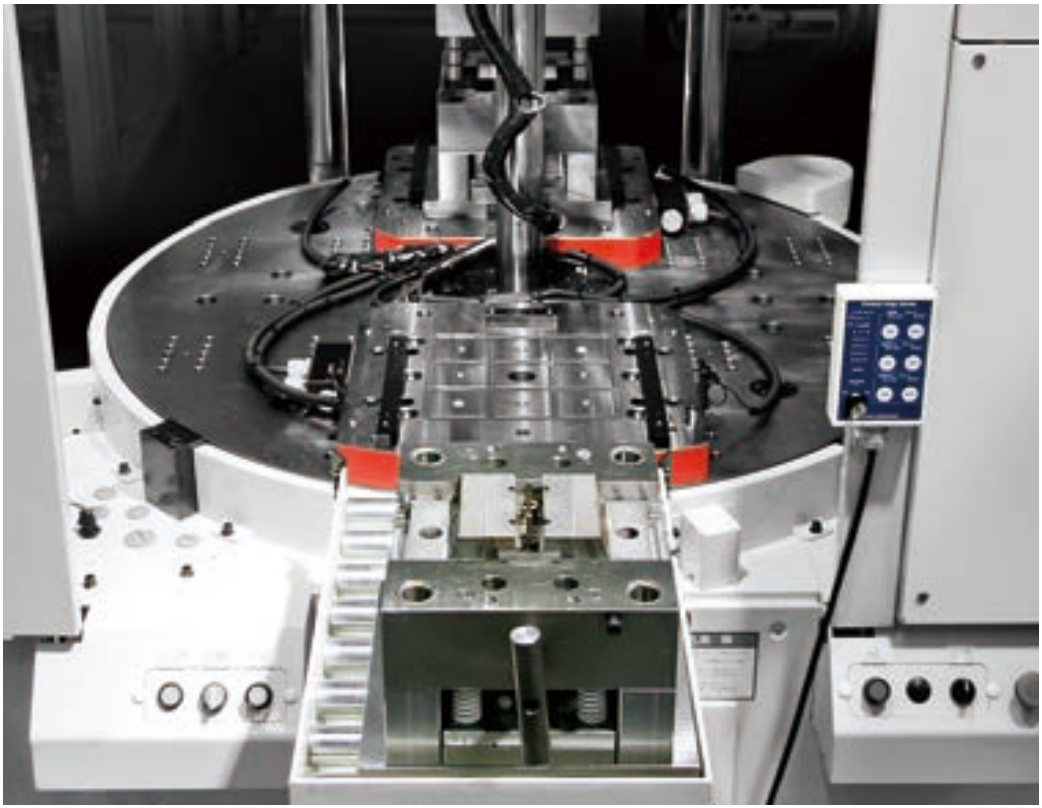
Pascal

molding machine system

Improving the set-up time for vertical IMM



Clamping

Clamp the workpiece

Clamp the mold

Clamp the tool

Changing

Change the workpiece

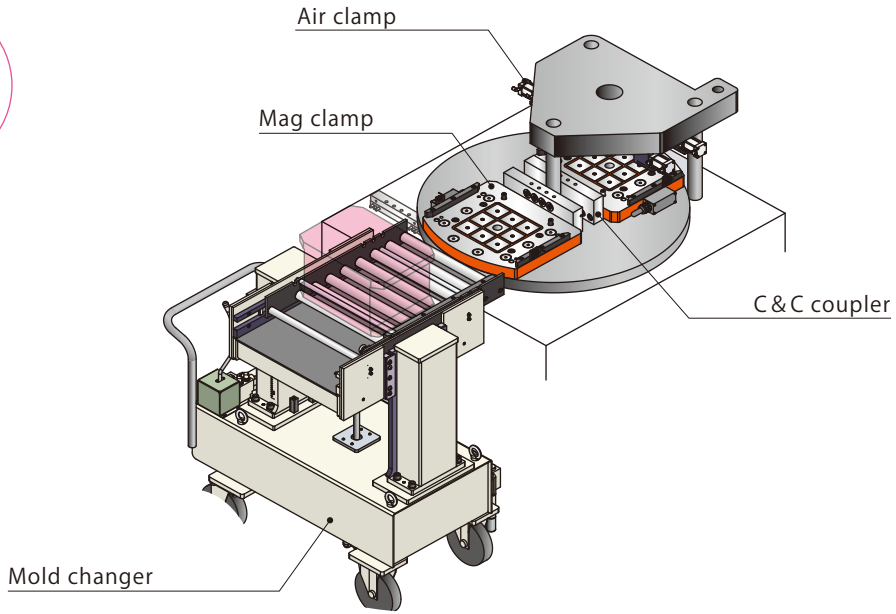
Change the mold

Change the tool

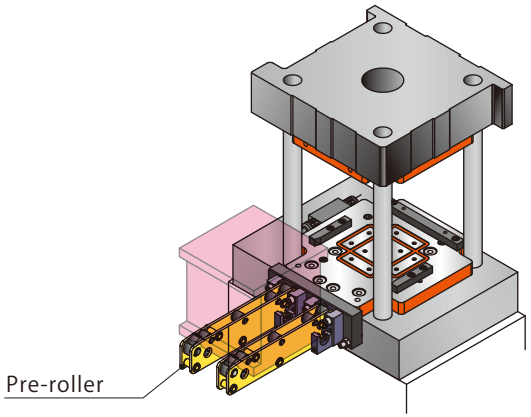
Control

Control them

Rotary table

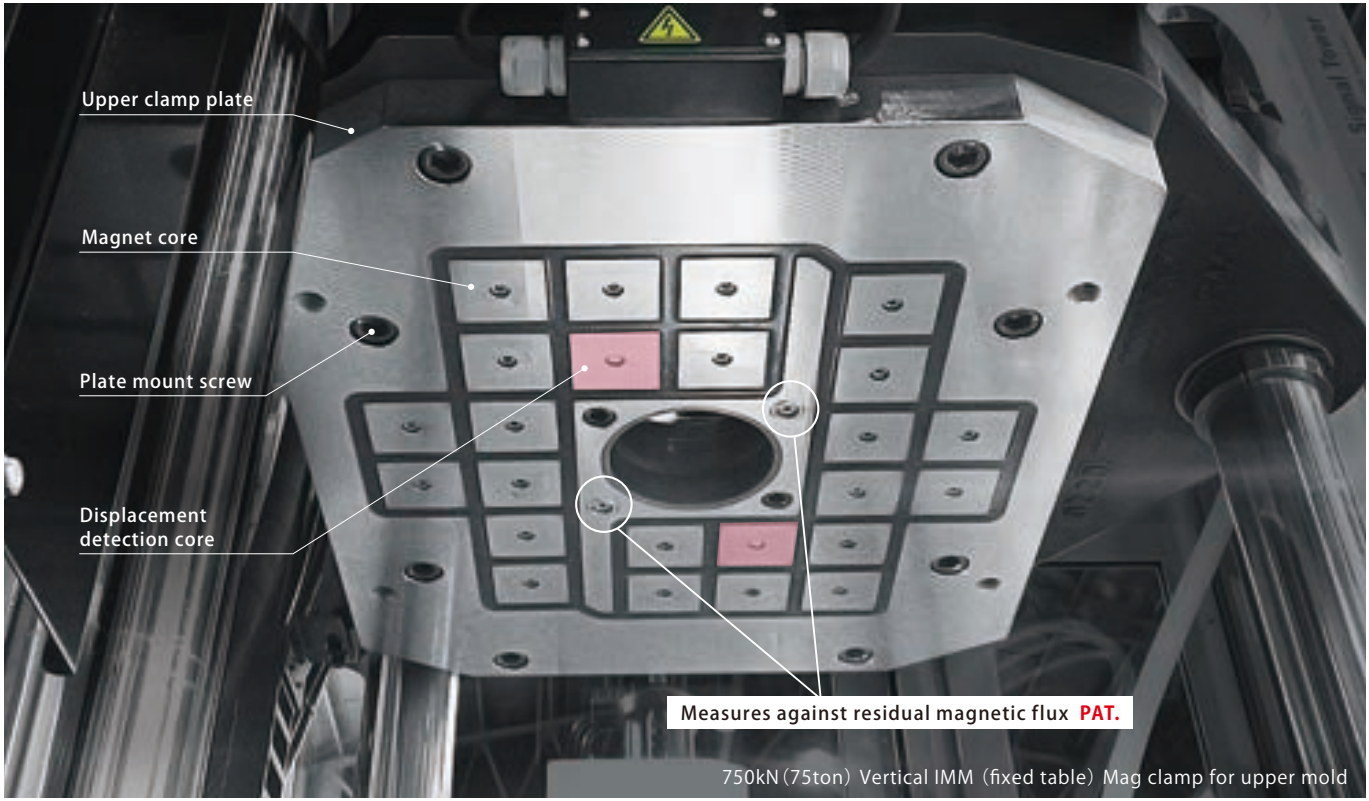


Fixed table

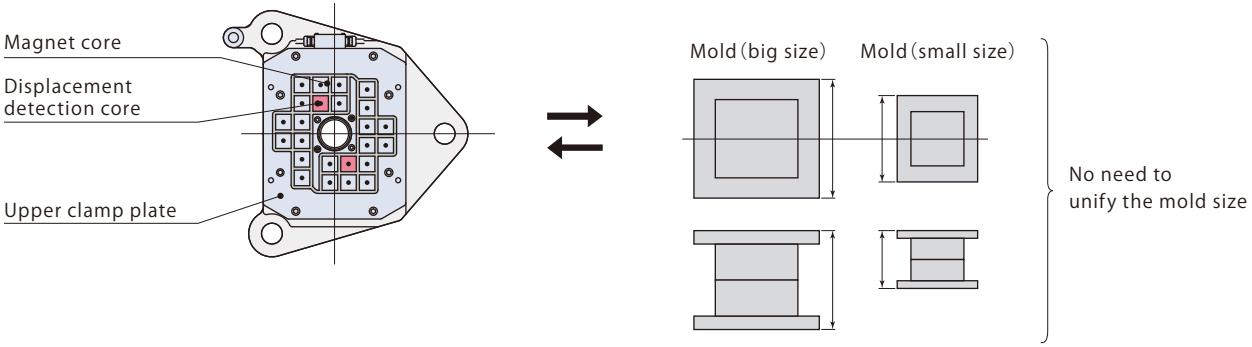


Pascal mag clamp

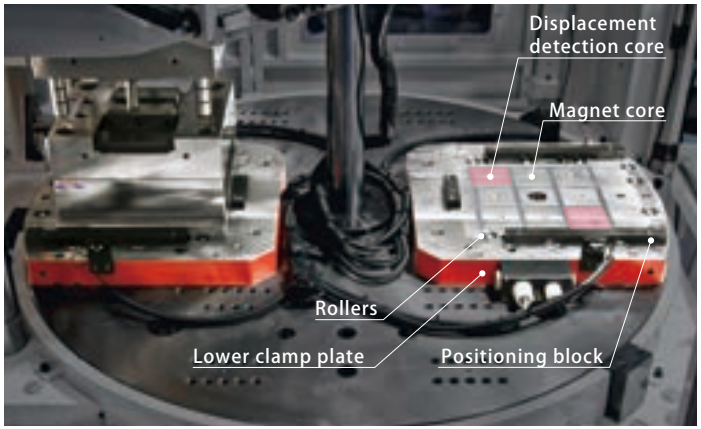
Mag clamp for vertical IMM



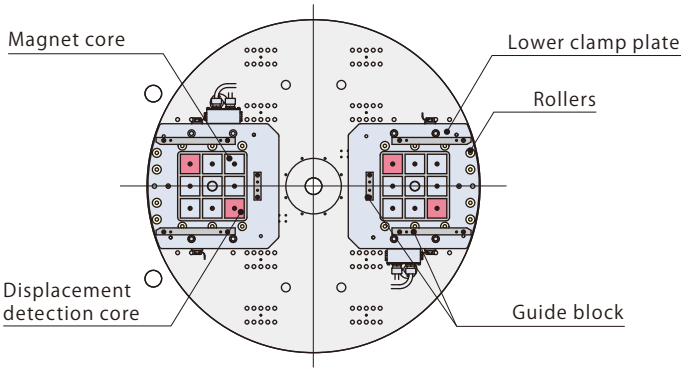
750kN (75ton) Vertical IMM (fixed table) Mag clamp for upper mold

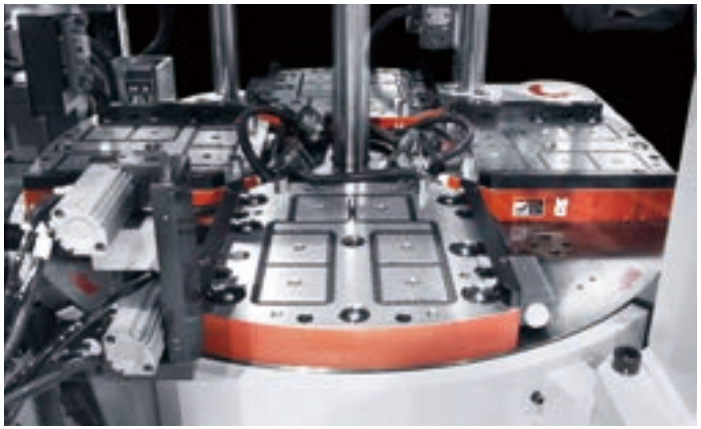


The introduction of **Mag clamp** in the vertical IMM
eliminates bolting job (temporary tightening, retightening) in the limited space of the machine
and realizes shortening the set up time considerably.

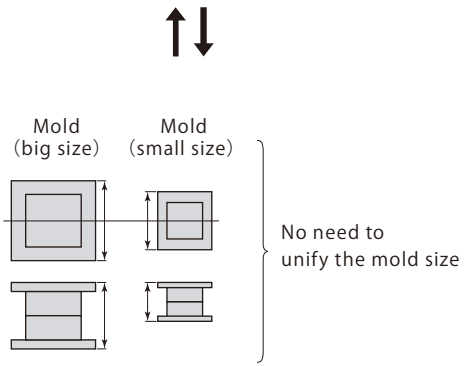


750kN (75ton) Vertical IMM (rotary) Mag clamp for lower mold



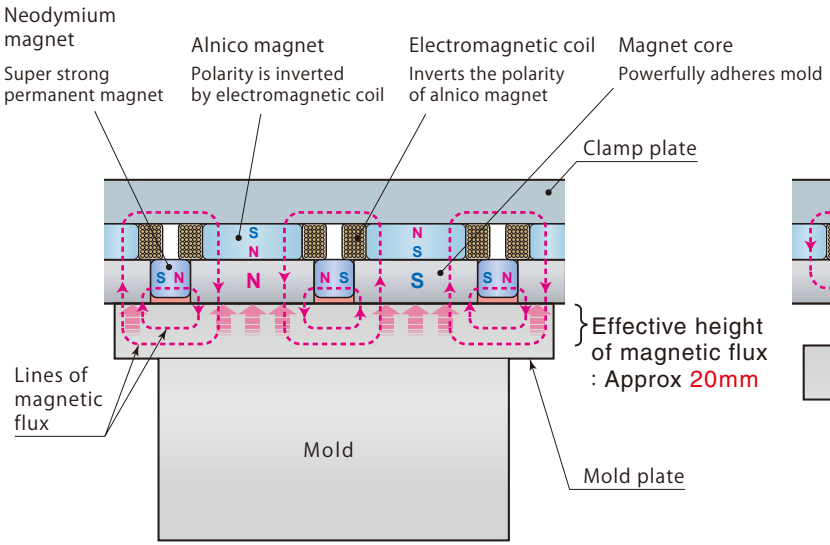


450kN (45ton) Vertical IMM (rotary) Mag clamp for lower mold



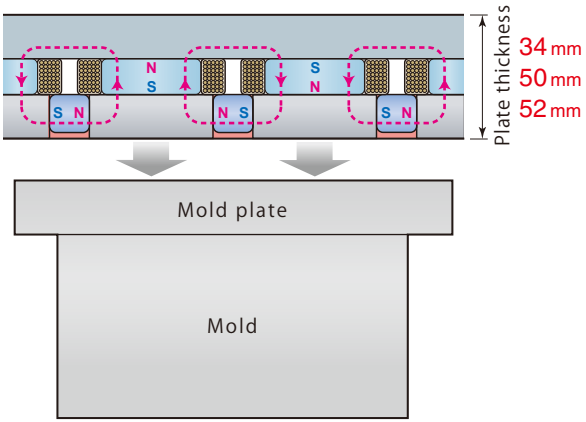
Mag clamp structure and function

Clamp (Magnetized)



1. Electromagnetic coil is energized for 0.5 sec.
2. Polarity of alnico magnet is inverted.
3. Neodymium magnet and alnico magnet become homopolar.
4. Magnet core becomes a strong magnet to clamp the mold.

Unclamp (Demagnetized)

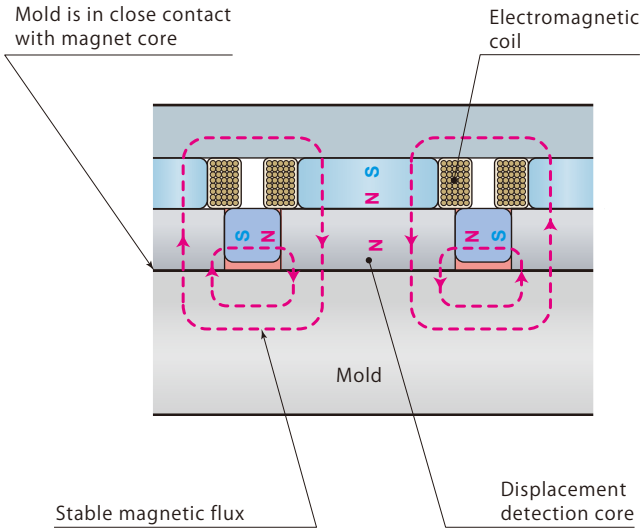


1. Electromagnetic coil is energized for 0.5 sec
2. Polarity of alnico magnet is inverted.
3. Magnetic flux of neodymium magnet and alnico magnet is not emitted from the surface of the magnet core so that the mold can be unclamped.

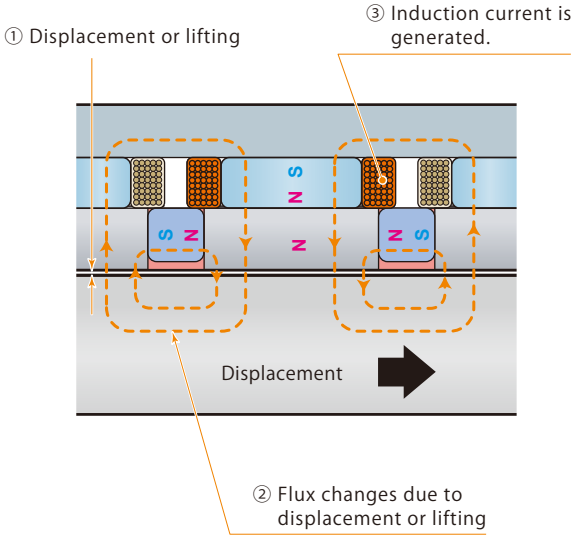
Displacement detection system（standard） PAT.

Displacement or lifting of the mold can be detected by the electromagnetic coils built into the magnet core near the center of the clamp plates.
When the mold moves, these electromagnetic coils detect an induction current signal.

Normal clamping status

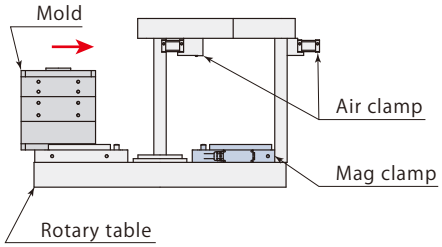


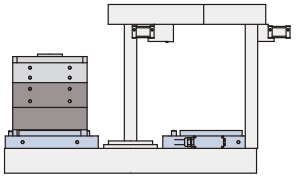
When the mold moves

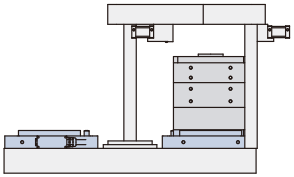


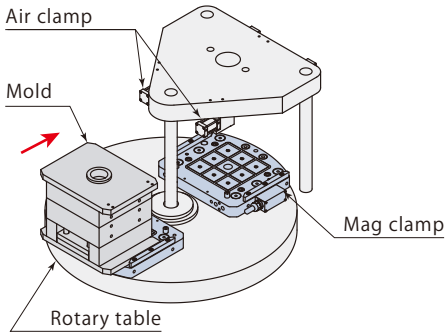
Mag clamp for lower mold mold loading procedure

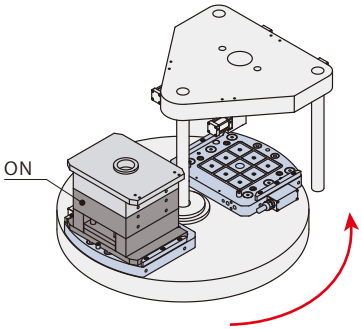
① Loading the master mold → ②-1 Lower Mag clamp ON, ②-2 Table rotates → ③-1 Table stops rotating, ③-2 Lower Mag clamp OFF →

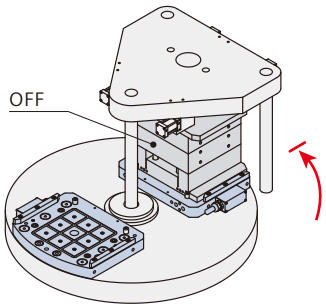






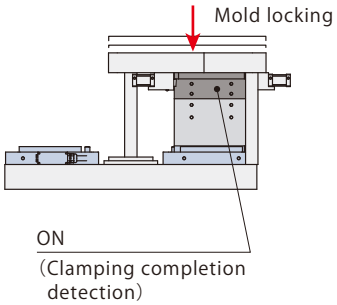


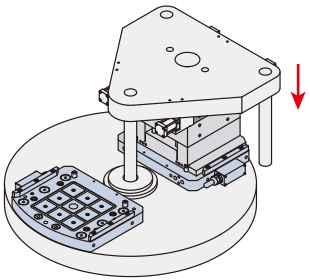




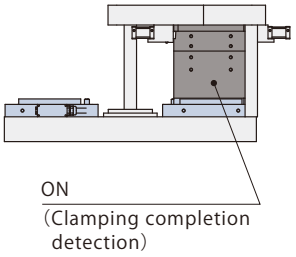
④-1 Mold clamped by platens with Mag clamp OFF

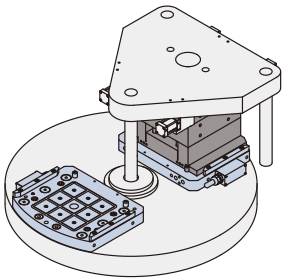
④-2 Upper Air clamp ON



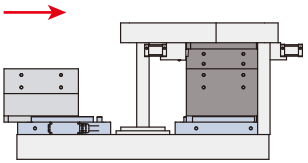


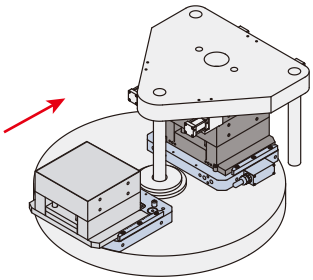
⑤ Lower Mag clamp ON





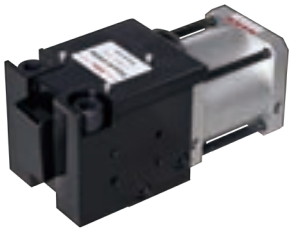
⑥ Lower mold to be positioned by the procedure of ② to ⑤





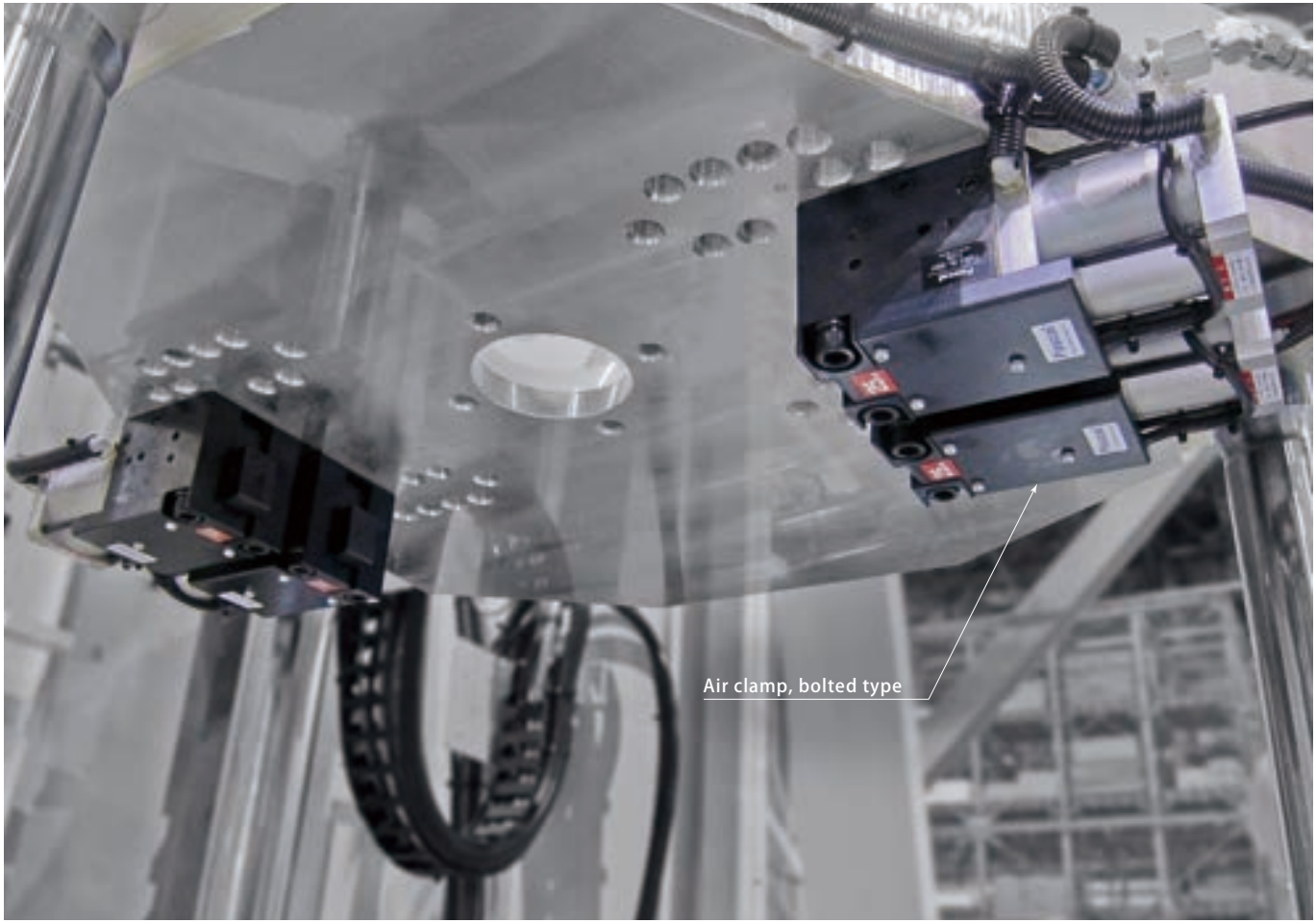
- The system can be securely operated with safety interlock.
- The above procedure is explained at upper mold basis. Contact Pascal for lower mold basis procedure.

Air clamp, bolted type TLA



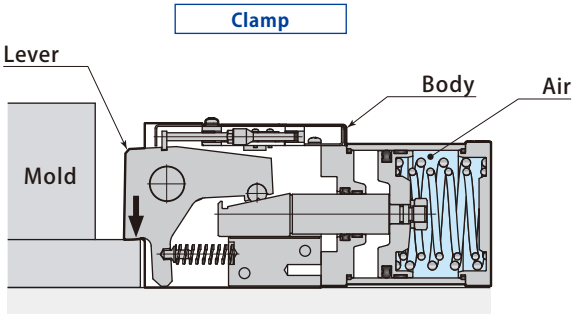
Clamp or unclamp the standardized mold by one-touch operation

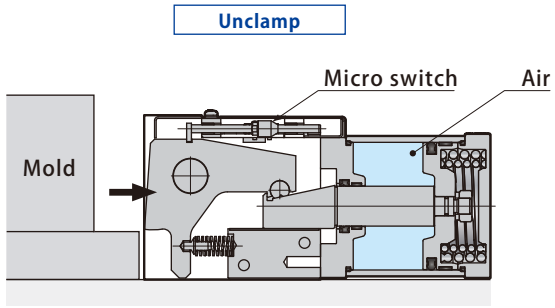
Screw or Unscrew the mold in the limited space is not required.



It is the clamp with safety and high reliability, which does not lose holding force because of the strong spring and special wedge mechanism even at time of zero air pressure.

1,500kN vertical IMM　Air clamp TLA





At time of unclamping, the lever is retracted back in the body and it does not interfere in loading/unloading the mold.

Specifications

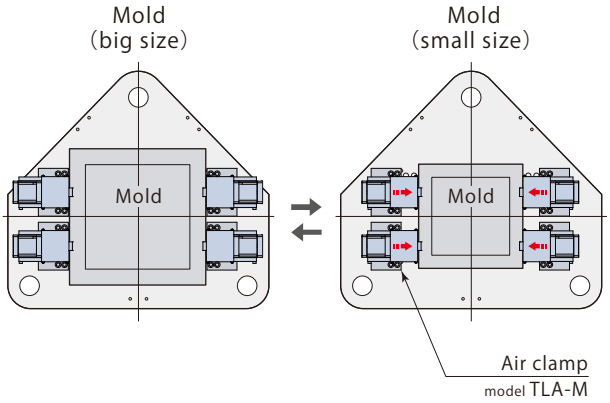
Model			TLA010	TLA016	TLA025	TLA040	TLA063	TLA100	TLA160	TLA250
Holding force	At air pressure 0.49 MPa	kN	9.8	15.6	24.5	39.2	61.7	98	156	245
	At air pressure 0.39 MPa	kN	9.8	15.6	24.5	39.2	61.7	98	156	245
	At no air pressure (0MPa)	kN	3.92	6.17	9.8	15.6	24.5	39.2	61.7	98
Clamping force	At air pressure 0.49 MPa	kN	3.92	6.17	9.8	15.6	24.5	39.2	61.7	98
Residual clamping force	At no air pressure (0MPa)	kN	2.94	4.9	7.84	11.7	19.6	31.3	49.0	78.4
Full stroke		mm	2.2	2.2	2.2	2.6	2.6	2.8	3.0	3.4
Clamping stroke		mm	1	1	1	1.2	1.2	1.2	1.2	1.4
Safety stroke		mm	1.2	1.2	1.2	1.4	1.4	1.6	1.8	2
Cylinder capacity	Clamp	cm^3	43	70	115	219	350	607	1116	1993
	Unclamp	cm^3	39	63	104	197	318	560	1046	1869
Operating air pressure		MPa	0.39 ～ 0.49							
Proof pressure		MPa	0.68							
Operating temperature		℃	0 ～ 70　(5 ～ 120 by heat proof type)						0 ～ 70	
Weight		kg	2.3	3.2	4.2	7.8	13	25	43	85

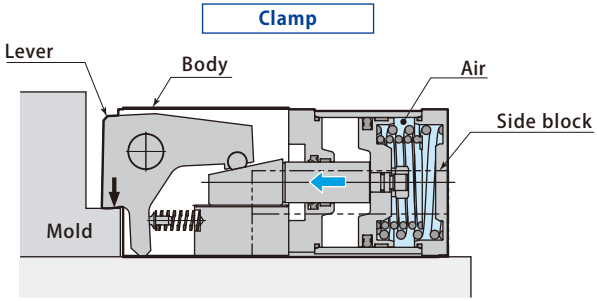
● Residual clamping force : the clamping force when air pressure drops to zero after clamp is clamped the mold at air pressure 0.49MPa.

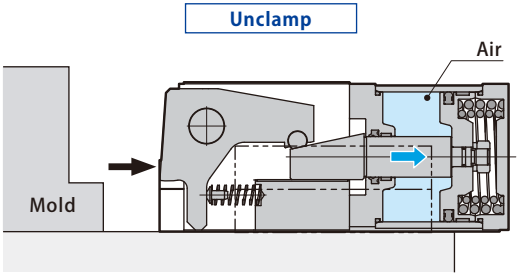
Air clamp,
T-slot-less slidable type TLA-M

Slidable clamp for the IMM without T-slot.

No need to unify the mold size







The clamp lever is **not retracted** back in the body at time of unclamping.
Forward and backward of the clamp itself is manual.

Specifications

Model			TLA010M	TLA016M	TLA025M	TLA040M	TLA063M
Holding force	At air pressure 0.49 MPa	kN	9.8	15.6	24.5	39.2	61.7
	At air pressure 0.39 MPa	kN	9.8	15.6	24.5	39.2	61.7
	At no air pressure (0MPa)	kN	3.92	6.17	9.8	15.6	24.5
Clamping force	At air pressure 0.49 MPa	kN	3.92	6.17	9.8	15.6	24.5
Residual clamping force	At no air pressure (0MPa)	kN	2.94	4.9	7.84	11.7	19.6
Full stroke		mm	2.7	2.7	2.8	3.2	3.2
Clamping stroke		mm	1	1	1	1.2	1.2
Safety stroke		mm	1.7	1.7	1.8	2.0	2.0
Standard sliding stroke		mm	35	40	50	60	75
Cylinder capacity	Clamp	cm^3	27	46	79	148	234
	Unclamp	cm^3	34	52	85	160	258
Operating air pressure		MPa	0.39 ～ 0.49				
Proof pressure		MPa	0.68				
Operating temperature		℃	0 ～ 70　(5 ～ 120 by heat proof type)				
Weight		kg	3.1	4.8	7.4	14.3	25.4

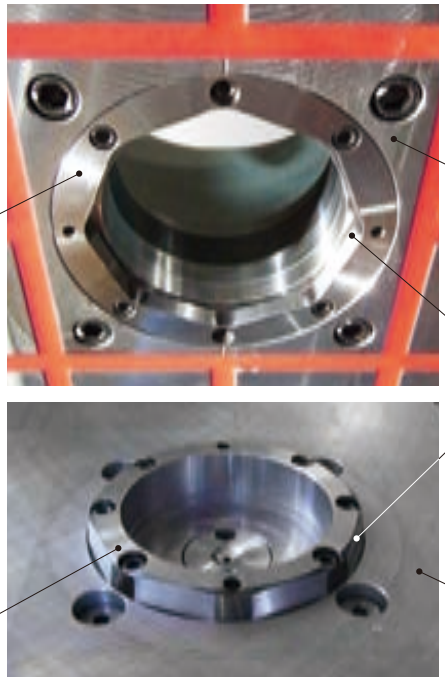
● Residual clamping force : the clamping force when air pressure drops to zero after clamp is clamped the mold at air pressure 0.49MPa.

Mold positioning for insert / hoop molding

Octagonal locate ring

Mold positioning can easily be done by mating an octagonal locate block (mold side) to an octagonal locate ring (machine side) with visual observation sliding the mold on the machine table. (upper mold reference)
Conventional positioning using a stopper block is no longer needed even the positioning by a parallel pin can also be improved. Also unifying the mold size is not required.

500kN（50ton）Vertical IMM



Octagonal locate-ring
Restrained 8-faces can provide easy centering.

Platen (Mag clamp)

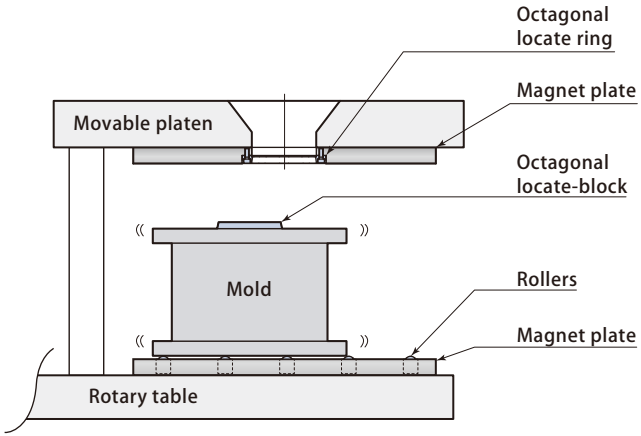
Taper allows easy mold setting

Mold

Octagonal locate-block
High rigidity can be obtained by receiving mold weight with multiple faces.

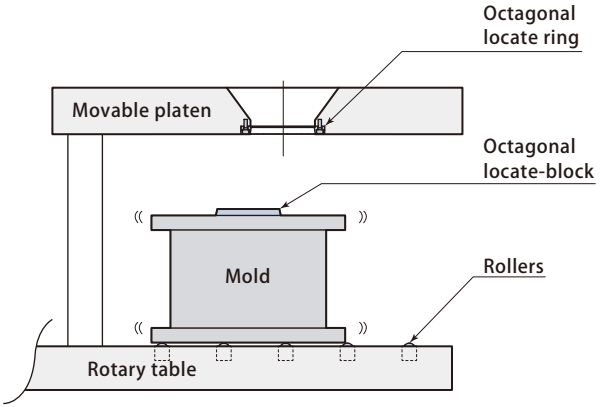
Mag clamp & Octagonal locate-ring & Rollers

(When the ring mounted in magnet plate)



Octagonal locate ring & Rollers

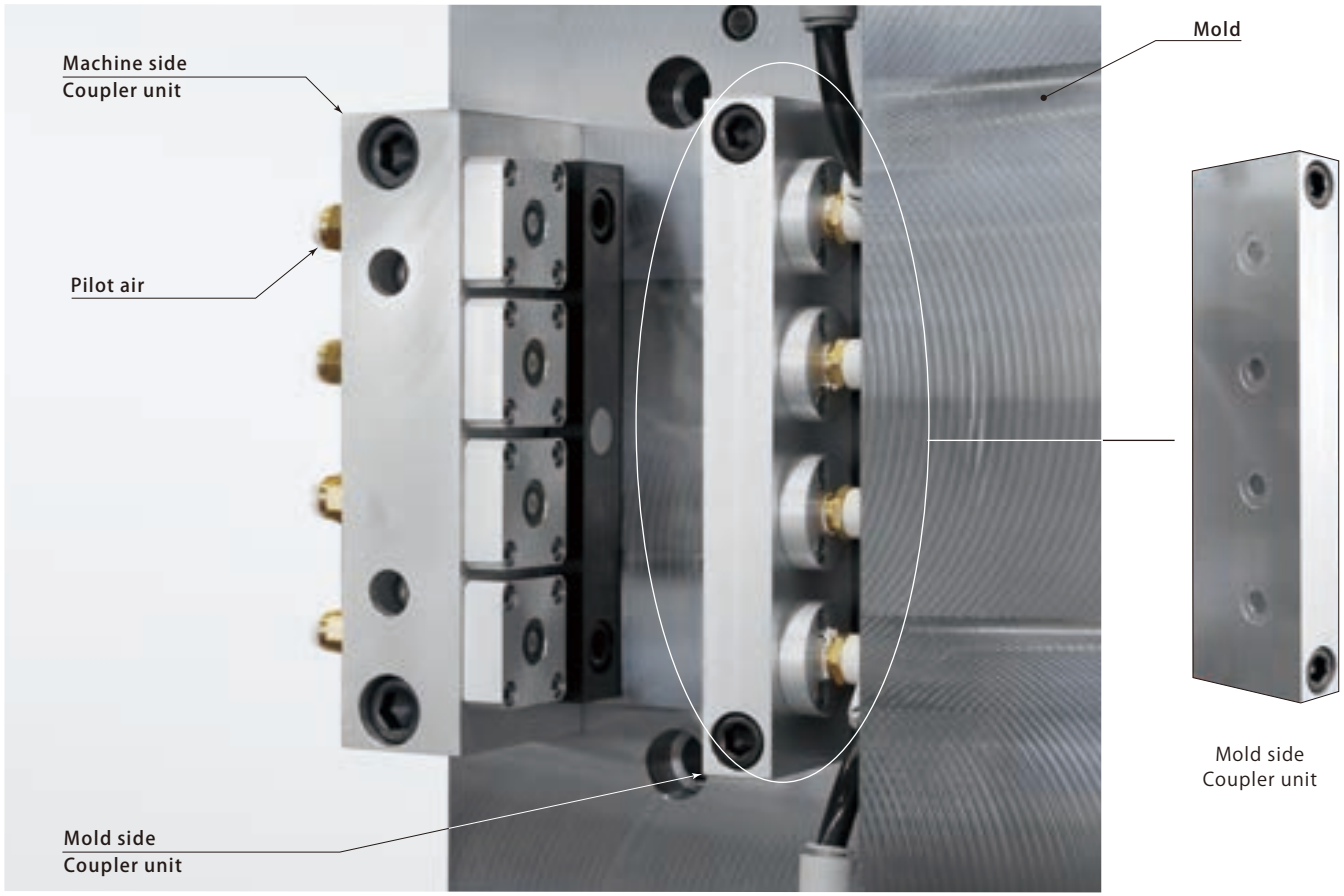
(When using a automatic clamp or a manual clamp)



C&C coupler PAT.

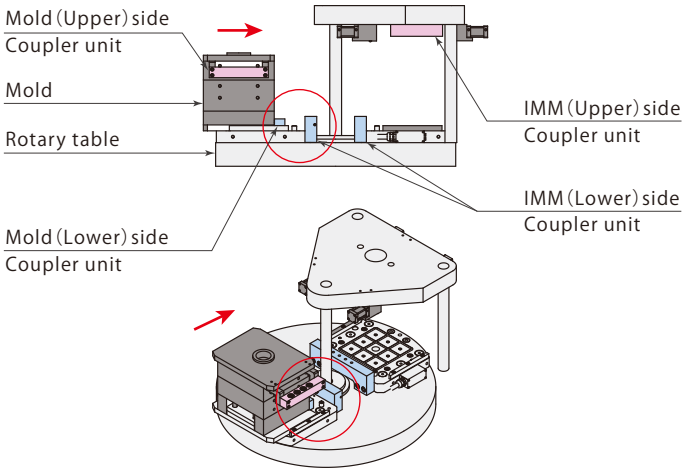
It is the simple mechanism of coupler which maintains connection by the mold clamp.

Fluid	Hydraulic (Max. 1MPa)	Water	Air	Electric connector
Connection port	1/4"			

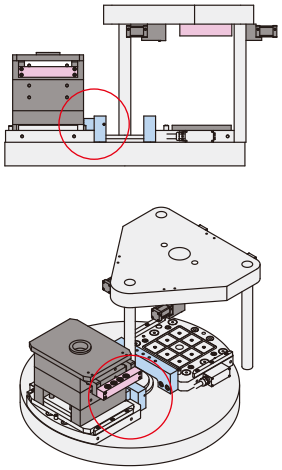


Mold loading procedure

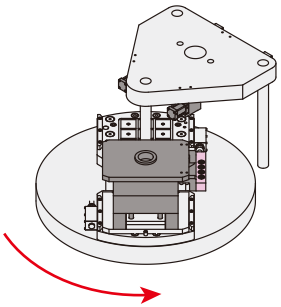
① Lower coupler
Disconnecting state



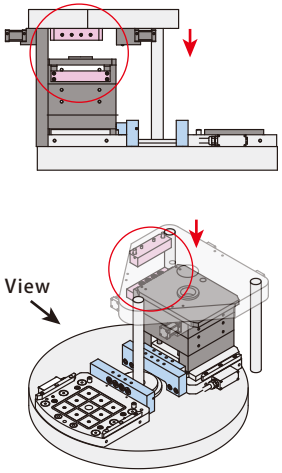
② Lower coupler
Connecting state



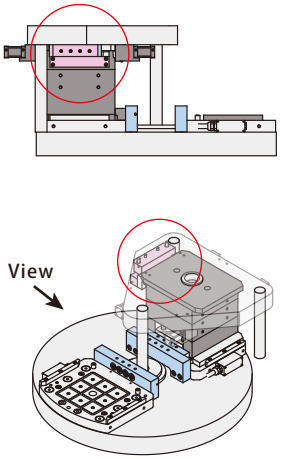
③ Table rotates



④ Upper coupler
Disconnecting state

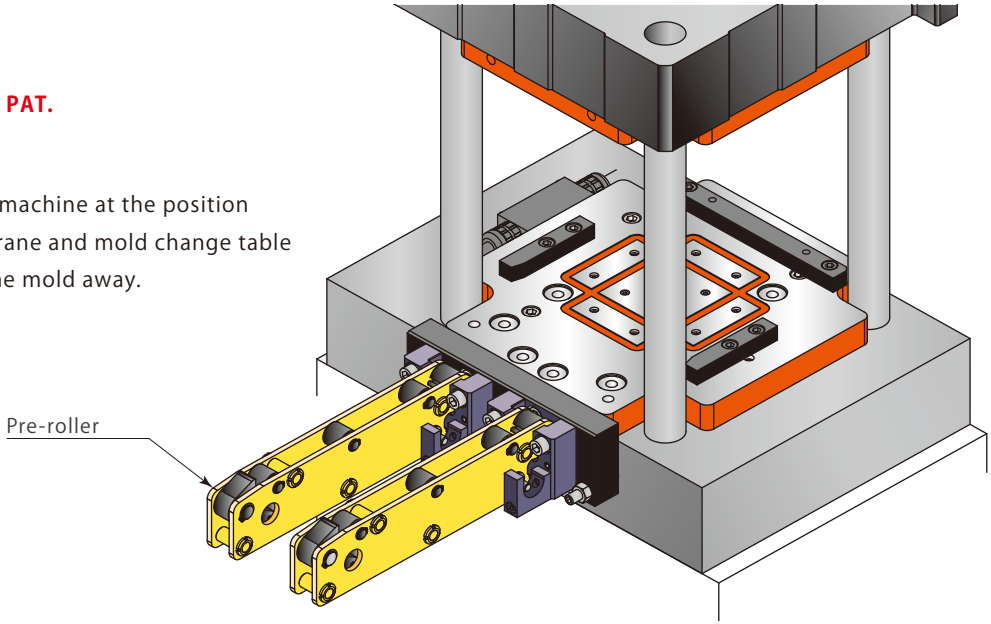


⑤ Upper coupler
Connecting state

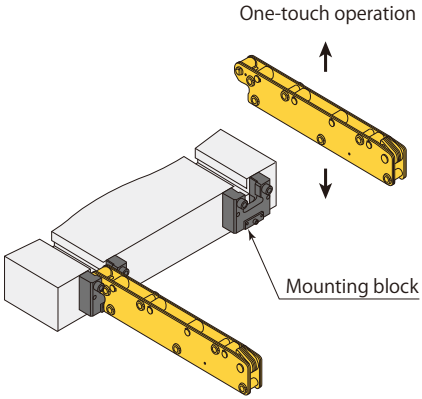


Pre-roller PAT.

Pulling the mold out of the machine at the position where a forklift, overhead crane and mold change table can readily access to take the mold away.

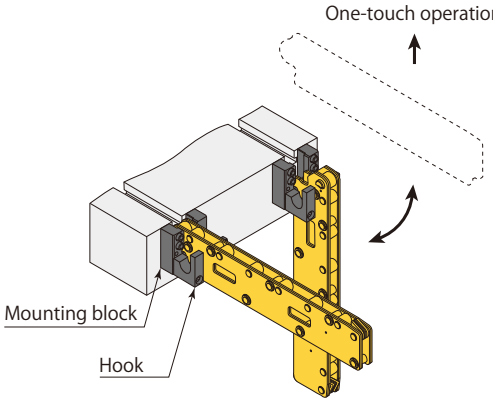


model **PRA**



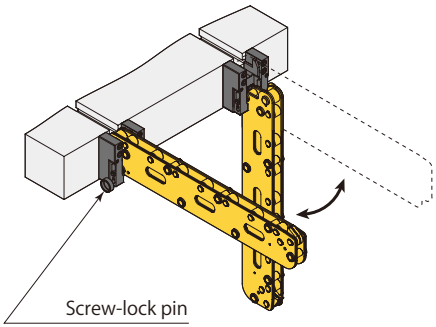
Removable & fold type

model **PRF**



Vertically fold type

model **PRH**



Selection of Pre-roller each for allowable load (Mold weight)

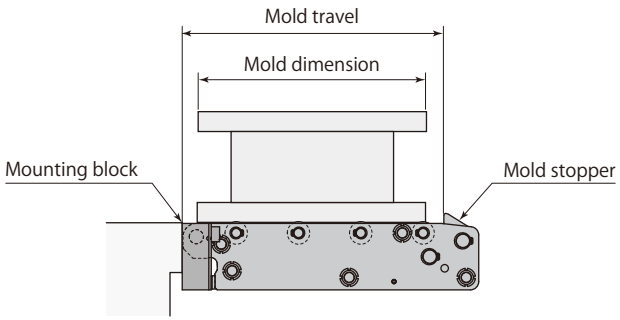
In case the mold weight is 0.5 tonf, select PRA2-0630B or PRF2-0630B.

Allowable load ＊ (Mold weight)	PRA2	PRA3	PRA5	PRF2	PRF3	PRF5	PRH3	PRH5
	Mold travel							
5 tonf（50kN）			400			400		400
4 tonf（40kN）			450			450		450
3.2 tonf（32kN）		355	560		355	560	355	560
2.6 tonf（26kN）		400	710		400	710	400	710
2 tonf（20kN）		450	850		450	850	450	850
1.6 tonf（16kN）	250	630	1000	250	630	1000	630	1000
1.2 tonf（12kN）		710			710		710	
1 tonf（10kN）	355	850		355	850		850	
0.8 tonf（8kN）	450	950		450	950		950	
0.6 tonf（6kN）	500	1000		500	1000		1000	
0.5 tonf（5kN）	630			630				

＊ The allowable load of above table is for 2 pre-rollers.

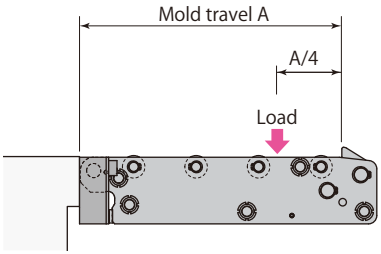
Mold travel

Mold travel = Length from mounting surface of block to the stopper.
Select the Pre-roller where mold dimensions are within mold travel.



Allowable load

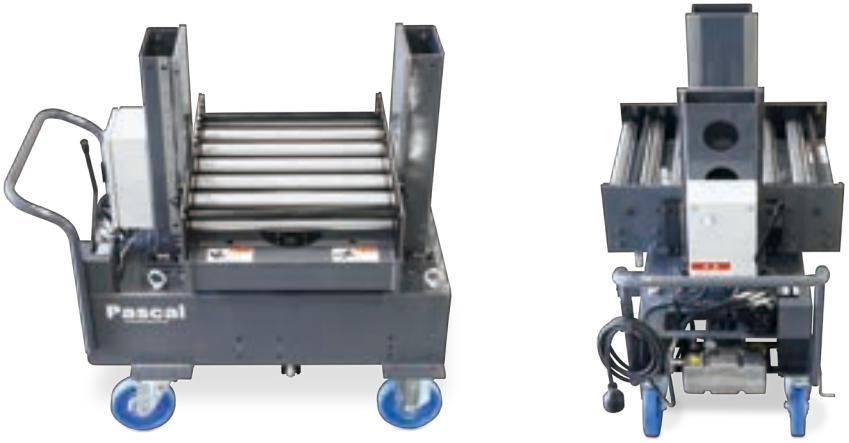
Static load measured at the position of 1/4 of the mold travel.
Select Pre-roller where allowable load (kN) multiplied by the quantity is greater than the mold weight.
SI conversion : Mold weight (kN)=Mold weight (kgf)×9.8÷1000

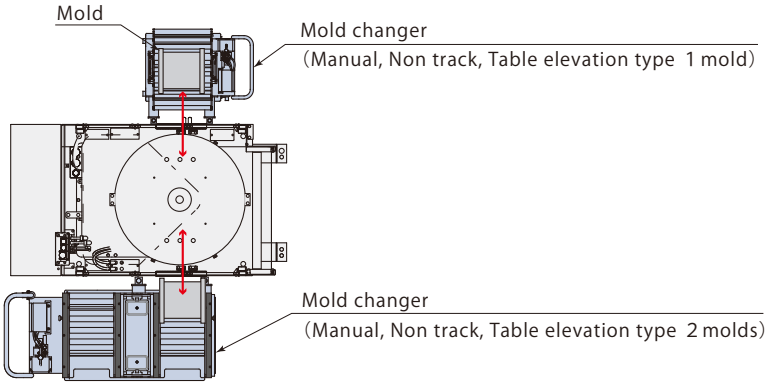


Mold die changer

Proposing time reduction for overall mold change operation including transportation.

Manual, Non track, Table elevation type



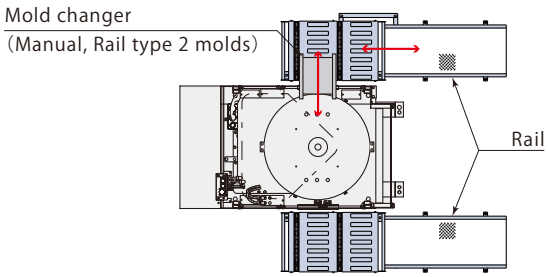


Manual, Rail type

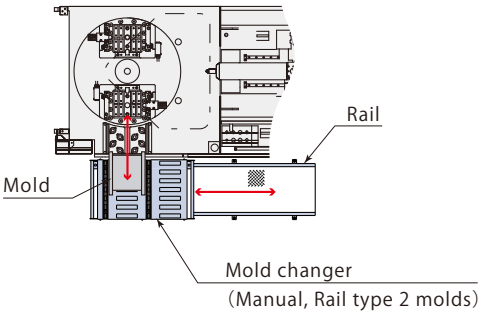
1,500 kN IMM　Mold 800kg × 2 molds × 2
Mold changer：Manual, Non track

1,000 kN IMM　Mold 600kg × 2 molds　Mold changer：Manual, Non track

2 molds

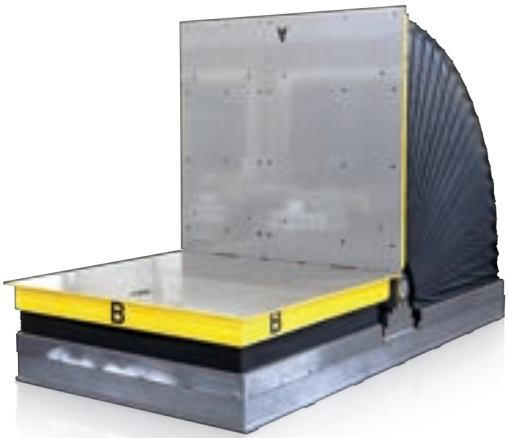


2 molds



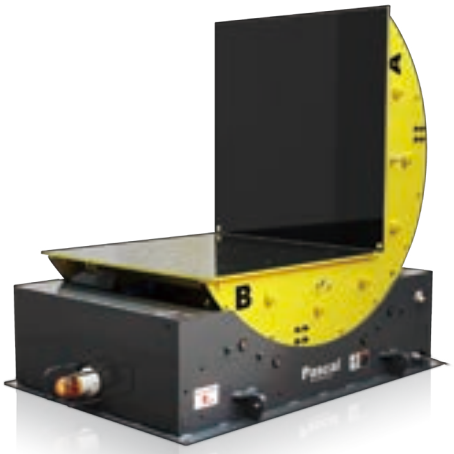
Mold rotator

It can flip the heavy materials such as mold, coil and castings part quickly and securely.



model **SMF**

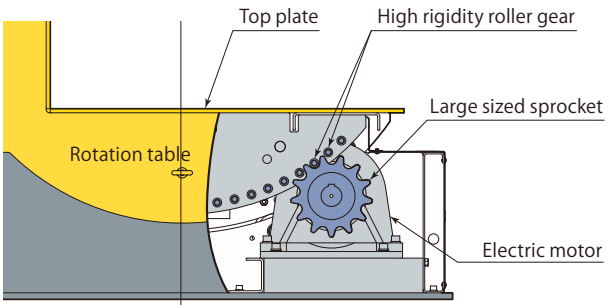
Maximum mold weight 1, 3, 5, 10, 15, 20, 30（ton）



model **SMR**

Maximum mold weight 1, 3, 5, 10, 15, 20, 30, 50（ton）

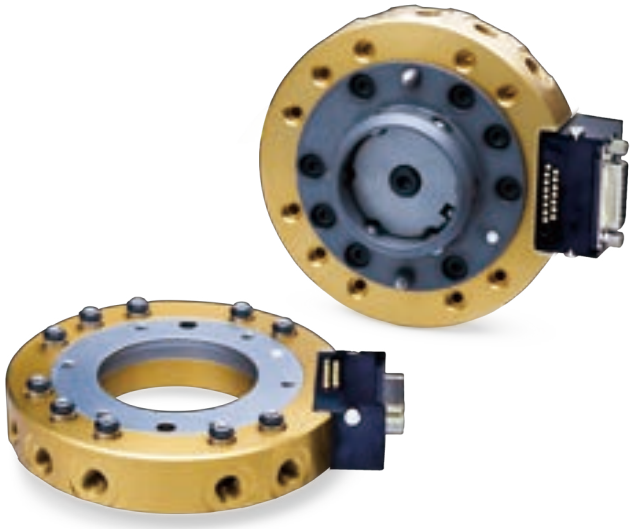
model SMF
SMF can be embedded and flattened as shown in the photo. The table is rigid enough to be passed by a forklift or a truck.

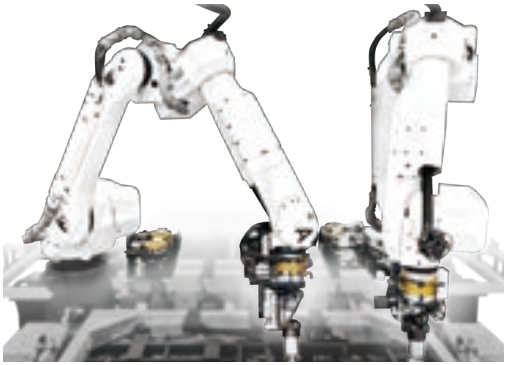


Roller gear driven mechanism

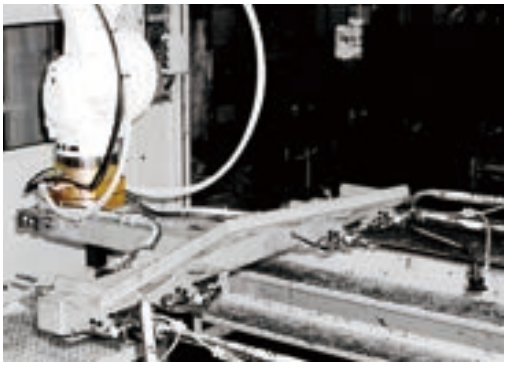
Robot tool changer

Applicable payload **5 10 20 40 60 100 150 200 kg**





In the welding line



For sheetmetal stamping

DOMESTIC LOCATIONS

JAPAN

Head office / R & D center

- Itami, Hyogo

Plant

- Oita
- Yamagata

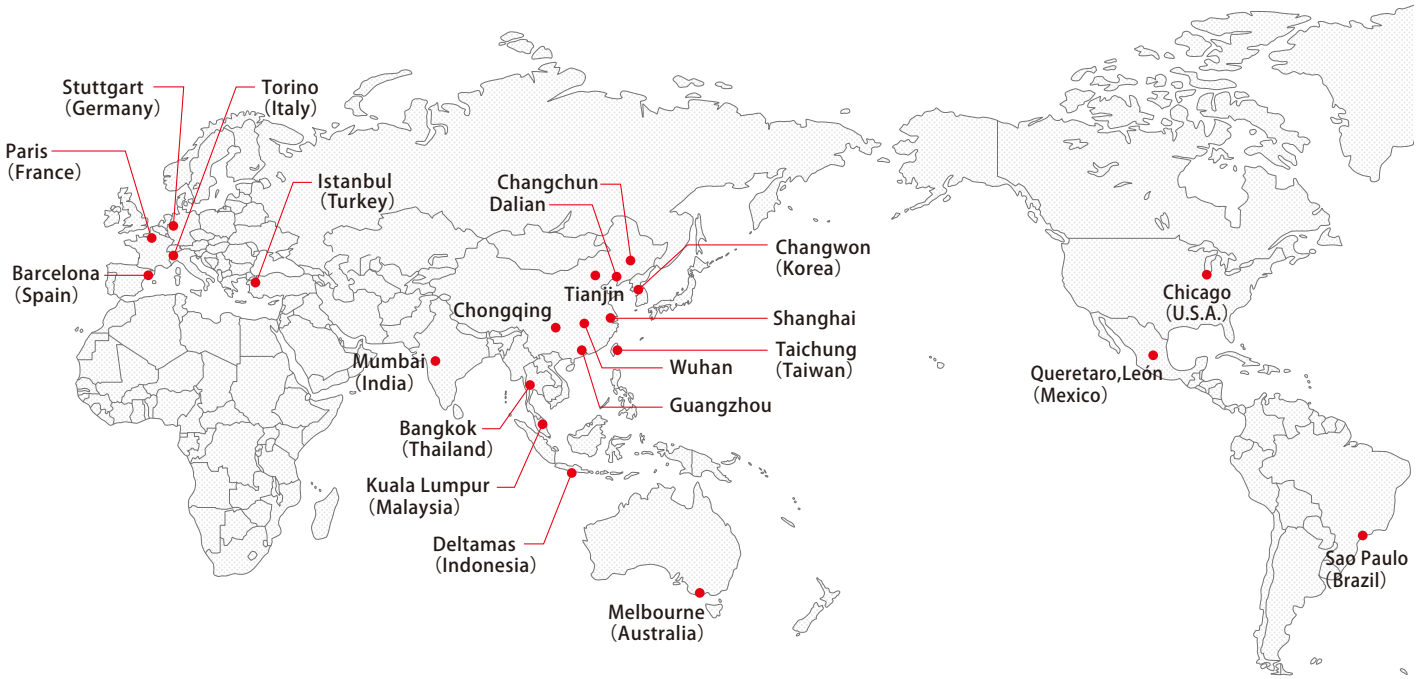
Sales office

- Osaka, Hyogo
- Kumagaya, Saitama
- Atsugi, Kanagawa
- Nagoya, Aichi
- Yamagata

Oita plant

Yamagata plant

GLOBAL NETWORK



ASIA

- ● ● Dalian [China]
- ● Shanghai [China]
- ● Changchun [China]
- ● Tianjin [China]
- ● Wuhan [China]
- ● Chongqing [China]
- ● Guangzhou [China]
- ● Taichung [Taiwan]
- ● ● Bangkok [Thailand]
- ● Changwon [Korea]
- ○ Deltamas [Indonesia]
- ○ Kuala Lumpur [Malaysia]
- ○ Mumbai [India]
- ○ Melbourne [Australia]

Dalian plant

AMERICA

- ● Chicago [U.S.A.]
- ○ Sao Paulo [Brazil]
- ○ Queretaro, Leon [Mexico]

EUROPE

- ● Stuttgart [Germany]
- ○ Paris [France]
- ○ Torino [Italy]
- ○ Barcelona [Spain]
- ○ Istanbul [Turkey]

● Plant ● Subsidiary ● Sales office
● Liaison office ○ Agent

Pascal products are supporting

For sheetmetal stamping

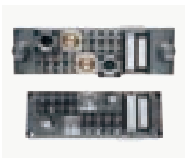
Traveling clamp

Stamping die clamp

For plastic molding

Mag clamp

Mold die clamping system



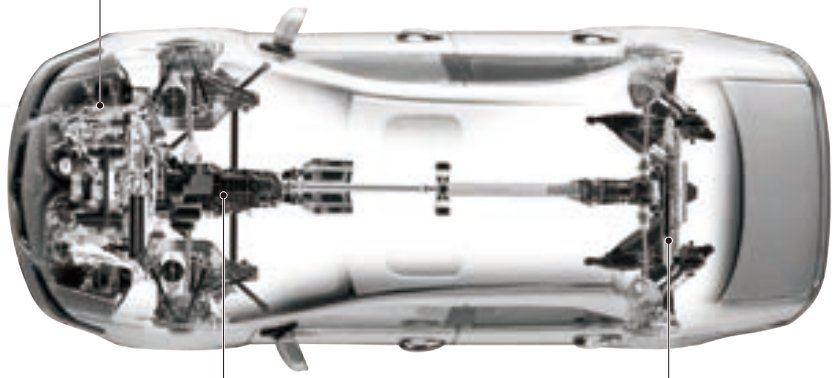
Auto coupler

For die and mold

Press machine:
Body,Roof,Door etc...
Molding machine:
Bumper,
Instrument panel etc...

N2 gas springs

automotive production lines in the world.



For die cast machine

Die-clamping system

C-plate mag clamp

For metal cutting machine line

Work clamp

Pallet clamp

Index table

N2 gas balancer

Pascal

CERTIFICATE OF APPROVAL ISO9001

PA-449E-5 2023.05