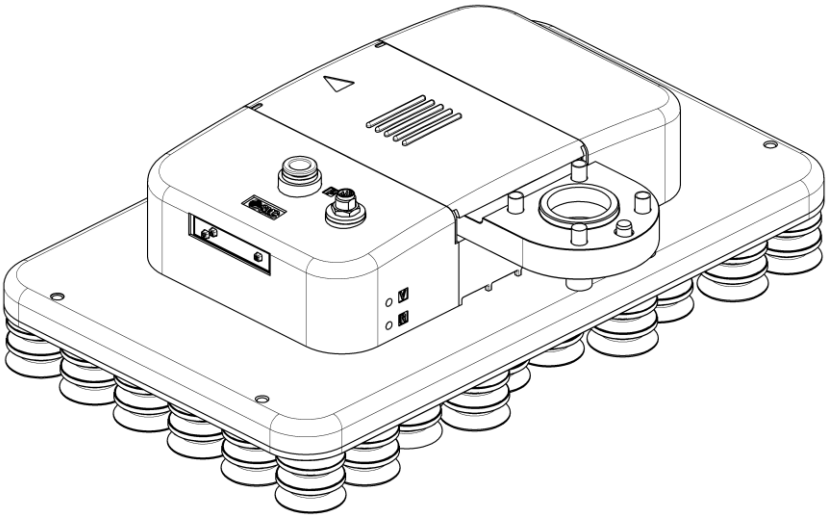
Step3


Flange cover

Step4



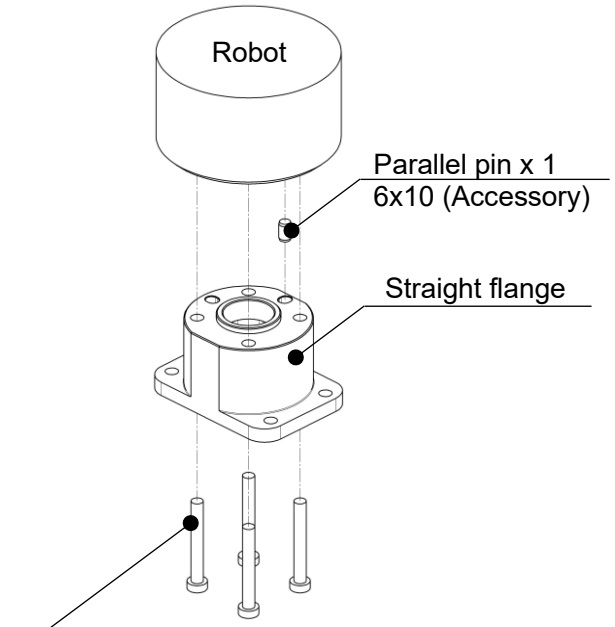
Step5



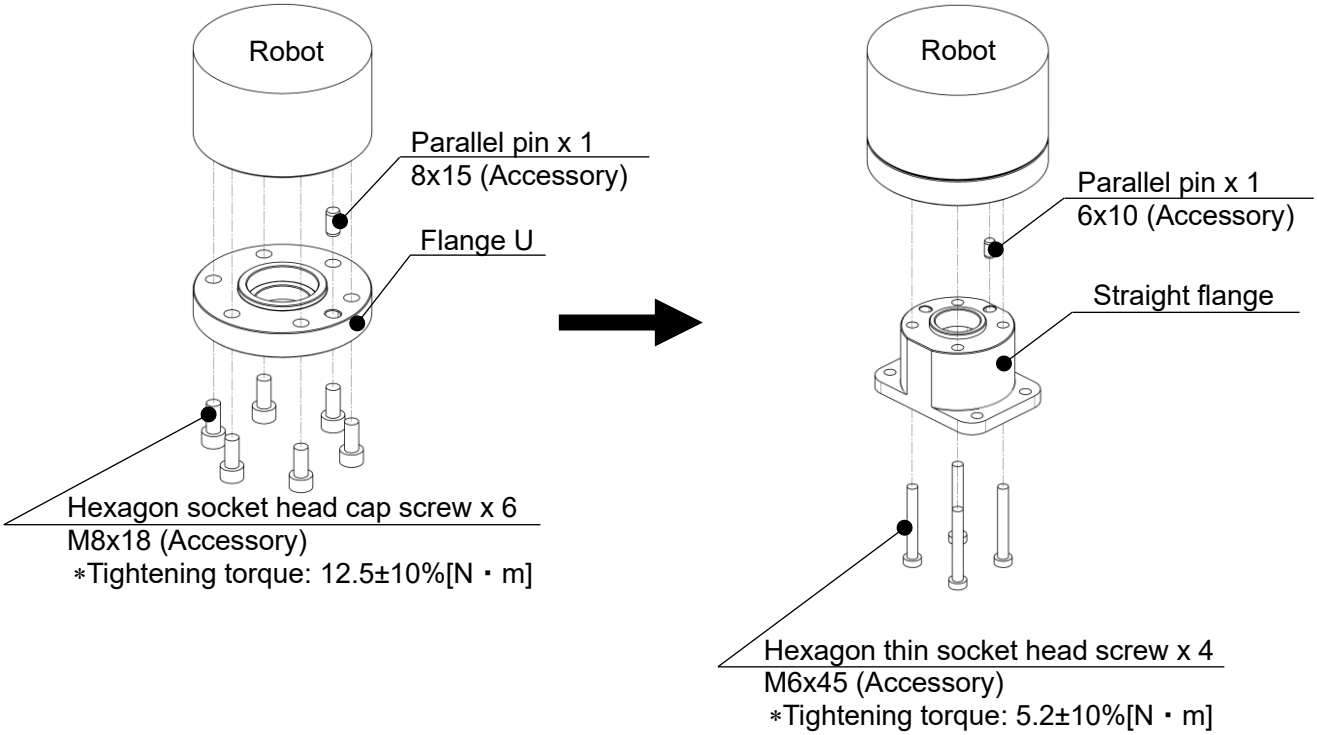
4.5. Robot mounting flange: Straight flange

Step1

No additional flange

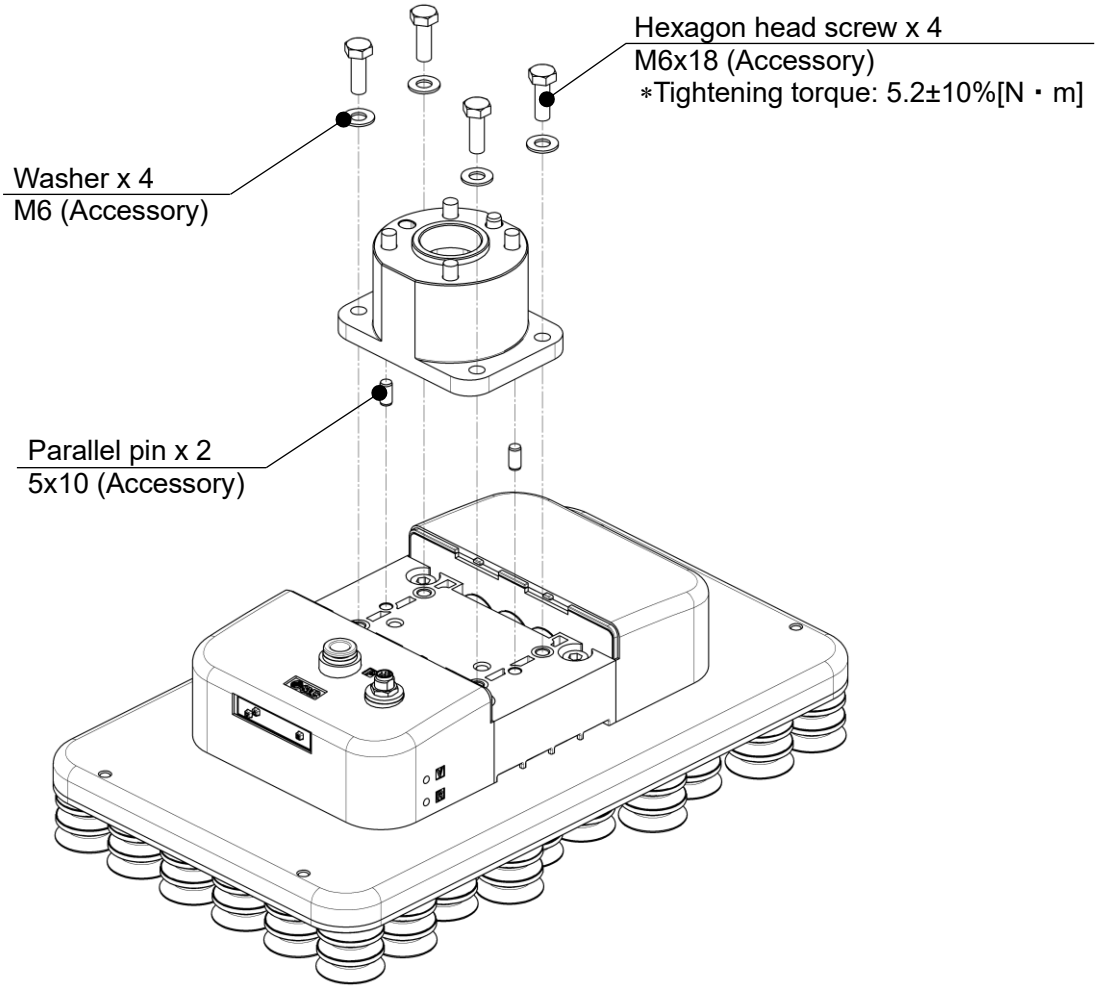


Flange U

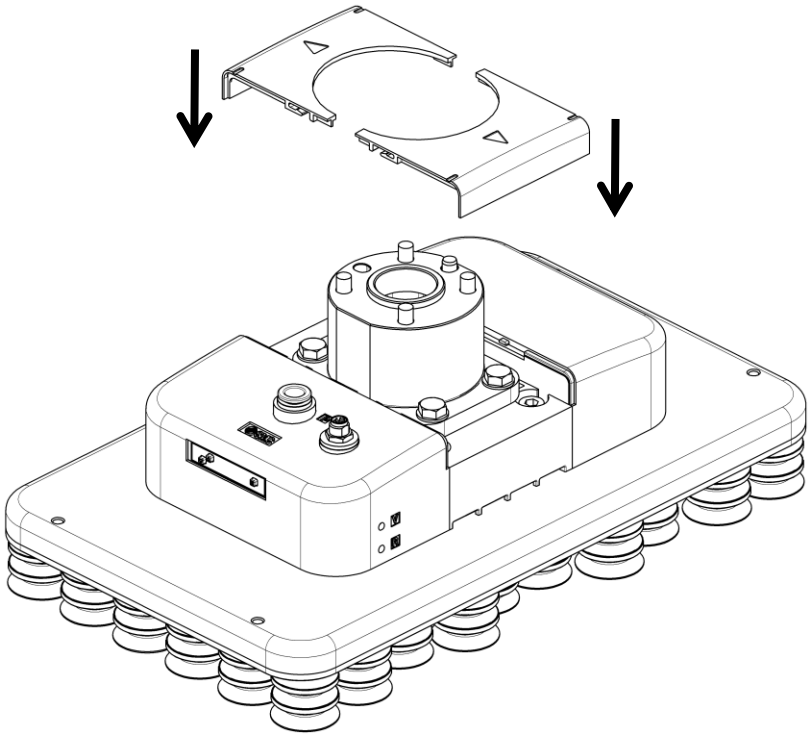


*) If the screw length does not match the robot, please prepare the screws yourself.

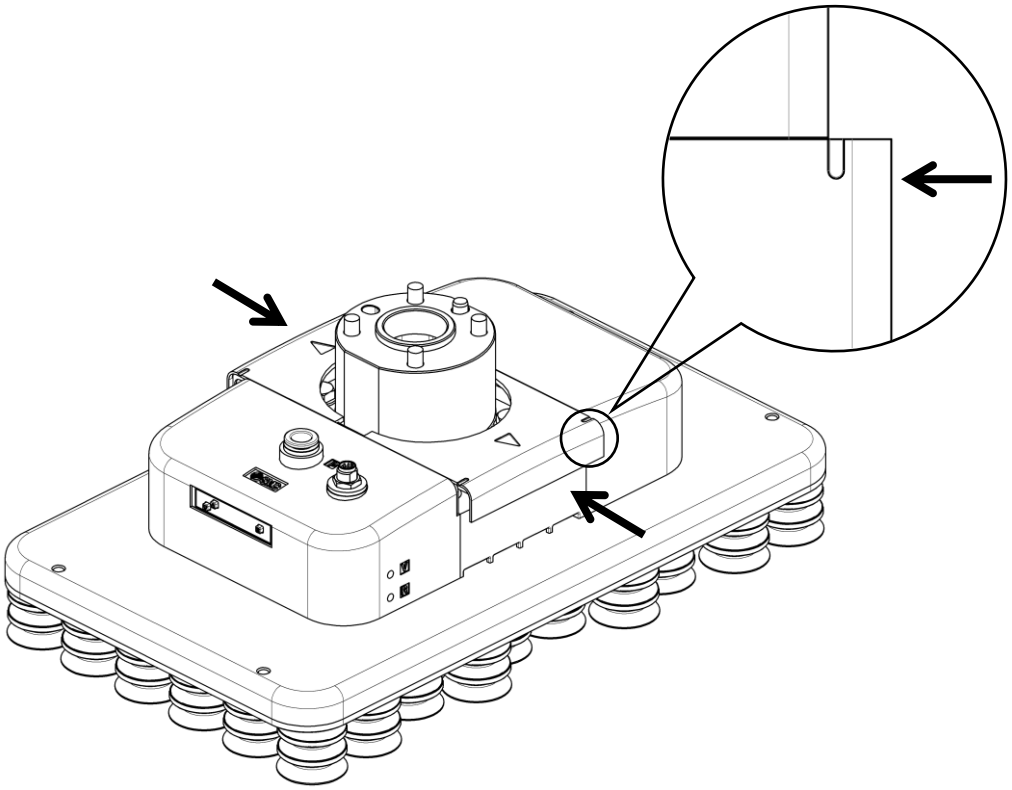
Step2


Hexagon head screw x 4
M6x18 (Accessory)
∗Tightening torque: 5.2±10%[N・m]
Washer x 4
M6 (Accessory)
Parallel pin x 2
5x10 (Accessory)

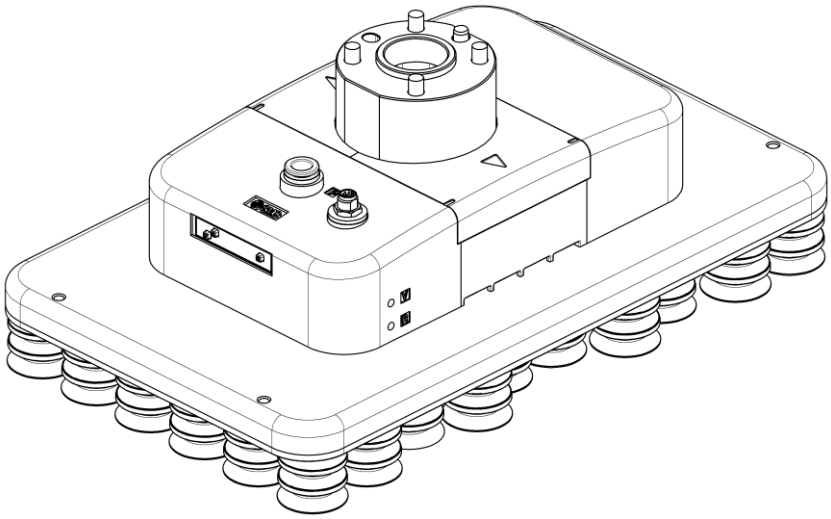
Step3



Step4



Step5



5. Specifications

5.1. Specifications

■General specifications

Fluid		Air
Compressed air purity class		ISO8573-1: 2010[2:4:3]
Operating pressure range [MPa]		0.3～0.7
Operating temperature range [°C]		5～50
Power supply voltage [V]		DC24±10%
Power consumption [W]	400x240	2.7
	300x180、200x120	1.4
Supply valve / Release valve *1)		JSY3□40-5MOZ-□ equivalent
Pressure switch*2)		ZSE10-00-□ equivalent
Standard		CE/UKCA MARKED

*1) Refer to JSY3000 series catalog and operation manual regarding specifications of supply valve and release valve.
*2) Refer to ZSE10 series catalog and operation manual regarding specifications of pressure switch. For IO-Link compatible pressure switch, refer to operation manual for “ZGS-LD1-□(H/J)□-A”.

■Ejector specifications (400mmx240mm)

Number of ejector assemblies [pcs]	2	4	6
Standard supply pressure [MPa] *1)	0.58	0.6	0.6
Max. vacuum pressure [kPa] *2)	-75		
Air consumption [L/min(ANR)]	228	454	661
Weight [kg] *3)	4.3		

*1) This is the pressure immediately before the air pressure supply (P) port of the vacuum gripper during suction. It is affected by air supply capacity, pipe size, air consumption of other equipment operating simultaneously, etc. During vacuum generation, the pressure immediately before the air pressure supply (P) port of vacuum gripper system may fall below the standard supply pressure.
*2) Values are based on our measurement conditions at standard supply pressure and may vary depending on atmospheric pressure (weather, altitude, etc.) and measurement method.
*3) For ZGPNPK-400240A254-NM1C8

■Ejector specifications (300mmx180mm, 200mmx120mm)

Number of ejector assemblies [pcs]		1	2	3
Standard supply pressure [MPa] *1)		0.45		
Max. vacuum pressure [kPa] *2)		-63	-62	-60
Air consumption [L/min(ANR)]		92	177	257
Weight [kg]	300x180 *3)	2.2		
	200x120 *4)	1.5		-

*1) This is the pressure immediately before the air pressure supply (P) port of the vacuum gripper during suction. It is affected by air supply capacity, pipe size, air consumption of other equipment operating simultaneously, etc. During vacuum generation, the pressure immediately before the air pressure supply (P) port of vacuum gripper system may fall below the standard supply pressure.
*2) Values are based on our measurement conditions at standard supply pressure and may vary depending on atmospheric pressure (weather, altitude, etc.) and measurement method.
*3) For ZGPNPK-300180A253-NY1C8.
*4) For ZGPNPK-200120A252-NY1C8.

■Exhaust Noise (Reference value)

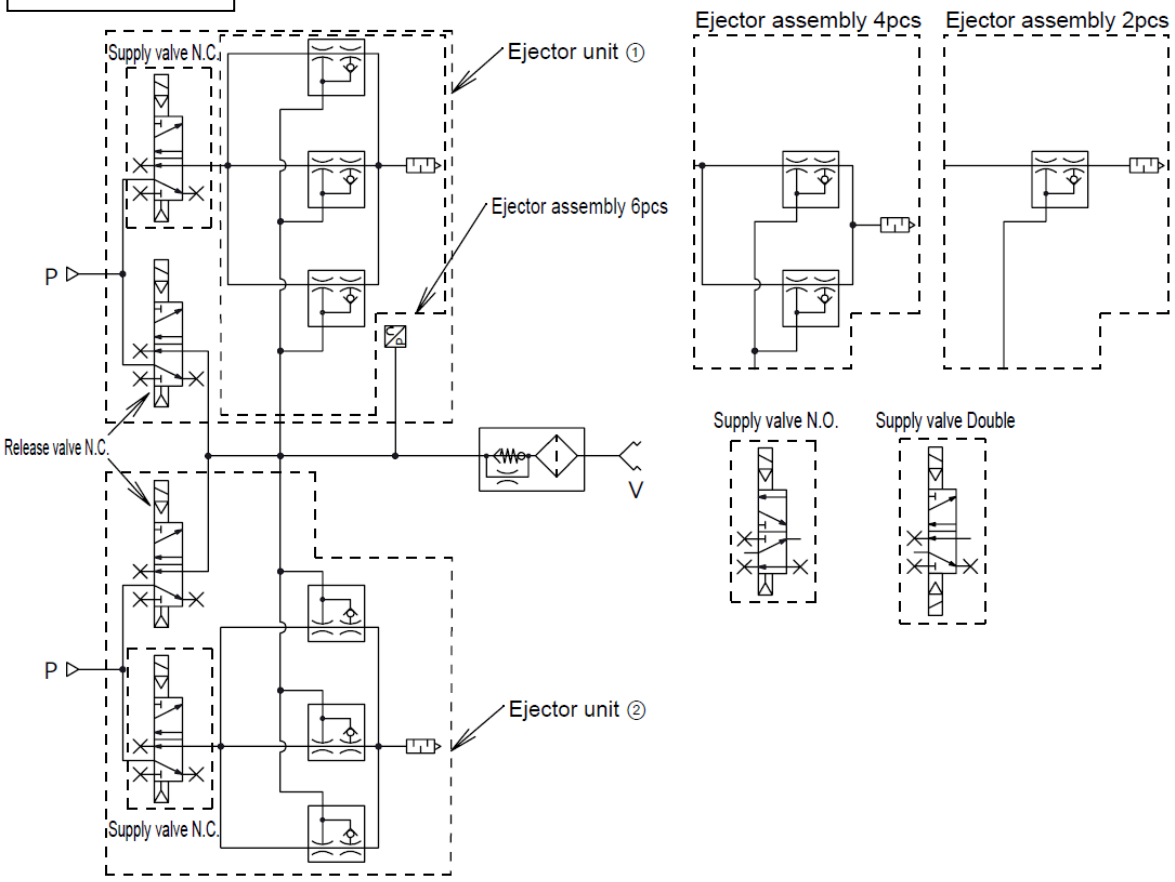
Exhaust Noise [dB(A)]	400mmx240mm	70
	300mmx180mm	64
	200mmx120mm	60

*Actual values under SMC’s measurement conditions (Not guaranteed values).

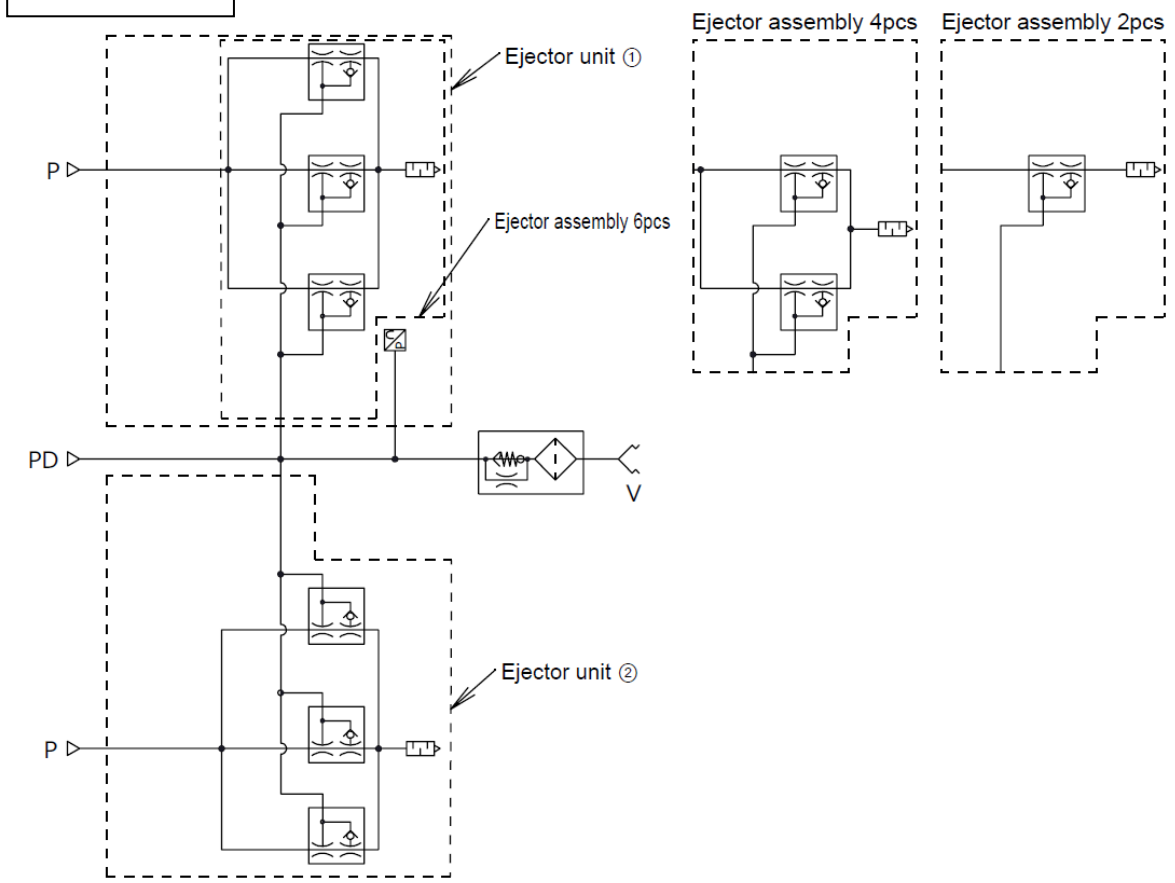
5.2. Pneumatic Circuit

■400mmx240mm

With valve

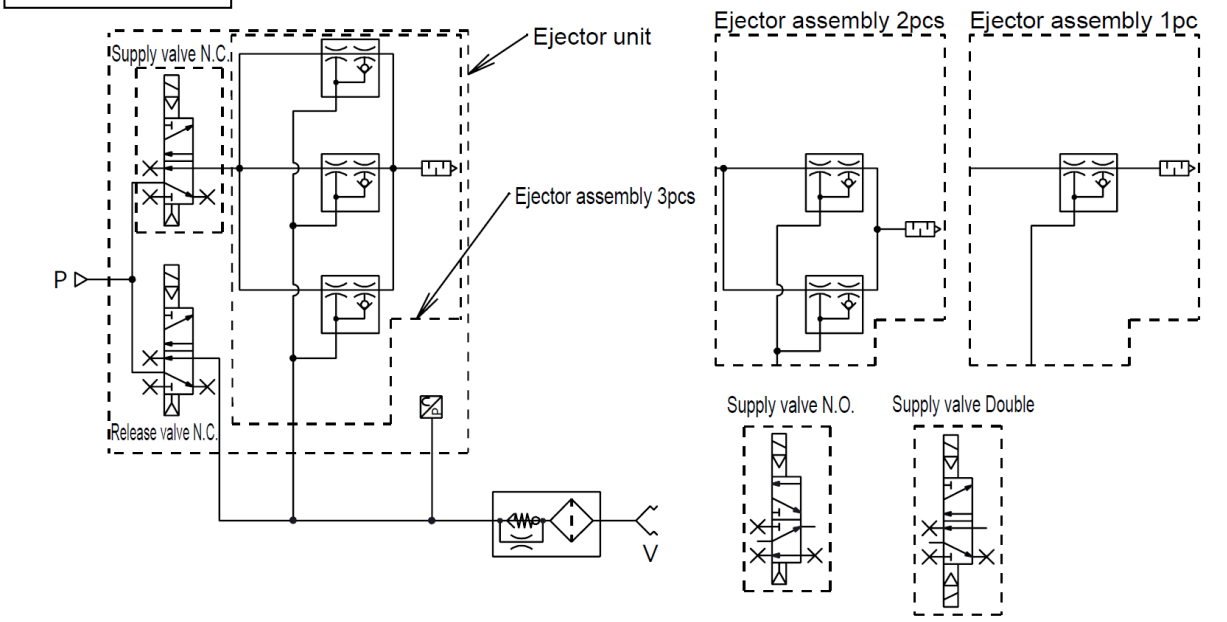


Without valve

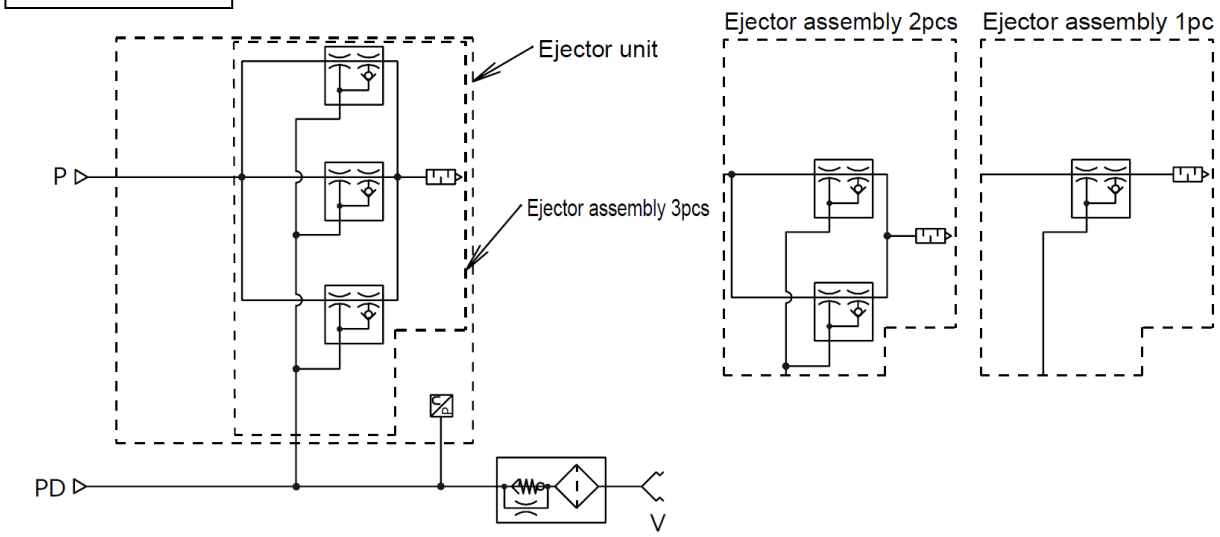


■300mmx180mm, 200mmx120mm

With valve



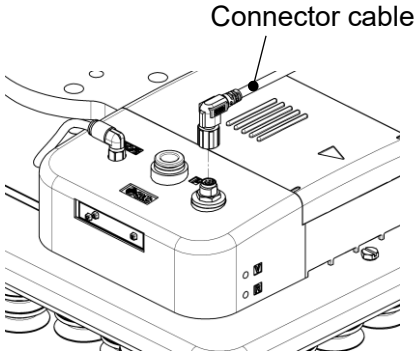
Without valve



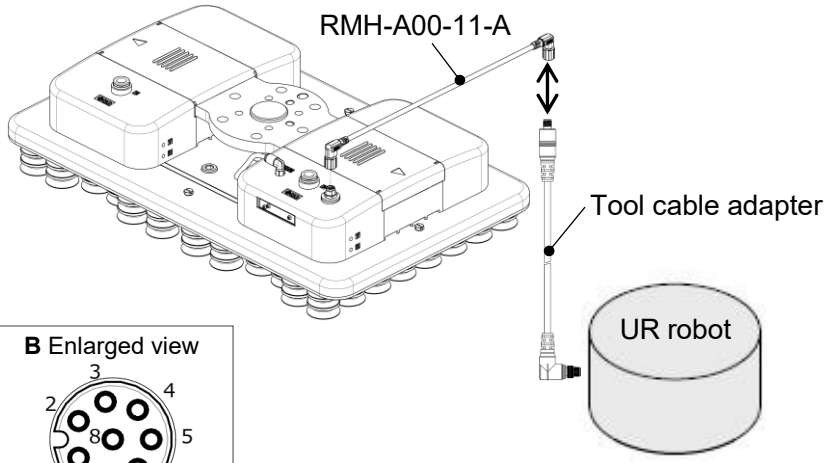
5.3. Wiring

■Connect connector cable

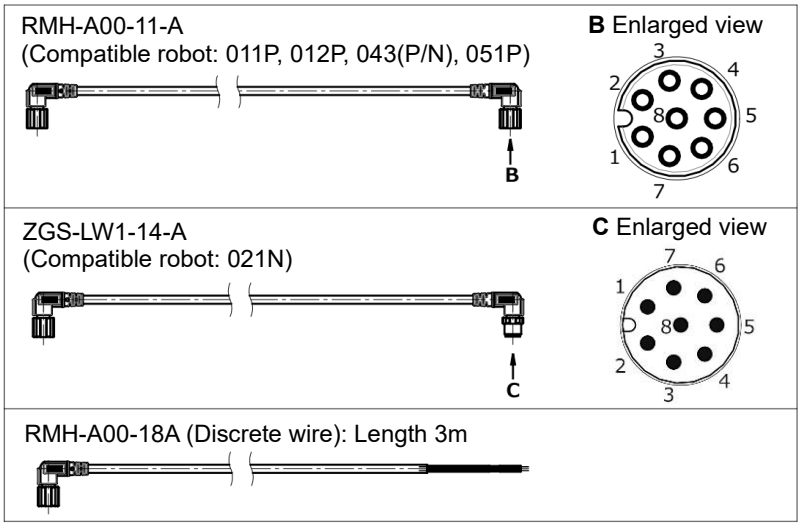
Connect a connector cable to the M8 connector of the vacuum gripper system.
*1) Do not energize while connecting them.
*2) Ensure that the connector is secured (Not loose).



For UR robots
If UR robot comes with a tool cable adapter, use it.
Otherwise, the vacuum gripper system can't be correctly operated.



■Connector cable



Symbol	Robot manufacturer	Vacuum gripper system side	Robot side	Part no.	Cable length [mm]
011P *1)	UNIVERSAL ROBOTS	M8 8-pin connector (Socket)	M8 8-pin connector (Socket) or Discrete wire	RMH-A00-11-A or RMH-A00-18A	220 or 3000
012P *1)					
043P	YASKAWA Electric				
043N					
051P	FANUC				
021N	OMRON/ TECHMAN ROBOT		M8 8-pin connector (Plug) or Discrete wire	ZGS-LW1-14-A or RMH-A00-18A	300 or 3000
NP	-		Discrete wire	RMH-A00-18A	3000
NN					
NH *2)		M8 4-pin connector (Socket)	-	-	-

*1) If UR robot comes with a tool cable adapter, use it as shown in the above figure.
*2) Prepare a general-purpose IO-Link compatible M8 cable or prepare an M8-M12 conversion connector and an M12 cable.

■400mmx240mm (Except for IO-Link type)

Table 2-1. 400mmx240mm: Connector pin assignment “M8 8-pin”

Pin no.	Discrete wire color	General purpose UNIVERSAL ROBOTS FANUC YASKAWA Electric	General purpose YASKAWA Electric	OMRON/ TECHMAN ROBOT
		PNP	NPN	
1	White	–	–	Power supply DC24V (+)
2	Brown	–	–	Pressure switch 1 output OUT1【Digital】 (+)
3	Green	Pressure switch 2 output OUT1【Digital】*2) (-)	Pressure switch 2 output OUT1【Digital】*2) (+)	Pressure switch 2 output OUT1【Digital】*2) (+)
4	Yellow	Pressure switch 1 output OUT1【Digital】 (-)	Pressure switch 1 output OUT1【Digital】 (+)	–
5	Gray	Power supply DC24V (+)	Power supply DC24V (+)	Supply valve *1) (-)
6	Black	Release valve *1) (+)	Release valve *1) (-)	Release valve *1) (-)
7	Blue	Supply valve *1) (+)	Supply valve *1) (-)	–
8	Red	Power supply GND (-)	Power supply GND (-)	Power supply GND (-)

*1) In the case of “Without supply valve and release valve” type, these are not connected.
*2) In the case of “One pressure switch” type, Pressure switch 2 output is not connected.
*3) Regarding how to use the pressure switch, refer to operation manual for ZSE10 series.

■300mmx180mm, 200mmx120mm (Except for IO-Link type)

Table 2-2. 300mmx180mm, 200mmx120mm: Connector pin assignment “M8 8-pin”

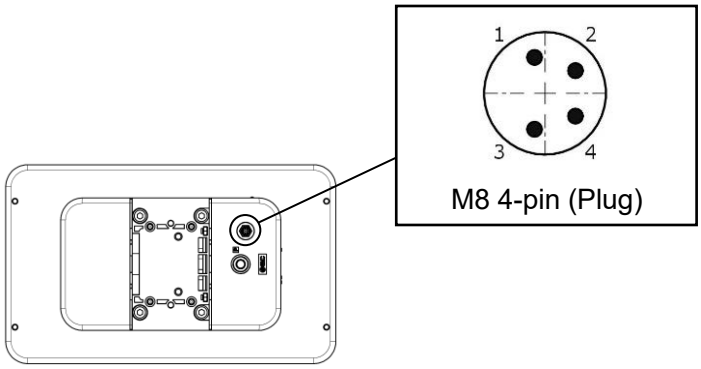
Pin no.	Discrete wire color	General purpose UNIVERSAL ROBOTS FANUC YASKAWA Electric	General purpose YASKAWA Electric	OMRON/ TECHMAN ROBOT
		PNP	NPN	
1	White	–	–	Power supply DC24V (+)
2	Brown	–	–	Pressure switch output OUT1【Digital】 (+)
3	Green	Pressure switch output OUT2【Digital】 (-)	Pressure switch output OUT2【Digital】 (+)	Pressure switch output OUT2【Digital】 (+)
4	Yellow	Pressure switch output OUT1【Digital】 (-)	Pressure switch output OUT1【Digital】 (+)	–
5	Gray	Power supply DC24V (+)	Power supply DC24V (+)	Supply valve *1) (-)
6	Black	Release valve *1) (+)	Release valve *1) (-)	Release valve *1) (-)
7	Blue	Supply valve *1) (+)	Supply valve *1) (-)	–
8	Red	Power supply GND (-)	Power supply GND (-)	Power supply GND (-)

*1) In the case of “Without supply valve and release valve” type, these are not connected.
*2) Regarding how to use the pressure switch, refer to operation manual for ZSE10 series.

■400mmx240mm, 300mmx180mm, 200mmx120mm (IO-Link type)

Table 2-3. IO-Link type: Connector pin assignment “M8 4-pin”

Pin no.	IO-Link type
1	Power supply DC24V (+)
2	-
3	Power supply GND (-)
4	IO-Link Communication data (C/Q)



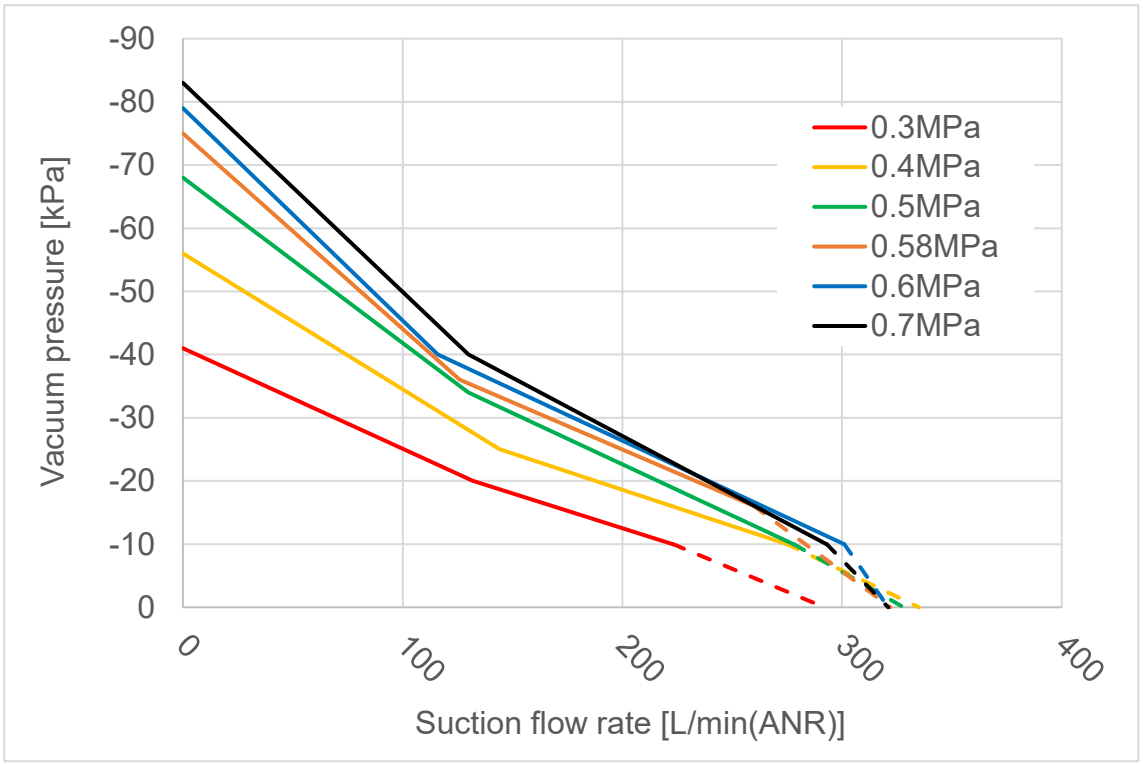
*) Regarding how to use the pressure switch, refer to operation manual for “ZGS-LD1-☐(H/J)☐-A”.

5.4. Ejector flow characteristics

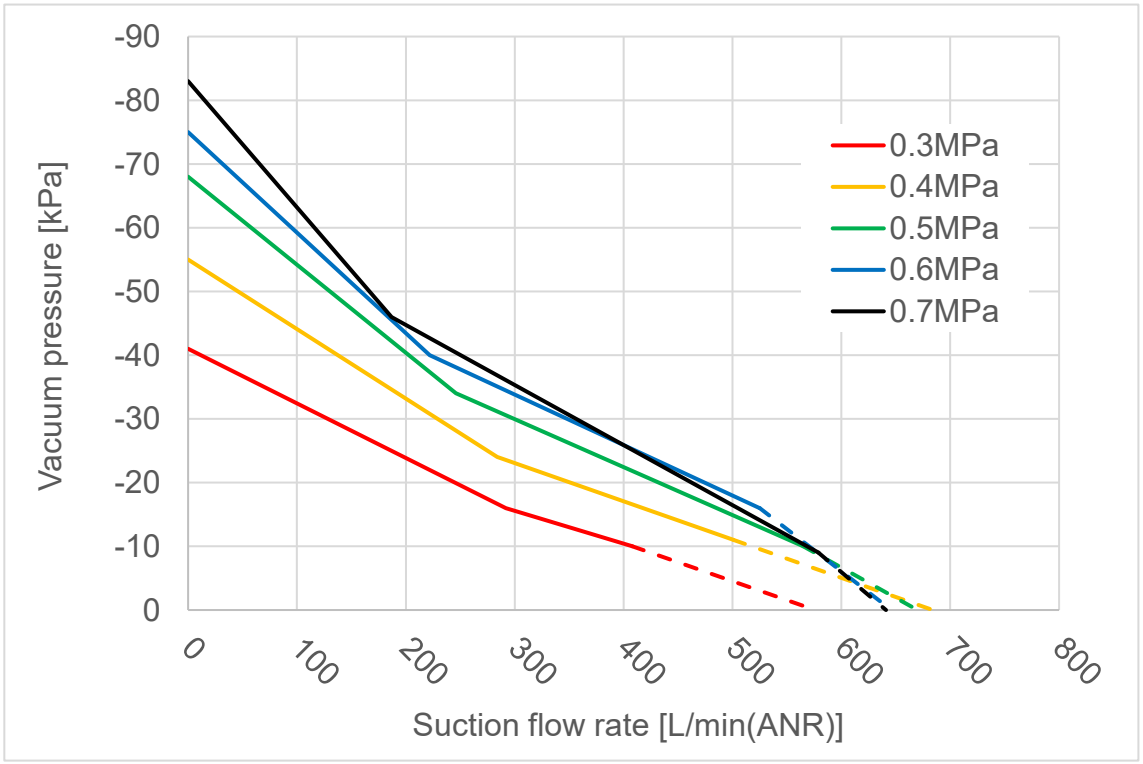
*) Suction flow rates are measured under SMC test conditions and are not guaranteed.
The dotted lines in the graph below are estimates based on measured values.

■400mmx240mm

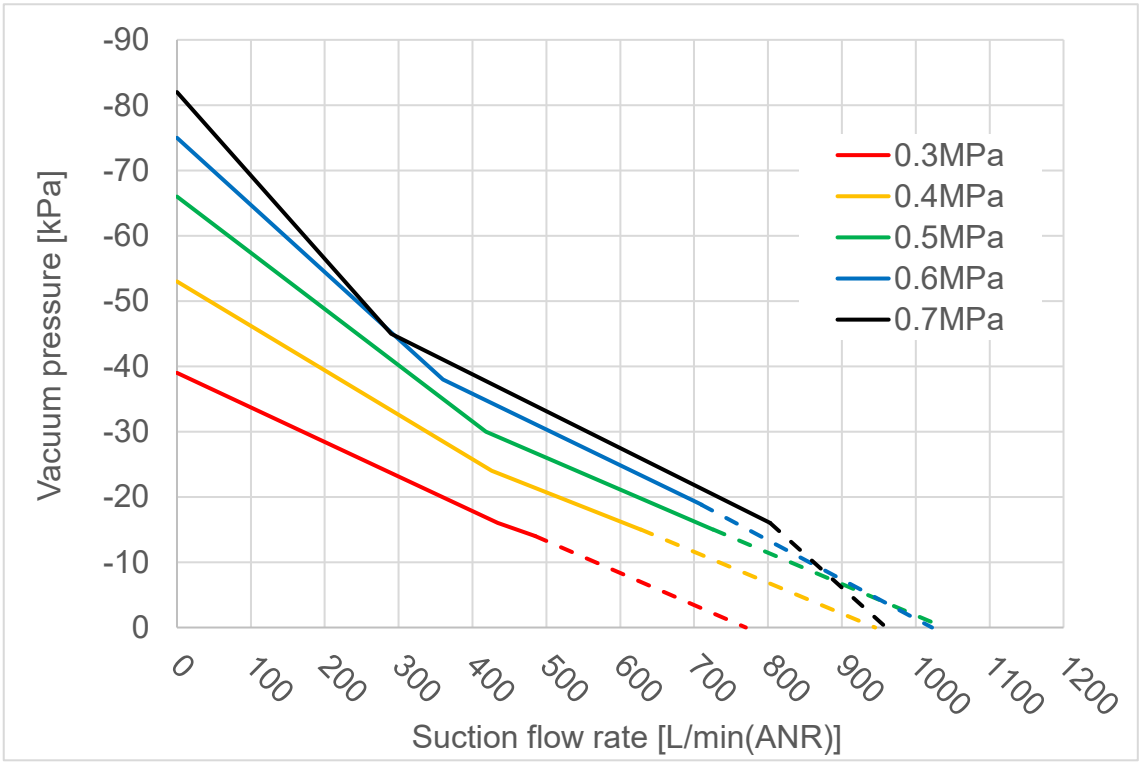
Ejector assembly : 2 pcs.



Ejector assembly : 4 pcs.

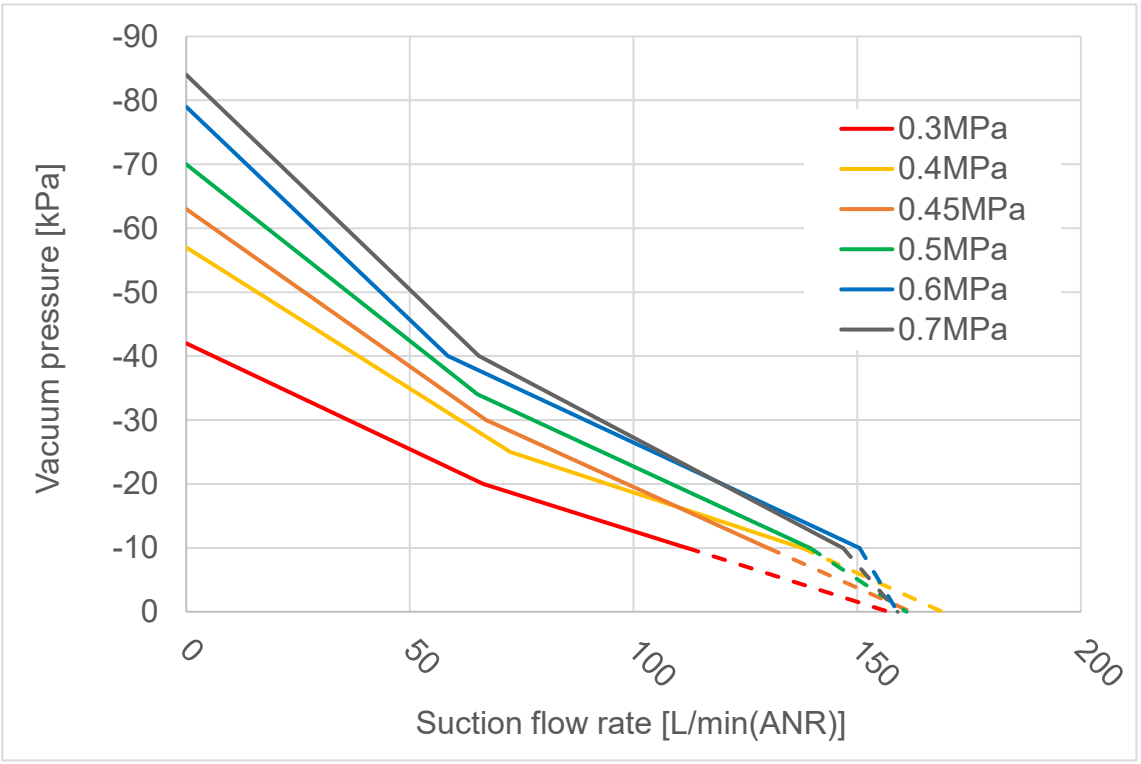


Ejector assembly : 6 pcs.

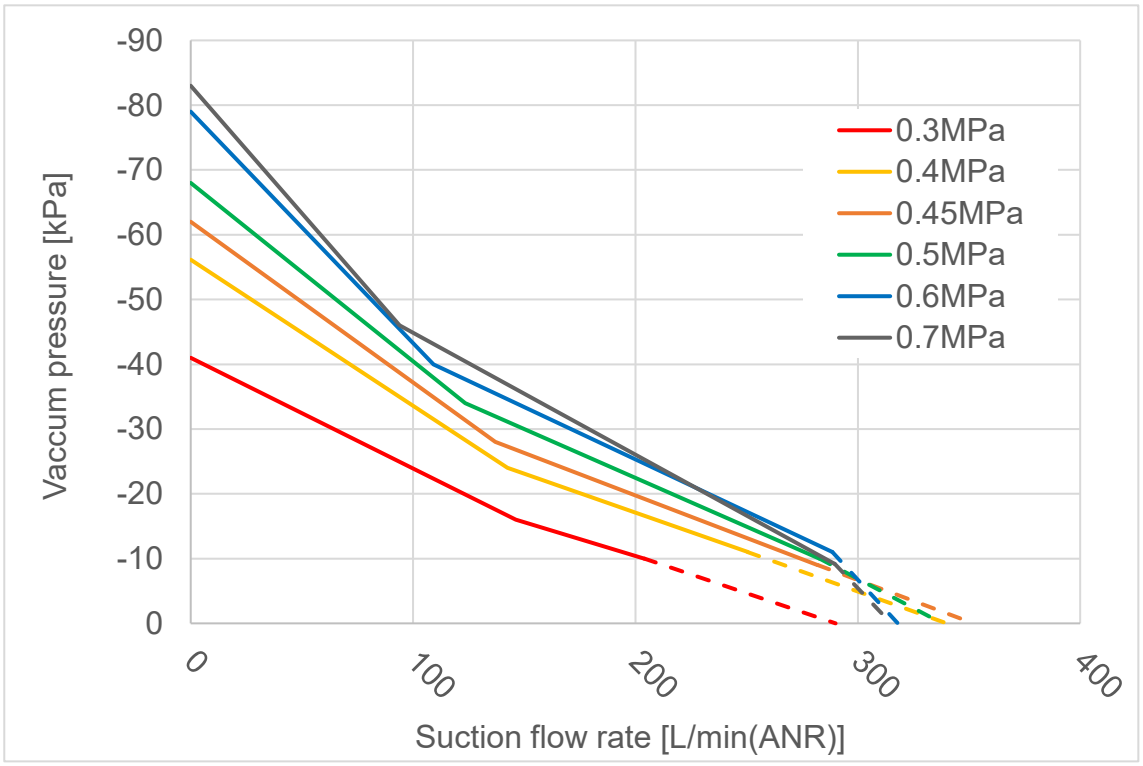


■300mmx180mm, 200mmx120mm

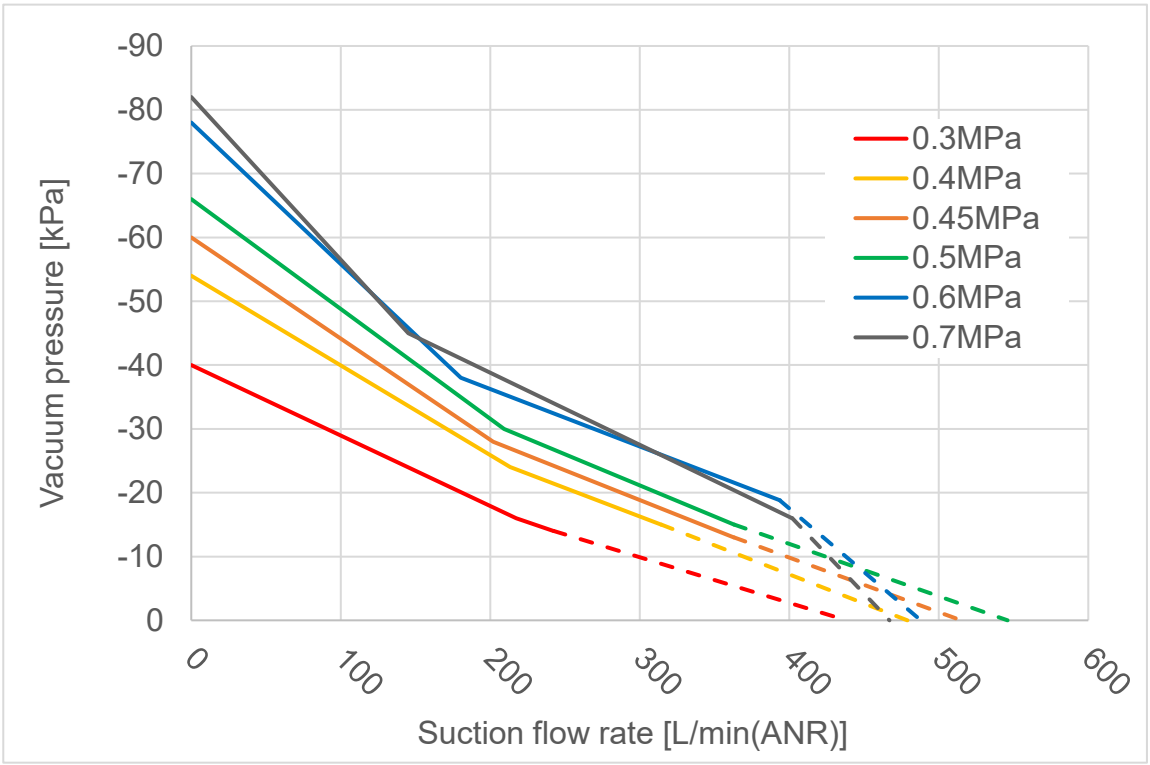
Ejector assembly : 1 pc.



Ejector assembly : 2 pcs.



Ejector assembly : 3 pcs.

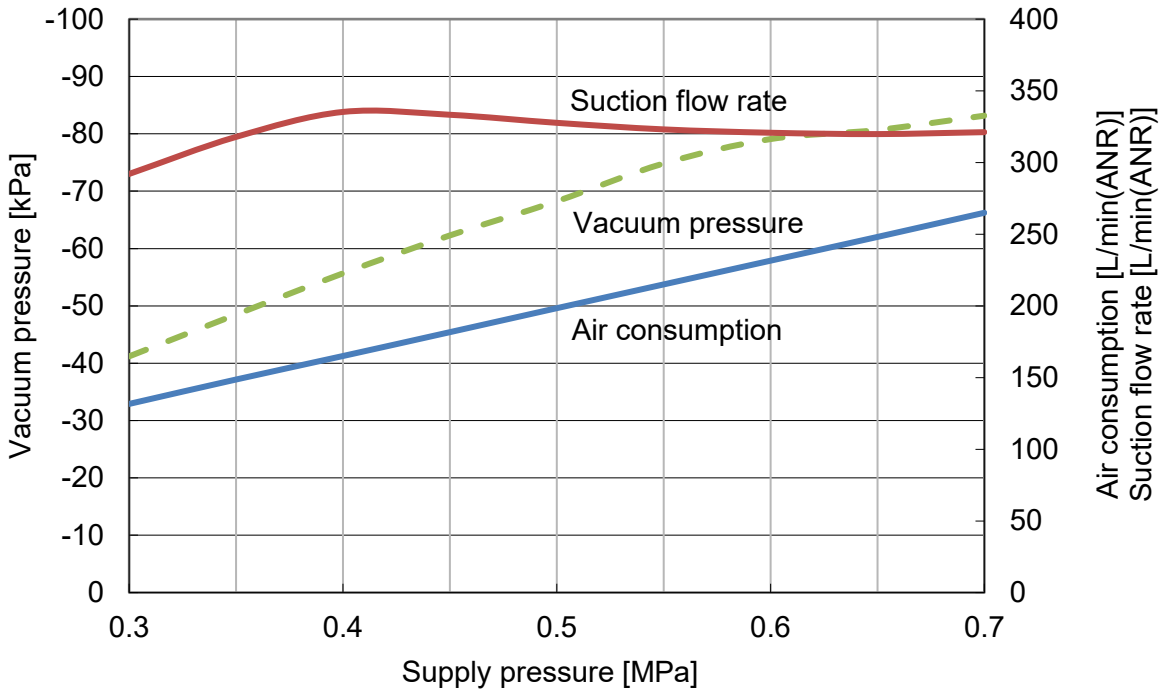


5.5. Ejector Exhaust characteristics

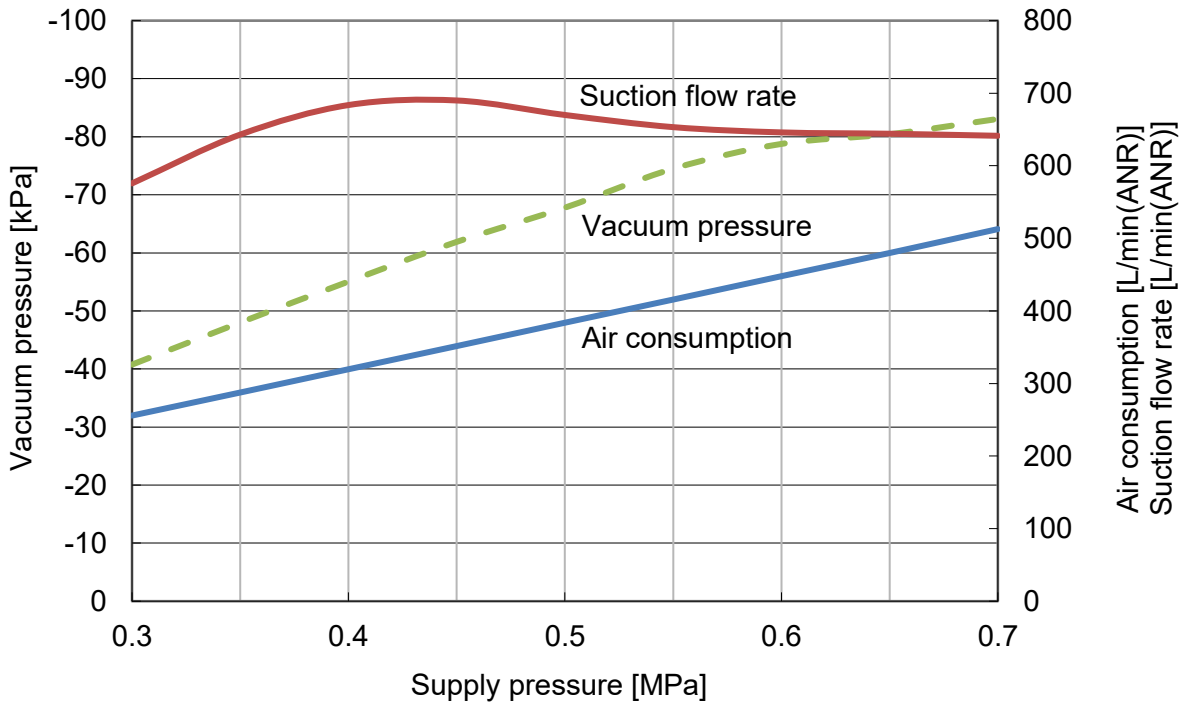
*) These values are measured under SMC test conditions and not guaranteed.

■400mmx240mm

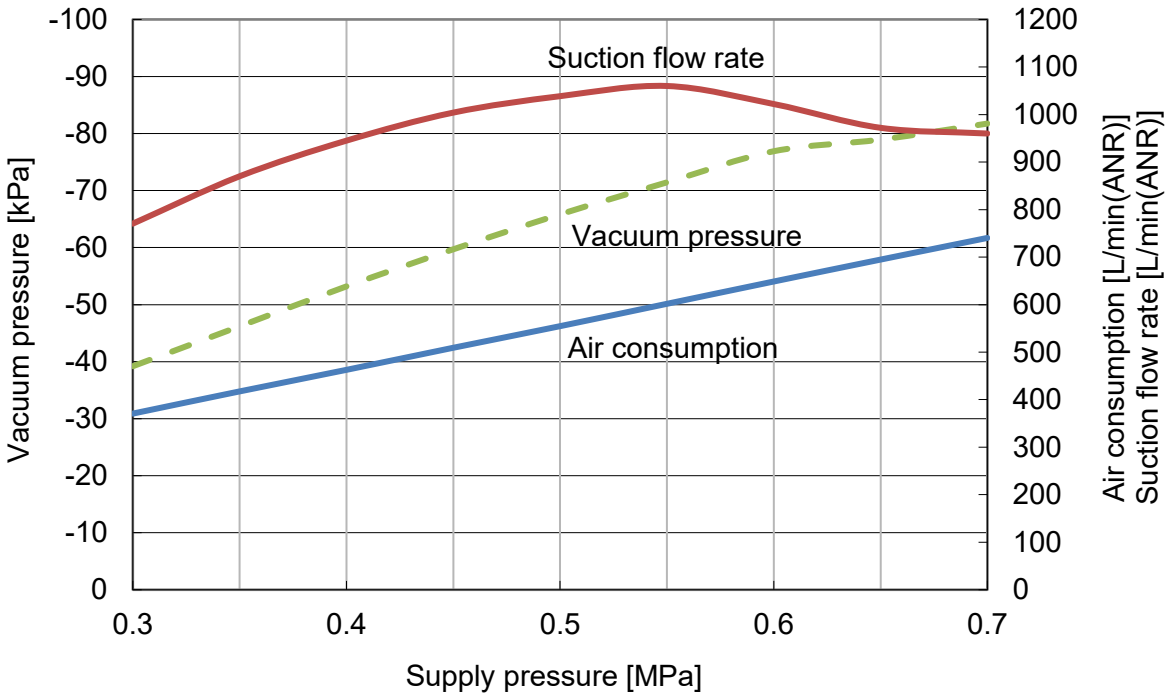
Ejector assembly : 2 pcs.



Ejector assembly : 4 pcs.

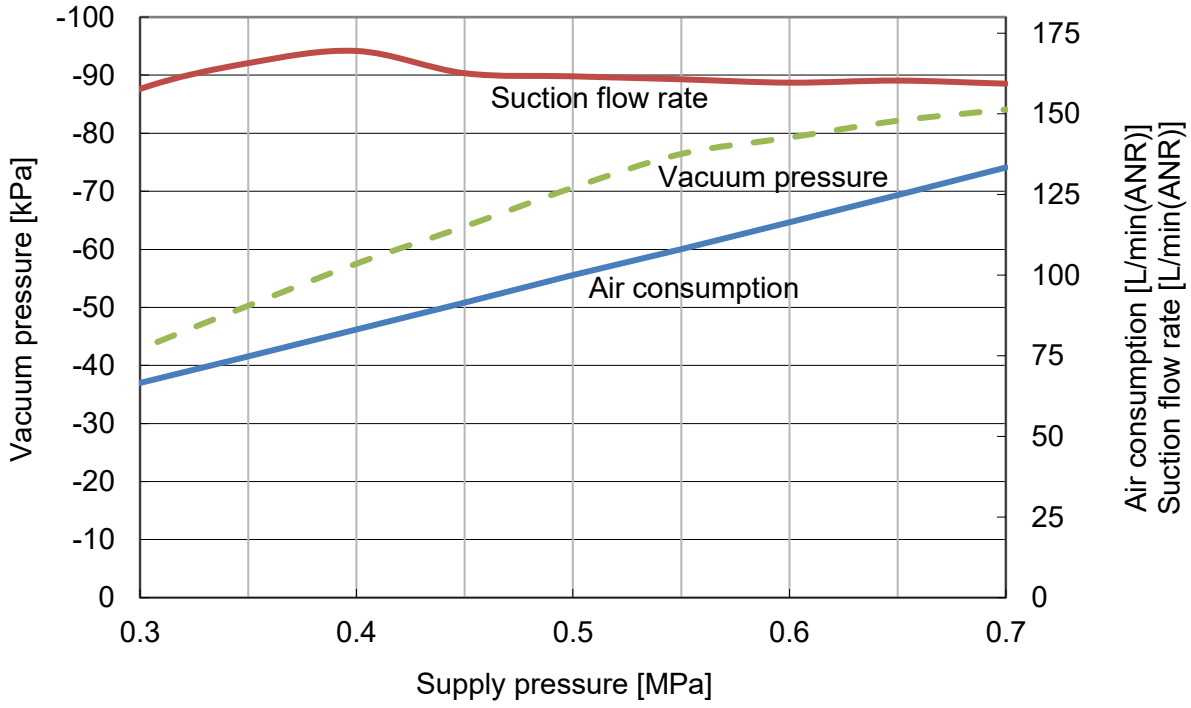


Ejector assembly : 6 pcs.

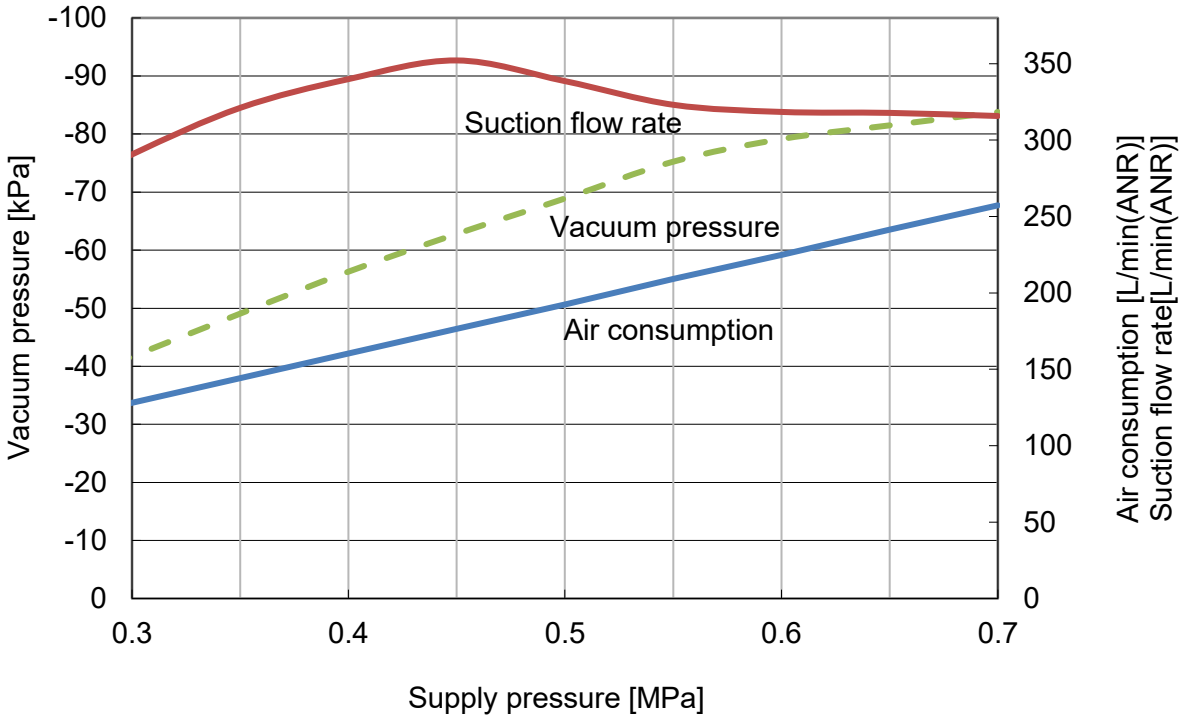


■300mmx180mm, 200mmx120mm

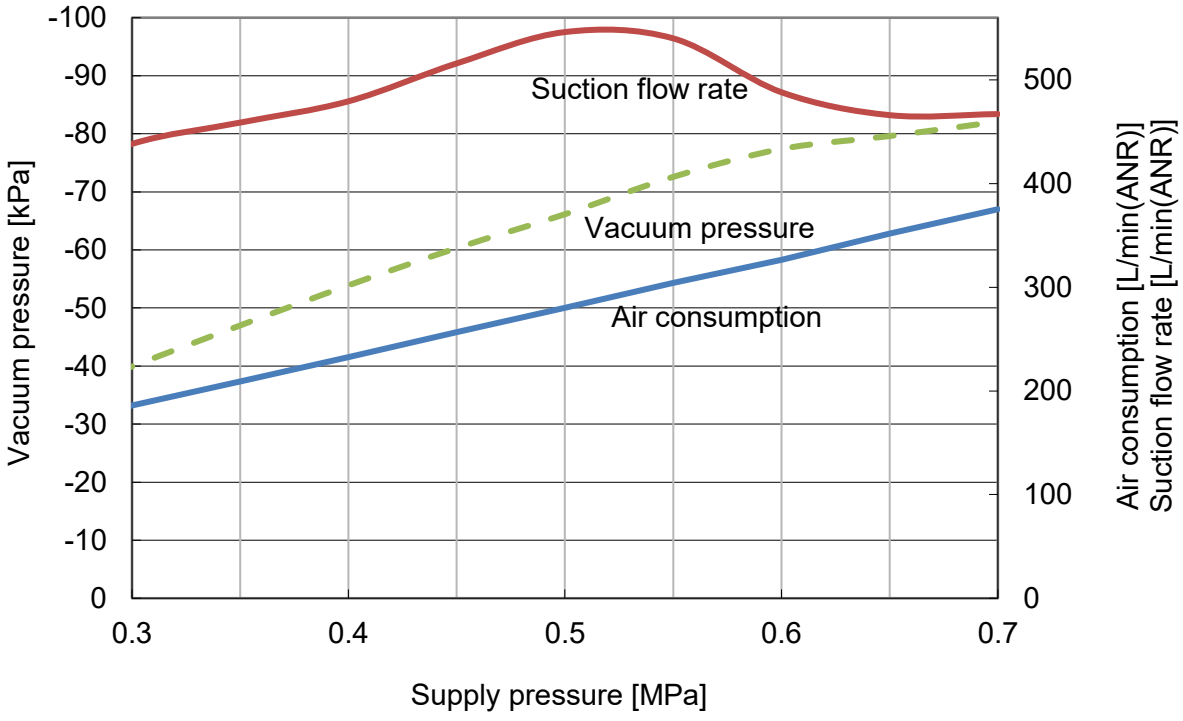
Ejector assembly : 1 pc.



Ejector assembly : 2 pcs.



Ejector assembly : 3 pcs.



6. Dimensions

■400mmx240mm

6.1. Robot mounting flange: Basic type

■Compatible robot : NP/NN/NH (General purpose)
: 011P/012P (UNIVERSAL ROBOTS)
: 043P/043N (YASKAWA)
: 051P (FANUC)

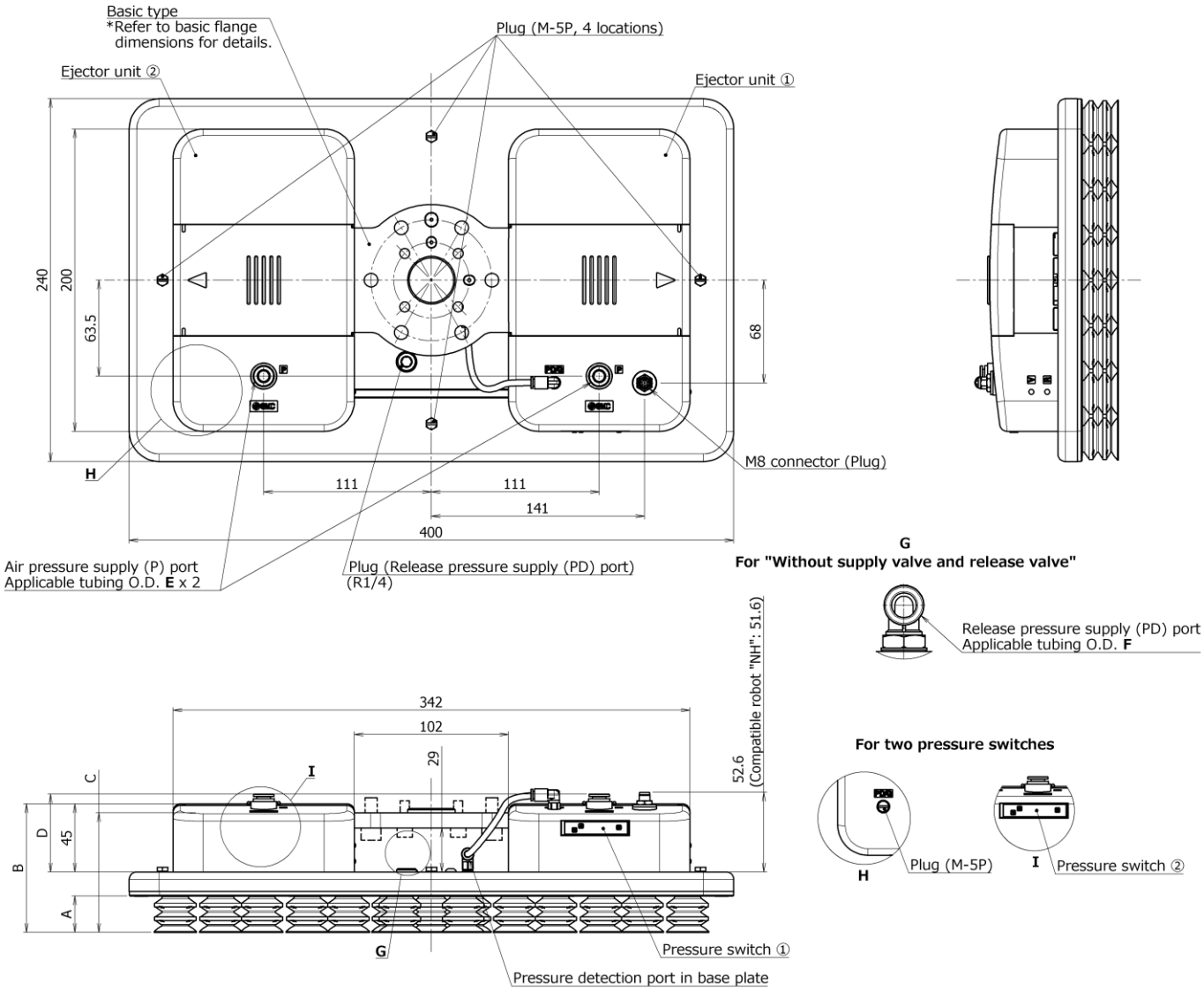


Table 4-1. Dimensions

Part no.	A	B	C
ZGP**-400240A25*-**1*	24	85	79
ZGP**-400240A50*-**1*	48.5	109.5	103.5

Part no.	D	E	F
ZGP**-400240***-***C8	51.4	ϕ8	ϕ8
ZGP**-400240***-***C10	52	ϕ10	
ZGP**-400240***-***N9	51.4	ϕ5/16”	ϕ3/8”
ZGP**-400240***-***N11	51.9	ϕ3/8”	

6.2. Robot mounting flange: Basic type + Offset flange

■Compatible robot : NP/NN/NH (General purpose)
: 011P (UNIVERSAL ROBOTS)
: 021N (OMRON/TECHMAN ROBOT)
: 043P/043N (YASKAWA Electric)
: 051P (FANUC)

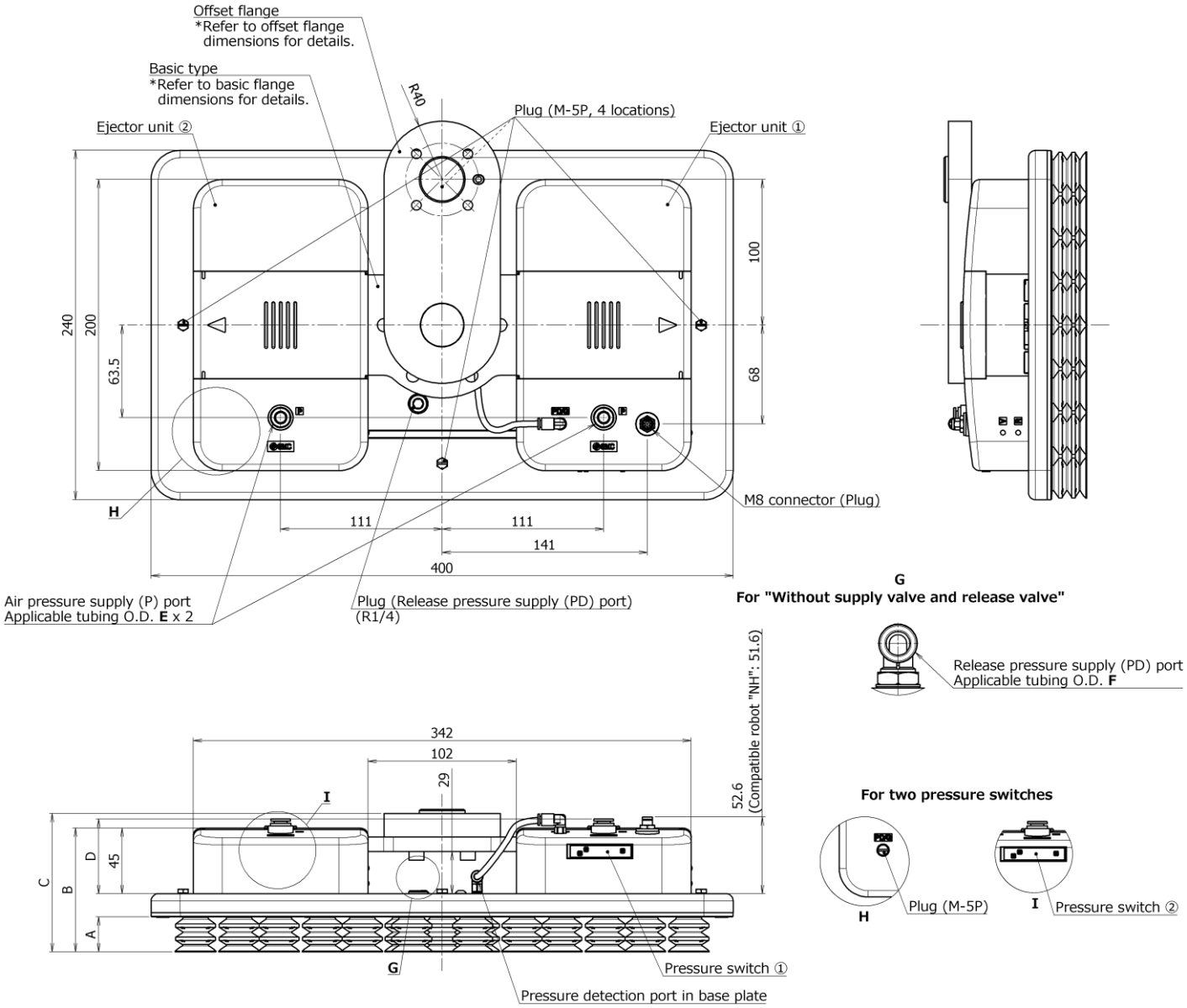


Table 4-2. Dimensions

Part no.	A	B	C
ZGP**-400240A25*-**2*	24	85	95
ZGP**-400240A50*-**2*	48.5	109.5	119.5

Part no.	D	E	F
ZGP**-400240***-***C8	51.4	ϕ8	ϕ8
ZGP**-400240***-***C10	52	ϕ10	
ZGP**-400240***-***N9	51.4	ϕ5/16”	ϕ3/8”
ZGP**-400240***-***N11	51.9	ϕ3/8”	

6.3. Robot mounting flange: Basic type + Offset flange + Flange U

■Compatible robot : 012P (UNIVERSAL ROBOTS)

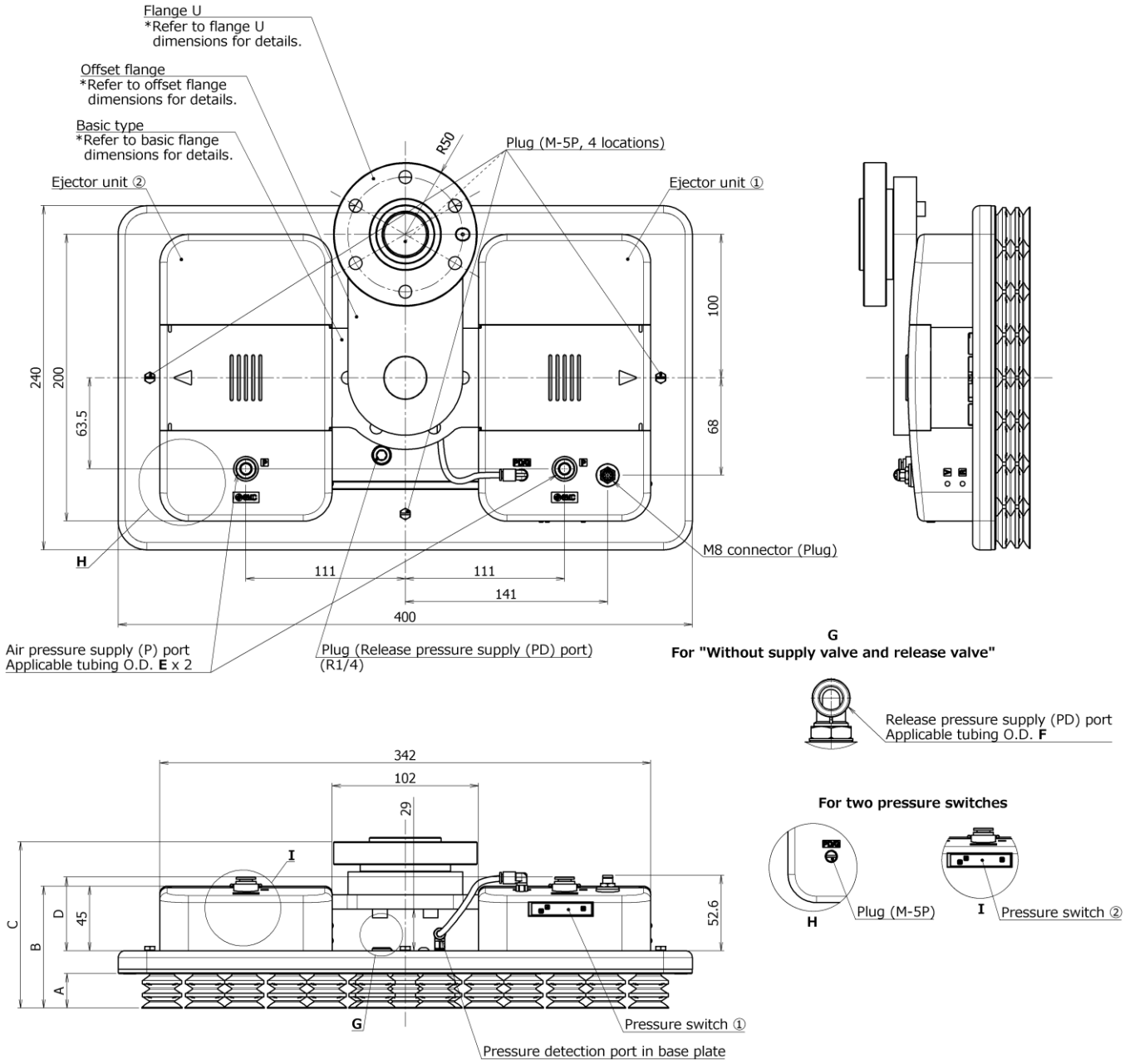


Table 4-3. Dimensions

Part no.	A	B	C
ZGP012P∗-400240A25∗-∗∗2∗	24	85	116
ZGP012P∗-400240A50∗-∗∗2∗	48.5	109.5	140.5

Part no.	D	E	F
ZGP∗∗-400240∗∗∗-∗∗∗C8	51.4	ϕ8	ϕ8
ZGP∗∗-400240∗∗∗-∗∗∗C10	52	ϕ10	
ZGP∗∗-400240∗∗∗-∗∗∗N9	51.4	ϕ5/16”	ϕ3/8”
ZGP∗∗-400240∗∗∗-∗∗∗N11	51.9	ϕ3/8”	

6.4. Robot mounting flange: Without robot mounting flange

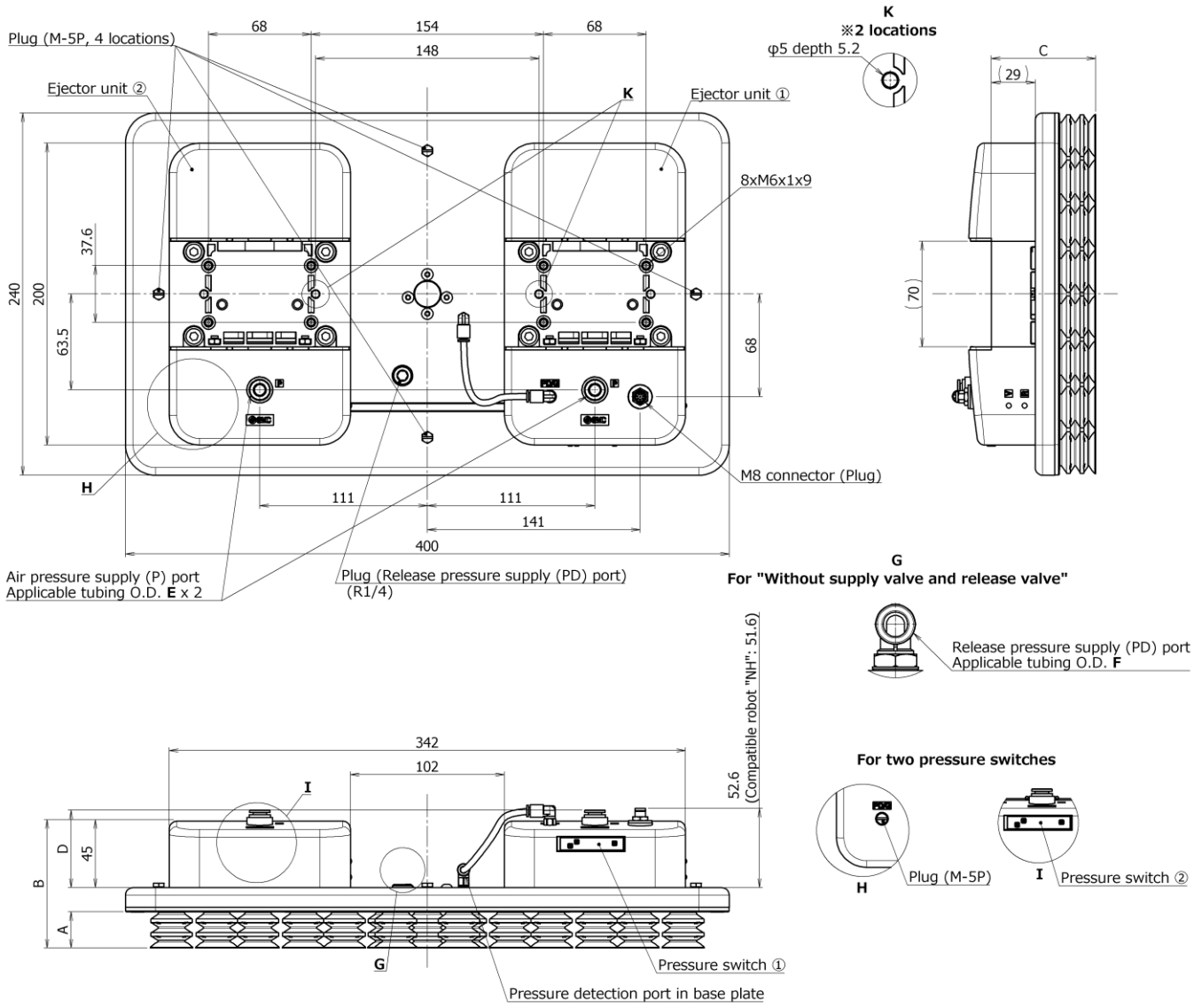
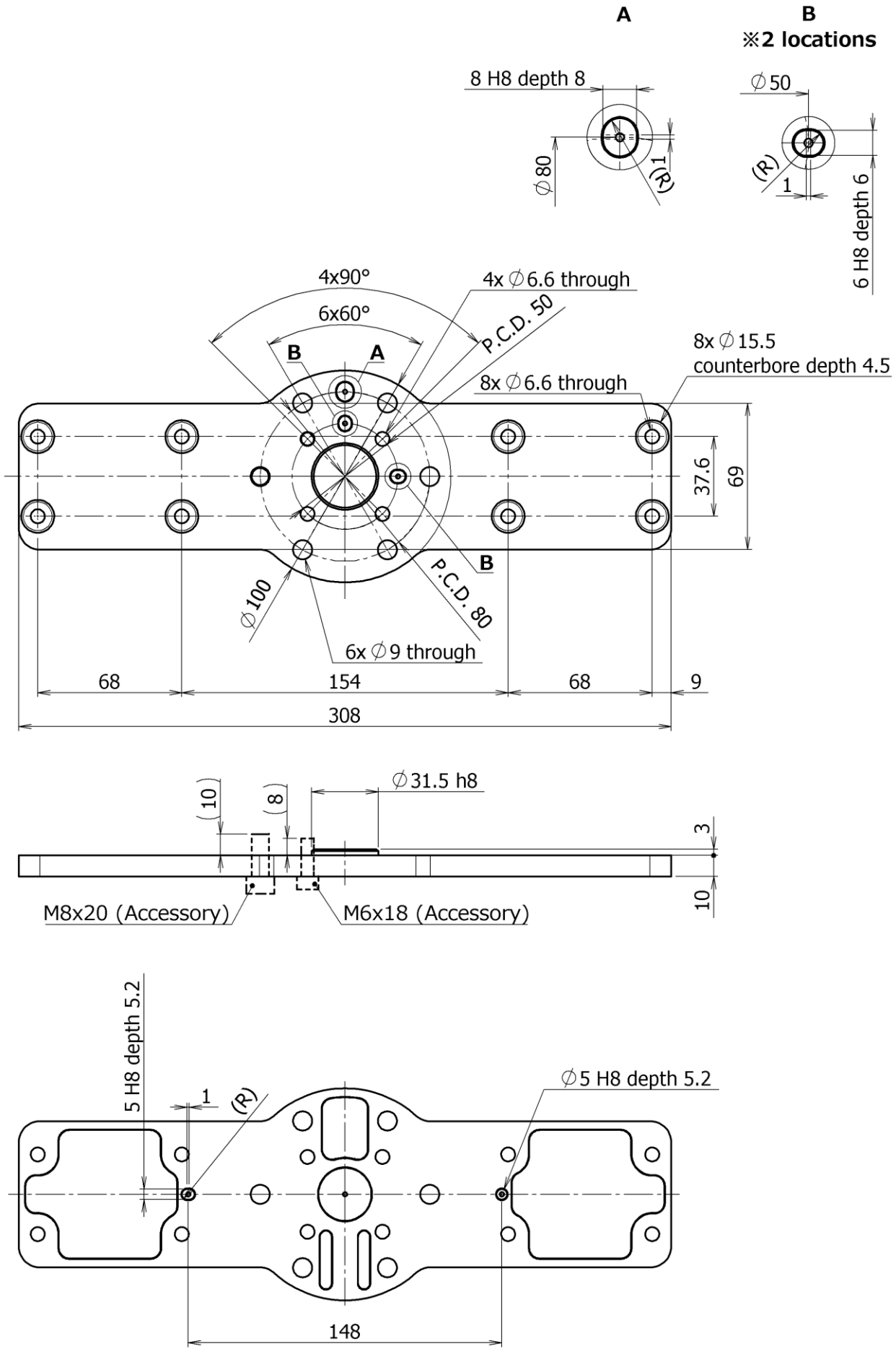


Table 4-4. Dimensions

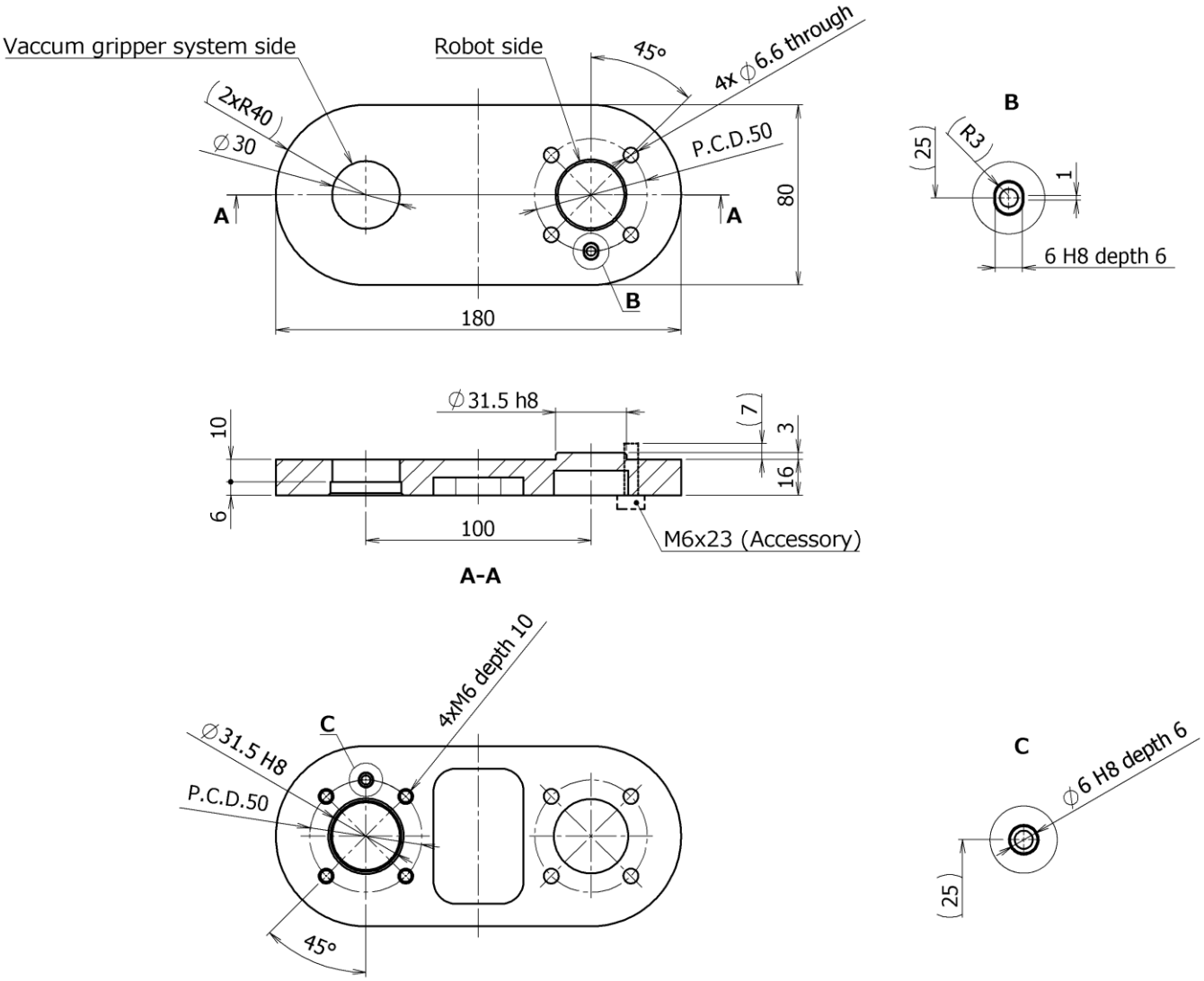
Part no.	A	B	C
ZGP**-400240A25*-**_*	24	85	69
ZGP**-400240A50*-**_*	48.5	109.5	93.5

Part no.	D	E	F
ZGP**-400240***-***C8	51.4	ϕ8	ϕ8
ZGP**-400240***-***C10	52	ϕ10	
ZGP**-400240***-***N9	51.4	ϕ5/16”	ϕ3/8”
ZGP**-400240***-***N11	51.9	ϕ3/8”	

6.5. Basic type



6.6. Offset flange



6.7. Tool center point (T.C.P.), Center of gravity (C.O.G.) and Weight

■Robot mounting flange: Basic type

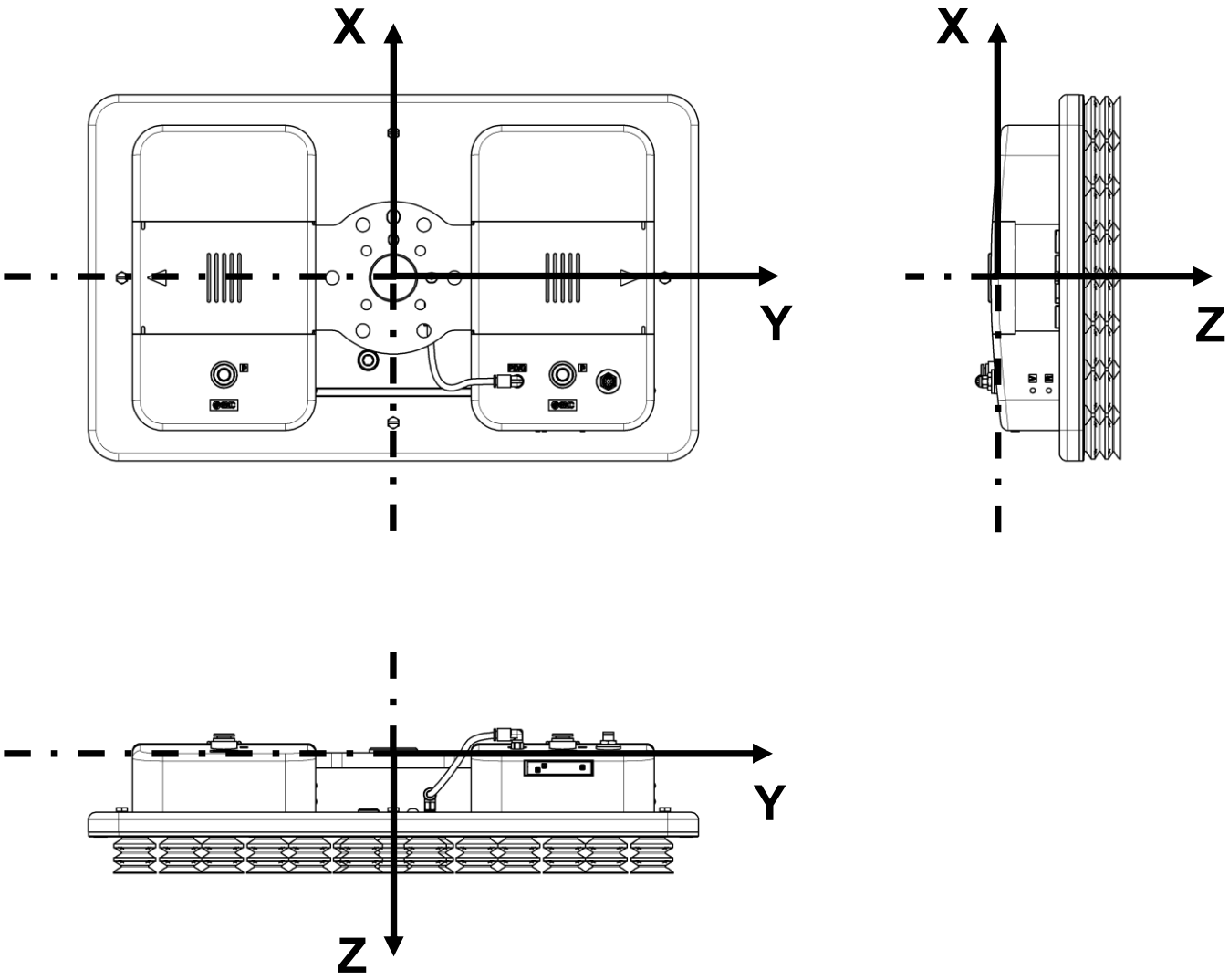


Table 5-1. T.C.P. and C.O.G. (mm)

	ZGP**－400240**A25***－**1* Cup size: ϕ25			ZGP**－400240**A50***－**1* Cup size: ϕ50		
	X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	0	0	79	0	0	103.5
Center of gravity (C.O.G.)	-3	1	37	-2	1	43

Table 5-2. Weight (kg)

	ZGP**－400240**A25***－**1* Cup size: ϕ25	ZGP**－400240**A50***－**1* Cup size: ϕ50
Weight	4.3	5.0

*) When using plugs, refer to Page 101 and calculate weight as needed.

■Robot mounting flange: Basic type + Offset flange

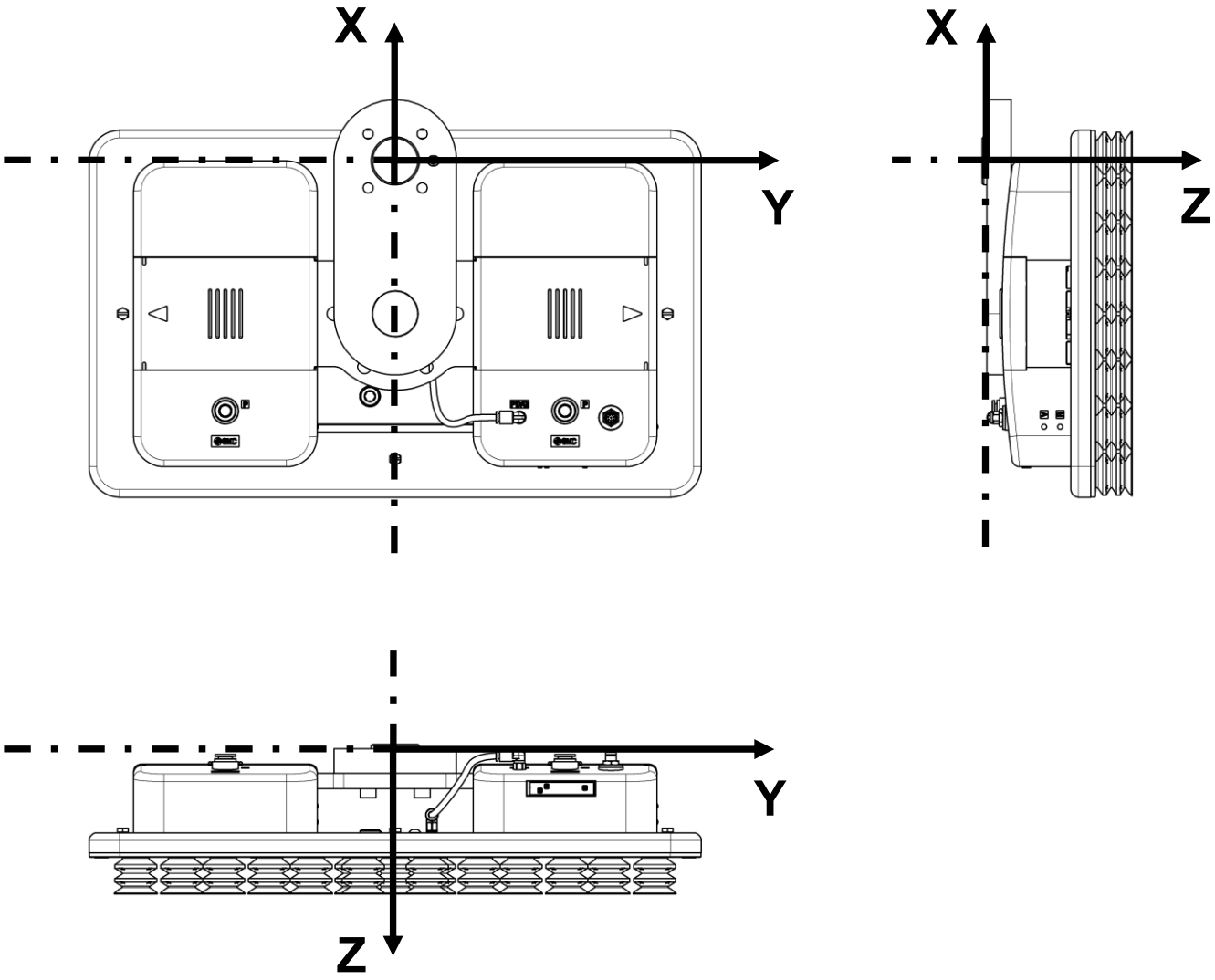


Table 5-3. T.C.P. and C.O.G. (mm)

	ZGP**－400240**A25***－**2* Cup size: ϕ25			ZGP**－400240**A50***－**2* Cup size: ϕ50		
	X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	-100	0	95	-100	0	119.5
Center of gravity (C.O.G.)	-97	1	48	-97	1	55

Table 5-4. Weight (kg)

	ZGP**－400240**A25***－**2* Cup size: ϕ25	ZGP**－400240**A50***－**2* Cup size: ϕ50
Weight	4.8	5.5

*) When using plugs, refer to Page 101 and calculate weight as needed.

■Robot mounting flange: Basic type + Offset flange + Flange U

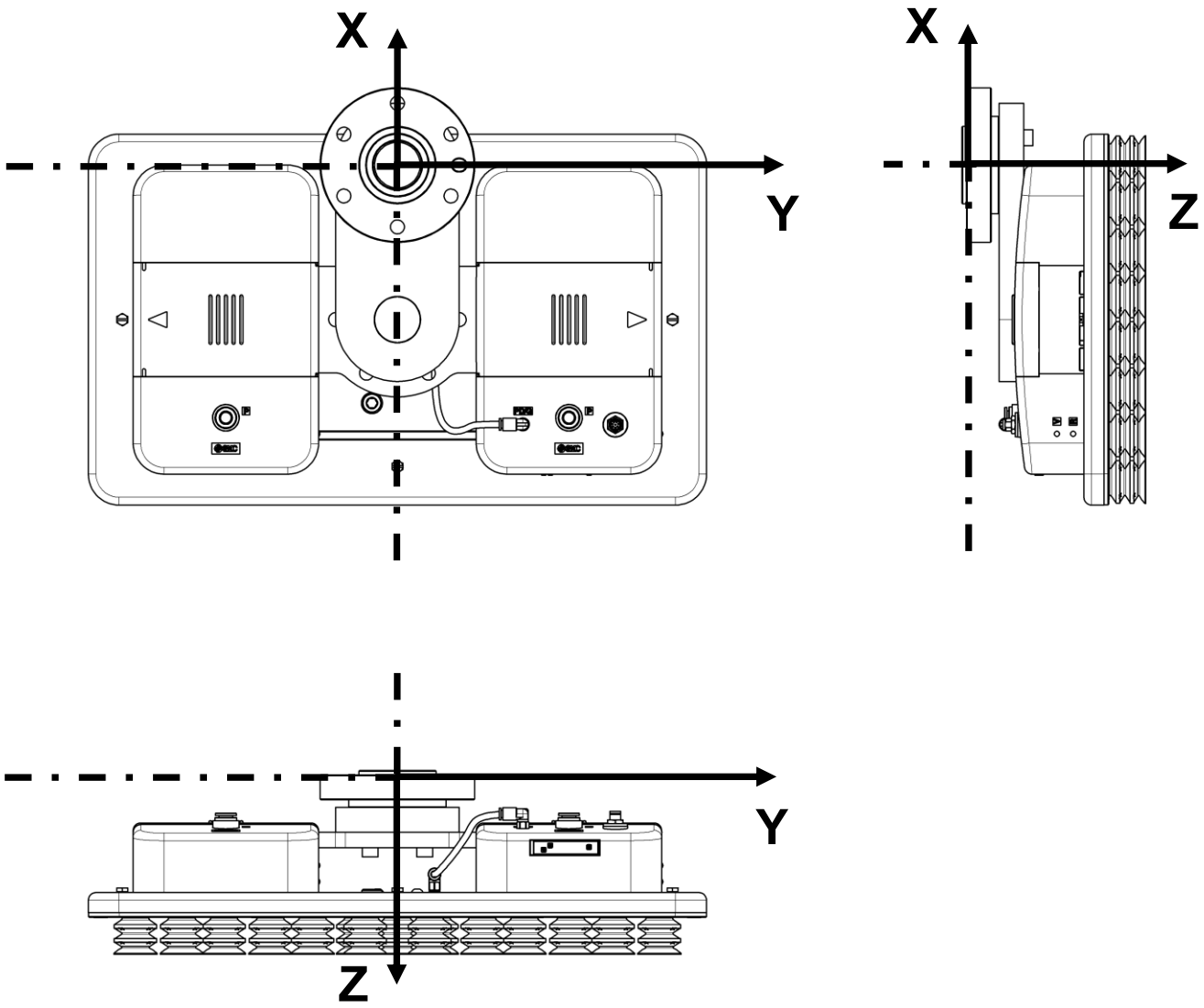


Table 5-5. T.C.P. and C.O.G. (mm)

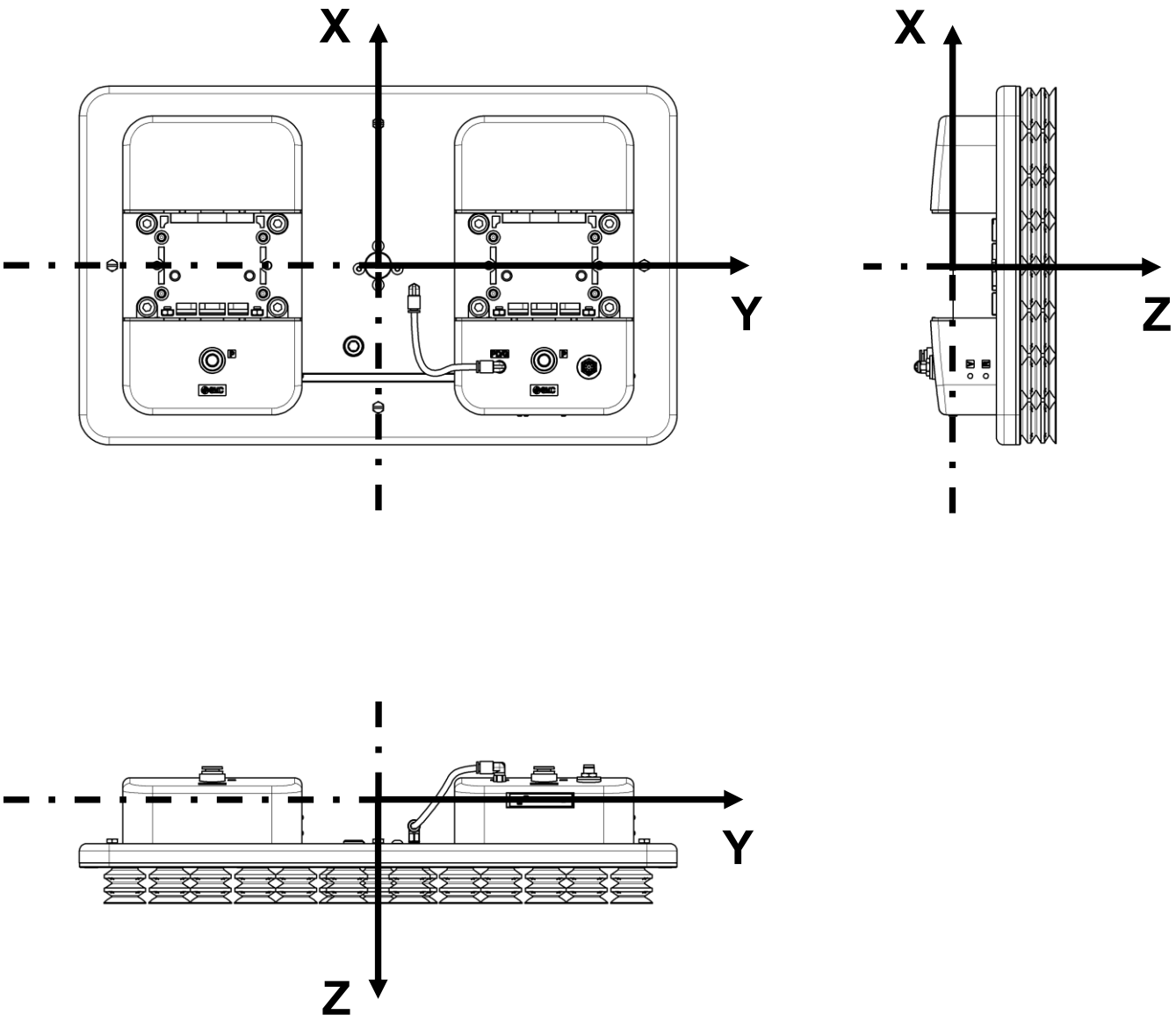
	ZGP**012P**＊－400240**A25**＊－＊＊**2**＊ Cup size: ϕ25			ZGP**012P**＊－400240**A50**＊－＊＊**2**＊ Cup size: ϕ50		
	X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	-100	0	116	-100	0	140.5
Center of gravity (C.O.G.)	-89	1	64	-90	1	71

Table 5-6. Weight (kg)

	ZGP**012P**＊－400240**A25**＊－＊＊**2**＊ Cup size: ϕ25	ZGP**012P**＊－400240**A50**＊－＊＊**2**＊ Cup size: ϕ50
Weight	5.2	5.9

*) When using plugs, refer to Page 101 and calculate weight as needed.

■Robot mounting flange: Without robot mounting flange



When using a flange that you prepare yourself, calculate T.C.P., C.O.G and weight using the values in the tables below.

Table 5-7. T.C.P. and C.O.G. (mm)

	ZGP**−400240**A25***−****_* Cup size: ϕ25			ZGP**−400240**A50***−****_* Cup size: ϕ50		
	X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	0	0	69	0	0	93.5
Center of gravity (C.O.G.)	-3	1	31	-2	1	38

Table 5-8. Weight (kg)

	ZGP**−400240**A25***−****_* Cup size: ϕ25	ZGP**−400240**A50***−****_* Cup size: ϕ50
Weight	3.8	4.5

*) When using plugs, refer to Page 101 and calculate weight as needed.

■300mmx180mm

6.8. 300mm×180mm
(Robot mounting flange: Tool plate + Main plate)

■Compatible robot : NP/NN/NH (General purpose)
: 011P (UNIVERSAL ROBOTS)
: 051P (FANUC)

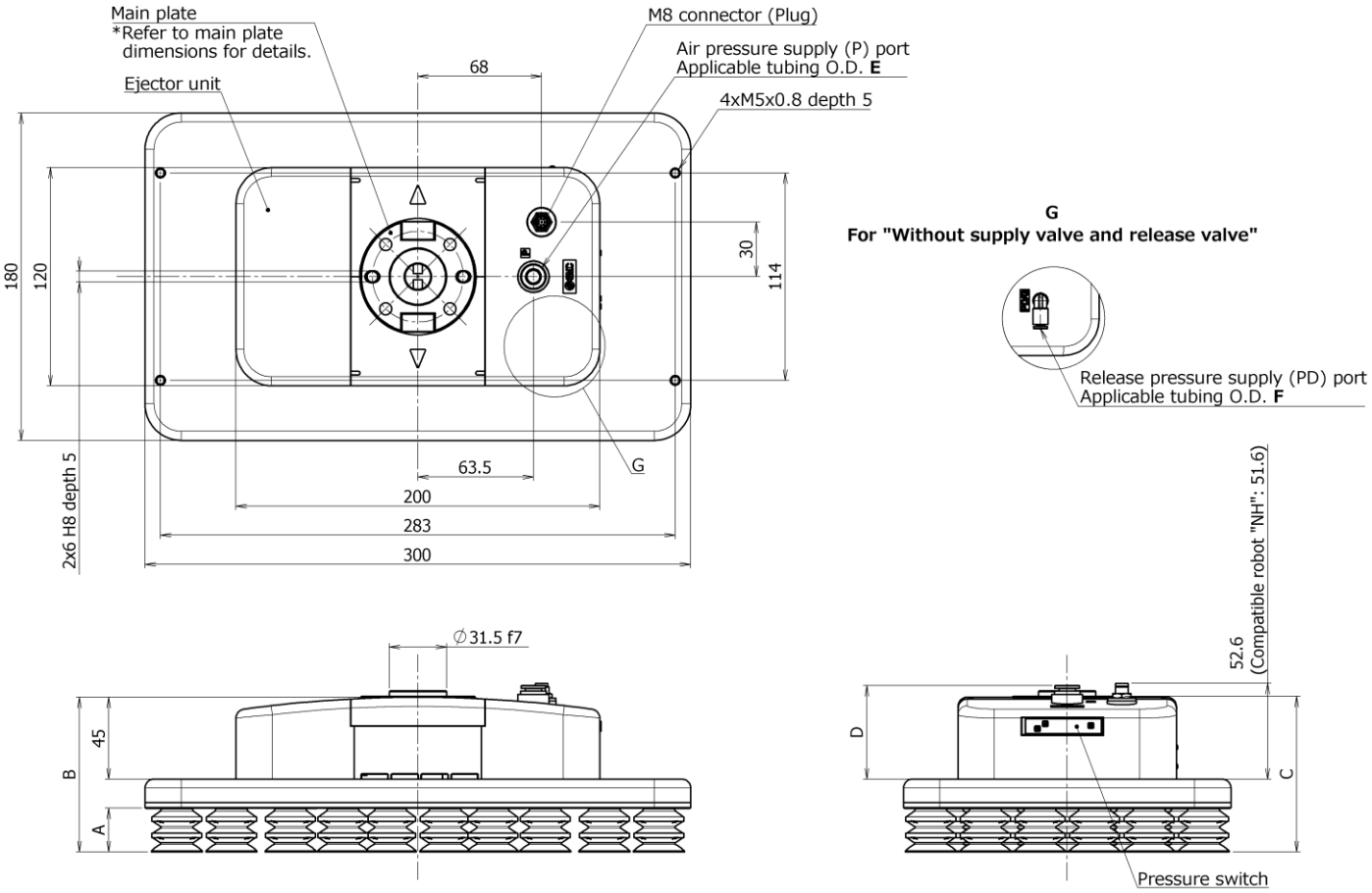


Table 6-1. Dimensions

Part no.	A	B	C
ZGP**-300180A25*-**1*	24	85	85.5
ZGP**-300180A50*-**1*	48.5	109.5	110

Part no.	D	E	F
ZGP**-300180***-***C8	51.4	ϕ8	ϕ4
ZGP**-300180***-***C10	52	ϕ10	
ZGP**-300180***-***N9	51.4	ϕ5/16”	ϕ1/8”
ZGP**-300180***-***N11	51.9	ϕ3/8”	

6.9. 300mm×180mm
(Robot mounting flange: Tool plate + Main plate + Flange U)

■Compatible robot : 012P (UNIVERSAL ROBOTS)

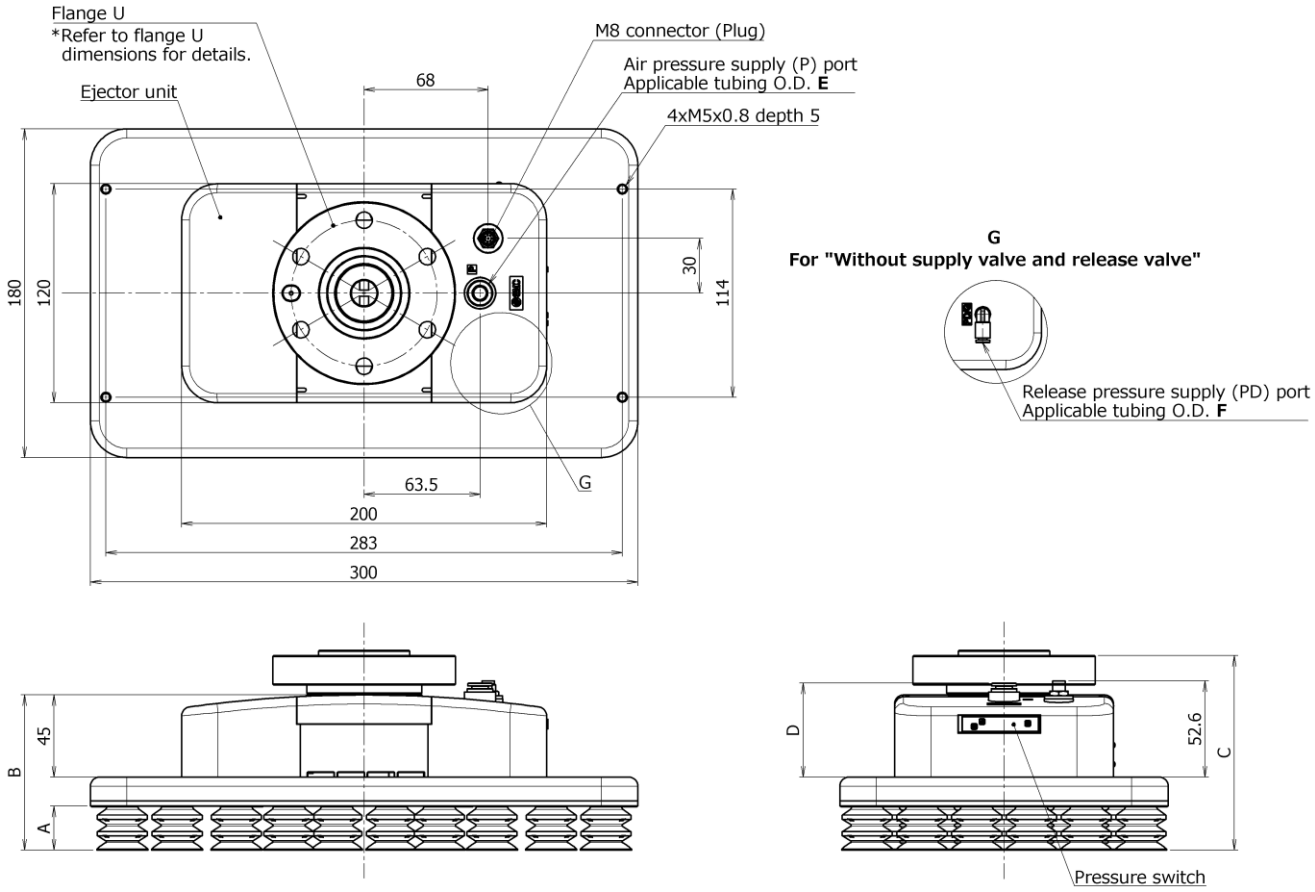


Table 6-2. Dimensions

Part no.	A	B	C
ZGP012P∗-300180A25∗-∗∗1∗	24	85	106.5
ZGP012P∗-300180A50∗-∗∗1∗	48.5	109.5	131

Part no.	D	E	F
ZGP∗∗-300180∗∗∗-∗∗∗C8	51.4	ϕ8	ϕ4
ZGP∗∗-300180∗∗∗-∗∗∗C10	52	ϕ10	
ZGP∗∗-300180∗∗∗-∗∗∗N9	51.4	ϕ5/16”	ϕ1/8”
ZGP∗∗-300180∗∗∗-∗∗∗N11	51.9	ϕ3/8”	

6.10. 300mm×180mm
(Robot mounting flange: Tool plate + Main plate + Flange Y)

■Compatible robot : 043P/043N (YASKAWA Electric)

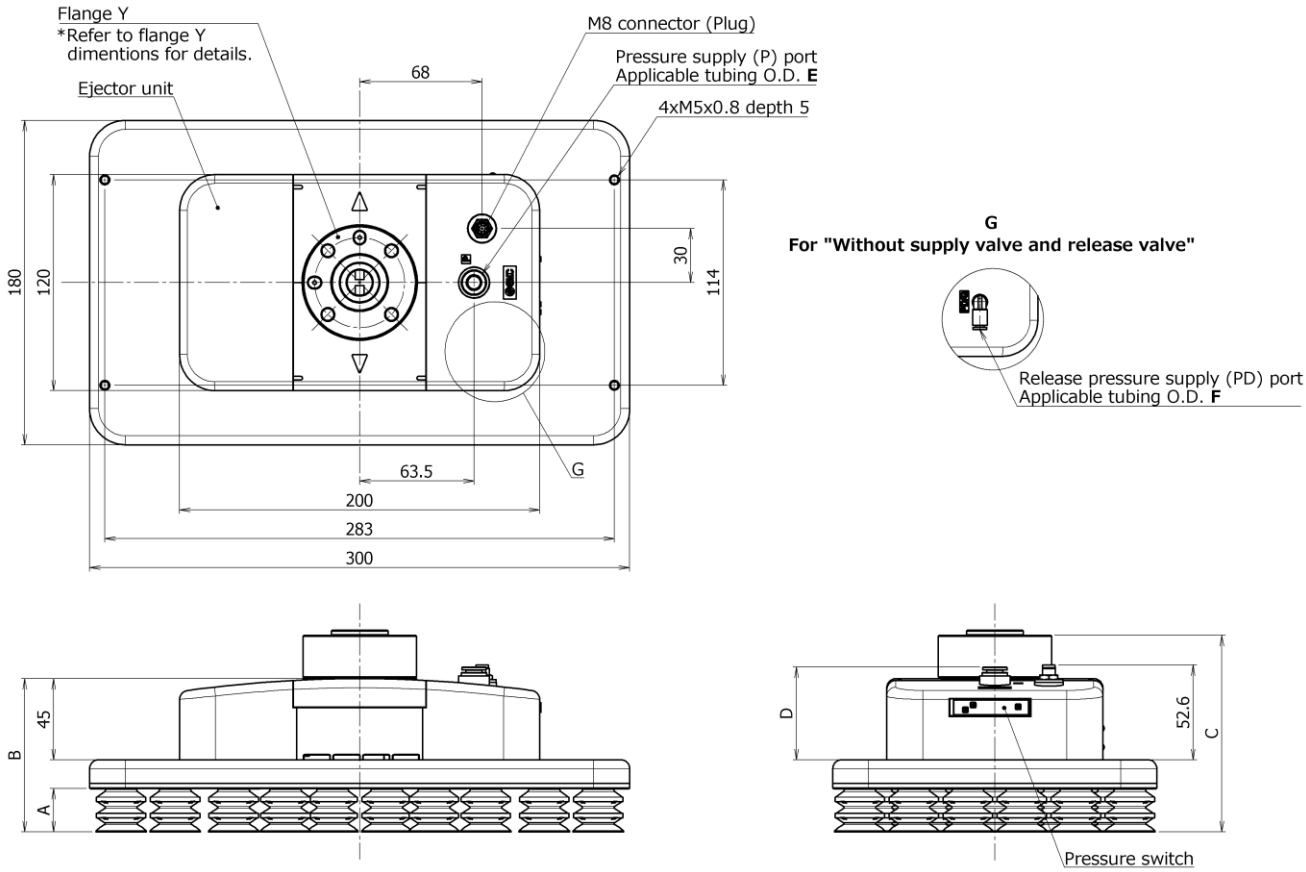


Table 6-3. Dimensions

Part no.	A	B	C
ZGP043(P/N)∗-300180A25-∗∗1∗	24	85	109
ZGP043(P/N)∗-300180A50-∗∗1∗	48.5	109.5	133.5

Part no.	D	E	F
ZGP∗∗-300180∗∗-∗∗∗C8	51.4	ϕ8	ϕ4
ZGP∗∗-300180∗∗-∗∗∗C10	52	ϕ10	
ZGP∗∗-300180∗∗-∗∗∗N9	51.4	ϕ5/16”	ϕ1/8”
ZGP∗∗-300180∗∗-∗∗∗N11	51.9	ϕ3/8”	

6.11. 300mm×180mm
(Robot mounting flange: Offset flange)

■Compatible robot : NP/NN/NH (General purpose)
: 011P (UNIVERSAL ROBOTS)
: 021N (OMRON /TECHMAN ROBOT)
: 051P (FANUC)

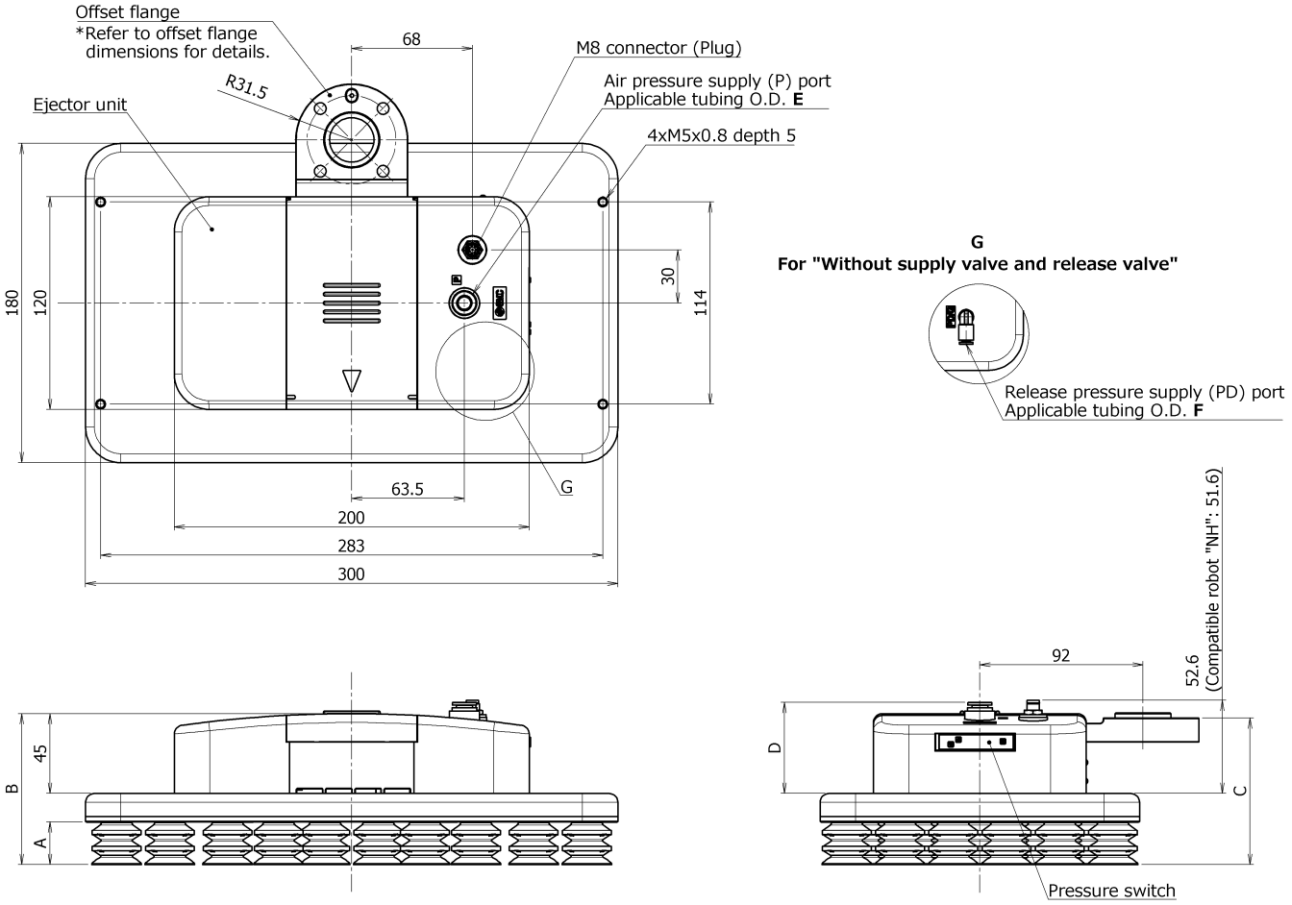


Table 6-4. Dimensions

Part no.	A	B	C
ZGP**-300180A25-**2*	24	85	82.5
ZGP**-300180A50-**2*	48.5	109.5	107

Part no.	D	E	F
ZGP**-300180**-***C8	51.4	ϕ8	ϕ4
ZGP**-300180**-***C10	52	ϕ10	
ZGP**-300180**-***N9	51.4	ϕ5/16”	ϕ1/8”
ZGP**-300180**-***N11	51.9	ϕ3/8”	

6.12. 300mm×180mm
(Robot mounting flange: Offset flange + Flange U)

■Compatible robot : 012P (UNIVERSAL ROBOTS)

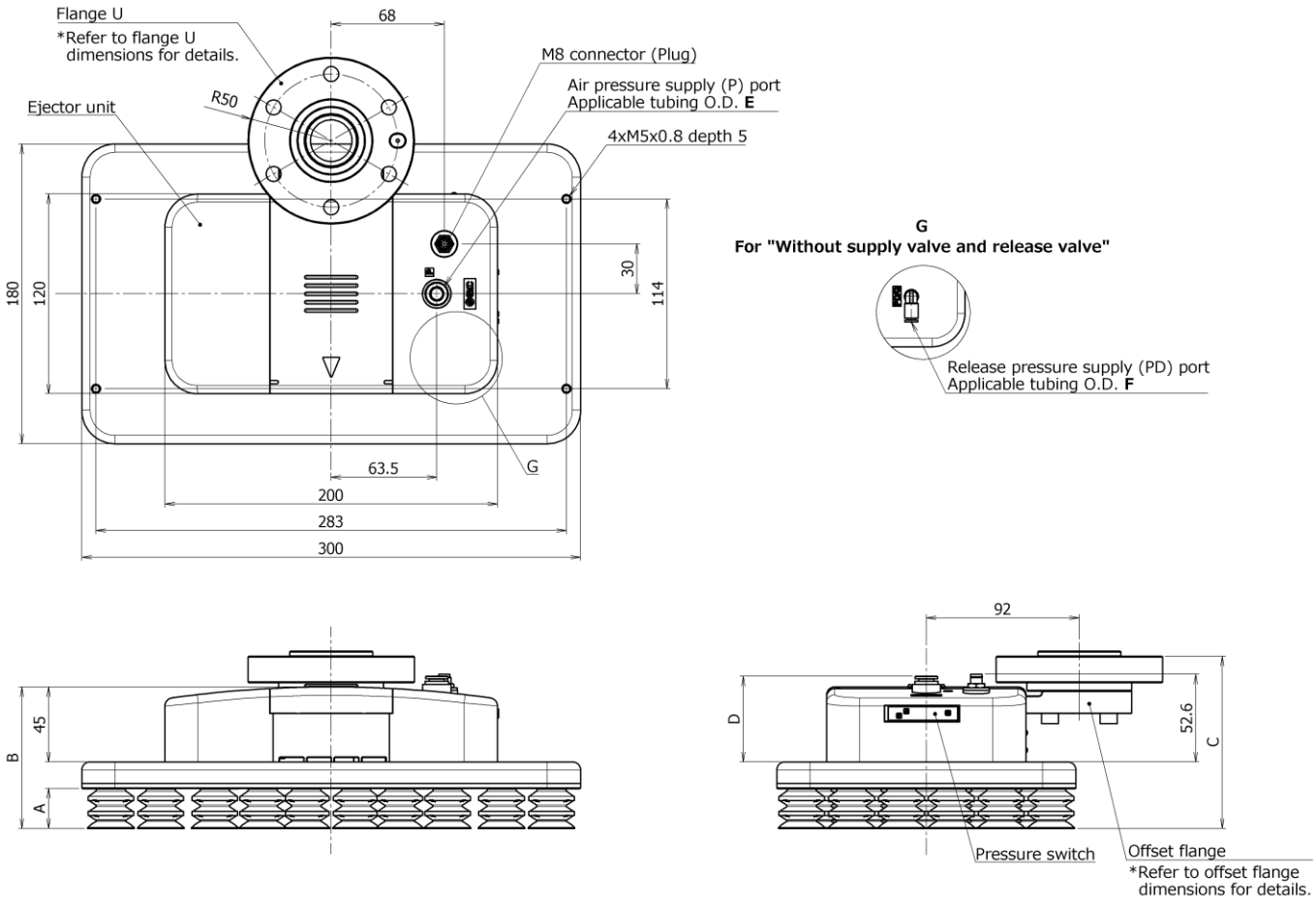


Table 6-5. Dimensions

Part no.	A	B	C
ZGP012P∗-300180A25-∗∗2∗	24	85	103.5
ZGP012P∗-300180A50-∗∗2∗	48.5	109.5	128

Part no.	D	E	F
ZGP∗∗-300180∗∗-∗∗∗C8	51.4	ϕ8	ϕ4
ZGP∗∗-300180∗∗-∗∗∗C10	52	ϕ10	
ZGP∗∗-300180∗∗-∗∗∗N9	51.4	ϕ5/16”	ϕ1/8”
ZGP∗∗-300180∗∗-∗∗∗N11	51.9	ϕ3/8”	

6.13. 300mm×180mm
(Robot mounting flange: Offset flange + Flange Y)

■Compatible robot : 043P/043N (YASKAWA Electric)

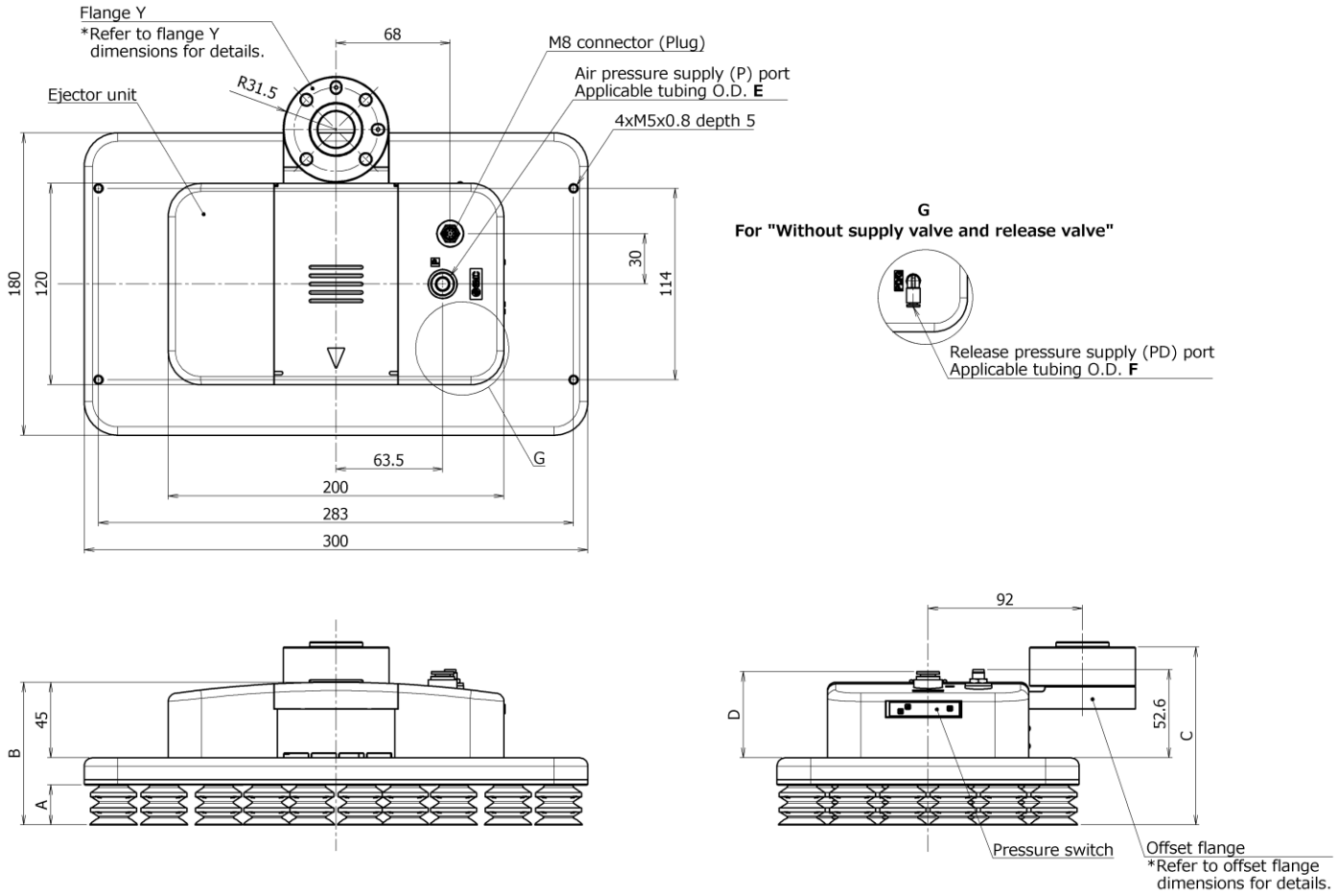


Table 6-6. Dimensions

Part no.	A	B	C
ZGP043(P/N)∗-300180A25-∗∗2∗	24	85	106
ZGP043(P/N)∗-300180A50-∗∗2∗	48.5	109.5	130.5

Part no.	D	E	F
ZGP∗∗-300180∗∗-∗∗∗C8	51.4	ϕ8	ϕ4
ZGP∗∗-300180∗∗-∗∗∗C10	52	ϕ10	
ZGP∗∗-300180∗∗-∗∗∗N9	51.4	ϕ5/16”	ϕ1/8”
ZGP∗∗-300180∗∗-∗∗∗N11	51.9	ϕ3/8”	

6.14. 300mm×180mm
(Robot mounting flange: Straight flange)

■Compatible robot : NP/NN/NH (General purpose)
: 011P (UNIVERSAL ROBOTS)
: 043P/043N (YASKAWA Electric)
: 051P (FANUC)

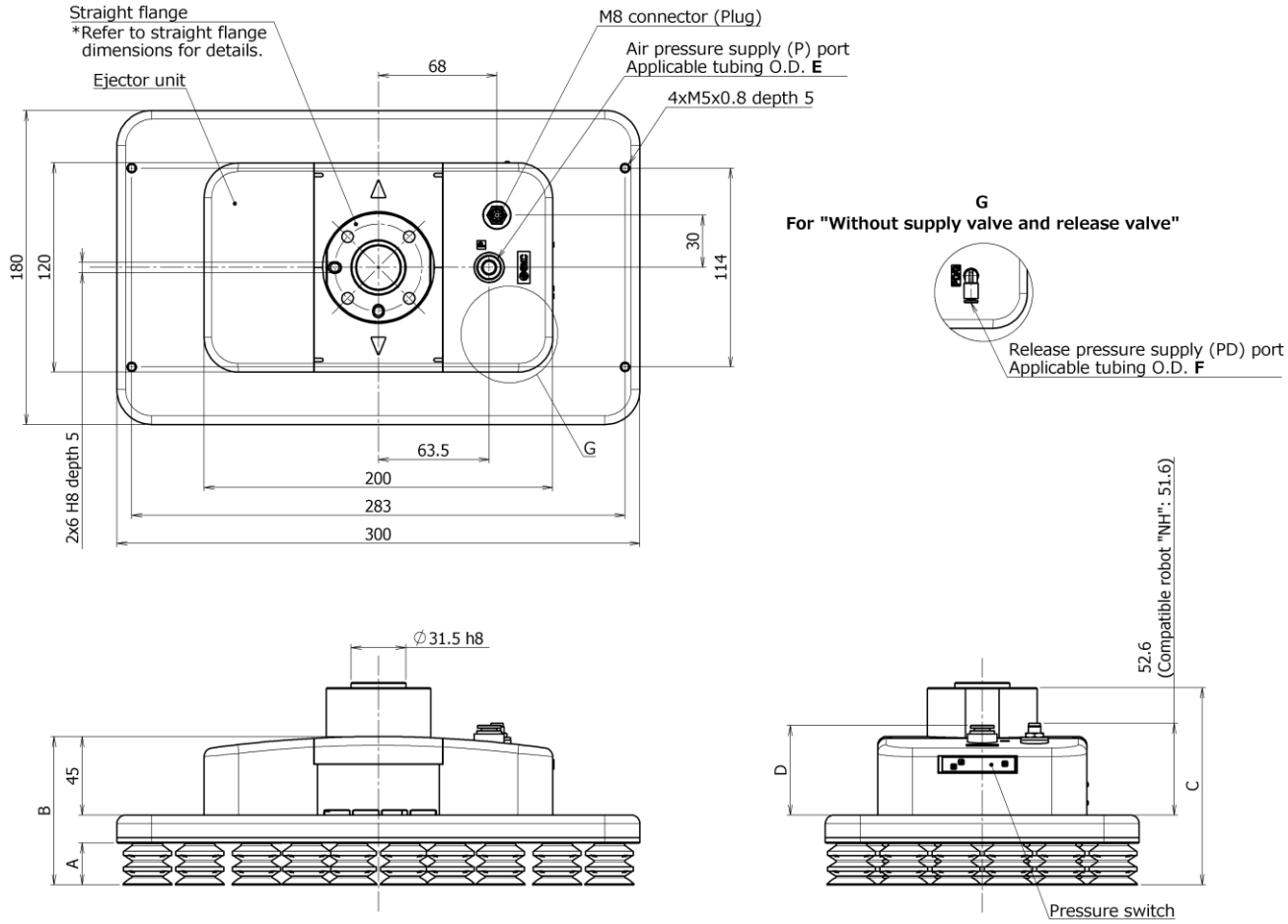


Table 6-7. Dimensions

Part no.	A	B	C
ZGP**-300180A25-**4*	24	85	113
ZGP**-300180A50-**4*	48.5	109.5	137.5

Part no.	D	E	F
ZGP**-300180**-***C8	51.4	ϕ8	ϕ4
ZGP**-300180**-***C10	52	ϕ10	
ZGP**-300180**-***N9	51.4	ϕ5/16”	ϕ1/8”
ZGP**-300180**-***N11	51.9	ϕ3/8”	

6.15. 300mm×180mm
(Robot mounting flange: Straight flange + Flange U)

■Compatible robot : 012P (UNIVERSAL ROBOTS)

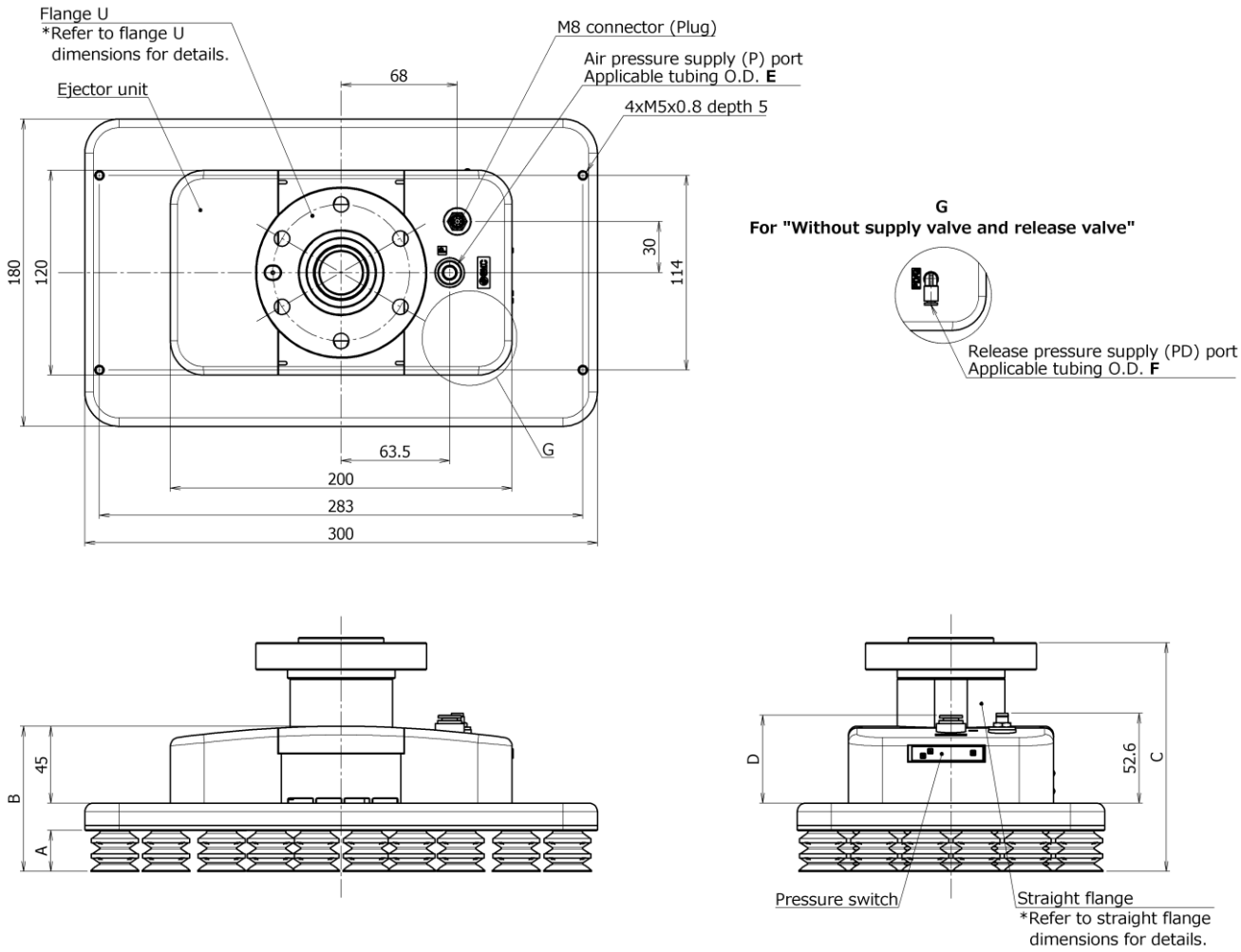


Table 6-8. Dimensions

Part no.	A	B	C
ZGP012P∗-300180A25-∗∗4∗	24	85	134
ZGP012P∗-300180A50-∗∗4∗	48.5	109.5	158.5

Part no.	D	E	F
ZGP∗∗-300180∗∗-∗∗∗C8	51.4	ϕ8	ϕ4
ZGP∗∗-300180∗∗-∗∗∗C10	52	ϕ10	
ZGP∗∗-300180∗∗-∗∗∗N9	51.4	ϕ5/16”	ϕ1/8”
ZGP∗∗-300180∗∗-∗∗∗N11	51.9	ϕ3/8”	

6.16. 300mm×180mm
(Robot mounting flange: Without robot mounting flange)

■Compatible robot : NP/NN/NH(General purpose)
: 011P(UNIVERSAL ROBOTS)
: 012P(UNIVERSAL ROBOTS)
: 043P/043N(YASKAWA Electric)
: 051P(FANUC)
: 021N(OMRON /TECHMAN ROBOT)

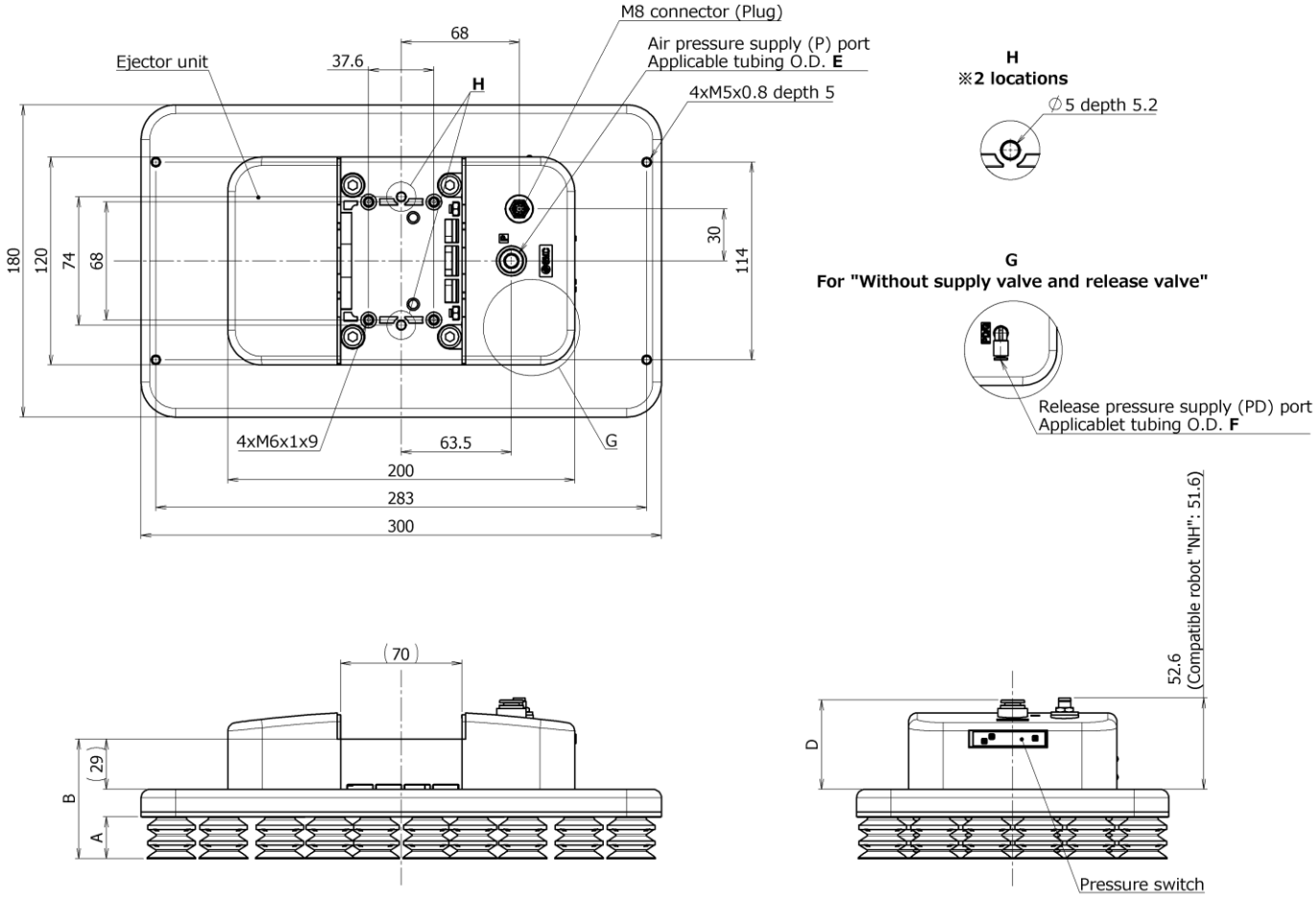


Table 6-9. Dimensions

Part no.	A	B
ZGP**-300180A25-**_*	24	69
ZGP**-300180A50-**_*	48.5	93.5

Part no.	D	E	F
ZGP**-300180**-***C8	51.4	ϕ8	ϕ4
ZGP**-300180**-***C10	52	ϕ10	
ZGP**-300180**-***N9	51.4	ϕ5/16”	ϕ1/8”
ZGP**-300180**-***N11	51.9	ϕ3/8”	

■200mmx120mm

6.17. 200mm×120mm
(Robot mounting flange: Tool plate + Main plate)

■Compatible robot : NP/NN/NH (General purpose)
: 011P (UNIVERSAL ROBOTS)
: 051P (FANUC)

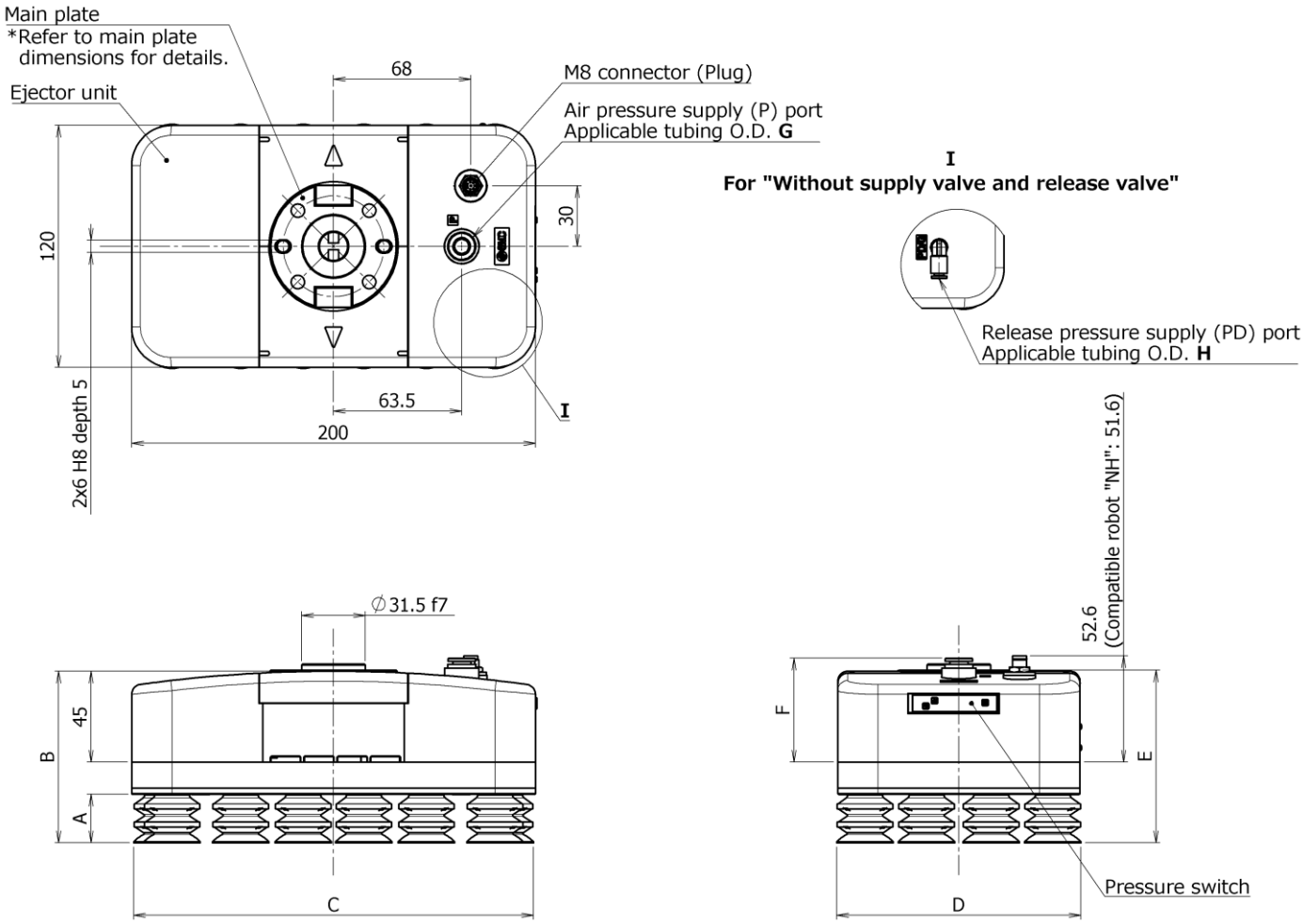


Table 6-10. Dimensions

Part no.	A	B	C	D	E
ZGP**-200120A25-**1*	24	85	198	121	85.5
ZGP**-200120A50-**1*	48.5	109.5	215.8	137	110

Part no.	F	G	H
ZGP**-200120**-***C8	51.4	ϕ8	ϕ4
ZGP**-200120**-***C10	52	ϕ10	
ZGP**-200120**-***N9	51.4	ϕ5/16”	ϕ1/8”
ZGP**-200120**-***N11	51.9	ϕ3/8”	

6.18. 200mm×120mm
(Robot mounting flange: Tool plate + Main plate + Flange U)

■Compatible robot : 012P (UNIVERSAL ROBOTS)

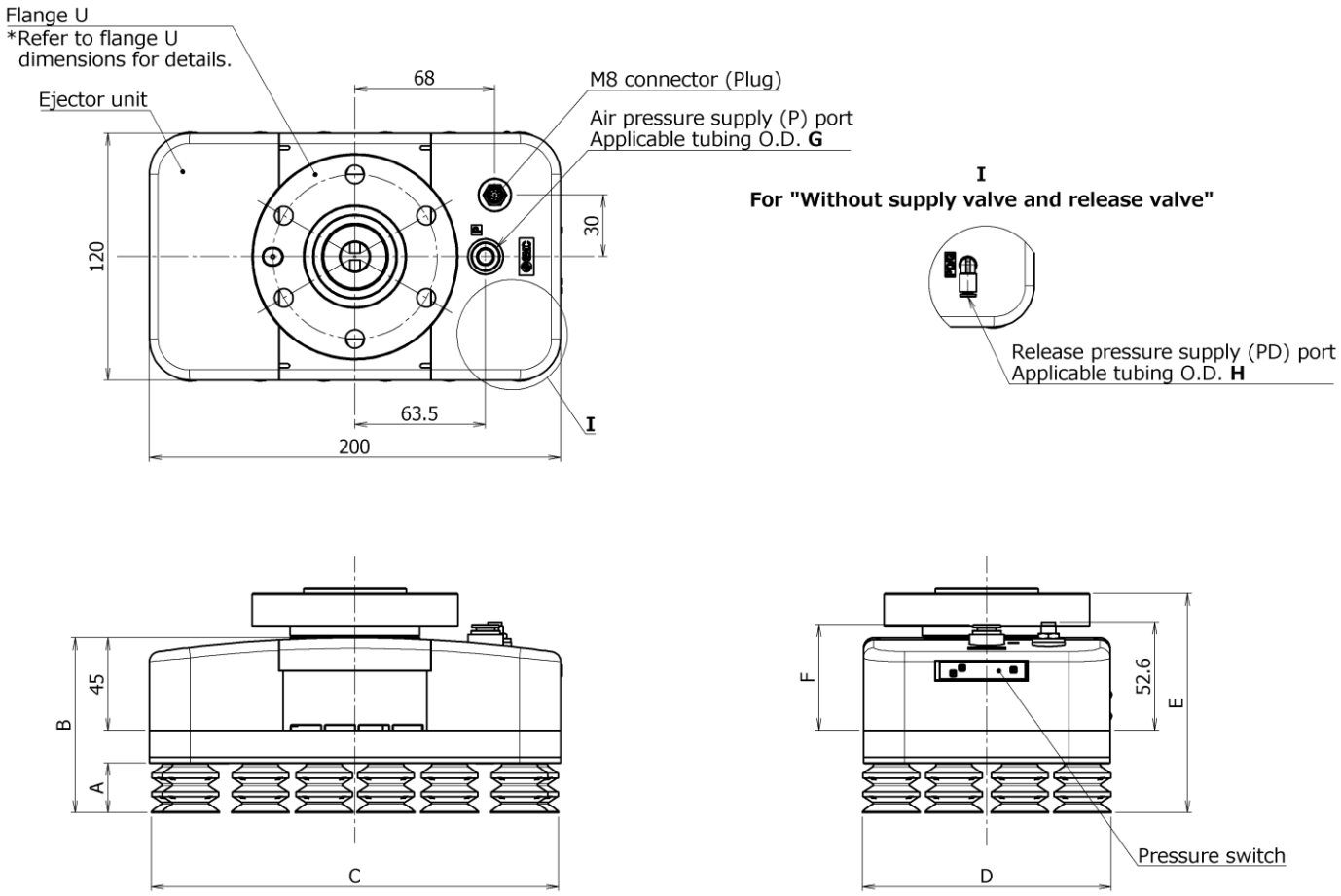


Table 6-11. Dimensions

Part no.	A	B	C	D	E
ZGP012P∗-200120A25-∗∗1∗	24	85	198	121	106.5
ZGP012P∗-200120A50-∗∗1∗	48.5	109.5	215.8	137	131

Part no.	F	G	H
ZGP∗∗-200120∗∗-∗∗∗C8	51.4	ϕ8	ϕ4
ZGP∗∗-200120∗∗-∗∗∗C10	52	ϕ10	
ZGP∗∗-200120∗∗-∗∗∗N9	51.4	ϕ5/16”	ϕ1/8”
ZGP∗∗-200120∗∗-∗∗∗N11	51.9	ϕ3/8”	

6.19. 200mm×120mm
(Robot mounting flange: Tool plate + Main plate + Flange Y)

■Compatible robot : 043P/043N (YASKAWA Electric)

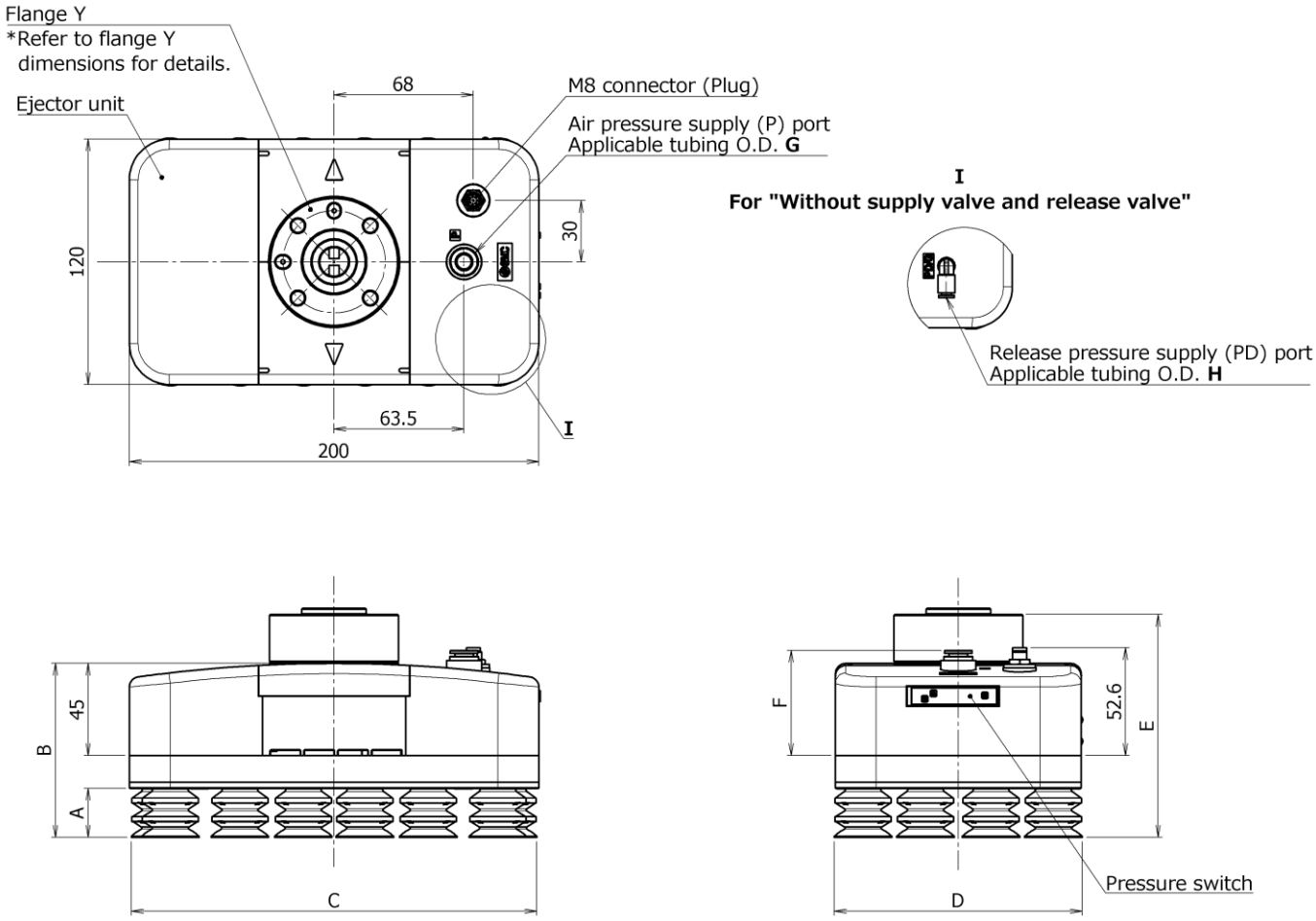


Table 6-12. Dimensions

Part no.	A	B	C	D	E
ZGP043(P/N)∗-200120A25-∗∗1∗	24	85	198	121	109
ZGP043(P/N)∗-200120A50-∗∗1∗	48.5	109.5	215.8	137	133.5

Part no.	F	G	H
ZGP∗∗-200120∗∗-∗∗∗C8	51.4	ϕ8	ϕ4
ZGP∗∗-200120∗∗-∗∗∗C10	52	ϕ10	
ZGP∗∗-200120∗∗-∗∗∗N9	51.4	ϕ5/16”	ϕ1/8”
ZGP∗∗-200120∗∗-∗∗∗N11	51.9	ϕ3/8”	

6.20. 200mm×120mm
(Robot mounting flange: Offset flange)

■Compatible robot : NP/NN/NH (General purpose)
: 011P (UNIVERSAL ROBOTS)
: 021N (OMRON/TECHMAN ROBOT)
: 051P (FANUC)

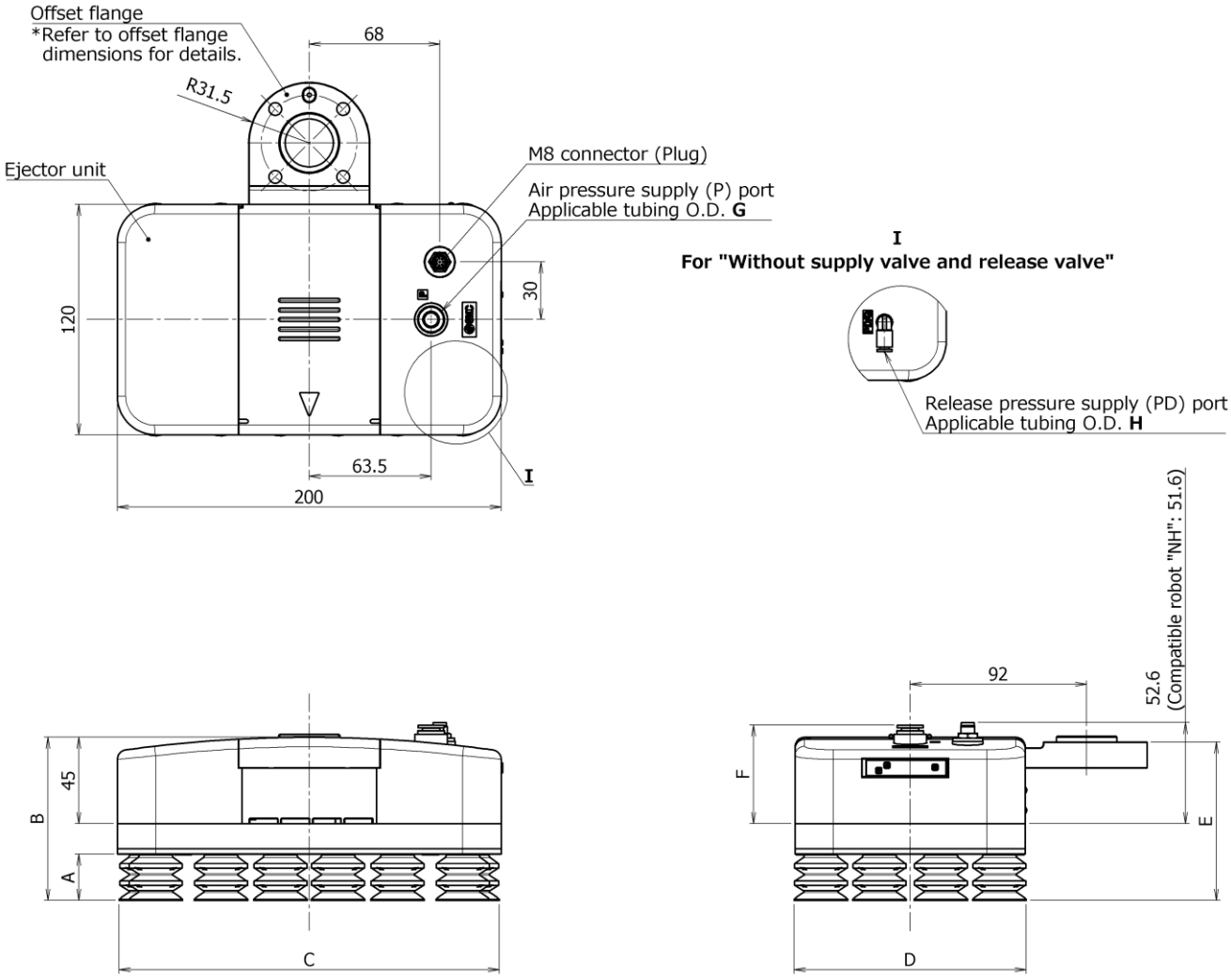


Table 6-13. Dimensions

Part no.	A	B	C	D	E
ZGP**-200120A25-**2*	24	85	198	121	82.5
ZGP**-200120A50-**2*	48.5	109.5	215.8	137	107

Part no.	F	G	H
ZGP**-200120**-***C8	51.4	ϕ8	ϕ4
ZGP**-200120**-***C10	52	ϕ10	
ZGP**-200120**-***N9	51.4	ϕ5/16”	ϕ1/8”
ZGP**-200120**-***N11	51.9	ϕ3/8”	

6.21. 200mm×120mm
(Robot mounting flange: Offset flange + Flange U)

■Compatible robot : 012P (UNIVERSAL ROBOTS)

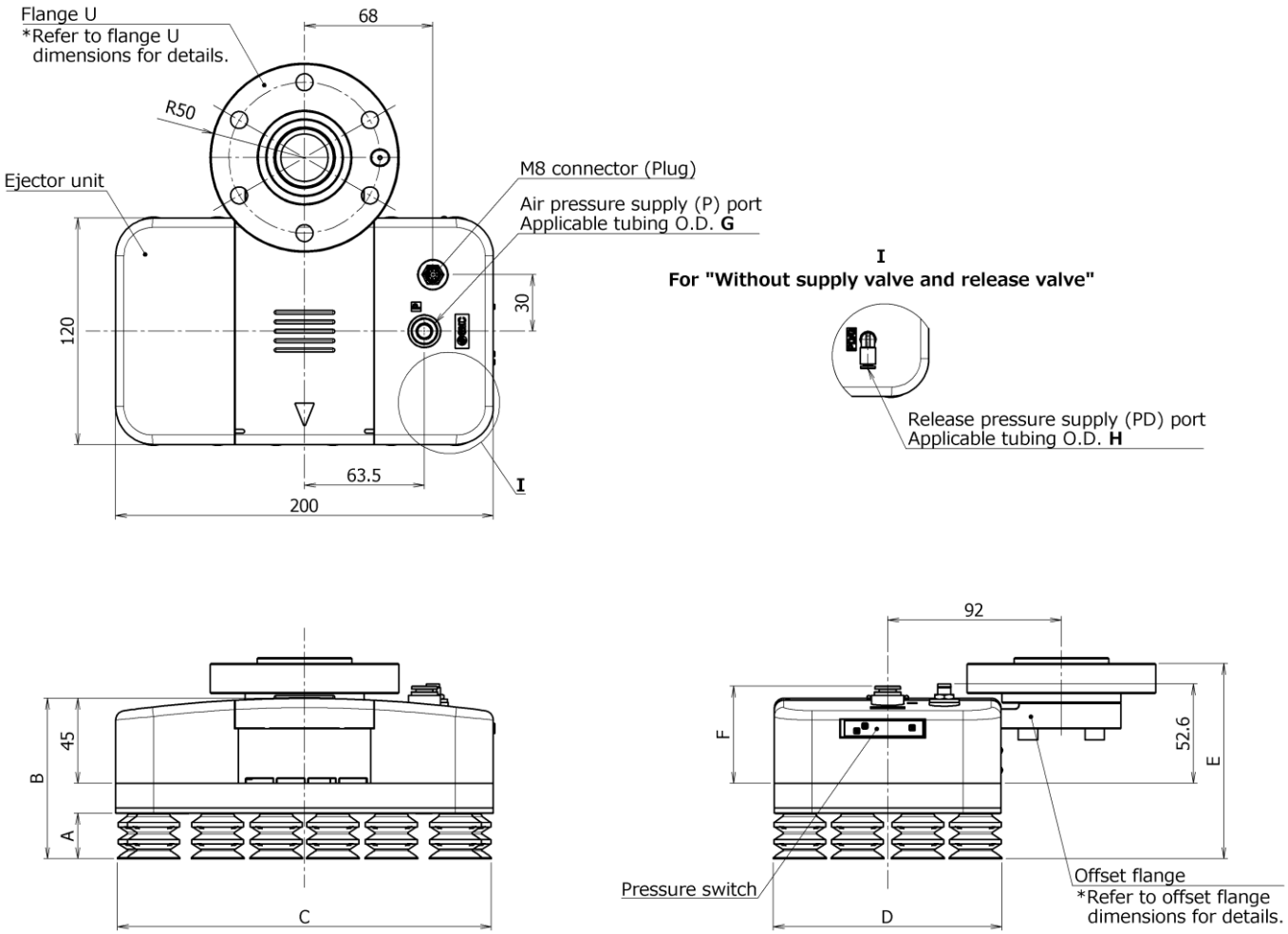


Table 6-14. Dimensions

Part no.	A	B	C	D	E
ZGP012P∗-200120A25-∗∗2∗	24	85	198	121	103.5
ZGP012P∗-200120A50-∗∗2∗	48.5	109.5	215.8	137	128

Part no.	F	G	H
ZGP∗∗-200120∗∗-∗∗∗C8	51.4	ϕ8	ϕ4
ZGP∗∗-200120∗∗-∗∗∗C10	52	ϕ10	
ZGP∗∗-200120∗∗-∗∗∗N9	51.4	ϕ5/16”	ϕ1/8”
ZGP∗∗-200120∗∗-∗∗∗N11	51.9	ϕ3/8”	

6.22. 200mm×120mm
(Robot mounting flange: Offset flange + Flange Y)

■Compatible robot : 043P/043N (YASKAWA Electric)

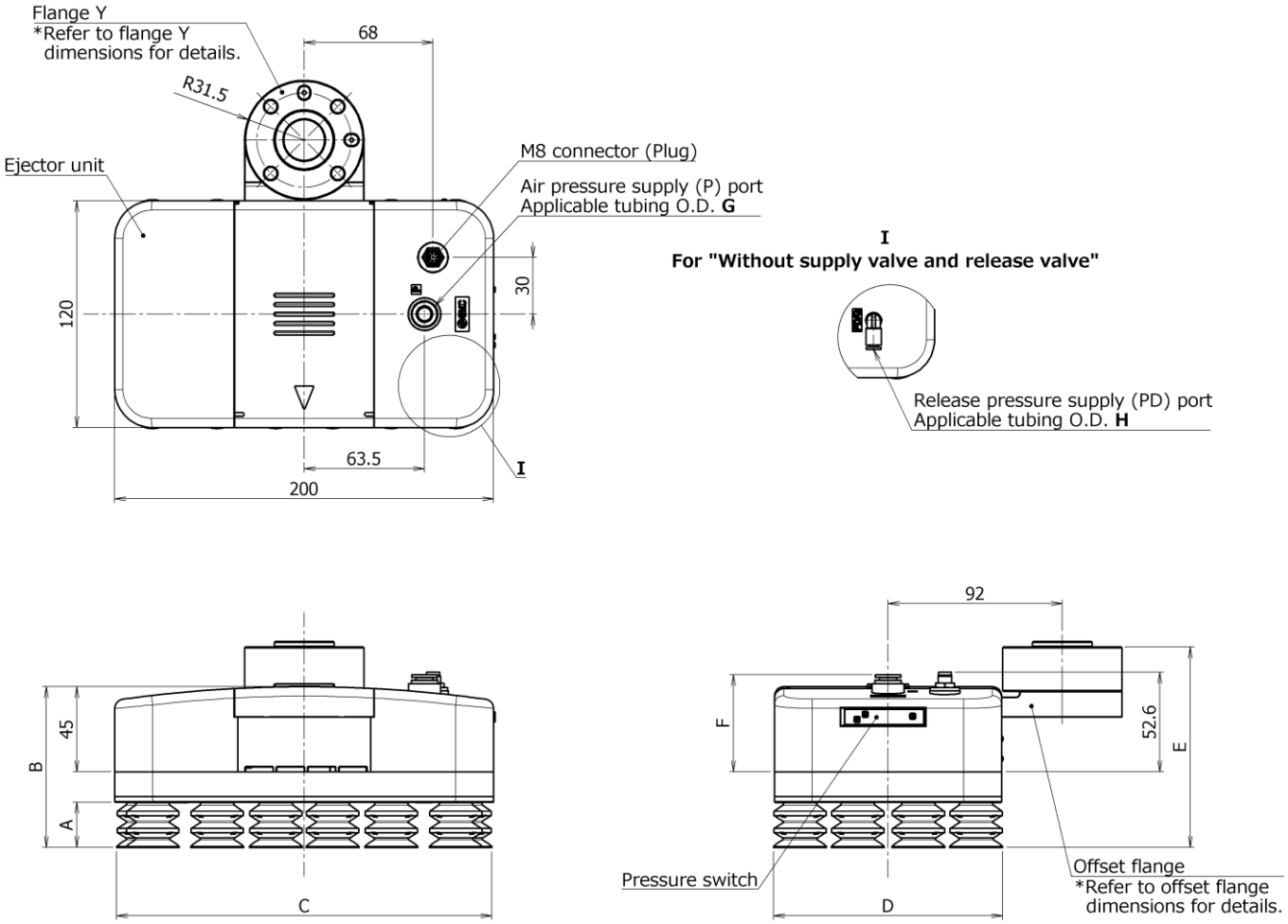


Table 6-15. Dimensions

Part no.	A	B	C	D	E
ZGP043(P/N)∗-200120A25-∗∗2∗	24	85	198	121	106
ZGP043(P/N)∗-200120A50-∗∗2∗	48.5	109.5	215.8	137	130.5

Part no.	F	G	H
ZGP∗∗-200120∗∗-∗∗∗C8	51.4	ϕ8	ϕ4
ZGP∗∗-200120∗∗-∗∗∗C10	52	ϕ10	
ZGP∗∗-200120∗∗-∗∗∗N9	51.4	ϕ5/16”	ϕ1/8”
ZGP∗∗-200120∗∗-∗∗∗N11	51.9	ϕ3/8”	

6.23. 200mm×120mm
(Robot mounting flange: Straight flange)

■Compatible robot : NP/NN/NH (General purpose)
: 011P (UNIVERSAL ROBOTS)
: 043P/043N (YASKAWA Electric)
: 051P (FANUC)

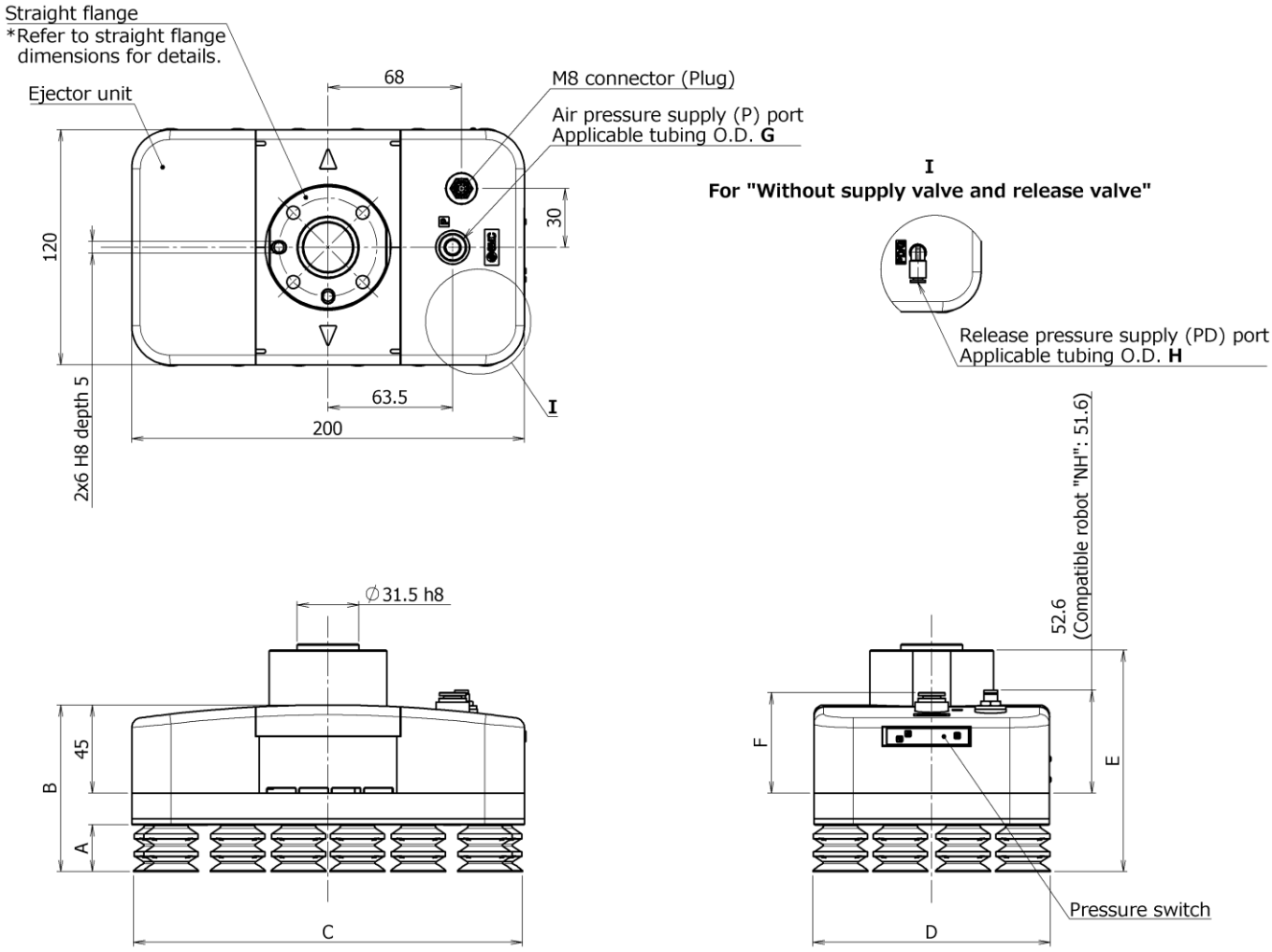


Table 6-16. Dimensions

Part no.	A	B	C	D	E
ZGP**-200120A25-**4*	24	85	198	121	113
ZGP**-200120A50-**4*	48.5	109.5	215.8	137	137.5

Part no.	F	G	H
ZGP**-200120**-***C8	51.4	ϕ8	ϕ4
ZGP**-200120**-***C10	52	ϕ10	
ZGP**-200120**-***N9	51.4	ϕ5/16”	ϕ1/8”
ZGP**-200120**-***N11	51.9	ϕ3/8”	

6.24. 200mm×120mm
(Robot mounting flange: Straight flange + Flange U)

■Compatible robot : 012P (UNIVERSAL ROBOTS)

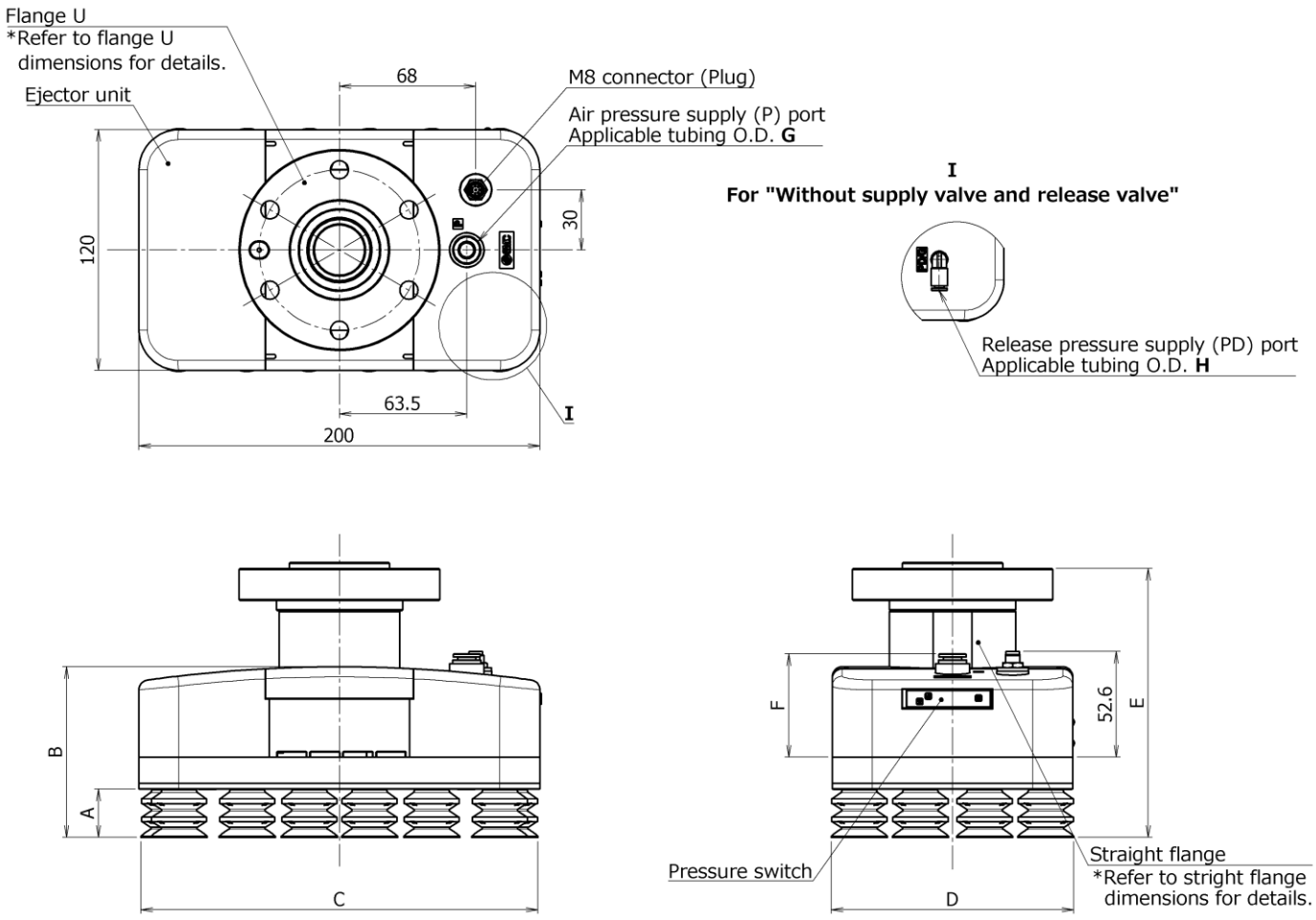


Table 6-17. Dimensions

Part no.	A	B	C	D	E
ZGP012P∗-200120A25-∗∗4∗	24	85	198	121	134
ZGP012P∗-200120A50-∗∗4∗	48.5	109.5	215.8	137	158.5

Part no.	F	G	H
ZGP∗∗-200120∗∗-∗∗∗C8	51.4	ϕ8	ϕ4
ZGP∗∗-200120∗∗-∗∗∗C10	52	ϕ10	
ZGP∗∗-200120∗∗-∗∗∗N9	51.4	ϕ5/16”	ϕ1/8”
ZGP∗∗-200120∗∗-∗∗∗N11	51.9	ϕ3/8”	

6.25. 200mm×120mm
(Robot mounting flange: Without robot mounting flange)

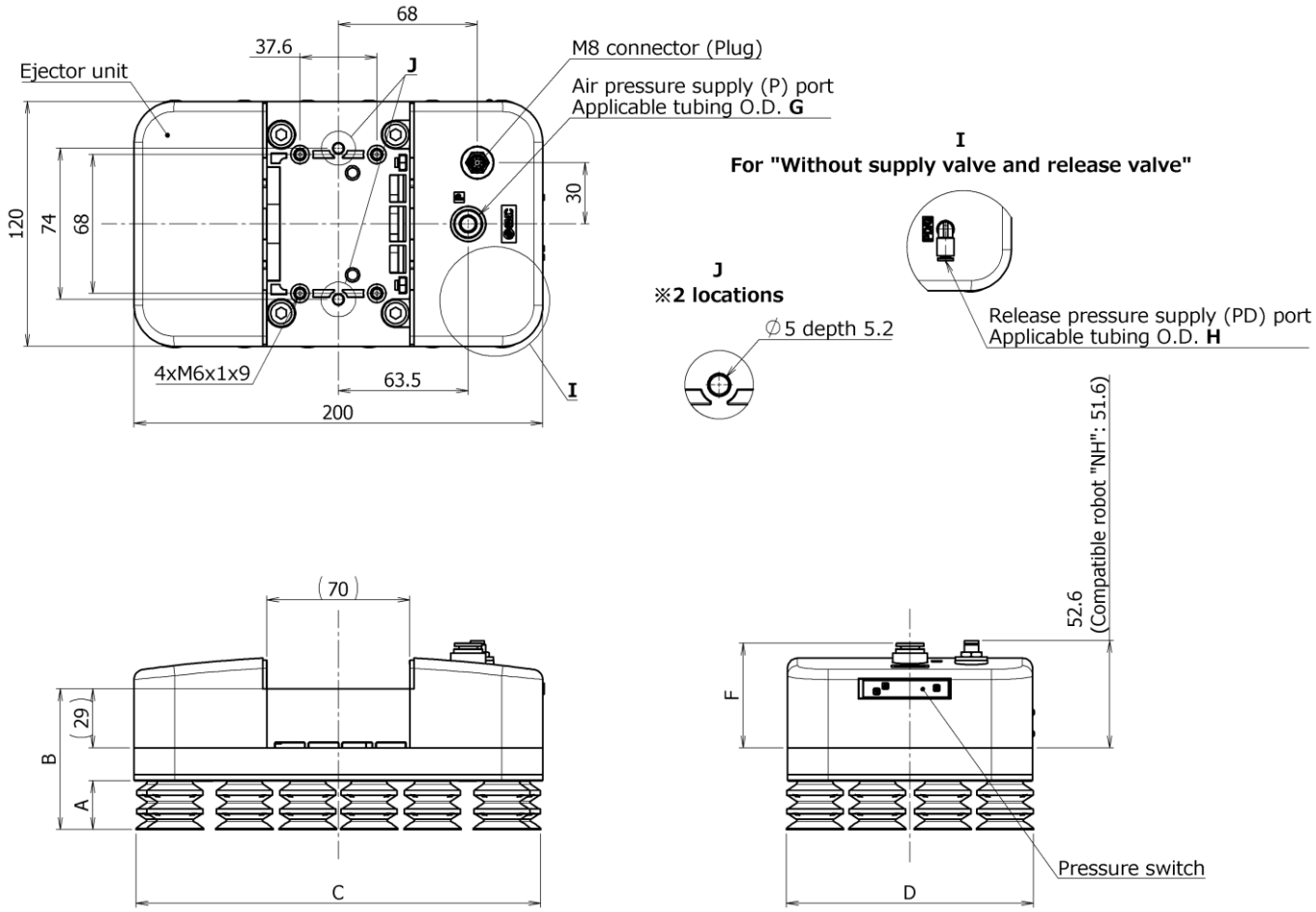


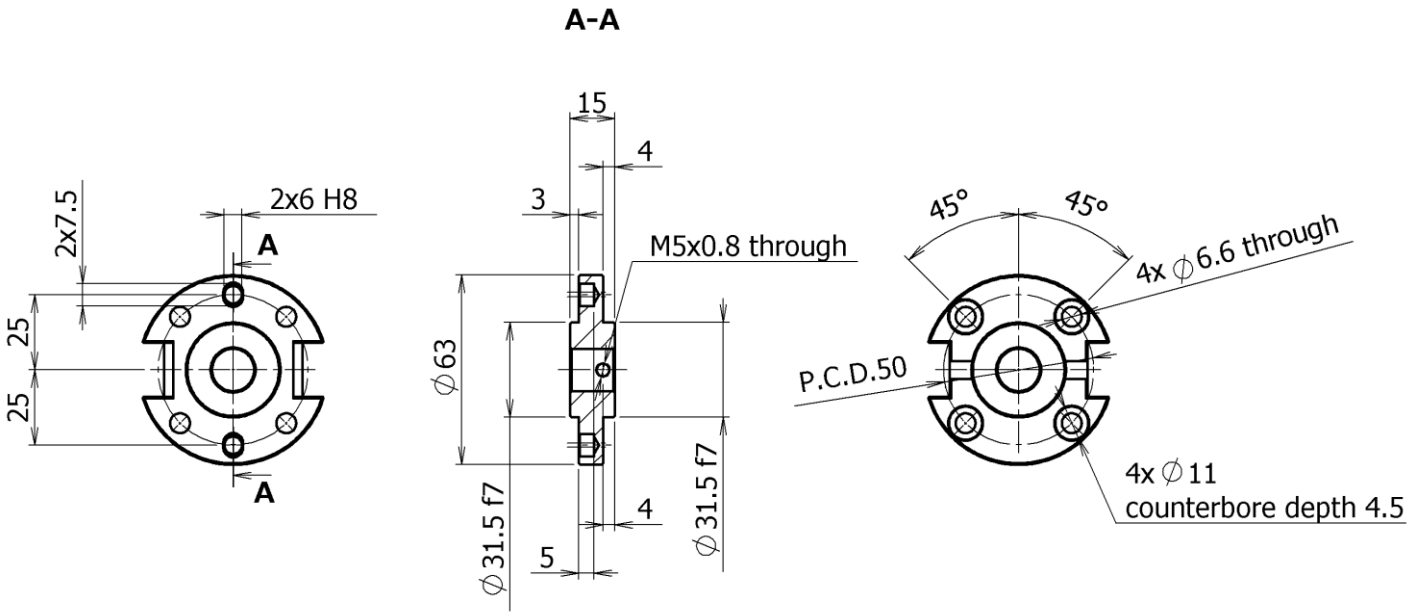
Table 6-18. Dimensions

Part no.	A	B	C	D
ZGP**-200120A25-**_*	24	69	198	121
ZGP**-200120A50-**_*	48.5	93.5	215.8	137

Part no.	F	G	H
ZGP**-200120**-***C8	51.4	ϕ8	ϕ4
ZGP**-200120**-***C10	52	ϕ10	
ZGP**-200120**-***N9	51.4	ϕ5/16”	ϕ1/8”
ZGP**-200120**-***N11	51.9	ϕ3/8”	

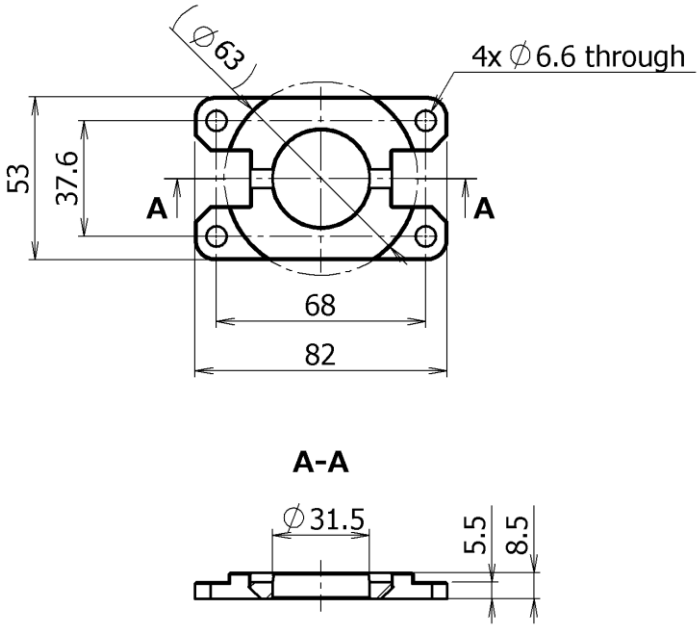
6.26. Main plate

■Regarding part number, refer to "Replacement part number" table below.



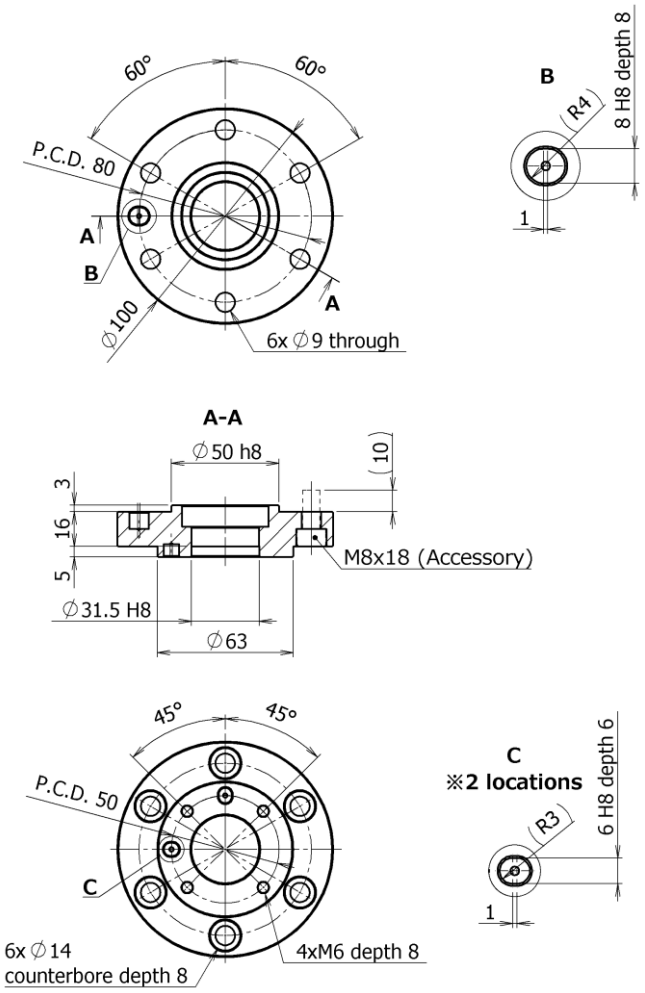
6.27. Tool plate

■Regarding part number, refer to "Replacement part number" table below.



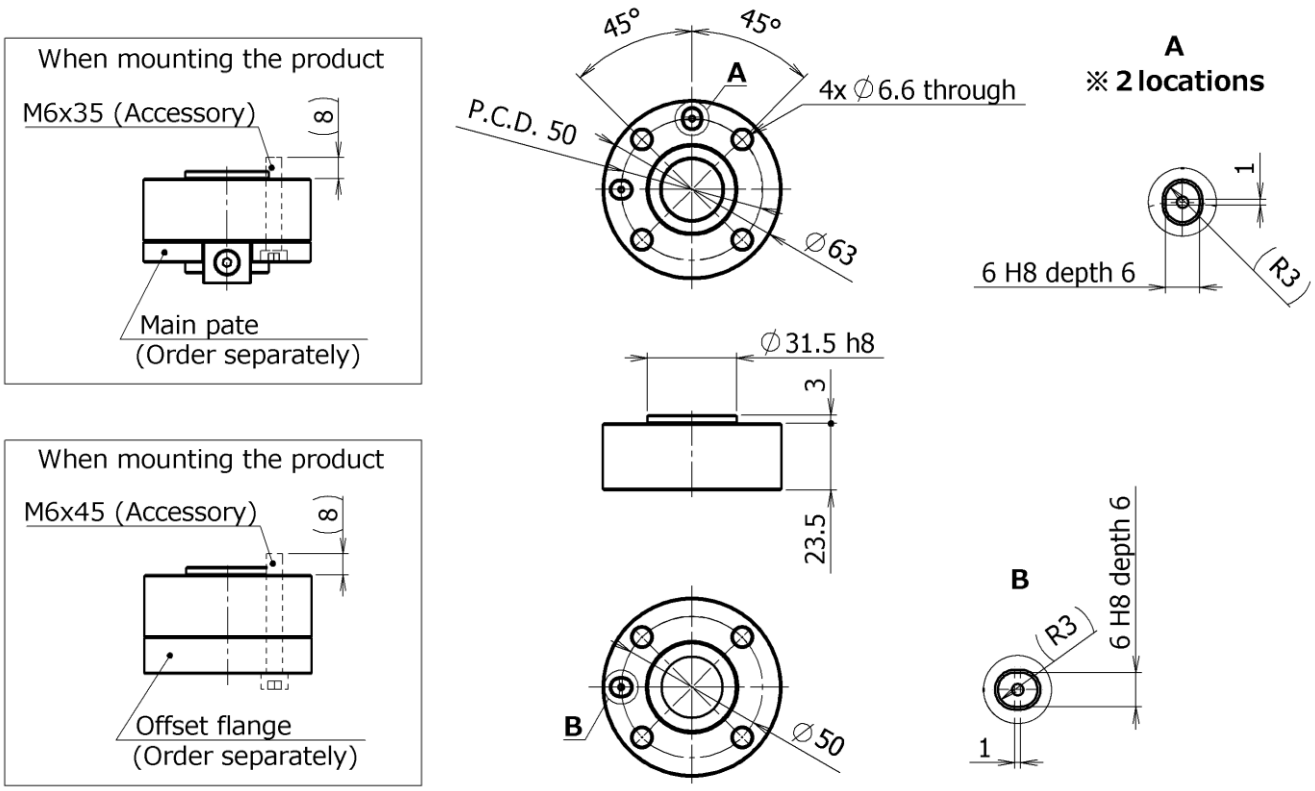
6.28. Flange U

■Regarding part number, refer to "Replacement part number" table below.



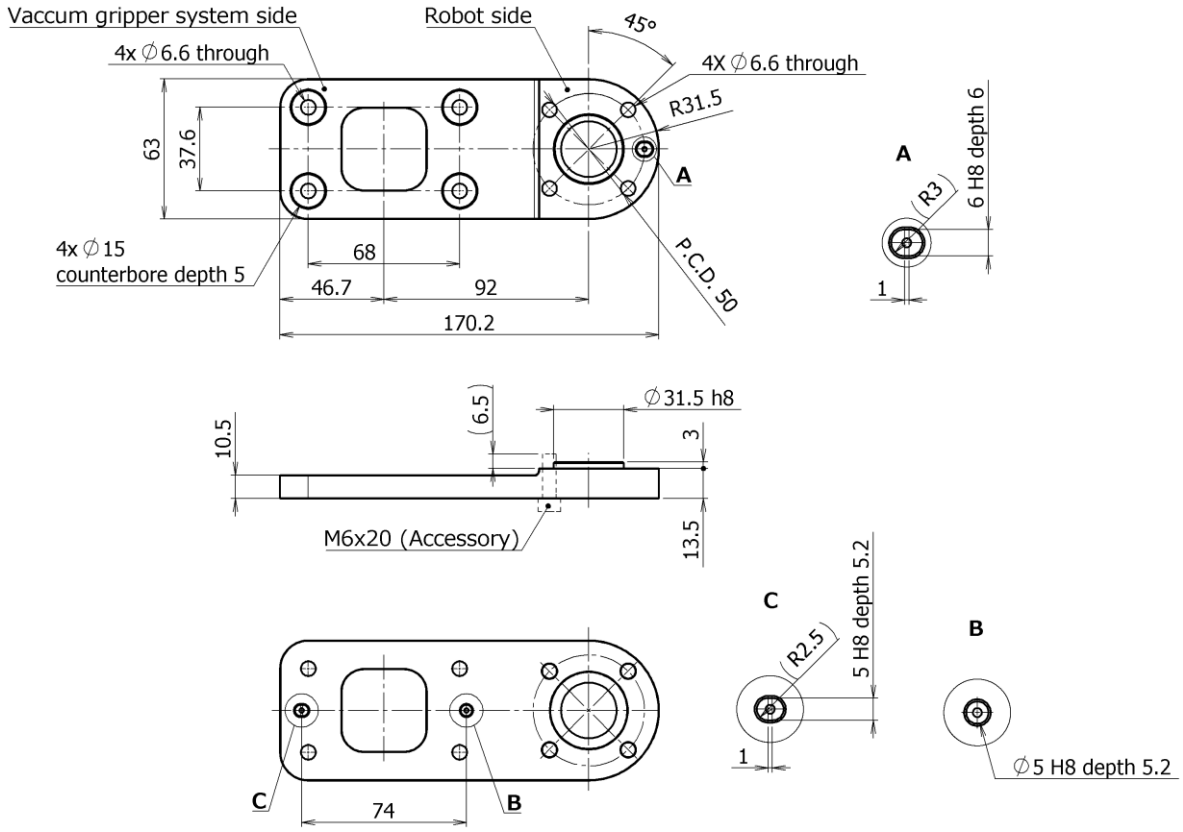
6.29. Flange Y

■Regarding part number, refer to "Replacement part number" table below.



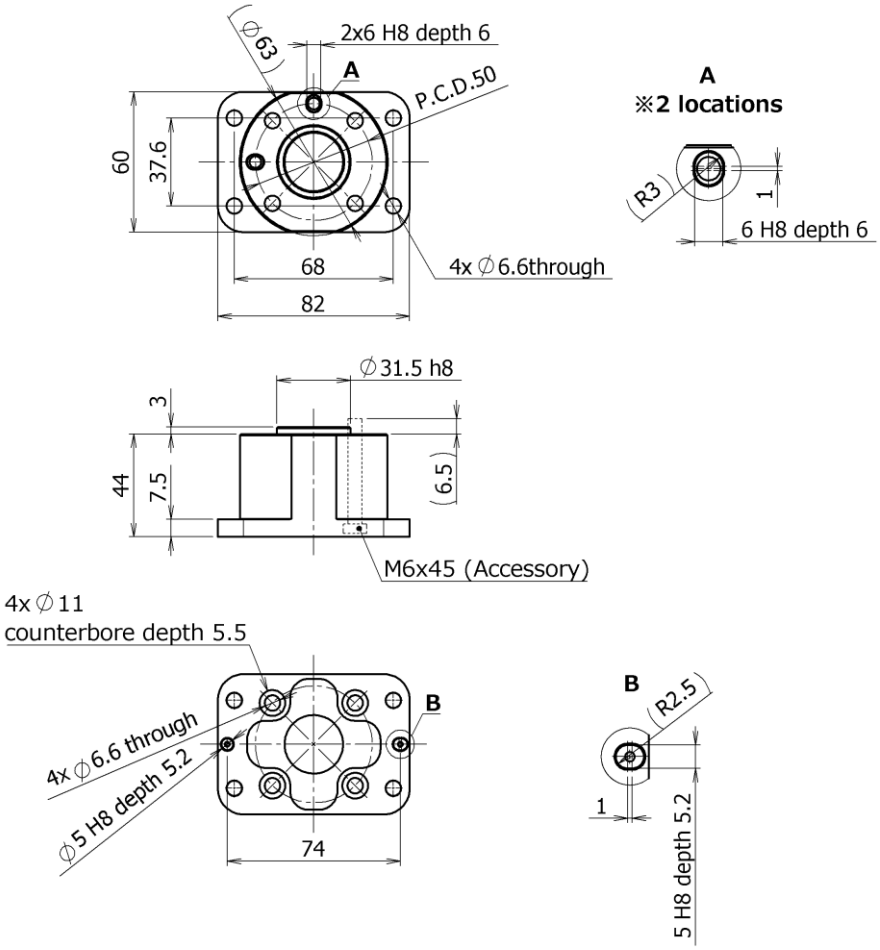
6.30. Offset flange

■Regarding part number, refer to "Replacement part number" table below.



6.31. Straight flange

■Regarding part number, refer to "Replacement part number" table below.



6.32. Tool center point (T.C.P.), Center of gravity (C.O.G.) and Weight

■300mmx180mm

■Robot mounting flange: Tool plate + Main plate

Fig 1. Tool plate + Main plate

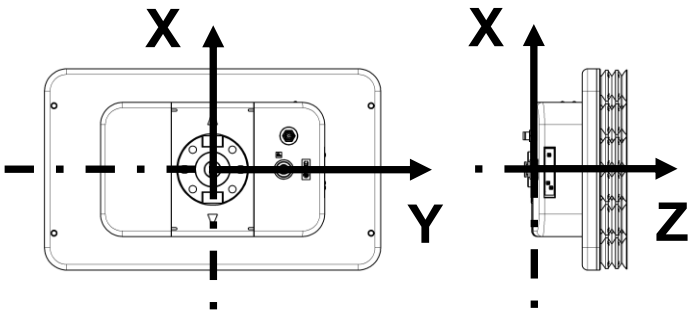


Fig 2. Tool plate + Main plate + Flange U

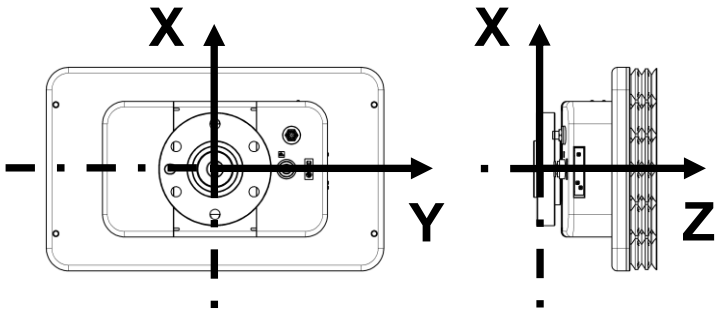


Fig 3. Tool plate + Main plate + Flange Y

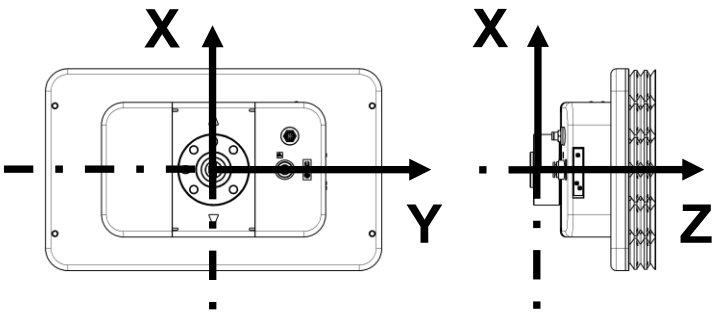


Table 7-1. T.C.P. and C.O.G. (mm)

		ZGP**－300180**A25**－**1* Cup size: ϕ25			ZGP**－300180**A50**－**1* Cup size: ϕ50		
		X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	Fig 1	0	0	85.5	0	0	110
	Fig 2	0	0	106.5	0	0	131
	Fig 3	0	0	109	0	0	133.5
Center of gravity (C.O.G.)	Fig 1	0	3	44	0	2	51
	Fig 2	0	2	56	0	2	63
	Fig 3	0	2	63	0	2	71

Table 7-2. Weight (kg)

		ZGP**－300180**A25**－**1* Cup size: ϕ25	ZGP**－300180**A50**－**1* Cup size: ϕ50
Weight	Fig 1	2.2	2.5
	Fig 2	2.6	2.9
	Fig 3	2.4	2.7

*) When using plugs, refer to Page 101 and calculate weight as needed.

■Robot mounting flange: Offset flange

Fig 4. Offset flange

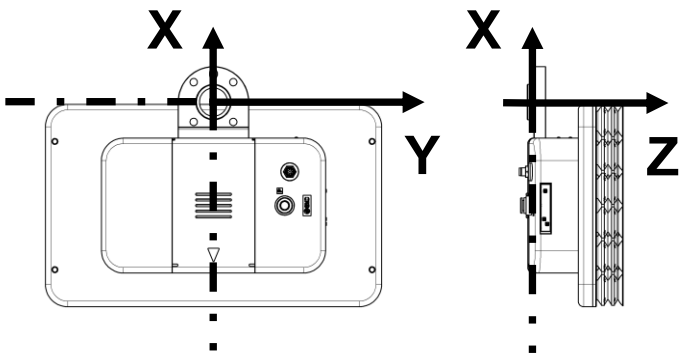


Fig 5. Offset flange + Flange U

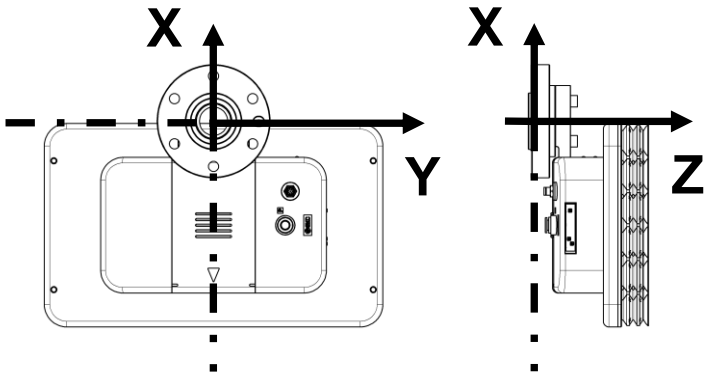


Fig 6. Offset flange + Flange Y

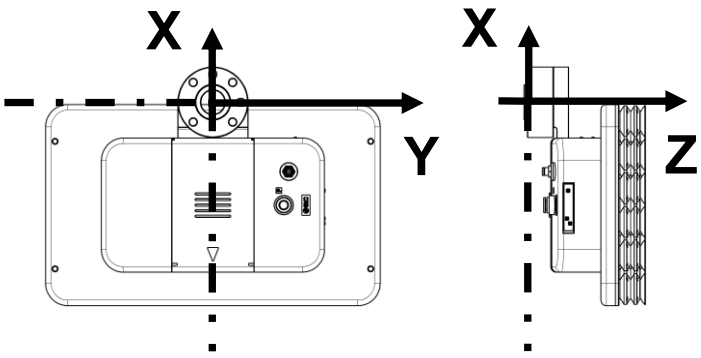


Table 7-3. T.C.P. and C.O.G. (mm)

		ZGP**－300180**A25**－**2* Cup size: ϕ25			ZGP**－300180**A50**－**2* Cup size: ϕ50		
		X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	Fig 4	-92	0	82.5	-92	0	107
	Fig 5	-92	0	103.5	-92	0	128
	Fig 6	-92	0	106	-92	0	130.5
Center of gravity (C.O.G.)	Fig 4	-86	2	40	-87	2	47
	Fig 5	-73	2	53	-75	2	60
	Fig 6	-80	2	59	-81	2	67

Table 7-4. Weight (kg)

		ZGP**－300180**A25**－**2* Cup size: ϕ25	ZGP**－300180**A50**－**2* Cup size: ϕ50
Weight	Fig 4	2.3	2.6
	Fig 5	2.7	3.0
	Fig 6	2.5	2.8

*) When using plugs, refer to Page 101 and calculate weight as needed.

■Robot mounting flange: Straight flange

Fig 7. Straight flange

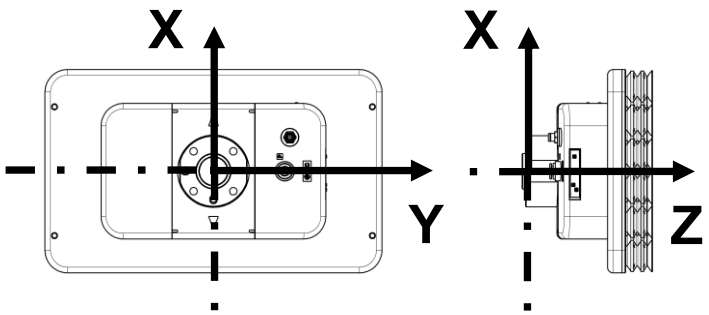


Fig 8. Straight flange + Flange U

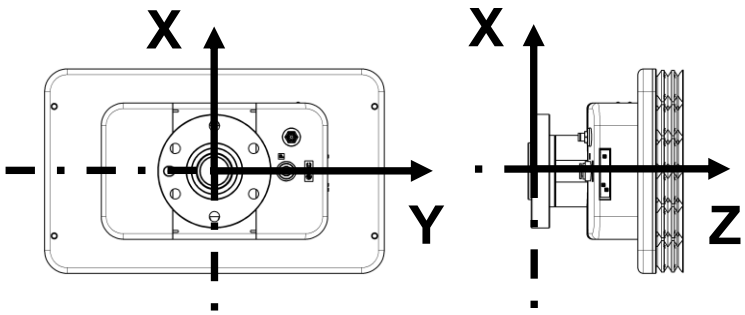


Table 7-5. T.C.P. and C.O.G. (mm)

		ZGP**−300180**A25**−**4* Cup size: ϕ25			ZGP**−300180**A50**−**4* Cup size: ϕ50		
		X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	Fig 7	0	0	113	0	0	137.5
	Fig 8	0	0	134	0	0	158.5
Center of gravity (C.O.G.)	Fig 7	0	2	69	0	2	76
	Fig 8	0	2	77	0	2	85

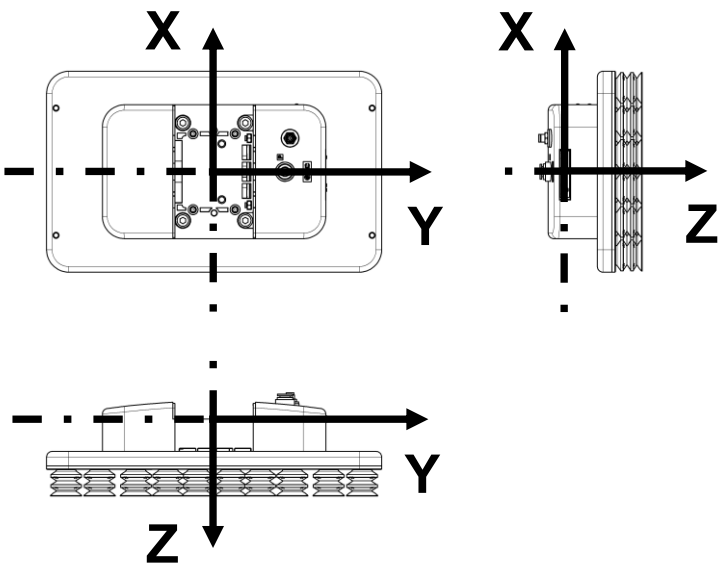
Table 7-6. Weight (kg)

		ZGP**−300180**A25**−**4* Cup size: ϕ25	ZGP**−300180**A50**−**4* Cup size: ϕ50
Weight	Fig 7	2.3	2.6
	Fig 8	2.7	3.0

*) When using plugs, refer to Page 101 and calculate weight as needed.

■Robot mounting flange: Without robot mounting flange

Fig 9. Without robot mounting flange



When using a flange that you prepare yourself, calculate T.C.P., C.O.G and weight using the values in the tables below.

Table 7-7. T.C.P. and C.O.G. (mm)

		ZGP**－300180**A25**－**_* Cup size: ϕ25			ZGP**－300180**A50**－**_* Cup size: ϕ50		
		X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	Fig 9	0	0	69	0	0	93.5
Center of gravity (C.O.G.)	Fig 9	0	3	32	0	2	39

Table 7-8. Weight (kg)

		ZGP**－300180**A25**－**_* Cup size: ϕ25	ZGP**－300180**A50**－**_* Cup size: ϕ50
Weight	Fig 9	2.0	2.3

*) When using plugs, refer to Page 101 and calculate weight as needed.

■200mmx120mm

■Robot mounting flange: Tool plate + Main plate

Fig 10. Tool plate + Main plate

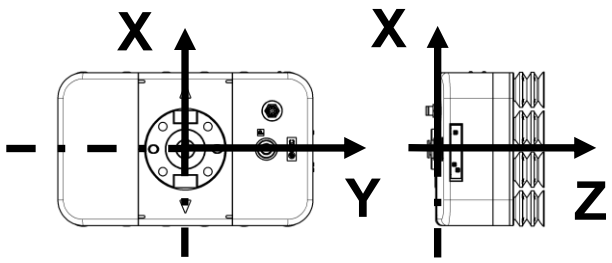


Fig 11. Tool plate + Main plate + Flange U

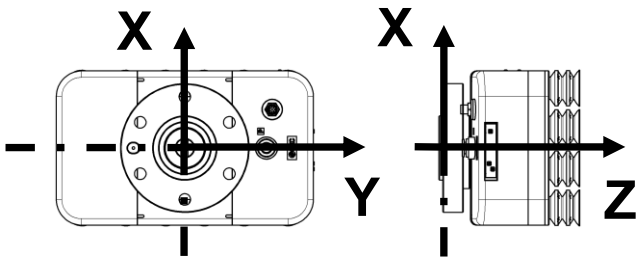


Fig 12. Tool plate + Main plate + Flange Y

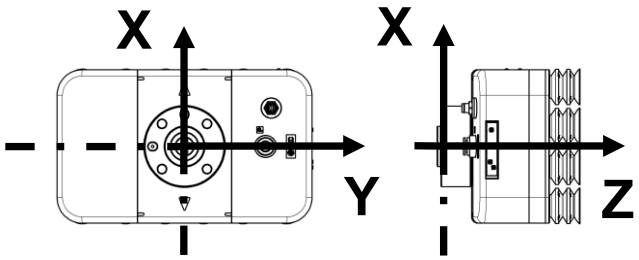


Table 7-9. T.C.P. and C.O.G. (mm)

		ZGP**－200120**A25**－**1* Cup size: ϕ25			ZGP**－200120**A50**－**1* Cup size: ϕ50		
		X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	Fig 10	0	0	85.5	0	0	110
	Fig 11	0	0	106.5	0	0	131
	Fig 12	0	0	109	0	0	133.5
Center of gravity (C.O.G.)	Fig 10	1	3	37	1	3	44
	Fig 11	1	3	47	0	2	54
	Fig 12	1	3	55	1	3	62

Table 7-10. Weight (kg)

		ZGP**－200120**A25**－**1* Cup size: ϕ25	ZGP**－200120**A50**－**1* Cup size: ϕ50
Weight	Fig 10	1.5	1.7
	Fig 11	1.9	2.1
	Fig 12	1.7	1.9

*) When using plugs, refer to Page 101 and calculate weight as needed.

■Roboto mounting flange: Offset flange

Fig 13. Offset flange

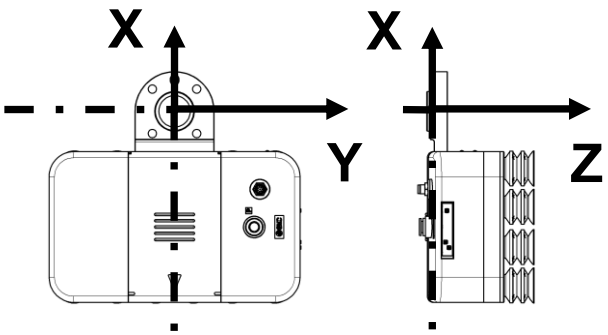


Fig 14. Offset flange + Flange U

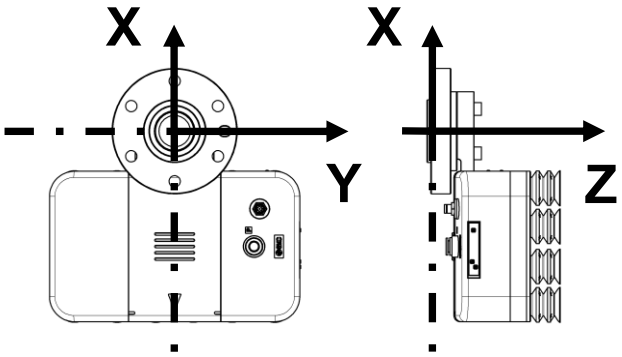


Fig 15. Offset flange + Flange Y

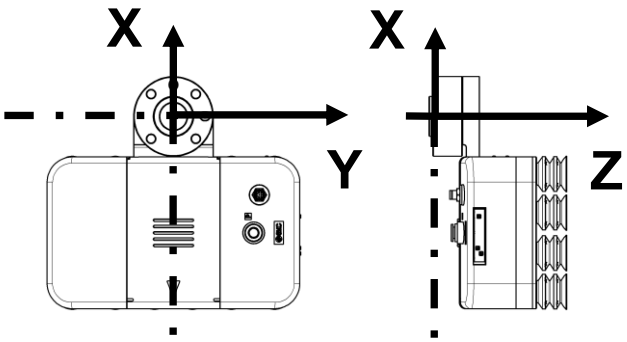


Table 7-11. T.C.P. and C.O.G. (mm)

		ZGP**－200120**A25**－**2* Cup size: ϕ25			ZGP**－200120**A50**－**2* Cup size: ϕ50		
		X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	Fig 13	-92	0	82.5	-92	0	107
	Fig 14	-92	0	103.5	-92	0	128
	Fig 15	-92	0	106	-92	0	130.5
Center of gravity (C.O.G.)	Fig 13	-83	3	32	-85	3	39
	Fig 14	-66	3	44	-69	2	51
	Fig 15	-75	3	51	-77	3	58

Table 7-12. Weight (kg)

		ZGP**－200120**A25**－**2* Cup size: ϕ25	ZGP**－200120**A50**－**2* Cup size: ϕ50
Weight	Fig 13	1.6	1.8
	Fig 14	2.0	2.2
	Fig 15	1.8	2.0

*) When using plugs, refer to Page 101 and calculate weight as needed.

■Robot mounting flange: Straight flange

Fig 16. Straight flange

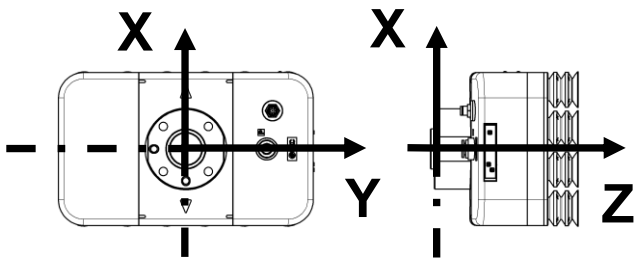


Fig 17. Straight flange + Flange U

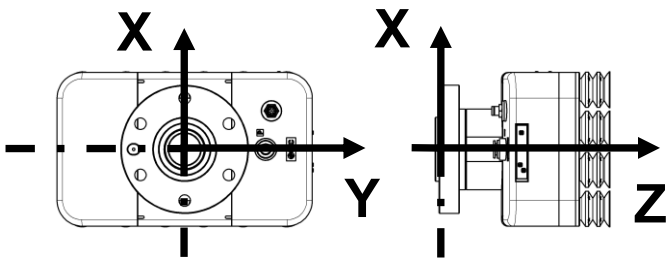


Table 7-13. T.C.P. and C.O.G. (mm)

		ZGP**−200120**A25**−**4* Cup size: ϕ25			ZGP**−200120**A50**−**4* Cup size: ϕ50		
		X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	Fig 16	0	0	113	0	0	137.5
	Fig 17	0	0	134	0	0	158.5
Center of gravity (C.O.G.)	Fig 16	1	3	61	1	3	68
	Fig 17	0	2	66	0	2	74

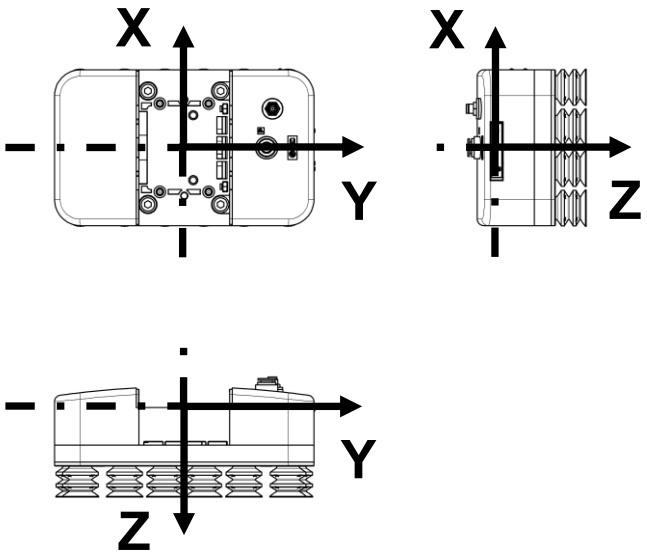
Table 7-14. Weight (kg)

		ZGP**−200120**A25**−**4* Cup size: ϕ25	ZGP**−200120**A50**−**4* Cup size: ϕ50
Weight	Fig 16	1.6	1.8
	Fig 17	2.0	2.2

*) When using plugs, refer to Page 101 and calculate weight as needed.

■Robot mounting flange: Without robot mounting flange

Fig 18. Without robot mounting flange



When using a flange that you prepare yourself, calculate T.C.P., C.O.G and weight using the values in the tables below.

Table 7-15. T.C.P. and C.O.G. (mm)

		ZGP**－200120**A25**－**4* Cup size: ϕ25			ZGP**－200120**A50**－**4* Cup size: ϕ50		
		X	Y	Z	X	Y	Z
Tool center point (T.C.P.)	Fig 18	0	0	69	0	0	93.5
Center of gravity (C.O.G.)	Fig 18	1	4	25	1	3	33

Table 7-16. Weight (kg)

		ZGP**－200120**A25**－**_* Cup size: ϕ25	ZGP**－200120**A50**－**_* Cup size: ϕ50
Weight	Fig 18	1.3	1.5

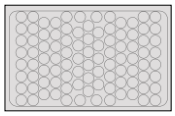
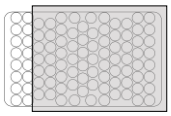
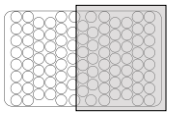
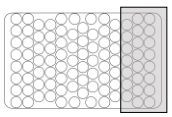
*) When using plugs, refer to Page 101 and calculate weight as needed.

7. Technical information

7.1. Lifting force for each suction area

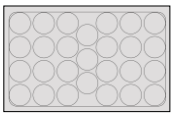
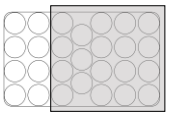
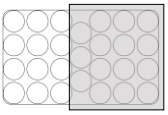
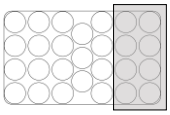
■400mmx240mm

Suction cup size	φ25

Number of ejector assemblies [pcs]	Standard supply pressure [MPa] *4)	Suction area [%] *5)		100%	About 85%	About 55%	About 25%
		Number of suction holes [pcs]		96/96	80/96	51/96	23/96
		Workpiece：Acrylic plate					
2	0.58	Vacuum pressure [kPa] *1)		-75.0	-63.3	-4.5	-1.9
		Lifting force[N] *2)		2144	1379	- *6)	- *6)
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	536	344	-	-
			Vertical lifting (Safety factor : 8)	268	172	-	-
4	0.6	Vacuum pressure [kPa] *1)		-75.0	-72.0	-61.8	-6.2
		Lifting force[N] *2)		2144	1600	702	- *6)
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	536	400	175	-
			Vertical lifting (Safety factor : 8)	268	200	87	-
6	0.6	Vacuum pressure [kPa] *1)		-75.0	-72.4	-65.7	-58.7
		Lifting force[N] *2)		2144	1603	746	305
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	536	400	186	76
			Vertical lifting (Safety factor : 8)	268	200	93	38

*1) The vacuum pressure is the actual measured value when non-leakage workpiece (acrylic plate) is suctioned at the standard supply pressure. It is not guaranteed values.
*2) The lifting force is an actual value measured by SMC at the above vacuum pressure and is not a guaranteed value. It is necessary to judge the suitability for the workpiece with actual condition of use.
*3) Make sure the load factor is 1 or less during pick and place.
For details, refer to the section "7.2. Max. allowable moment and load".
*4) This is the pressure immediately before the air pressure supply (P) port of the vacuum gripper system during suction. It is affected by air supply capacity, pipe size, air consumption of other equipment operating simultaneously, etc. During vacuum generation, the pressure immediately before the air pressure supply (P) port of the vacuum gripper system may fall below the standard supply pressure.
*5) Vacuum saving valve may not be activated when suction area is small.
*6) This indicates that vacuum saving valves don't work.

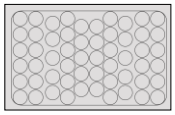
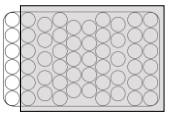
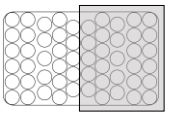
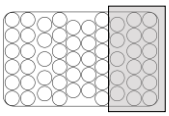
Suction cup size	φ50

Number of ejector assemblies [pcs]	Standard supply pressure [MPa] *4)	Suction area [%] *5)		100%	About 70%	About 55%	About 30%
		Number of suction holes [pcs]		27/27	19/27	15/27	8/27
		Workpiece : Acrylic plate					
2	0.58	Vacuum pressure [kPa] *1)		-75.0	-54.8	-17.8	-8.5
		Lifting force[N] *2)		2144	1044	- *6)	- *6)
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	536	261	-	-
			Vertical lifting (Safety factor : 8)	268	130	-	-
4	0.6	Vacuum pressure [kPa] *1)		-75.0	-66.4	-59.5	-51.0
		Lifting force[N] *2)		2144	1238	680	328
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	536	309	170	82
			Vertical lifting (Safety factor : 8)	268	154	85	41
6	0.6	Vacuum pressure [kPa] *1)		-75.0	-68.5	-63.8	-57.2
		Lifting force[N] *2)		2144	1260	715	356
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	536	315	178	89
			Vertical lifting (Safety factor : 8)	268	157	89	44

*1) The vacuum pressure is the actual measured value when non-leakage workpiece (acrylic plate) is suctioned at the standard supply pressure. It is not guaranteed values.
*2) The lifting force is an actual value measured by SMC at the above vacuum pressure and is not a guaranteed value. It is necessary to judge the suitability for the workpiece with actual condition of use.
*3) Make sure the load factor is 1 or less during pick and place.
For details, refer to the section "7.2. Max. allowable moment and load".
*4) This is the pressure immediately before the air pressure supply (P) port of the vacuum gripper system during suction. It is affected by air supply capacity, pipe size, air consumption of other equipment operating simultaneously, etc. During vacuum generation, the pressure immediately before the air pressure supply (P) port of the vacuum gripper system may fall below the standard supply pressure.
*5) Vacuum saving valve may not be activated when suction area is small.
*6) This indicates that vacuum saving valves don't work.

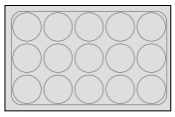
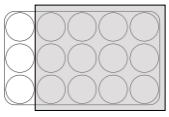
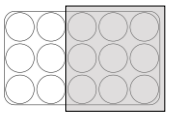
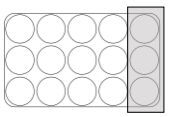
■300mmx180mm

Suction cup size	φ25

Number of ejector assemblies [pcs]	Standard supply pressure [MPa] *4)	Suction area [%] *5)		100%	About 90%	50%	About 30%
		Number of suction holes [pcs]		56/56	50/56	28/56	17/56
		Workpiece : Acrylic plate					
1	0.45	Vacuum pressure [kPa] *1)		-63.0	-56.6	-3.2	-1.8
		Lifting force[N] *2)		880 (400)	588 (400)	- *6)	- *6)
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	220 (100)	147 (100)	-	-
			Vertical lifting (Safety factor : 8)	110 (50)	73 (50)	-	-
2	0.45	Vacuum pressure [kPa] *1)		-62.0	-58.2	-48.0	-5.8
		Lifting force[N] *2)		880 (400)	608 (400)	298	- *6)
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	220 (100)	152 (100)	74	-
			Vertical lifting (Safety factor : 8)	110 (50)	76 (50)	37	-
3	0.45	Vacuum pressure [kPa] *1)		-60.0	-57.5	-50.2	-47.3
		Lifting force[N] *2)		880 (400)	605 (400)	312	176
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	220 (100)	151 (100)	78	44
			Vertical lifting (Safety factor : 8)	110 (50)	75 (50)	39	22

*1) The vacuum pressure is the actual measured value when non-leakage workpiece (acrylic plate) is suctioned at the standard supply pressure. It is not guaranteed values.
*2) The lifting force is an actual value measured by SMC at the above vacuum pressure and is not a guaranteed value. It is necessary to judge the suitability for the workpiece with actual condition of use.
*3) Make sure the load factor is 1 or less during pick and place.
For details, refer to the section "7.2. Max. allowable moment and load".
*4) This is the pressure immediately before the air pressure supply (P) port of the vacuum gripper system during suction. It is affected by air supply capacity, pipe size, air consumption of other equipment operating simultaneously, etc. During vacuum generation, the pressure immediately before the air pressure supply (P) port of the vacuum gripper system may fall below the standard supply pressure.
*5) Vacuum saving valve may not be activated when suction area is small.
*6) This indicates that vacuum saving valves don't work.

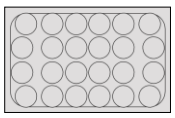
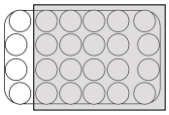
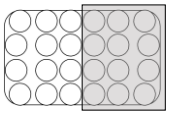
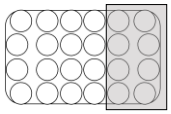
Suction cup size	φ50

Number of ejector assemblies [pcs]	Standard supply pressure [MPa] *4)	Suction area [%] *5)		100%	80%	60%	20%
		Number of suction holes [pcs]		15/15	12/15	9/15	3/15
		Workpiece : Acrylic plate					
1	0.45	Vacuum pressure [kPa] *1)		-63.0	-50.3	-14.8	-6.1
		Lifting force[N] *2)		880 (400)	452 (400)	- *6)	- *6)
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	220 (100)	113 (100)	-	-
			Vertical lifting (Safety factor : 8)	110 (50)	56 (50)	-	-
2	0.45	Vacuum pressure [kPa] *1)		-62.0	-54.8	-49.6	-15.2
		Lifting force[N] *2)		880 (400)	473 (400)	335	- *6)
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	220 (100)	118 (100)	83	-
			Vertical lifting (Safety factor : 8)	110 (50)	59 (50)	41	-
3	0.45	Vacuum pressure [kPa] *1)		-60.0	-54.9	-51.0	-44.4
		Lifting force[N] *2)		880 (400)	483 (400)	344	109
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	220 (100)	120 (100)	86	27
			Vertical lifting (Safety factor : 8)	110 (50)	60 (50)	43	13

*1) The vacuum pressure is the actual measured value when non-leakage workpiece (acrylic plate) is suctioned at the standard supply pressure. It is not guaranteed values.
*2) The lifting force is an actual value measured by SMC at the above vacuum pressure and is not a guaranteed value. It is necessary to judge the suitability for the workpiece with actual condition of use.
*3) Make sure the load factor is 1 or less during pick and place.
For details, refer to the section "7.2. Max. allowable moment and load".
*4) This is the pressure immediately before the air pressure supply (P) port of the vacuum gripper system during suction. It is affected by air supply capacity, pipe size, air consumption of other equipment operating simultaneously, etc. During vacuum generation, the pressure immediately before the air pressure supply (P) port of the vacuum gripper system may fall below the standard supply pressure.
*5) Vacuum saving valve may not be activated when suction area is small.
*6) This indicates that vacuum saving valves don't work.

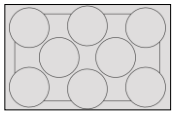
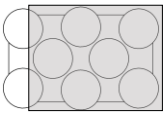
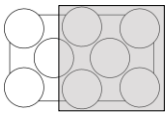
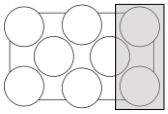
■200mmx120mm

Suction cup size	φ25

Number of ejector assemblies [pcs]	Standard supply pressure [MPa] *4)	Suction area [%] *5)		100%	About 85%	50%	About 35%
		Number of suction holes [pcs]		24/24	20/24	12/24	8/24
		Workpiece : Acrylic plate					
1	0.45	Vacuum pressure [kPa] *1)		-63.0	-58.2	-11.3	-7.4
		Lifting force[N] *2)		440 (400)	296	- *6)	- *6)
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	110 (100)	74	-	-
			Vertical lifting (Safety factor : 8)	55 (50)	37	-	-
2	0.45	Vacuum pressure [kPa]※1		-62.0	-59.5	-54.7	-52.9
		Lifting force[N]※2		440 (400)	301	168	115
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	110 (100)	75	42	28
			Vertical lifting (Safety factor : 8)	55 (50)	37	21	14

*1) The vacuum pressure is the actual measured value when non-leakage workpiece (acrylic plate) is suctioned at the standard supply pressure. It is not guaranteed values.
*2) The lifting force is an actual value measured by SMC at the above vacuum pressure and is not a guaranteed value. It is necessary to judge the suitability for the workpiece with actual condition of use.
*3) Make sure the load factor is 1 or less during pick and place.
For details, refer to the section "7.2. Max. allowable moment and load".
*4) This is the pressure immediately before the air pressure supply (P) port of the vacuum gripper system during suction. It is affected by air supply capacity, pipe size, air consumption of other equipment operating simultaneously, etc. During vacuum generation, the pressure immediately before the air pressure supply (P) port of the vacuum gripper system may fall below the standard supply pressure.
*5) Vacuum saving valve may not be activated when suction area is small.
*6) This indicates that vacuum saving valves don't work.

Suction cup size	φ50

Number of ejector assemblies [pcs]	Standard supply pressure [MPa] *4)	Suction area [%] *5)		100%	75%	About 65%	25%
		Number of suction holes [pcs]		8/8	6/8	5/8	2/8
		Workpiece : Acrylic plate					
1	0.45	Vacuum pressure [kPa] *1)		-63.0	-54.3	-51.0	-15.0
		Lifting force[N] *2)		440 (400)	288	229	- *6)
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	110 (100)	72	57	-
			Vertical lifting (Safety factor : 8)	55 (50)	36	28	-
2	0.45	Vacuum pressure [kPa]※1		-62.0	-57.0	-54.9	-49.7
		Lifting force[N]※2		440 (400)	291	242	95
		Lifting force considering safety factor [N]	Horizontal lifting (Safety factor : 4)	110 (100)	72	60	23
			Vertical lifting (Safety factor : 8)	55 (50)	36	30	11

*1) The vacuum pressure is the actual measured value when non-leakage workpiece (acrylic plate) is suctioned at the standard supply pressure. It is not guaranteed values.
*2) The lifting force is an actual value measured by SMC at the above vacuum pressure and is not a guaranteed value. It is necessary to judge the suitability for the workpiece with actual condition of use.
*3) Make sure the load factor is 1 or less during pick and place.
For details, refer to the section "7.2. Max. allowable moment and load".
*4) This is the pressure immediately before the air pressure supply (P) port of the vacuum gripper system during suction. It is affected by air supply capacity, pipe size, air consumption of other equipment operating simultaneously, etc. During vacuum generation, the pressure immediately before the air pressure supply (P) port of the vacuum gripper system may fall below the standard supply pressure.
*5) Vacuum saving valve may not be activated when suction area is small.
*6) This indicates that vacuum saving valves don't work.

7.2. Max. allowable moment and load

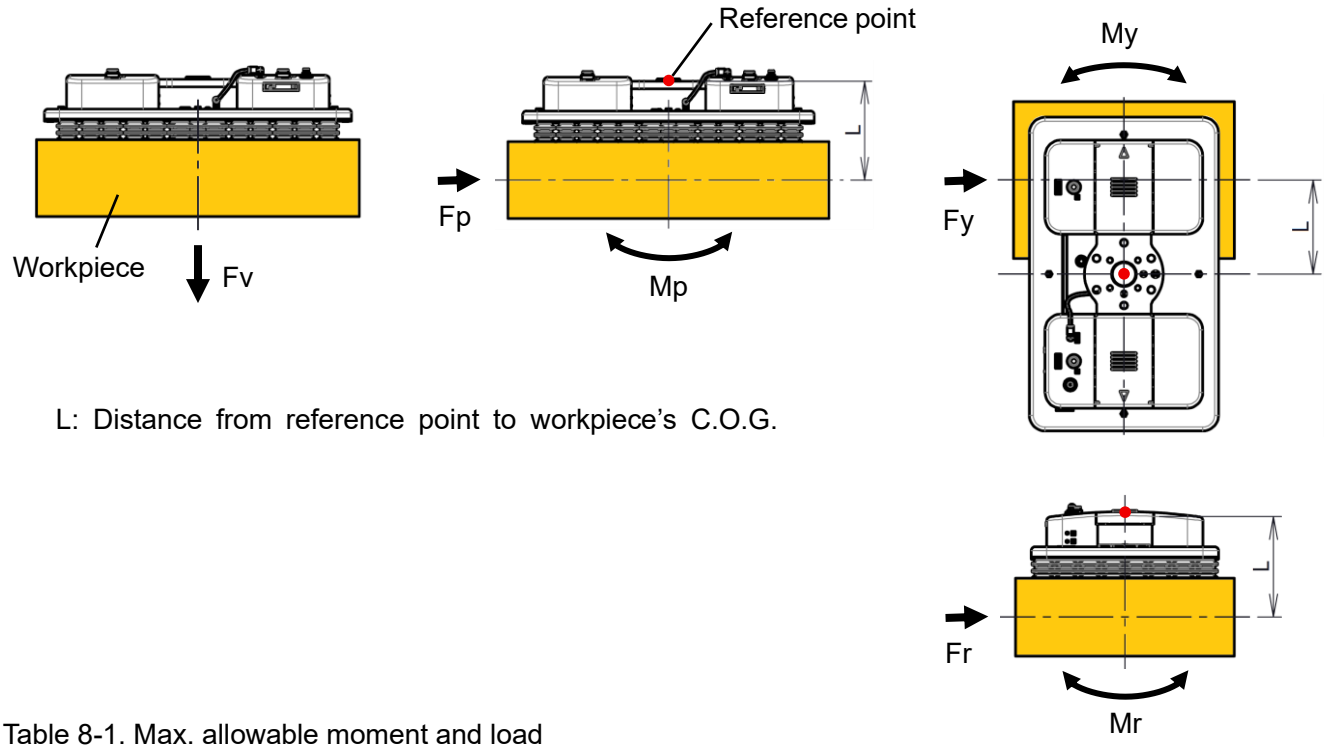
*1) The values below are the allowable moment and the load capacity of the product. It is necessary to judge the suitability for the workpiece with actual condition of use.
*2) When the product is used for pick and place, consider the rate of acceleration.
*3) Ensure moments and loads are the allowable values or less.
*4) When combining a vertical load and moment, make sure the load factor is 1 or less according to the equation below.

Fv/Fvmax + Mp/Mpmax + My/Mymax + Mr/Mrmax ≤ 1 (Load factor)

*5) If moments and loads other than the below are applied due to robot motion, a sufficient safety factor must be provided.
*6) These are the allowable values when used at an acceleration of 19.6 m/s² or less.
*7) For Flange U and Y, use the allowable values below for calculations as well as the other flanges.

■400mm×240mm

Robot mounting flange: Basic type

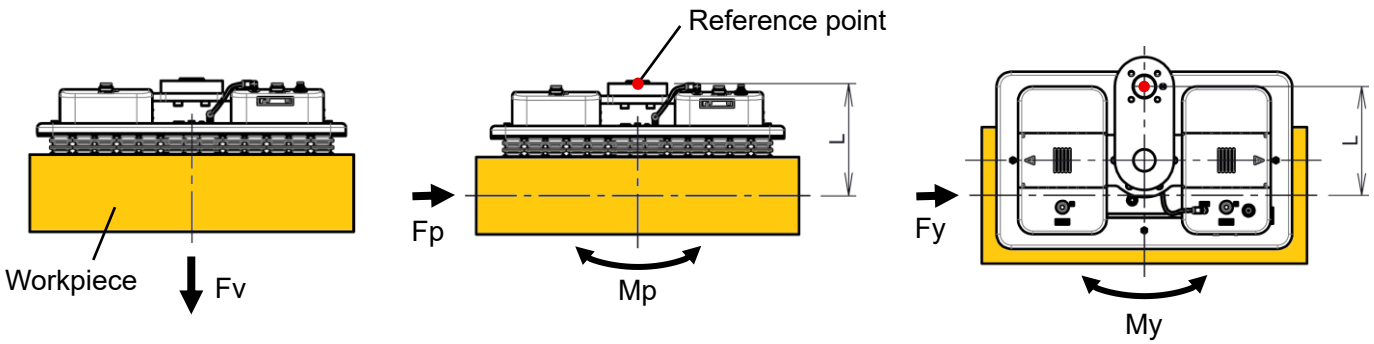


L: Distance from reference point to workpiece's C.O.G.

Table 8-1. Max. allowable moment and load

Part no.	Vertical load Fvmax (N)	Pitch moment Mpmax (N·m)	Yaw moment Mymax (N·m)	Roll moment Mrmax (N·m)
ZGP**-400240***-**1*	2144	85.4	94.5	47.1

Robot mounting flange: Basic type + Offset flange



L: Distance from reference point to workpiece's C.O.G.

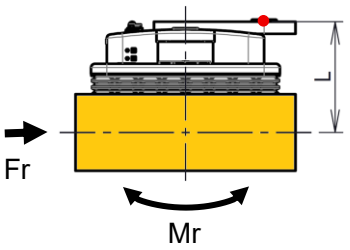
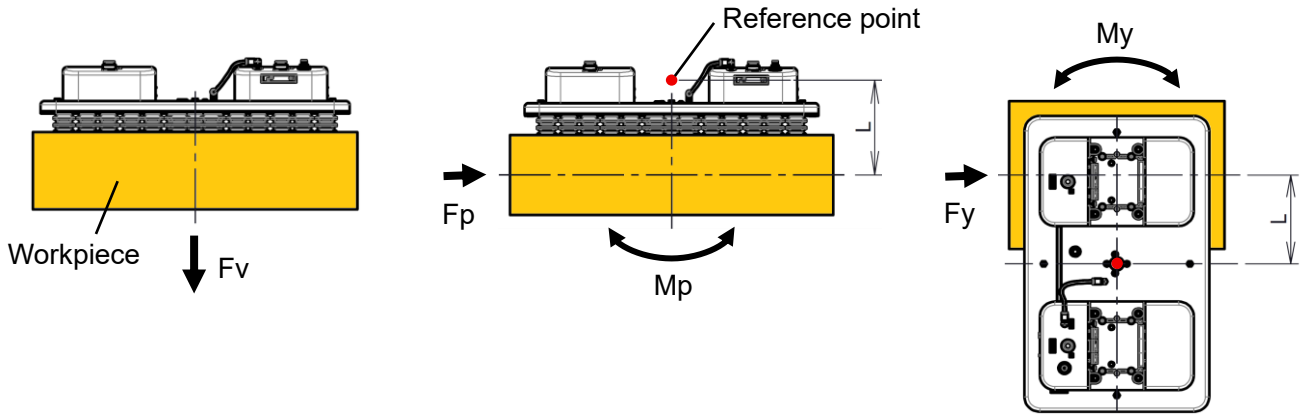


Table 8-2. Max. allowable moment and load

Part no.	Vertical load Fvmax (N)	Pitch moment Mpmax (N·m)	Yaw moment Mymax (N·m)	Roll moment Mrmax (N·m)
ZGP**-400240***-**2*	2144	38.8	81.9	45.5

Robot mounting flange: Without robot mounting flange



L: Distance from reference point to workpiece's C.O.G.

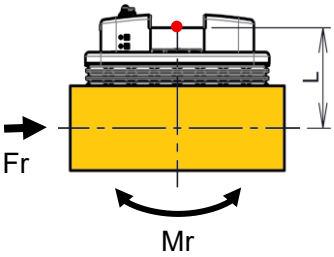
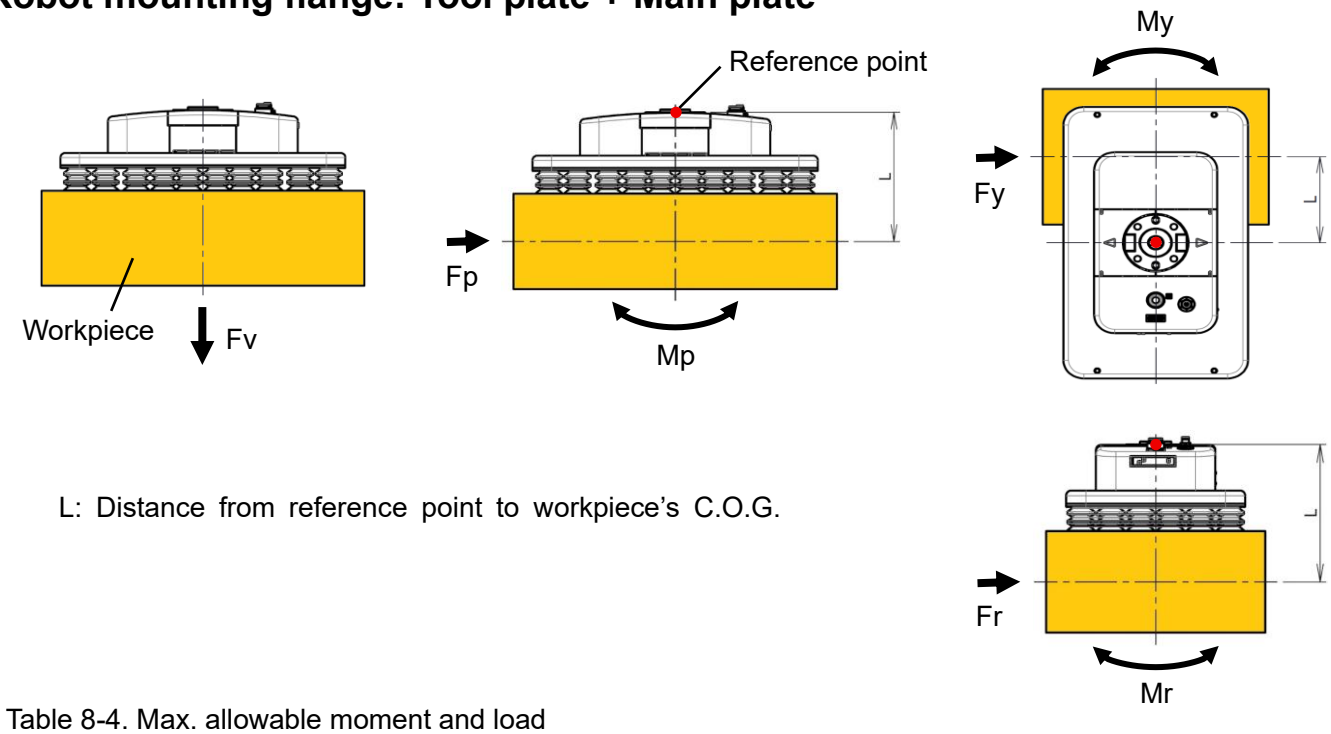


Table 8-3. Max. allowable moment and load

Part no.	Vertical load Fvmax (N)	Pitch moment Mpmax (N·m)	Yaw moment Mymax (N·m)	Roll moment Mrmax (N·m)
ZGP**-400240***-**_*	2144	73.5	94.4	40.7

■300mm×180mm, 200mm×120mm

Robot mounting flange: Tool plate + Main plate

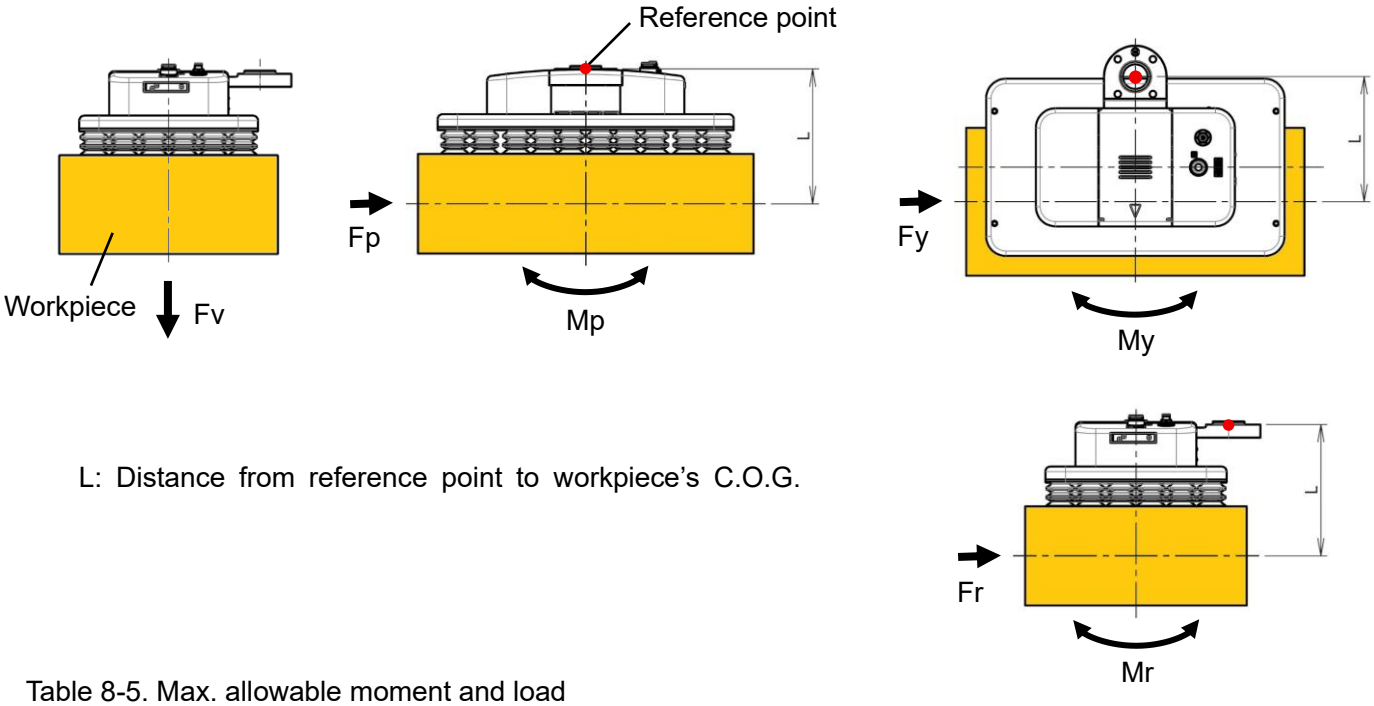


L: Distance from reference point to workpiece's C.O.G.

Table 8-4. Max. allowable moment and load

Part no.	Vertical load Fvmax (N)	Pitch moment Mpmax (N·m)	Yaw moment Mymax (N·m)	Roll moment Mrmax (N·m)
ZGP**-300180***-**1*	400	8.1	16.6	11.0
ZGP**-200120***-**1*	400	9.1	16.6	12.0

Robot mounting flange: Offset flange

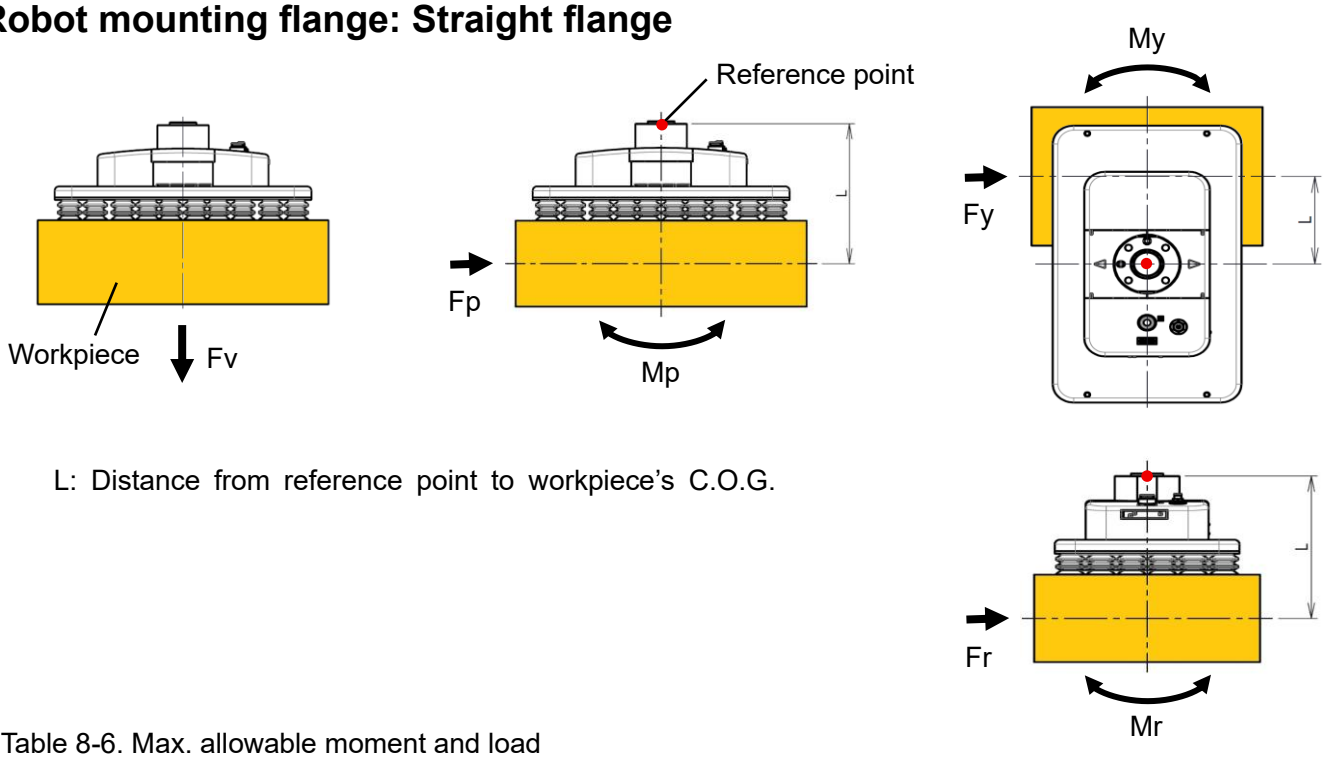


L: Distance from reference point to workpiece's C.O.G.

Table 8-5. Max. allowable moment and load

Part no.	Vertical load Fvmax (N)	Pitch moment Mpmax (N·m)	Yaw moment Mymax (N·m)	Roll moment Mrmax (N·m)
ZGP**-300180***-**2*	880	20.0	54.4	26.2
ZGP**-200120***-**2*	440	21.0	54.4	27.2

Robot mounting flange: Straight flange

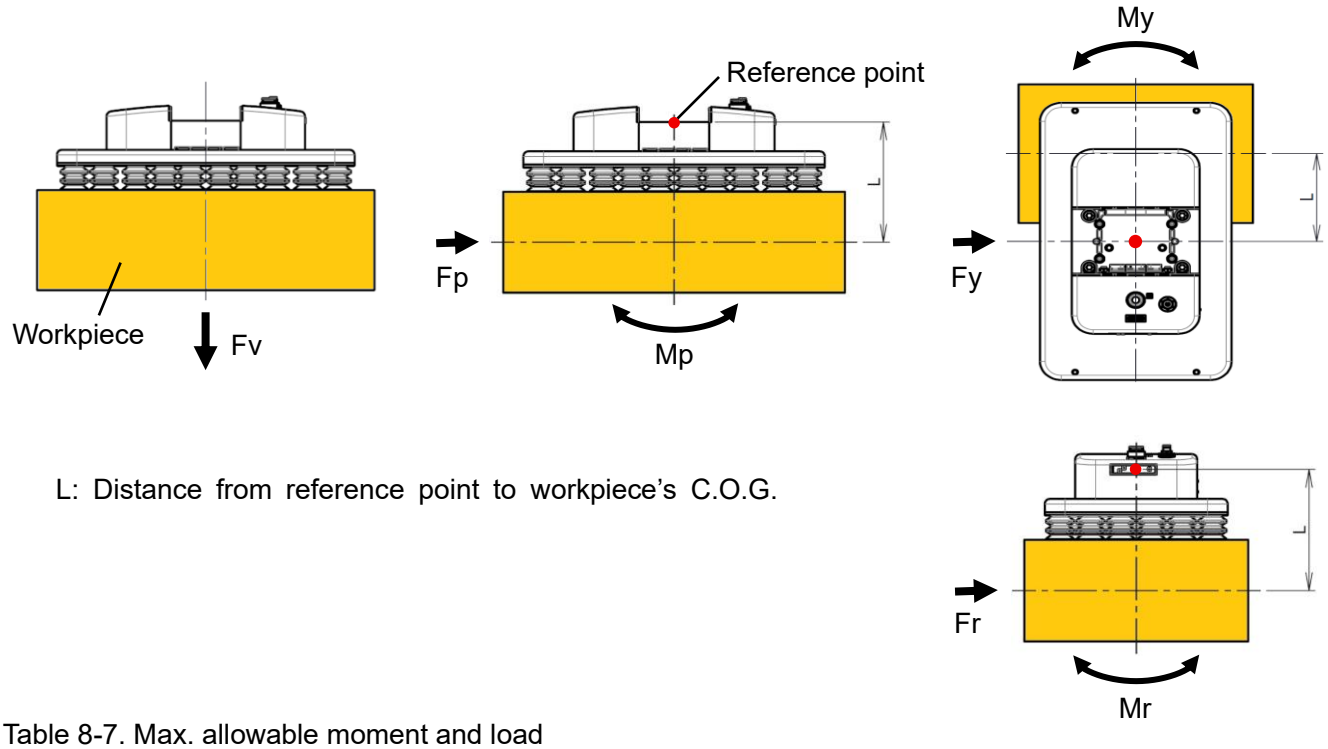


L: Distance from reference point to workpiece's C.O.G.

Table 8-6. Max. allowable moment and load

Part no.	Vertical load Fvmax (N)	Pitch moment Mpmax (N·m)	Yaw moment Mymax (N·m)	Roll moment Mrmax (N·m)
ZGP**-300180***-**4*	880	27.9	42.5	36.6
ZGP**-200120***-**4*	440	29.3	42.5	38.0

Robot mounting flange: Without robot mounting flange

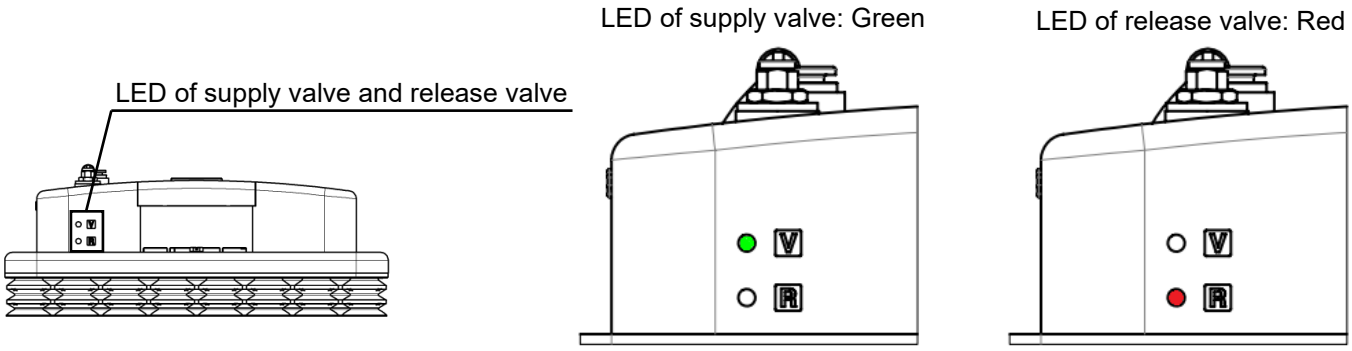


L: Distance from reference point to workpiece's C.O.G.

Table 8-7. Max. allowable moment and load

Part no.	Vertical load Fvmax (N)	Pitch moment Mpmax (N·m)	Yaw moment Mymax (N·m)	Roll moment Mrmax (N·m)
ZGP**-300180***-**_*	880	16.5	42.5	21.6
ZGP**-200120***-**_*	440	17.3	42.5	22.4

7.3. LED light of supply valve and release valve



	LED	"Supply valve / Release valve" type		
		Symbol "K" N.C. (2-position single)	Symbol "B" N.O. (2-position single)	Symbol "W" 2-position double
Supply valve	**Green**	Suction ON	Suction OFF	Suction ON
	OFF	Suction OFF	Suction ON	Suction ON *) or Suction OFF
Release valve	**Red**	Blow-off ON	Blow-off ON	Stop suction and Blow-off ON
	OFF	Blow-off OFF	Blow-off OFF	Blow-off OFF

*) It depends on operations. After energizing supply valve, suction keeps ON. After energizing release valve, suction turns OFF.

8. Maintenance

■ Perform the maintenance and inspection shown below in order to use the vacuum gripper system in a safe and appropriate manner for a long time.

8.1. Maintenance for Vacuum Gripper System

⚠ Caution

1） Inspection before and after maintenance

When removing the product from the equipment, ensure that the power supply is turned off and the vacuum pressure inside the product is released. When returning the product to the equipment after maintenance, connect to the power.

2） Inspect the vacuum gripper system regularly.

- Regularly inspect the vacuum gripper system to ensure that there are no cracks or wear on suction cups.
- Replace the suction cups as necessary.
- Regularly inspect mesh filters of vacuum saving valves and the silencer element to ensure that they are not clogged. Clean or replace them as necessary. To check for clogging, use the pressure detection port in the base plate and measure the vacuum pressure during suction without picking up a workpiece.
  An increase in vacuum pressure without a workpiece indicates clogging. On the other hand, a decrease in vacuum pressure without a workpiece may indicate air leakage.

3） Regularly tighten connections which may be loosened by the use for a long period.

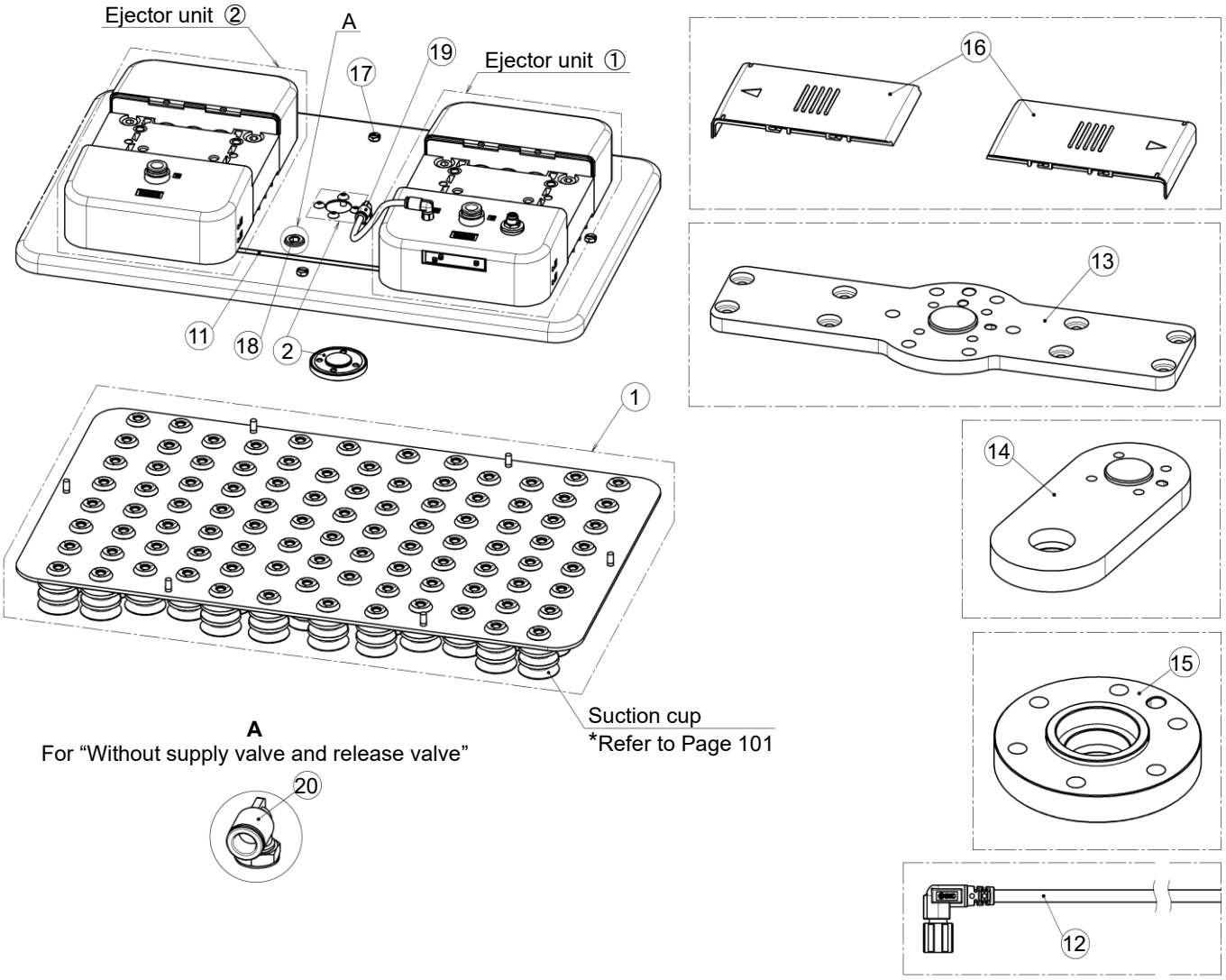
Connections may be loosened by vibration or impact when the gripper system is operated for a long time. Tighten the connections regularly so that any parts will not come off and the gripper system will remain properly installed on the equipment.

4） Do not disassemble or modify the product, other than replacement of the parts specified in this manual.

8.2. How to replace parts

8.2.1 Replacement parts

■400mmx240mm



Ejector unit

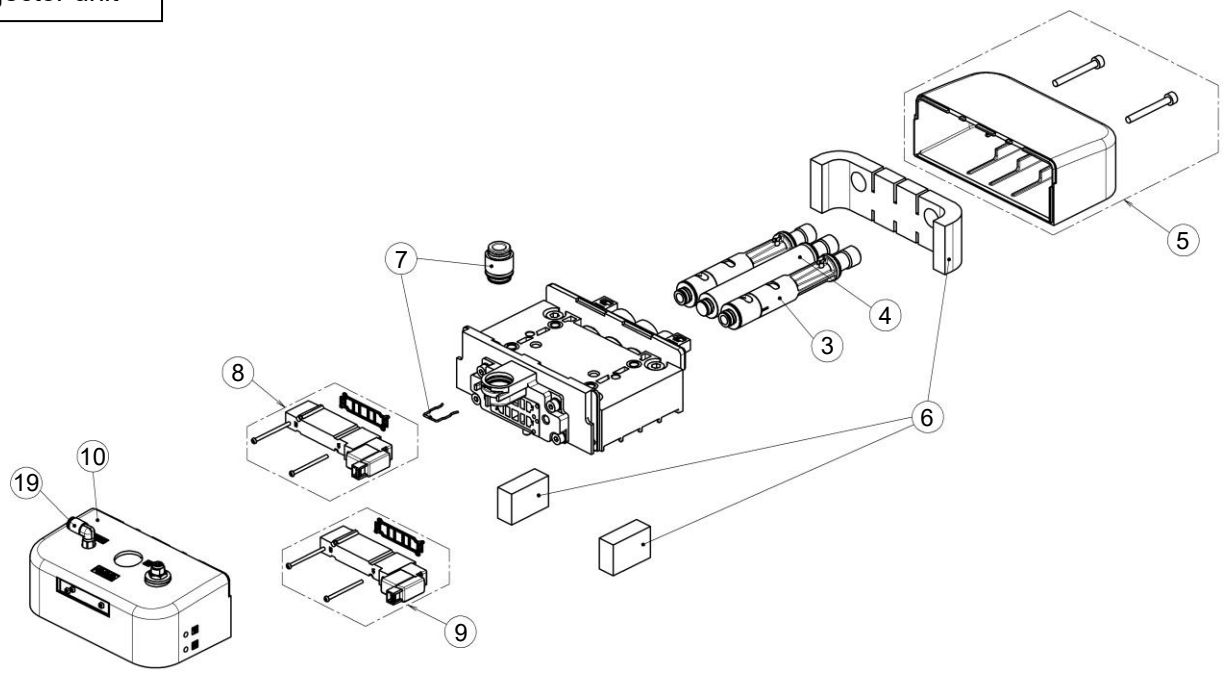


Table 9-1. Replacement parts

No.	Replacement parts	Part no.	Replacement procedure	Remarks
1	Plate with suction cups	ZGP-PL1-400240-A25-A	■	Cup size ϕ25
		ZGP-PL1-400240-A50-A		Cup size ϕ50
	Plate with suction cups (comes with block)	ZGP-PL1-400240-A25-P-A	■	For switching from ZGS series
		ZGP-PL1-400240-A50-P-A		
	Plate with plugs	ZGP-PL1-400240-P25-A	■	Plug size ϕ25
		ZGP-PL1-400240-P50-A		Plug size ϕ50
	Plate with plugs (comes with block)	ZGP-PL1-400240-P25-P-A	■	For switching from ZGS series
		ZGP-PL1-400240-P50-P-A		
2	Block	ZGS-BD6-1-3-A	■	With O-ring and screws
3	Ejector assembly	ZGS-EJ1-V-A	■	
4	Dummy ejector assembly	ZGS-EJ1-D-A	■	
5	Ejector cover set	ZGS-LD2-A	■	With mounting screws
6	Sound absorbing material set	ZGS-SE1-A	■	
7	One-touch fitting set	ZGS-PR1-∗-A	■	With clip Refer to part no. below
8	Supply valve set	ZGS-JSY3V-A	■	For 2-position single With gasket and mounting screws
		ZGS-JSY3W-A		For 2-position double With gasket and mounting screws
9	Release valve set	ZGS-JSY3R-A	■	With gasket and mounting screws
10	Valve cover assembly	ZGS-LD1-∗∗∗∗-A	■	Refer to part no. below
11	Connector cable assembly	ZGS-LW1-8-A	■	For PNP except for “2-position double” valve
		ZGS-LW1-6-A		For NPN except for “2-position double” valve
		ZGS-LW1-12-A		For PNP with “2-position double” valve
		ZGS-LW1-19-A		For NPN with “2-position double” valve
		ZGS-LW1-17-A		For IO-Link
12	Connector cable	RMH-A00-11-A	-	
		RMH-A00-18A		
		ZGS-LW1-14-A		
13	Basic type (Robot mounting flange)	ZGS-PL3-1-A	-	With mounting screws, washers and parallel pins
14	Offset flange (Robot mounting flange)	ZGS-PL5-1-A	-	With mounting screws and parallel pin
15	Flange U	ZGS-PL3-5-A	-	With mounting screws and parallel pin
16	Flange cover	ZGS-LD3-A	-	Qty. : 1 pc.
17	Plug	M-5P	-	
18	Plug	TB00132	-	
19	One-touch fitting	KQ2L04-M5A	-	Metric
		KQ2L01-M5A		Inch
20	One-touch fitting	KQ2L08-U02A	-	Metric
		KQ2L11-U02A		Inch

7. One-touch fitting set

ZGS - PR1 ∗ - A

(1)

(1) Air supply pressure (P) port

Symbol	Air pressure supply (P) port
C8	ϕ8
C10	ϕ10
N9	ϕ5/16”
N11	ϕ3/8”

10. Valve cover assembly

For Ejector unit ①

ZGS - LD1 - 1 ＊ ＊ ＊ - A

(1) (2) (3)

(1) Supply valve and Switch output

Symbol	Supply valve	Switch output
P	N.C. (2-position single)	PNP
	N.O. (2-position single)	
	None	
N	N.C. (2-position single)	NPN
	N.O. (2-position single)	
	None	
T	N.C. (2-position single)	NPN (OMRON / TECHMAN ROBOT)
	N.O. (2-position single)	
	None	
A	2-position double	PNP
B	2-position double	NPN
C	2-position double	NPN (OMRON / TECHMAN ROBOT)
H	N.C.	IO-Link
J	N.O.	IO-Link

(2) Switch unit

Symbol	Switch unit
C	With unit switching function
M	SI unit only

(3) Port size

Symbol	Port size
Nil	ϕ4 (Metric)
4	ϕ1/8” (Inch)

For Ejector unit ② for two-pressure switch type

ZGS - LD1 - 2 ＊ ＊ ＊ - A

(1) (2) (3)

(1) Supply valve type and Switch output

Symbol	Supply valve	Switch output
P	N.C. (2-position single)	PNP
	N.O. (2-position single)	
	None	
N	N.C. (2-position single)	NPN
	N.O. (2-position single)	
	None	
T	N.C. (2-position single)	NPN (OMRON / TECHMAN ROBOT)
	N.O. (2-position single)	
	None	
A	2-position double	PNP
B	2-position double	NPN
C	2-position double	NPN (OMRON / TECHMAN ROBOT)

(2) Switch unit

Symbol	Switch unit
C	With unit switching function
M	SI unit only

(3) Port size

Symbol	Port size
Nil	ϕ4 (Metric)
4	ϕ1/8” (Inch)

For Ejector unit ② for one-pressure switch type (Including IO-Link type)

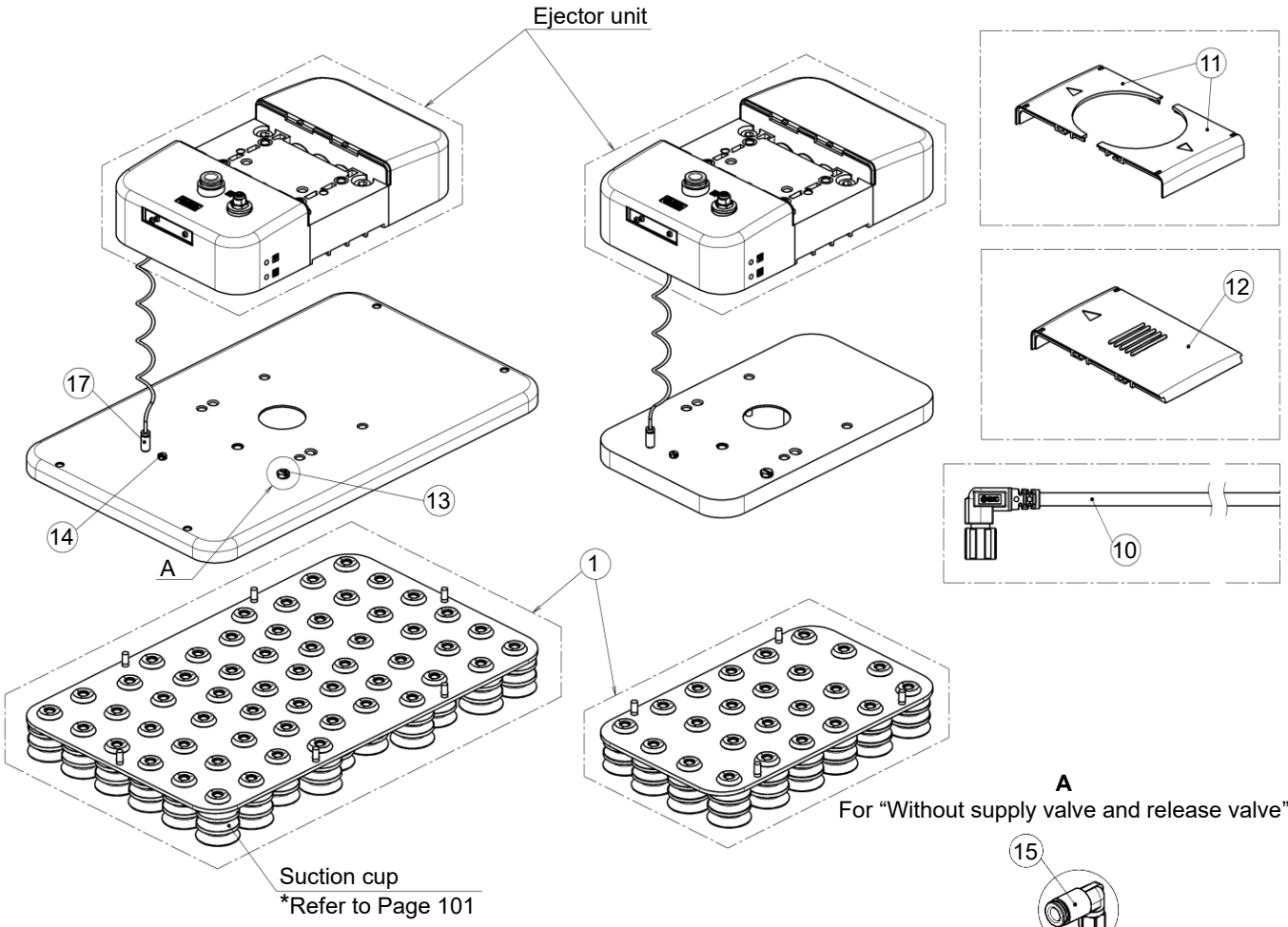
ZGS - LD1 - 4 ＊ - A

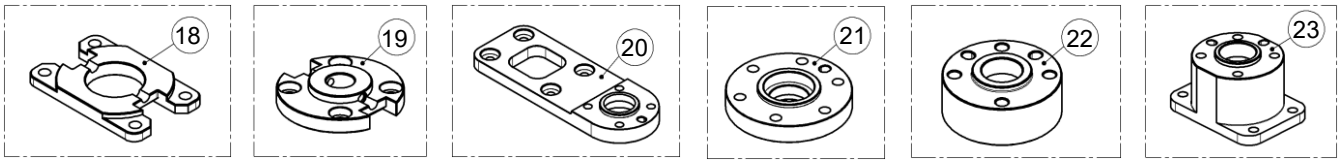
(1)

(1) Supply valve or Switch type

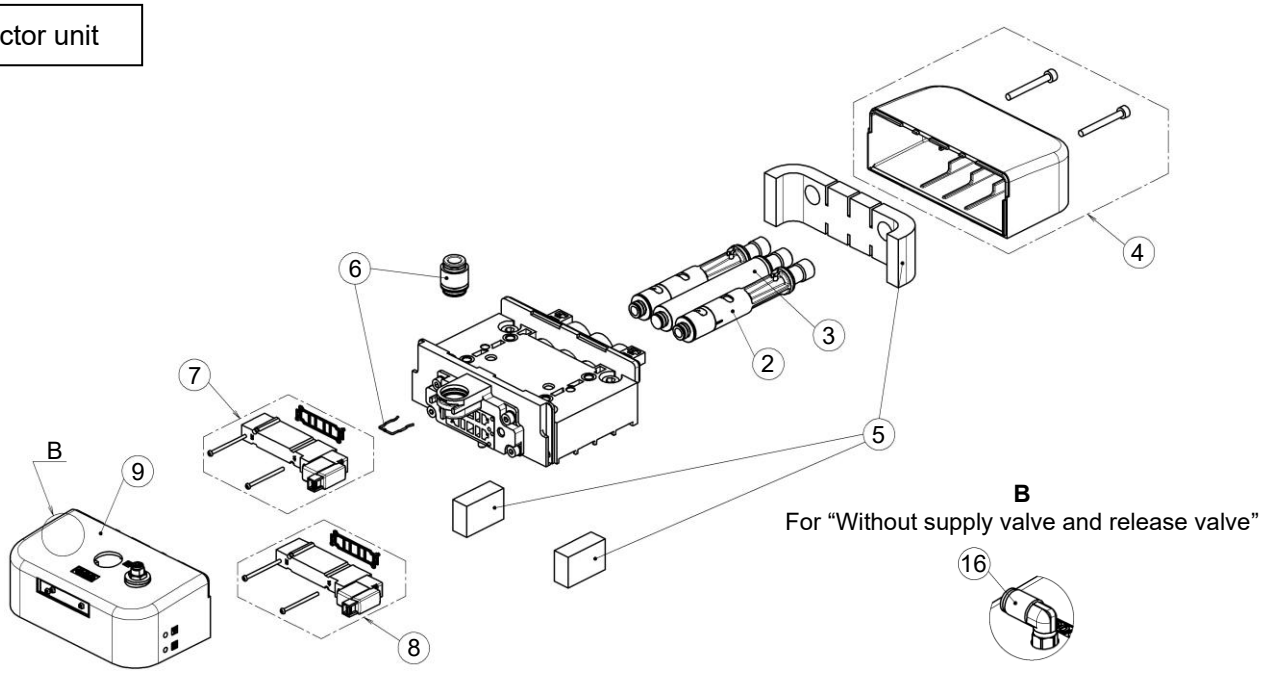
Symbol	Supply valve / Pressure switch
Nil	None
P	N.C. (2-position single)
	N.O. (2-position single)
A	2-position double
H	IO-Link

■300mmx180mm, 200mmx120mm





Ejector unit



SMC

Table 9-2. Replacement parts

No.	Replacement parts	Part no.	Replacement procedure	Remarks
1	Plate with suction cups	ZGP-PL1-300180-A25-A	■	Cup size ϕ25
		ZGP-PL1-300180-A50-A		Cup size ϕ50
		ZGP-PL1-200120-A25-A		Cup size ϕ25
		ZGP-PL1-200120-A50-A		Cup size ϕ50
	Plate with plugs	ZGP-PL1-300180-P25-A		Plug size ϕ25
		ZGP-PL1-300180-P50-A		Plug size ϕ50
		ZGP-PL1-200120-P25-A		Plug size ϕ25
		ZGP-PL1-200120-P50-A		Plug size ϕ50
2	Ejector assembly	ZGS-EJ1-V-A	■	
3	Dummy ejector assembly	ZGS-EJ1-D-A	■	
4	Ejector cover set	ZGS-LD2-A	■	With mounting screws
5	Sound absorbing material set	ZGS-SE1-A	■	
6	One-touch fitting set	ZGS-PR1-∗-A	■	With clip Refer to part no. below
7	Supply valve set	ZGS-JSY3V-A	■	For 2-position single With gasket and mounting screws
		ZGS-JSY3W-A	■	For 2-position double With gasket and mounting screws
8	Release valve set	ZGS-JSY3R-A	■	With gasket and mounting screws
9	Valve cover assembly	ZGS-LD1-∗∗∗∗-A	■	Refer to part no. below
10	Connector cable	RMH-A00-11-A	-	
		RMH-A00-18A		
		ZGS-LW1-14-A		
11	Tool plate cover	ZGS-LD4-A	-	Qty. : 2 pcs.
12	Flange cover	ZGS-LD3-A	-	Qty. : 1 pc.
13	Plug	M-5P	-	
14	Plug	M-3P	-	
15	One-touch fitting	KQ2L04-M5A	-	
16	One-touch fitting	KQ2L04-M5A	-	Metric
		KQ2L01-M5A		Inch
17	One-touch fitting	KQ2S02-M3G	-	
18	Tool plate	ZGS-PL3-3-A	-	With mounting screws and washers
19	Main plate	ZGS-PL3-7-A	-	With mounting screws, parallel pin and clampers
20	Offset flange	ZGS-PL3-4-A	-	With mounting screws, washers and parallel pins
21	Flange U	ZGS-PL3-5-A	-	With mounting screws and parallel pin
22	Flange Y	ZGS-PL3-6-A	-	For using with main plate With mounting screws and parallel pin
		ZGS-PL3-6-1-A		For using with offset flange With mounting screws and parallel pin
23	Straight flange	ZGS-PL3-8-A	-	With mounting screws, washers and parallel pins

6. One-touch fitting set

ZGS - PR1 ∗ - A

(1)

(1) Air supply pressure (P) port

Symbol	Air pressure supply (P) port
C8	ϕ8
C10	ϕ10
N9	ϕ5/16”
N11	ϕ3/8”

10. Valve cover assembly

For “with” valve type

ZGS - LD1 - 5 ＊ ＊ - A

(1) (2)

(1) Supply valve and Switch output

Symbol	Supply valve	Switch output
P	N.C. (2-position single)	PNP
	N.O. (2-position single)	
N	N.C. (2-position single)	NPN
	N.O. (2-position single)	
T	N.C. (2-position single)	NPN (OMRON / TECHMAN ROBOT)
	N.O. (2-position single)	
A	2-position double	PNP
B	2-position double	NPN
C	2-position double	NPN (OMRON / TECHMAN ROBOT)
H	N.C.	IO-Link
J	N.O.	IO-Link

(2) Switch unit

Symbol	Switch unit
X	With unit switching function
Z	SI unit only

For “without” valve type

ZGS - LD1 - 1 ＊ ＊ ＊ - A

(1) (2) (3)

(1) Switch output

Symbol	Switch output
P	PNP
N	NPN
T	NPN (OMRON / TECHMAN ROBOT)

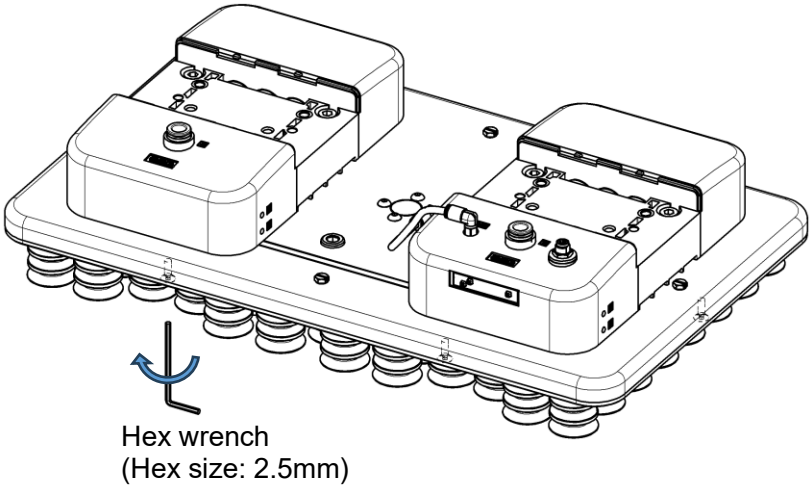
(2) Switch unit

Symbol	Switch unit
X	With unit switching function
Z	SI unit only

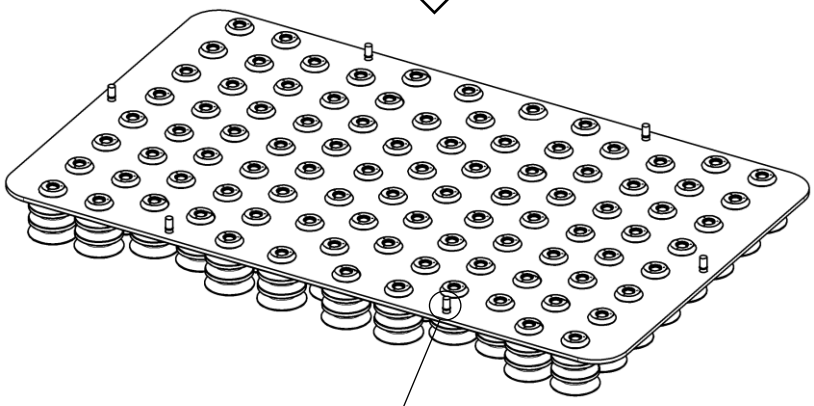
(3) Port size

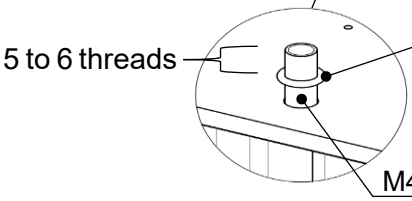
Symbol	Port size
Nil	ϕ4 (Metric)
4	ϕ1/8” (Inch)

8.2.2 How to replace plate with suction cups



Hex wrench
(Hex size: 2.5mm)



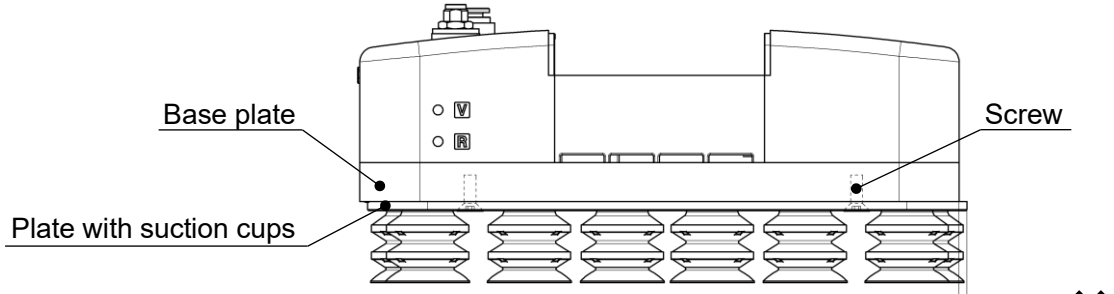


5 to 6 threads

O-ring for screw drop prevention

M4x12
Tightening torque: 1.5±10% [N・m]
400mmx240mm: 6 screws
300mmx180mm: 6 screws
200mmx120mm: 4 screws

For 300mmx180mm and 200mmx120mm



Base plate

Plate with suction cups

Screw

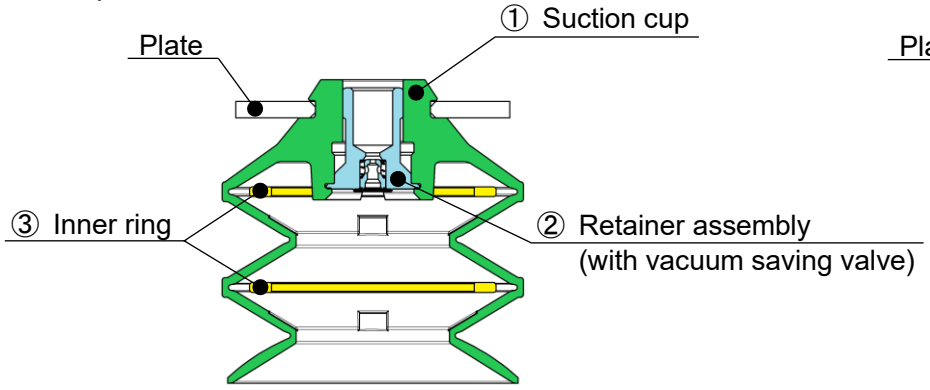
Gap

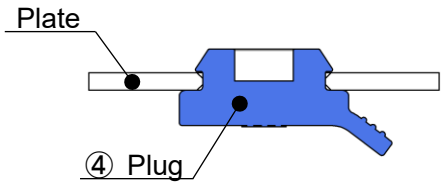
Plate with suction cups has an orientation.
Before tightening screws, ensure that the plate aligns with the base plate without a gap.

Wrong orientation

8.2.3 How to replace Suction cups and Vacuum saving valves

Although vacuum saving valves are implemented, generated vacuum pressure decreases if all around the surface areas of suction cups don't contact workpieces. In such cases, plugs can minimize the decrease of vacuum pressure.



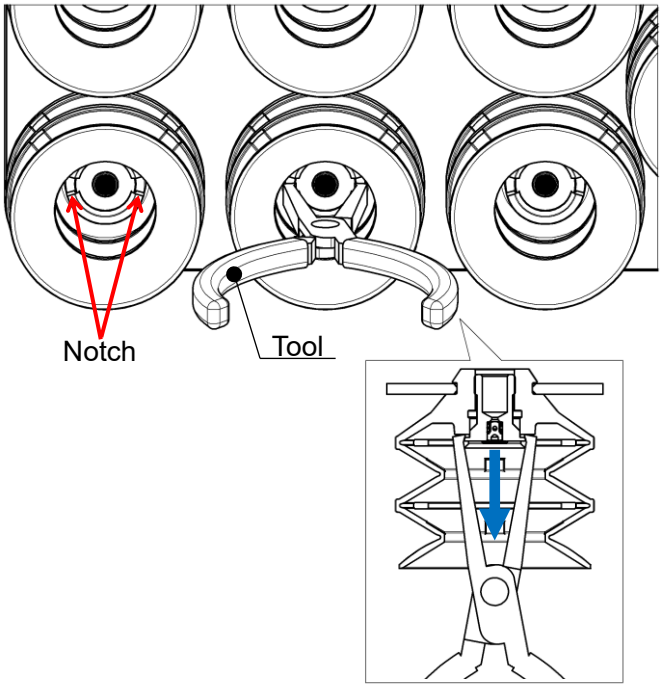


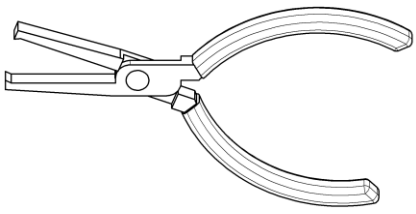
Replacement parts		Part no.	Included *1)	Weight [g]
ϕ25 cup size	Whole suction cup assembly	ZP3C2-D25J2FS-05-R	①+②+③	8.9
	Suction cup	ZP3C2-25J2FS	①	7.3
	Suction cup with inner rings	ZP3C2-25J2FS-R	①+③	7.9
	Inner ring (Set of 2 pcs.)	ZP3C2-25-R	③	0.6
	Retainer assembly	ZP3C2A-D2-05	②	1.0
	Plug (Set of 10 pcs.)	ZGP-GK1-1-A	④	2.2 *2)
ϕ50 cup size	Whole suction cup assembly	ZP3C2-D50J2FS-10-R	①+②+③	56.0
	Suction cup	ZP3C2-50J2FS	①	49.5
	Suction cup with inner rings	ZP3C2-50J2FS-R	①+③	52.0
	Inner ring (Set of 2 pcs.)	ZP3C2-50-R	③	2.5
	Retainer assembly	ZP3C2A-D4-10	②	4.0
	Plug (Set of 5 pcs.)	ZGP-GK1-2-A	④	8.2 *2)

*1) Regarding the numbers, refer to the above figure.
*2) Weight per piece.

Step 1:

Clamp a retainer from notches using a tool then pull out the retainer.
For plugs, skip step 1 and proceed to step 2.

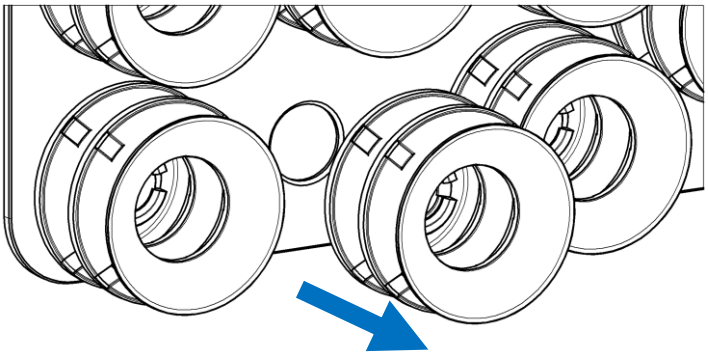




<Tool examples>
- Relay pliers
- End nippers

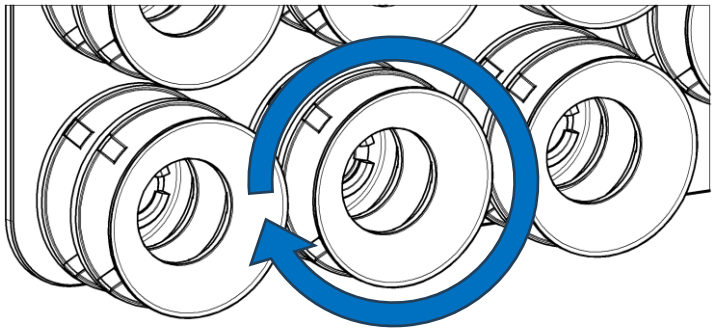
Step 2:

Remove a suction cup or plug.



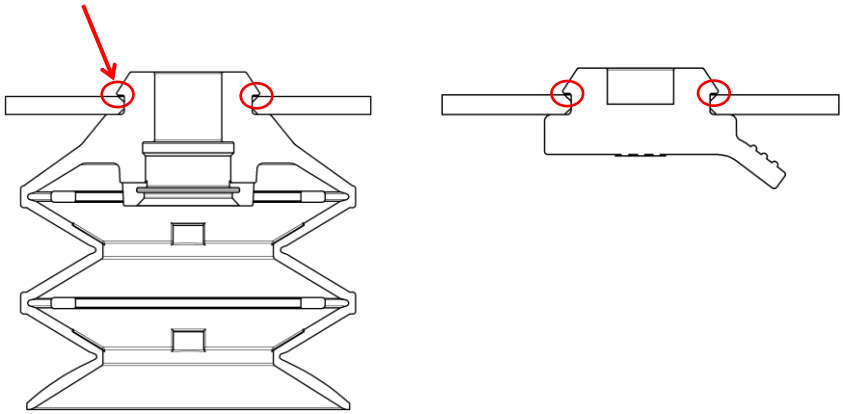
Step 3:

Assemble a new suction cup or plug to plate while rotating.



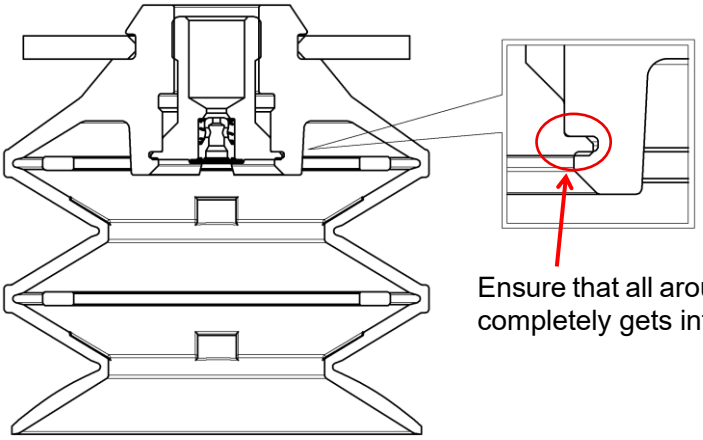
Correct assembled state

Ensure that all around the edge completely sticks out from the plate as shown the above figure.



Step 4 (Only for suction cups):

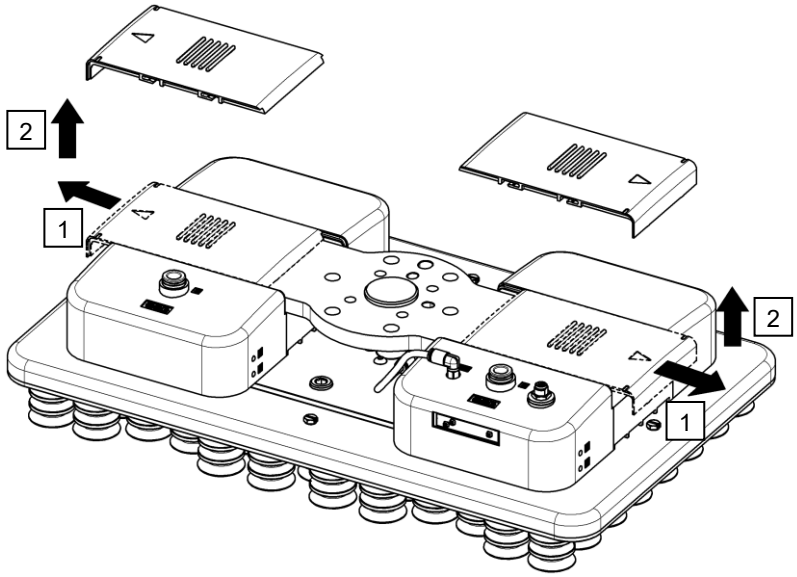
Assemble a retainer into the cup.



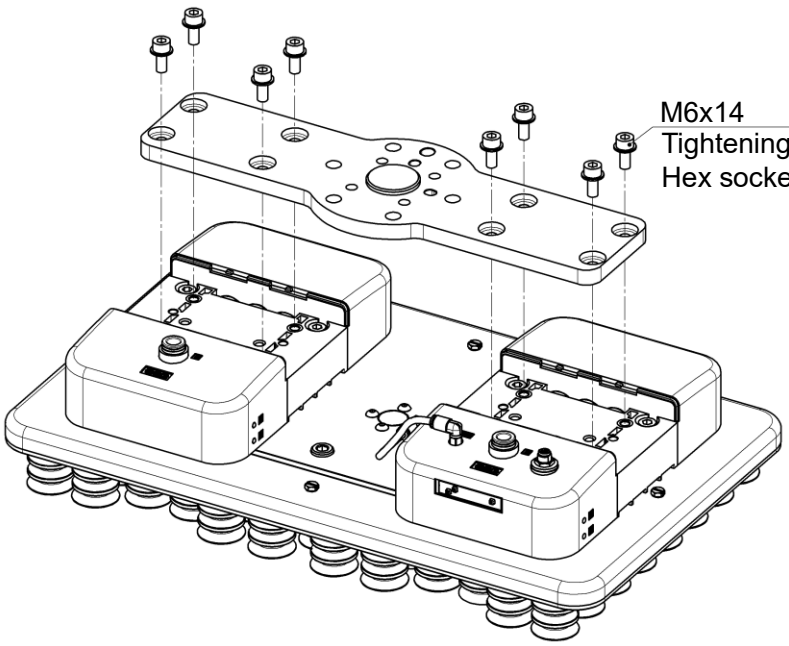
Ensure that all around the brim of the retainer completely gets into the groove of the cup.

8.2.4 How to replace Ejector unit

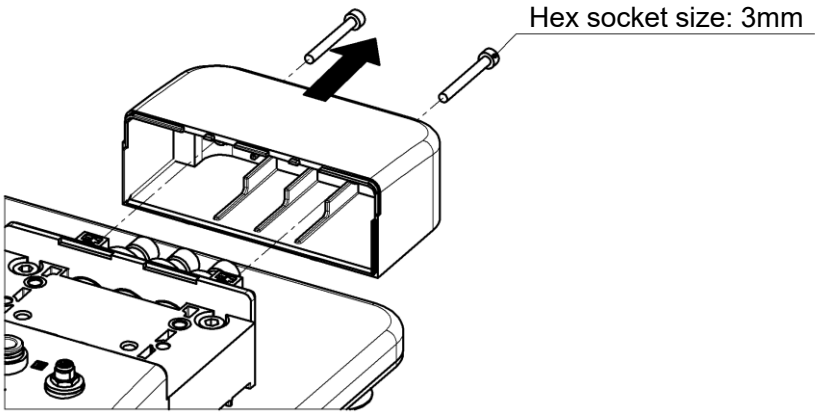
Step 1



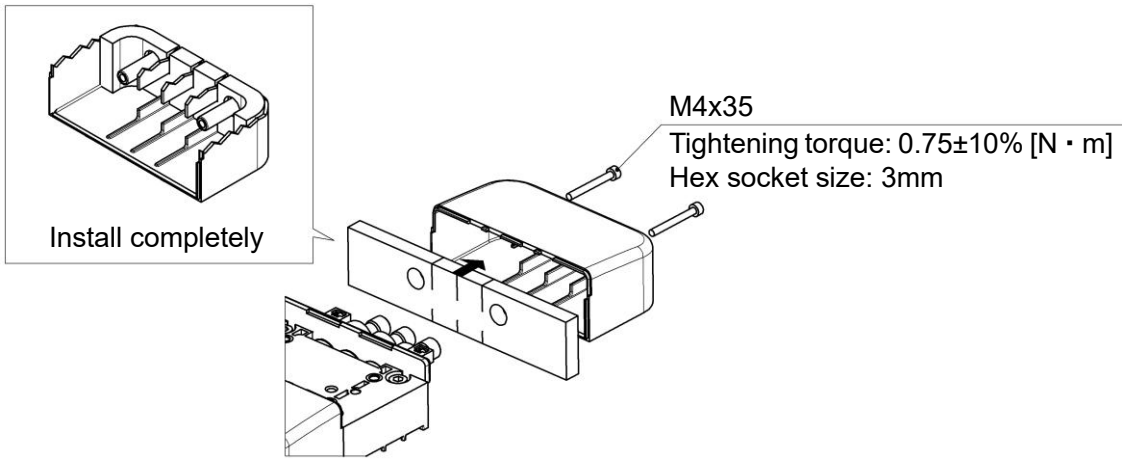
Step 2



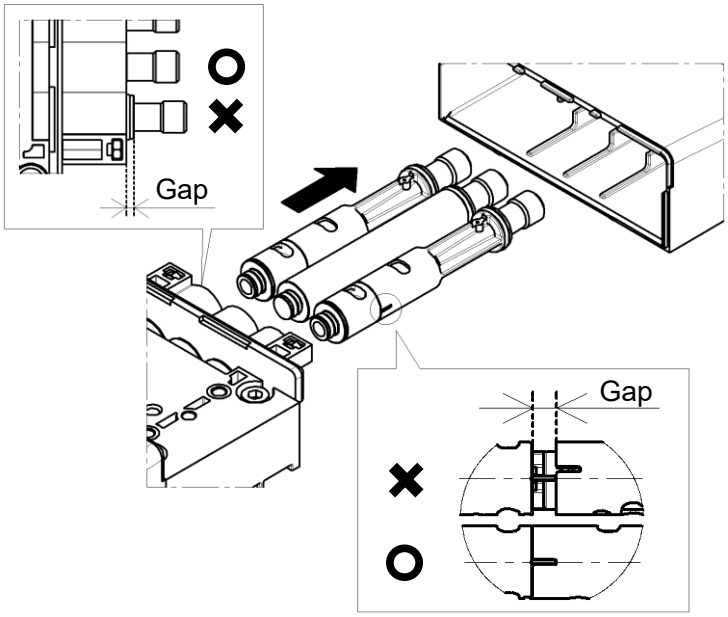
Step 3



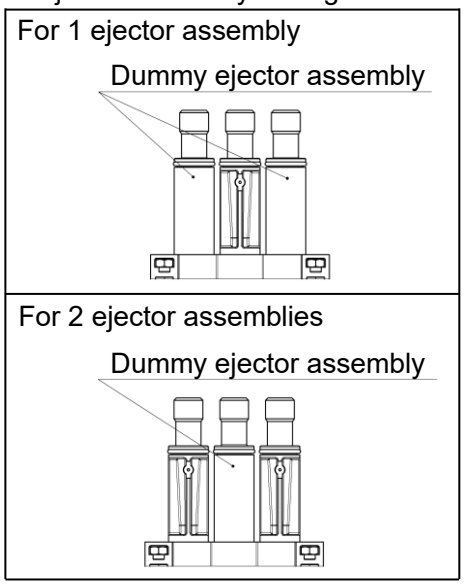
Step 4



Step 5

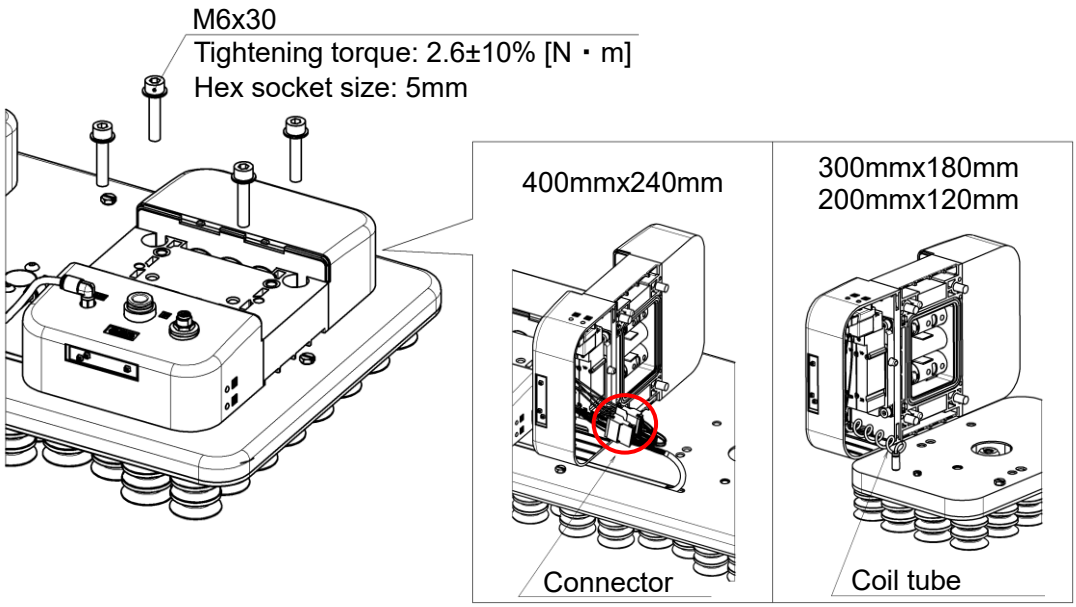


Ejector assembly arrangement

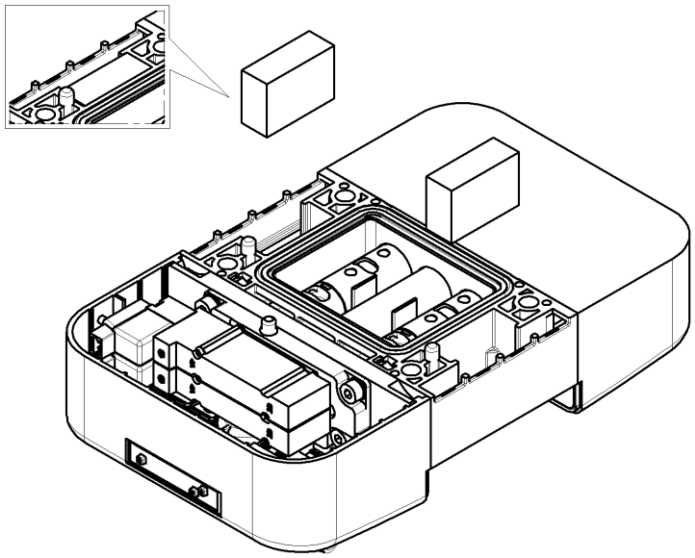


For size 200x120, the number of ejector assembly is 1 or 2.
3 ejector assemblies may unexpectedly close the suction assist valves and it may result in failures.

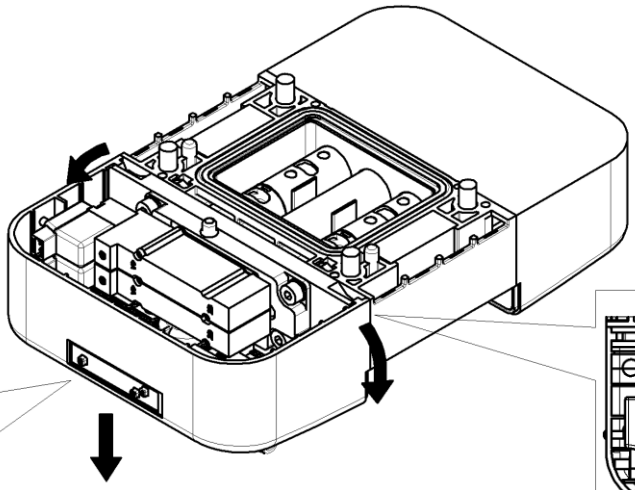
Step 6



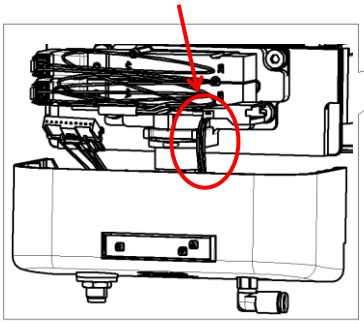
Step 7

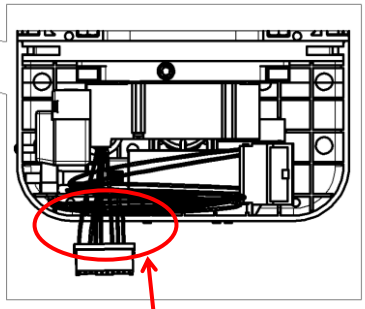


Step 8



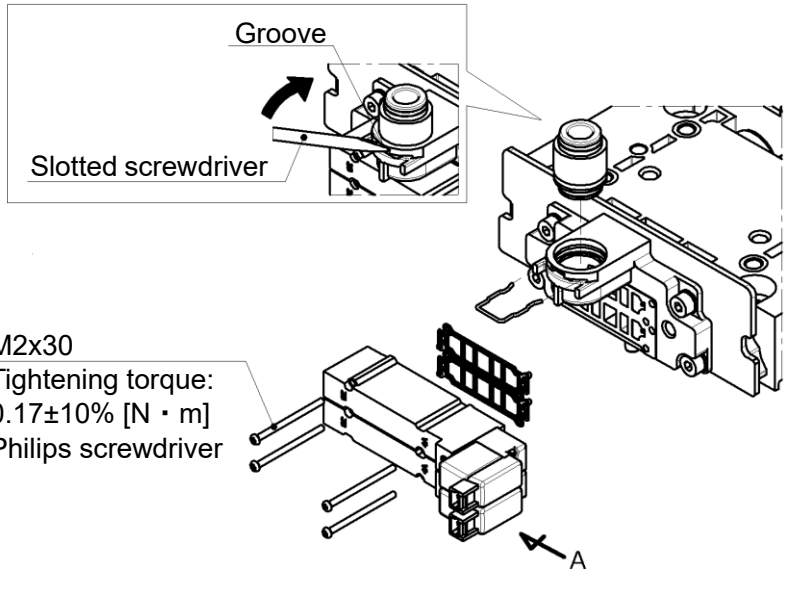
Do not pull too much.
Lead wires are connected.

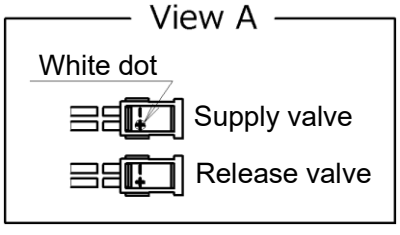




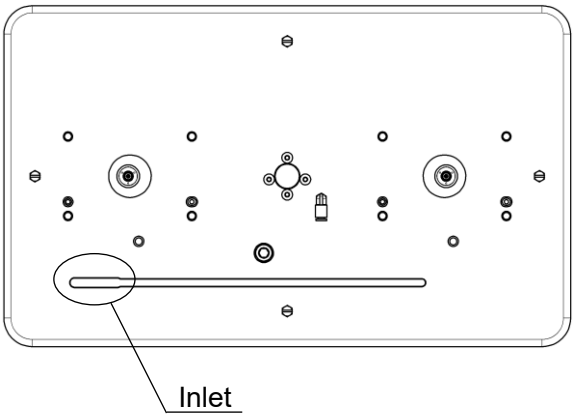
When reassembling,
ensure that the lead wires
are not pinched anywhere.

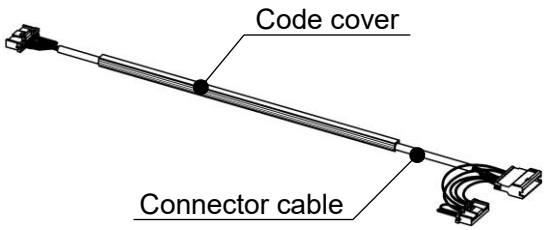
Step 9



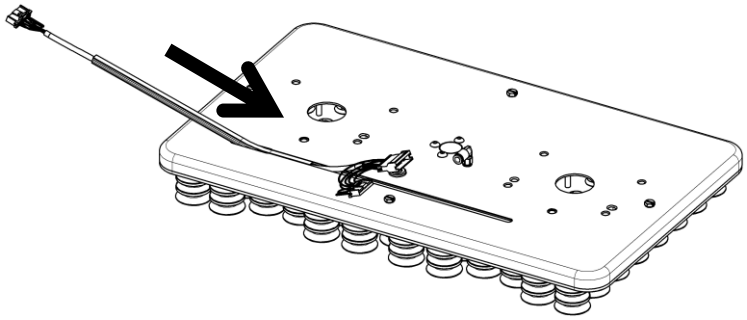


8.2.5 How to replace Connector cable assembly (Only for 400mmx240mm)

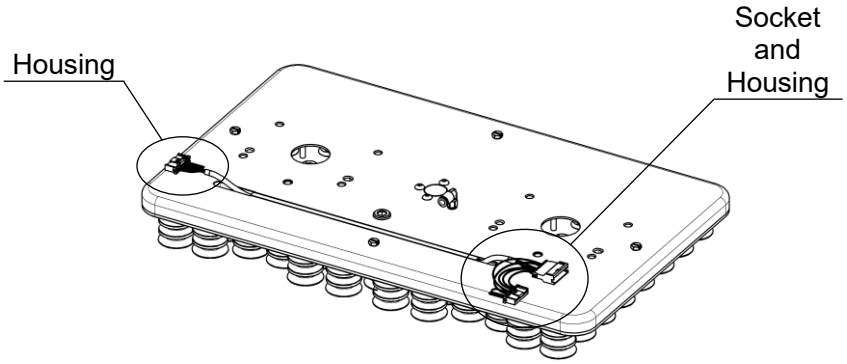




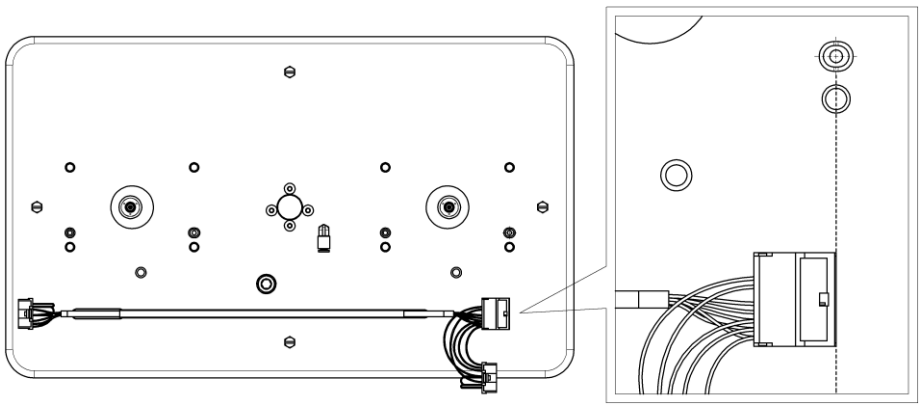
Step 1



Step 2



Step 3



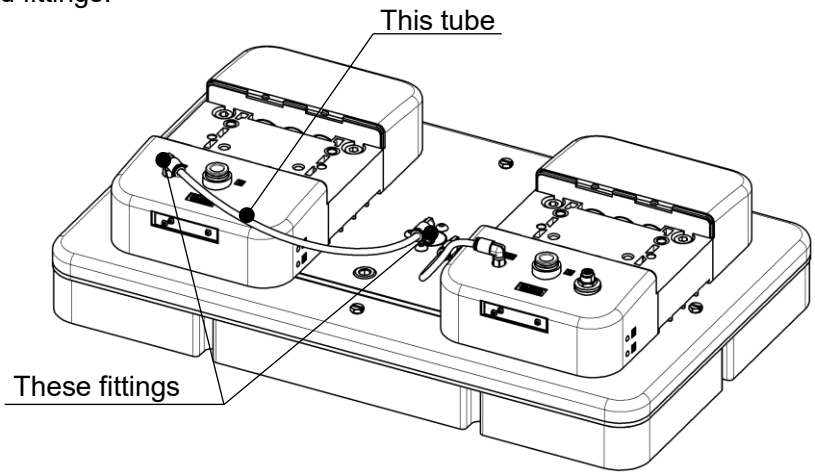
Align socket with hole as the above figure.

8.2.6 How to switch from ZGS to ZGP

■400mmx240mm

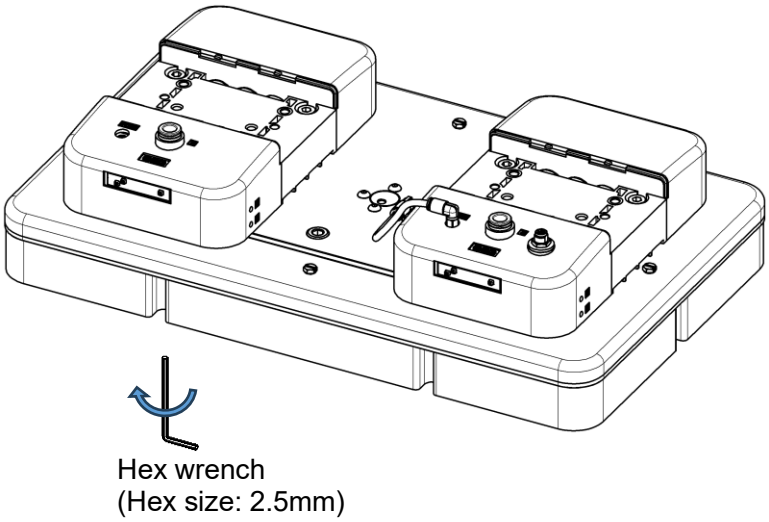
Step 1:

Remove tube and fittings.



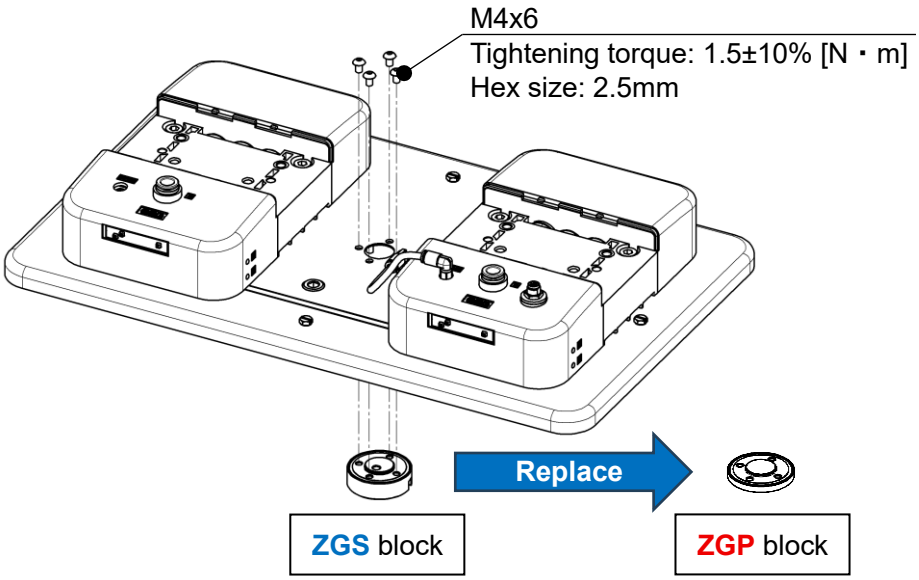
Step 2:

Remove foam with plate.



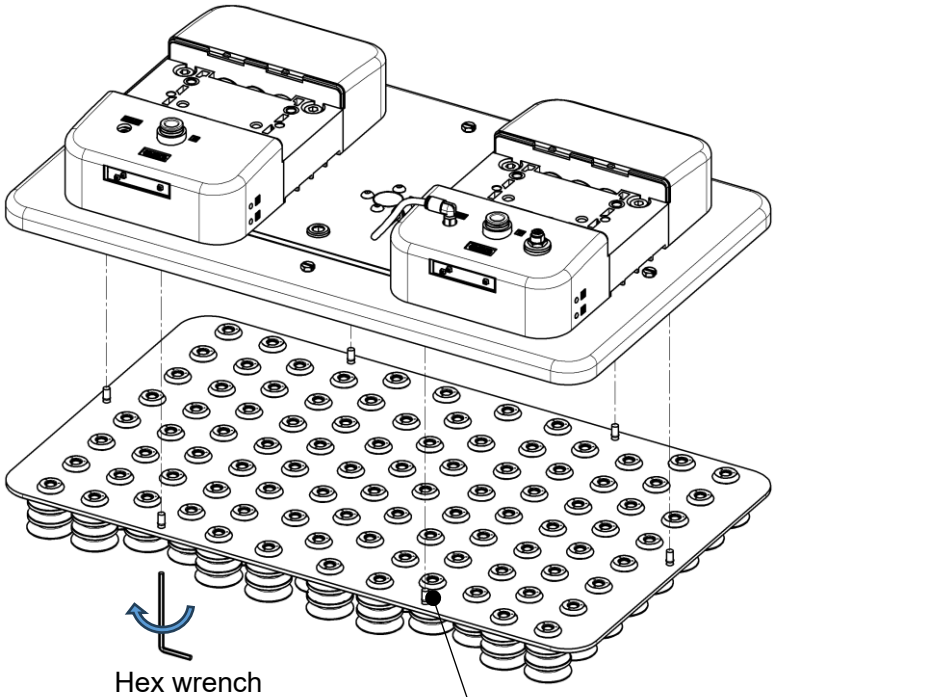
Step 3:

Remove ZGS block and replace with ZGP block.



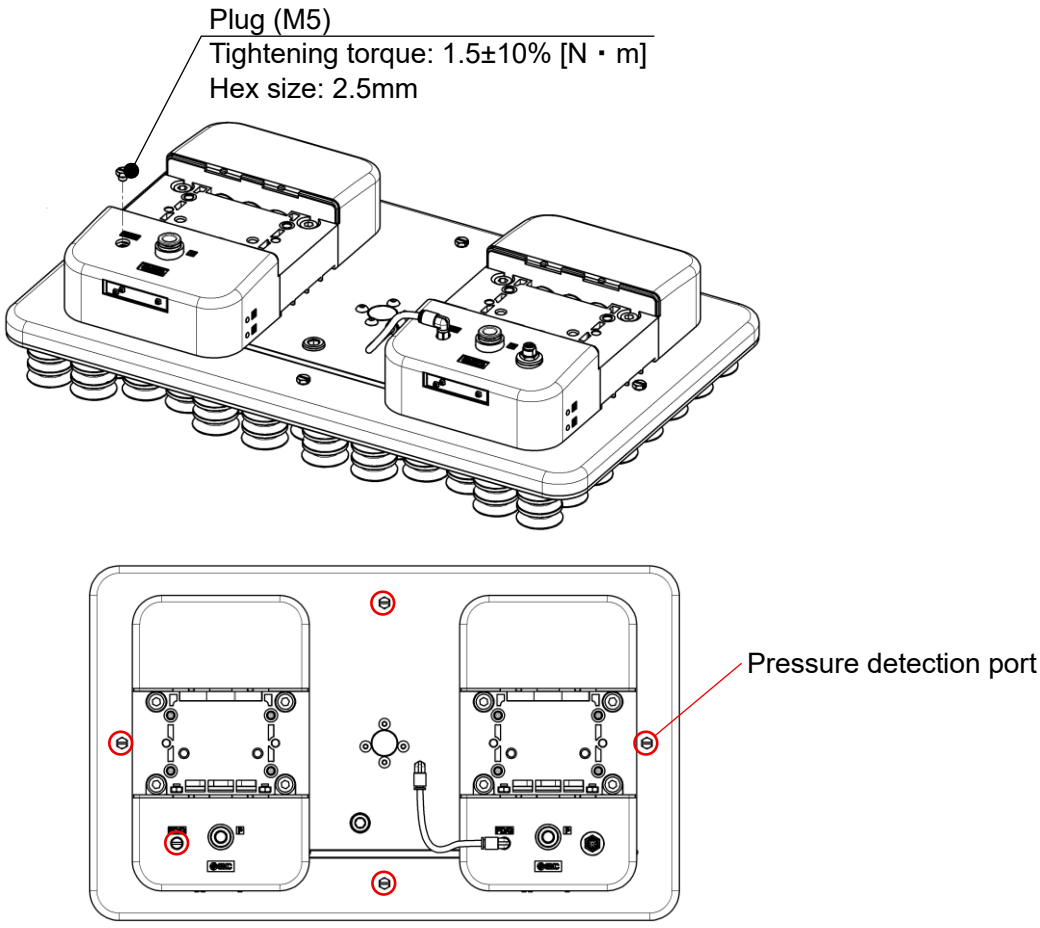
Step 4:

Assemble plate with suction cups or plate with plugs.



Step 5:

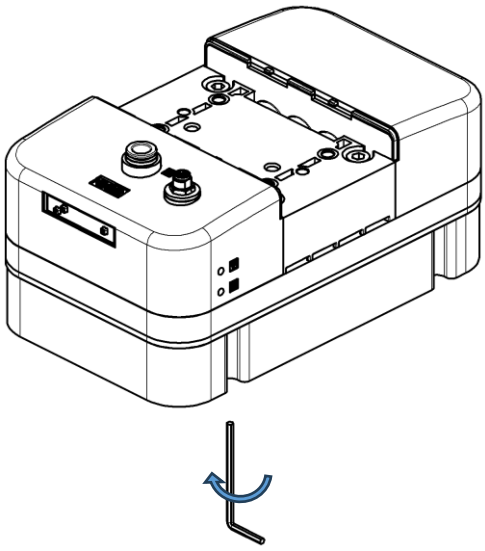
Assemble plug(s). Ensure that 5 pressure detection ports are plugged as shown the figure below.
*) ZGP can detect pressure only inside base plate.



■300mmx180mm, 200mmx120mm

Step 1:

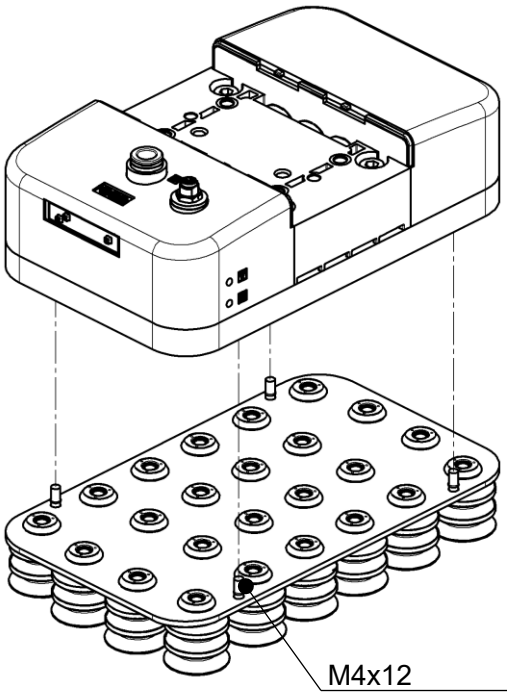
Remove foam with plate.



Hex wrench
(Hex size: 2.5mm)

Step 2:

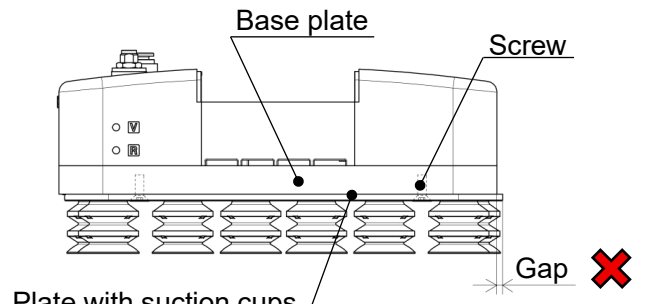
Assemble plate with suction cups or plate with plugs.



M4x12
Tightening torque: 1.5±10% [N・m]
Hex size: 2.5mm

Hex wrench

Plate with suction cups has an orientation. Before tightening screws, ensure that the plate aligns with the base plate without a gap.

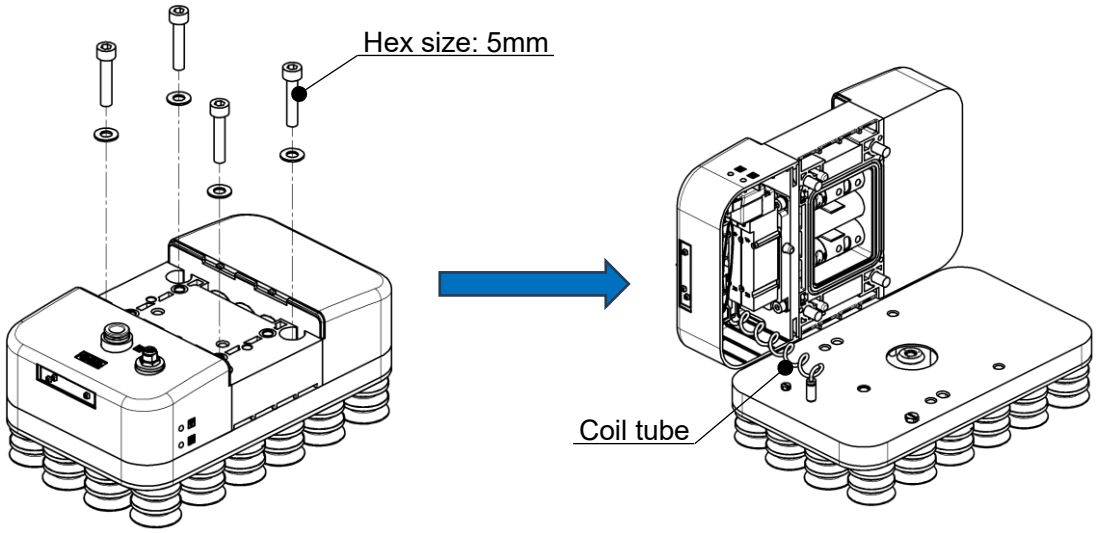


Wrong orientation

If ZGS is the type which detects pressure inside a foam hole, proceed with the steps below. If ZGS is the type which detects pressure inside base plate, disregard the below.

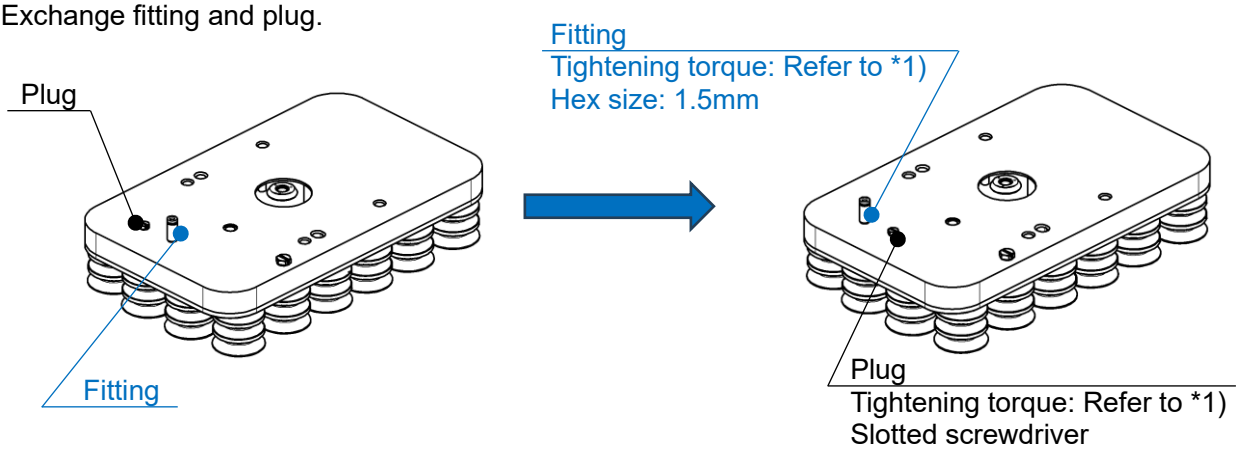
Step 3:

Remove ejector unit and coil tube.



Step 4:

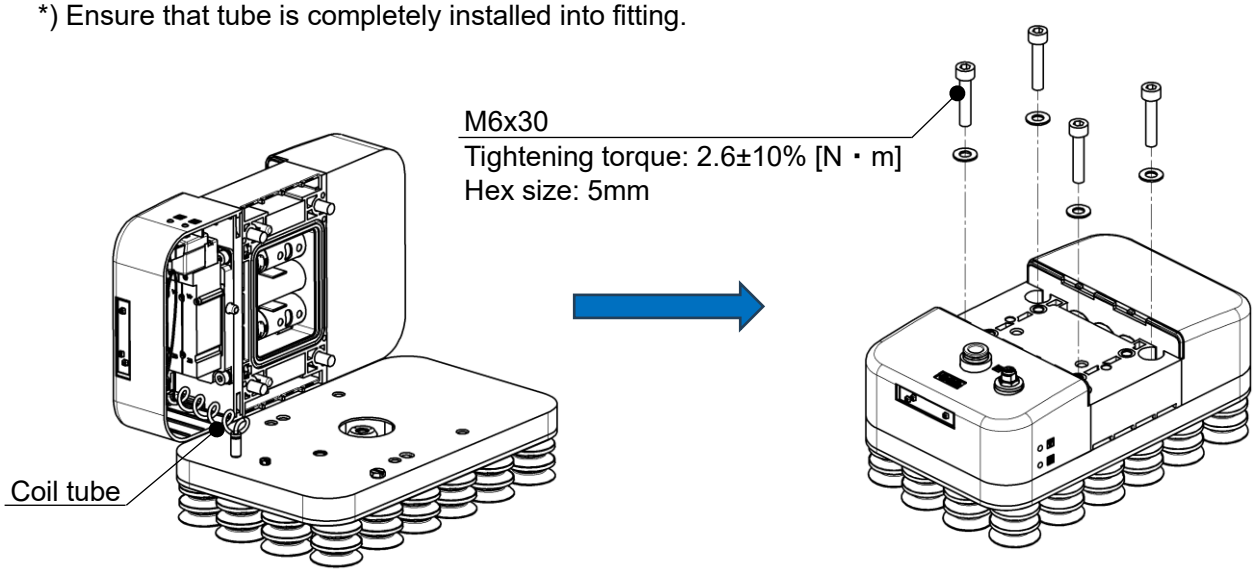
Exchange fitting and plug.



*1) After tightening by hand, use a tool to tighten an additional 1/4 turn.
A reference value for the tightening torque is 0.4 to 0.5N・m.

Step 5:

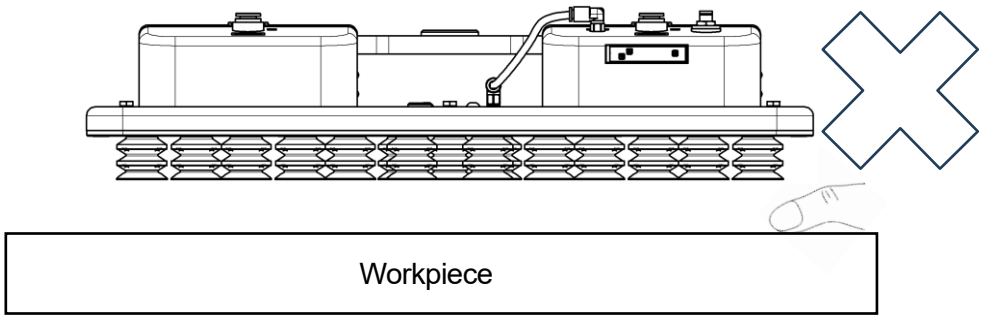
Assemble coil tube and ejector unit.
*) Ensure that tube is completely installed into fitting.



9. Precautions

⚠ Warning

Do not put a finger between the cups and the workpiece. It will be pinched during suction.



⚠ Caution

1) Test the product before use by installing it on the equipment and operating it in your operating environment or conditions to ensure that it meets required functionality, taking into account the following:

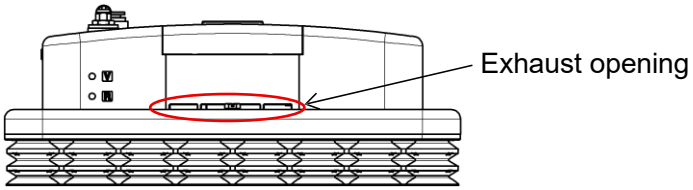
   - Porous workpieces such as cardboard cause more air leakage than other workpieces, resulting in a decrease in lifting force.

   In addition, take safety measures before use to prevent accidents, such as workpieces being dropped during transport.

2) Design the equipment with safety in mind, taking into account a vacuum pressure drop caused by a power or air supply failure. Provide preventive measures against the fall of workpieces where this may cause danger.

3) Use this product within its specifications.
   If it is used outside the specifications, its performance will decrease, resulting in serious damage or injury.

4) Do not block the exhaust opening of the product and restrict air exhaust from it.



5) Start generating vacuum after suction cups contact workpieces.
   If starting to generate vacuum before suction cups contact workpieces, it may cause suction failure because vacuum saving valves close.

6) Do not pressurize the product without the ejector cover. Ejector assemblies could jump out.

7) Use this product avoiding resonance. Too much load may apply to the product due to resonance, resulting in product damage.

8) Premature clogging may occur if the product is used in a dusty environment or used to pick up dusty workpieces. Perform maintenance of the product regularly, including replacement of suction cups.

9) The presence of oil or water on the product or workpiece can adversely affect the product, causing a decrease in performance.

■Storage

⚠ Warning

1) Do not store the product in a place where it is exposed to rain, water, harmful gases or liquids.
2) Store the product out of direct sunlight and within the product's operating temperature range.
3) Do not apply vibration or impact to the product during storage.

10. Troubleshooting

When any failure occurs to the product, perform the following trouble shooting.

Failure phenomenon		Possible causes		Countermeasure No.
Vacuum absorption failure	Vacuum is not generated.	Supply valve does not operate.	Power supply voltage drop	1)
			Electrical wire failure	2)
			Supply pressure is outside the operating pressure range.	3)
	Vacuum pressure decreased.	Clogging by foreign matter or particles		4), 5)
		Clogging of the filters		5)
		Clogging of the sound absorbing materials		4), 5)
		Air leak due to deterioration or wear of the adsorbing parts		6)
		Incorrect assembly during maintenance (Incorrect assembly of gaskets or O-rings)		7)
		Insufficient supply pressure		8)
		Simultaneous operation of supply valve and release valve		9)
		Sealing failure due to the deterioration of the check valve		10)
Fluctuation of vacuum pressure	Noise is generated intermittently when air is exhausted when adsorbing by vacuum and vacuum pressure slightly fluctuates.	Vibration of fluid when vacuum pressure is generated		11)
Vacuum release failure	Blow-off air is not output.	Release valve does not operate	Power supply voltage drop	1)
			Electrical wire failure	2)
			Supply pressure is outside the operating pressure range.	3)
	Workpiece is not released smoothly.	Decrease in blow-off air		12)
		Simultaneous operation of supply valve and release valve		9)
Pressure switch ② indicates numbers other than zero.		Indication error		13)

No	Countermeasure
1)	Adjust the rated voltage so that the supply voltage for the solenoid valve is within +/-10% of the rated voltage while the simultaneously energized equipment is ON.
2)	Ensure that each wire is correctly connected including power supply and cable for the vacuum gripper system.
3)	If the supply pressure is lower than the operating pressure range, it may cause operation failure of the valves. If the supply pressure is higher than the operating pressure range, it may cause operation failure due to premature wear of sealing. Adjust the supply pressure appropriately. Ensure that the supply pressure is within the operating range, when the ejector is operating.
4)	Oil mist in the supply air or particles in the piping may cause clogging if they go into the ejector. This may cause operation failure. Blow the piping with air to eliminate particles. It is recommended installing the mist separator and air filter to clean the supply air. Perform regular maintenance for mist separator and filter. Refer to the product catalogue or operation manual for details of the maintenance.
5)	Substances adhering to the surface of the workpiece may enter into the ejector, causing clogging. Perform regular maintenance for the mesh filters of the vacuum saving valves and the sound adsorbing materials.
6)	Replace the suction cups or plate with suction cups. If premature wear occurs, check operating conditions such as vacuum pressure, suitability between suction cups and the workpiece and as needed, change operating conditions.
7)	If the gaskets or O-rings are lost or pinched after disassembling for maintenance, vacuum leak or air leak occurs there. In this case, disassemble again and correctly assemble the gaskets and O-rings.
8)	If the supply pressure decreases during the operation of the ejector, the generated vacuum pressure decreases. Supply adequate flow rate so that the supply pressure will not decrease when other air equipment operates simultaneously.
9)	Vacuum pressure and release flow decrease if the supply valve and release valve are open simultaneously. Check the control program and wiring.
10)	In the following cases, the vacuum pressure does not increase adequately. Replace the ejector assembly. (1) The check valve in the ejector assembly is deteriorated by use for a long period. (2) Particles are attached on the sealing surface of the check valve in the ejector assembly.
11)	When the ejector vacuums the workpiece, high speed air coming out of the nozzle collides into the diffuser I.D. and bounces back, generating vibration in the exhaust air. Because of this, the vacuum pressure fluctuates slightly and is not stabilized. There should be no functional problem with the ejector. The phenomenon causes noise or could be a problem for the setting of pressure switch. The noise can be eliminated by changing the supply pressure. Adjust the supply pressure while checking the exhaust noise and vacuum pressure until the noise disappears. Ejector may generate noise due to the increase of exhaust resistance. When the sound absorbing materials become dirty, the replacement of them may improve the fluctuation and noise.
12)	If the mesh filters of the vacuum saving valves are clogged, blow-off air decreases. Regularly perform maintenance.
13)	Pressure switch ② is plugged and the pressure switch could indicate numbers other than zero because of the difference between pressure inside of the plugged flow path and atmospheric pressure. In case that the indication error might cause problems, remove the plug so that Pressure switch ② can detect atmospheric pressure. Then perform “Zero clear” after reassembling the plug. Regarding how to perform “Zero clear”, refer to operation manual for ZSE10 series.

Revision history

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