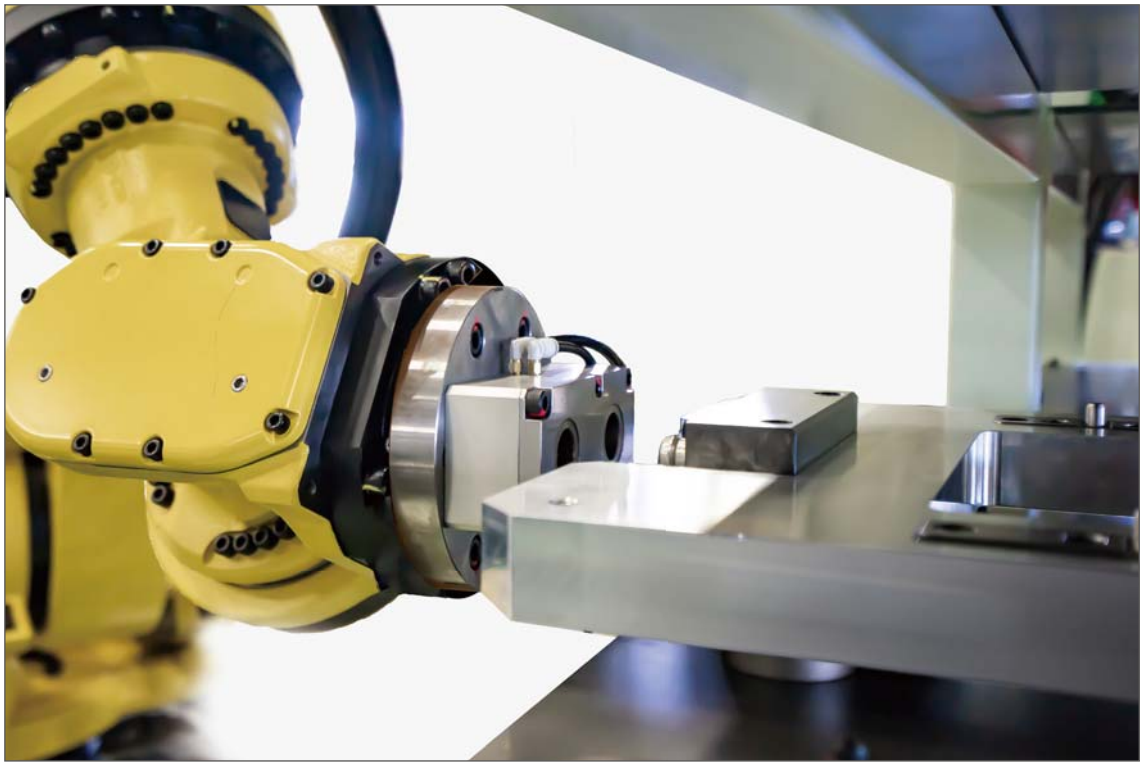
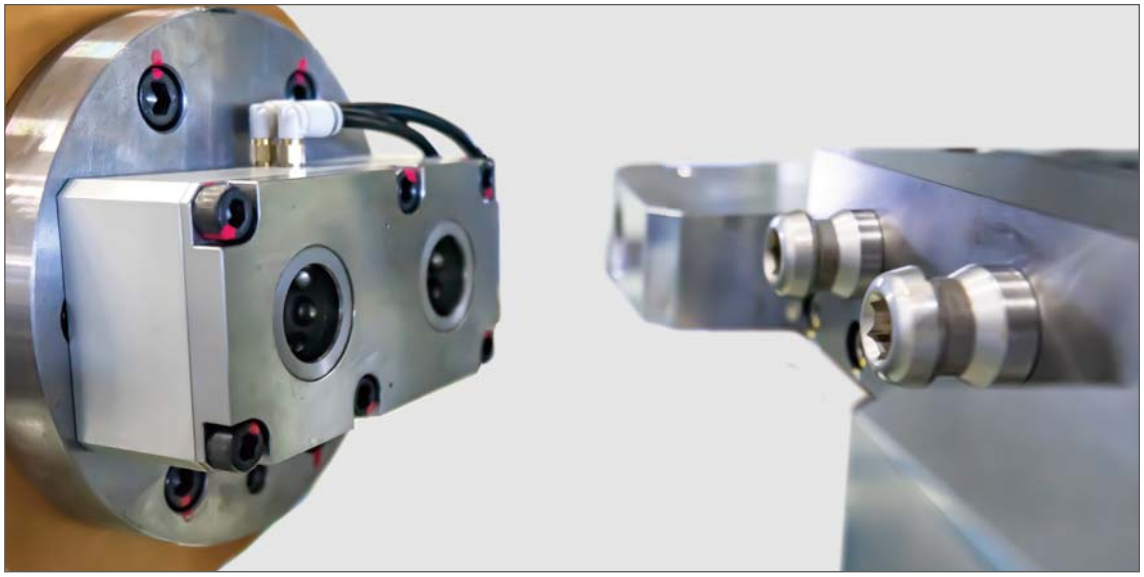
Pascal

air Pallet gripper

model **RPG** PAT. P.

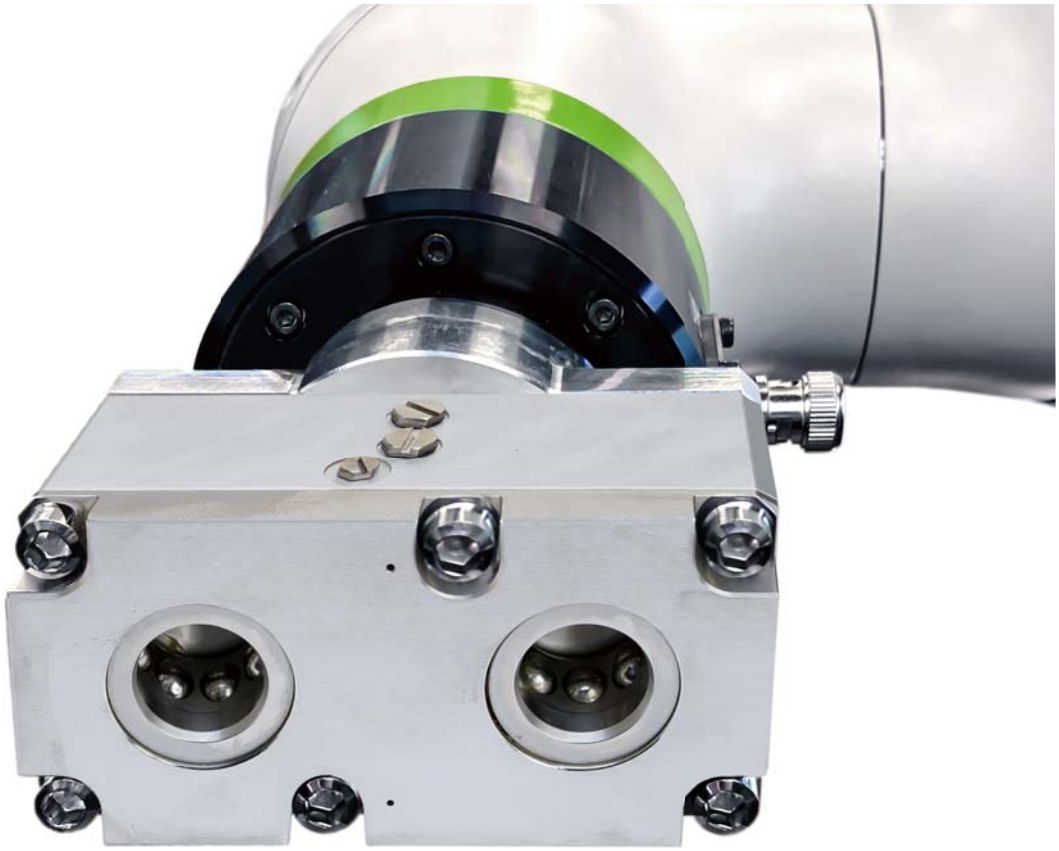
Locks a pallet firmly by 2 cylinders

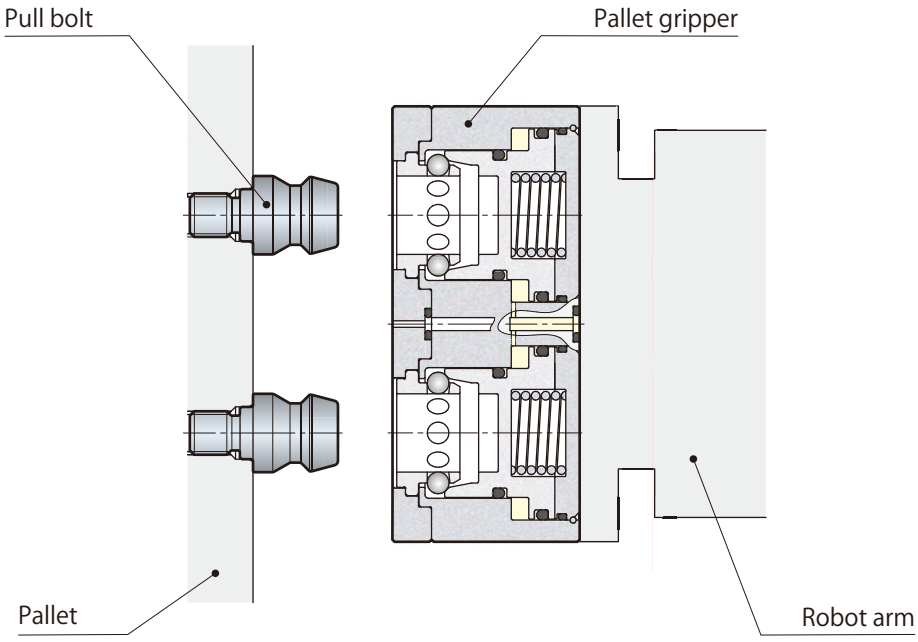




Pallet gripper model RPG

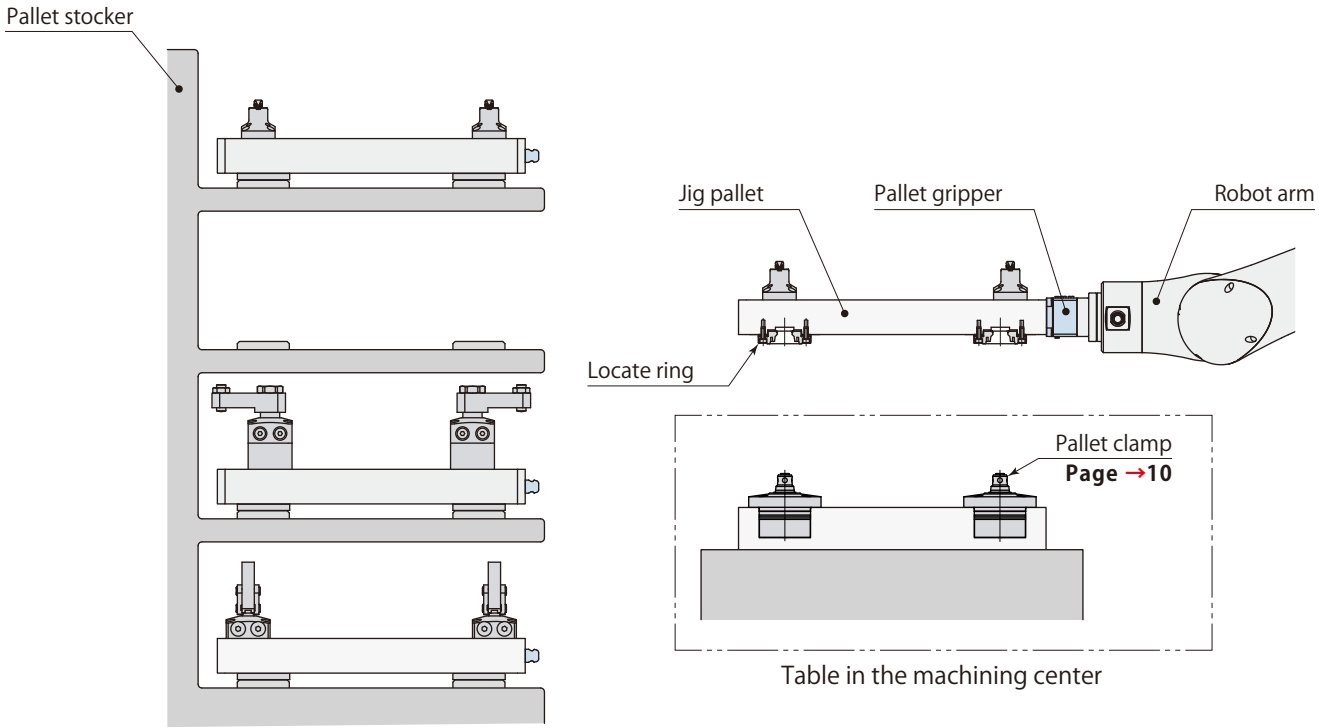
PAT. P.





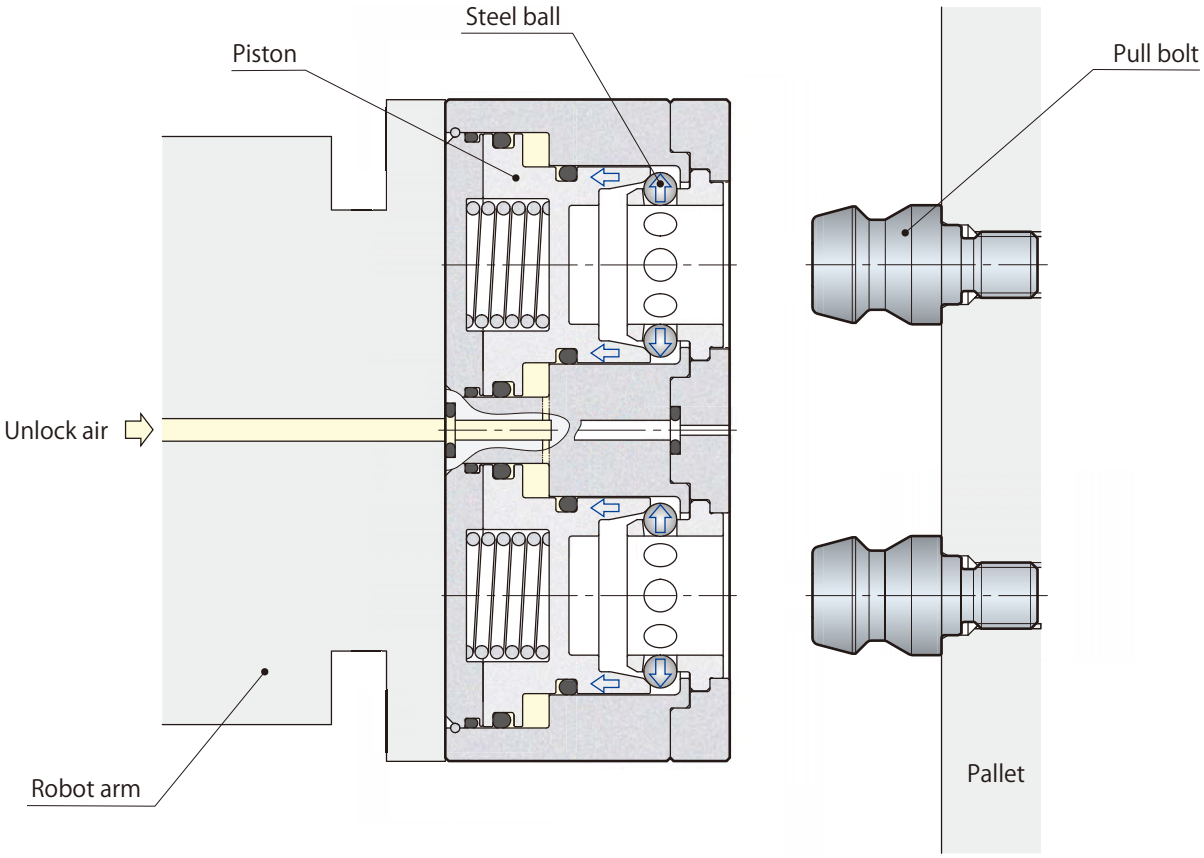
The gripper exerts high clamping force because it clamps two pull bolts, and maintains excellent positioning repeatability over a long period of time. The pull bolts can be mounted on the pallet and eliminates the need for an adaptor plate, allowing the pallet design compact.

Pallet Change System by Robots

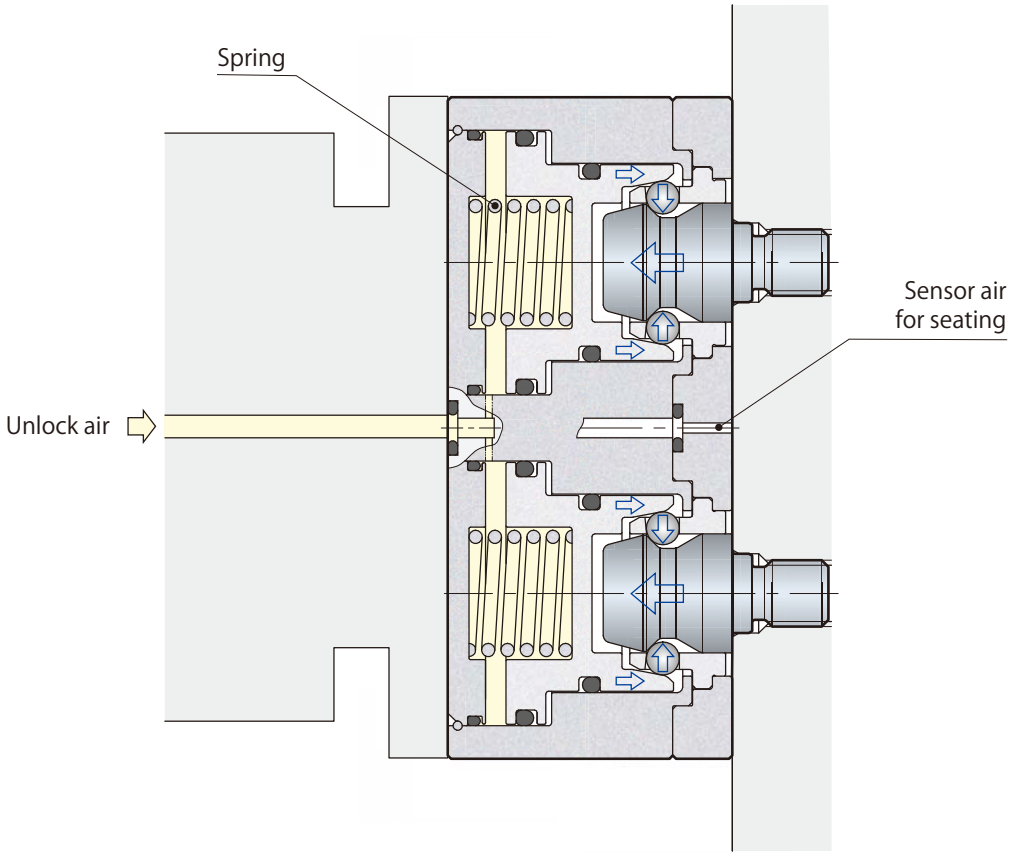


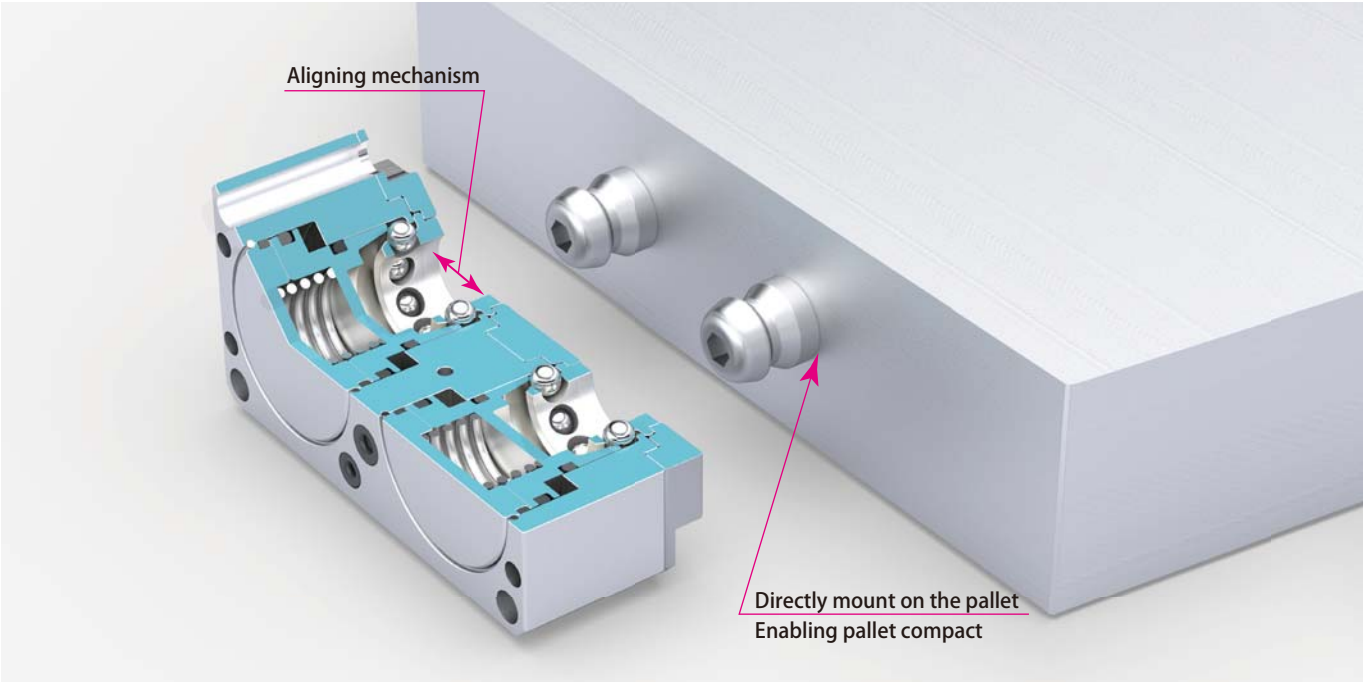
Application example

Unlock


Steel ball
Piston
Pull bolt
Unlock air
Robot arm
Pallet

Lock


Spring
Sensor air
for seating
Unlock air



Model designation

RPG — Size: 05 / 07 — A : Pallet gripper / P : Pull bolt*

*: 2 pcs per set

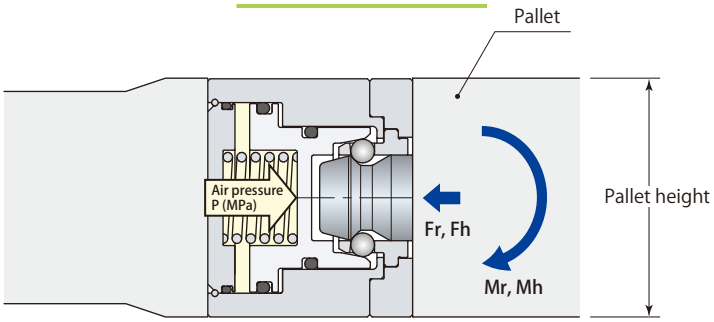
Specifications

Model			RPG05	RPG07
Air pressure range		MPa	0.25 ～ 0.5	
Positioning Repeatability		mm	0.06	0.08
Cylinder capacity	Lock	cm^3	10.1	33.9
	Unlock	cm^3	4.5	15.7
Clamping force*1	Air pressure 0 MPa	kN	0.41	0.85
	Air pressure 0.5MPa	kN	3.67	8.17
Holding force*1	Air pressure 0 MPa	kN	0.84	1.74
	Air pressure 0.5MPa	kN	7.47	16.6
Allowable Moment (clamping force base) air pressure at 0.5MPa*2		N·m	92	286
Allowable Moment (holding force base) air pressure at 0.5MPa*2		N·m	187	583
Allowable torque		N·m	424	1336
Mass	RPG□-A	kg	0.7	1.8
	RPG□-P	kg	0.03×2	0.1×2
Recommended tightening torque for mount screws		N·m	7	29
Recommended tightening torque for pull bolts*3		N·m	max. 44	max. 150

● Proof pressure : 0.75 MPa ● Operating temperature : 0～70 ℃ ● Working fluid : Air (*4) ● Lubrication: Not required
● Do not use under harsh environment (chips or coolant splash)

*1 : Tightening force denotes the force that pulls in the pull bolts, while holding force after gripped denotes the maximum tensile force that can hold the pallet. If a force greater than the clamping force is applied, a small gap will be created between the pallet gripper and pallet, but the pallet will continue to be held if the clamping force is less than the holding force after gripped.
*2 : The value indicates the pallet is clamped by entire body of the pallet gripper.
*3 : Tighten the bolt with appropriate torque according to the material of the pallet
*4 : Supply dry air through a filter of 5 μm or less

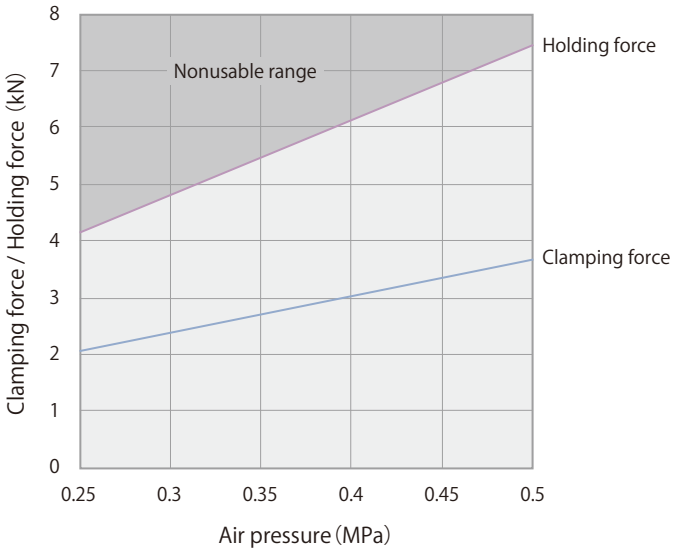
Performance Chart



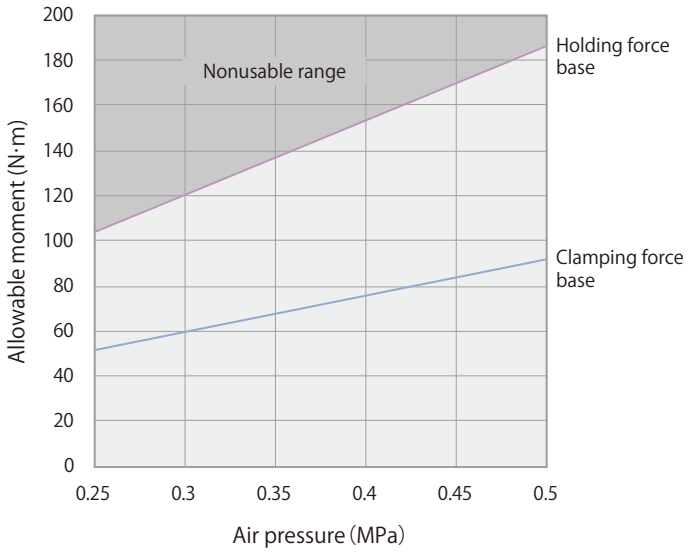
Allowable moment denotes when the pallet is clamped by entire body of the pallet gripper.
The value in the diagram decrease when the pallet height is smaller than that of the gripper.

RPG05

Clamping force Fr = 6.5 × P + 0.41
Holding force Fh = 13.25× P + 0.84

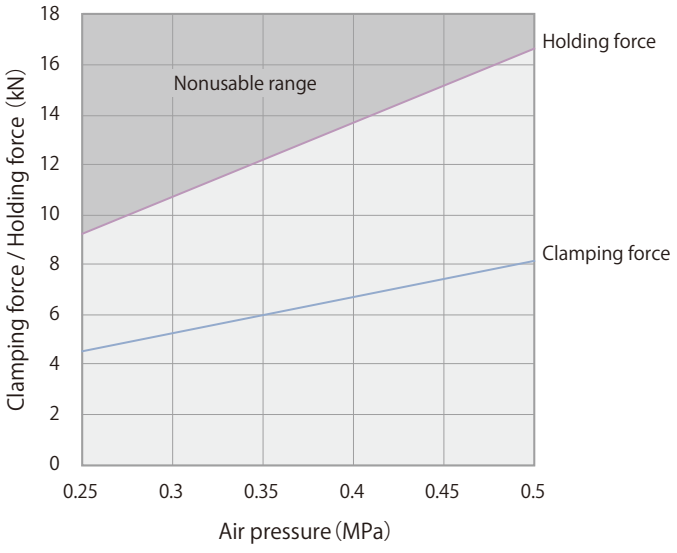


Allowable moment (clamping force base) Mr = 163× P + 10.4
Allowable moment (holding force base) Mh = 331× P + 21.1

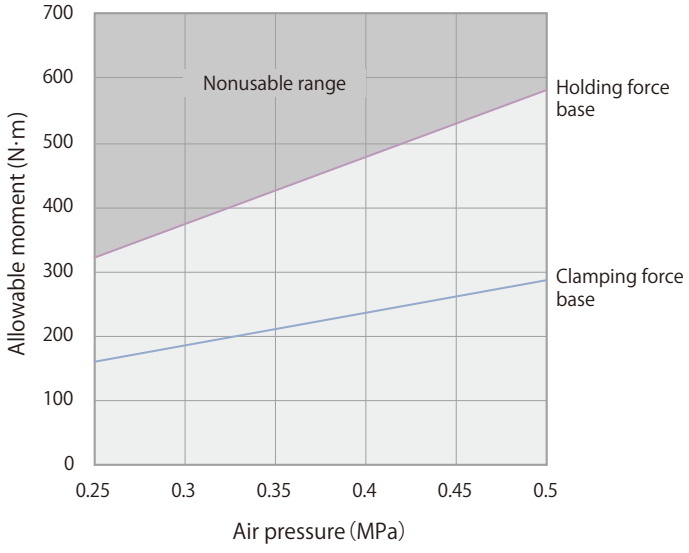


RPG07

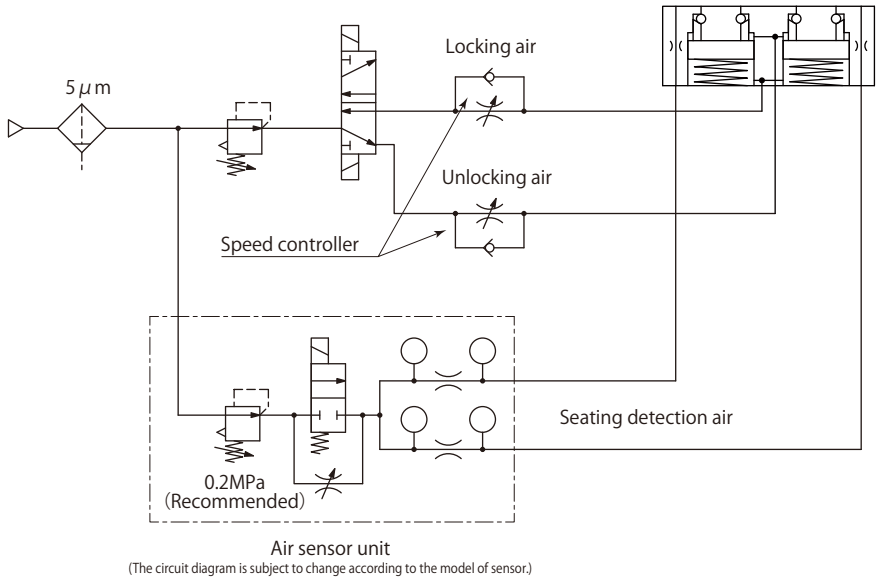
Clamping force Fr = 14.64 × P + 0.85
Holding force Fh = 29.82× P + 1.74



Allowable moment (clamping force base) Mr = 512× P + 29.9
Allowable moment (holding force base) Mh = 1044× P + 60.9



Pneumatic circuit diagram



- Adjust the speed of full stroke at 1 second and over by flow control valves to avoid impact when locking /unlocking operation.

Recommended operation condition for air sensor unit

Supplier and model	ISA3-F/G series manufactured by SMC
	GPS2-05, GPS3-E series manufactured by CKD
Air supply pressure	0.2 MPa
Inner diameter of piping	ø4 mm
Overall piping length	Less than 5 meter

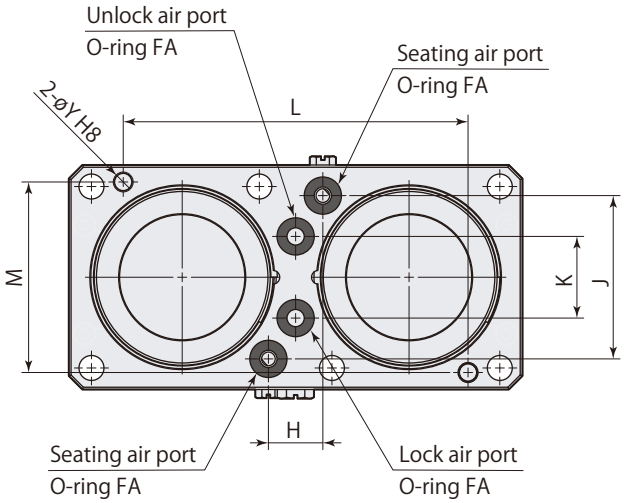
- Supply dry air through a filter of 5μm or less
- To prevent foreign substances from entering and adhering to the sensor, the air sensor unit should be controlled using a solenoid valve with a needle, and air should be supplied at all times."
- There is a case that air sensing cannot be made successfully as designed when it is used out of the usage shown on the left. Contact Technical Service Center for more detail.
- Refer to the instruction manual of sensor maker for how to set air sensor.
- Be careful when selecting the sensor because the pressure boost time and the pressure at detection vary depending on the sensor model.

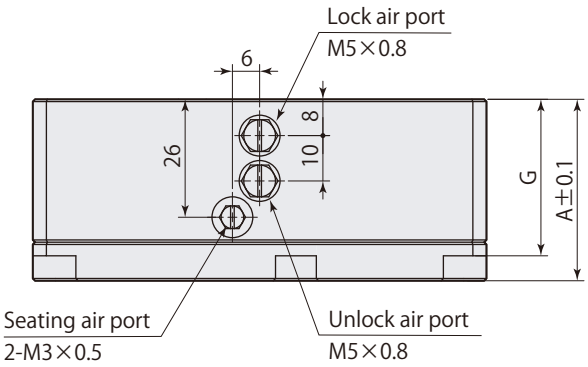
Caution when locking operation

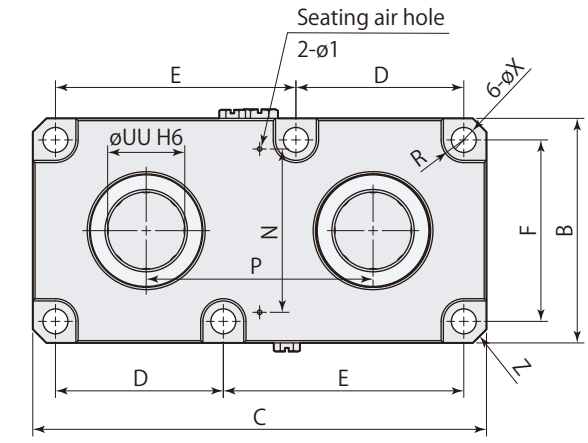
- Locking operation should be performed with the pallet gripper and pallet seating surface in full contact. Positioning is performed when the pull bolt is inserted into the pallet gripper. Design the system so that the pallet or robot side can be free during positioning. Otherwise, the robot or equipment may be damaged due to overload.

Dimensions

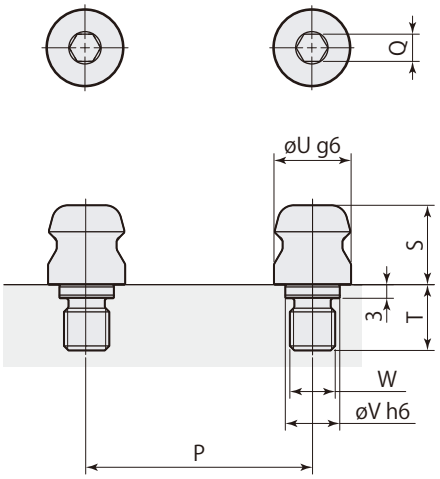
Pallet gripper







Pull bolt



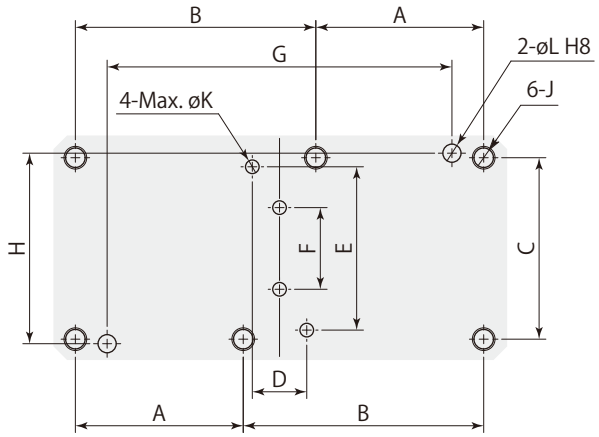
- Mounting bolts and positioning pin are not included.
- Remove the plug when piping from the side. Do not remove the O-ring.
- The two seating air ports are independently connected to the seating air holes.

mm

Model	RPG05	RPG07
A	40	50
B	49.5	69.5
C	100	140
D	37	53
E	53	73
F	40	56
G	34.5	41.5
H	12	12
J	36	54
K	18	22
L	76	108
M	42	60
N	36	52
P	50	70
Q(hex socket)	6	12
R	4.5	7
S	17.5	24
T	14.5	19.5
øU	$17\ ^{-0.006}_{-0.017}$	$25\ ^{-0.007}_{-0.020}$
øUU	$17\ ^{+0.011}_{0}$	$25\ ^{+0.013}_{0}$
øV	$12\ ^{0}_{-0.011}$	$18\ ^{0}_{-0.011}$
W	M10×1.5	M16×2
øX	5.5	9
øY	$4\ ^{+0.018}_{0}$ depth 5	$5\ ^{+0.018}_{0}$ depth 6
Z	C3	C4
O-ringFA（FKM-90）	P5	P6

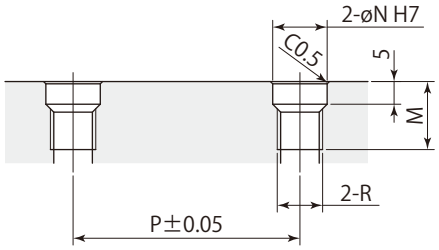
Mounting details

Pallet gripper



The mounting surface finish must be no rougher than Rz6.3 (ISO4 287:1997).

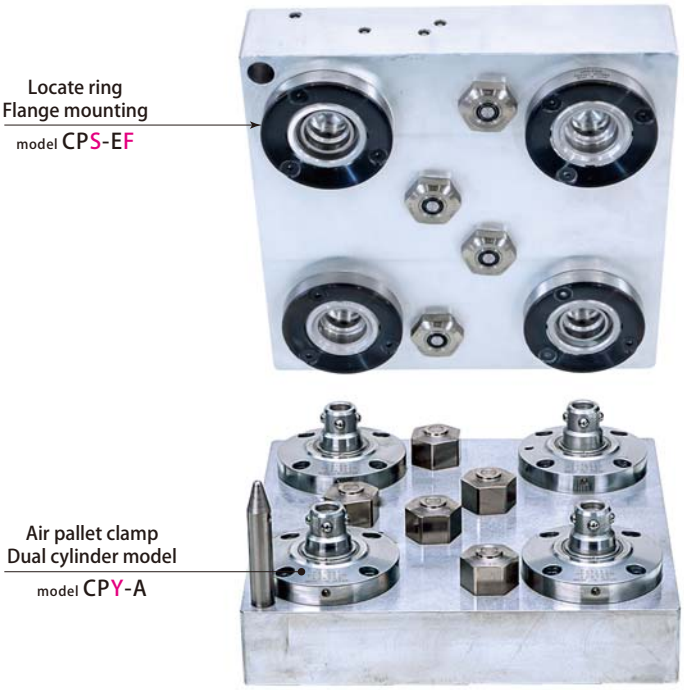
Pull bolt



mm

Model	RPG05	RPG07
A	37	53
B	53	73
C	40	56
D	12	12
E	36	54
F	18	22
G	76	108
H	42	60
J	M5	M8
øK	3	4
øL	$4^{+0.018}_{0}$	$5^{+0.018}_{0}$
M	15	20
øN	$12^{+0.018}_{0}$	$18^{+0.018}_{0}$
P	50	70
R	M10×1.5	M16×2

Pallet clamp



Locate ring
Pallet lower surface mounting
model CPS-ED

Locate ring
Pallet upper surface mounting
model CPS-ET

Locate ring
Flange mounting
model CPS-EF

Locate ring
model RPC-N

Spring clamp
model CPC-A

Hydraulic clamp
model CPH-A

Air pallet clamp
Dual cylinder model
model CPY-A

Air pallet clamp
model RPC-A

Refer to separate catalogs (PAL System CLS-51, Air Pallet Clamp RPC PA-699) for detail.

Pascal

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CERTIFICATE OF APPROVAL ISO9001

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