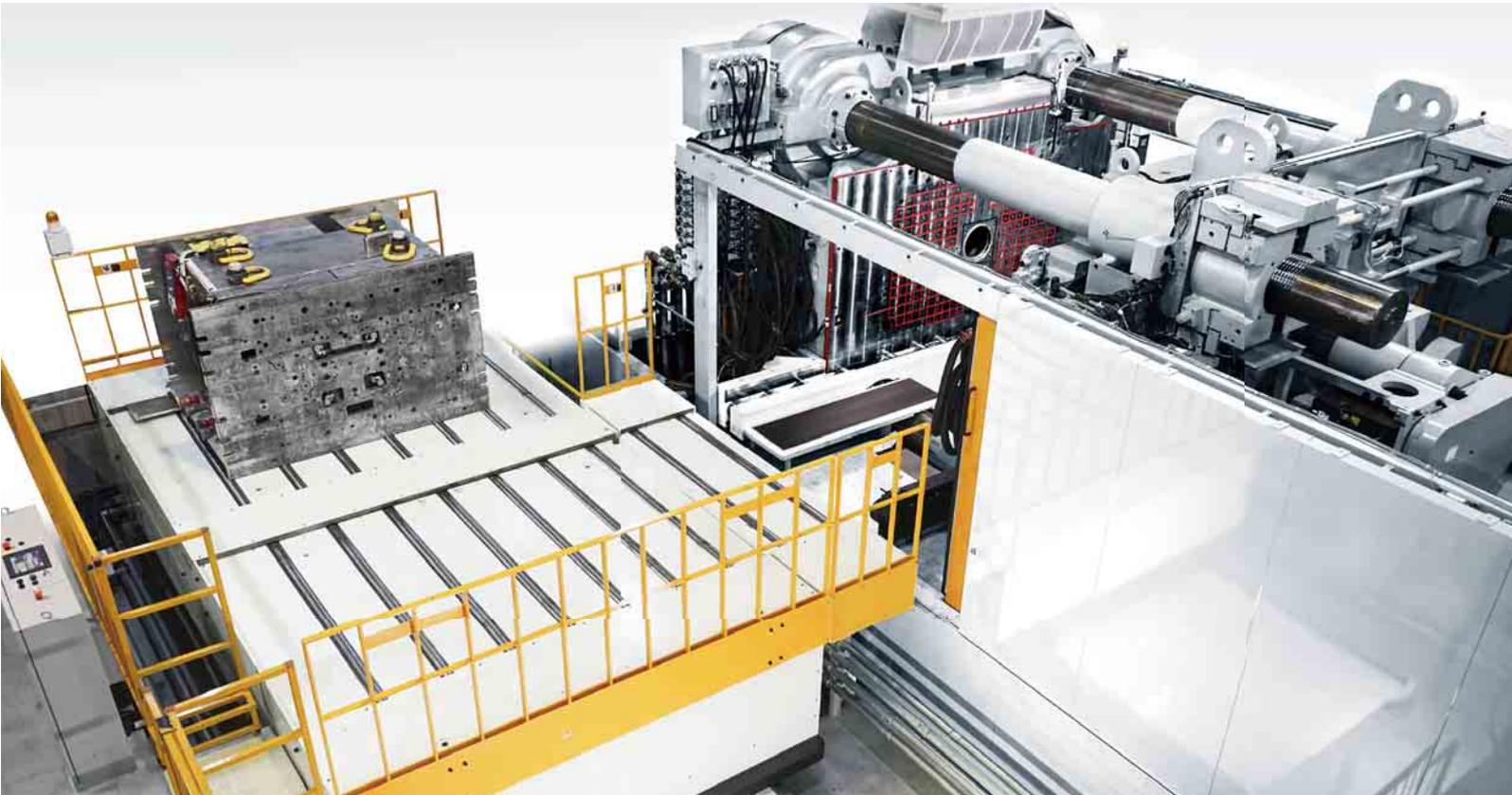


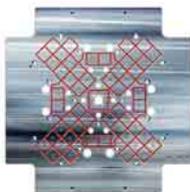
# Pascal mold die change system



**Pascal**

# Pascal mold change system

## Mag clamp



Mag clamp	page → 4
Operation panel & Control box	page → 10
DD mag clamp	page → 64
Mag clamp for vertical IMM	page → 14
Mag clamp for two-color IMM	page → 16

## Hydraulic clamp

## Air clamp



Hydraulic clamp	page → 18
Air clamp	page → 22
Operation panel & Control box	page → 28
Operation panel ELC-B	page → 30

## Control unit



model <b>HCM</b>	page → 26
(For medium and large-sized IMM)	

## Positioning device



<b>new</b> Die leveler	page → 12
<b>new</b> Quick locating system	page → 12
Die setter	page → 32
Octagonal locate ring	page → 40

# Pascal mold change system

## Accessory



<b>improvement of Mold change Step1</b>	
Easy ejector rod	..... page → 42
Ball lock ejector rod	..... page → 45

## Auto coupler



Auto coupler	..... page → 46
C&C coupler	..... page → 50

## Multi coupler

**new**

Multi coupler	..... page → 52
---------------	-----------------

## Mold changer



.....	page → 56
-------	-----------

## Mold rotator



Rolling type  
model **SMR**



Flat type  
model **SMF**



Die rotator with  
separation

.....	page → 62
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## Robot tool changer



.....	page → 66
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## N2 gas spring

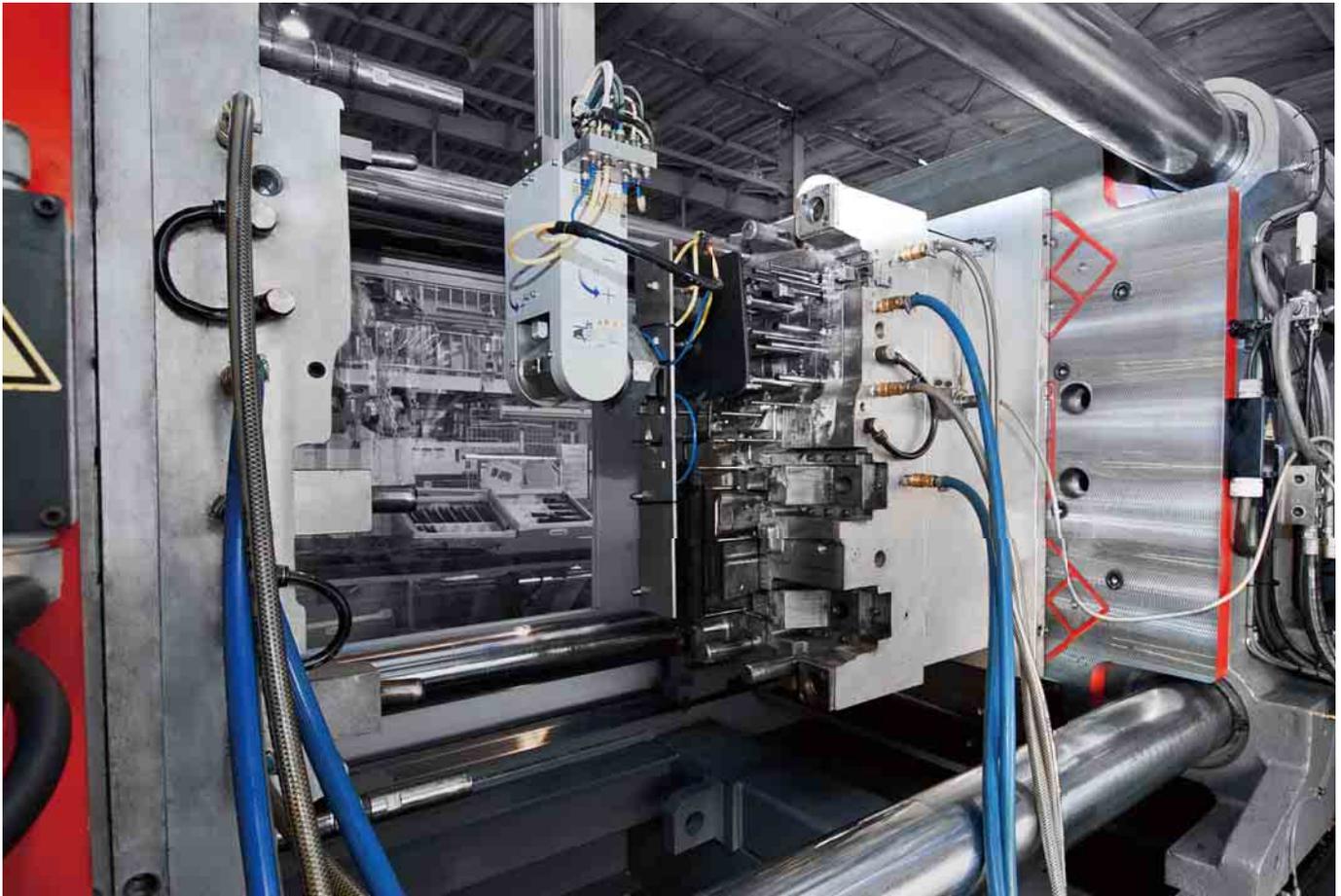


.....	page → 67
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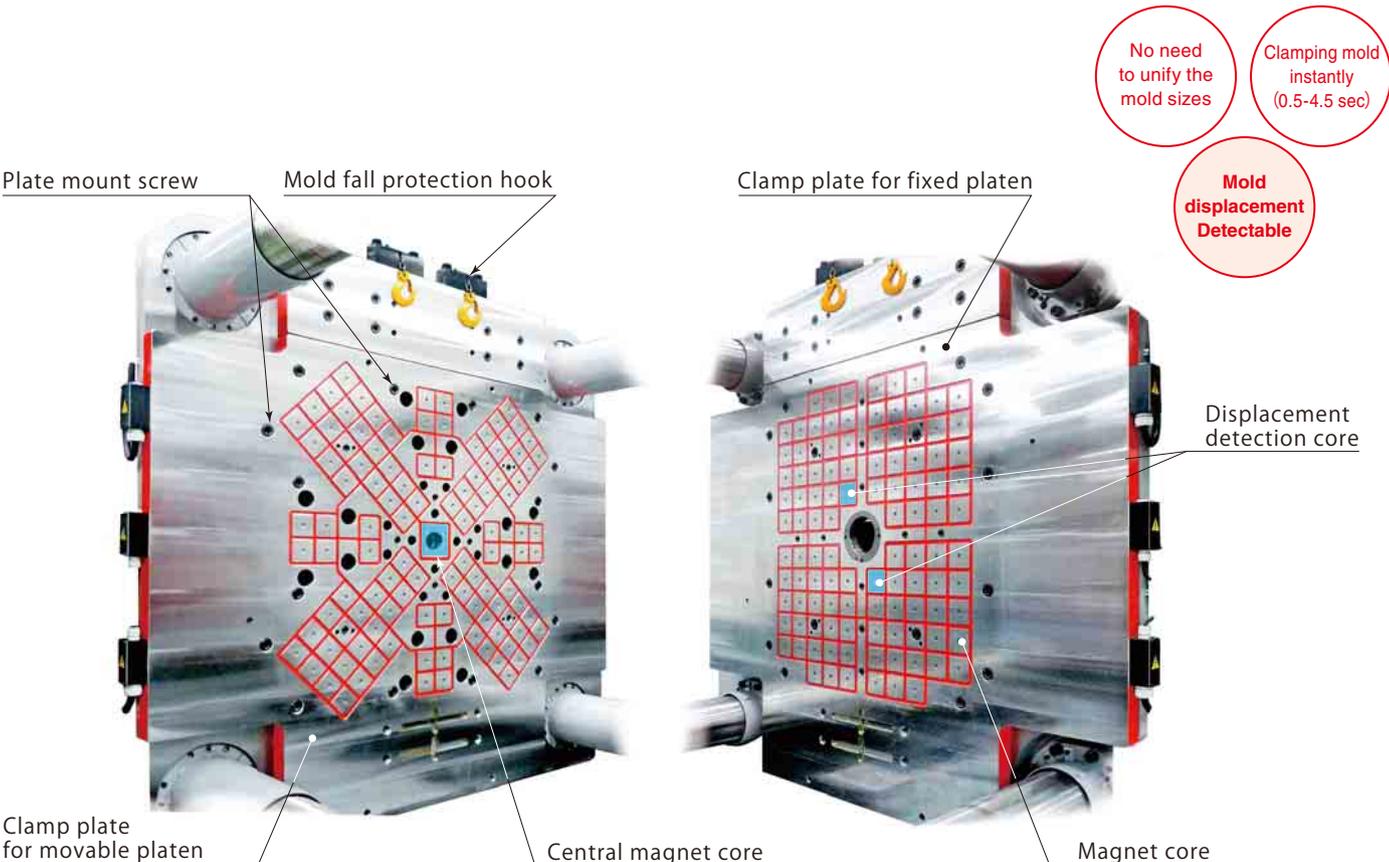
# Pascal mag clamp

**Clamps the mold instantly with a super strong permanent magnet.**

Pascal mag clamp is a mold clamp system for injection molding machines that clamps the mold with powerful magnetic force. The clamp plate is one set of two plates for movable platen and fixed platen sides.



10,000kN (1,000ton) IMM Vertical loading Mag clamp

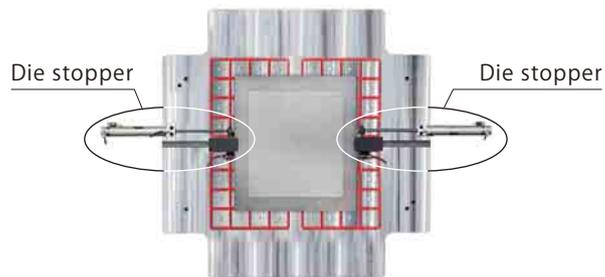
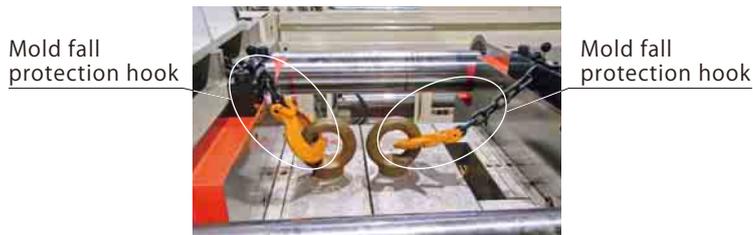


**Mold fall protection hook (length adjustable) model MGR**

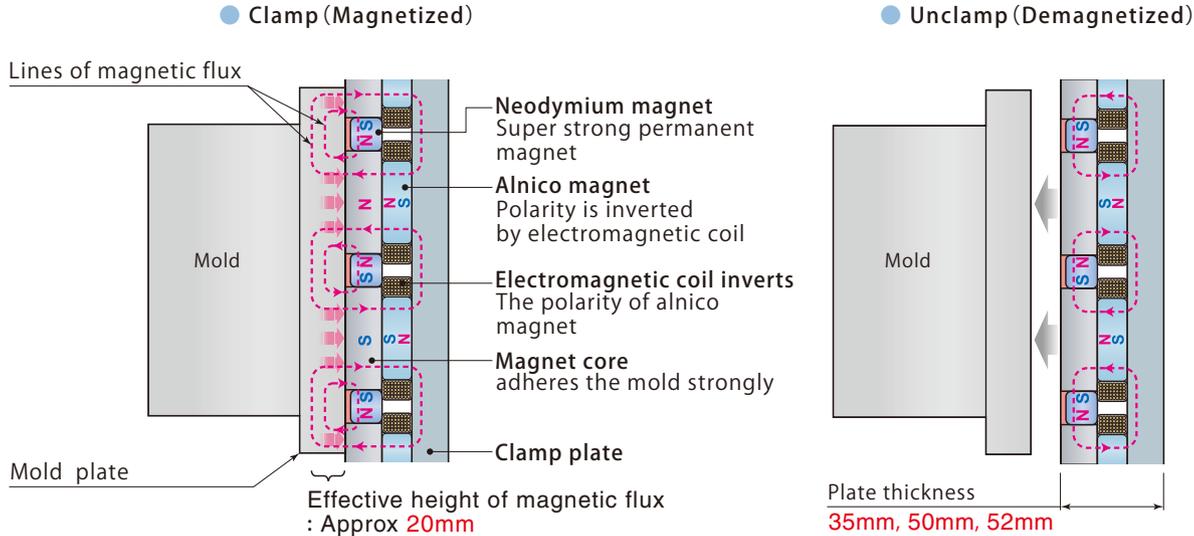
With a easily adjustable chain

**Die stopper**

It can positively prevent the die-fall accident due to the mold displacement or nozzle or ejector touch.



## Structure and function



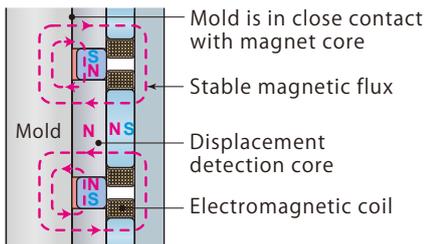
- ① Electromagnetic coil is energized for in 0.5 sec.
- ② Polarity of alnico magnet is inverted.
- ③ Neodymium magnet and alnico magnet become homopolar
- ④ Magnet core becomes a strong magnet to clamp the mold.

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

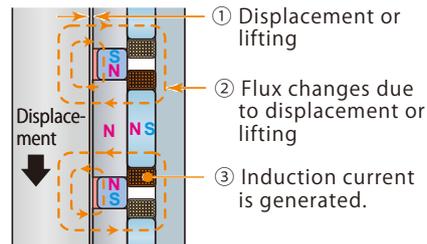
## Displacement detection system (standard)

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

### Normal clamping status



### When the mold moves



Mold center area is not so much influenced by the openings or grooves and mold displacement or lifting can securely be detected.



Ex. Mold plate with openings or cutouts

## Specifications

Model		MG□	
Clamping force (per one magnet core)	Thin-model 35mm	32×100mm	3.43kN
		50×50mm	2.45kN
		100×100mm	7.84kN
	Standard 50,52mm	70×70mm	7.35kN
		75×75mm	7.84kN
		115×115mm	15.68kN
Operating temperature	℃	0 ~ 80 (0 ~ 150 or 0 ~ 180 for heat proof type)	
Magnetic flux height	mm	20 (mold plate material SS400)	
Power voltage		AC200 / 220V ±5% (50/60Hz)	
Applicable machine		For general injection molding machine	
Plate mounting method		by screws utilizing the tap holes on the machine platens	
Displacement detection system (movable side & fixed side)		Include	

- Additional tap holes are required in the middle of machine platens.
- Operating temperature indicates the temperature on the surface of the clamp plate.

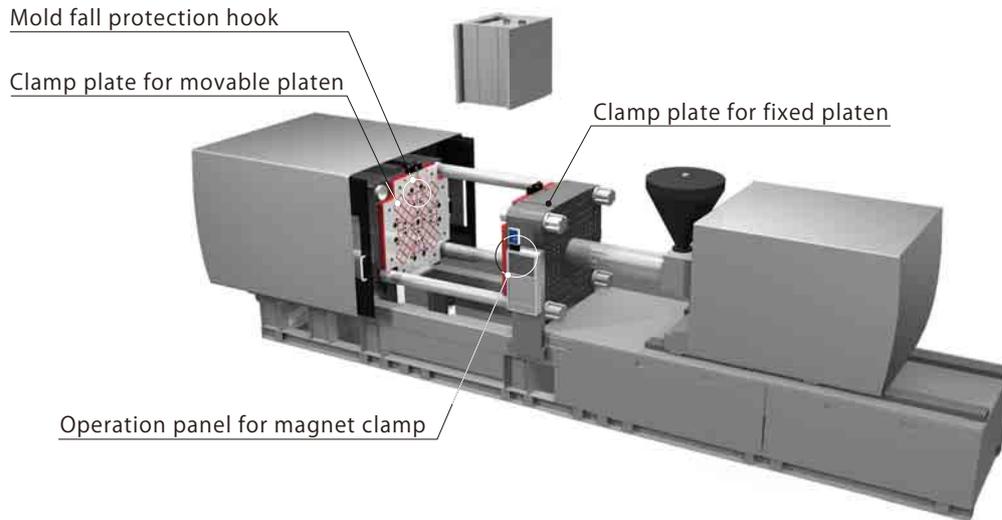
### Accessories

- Locate ring (fixed side only)
- Mold fall protection block (movable side only)
- Operation panel model ESMD
- Control box model EMGD
- Control cables
- Interlock

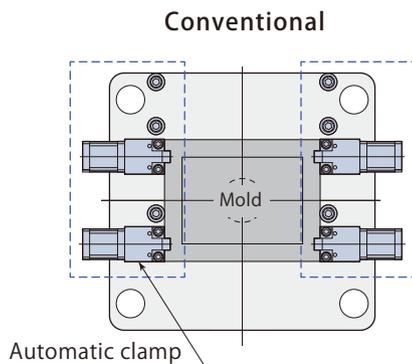
### Option

- Non standard voltage arrangement (50/60Hz)
  - AC380V ±5%
  - AC440V ±5%
  - AC480V ±5%
- High temperature
  - 0 ~ 150℃
  - 0 ~ 180℃
- Rust proof, polish arrangement for clamp plate
- Mold fall protection hook model MGR (movable side & fixed side)
- Additional magnet core
- Special core layout
- Horizontal loading arrangement
- DD mag clamp
- Proximity sensor to detect the mold cohered

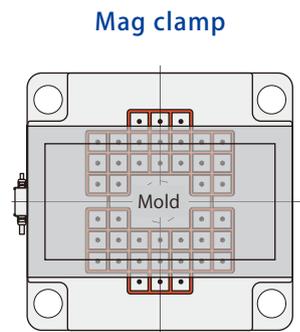
## Vertical loading



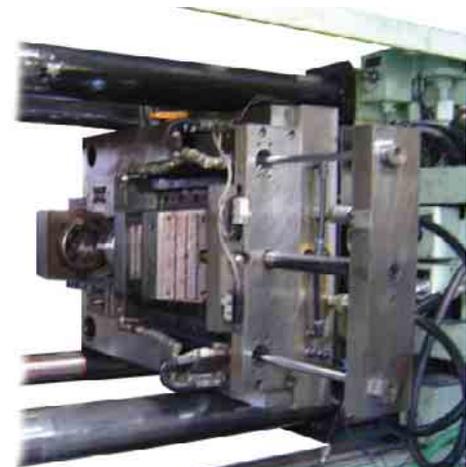
- No need to unify the mold sizes. (Note that clamping force varies according to the size of mold plate.)
- No need to secure the space to mount the retrofitted clamps on the platens and the mold size will not be restricted by the clamp space.



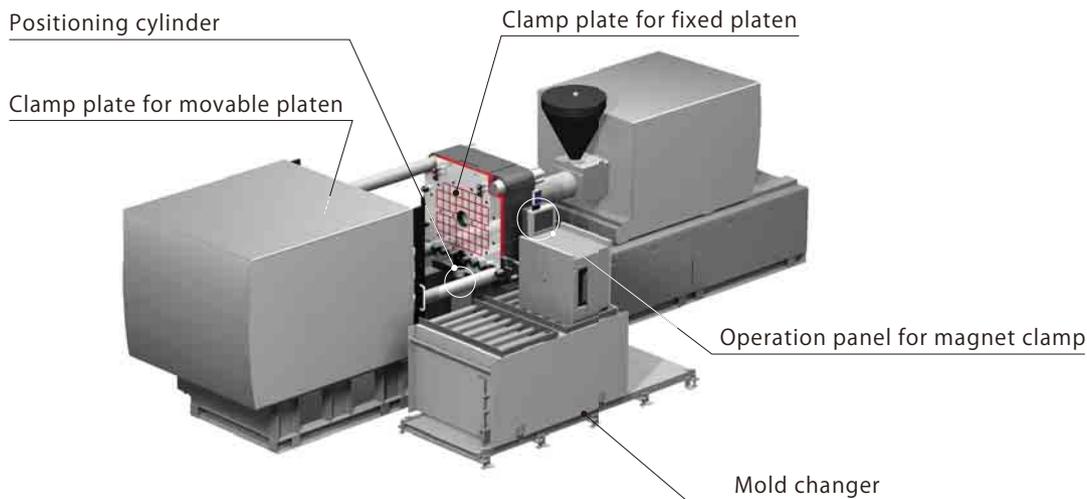
There are interferences



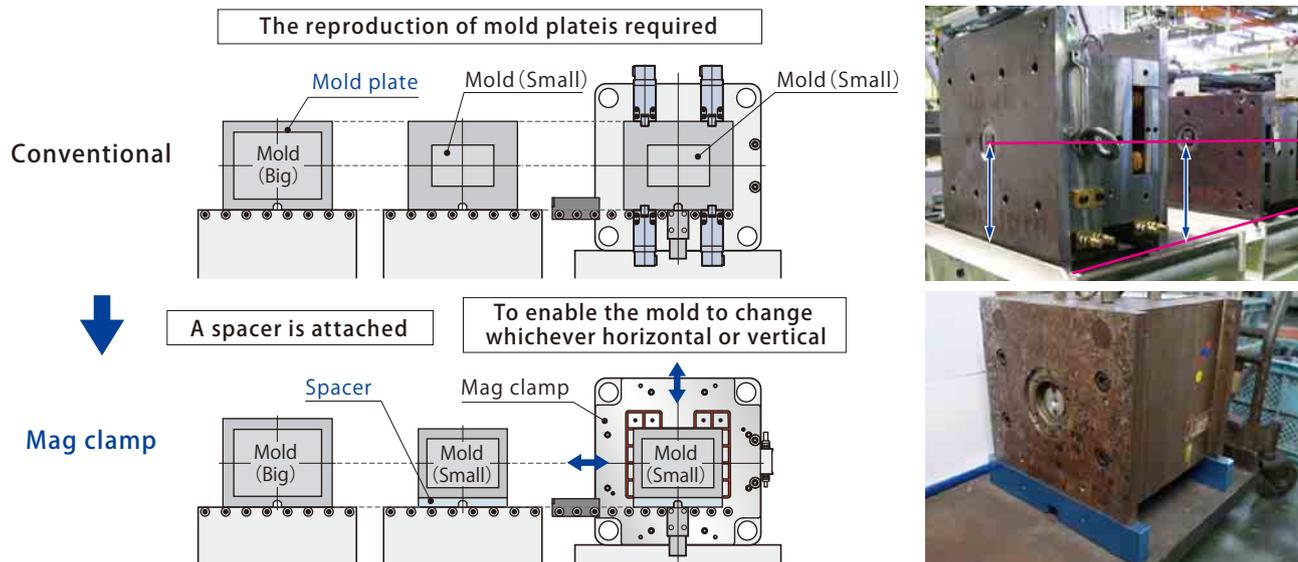
The flexibility of mold design has been improved



## Horizontal loading



- Even if the mold height is not unified, the horizontal loading is feasible by simply attaching the spacer or a riser.



## Operation panel

Compact and user-friendly operation panel exclusively designed for magnetic clamp.  
It is mountable on IMM or wall of IMM utilizing the tap holes at the rear side. (M4 bolts x 4 accessories)

[ For vertical loading ]

model **ESMD-A**

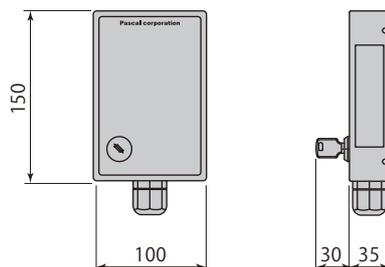


[ For horizontal loading ]

model **ESMD-B**

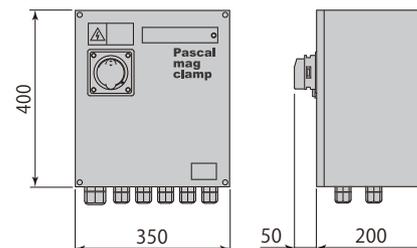


Model	ESMD-A	ESMD-B
Loading direction	Vertical loading	Horizontal loading
Weight	kg 0.6	0.6



## Control box

model **EMGD**



\* Size for model EMGD-A2J2

Model		EMGD
Weight	kg	25 ~ 80

## Interlock

Safety interlocks listed below are built in the electric control circuit for mold change operation.

- When changing a mold, Mag clamp operation is feasible only when the following conditions are prepared.

Mag clamp : ①Mold change mode

IMM : ②Set-up (or manual) mode, ③Nozzle retracted, ④Ejector retracted, ⑤Platen closed-end, ⑥Safety door closed

Regarding the condition of IMM side such as ②, ③ and ⑤, it can be confirmed with LED lamp on operation panel.

- During molding production

If the mold is displaced or detached from the clamp plate, the molding machine is immediately stopped by the displacement detection function.

# DD mag clamp

## Smart sensor checks the mold

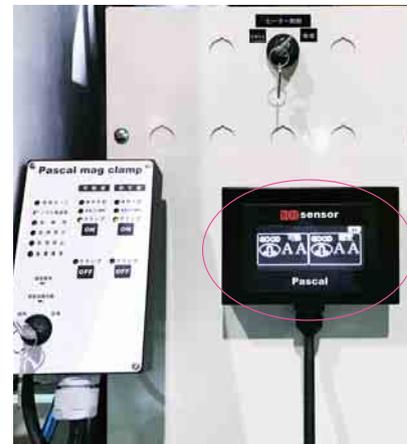
The clamp with DD sensor which can numerically check the mold. It can detect the clamp force decrease caused by heat, mold base material and a clearance between the mold and magnet core.



As for DD mag clamp, the status indicator is added to the control box.



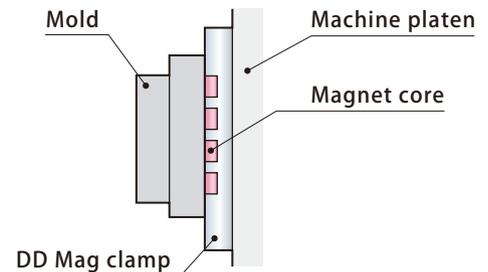
Display panel  
control panel built-in type

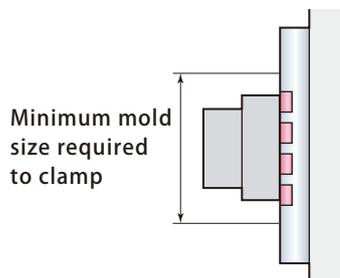
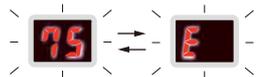
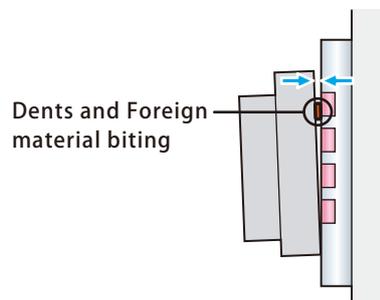
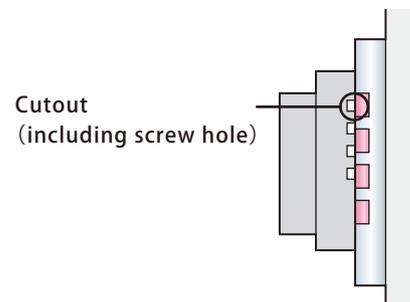
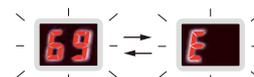


Display panel additional type  
(operation side)

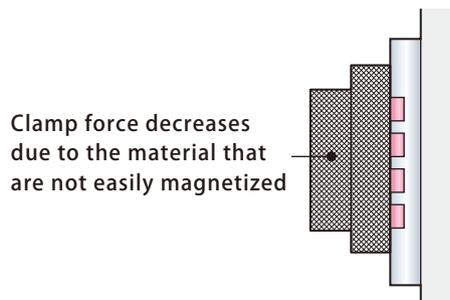
## Normal clamping status

The sensor indicates **AA** which means the mold has adequate size, material and temperature are appropriate to clamp and there is no gap between the magnetic surface and mold.

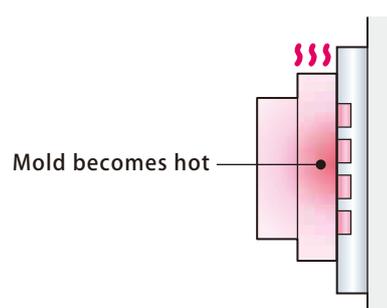


Size detectionDetect **too small** moldGap detectionClamp force decrease due to **the gap**Clearance detectionClamp force decrease due to **a clearance**

The sensor output abnormal signal when clamp force decreases more than 20% due to gap or clearance.

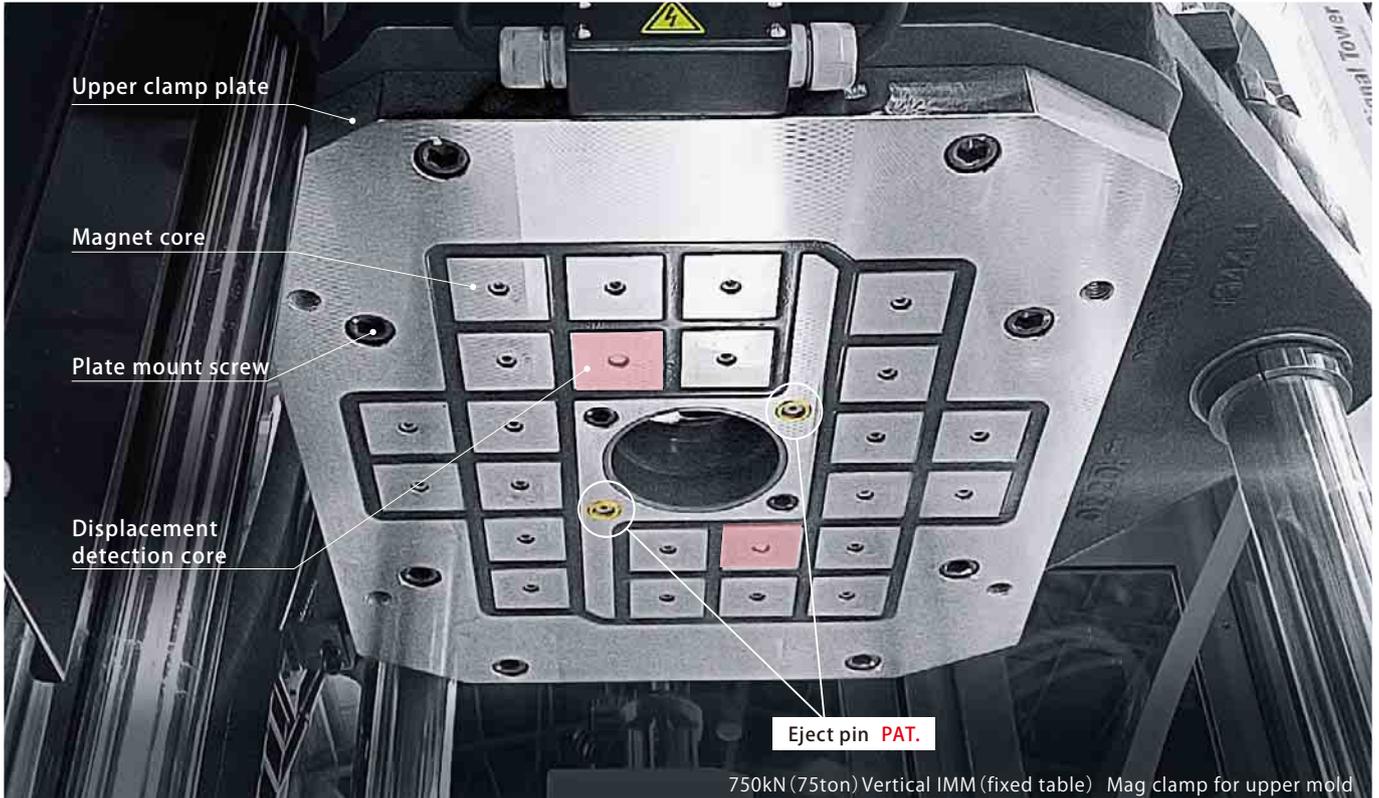
Material detectionClamp force decrease due to **the material that are not easily magnetized.**High temperature detection

Clamp force decreases due to the mold heat-up

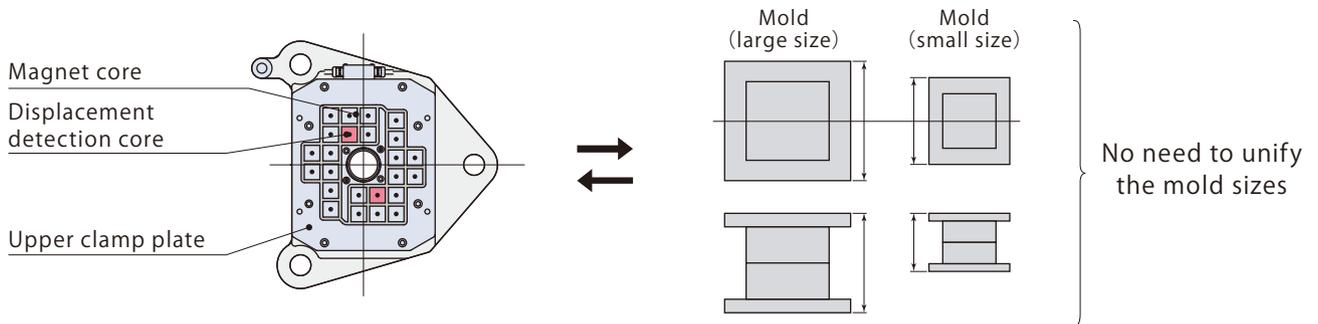


Simply type of material or mold temperature does not make the clamping force decrease lower than 80% however the value goes down due to the force decrease.

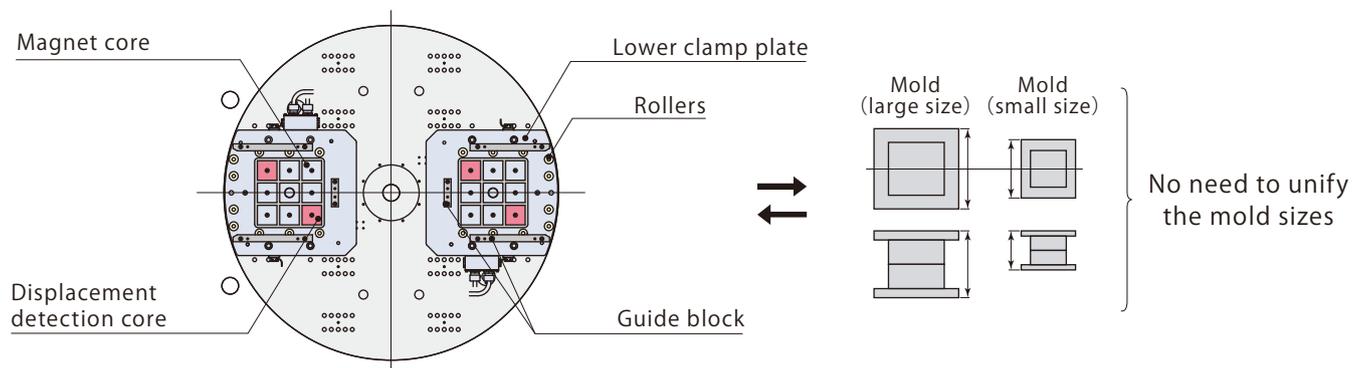
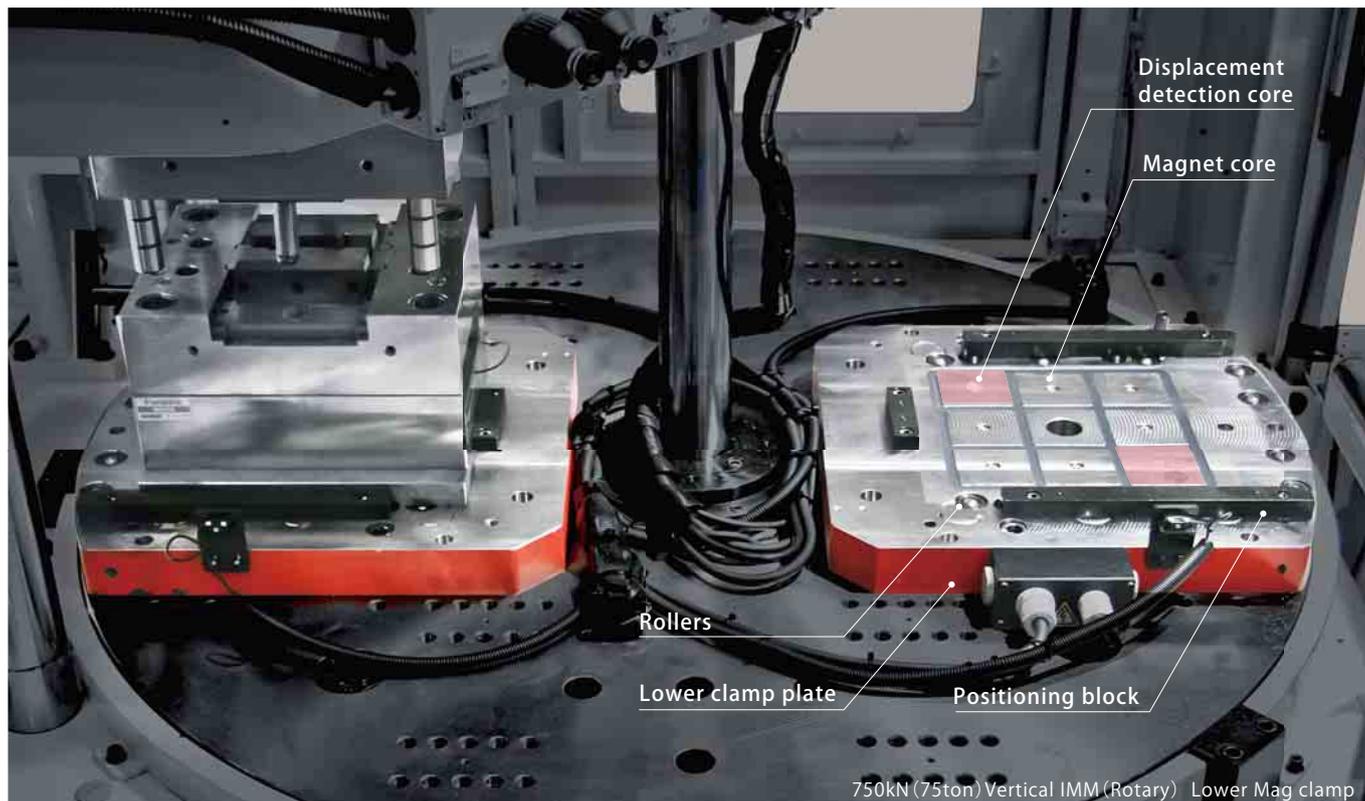
## Mag clamp for vertical IMM



### Mountable for upper die only



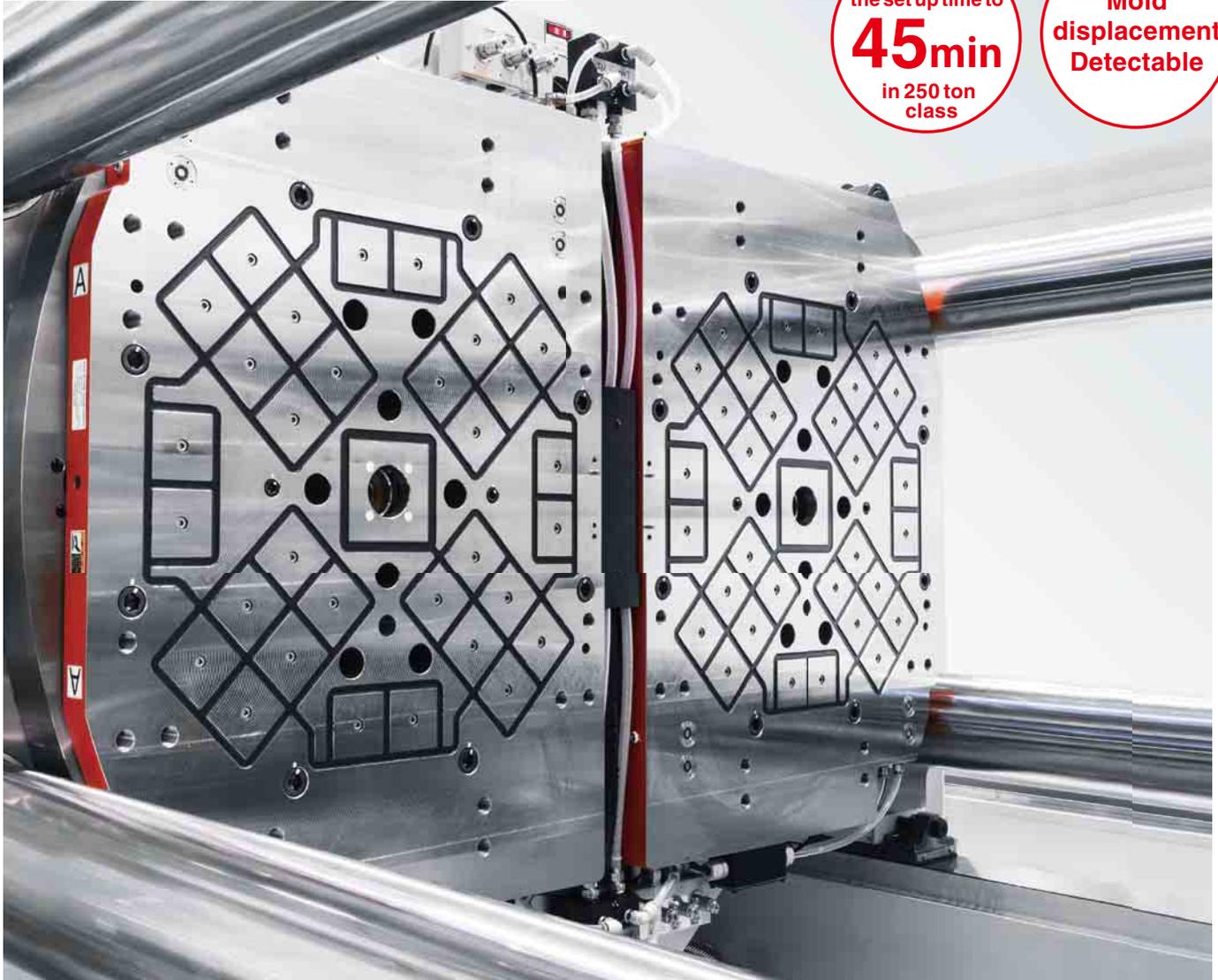
The introduction of Mag clamp in the vertical IMM  
 eliminates bolting job (temporary tightening, retightening) in a limited space of the machine  
 and realizes shortening the set up time considerably.



## Mag clamp for two-color IMM

Shortening  
the set up time to  
**45min**  
in 250 ton  
class

Mold  
displacement  
Detectable



6,000kN(600ton) Two-color IMM Vertical loading Mag clamp

## Hand tightening method

It takes a long time for an operator to screw or unscrew the bolts many times at a narrow space in a machine.

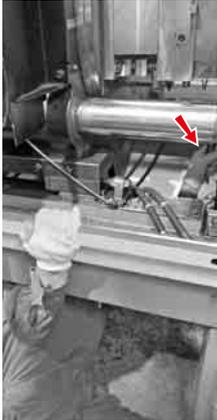
**Mold changing time : 60min** (250 ton class)

● Easy to drop tools.

● Limited power exertion.

● No visual

● Need to move to operation / non-operation side to install / remove bolts.



● Install bolts many times.



## Mag clamp

Clamp instantly by magnetic force with no work in the machine.

**Mold changing time : 15min** (250 ton class)

● Simply use the operation panel to clamp and unclamp the mold.

● With no work in the machine.

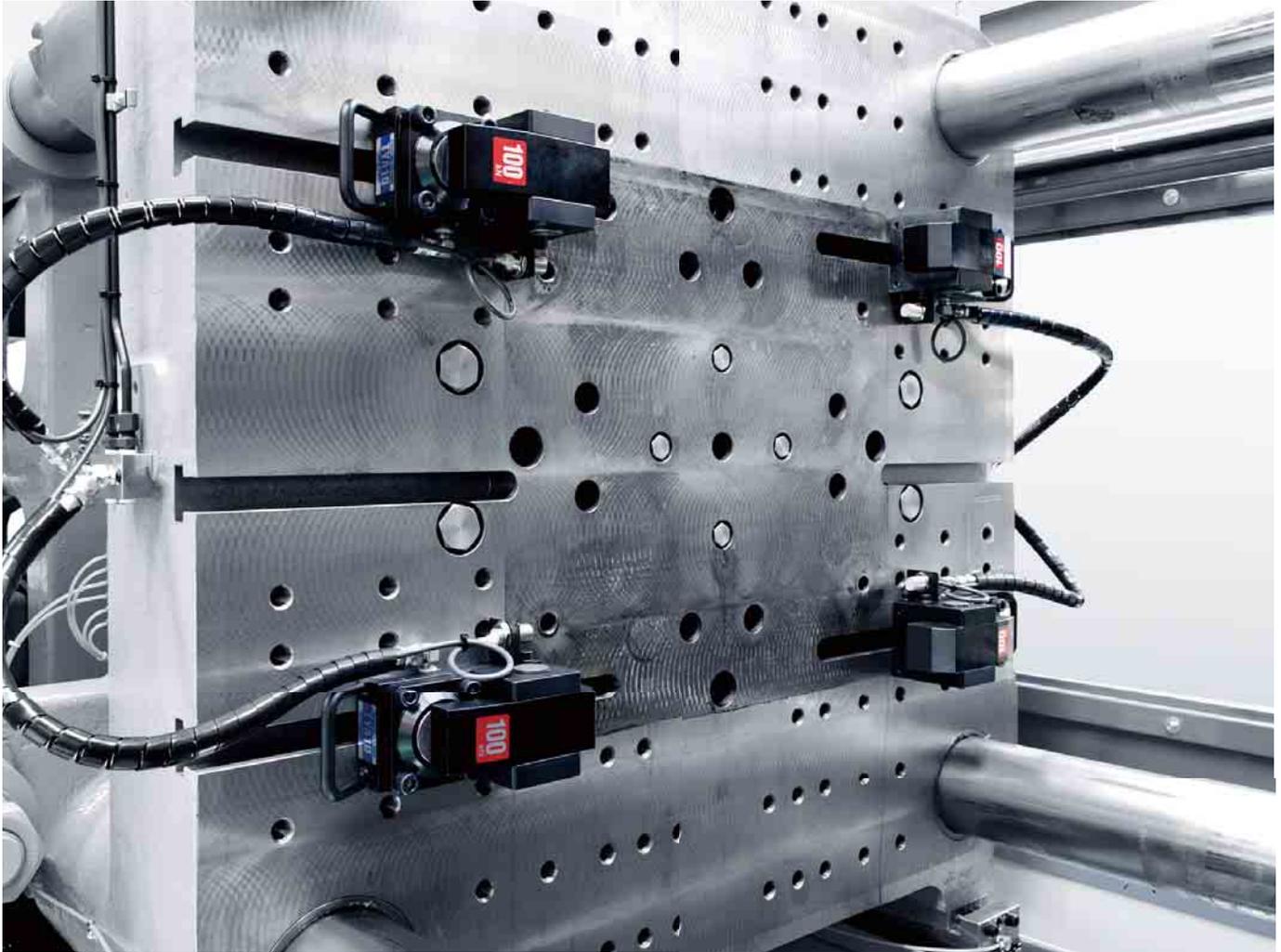
● Mold changing is done in only **15 minutes**.



The moving picture of mold change operation for two-color IMM with mag clamp is being uploaded in Pascal web site.

# Hydraulic clamp

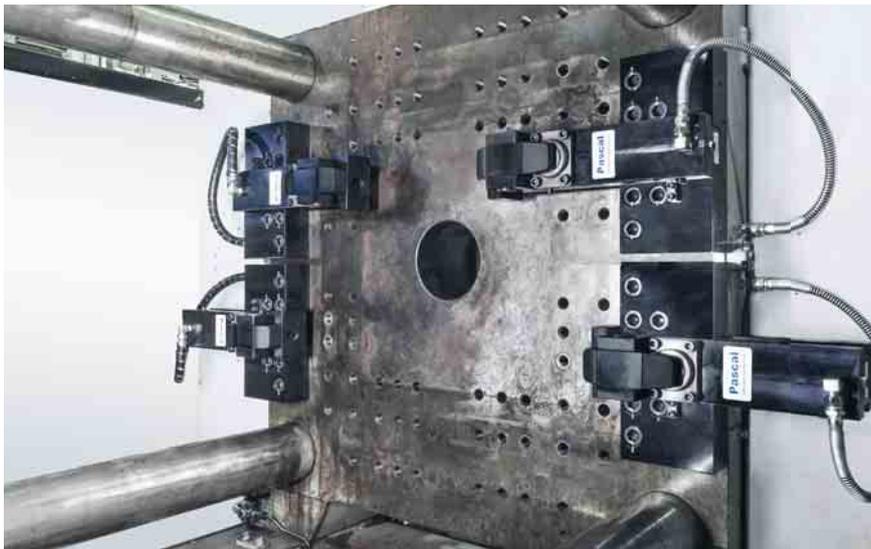
Hyd.



4,500kN (450ton) IMM Vertical loading Hydraulic clamp, slidable type TYA



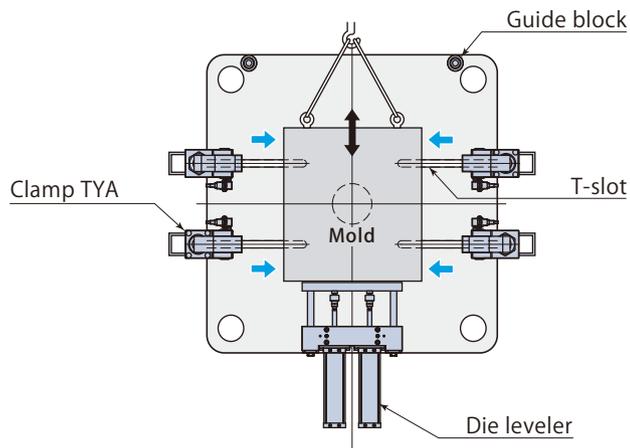
16,000kN (1,600ton) IMM Vertical loading Hydraulic clamp, automatic slidable type TYC-Z



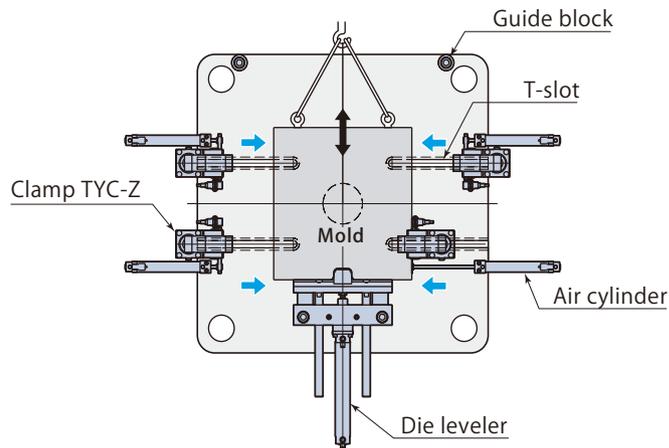
3,500kN (350ton) IMM Vertical loading Hydraulic clamp, T-slot-less slidable type TYA-M

**Hyd.**

### Slidable clamp & Die leveler



### Automatic slidable clamp & Die leveler



### Slidable type line-up

T-slotted manual slide type of clamp



model **TYA**  
Standard type



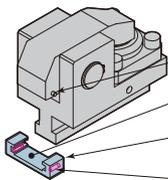
model **TYB**  
Long stroke type

The max. 5mm (in case of using a lever spacer, max. 15mm) of dimensional variation can be absorbed.



model **TYJ**  
Long stroke type

The max. 10mm lever stroke can accommodate dimensional variation of clamping height.



**Pin** The spacer is pulled up at unclamping.

**Lever spacer** PAT.P.

**Pin engagement groove**

**Magnet** Install the spacer tightly on the clamp body.

### Automatic slidable type

Automatic slidable clamp with air cylinder.  
It enables to shorten the mold change time.



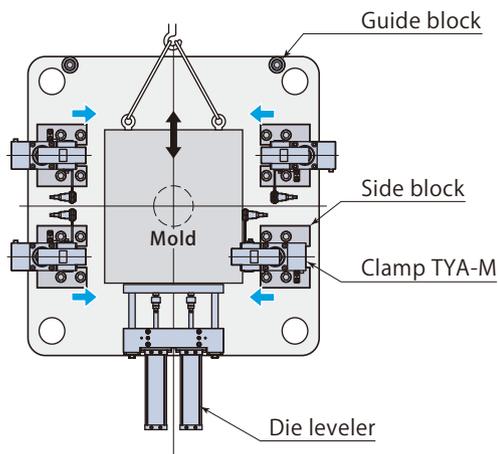
model **TYC-Z**  
Slide direction: Horizontal

model **TYC-R**  
Slide direction: Vertical

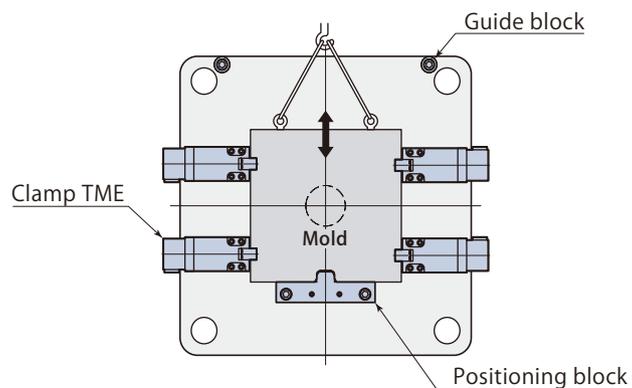


There is a risk of mismounting the wrong size of mold in case of choosing long stroke type of clamp.

### Clamp, T-slot- less slidable type & Die leveler



### Bolted type clamp & Positioning block



#### T-slot-less slidable /automatic slidable type

Manual slide type of clamp with a sideblock (T-slotted block). It enables the clamp to slide it manually even if machine platens do not have T-slots.



model **TYA-M**

#### Bolted type

Bolted type of clamp.



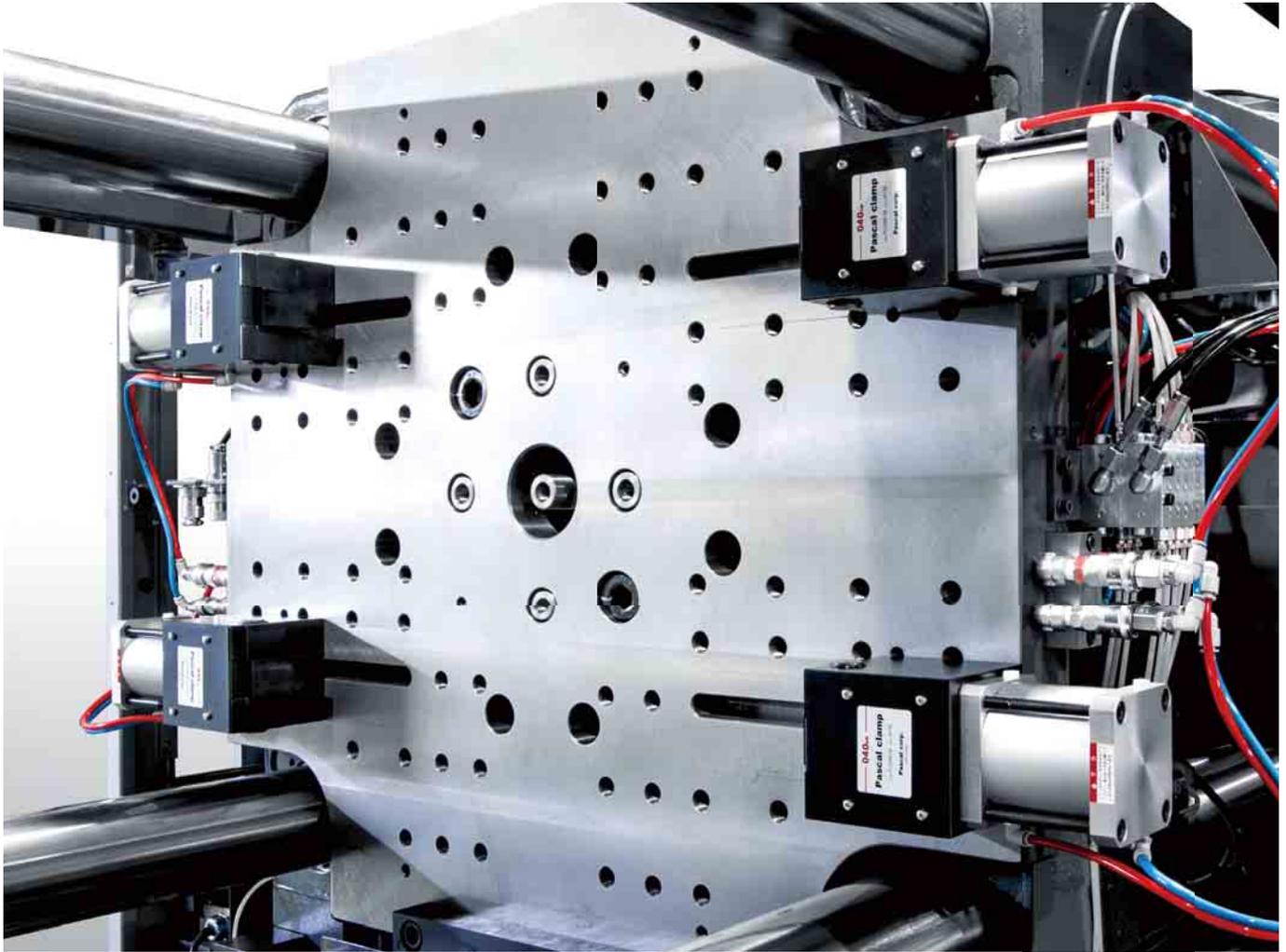
model **TME**  
For small and  
medium-sized IMM



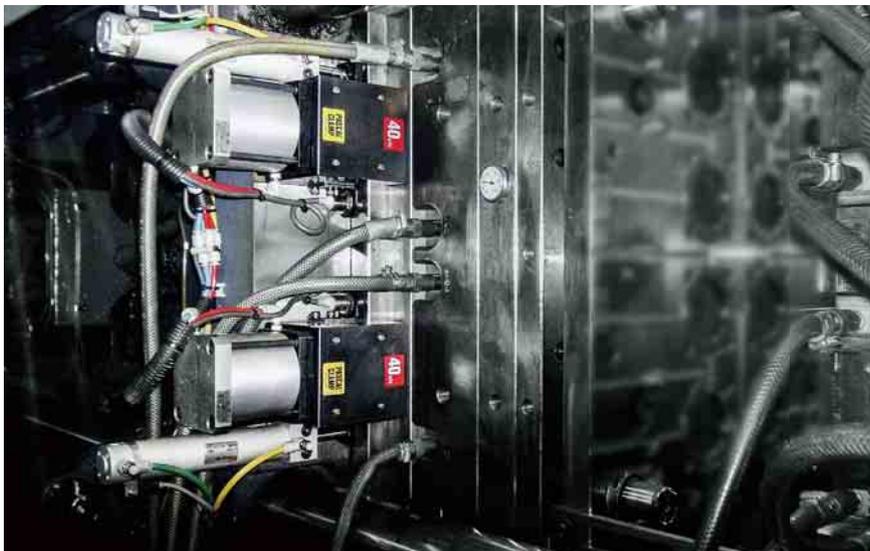
model **TKB**  
For medium and  
large-sized IMM

# Air clamp

Air



2,200kN (220ton) IMM Vertical loading Air clamp, slidable type TLC



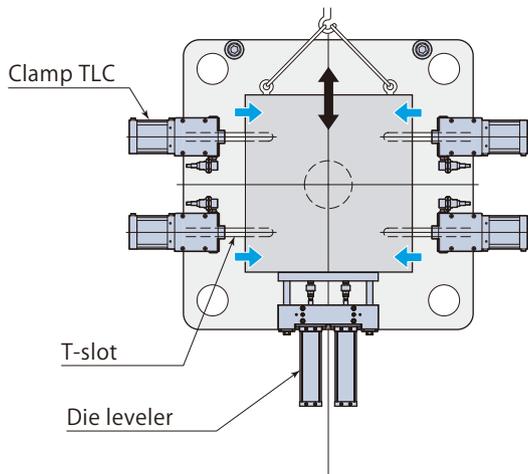
1,100kN (110ton) IMM Vertical loading Air clamp, automatic slidable type TLC-Z



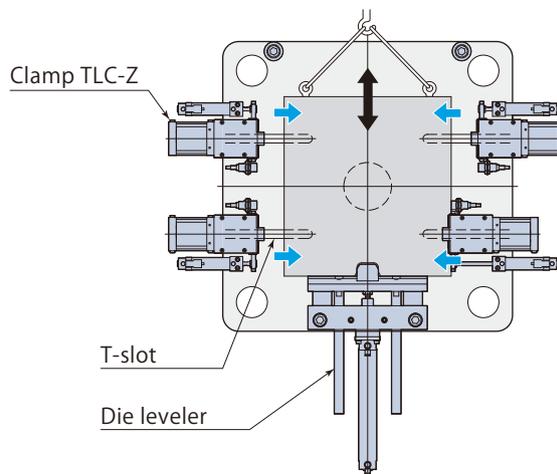
400kN (40ton) Vertical IMM Air clamp, T-slot-less slidable type TLA-M



### Slidable clamp & Die leveler



### Automatic slidable clamp & Die leveler



#### Slidable type

T-slotted manual slide type of clamp

model **TLC**



#### Automatic slidable type

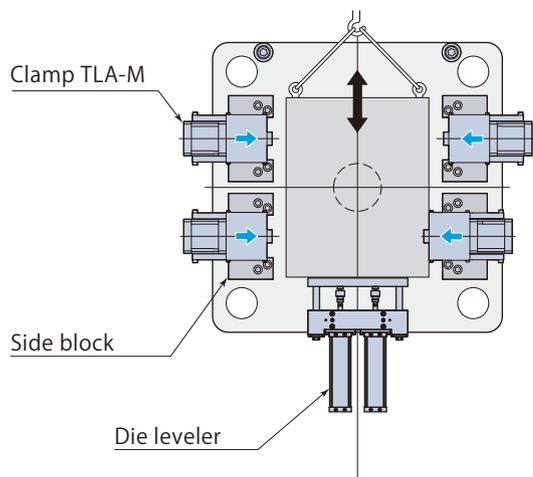
Automatic slidable clamp with air cylinder.  
It enables to shorten the mold change time.

model **TLC-Z**  
Slide direction:  
Horizontal

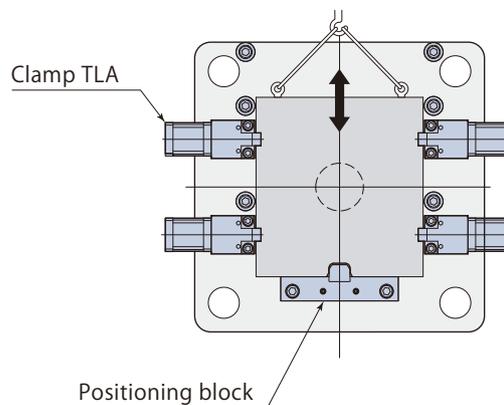
model **TLC-R**  
Slide direction:  
Vertical



### T-slot-less slidable clamp & Die leveler



### Bolted type clamp & Positioning block



#### **T-slot-less slidable / automatic slidable type**

Manual slide type of clamp with a sideblock (T-slotted block). It enables the clamp to slide it manually even if machine platens do not have T-slots.

model **TLA-M**



#### **Bolted type**

Bolted type of clamp.

model **TLA**



# Pascal hydraulic control unit

Hyd.

Control unit HCM

## Returning oil to the tank at air bleeding

Adopting transparent pipe to return the oil from air bleeding valve to the tank, air bleeding can be done without draining the oil.

A rigid bracket for the regulator to withstand the machine vibration

Equipped with filter regulator as standard

Adoption of steel tank which is strong against impact and heat

## 1 Block-type Valve unit

Independent circuit valves have been configured as a block valve, improving maintainability.

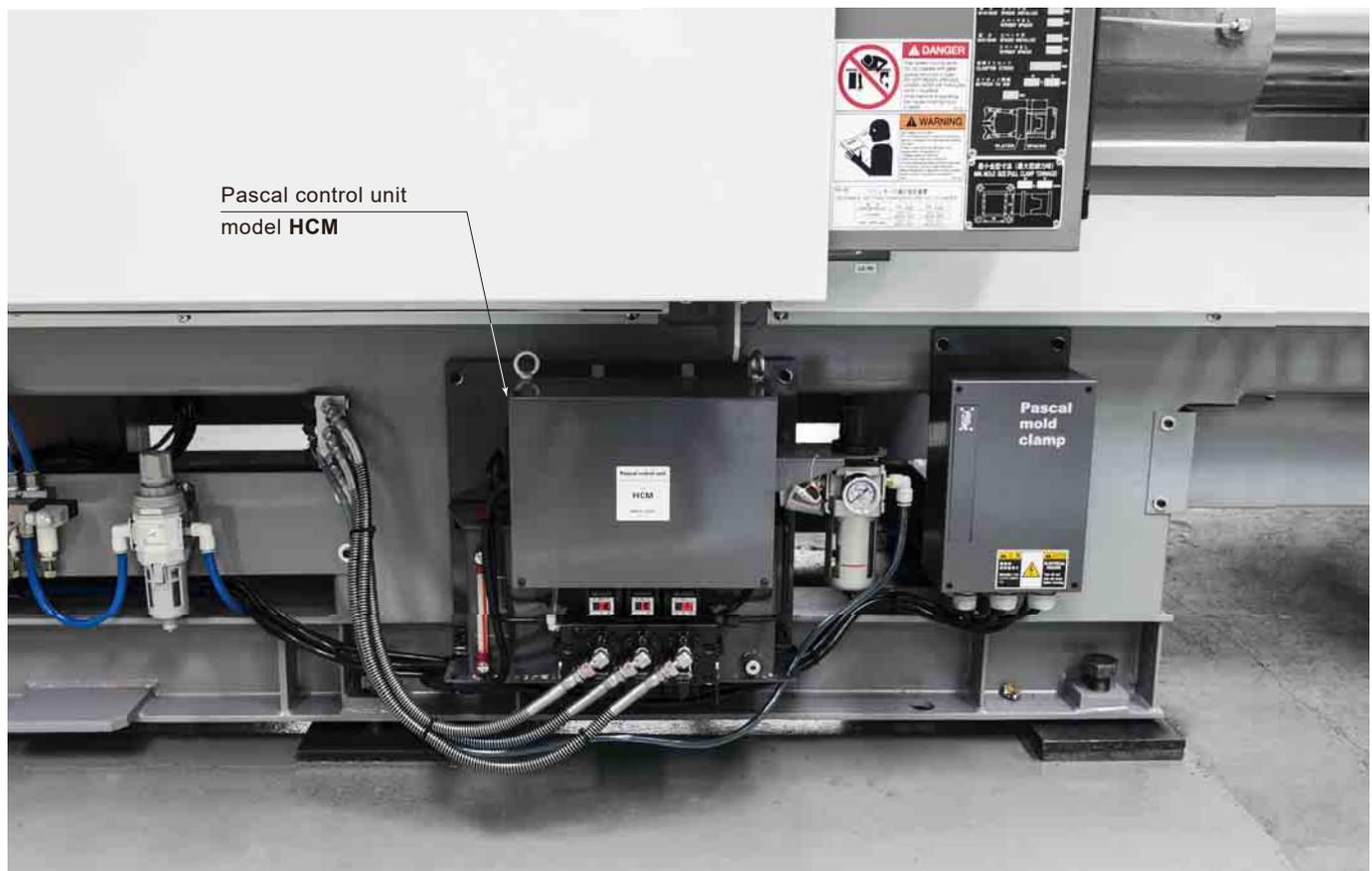
## Digital pressure switch

User-friendly display with 7 segments. It can also show abnormal pressure sign and allows hydraulic control unit to be compact.



## New control unit HCM with excellent maintenance

Air-driven hydraulic control unit integrating electric control (solenoid operated), Pascal pump and Pascal non-leak valve in a panel which is applicable to a medium and large-sized IMM.



## Operation panel

User friendly control panels with compact body and high visible indication.

It is mountable on IMM or wall of IMM utilizing the tap holes at the rear side. (M4 bolts x 4 accessories)

[ For vertical loading ]

model **ESTE-A**

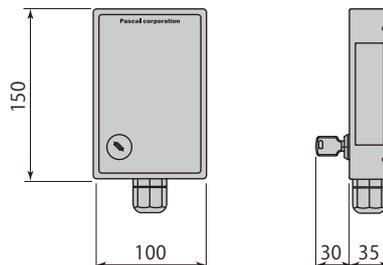


[ For horizontal loading ]

model **ESTE-B**

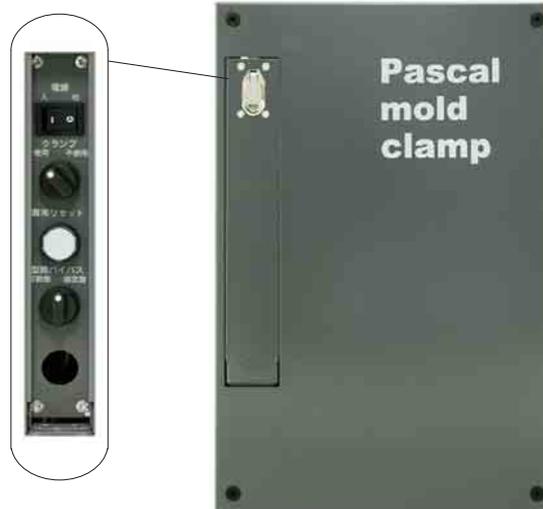


Model	ESTE-A	ESTE-B
Loading direction	Vertical loading	Horizontal loading
Weight	kg 0.6	0.6



## Control box

model **ECTE**



Model		ECTE
Weight	kg	4

## Interlock

The following interlock is incorporated into the electric control circuit for hydraulic and air clamp, so the mold changing operation can be performed safely.

- The operation of hydraulic and air clamp is feasible when all of conditions ①~⑥ shown below have become complete at time of mold changing.

Hydraulic/Air clamp : ①Mold change mode

IMM : ②Set-up (or manual) mode, ③Nozzle retracted, ④Ejector retracted, ⑤Platen closed-end, ⑥Safety door closed

Regarding the condition ②, ③ and ⑤, these can be confirmed with LED lamp on operation panel.

# Operation panel ELC-B/Smart clamp

An economical control system that can operate the clamp with limited function  
(built in simplified safety interlocks)

It is applicable to the customers who

- want to increase the number of clamp system but to reduce the initial cost.
- want to automate only the clamping and unclamping the mold.

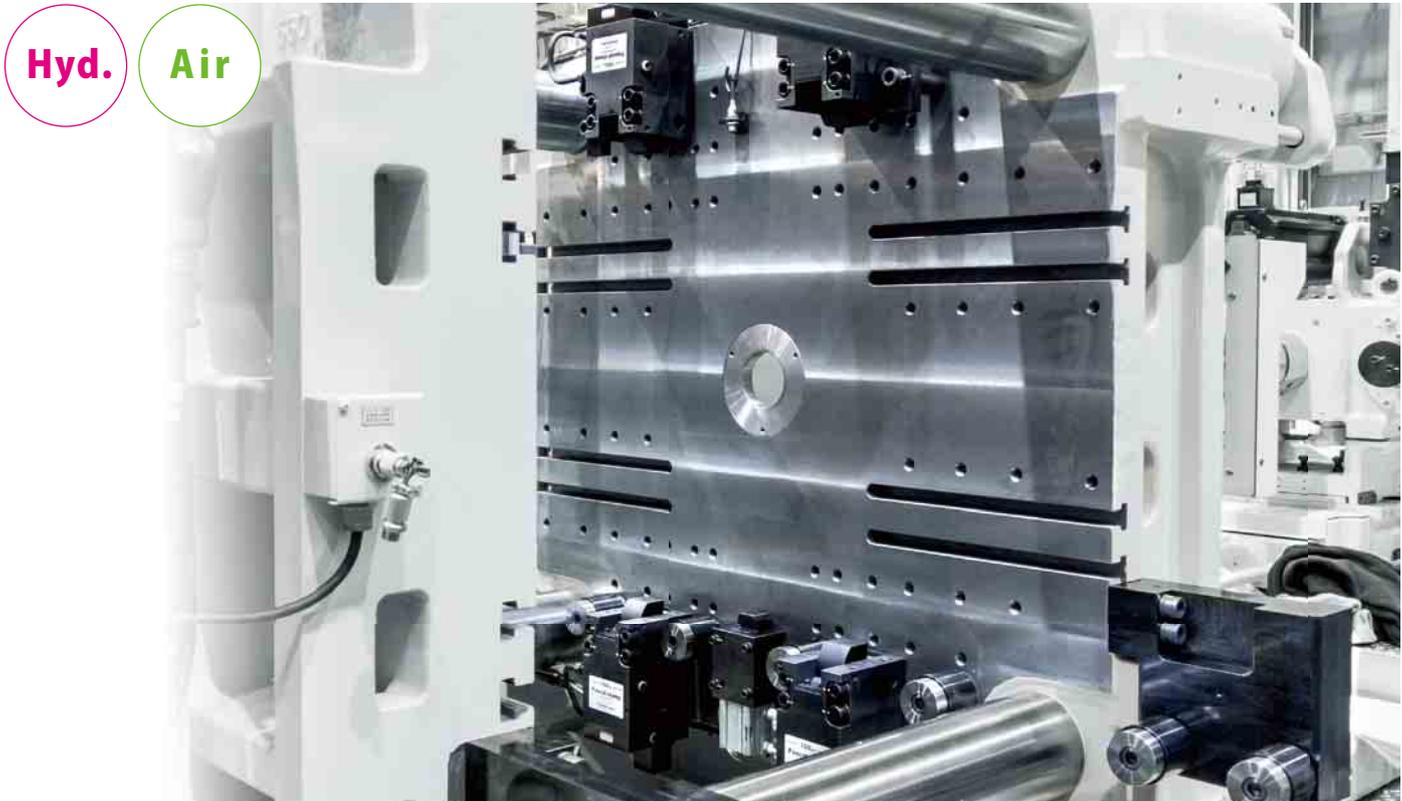
Conventional way of operation and control

Operation panel ELC-B

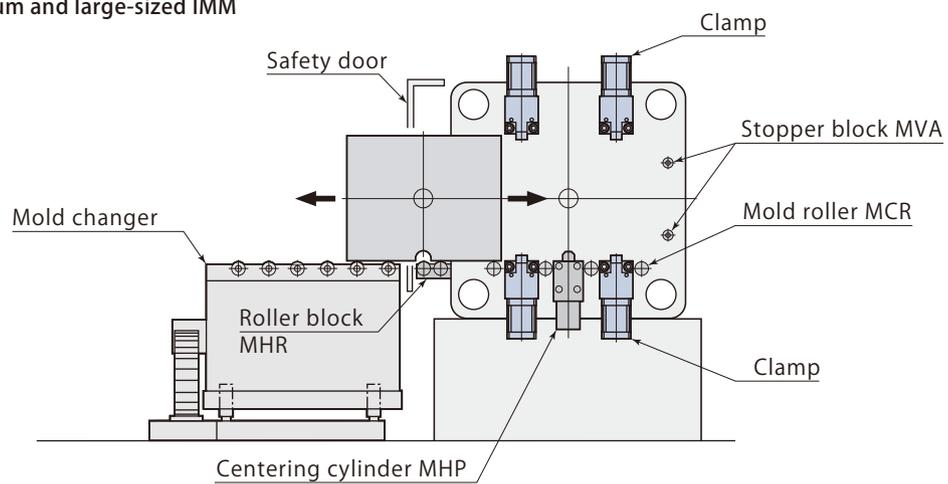


● Not applicable to automatic slidable clamp.

Hydraulic clamp					Air clamp			
TYA	TYC-Z/R	TYA-M	TME	TKB	TLC	TLC-Z/R	TLA-M	TLA
○	×	○	○	○	○	×	○	○



For small, medium and large-sized IMM



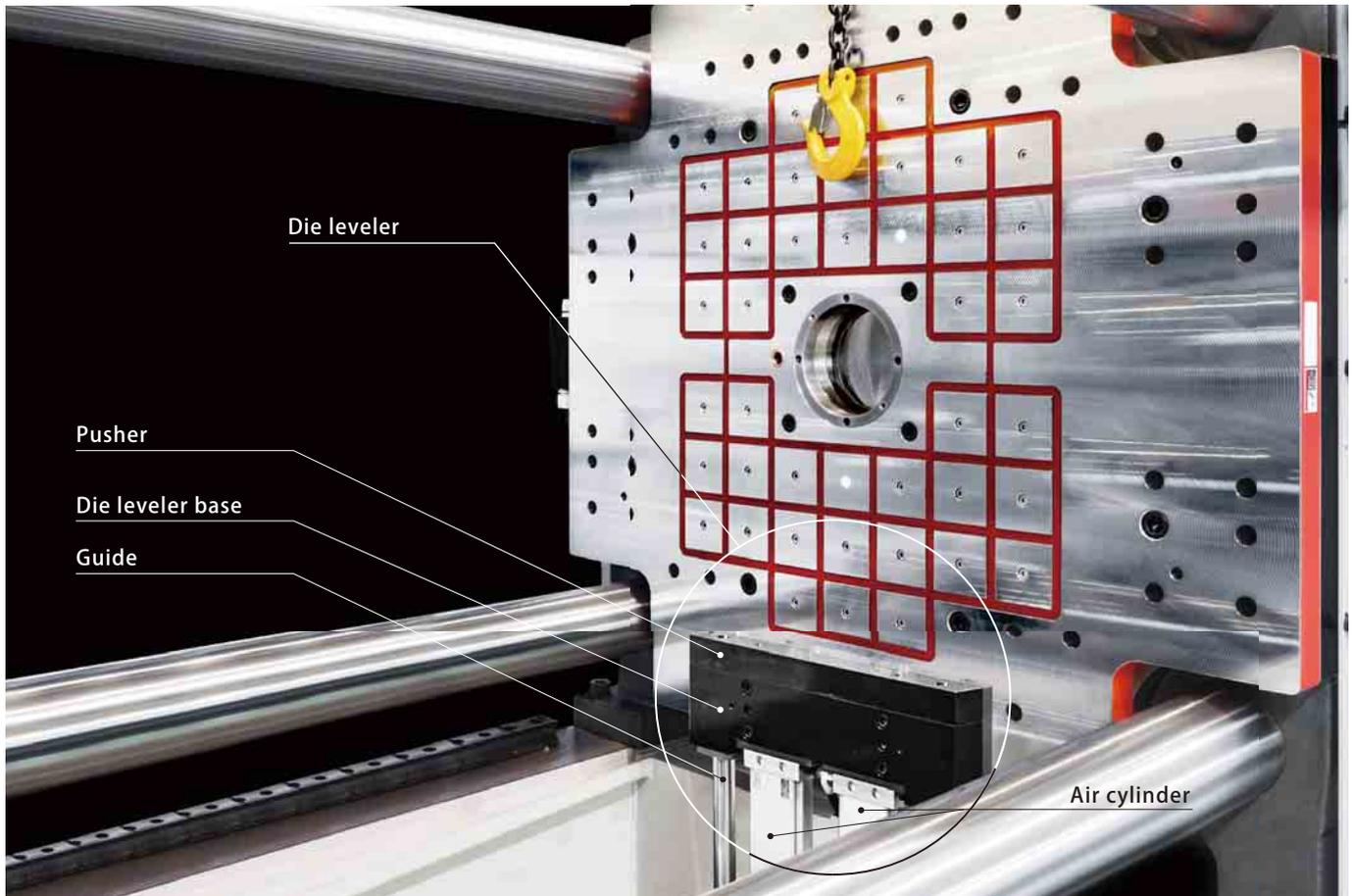
# Die leveler

new

## Locate ring & Die leveler

helps automatic leveling of the mold after centering with a locate ring

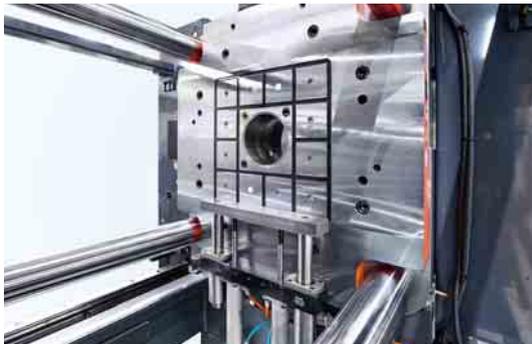
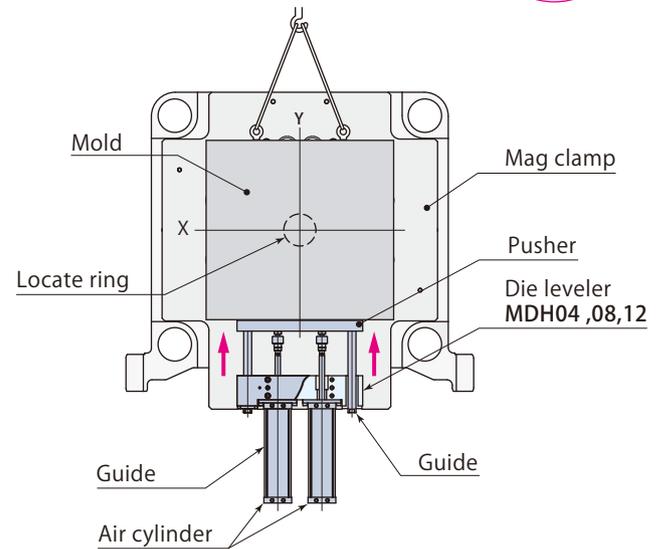
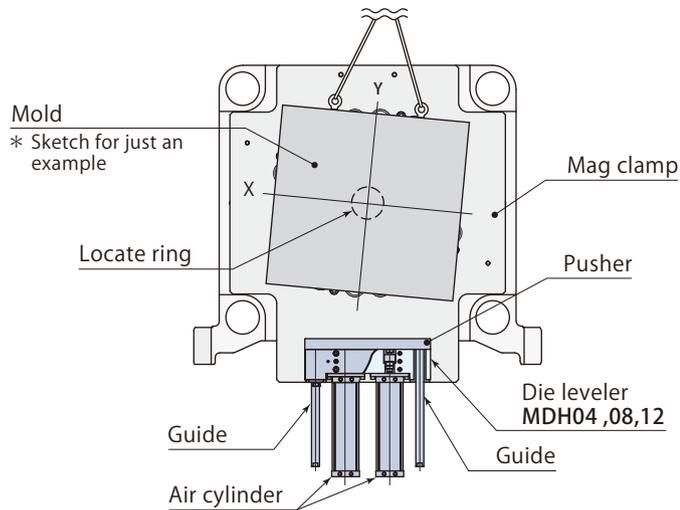
Model	MDH04	MDH08	MDH12
Mold weight kg	400	800	1200



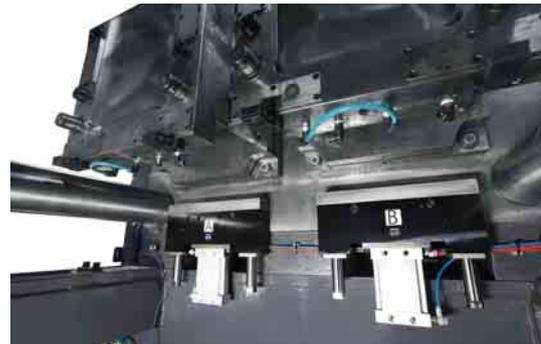
3,500kN (350ton) IMM Vertical loading Die leveler & Locate ring & Mag clamp

Down (Retracted)Up (Mold is leveled)

Mold weight  
Max.  
**1.2 ton**



2,800kN (280ton) Two-color IMM Application example



2,800kN (280ton) Two-color IMM Application example  
When installing the mold

# Quick locating system

new

A new proposal to enable the mold setting to be easy.  
Slide block (vertical guide) and die setter (leveling guide) allow the mold centering  
quick and simple.



2,300kN IMM Quick locating system practical example

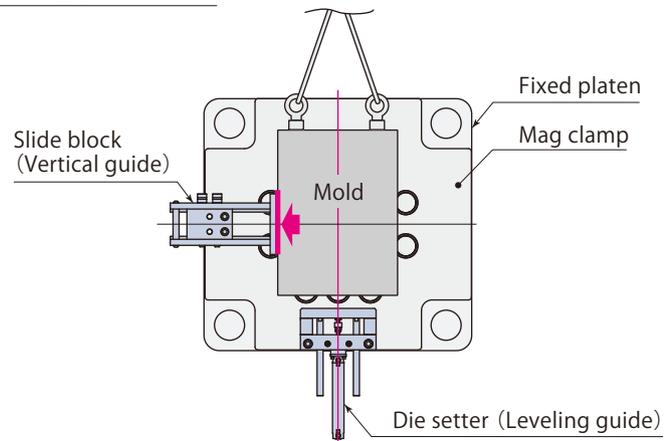
## Mold setting procedure

Mold loading in

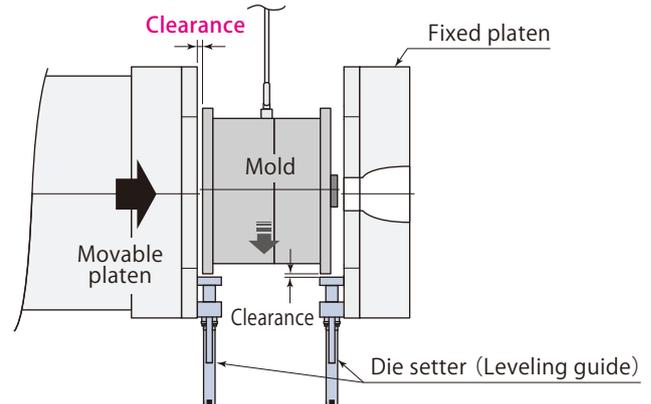


Push the mold against the slide block.

Y-axis is fixed.



Slide the platen back to make a clearance



Place the mold on the die setter

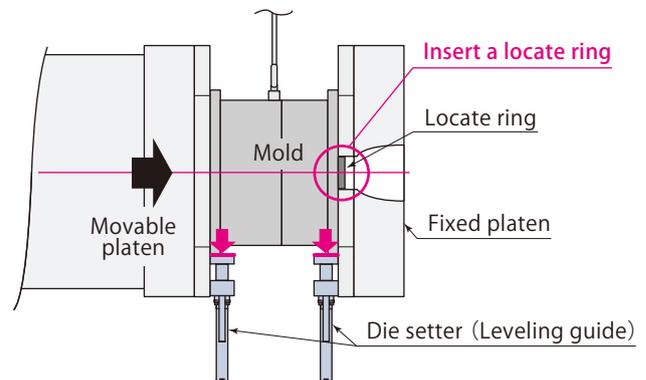
X-axis is fixed



Slide the platen forward to get the locate ring in the hole



Mold setting is over

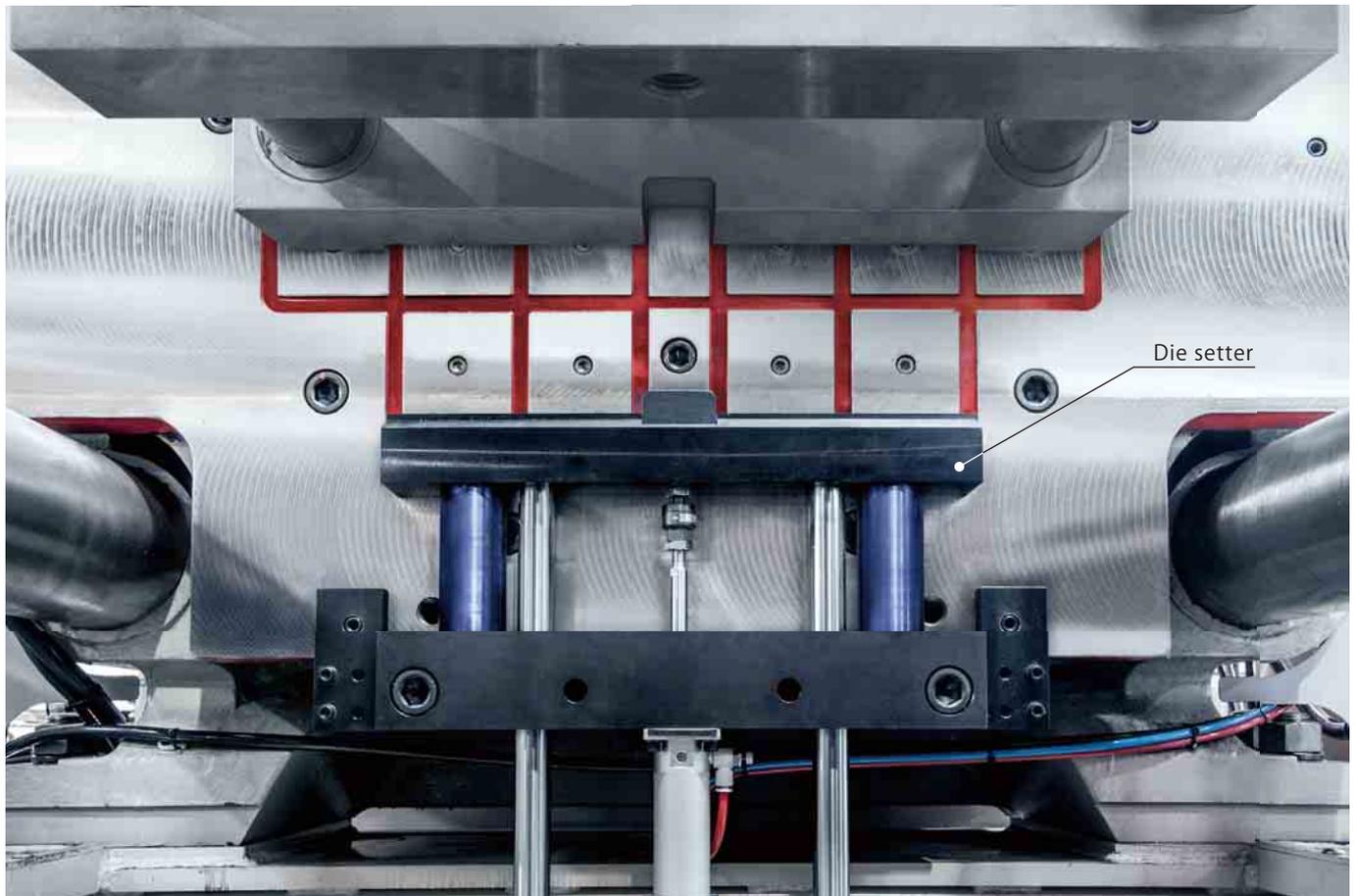


# Die setter

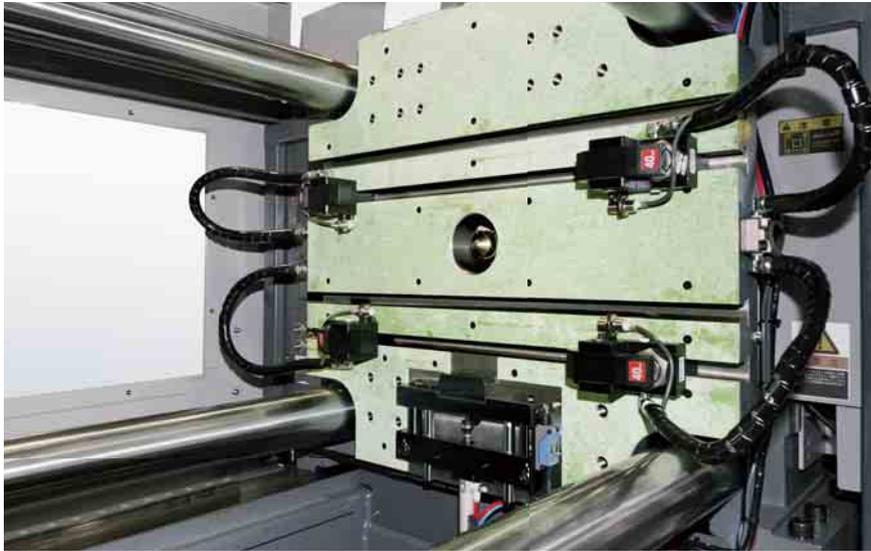
New proposal in place of conventional locate ring

Introducing a Die setter, the horizontal and vertical positioning can be determined surely and easily by placing a mold on a Die setter and it can reduce mold set-up time and improve the productivity.

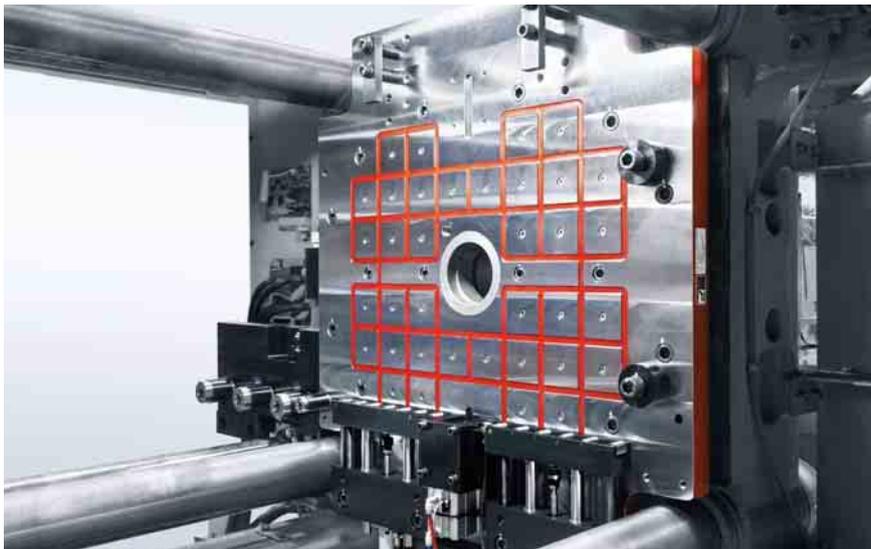
Model	MDL01	MDL03	MDL04	MDL06	MDL10	MDL15
Mold weight kg	1000	3000	4000	6000	10000	15000



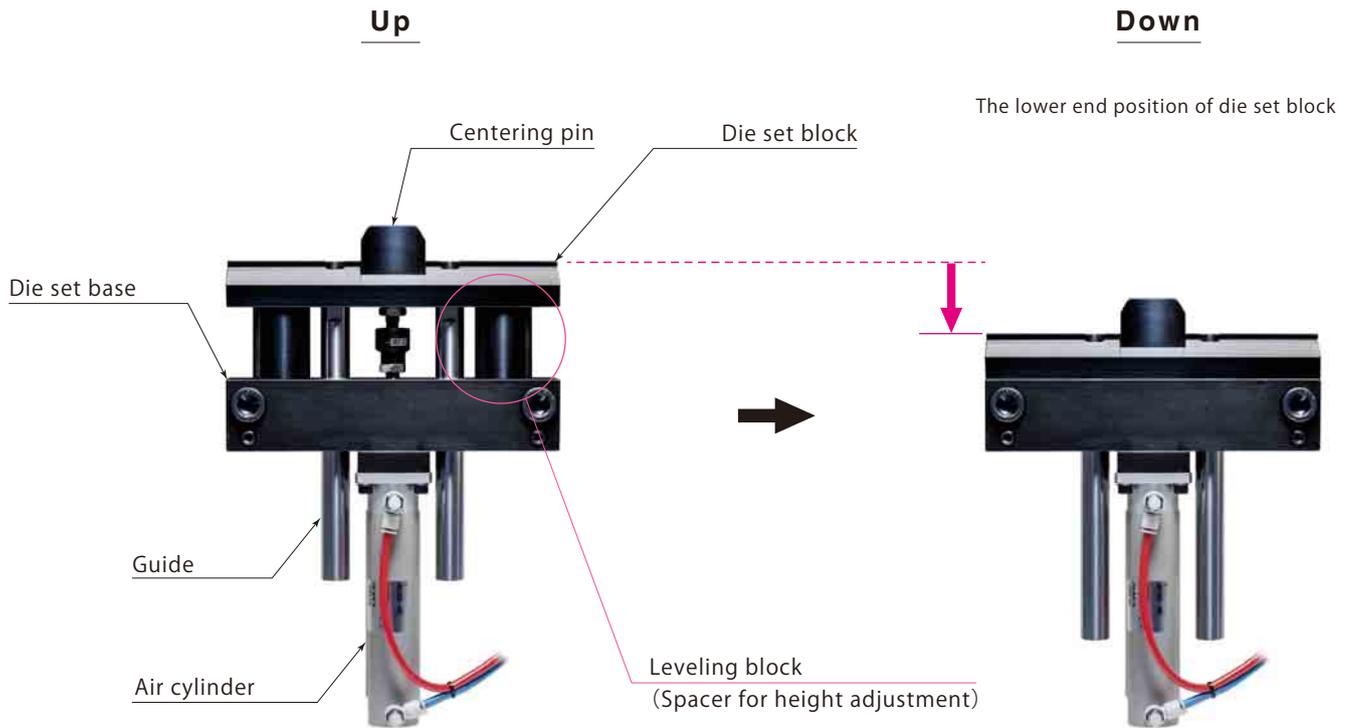
3,500kN (350ton) IMM Vertical loading Die setter & Mag clamp



1,800kN (180ton) IMM Vertical loading Die setter & Hydraulic clamp, slidable type TYA040



3,500kN (350ton) IMM Horizontal loading Die setting roller & Mag clamp



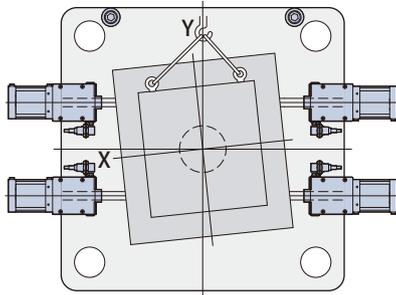
### Leveling block

Positioning by putting leveling block between a die set block and die set base.



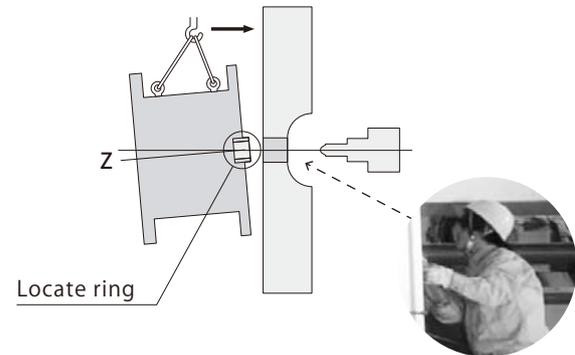
## Die setting with locate ring

Mold center (X,Y) is not stable.



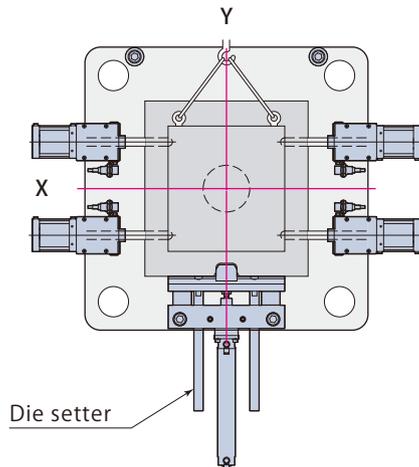
Hard to fit the ring into the nozzle hole

( It is not easy to check from back side of the platen if the ring fits in the hole by slinging the mold by overhead crane, in addition, there is a risk of damage of surface of platen or mold itself. )

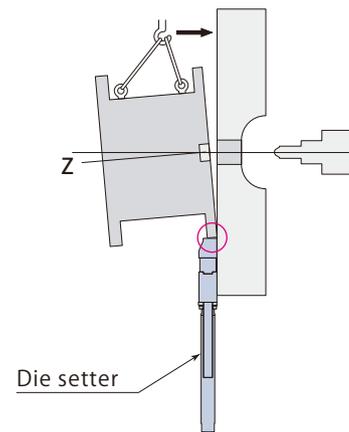


## Die setting with die setter

Mold centering (X,Y) is quickly secured.



By placing a mold on a die setter, mold is easily positioned.



# Octagonal locate ring

## Mold positioning for insert / hoop molding

For improvement of mold set-up time.

The use of octagonal locate ring (octagonal taper cone) provides easy positioning, eliminating need for retraining of robot.

Mold side



Octagonal locate block  
(Locate ring cylindrical)

Fixed platen side

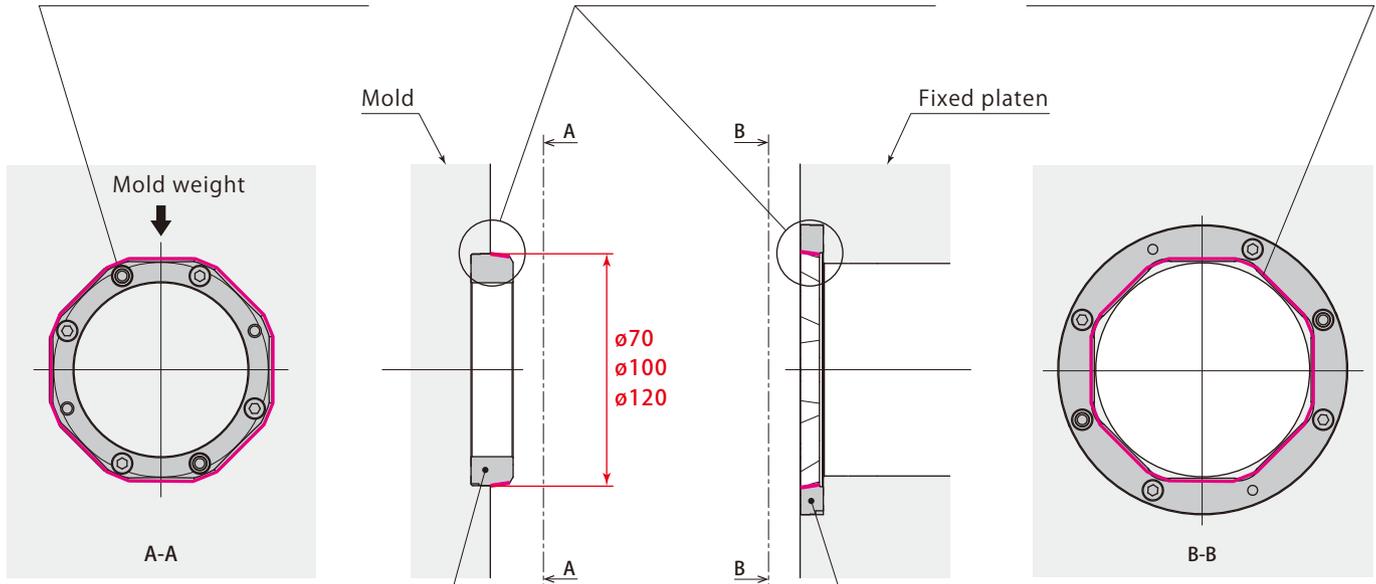


Octagonal locate ring  
(Base)

High rigidity can be obtained by receiving mold weight on multiple faces.

Taper allows easy mold setting.

Restrained 8-faces can provide easy centering.



Octagonal locate block

- MCL 70P
- MCL 100P
- MCL 120P

Octagonal locate ring

- MCL 70S
- MCL 100S
- MCL 120S



1,800kN (180ton) IMM Vertical loading  
Octagonal locate ring & Mag clamp



500kN (50ton) Vertical IMM  
Octagonal locate ring (positioning for upper mold) & Rollers

# Easy ejector rod

improvement  
of  
Moldchange  
**Step1**

**Pascal Easy ejector rod makes an ejector rod changing dramatically easier**

It is a newly designed ejector rod with strong magnets on the joint surface of the fixed/removable rods, which plugs in/out by one-touch operation.



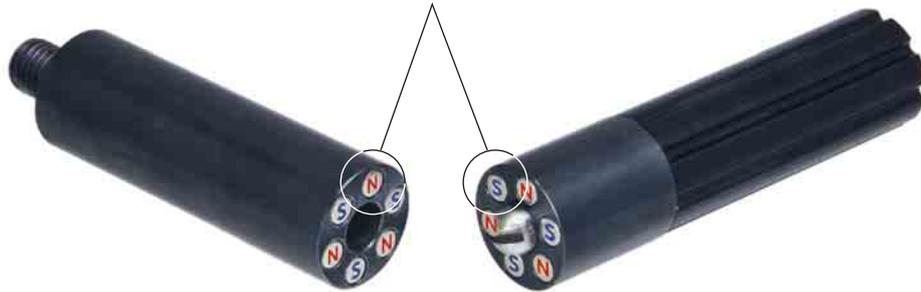
1,000kN IMM  
**1min08sec**  
to  
**6sec**



5,500kN IMM  
**5min30sec**  
to  
**20sec**

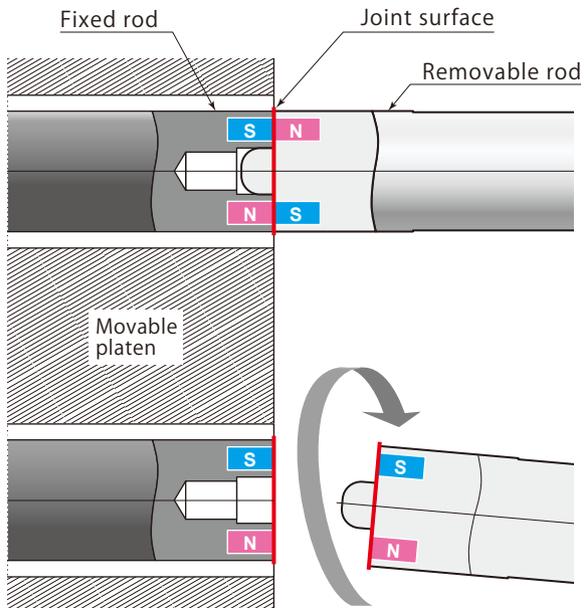


Super strong permanent magnet  
Neodymium magnet

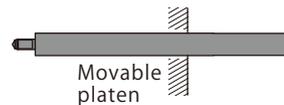


Fixed rod

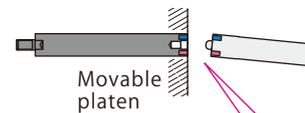
Removable rod



Conventional ejector rod



Easy ejector rod

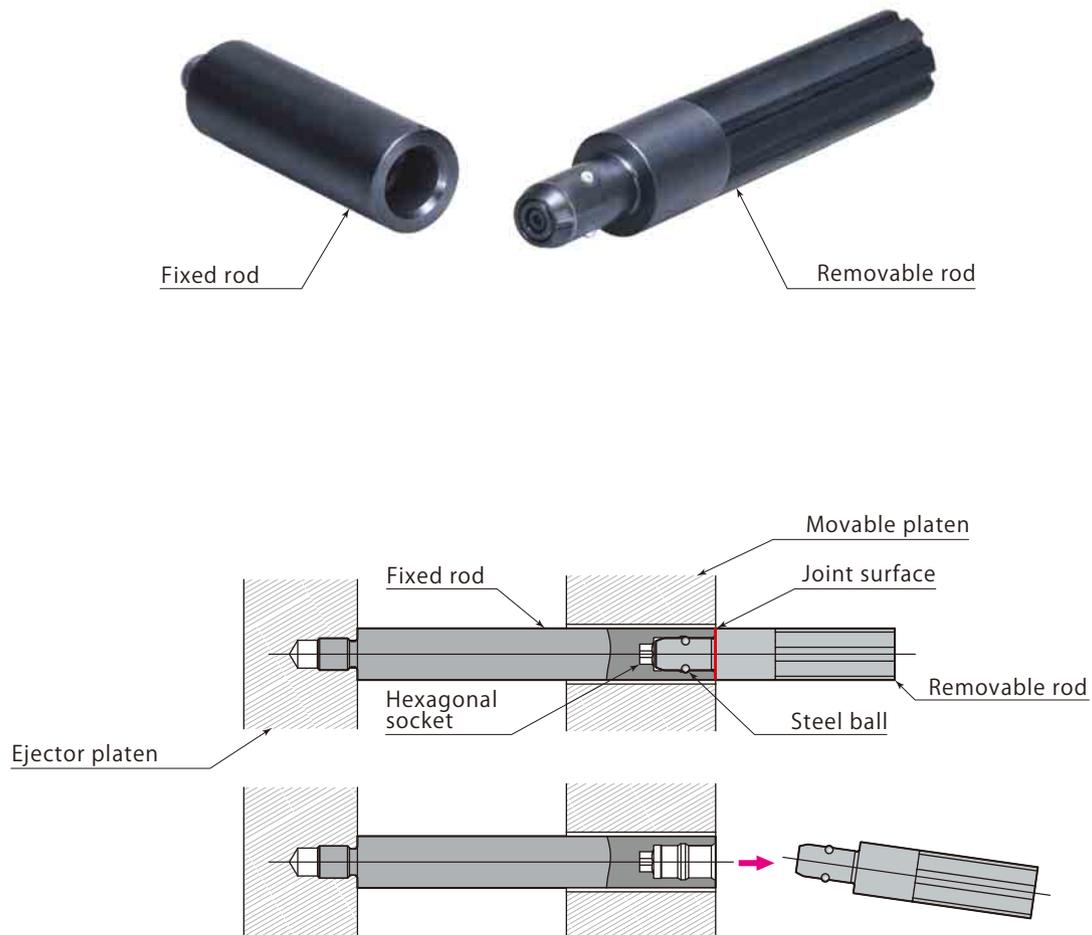


Separated into fixed  
and removable rod

\* Select a ball ejector rod for large sized IMM with the ejector stroke more than 300mm.

# Ball lock ejector rod

The ejector rod can be installed and removed by one-touch operation with the ball lock structure.

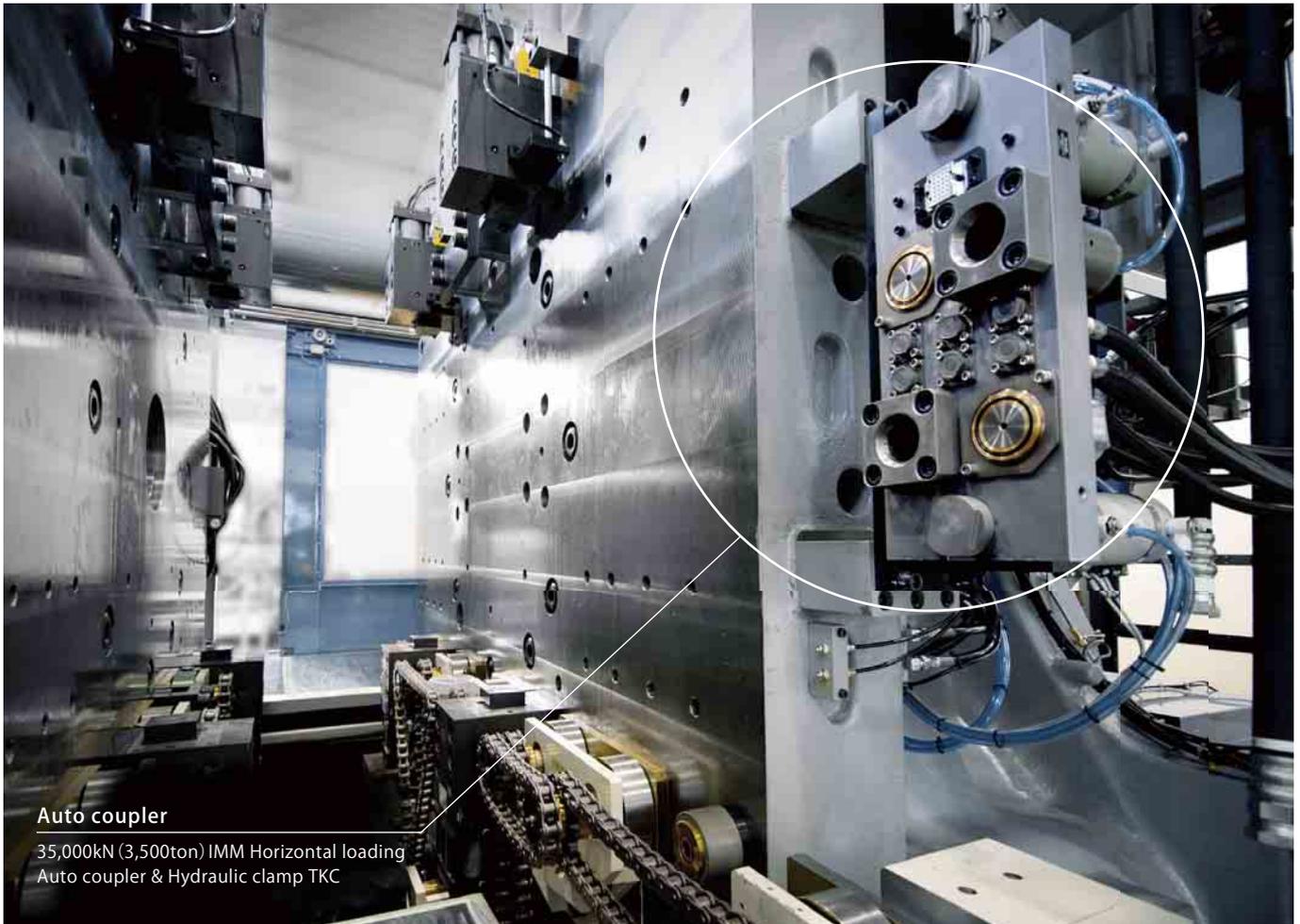


# Auto coupler

Auto-  
matic

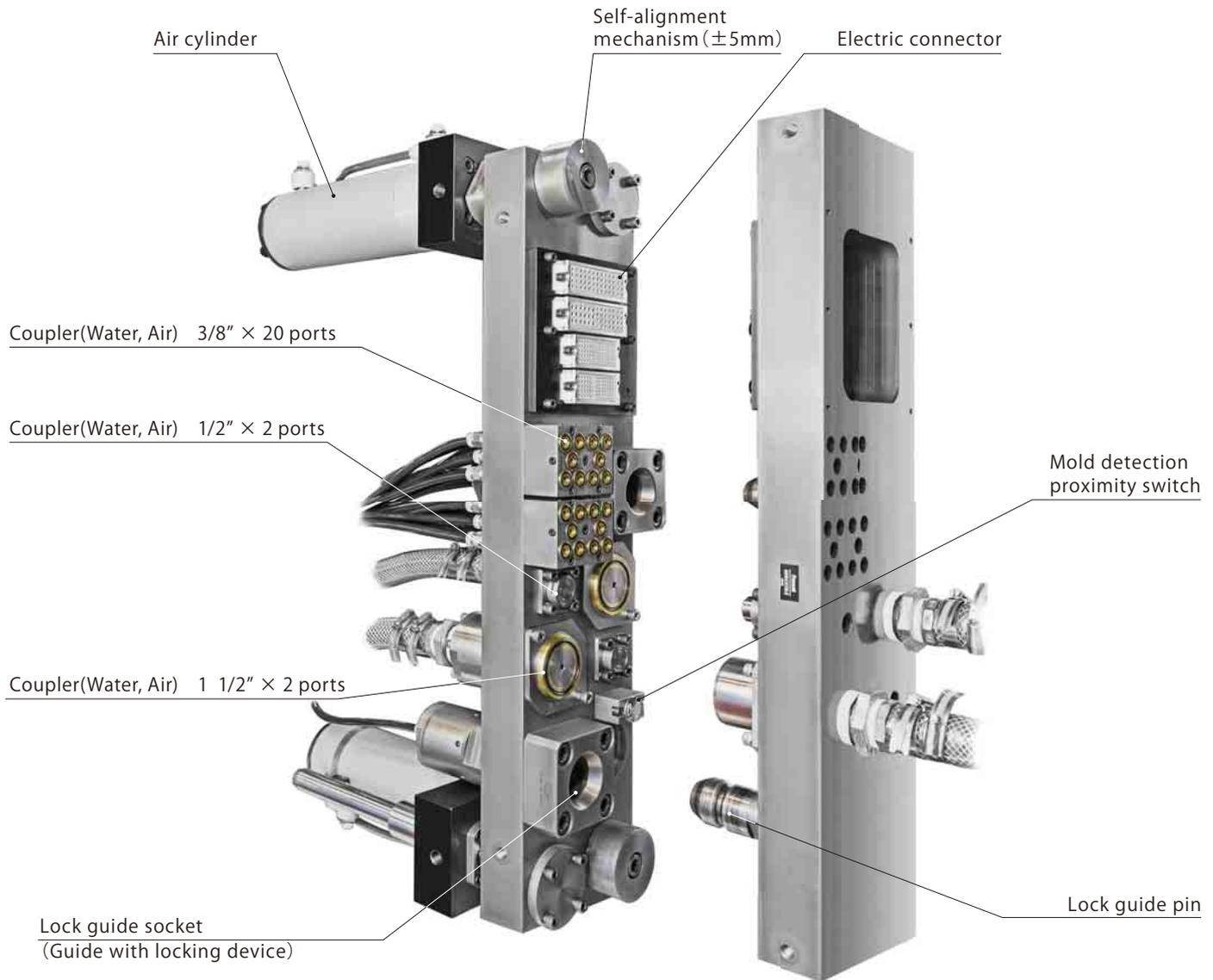
## Automatic connection and disconnection of plural piping and tube

Auto coupling system with large number of delivery records in the plastic molding, press working and die casting machine line.

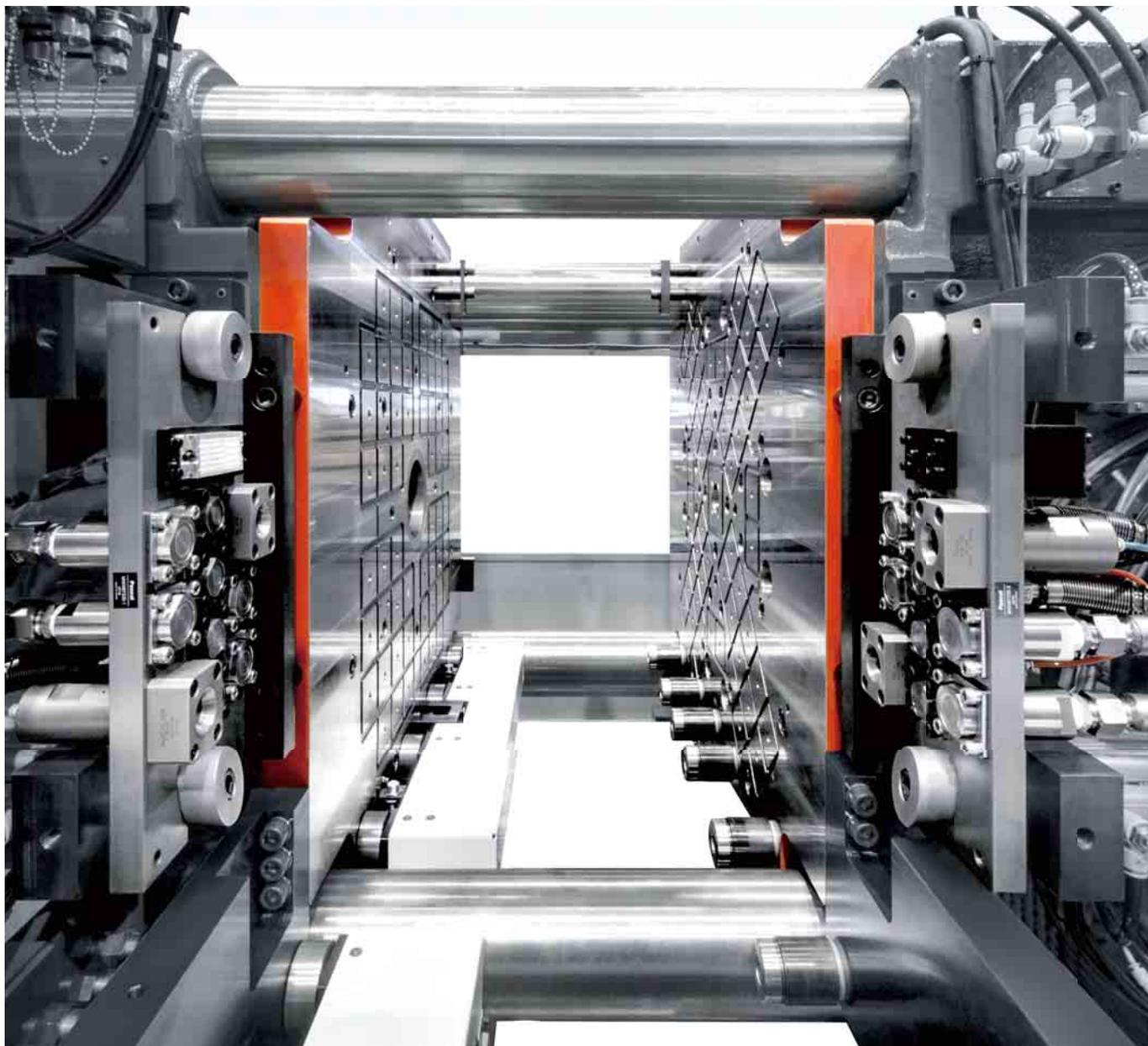


**Auto coupler**

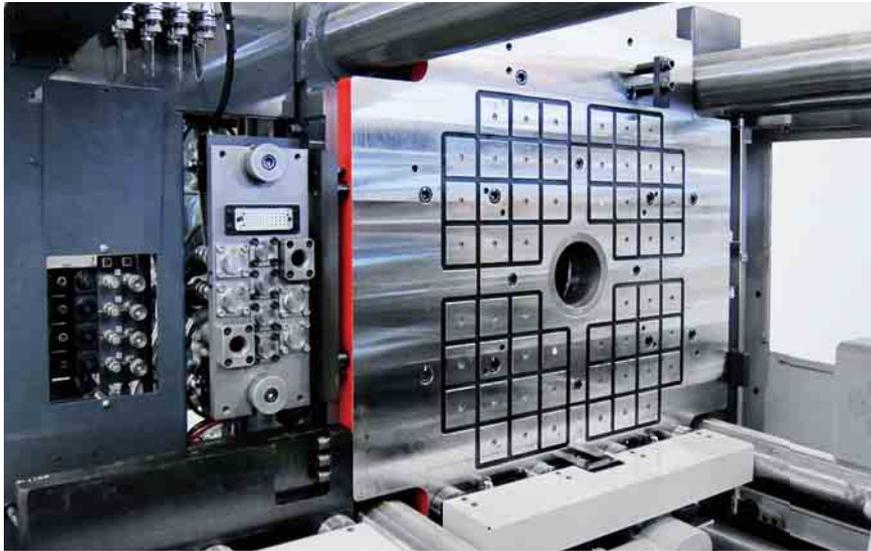
35,000kN (3,500ton) IMM Horizontal loading  
Auto coupler & Hydraulic clamp TKC



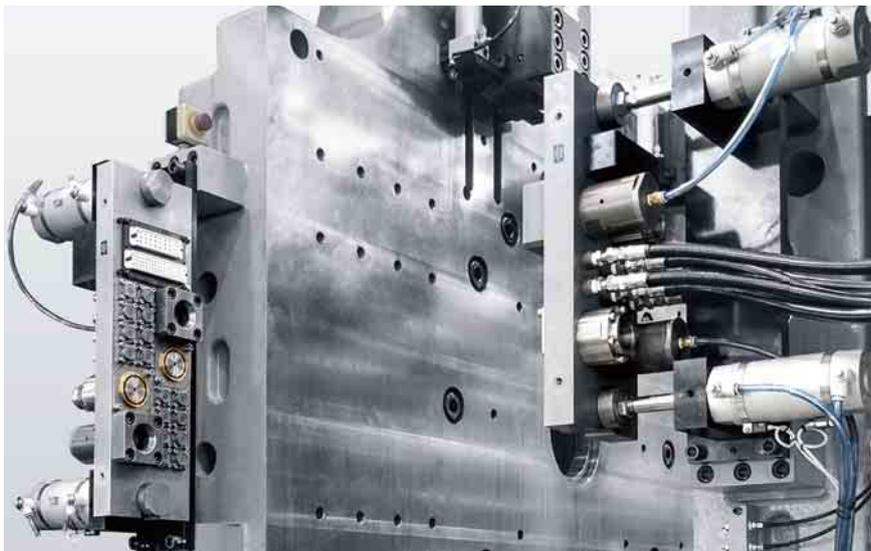
Module	Coupler, Electric connector, Lock guide, Mold detection proximity switch(Special)
Fluid	Hydraulic, Water, Air
Connection port	3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"



4,500kN (450ton) IMM Horizontal loading Mag clamp & Auto coupler



4,500kN (450ton) IMM Horizontal loading Auto coupler & Mag clamp



35,000kN (3,500ton) IMM Horizontal loading Auto coupler & Air clamp

# C&C coupler PAT.

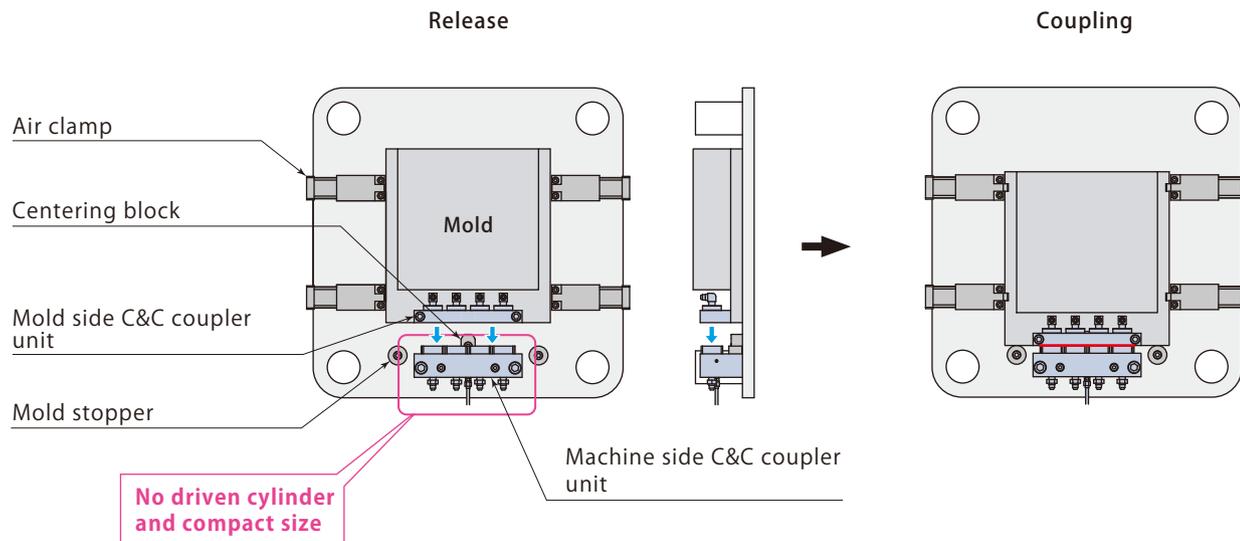
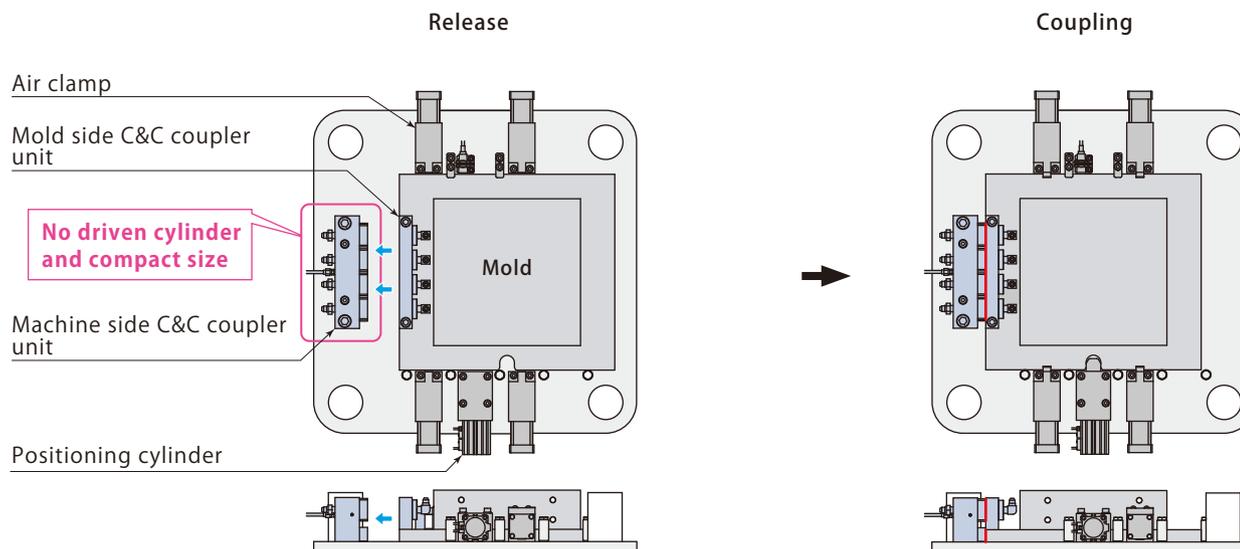
Auto-  
matic

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

Module	Coupler, Electric connector
Fluid	Hydraulic, Water, Air
Pressure	Max. 1MPa
Connection port	1/4"



2,500kN (250ton) Two-color IMM Horizontal loading Fixed side Mag clamp & C&C coupler

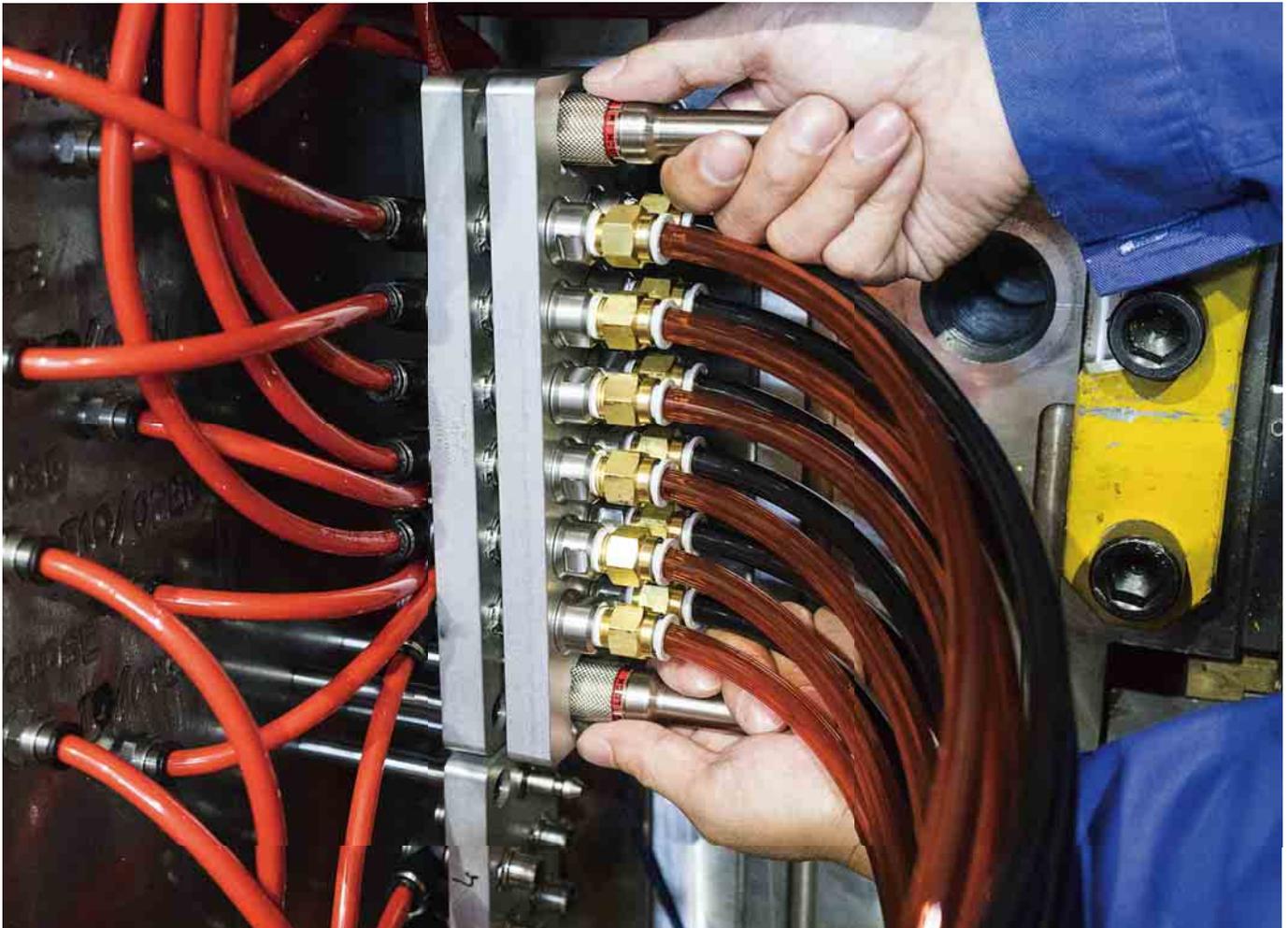
Vertical loadingHorizontal loading

# Multi coupler

new

Manual

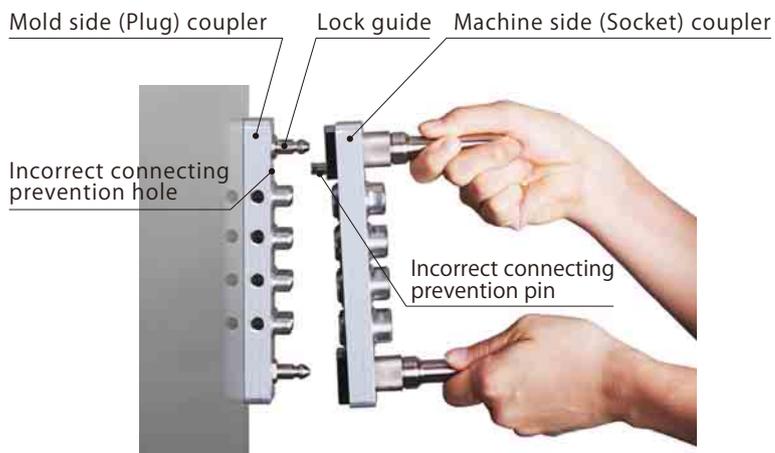
Multiple couplers are connectable easily and securely by pushing the gripper slightly. It prevents misplace of couplers and can shorten the coupling time.



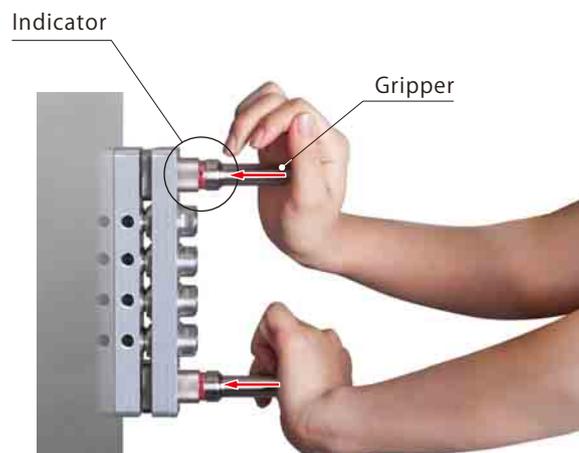
18,000kN (1800ton) IMM Multi coupler Open model

## Locking operation

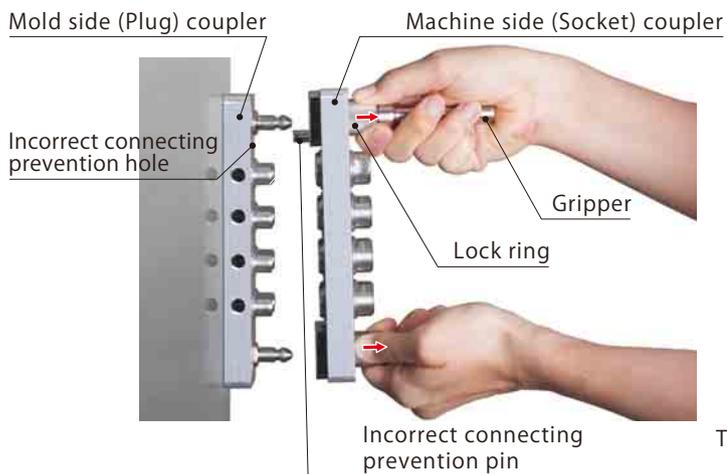
Insert the couplers(Female) along the guide



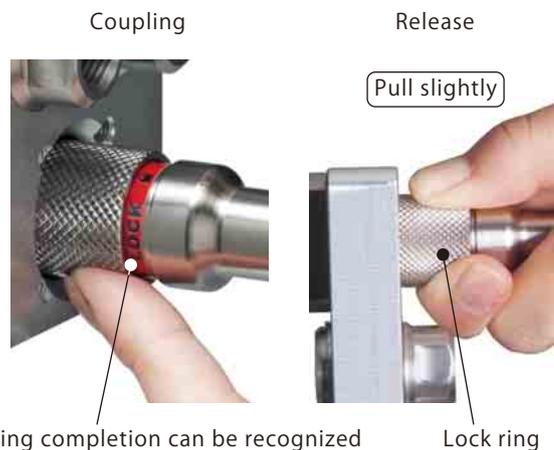
Push the gripper slightly and the locking has been completed.



## Release operation

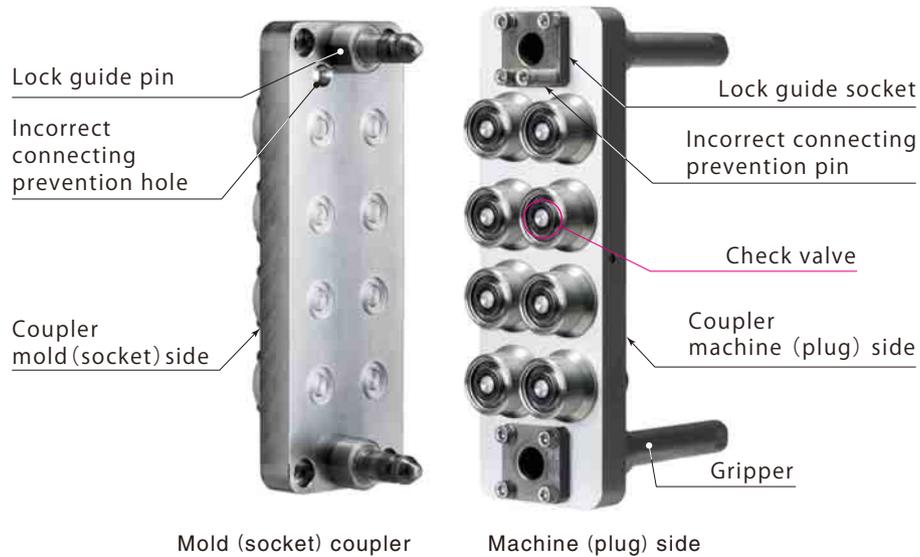


Hold the gripper and pull the lock ring slightly and the couplers disconnect.

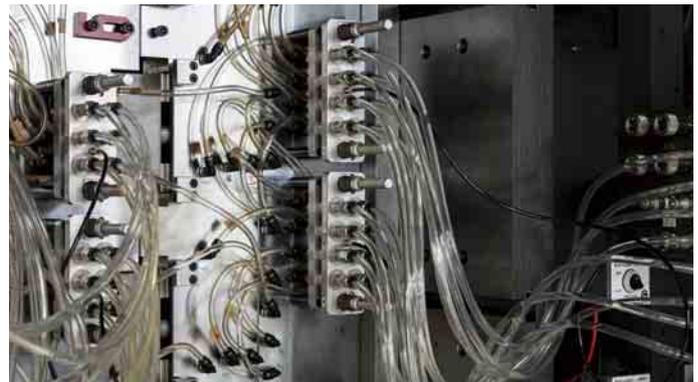


## Check valve model

A manual coupler which check valve is operable by a pilot pressure.



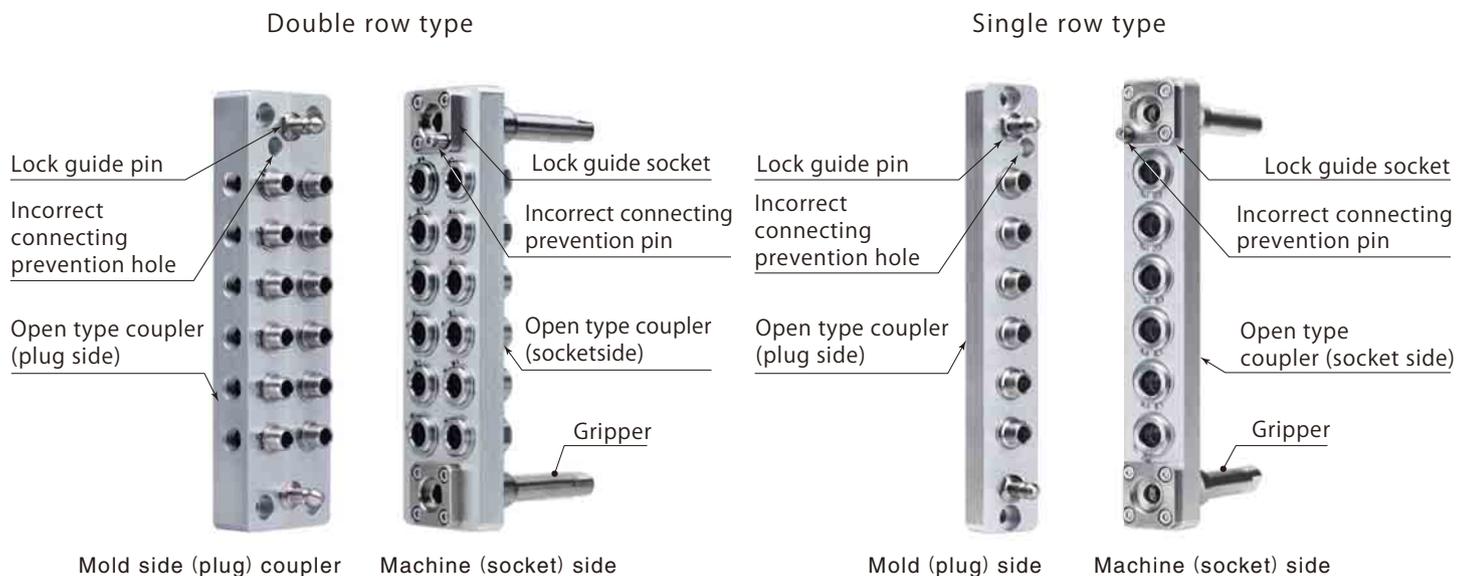
Fluid	Hydraulic, Water, Air
Pressure	Max. 0.8MPa
Connection port	Rc1/4
Number of port	4、 6、 8



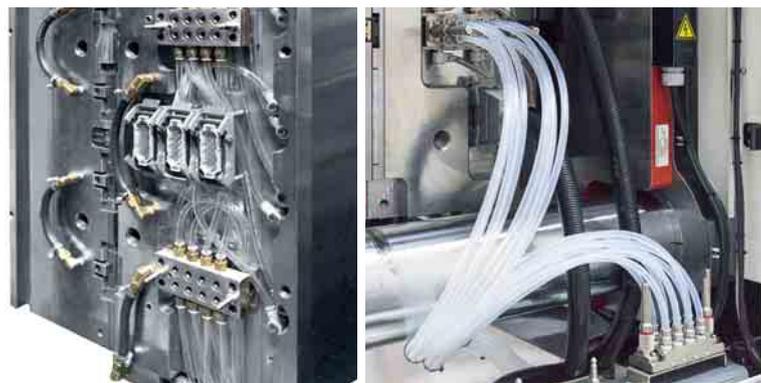
8,500kN(850ton) IMM

## Open (Check valve-less) model

An open type of coupler has no check valve, and the pressure loss is small.  
Malfunction caused by foreign substances being caught into the coupler does not occur.



Fluid	Hydraulic, Water, Air
Pressure	Max. 0.8MPa
Connection port	Rc1/4 Rc3/8
Number of port	6、 8、 12



Mold side

6,000kN(600ton) IMM

# Mold changer

It is an automatic mold changer which can shorten the mold changing time considerably, comparing with the conventional forklift or overhead crane.



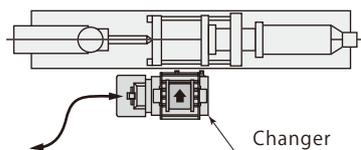
30,000kN(3,000ton) IMM Horizontal loading

Mold changer : Powered, Drive rollers type 2 molds & Mag clamp

## Layout example

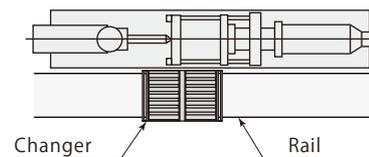
Manual loading

Non track



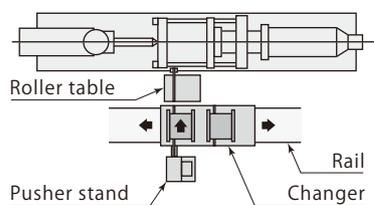
Manual loading

Rail type



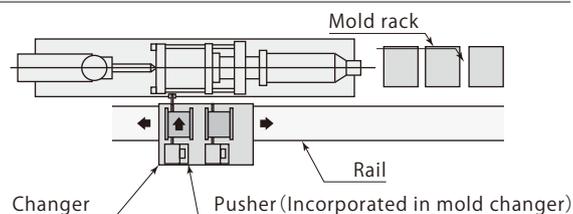
Pusher

1 pitch traveling with roller table, 2molds



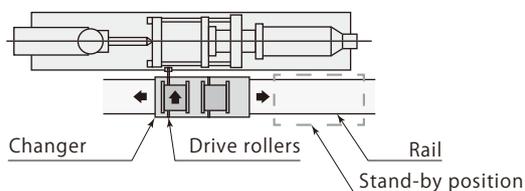
Pusher

Short distance traveling, 2molds



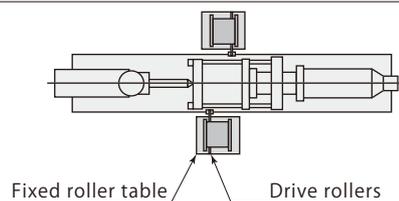
Drive rollers

1 pitch traveling (with standby position), 2molds



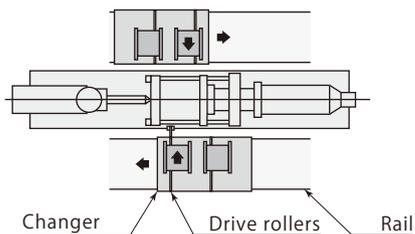
Drive rollers

Fixed roller table, 1mold, Pushing in/out style



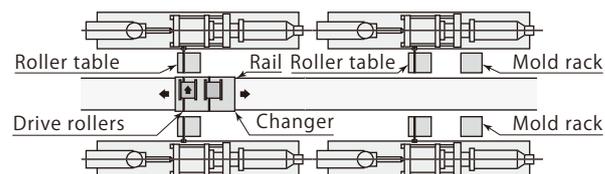
Drive rollers

1 pitch traveling, 2molds Pushing in/out style



Drive rollers

Long distance traveling, 2molds, Face to face layout



Manual loading, Non track, Non elevated table type model **QMF**



Model	QMF1	QMF2
Clamping force of IMM	400 ~ 1000 kN (40 ~ 100 tonf)	400 ~ 600 kN (40 ~ 60 tonf)
Max. mold weight	600 kg	300 kg
Number of load	1 mold	2 molds

Manual loading, Non track, Table elevation type model **QMA**



Model	QMA1	
Clamping force of IMM	400 ~ 1000 kN (40 ~ 100 tonf)	
Max. mold weight	300 kg	600 kg
Number of load	1 mold	

Battery-powered, Non track, Table elevation type model **QMB**



Model	QMB1		
Clamping force of IMM	400 ~ 4500 kN (40 ~ 450 tonf)		
Max. mold weight	kg	800	1500
Number of load	1 mold		

Manual loading, Rail type model **QME**



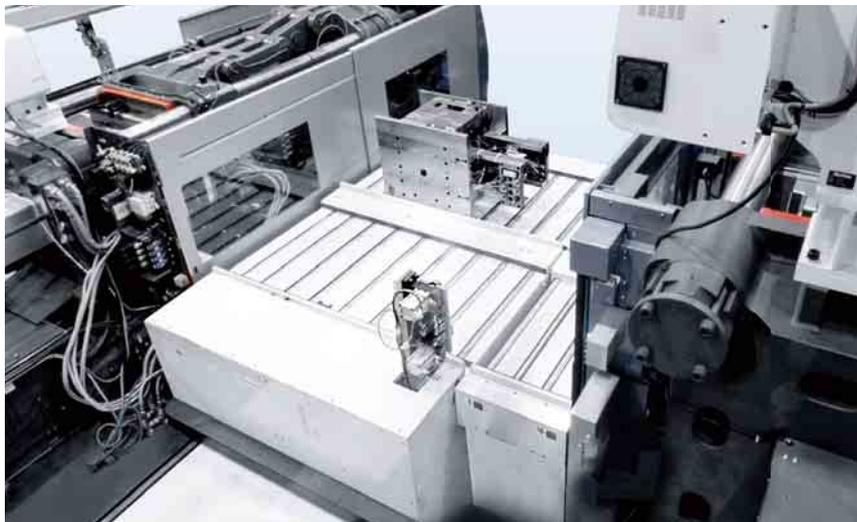
Model	QME						
Clamping force of IMM	500 kN (50 tonf)	800 kN (80 tonf)	1000 kN (100 tonf)	1300 kN (130 tonf)	1500 kN (150 tonf)	2000 kN (200 tonf)	2500 kN (250 tonf)
Max. mold weight	kg	300	400	400	600	800	1000
Number of load	2 molds						



2,500kN (250ton) Two-color IMM Horizontal loading Mold changer : Powered, Drive rollers type



500kN (50ton) IMM Horizontal loading Mold changer : Manual loading, Non track, Table elevation type



2,500kN (250ton) Two-color IMM Horizontal loading Mold changer : Manual loading, Rail type



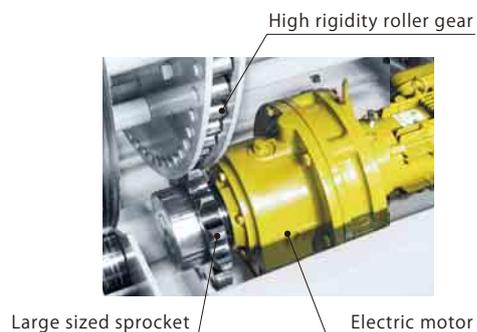
4,500kN (450ton) IMM Horizontal loading Mold changer : Powered, Drive rollers type

# Mold rotator


 Powered

## Roller gear driven type model SMR

Model SMR rotates the table with high rigidity roller gear and large sized sprocket, which enables excellent in durability and safety by introducing roller gear driven type (PAT.).



	Roller gear driven (electric motor) type
Max. rotation weight (ton)	1, 3, 5, 10, 15, 20, 30, 50

# Mold rotator

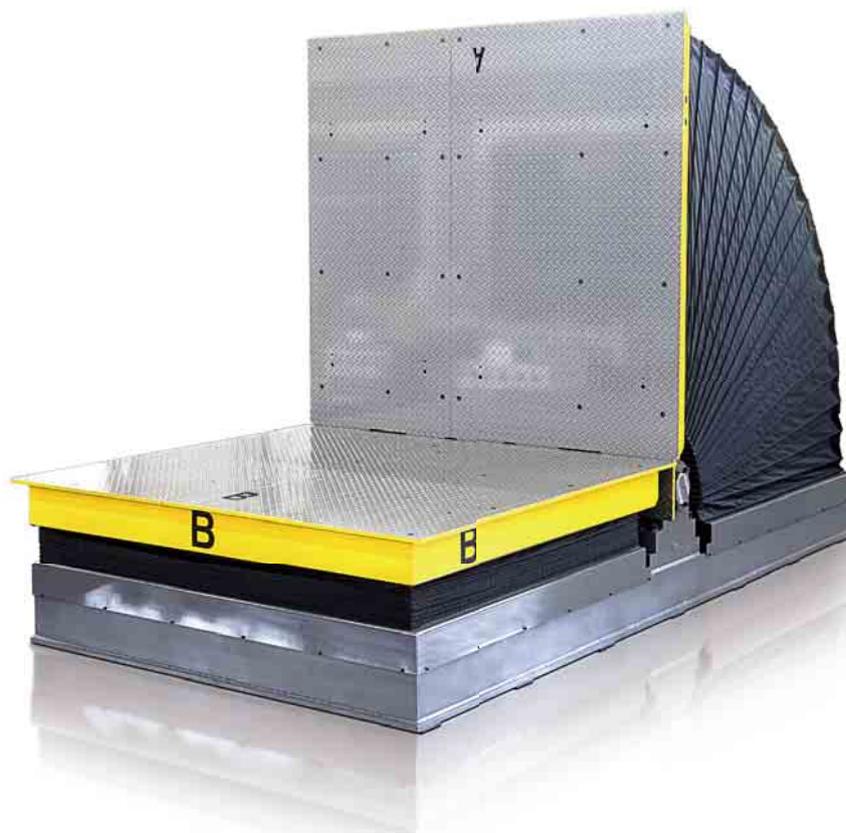
Powered

Hyd.

## Flat type model SMF

Model SMF is embeddable in the floor.

The table is flattened also rigid enough to be passed over by a forklift or a truck.



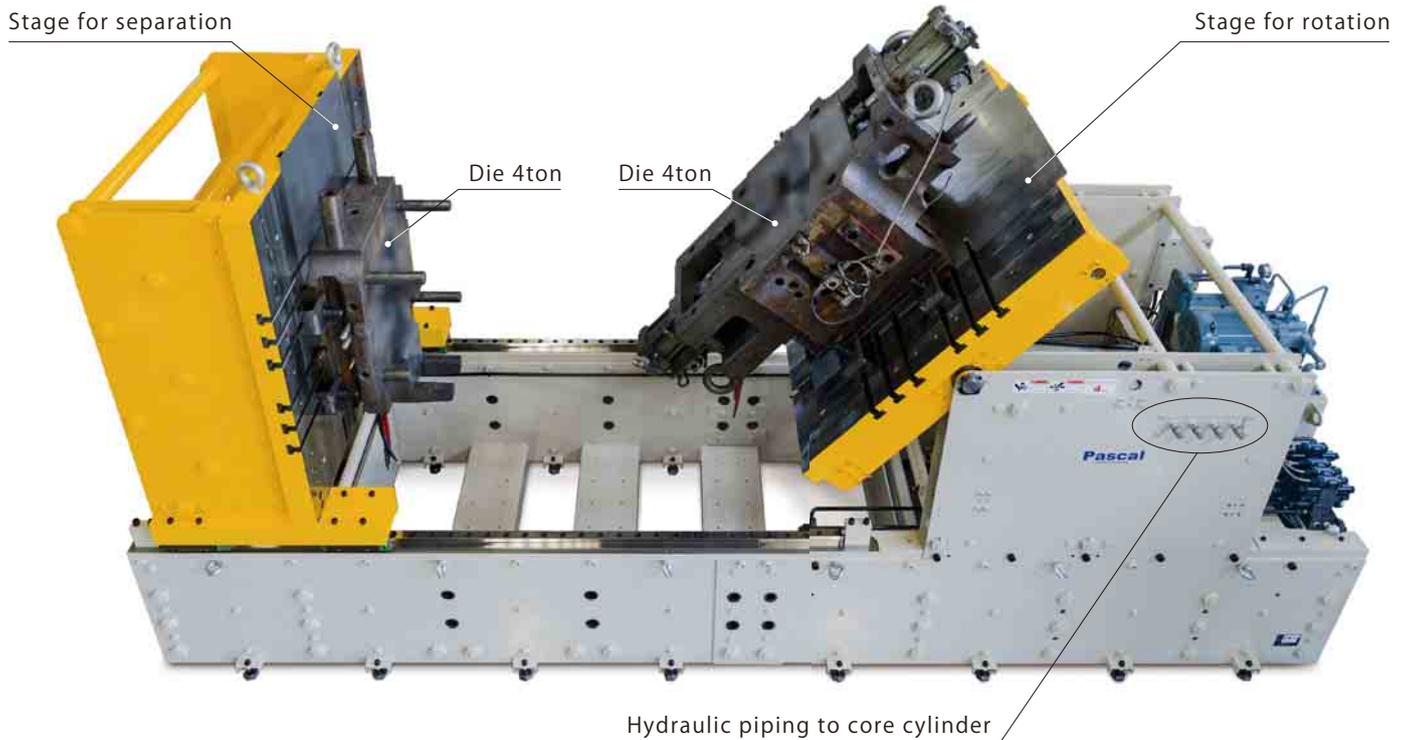
Picture of 20ton mold type

	Roller gear driven (electric motor) type	Hydraulic cylinder driven type
Max. rotation weight (ton)	1, 3, 5	10, 15, 20, 30

# Die rotator with separation

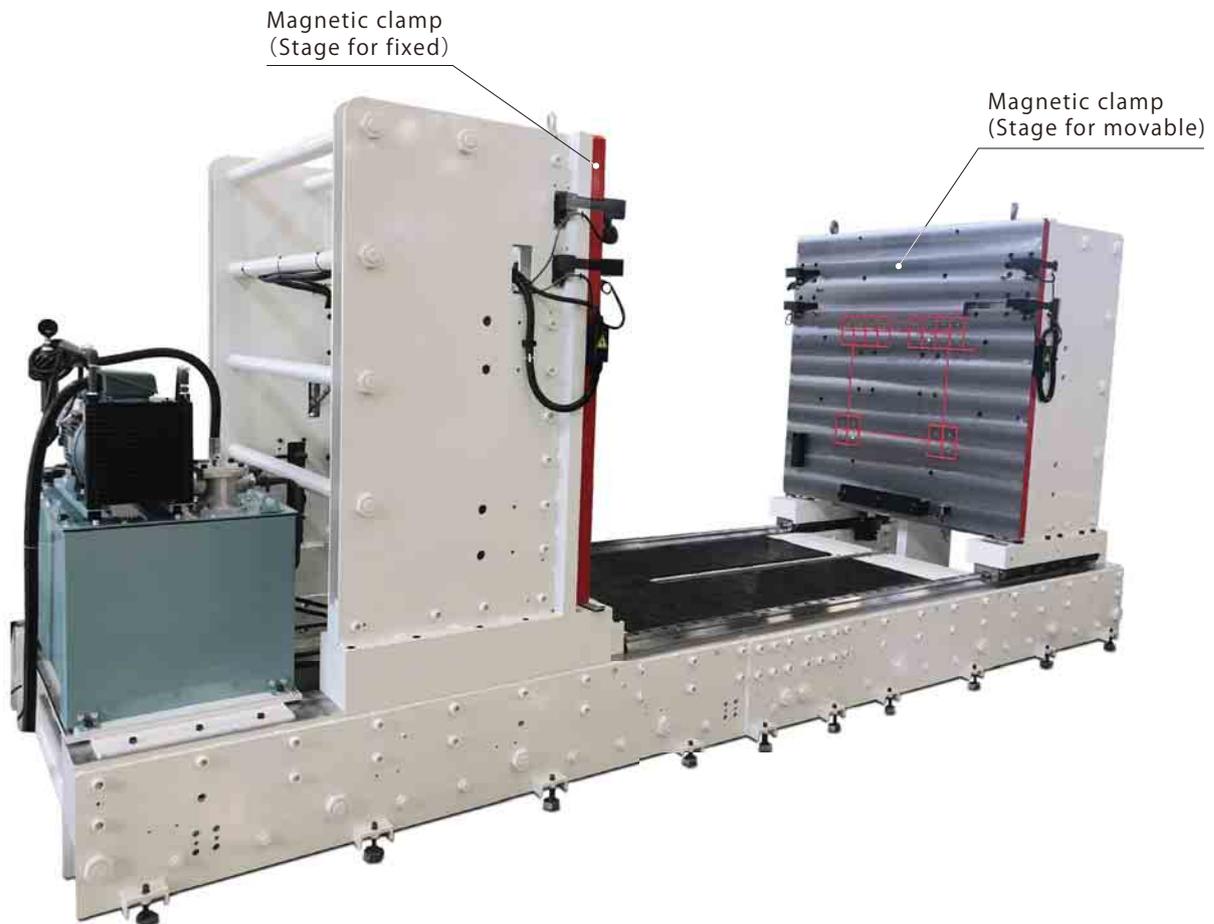
Mold maintenance work can be performed outside the machine without lowering machine operation rate.

**Die weight 8 ton (4 ton per each side)**

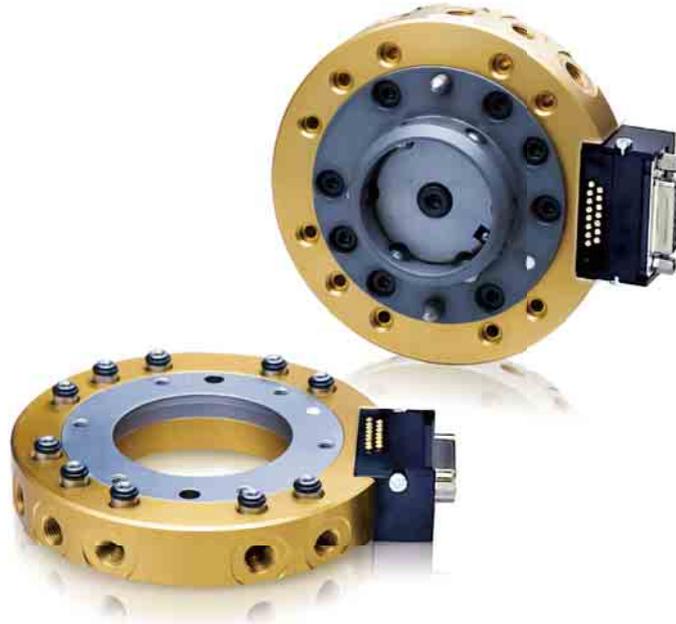


# Mold separator with magnetic platen

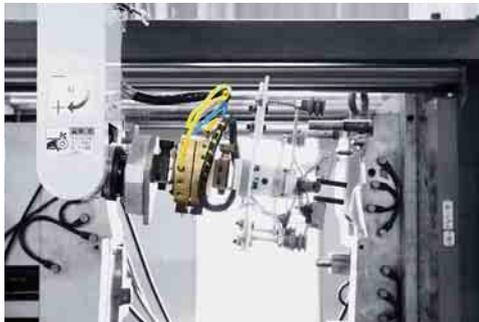
Die weight 15 ton (7.5 ton per each side)



# Robot tool changer



Payload 5 10 20 40 60 100 150 200 kg



For plastic molding machine



For the welding line

# N<sub>2</sub> gas spring

## Excellent durability

For quick cam or ejector plate return.



## DOMESTIC LOCATIONS



## JAPAN

### Head office / R & D center

- Itami, Hyogo

### Plant

- Oita
- Yamagata

### Sales office

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

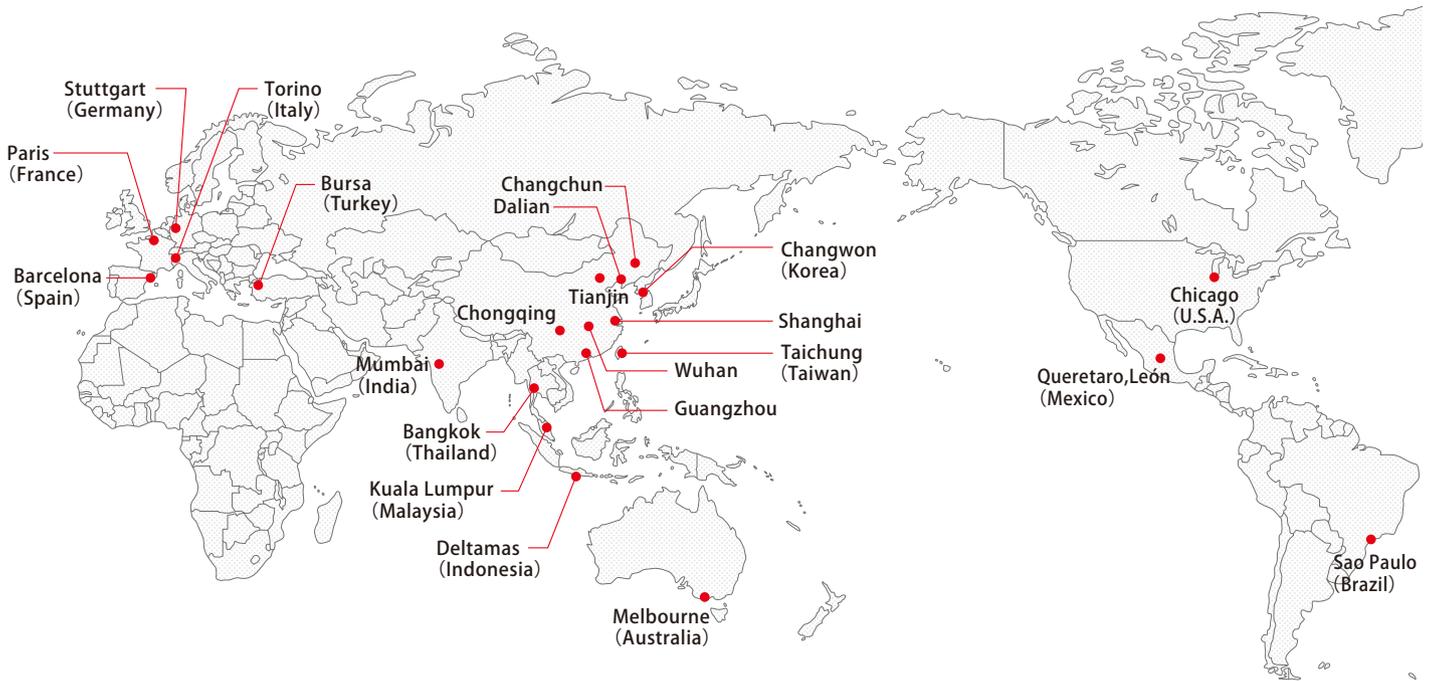


Oita plant



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

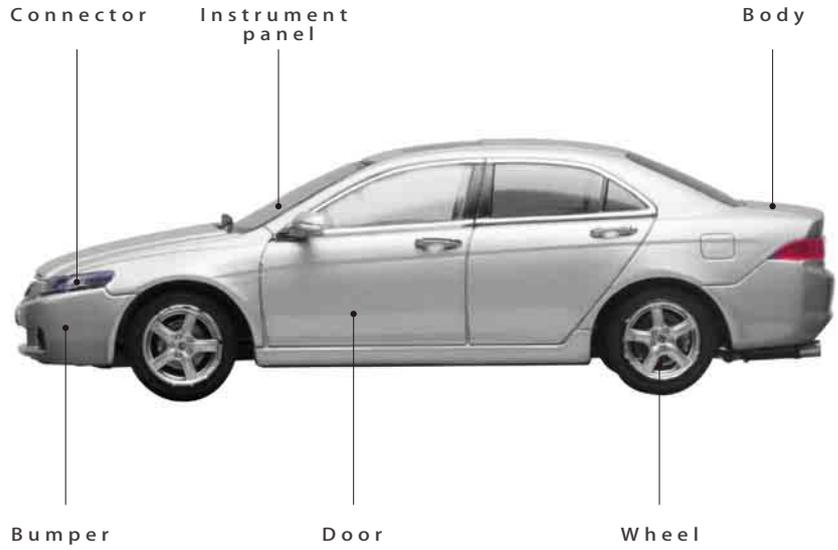
- Chicago [U.S.A.]
- Sao Paulo [Brazil]
- Queretaro, Leon [Mexico]

### EUROPE

- Stuttgart [Germany]
- Paris [France]
- Torino [Italy]
- Barcelona [Spain]
- Bursa [Turkey]

- Plant
- Subsidiary
- Sales office
- Liaison office
- Agent

# Pascal products are supporting



## For sheetmetal stamping

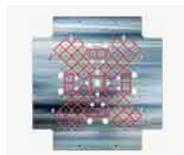


Traveling clamp



Stamping die clamp

## For plastic molding



Mag clamp



Mold die clamping system



Auto coupler

## For die and mold

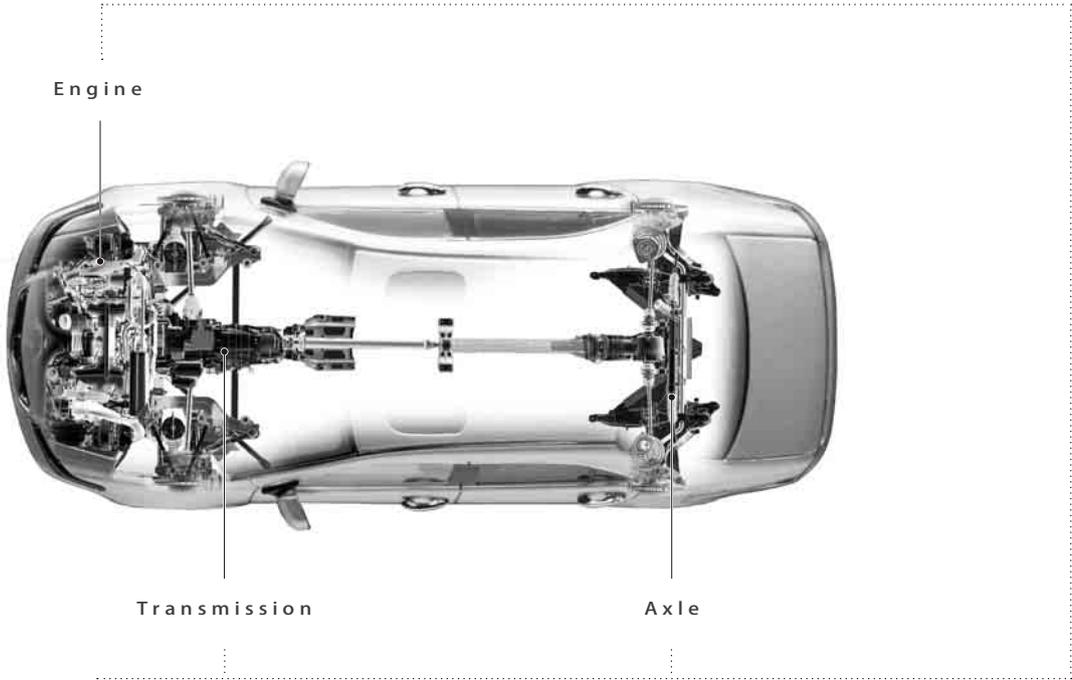
Press machine:  
Body, Roof, Door  
etc...

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