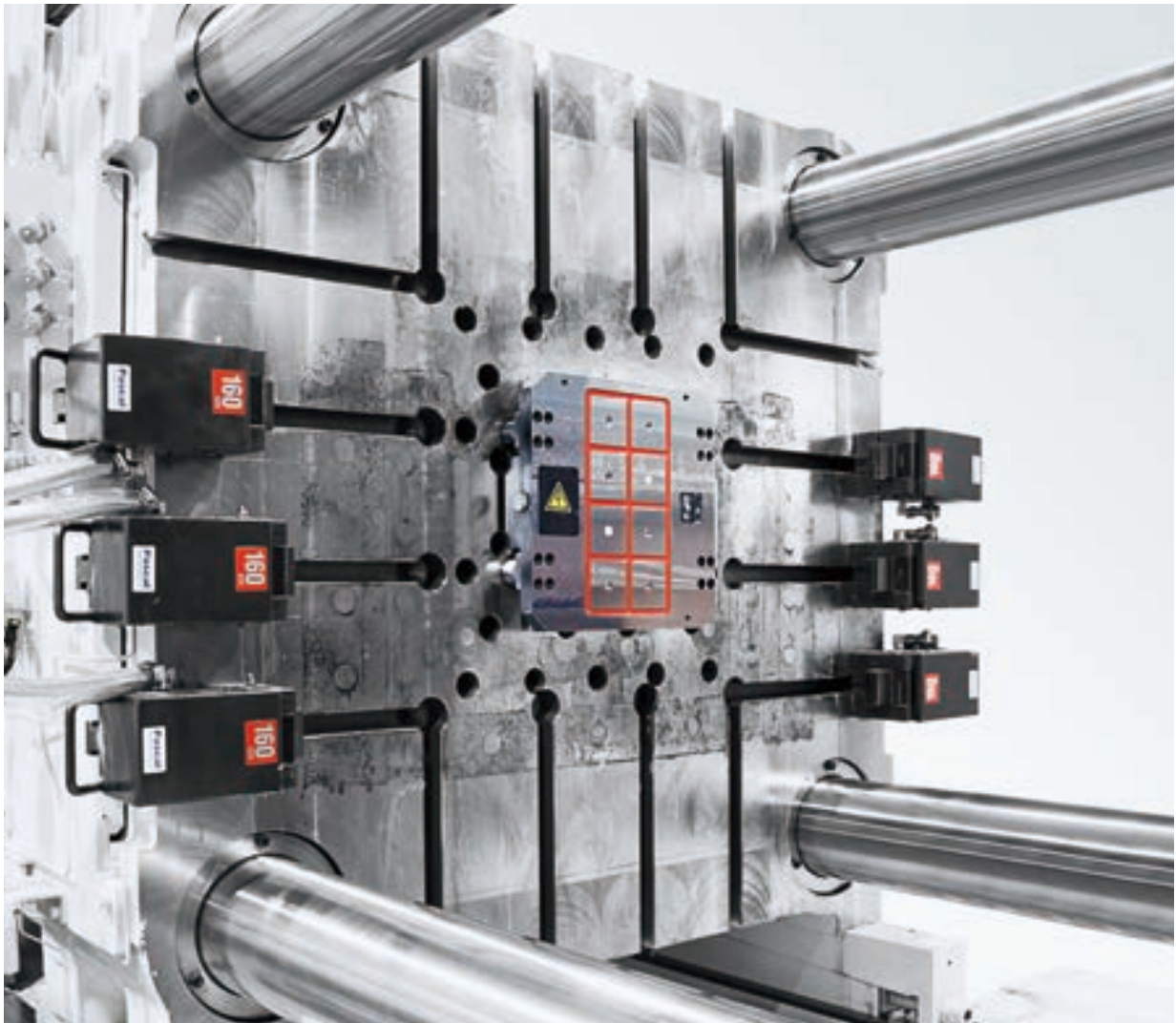


Pascal

Die cast clamping system



Pascal Die cast clamping system

Hydraulic clamp

model **TYB**



T-slotted manual slide type of clamp.

Clamping stroke 10~12mm model **TYB**

page → 15

model **TYB-Z / TYB-R**



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

page → 19

Mag clamp

model **MGA**



Clamp system which absorbs and fixes a die with strong magnet.

page → 31

Control system

Control unit

Air-driven hydraulic control unit of the electric control (solenoid operation), combined with Pascal pump and Pascal non leak valve unit.

Operation panel & Control box

Operation panel and Control box for hydraulic clamp. It simply displays the interlock state of clamp.

model **HCS**

(For small and medium-sized machine)



page → 25

model **HCL**

(For medium and large-sized machine)



page → 27

Operation panel

model **ESTE-D**



page → 29

Control box

model **ECTE-D**



page → 30

Positioning device

Die setter

model **MDL**



Elevating positioning block. It enables to perform the horizontal and vertical positioning surely and easily by placing a die on die setter.

page → 33

C-plate mag clamp

model **MGE**



The system that can instantly detach or attach the machine ejector plate and die ejector plate by the magnet.

page → 39

Ejector related system

Ball lock coupler

model **MED**



Automatic connection of ejector cylinder and plate (A and B) on die side by connecting and disconnecting the rod.

page → 49

Pascal Die cast clamping system

Other products

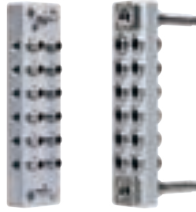
Auto coupler



Automatic connection and disconnection of multiple couplers and electric connectors together at once.

page → 53

Multi coupler



Multi coupler which can be connected securely at once by pushing the gripper slightly with hand.

page → 59

Die changer

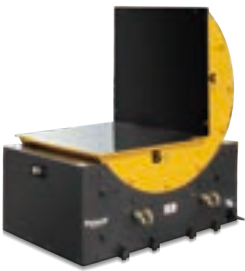


Die is changeable quickly and securely, comparing to the conventional forklift or overhead crane.

page → 75

Die rotator

model **SMR / SMF**



Dies and large sized components can be rotated safely and quickly.

page → 79

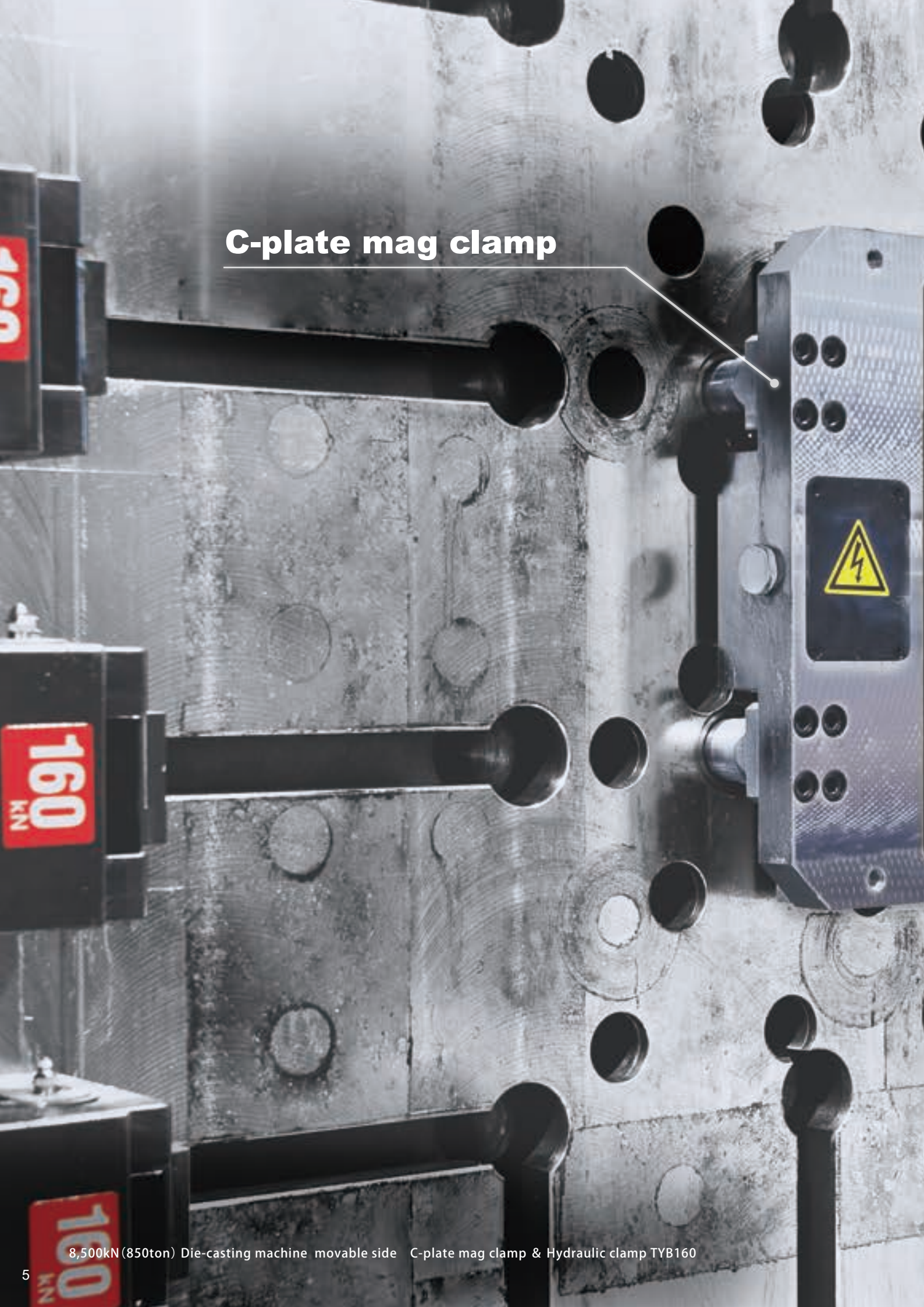


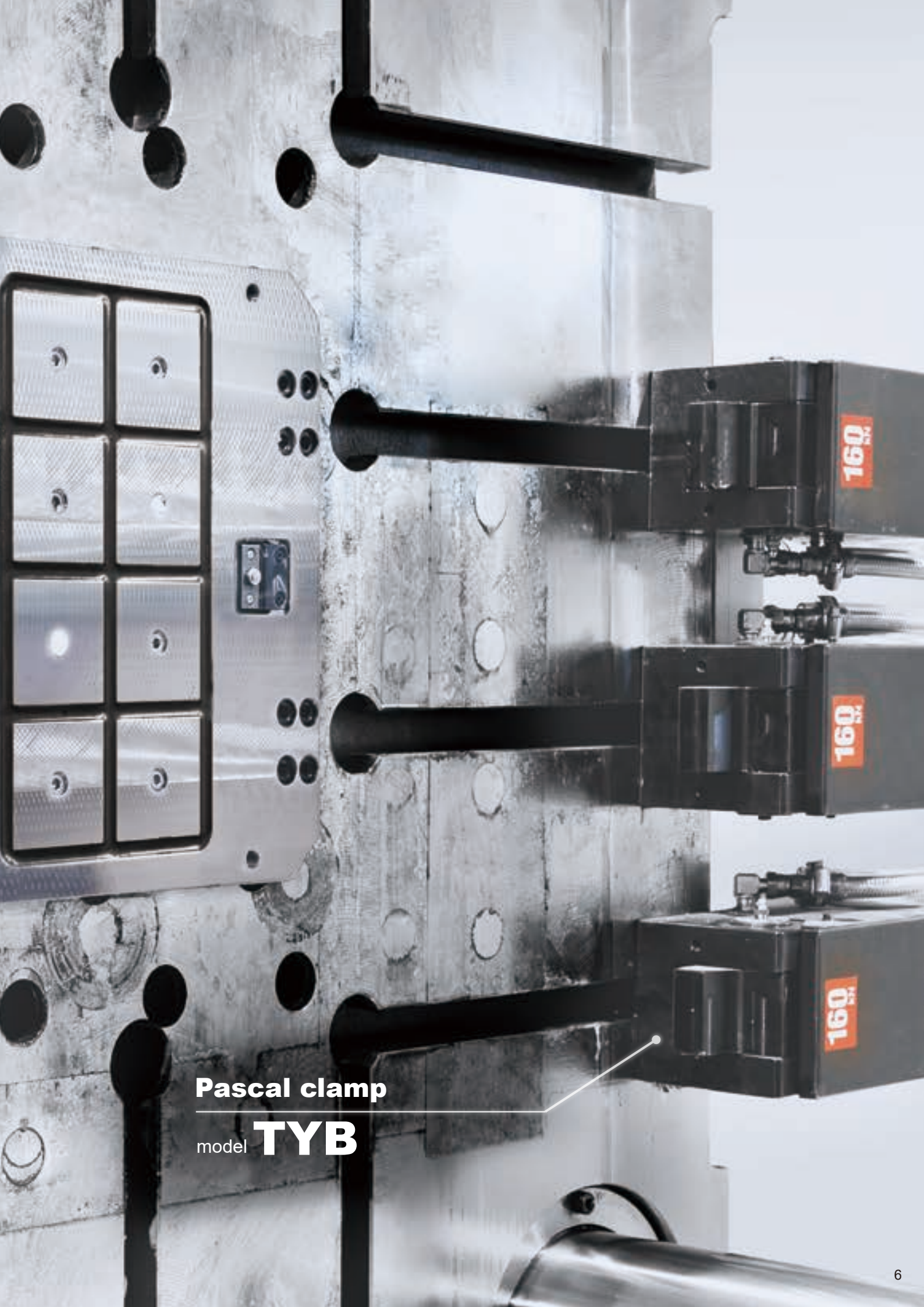
6,500kN (650ton) Die-casting machine fixed side Hydraulic clamp TYB100

Pascal clamp model **TYB**



C-plate mag clamp





Pascal clamp

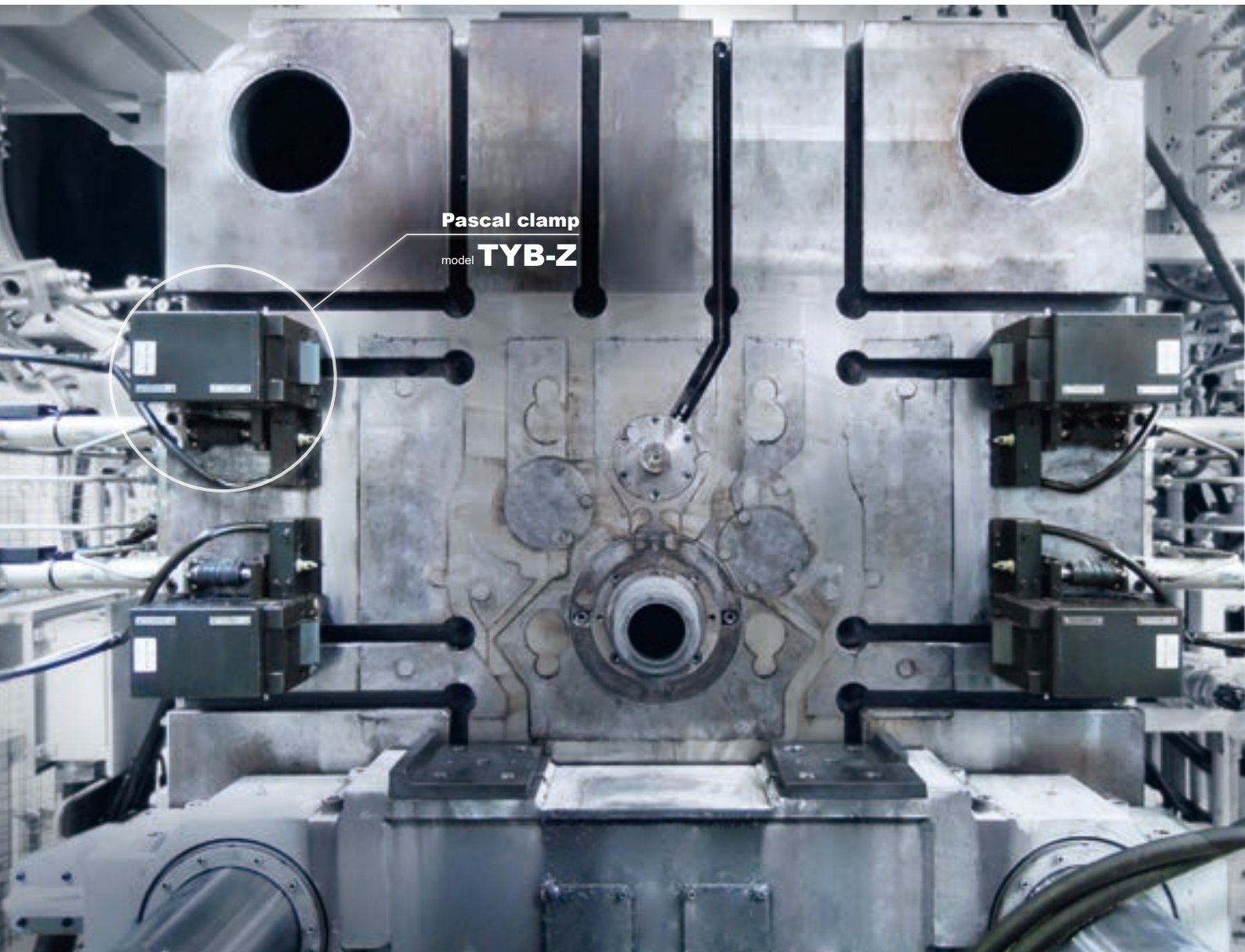
model **TYB**

Mag clamp



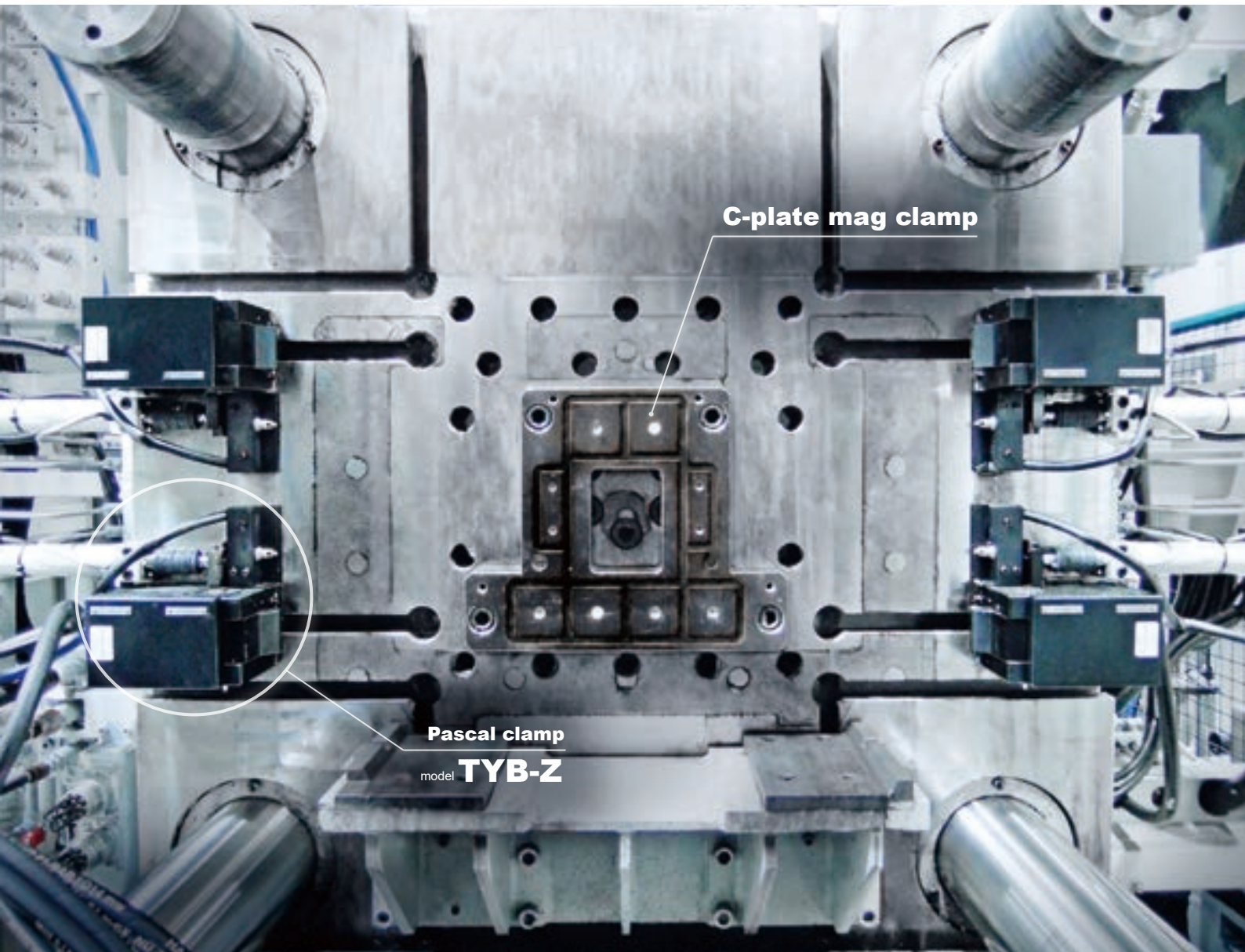


Hydraulic clamp TYB-Z



8,500kN (850ton) Die-casting machine fixed side Hydraulic clamp TYB-Z

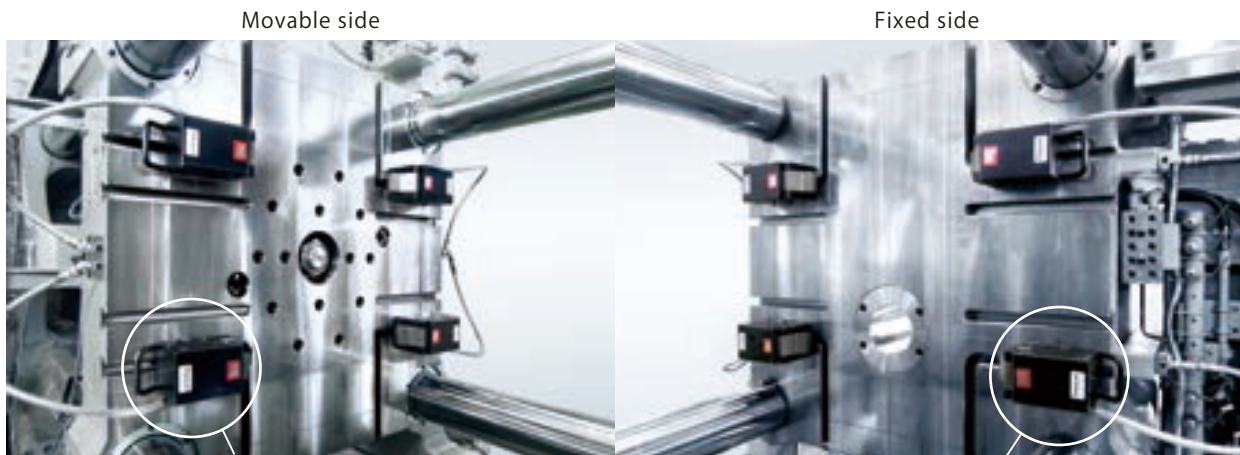
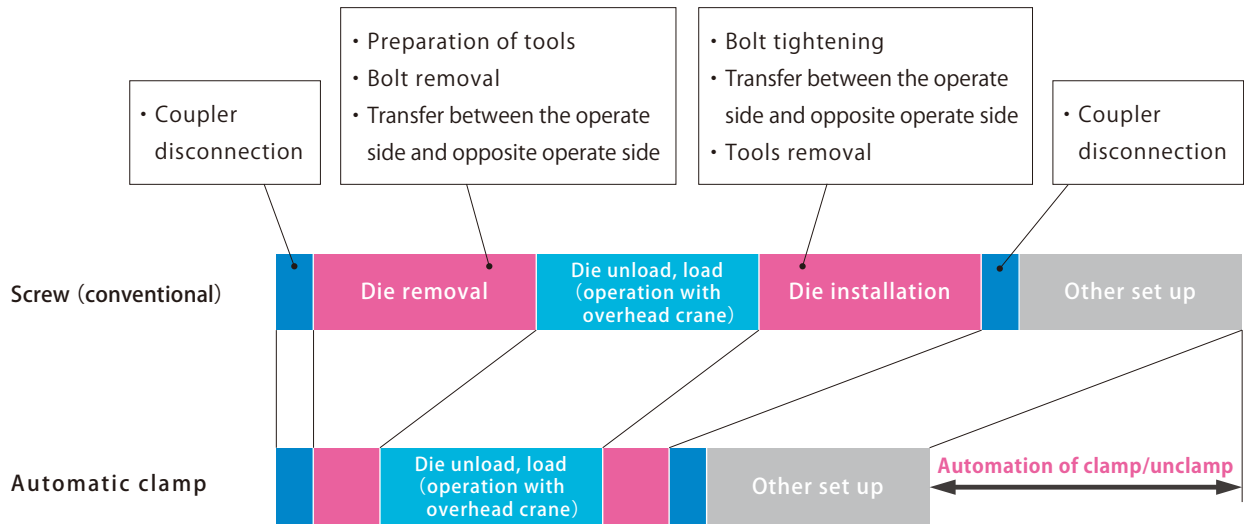
C-plate mag clamp & Hydraulic clamp TYB-Z



8,500kN (850ton) Die-casting machine movable side C-plate mag clamp & Hydraulic clamp TYB-Z

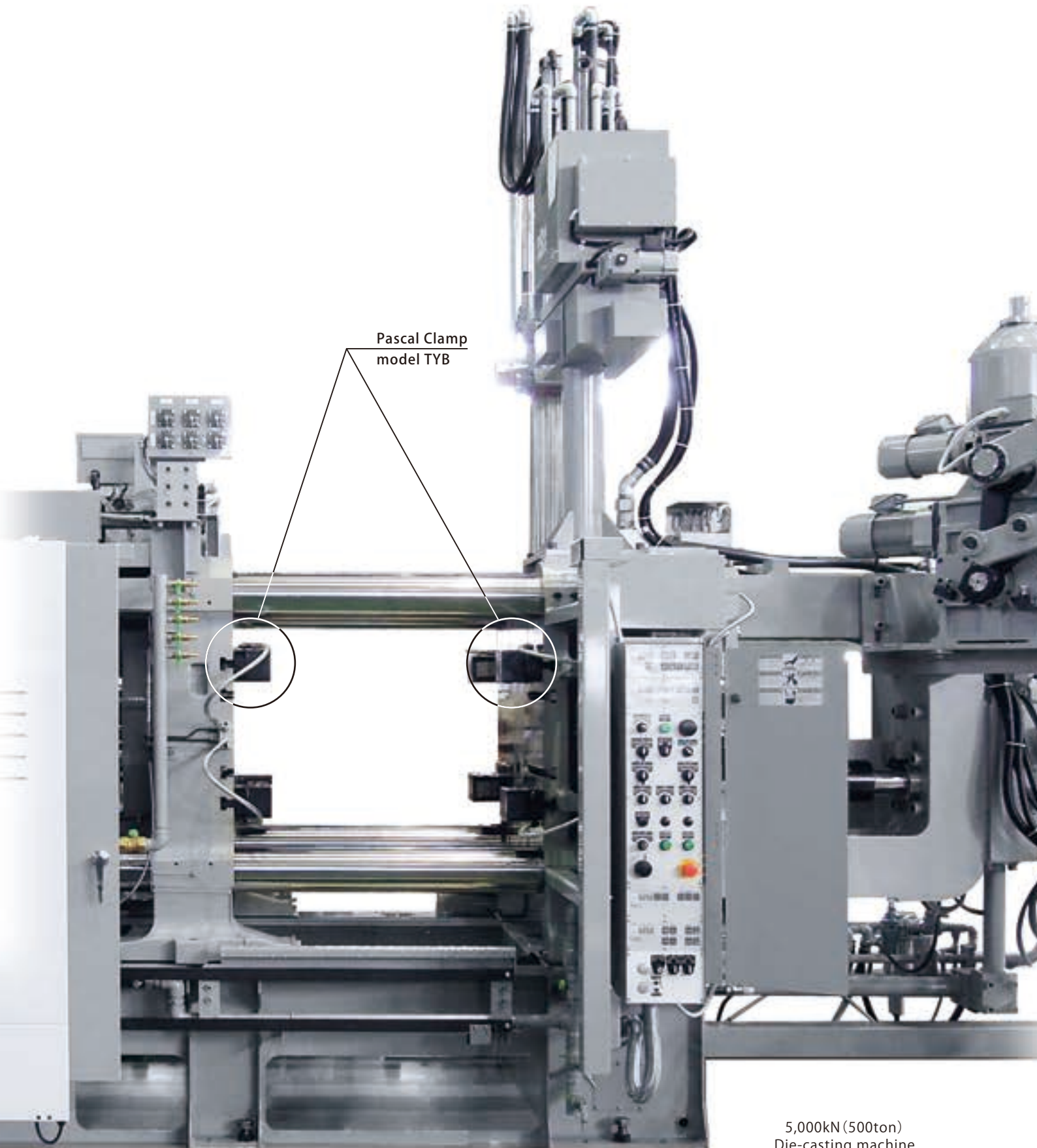
**By means of the automation of die clamp.
The reduction of non-productive time (set up time) can be fulfilled.**

Pascal clamp enables to shorten the die change time and improves productivity and enhances the operating rate of production. For a typical introduction example, it shortens the die change time from 60 minutes to 30 minutes for medium and large sized machine. In addition, it enables to reduce numbers of operators and workload.



Pascal clamp
model TYB

Pascal clamp
model TYB



Pascal Clamp
model TYB

5,000kN (500ton)
Die-casting machine

T-slotted slidable clamp with compact body and long clamp stroke, equipped with a strong clamping force and high rigidity to resist shock.



5,000kN (500ton) Die-casting machine Hydraulic clamp, slidable type TYB

- Long clamping stroke
- Perfect protection against dust or die release agents.
- Best solution for heat and corrosion



model **TYB**

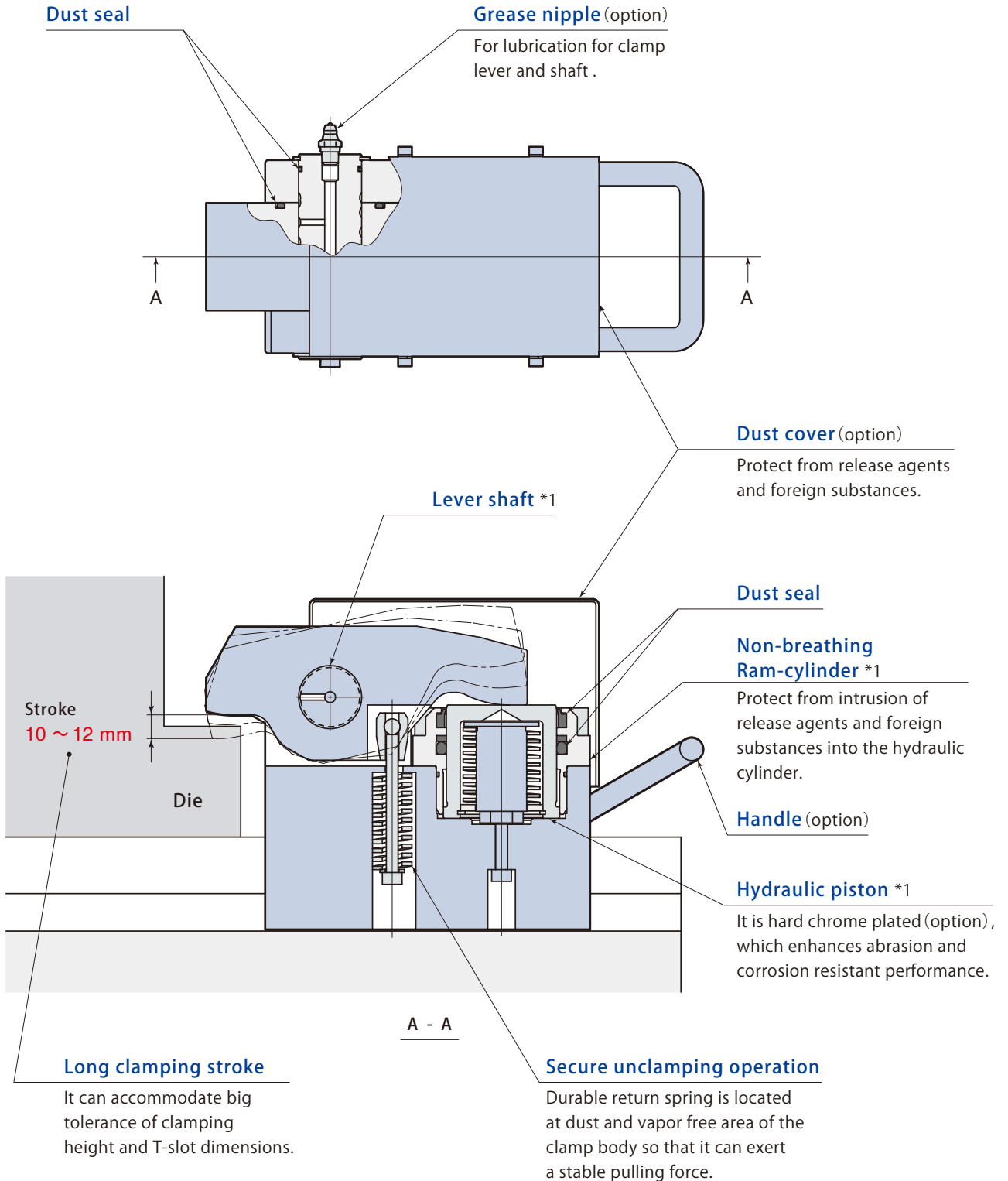
Clamping stroke : 10 ~ 12 mm

Clamping force : 4, 6, 10, 16, 25 ton

page → 15

Structure

It has high reliability and durability capable of enduring severe use conditions such as high temperature, foreign substances and release agent scattering. Dust proof seal/cover and viton seals are provided to protect from high temperature (under 120°C).



* 1: To improve the wear resistance of the product, Pascal performs ion-nitriding treatment as standard.

Clamping stroke : 10 ~ 12 mm
Clamping force : 4, 6, 10, 16, 25 ton



model **TYB**

■ Model designation

TYB 063-DGPV

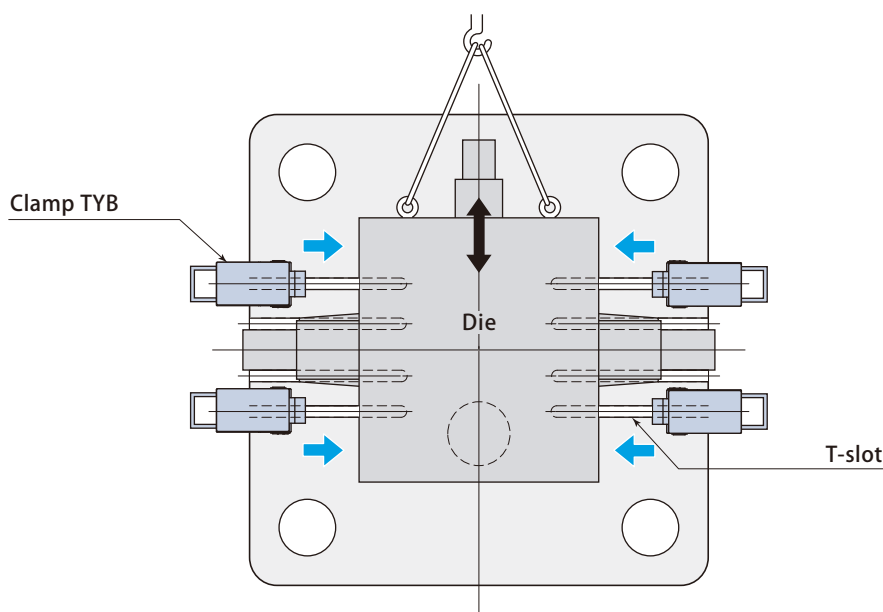
1 Clamping force

■ Option

※If you select multiple options, list them in alphabetical order.

■ Option Refer to page → 17

- D** With dust cover
- G** With handle
- H** Clamp lever high distance type
- J** Rear piping type
- N** NPT port
- P** With grease nipple
- S1** Body strengthened (S45C)
- S2** Body strengthened (SCM435)
- T** Low distance clamp type
- V** High temperature
- W** Wide lever
- Die detection limit switch

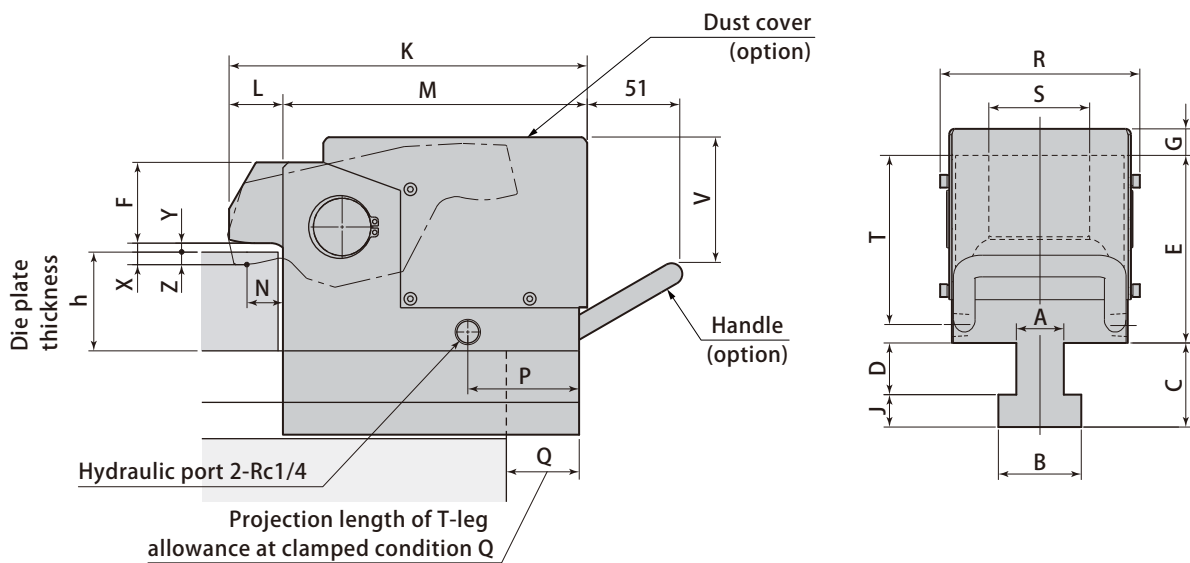


1 Specifications

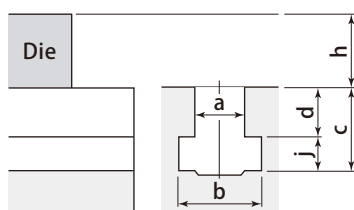
Model		TYB040	TYB063	TYB100	TYB160	TYB250
Clamping force (at 24.5 MPa)	kN	39.2	61.7	98	156	245
Full stroke	mm	10	10	12	12	12
Clamping stroke	mm	4	4	4	4	4
Safety stroke	mm	6	6	8	8	8
Cylinder capacity (at full stroke)	cm ³	16.5	26.1	47.2	78.2	130
Proof pressure	MPa	36.7				
Max. hydraulic pressure	MPa	24.5				
Operating temperature	°C	0 ~ 70 (5 ~ 120 by heat proof type)				
Weight	kg	4.5	9	15	25	45

- Safety stroke and clamping stroke shown above are subject to change depending on dimensions of die and T -slot.
- Weight varies according to the dimension of clamp T-leg and die plate thickness h.

Dimensions



T-slot dimension and die plate thickness



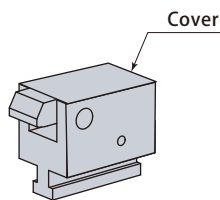
- Specify T-slot dimensions (a, b, c, d, j) and die plate thickness (h).
- Regarding "d" dimension of T-slot, for retrofit : specify to 0.1 mm. For new machine : machining tolerance shall be ±0.2 mm.
- Dimensions (A, B, C, D, J) shall be determined according to T-slot dimensions.

Model	TYB040	TYB063	TYB100	TYB160	TYB250
Height of lever F range of h inside the brackets	27.5 (45 ≤ h)	29.5 (50 ≤ h)	45 (58 ≤ h)	60 (58 ≤ h)	106 (58 ≤ h)
	32.5 (40 ≤ h < 45)	39.5 (40 ≤ h < 50)	55 (48 ≤ h < 58)	70 (48 ≤ h < 58)	116 (48 ≤ h < 58)
	37.5 (35 ≤ h < 40)	49.5 (30 ≤ h < 40)	65 (38 ≤ h < 48)	80 (38 ≤ h < 48)	126 (38 ≤ h < 48)
G	13	13	14	15	20
K	145	168	200	235	285
L	23	30	30	30	35
M	122	138	170	205	250
N	16	20	20	20	20
P	32.5	38	62	80	95
Projection length of T-leg allowance at clamped condition Q	32	36	45	55	65
R	83	103	113	133	168
S	39.6	49.6	54.6	59.6	72
T	64.5	71.5	94.5	110	156
V	-	58	76	96	118
Min. E	76.5	83.5	107	122	168
Full stroke X	10	10	12	12	12
Clamping stroke Y	4	4	4	4	4
Safety stroke Z	6	6	8	8	8
Min. J	Standard : 10.5 S1 : - S2 : 9	Standard : 14 S1 : 11.4 S2 : 9.5	Standard : 16 S1 : 13 S2 : 11	Standard : 19 S1 : 15.5 S2 : 13	Standard : 26 S1 : 21.5 S2 : 18
h (Min. ~ Max.)	35 ~ 50	30 ~ 60	38 ~ 70	38 ~ 70	38 ~ 70

- When newly machining T-slot, it is recommended to apply the dimensions specified on **page →23**.
- Height of lever F varies according to the dimension of h. ● Min. J dimension varies according to body materials. (Standard : SS400, S1 : S45C, S2 : SCM435) ● **Special specifications** are prepared in case "h" dimension is out of the range.

D With dust cover TYB□-D

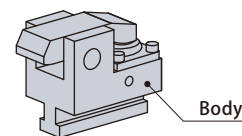
It is applied to protect from release agent and foreign substances.



S1 S2 Body strengthened TYB□-S1, TYB□-S2

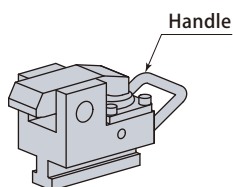
It is applied under condition that the T-slot dimension is under standard and the strength is insufficient.

TYB□-S1 : S45C
TYB□-S2 : SCM435



G With handle TYB□-G

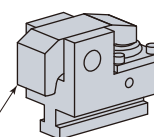
Only for TYB040-250.
It is not applicable for TYB010 and TYB020.



T Low distance clamp type TYB□-T

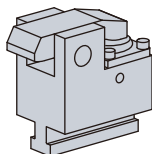
It is applied under condition that the die plate thickness is thinner than standard.

Low distance lever



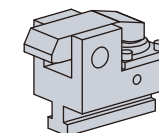
H Clamp lever high distance type TYB□-H

It is applied under condition that the die plate thickness is thicker than standard.



V High temperature TYB□-V

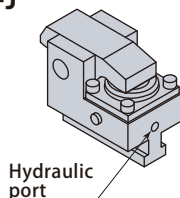
It is applied under condition that the die and its surroundings are in high temperature.



Operating temperature
: 5 ~ 120°C

J Rear piping type TYB□-J

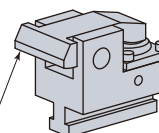
It is applied under condition that there is interference on clamp side and it can not be connected with side hydraulic port (standard specification).



W Wide lever TYB□-W

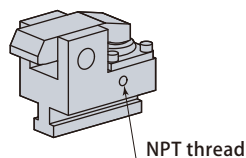
It is applied with U cut (cut out) in the die.

Wide lever



N NPT port TYB□-N

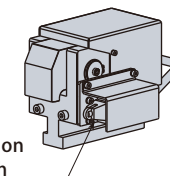
It is applied under condition that hydraulic connection port is connected with NPT thread.



Die detection limit switch

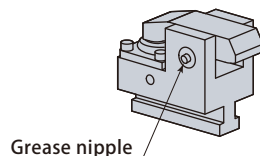
It prevents clamp misplace.

Die detection limit switch



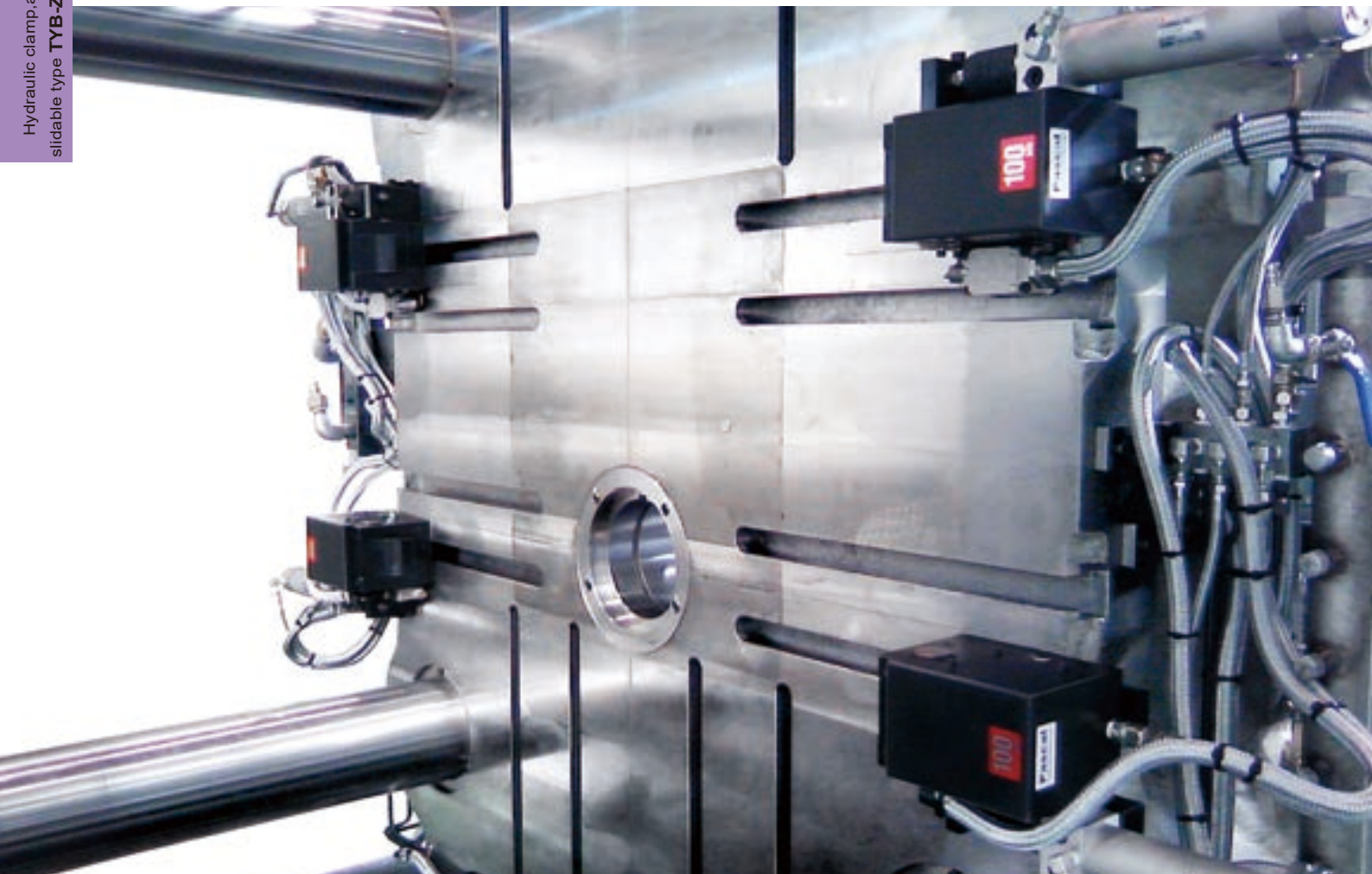
P With grease nipple TYB□-P

For lubrication for clamp lever and shaft (Option).

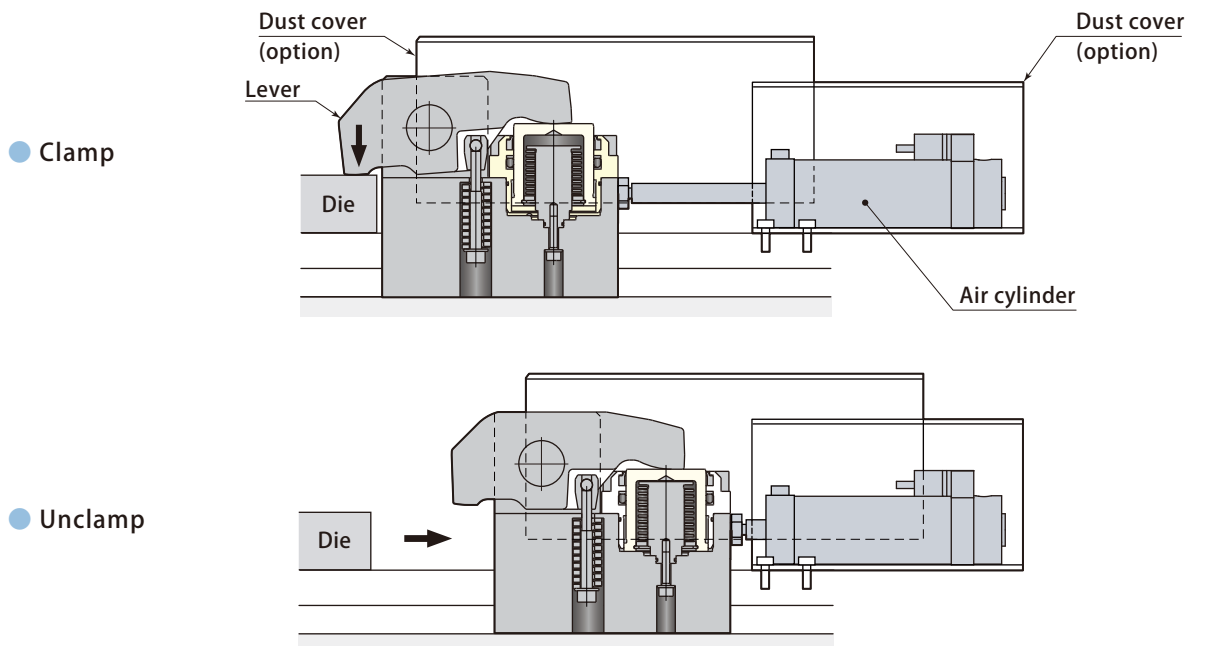


Automatic slidable clamp with an air cylinder. It enables to shorten the die change time.

Hydraulic clamp, automatic
slidable type TYB-Z / TYB-R



6,500kN (650ton) Die-casting machine Hydraulic clamp, automatic slidable type TYB-Z

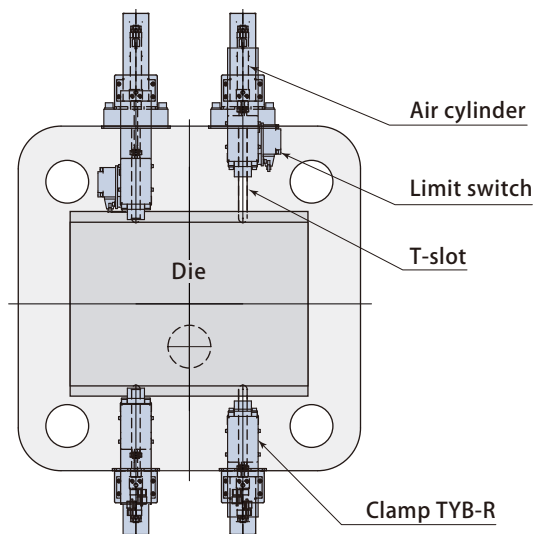
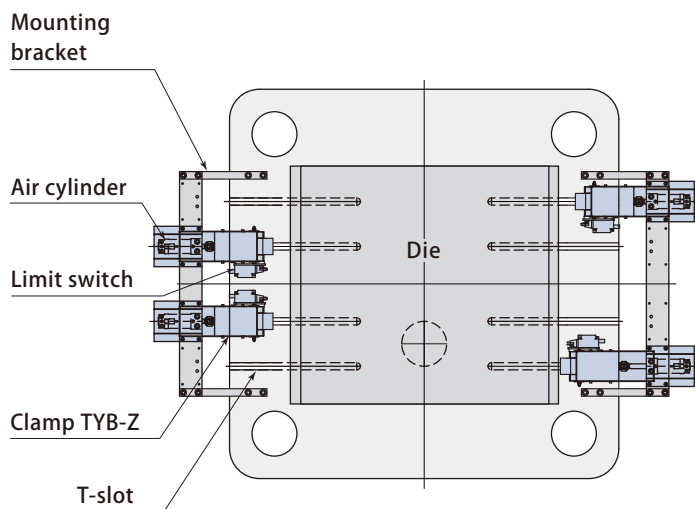


TYB-Z

Slide direction : Horizontal

TYB-R

Slide direction : Vertical



Control unit HCL-T3
3-position center exhaust air solenoid valve equipped

Control unit HCL-T2
2-position double air solenoid valve equipped

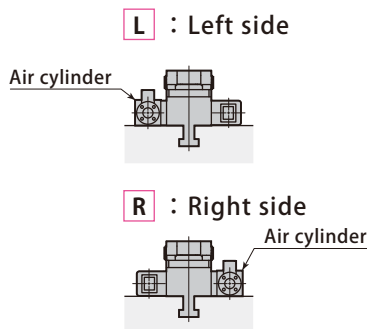
* The control method is different between TYB-Z and TYB-R.

■ Model designation

TYB040 R L - 150

- 1 Clamping force
- 2 Slide direction
- Z** : Horizontal **R** : Vertical
- 3 Air cylinder position
- 4 Sliding stroke (mm)

3 Air cylinder position



■ Option

- D** With dust cover
- J** Rear piping type
- N** NPT port
- P** With grease nipple
- S1** Body strengthened (S45C)
- S2** Body strengthened (SCM435)
- T** Low distance clamp type
- V** High temperature
- W** Wide lever

1 4 Specifications

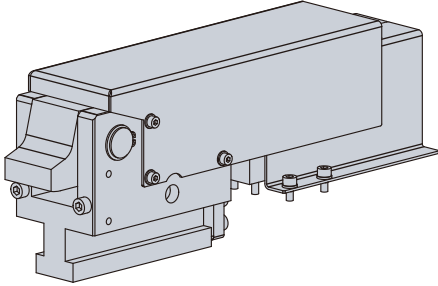
Model	TYB040Z		TYB063Z		TYB100Z		TYB160Z		TYB250Z		
	TYB040R		TYB063R		TYB100R		TYB160R		TYB250R		
Clamping force (at 24.5 MPa)	kN		39.2	61.7	98.0	156	245				
Full stroke	mm		10	10	12	12	12				
Clamping stroke	mm		4	4	4	4	4				
Safety stroke	mm		6	6	8	8	8				
Cylinder capacity (at full stroke)	cm ³		16.5	26.1	47.2	78.2	130				
Proof pressure	MPa		36.7								
Max. hydraulic pressure	MPa		24.5								
Standard sliding stroke *1	mm		50, 75, 100, 125, 150	50, 75, 100, 125, 150, 200	50, 75, 100, 125, 150, 200, 250, 300						
Slider driving air pressure	MPa		0.39 ~ 0.54								
Clamp sliding speed	mm/s		30 ~ 80 (Adjusted by a flow control valve)								
Operating temperature	°C		0 ~ 70 (5 ~ 120 by heat proof type *2)								

● Mass varies according to specifications. Contact Pascal for the details.

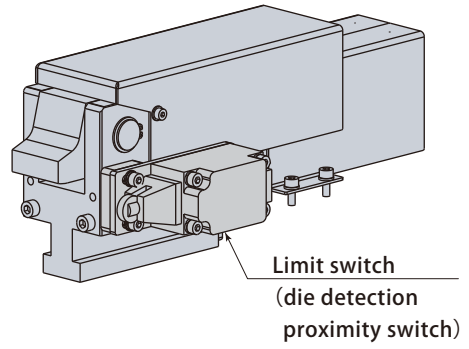
* 1 : Contact Pascal for the sliding stroke which is not mentioned above.

* 2 : Proximity switch and auto switch is not applied to a heat proof type.

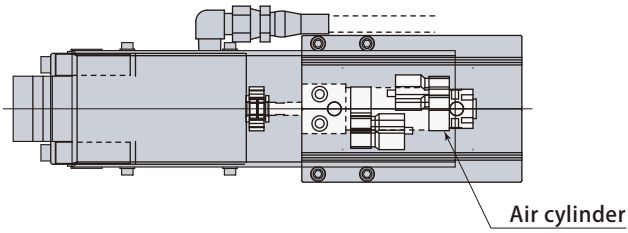
Automatic slidable type



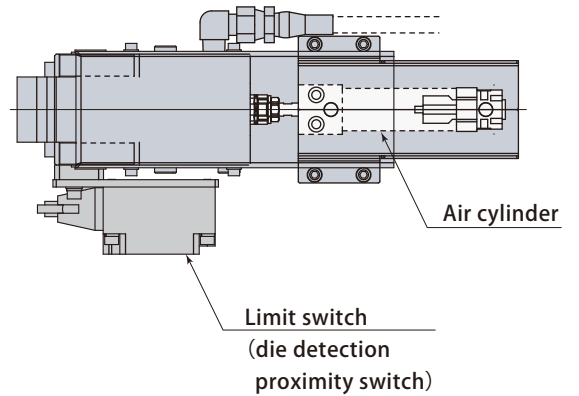
Automatic slidable type with limit switch
(Die detection proximity switch)



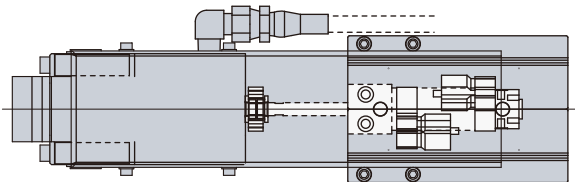
At standby



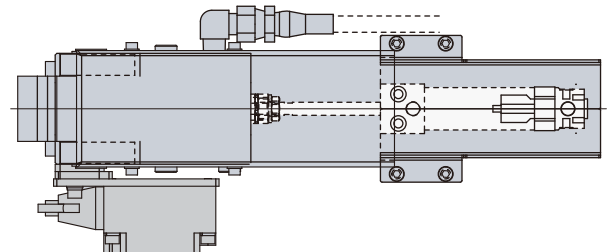
At standby



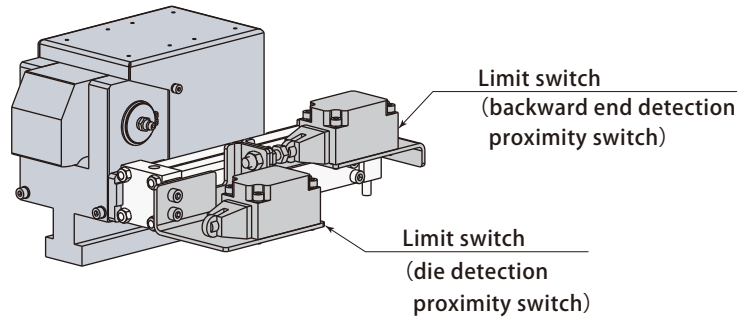
When forwarding



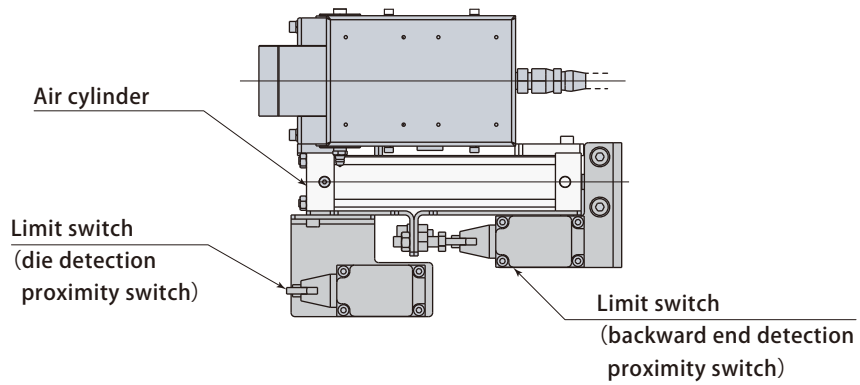
When forwarding



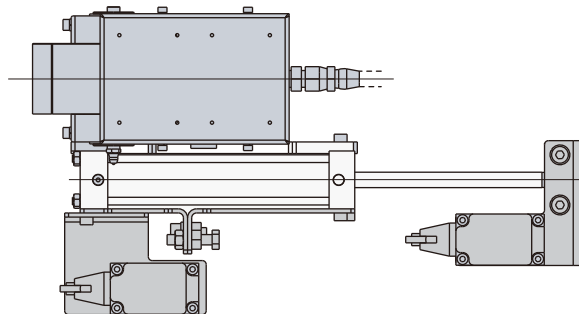
With limit switch
(die and backward end detection proximity switch)



At standby



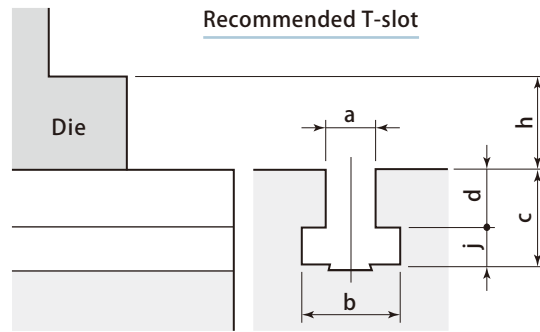
When forwarding



* Configuration varies according to specifications. Contact Pascal for the details.

T-slot and cutout details

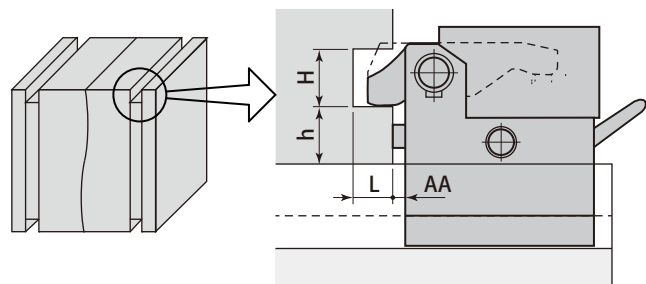
- Process with the below dimension in case of machining T-slot newly.
- Contact Pascal if your T-slot dimensions are less than Min. T-slot dimensions shown below. The main body materials shall be changed and code is S1 and S2 for a special spec.



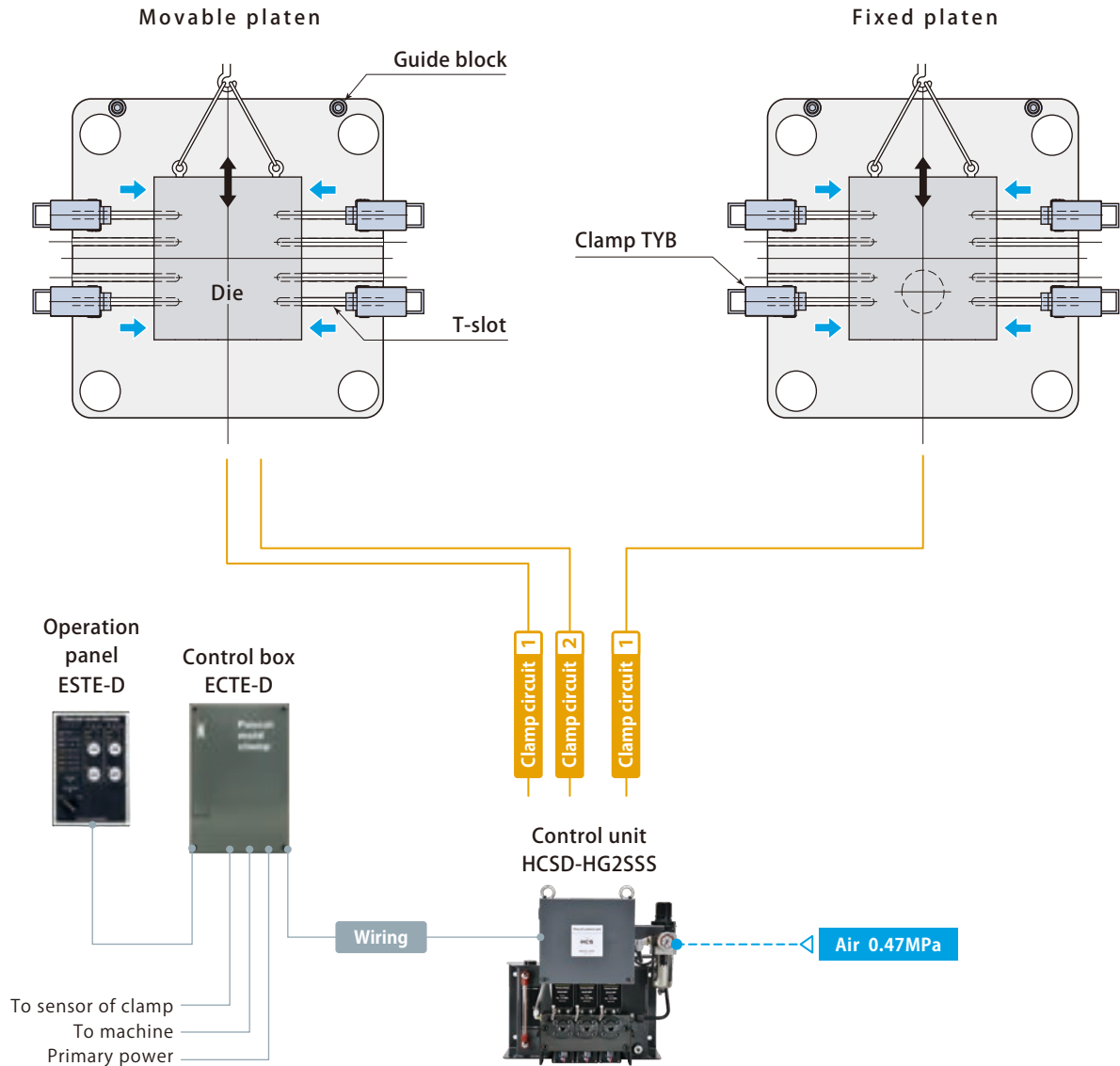
Model			TYB040	TYB063	TYB100	TYB160	TYB250
			TYB040Z	TYB063Z	TYB100Z	TYB160Z	TYB250Z
			TYB040R	TYB063R	TYB100R	TYB160R	TYB250R
Recommended T-slot dimension	a	mm	22 ^{+0.5} ₀	28 ^{+0.5} ₀	28 ^{+0.5} ₀	32 ^{+0.5} ₀	36 ^{+0.5} ₀
	b	mm	37 ⁺³ ₀	46 ⁺⁴ ₀	46 ⁺⁴ ₀	53 ⁺⁴ ₀	56 ⁺⁴ ₀
	d	mm	22 \pm 0.2	28 \pm 0.2	28 \pm 0.2	28 \pm 0.2	32 \pm 0.2
	j	mm	16 ⁺² ₀	20 ⁺² ₀	20 ⁺² ₀	24 ⁺² ₀	30 ⁺² ₀
Minimum T-slot dimensions	a	mm	15	19	23	27	32
	d	mm	14	16	18	21	29
	j	mm	11.5	15	17	20	23

- To accommodate the clamp to the die as shown on the right, Pascal can provide a special designed clamp lever with the clamp.
- Specify the dimension H, L and h of the die when ordering. The figures shown in the column L and H in the table are a minimum dimension to make.

Clamp area details



Model			TYB040	TYB063	TYB100	TYB160	TYB250
			TYB040Z	TYB063Z	TYB100Z	TYB160Z	TYB250Z
			TYB040R	TYB063R	TYB100R	TYB160R	TYB250R
Min. H	20 ≤ h < 25	mm	20	-	-	-	-
	25 ≤ h < 30	mm	25	25	35(30)	-	-
	30 ≤ h < 35	mm	25	30	35	-	-
	35 ≤ h < 40	mm	25	30	35	-	-
	40 ≤ h < 45	mm	-	30	40	40(30)	-
	45 ≤ h < 50	mm	-	-	-	40(30)	-
	50 ≤ h	mm	-	-	-	45(35)	50
Min. L		mm	15	20	20	25(20)	30
AA		mm	10	12.5	12.5	10(12.5)	10



Selecting table for clamp and control unit

Die-casting machines		kN	~2000	~3500	~5500	~8500	~13000	~20000	~26000
Clamp	Die clamping force								
	Model × Quantity *1		TYB040 × 8 TYB040Z × 8 TYB040R × 8	TYB063 × 8 TYB063Z × 8 TYB063R × 8	TYB100 × 8 TYB100Z × 8 TYB100 R × 8	TYB160 × 8 TYB160Z × 8 TYB160 R × 8	TYB250 × 8 (TYB160 × 12) TYB250Z × 8 (TYB160Z × 12) TYB250R × 8 (TYB160R × 12)	TYB250 × 8 (TYB160 × 12) TYB250Z × 8 (TYB160Z × 12) TYB250R × 8 (TYB160R × 12)	TYB250 × 16 TYB250Z × 16 TYB250R × 16
	Total clamping force *2	kN	156	246	392	624	980 (936)	1470 (1248)	1960
Hydraulic control unit			HCSD-HG2SSS / HCLD-HG2SSS				HCLD-HG22SSS		

● Regarding Control unit, refer to page →25, Operation panel page →29, and Control box page →30.

*1 : Quantity for one machine.

*2 : Clamping force per platen. (For half of the quantity mentioned above.) Inquire the clamp selection, when the actual die opening force is greater than above value.



Model designation

HCS D - H G2 S S S - U

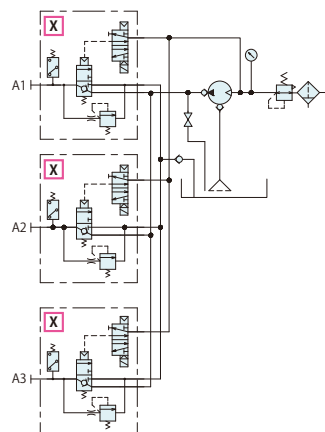
Control voltage DC24V

* In case of other solenoid valve voltage, contact Pascal separately.
In case of AC voltage, CE and UL standard are not applicable.

- 1 Pascal pump
- 2 Hydraulic circuit
* Indicated in 1-4 alphabets.
- 3 Hydraulic gauge for each circuit

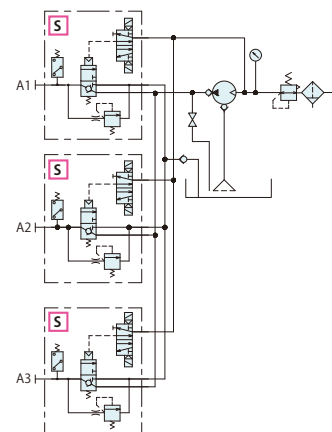
Hydraulic pressure circuit

XXX circuit



Hydraulic pressure circuit

SSS circuit



1 Pascal pump (model × quantity)

For use of mineral oil, contact Pascal separately.

G2 : X6308UG × 1unit

2 Hydraulic circuit

Number of clamp circuit		Pascal pump model × quantity	Control unit model	
Fixed side	Movable side		Single solenoid valve	Double solenoid valve
1		X6308UG × 1unit	X	S
1	1	X6308UG × 1unit	XX	SS
1	2	X6308UG × 1unit	XXX	SSS
2	2	X6308UG × 1unit	XXXX	SSSS

Clamp circuit Single solenoid valve + relief valve : X Double solenoid valve + relief valve : S

3 With hydraulic gauge for each circuit

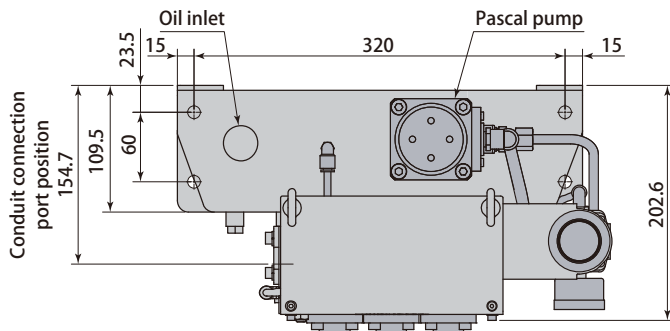
∅ : Without

U : With

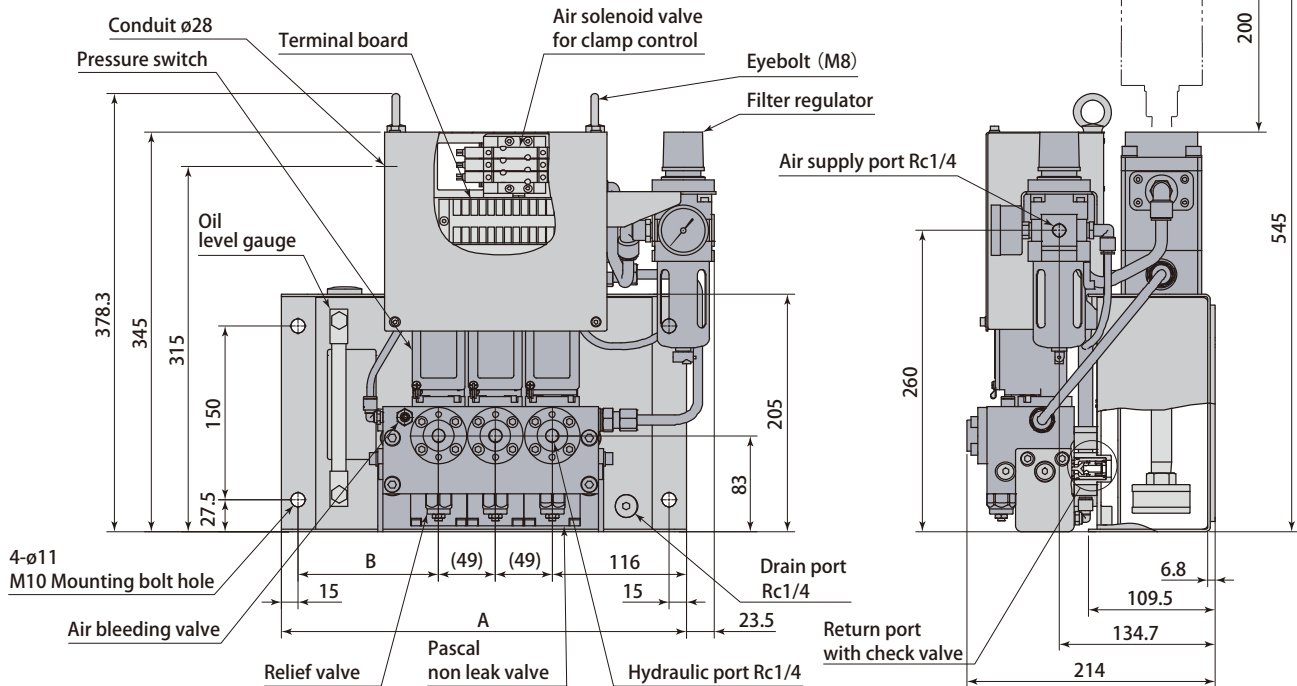
Specifications

Model	HCS D-HG2□-□	
Pump model × quantity	X6308UG × 1unit	
Valve switching system	Pilot air	
Discharge pressure	MPa	24.5
Driving air pressure	MPa	0.47
Discharge volume (at no load)	L/min	1.3
Oil tank capacity	L	LOW-LEVEL : 1.5 / UPPER : 3.5
Set pressure of pressure switch	MPa	14.7 (INC.)
Set pressure of relief valve	MPa	27.9
Air consumption rate	Nm ³ /min	Max. 0.4
Operating temperature	°C	5 ~ 50

● Fluid : water glycol system working oil



● The drawings showing : HCS-D-HG2SSS.
For 4 circuits application, contact Pascal for details.



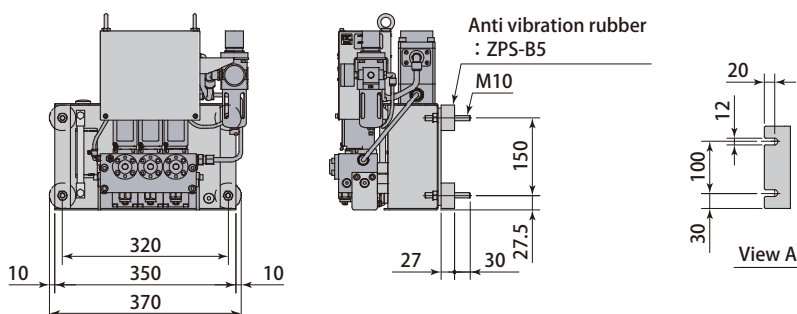
Control unit
HCS

Number of hydraulic circuit		1	2	3	4
A	mm	350	350	350	400
B	mm	234	185	136	137
Weight	kg	18	21	24	27

- Model HCL should be chosen in case of the following cases.
1. Double pump type is required.
 2. The signal of abnormal high pressure is required for interlocking.
 3. More than five circuits of hydraulic valve are required.

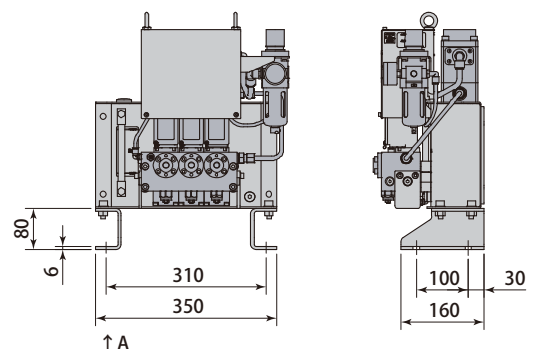
Anti vibration rubber (option)

model ZPS-B5



Stand (option)

model ZPS-S0





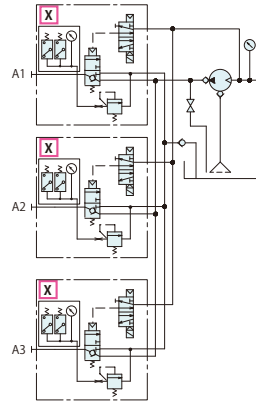
Model designation

HCL D - H G2 S S S - L

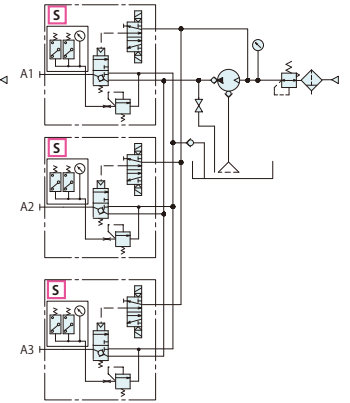
Control voltage DC24V
* It can not correspond to voltage other than DC24 V.

- 1 Pascal pump
- 2 Hydraulic circuit
* Indicated in 3-4 alphabets.
- 3 Special specification

Hydraulic and air pressure circuit
XXX circuit



Hydraulic and air pressure circuit
SSS circuit



1 Pascal pump (model × quantity)

For use of mineral oil, contact Pascal separately.

G2 : X6308UG × 1unit

G22 : X6308UG × 2units

3 Special specification

∅ : Without

L : Low oil level detection switch

T2 : 2-position double air solenoid valve equipped × 2 (for vertical clamp slider and die positioning pin)

T3 : 3-position center exhaust air solenoid valve equipped × 2 (for horizontal clamp slider)

2 Hydraulic circuit

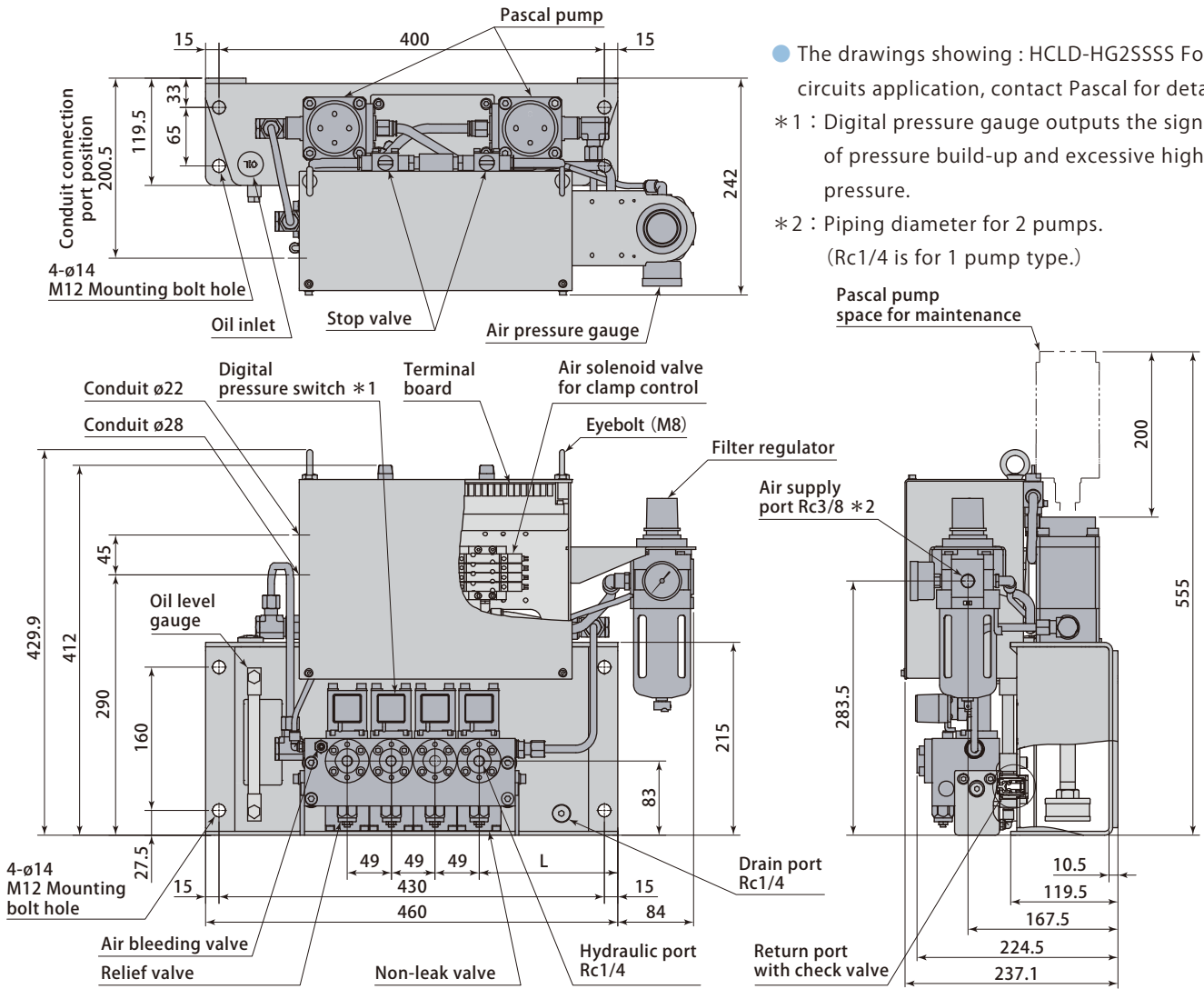
Number of clamp circuit		Pascal pump model × quantity	Control unit model	
Fixed side	Movable side		Single solenoid valve	Double solenoid valve
1	2	X6308UG × 1unit	XXX	SSS
2	2	X6308UG × 1unit	XXXX	SSSS
1	2	X6308UG × 2units	XXX	SSS
2	2	X6308UG × 2units	XXXX	SSSS

Clamp circuit Single solenoid valve + relief valve : X Double solenoid valve + relief valve : S

Specifications

Model	HCLD-HG2□-□	HCLD-HG22□-□
Pump model × quantity	X6308UG × 1unit	X6308UG × 2units
Valve switching system	Air pilot system	
Discharge pressure	MPa	24.5
Driving air pressure	MPa	0.47
Discharge volume (at no load)	L/min	1.3
Oil tank capacity	L	LOW-LEVEL : 1.5 / UPPER : 3.5
Set pressure of digital pressure gauge	MPa	14.7 / 30.8 (at excessively high pressure)
Set pressure of relief valve	MPa	27.9
Air consumption rate	Nm ³ /min	Max. 0.4
Operating temperature	°C	5 ~ 50

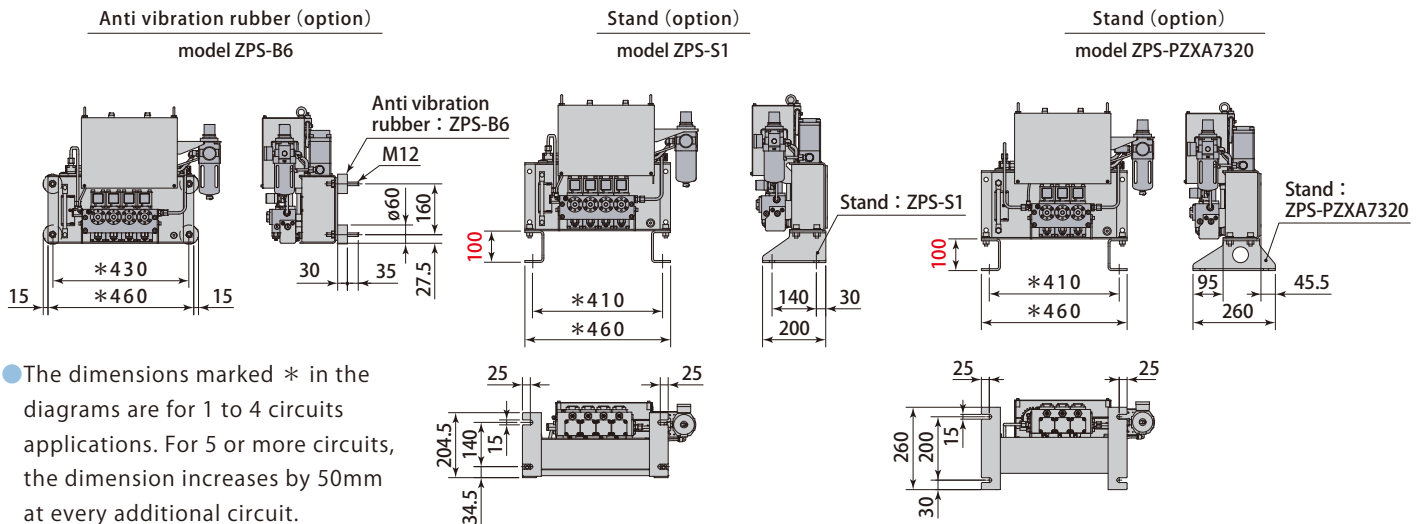
● Fluid : water glycol system working oil



- The drawings showing : HCLD-HG2SSSS For 5 circuits application, contact Pascal for details.
- *1 : Digital pressure gauge outputs the signal of pressure build-up and excessive high pressure.
- *2 : Piping diameter for 2 pumps. (Rc1/4 is for 1 pump type.)

Number of hydraulic circuit		1	2	3	4
L	mm	204	179.5	155	155
Weight	kg	26	29	32	34

● Weight for 1 unit of pump (dried) . 3kg to be added when 2 pumps are applied.



● The dimensions marked * in the diagrams are for 1 to 4 circuits applications. For 5 or more circuits, the dimension increases by 50mm at every additional circuit.

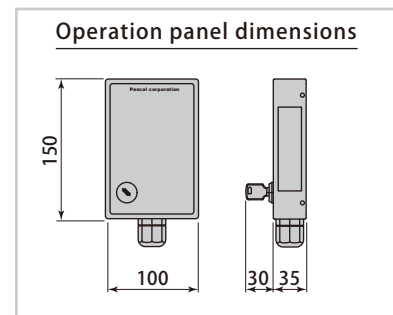
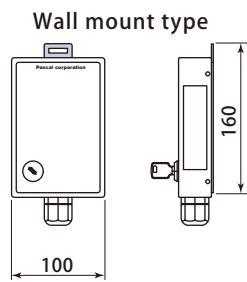
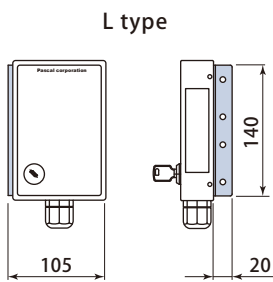
[For vertical and horizontal loading]

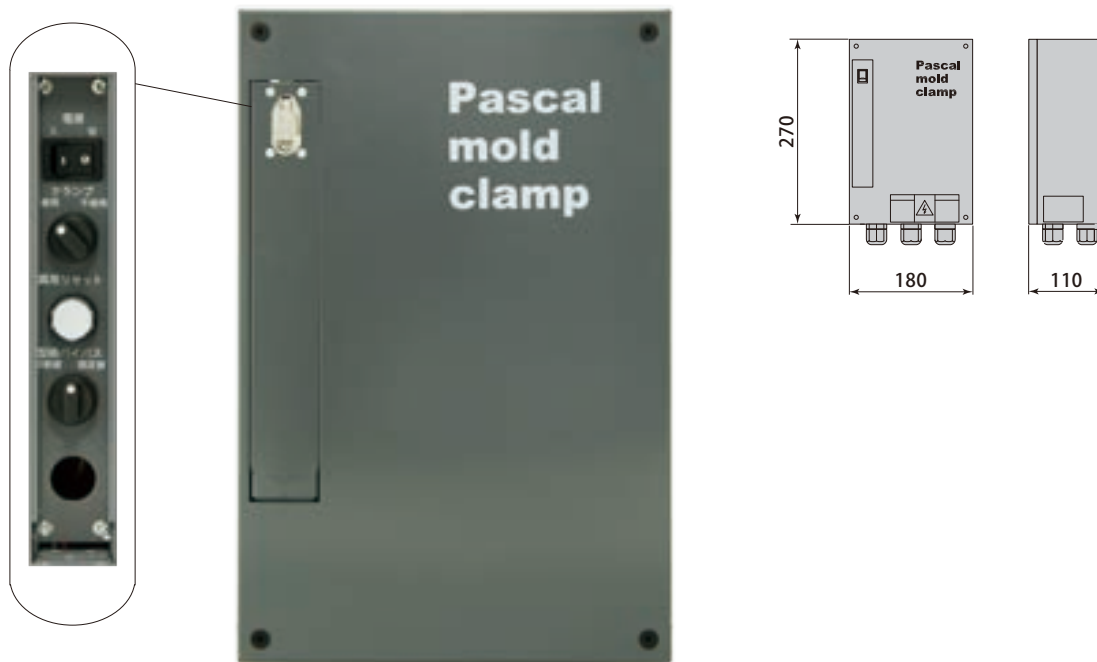


User friendly control panels with compact body and clear indication.
It can be installed to die-casting machine or wall utilizing the rear tap hole.
(M4 bolts × 4 accessories)

Model	ESTE-D
Loading direction	Vertical and horizontal loading
Weight	kg 0.6

Mounting bracket



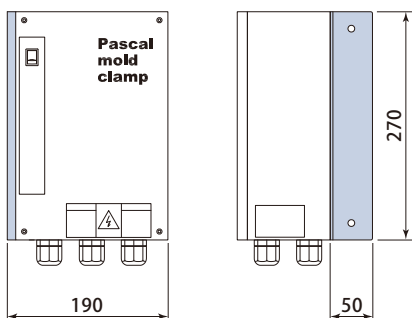


Model		ECTE-D
Weight	kg	4

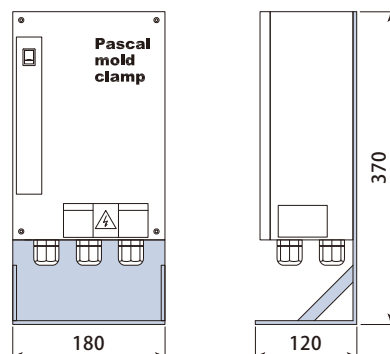
Control box
ECTE-D

Mounting bracket

L type



Self-standing type



Interlock

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

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

Hydraulic clamp : ①Die change mode

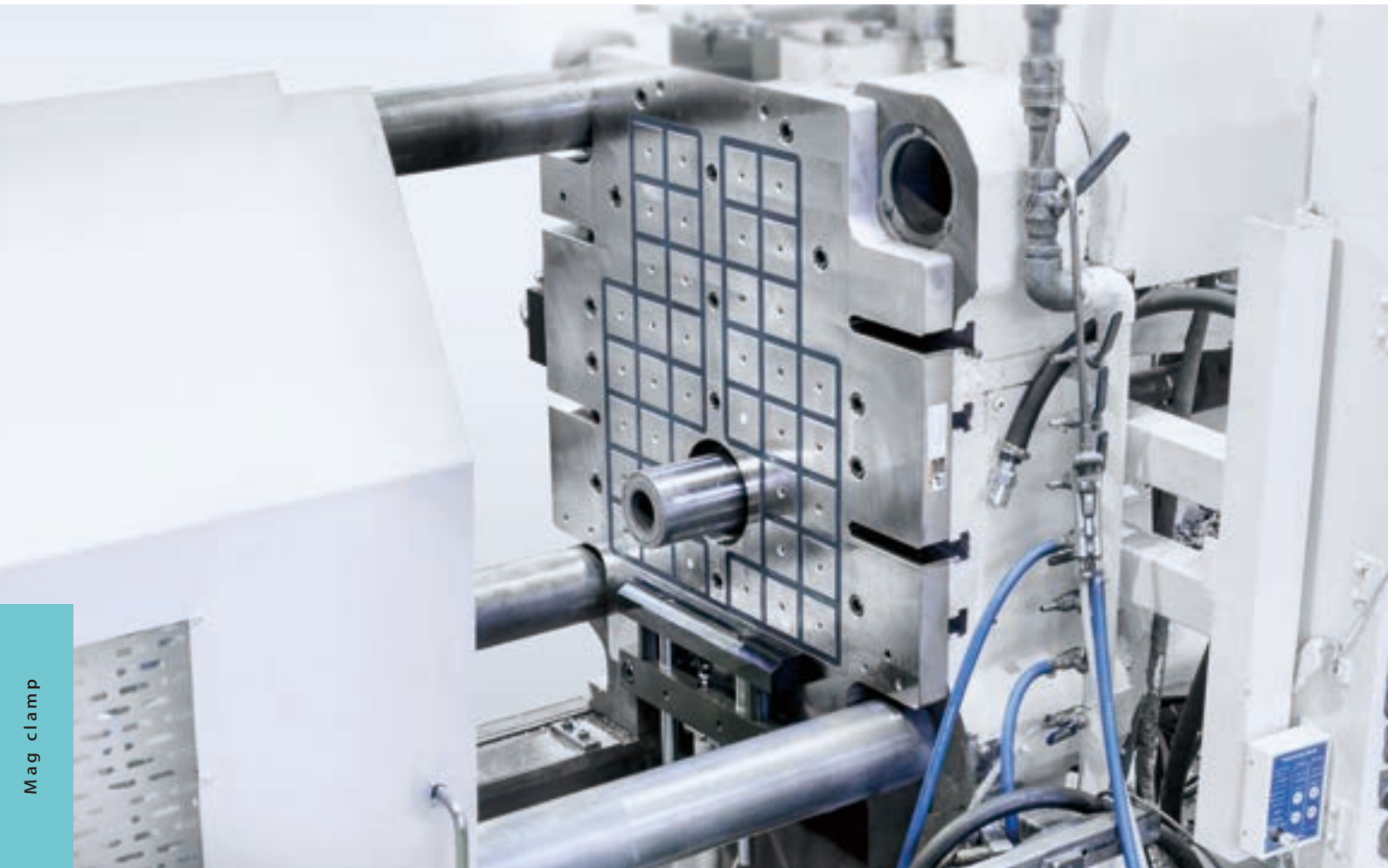
Die-casting machine : ②Set-up (or manual) mode, ③Nozzle retracted, ④Ejector retracted,
⑤Platen closed-end, ⑥Safety door closed

The condition of die-casting machine for ②, ③ and ⑤ can be confirmed with LED lamp on operation panel.

Clamp dies instantly with super strong permanent magnet

Pascal mag clamp is a die clamp system for die-casting machines that clamps a die with powerful magnet force.

As the mounting bolt and mounting space for automatic clamp are not required, **the die-casting machine surface can be maximized.**



3,500kN (350ton) Die-casting machine Mag clamp & Die setter

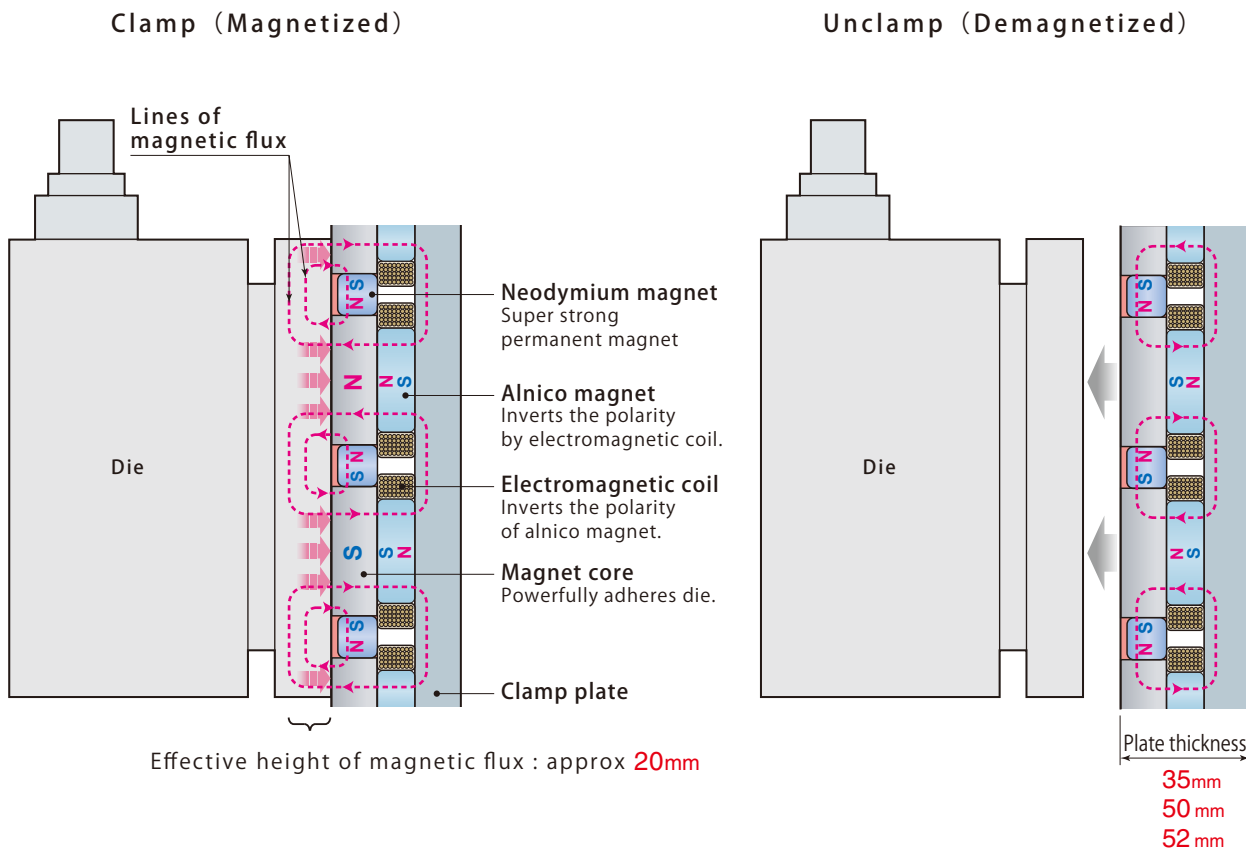


3,500kN (350ton) Die-casting machine
Mag clamp fixed side



3,500kN (350ton) Die-casting machine
Mag clamp movable side

Structure and function



- 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 die.

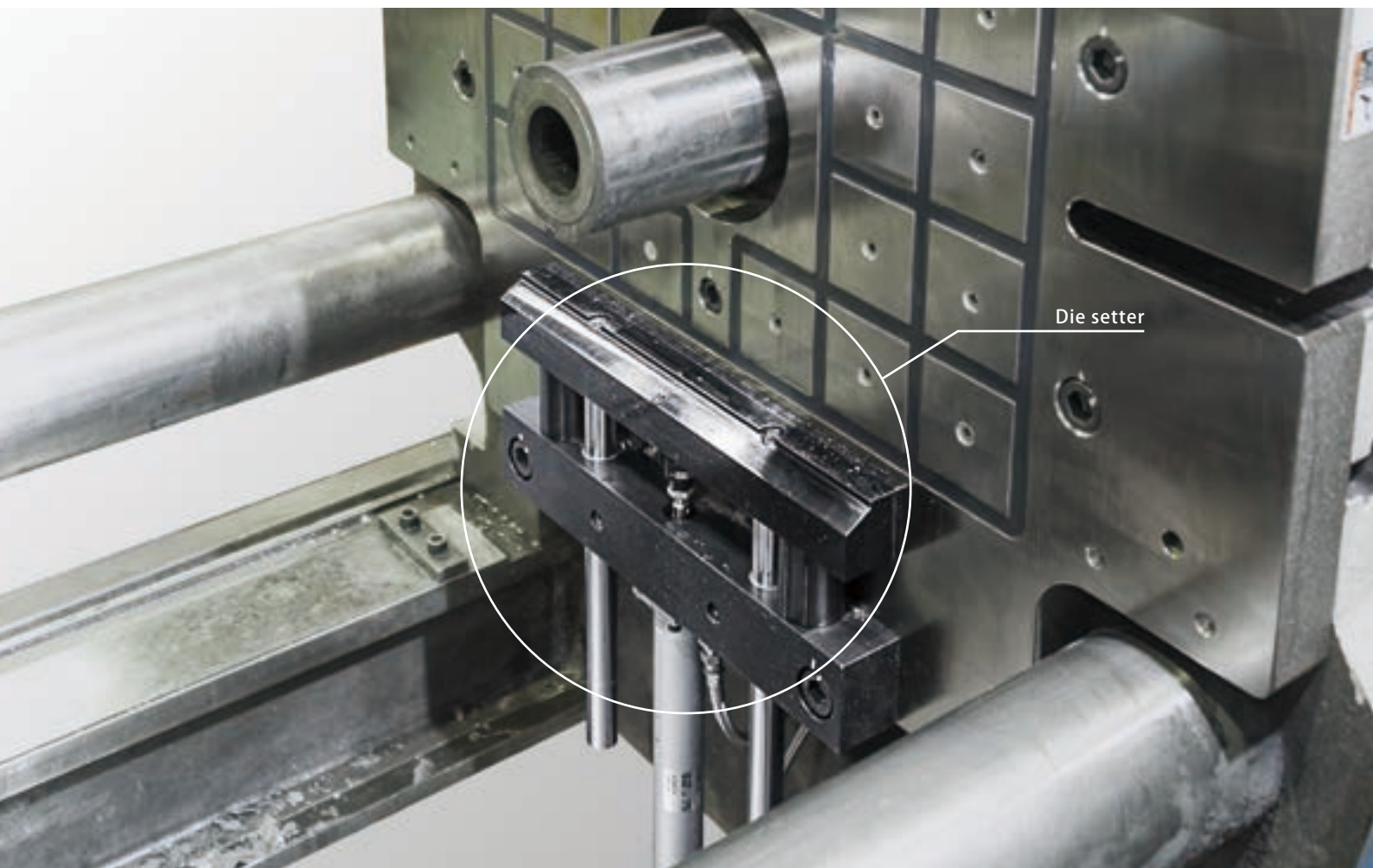
- ① Electromagnetic coil is energized for **0.5** sec.
- ② Polarity of alnico magnet is inverted.
- ③ Magnetic flux of neodymium magnet and alnico magnet is not emitted from the surface of magnet core so that the die can be unclamped.

- The clamp plate is one set of two plates for movable platen and fixed platen sides.
- Die can be adhered and detached instantly (0.5-4.5 seconds).
- Energization is required only when switching on and off. No energization required during clamped condition.
- Die displacement detection and die fall protection hook are equipped as standard.
- 0 ~ 180 for heat proof type.

● Contact Pascal for the details.

An elevating positioning block

Introducing a Die setter, the horizontal and vertical positioning can be determined surely and easily by placing a die on a Die setter and it improves the productivity and set up.



3,500kN (350ton) Die-casting machine Die setter & Mag clamp

Die setter operation panel

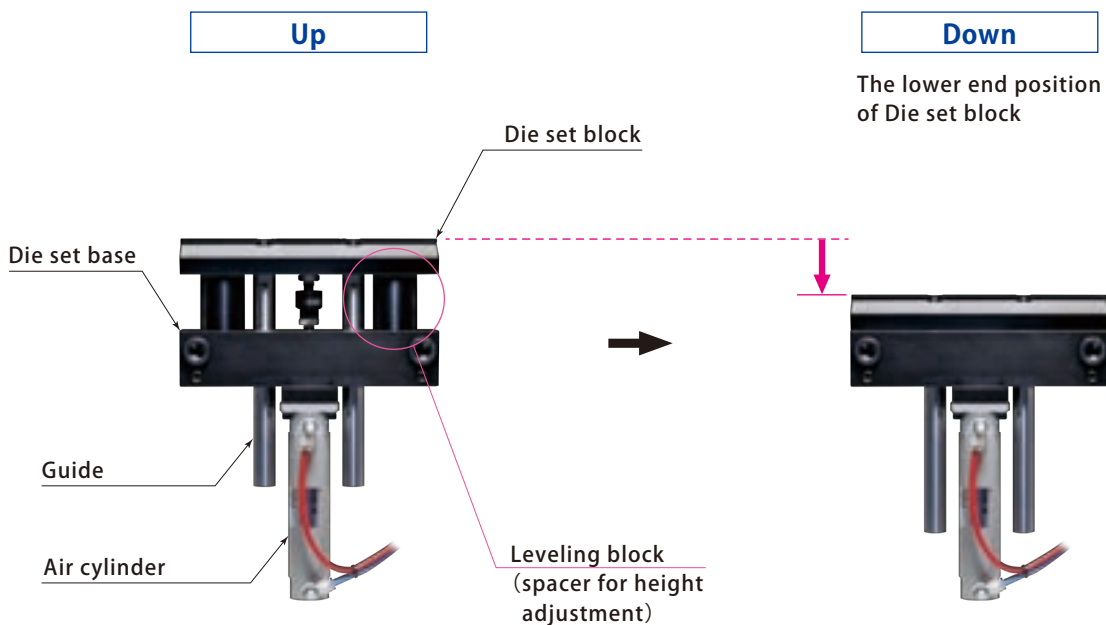


The lift of Die set block is operated. It is mountable near the die-casting machine control panel with L type bracket.

Die setter & Clamp Operation panel



There is also a model integrated with clamp and die setter. Contact Pascal for details.

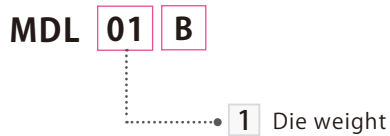


Leveling block

It adjusts the height by putting leveling block between a die set block and die set base.



Model designation



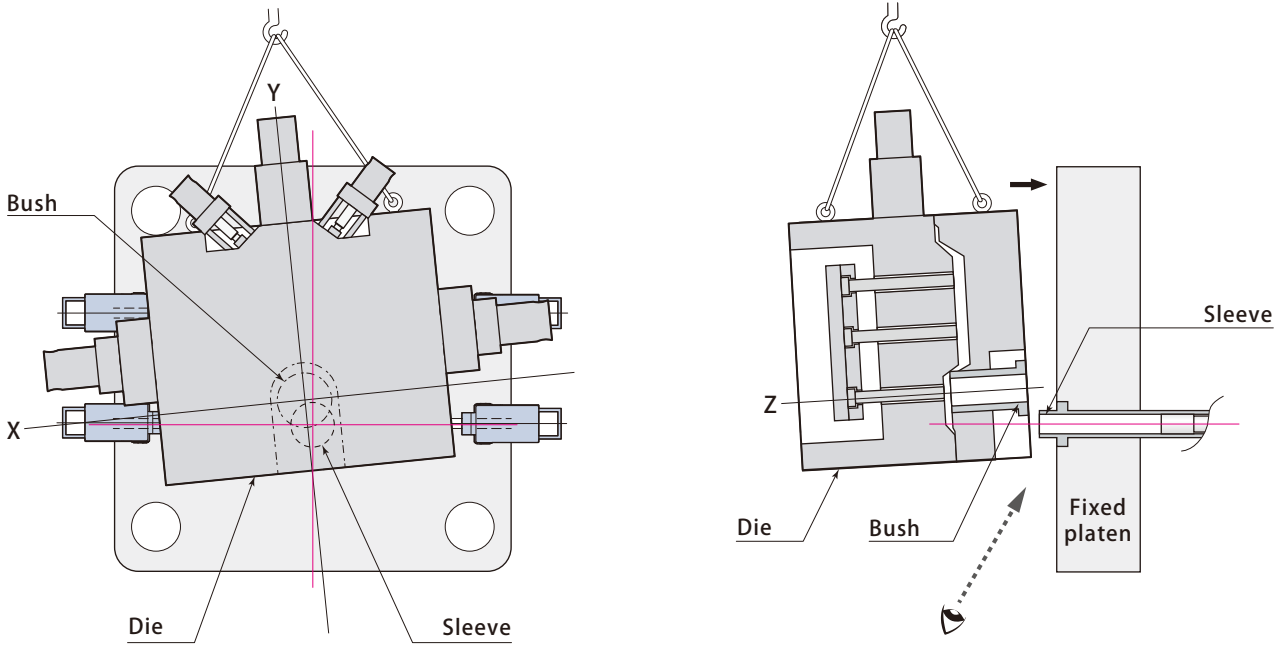
1

Model		MDL01B	MDL03B	MDL04B	MDL06B	MDL10B	MDL15B	
Die weight	kg	1000	3000	4000	6000	10000	15000	
Applied die-casting machine	Clamping force	kN (ton)	1000 (100)	2300 (230)	3500 (350)	6500 (650)	8500 (850)	10500 (1050)
	Loading direction	Vertical and horizontal loading						

● 1set of Leveling block is attached.

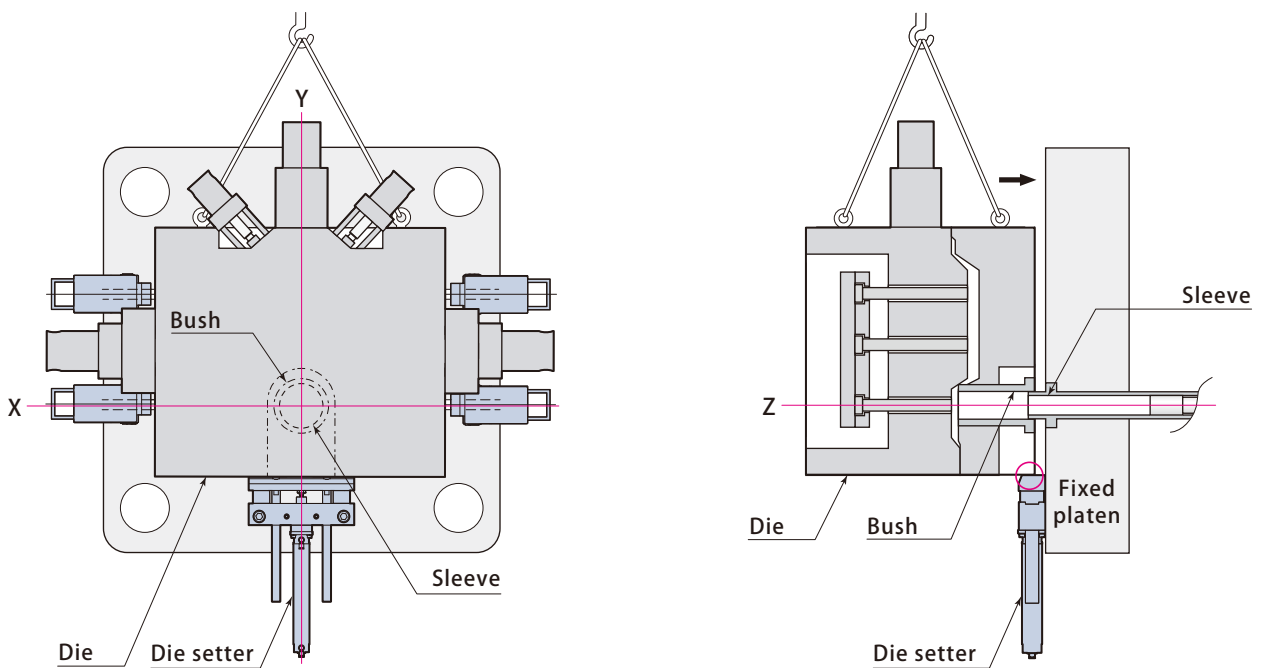
Die setting with sleeve and bush

Die center (X, Y) is not stable and hard to load a die. (Hard to position a sleeve and bush.)

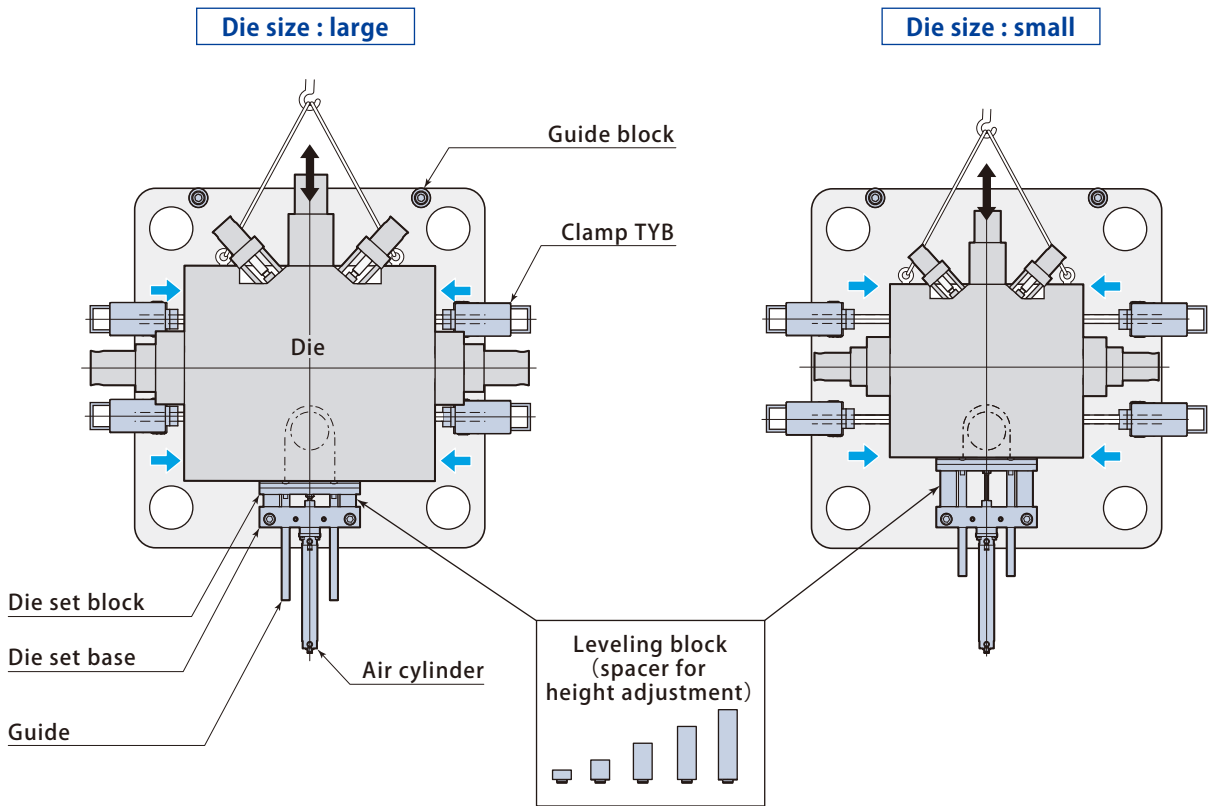


Die setting with die setter

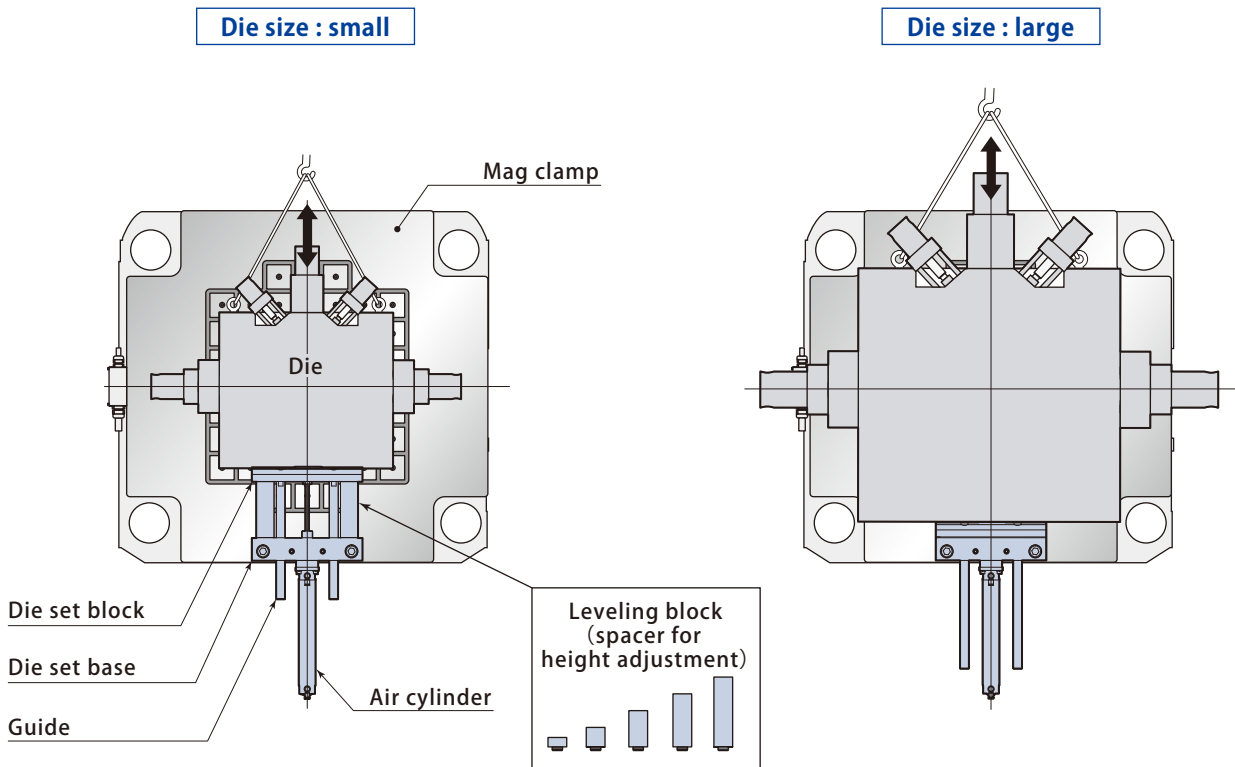
By placing a die on the die setter, horizontal position (X) is determined quickly and securely and die setting can be performed easily.



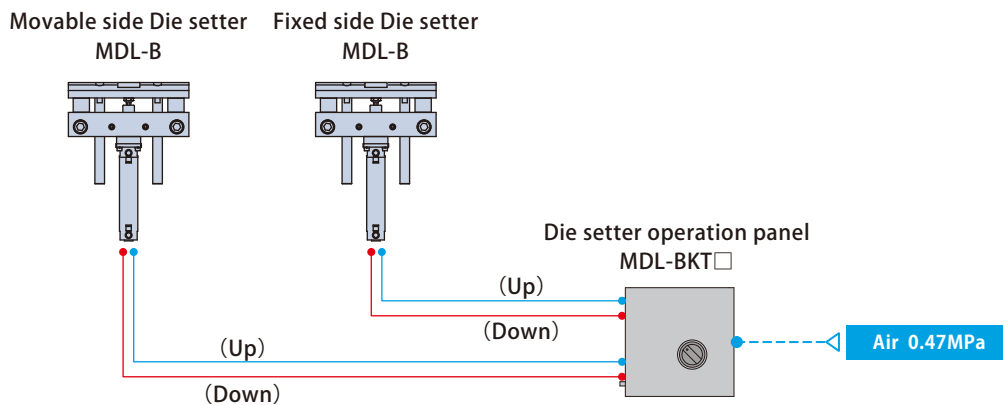
Die setter & Automatic clamp (vertical loading)



Die setter & Mag clamp (vertical loading)

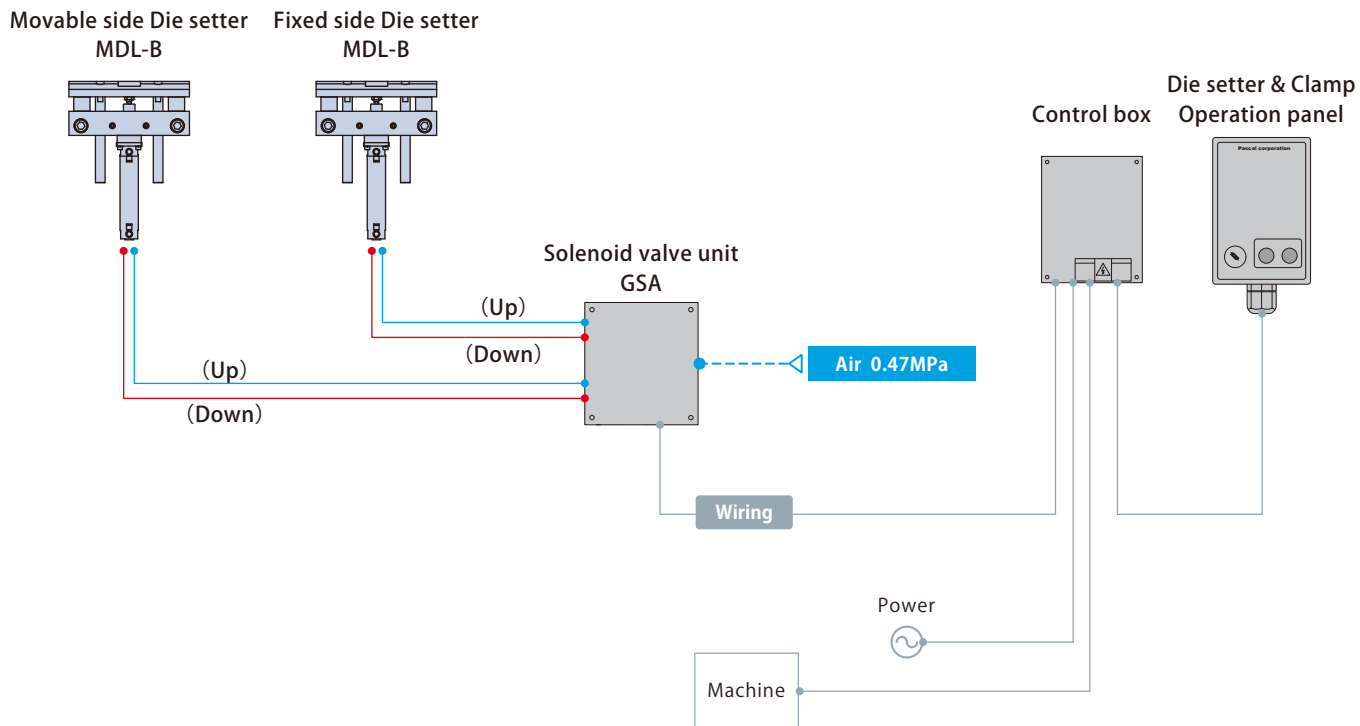


Die setter operation panel is used (in case it is controlled by a hand valve)



Die setter & clamp operation panel is used (in case it is incorporated in the control device)

It does not correspond to some clamps. Contact Pascal for details.





Hand valve switch

Model designation

MDL – BKT 01

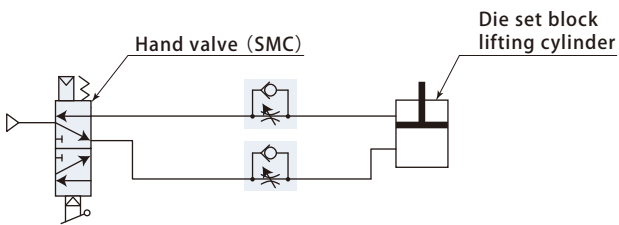
1 Number of circuits

01 : 1 circuit (only fixed side)

02 : 2 circuits (fixed side & movable side)

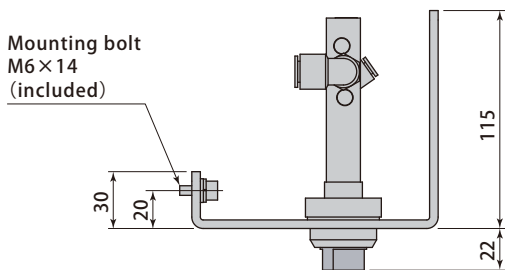
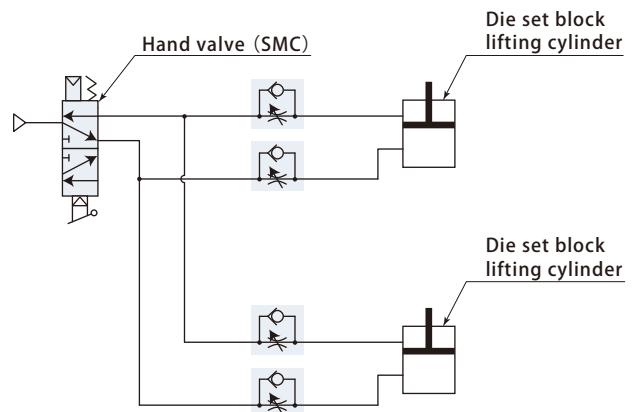
MDL – BKT 01

Air pressure circuit

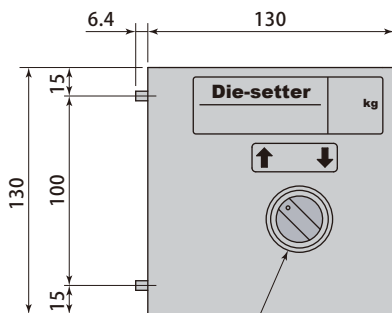


MDL – BKT 02

Air pressure circuit

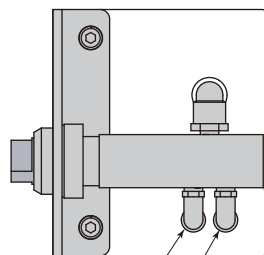


Model	MDL-BKT01	MDL-BKT02
Weight	kg	1.5



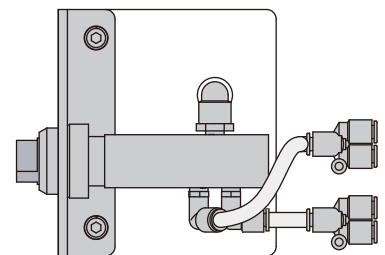
Die setter block up/down switch

MDL-BKT01



Upward port to speed controller
Downward port to speed controller

MDL-BKT02



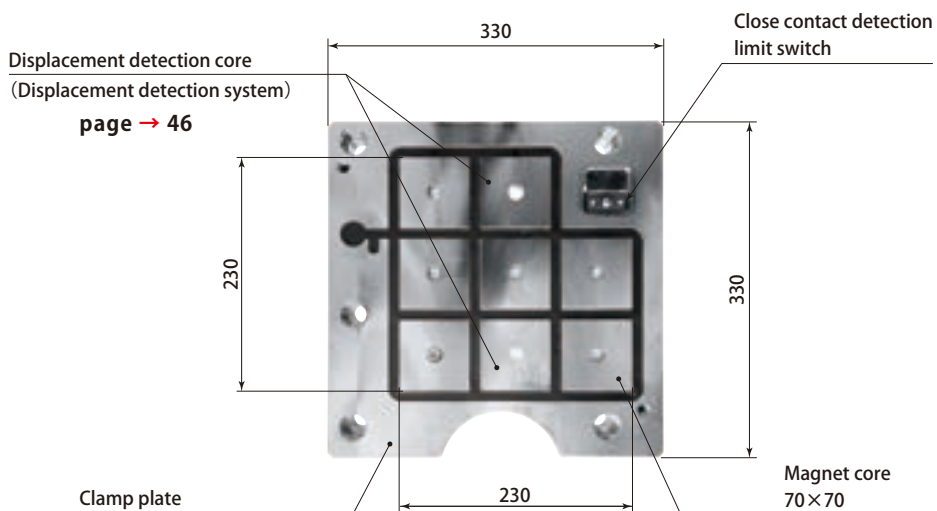
Hand valve (SMC)

Dramatic shortening of set up time for ejector plate !!

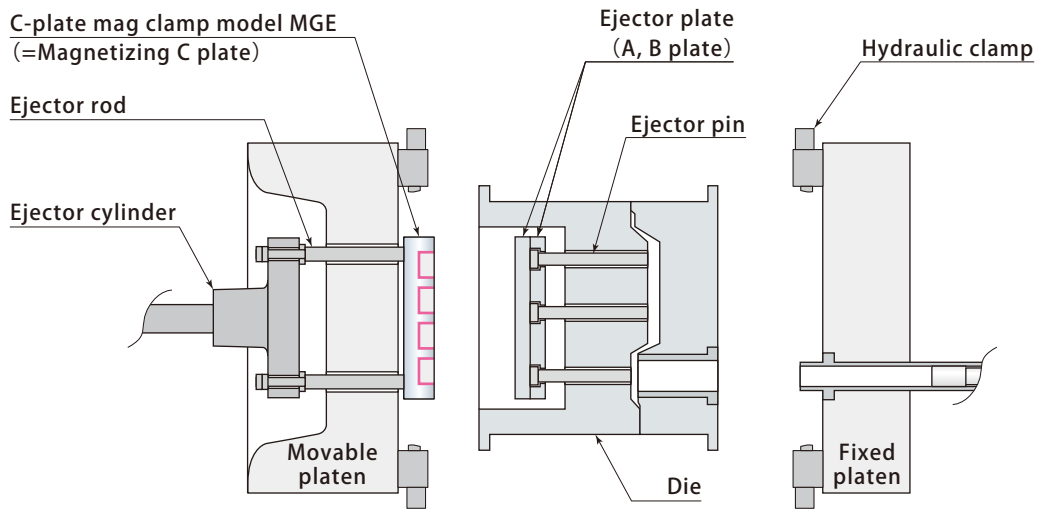
It can instantly detach or attach the die ejector plate by magnetizing the machine ejector plate. Mounting and dismounting a ejector cylinder, rod and plate is not required and it shortens the set up time considerably.



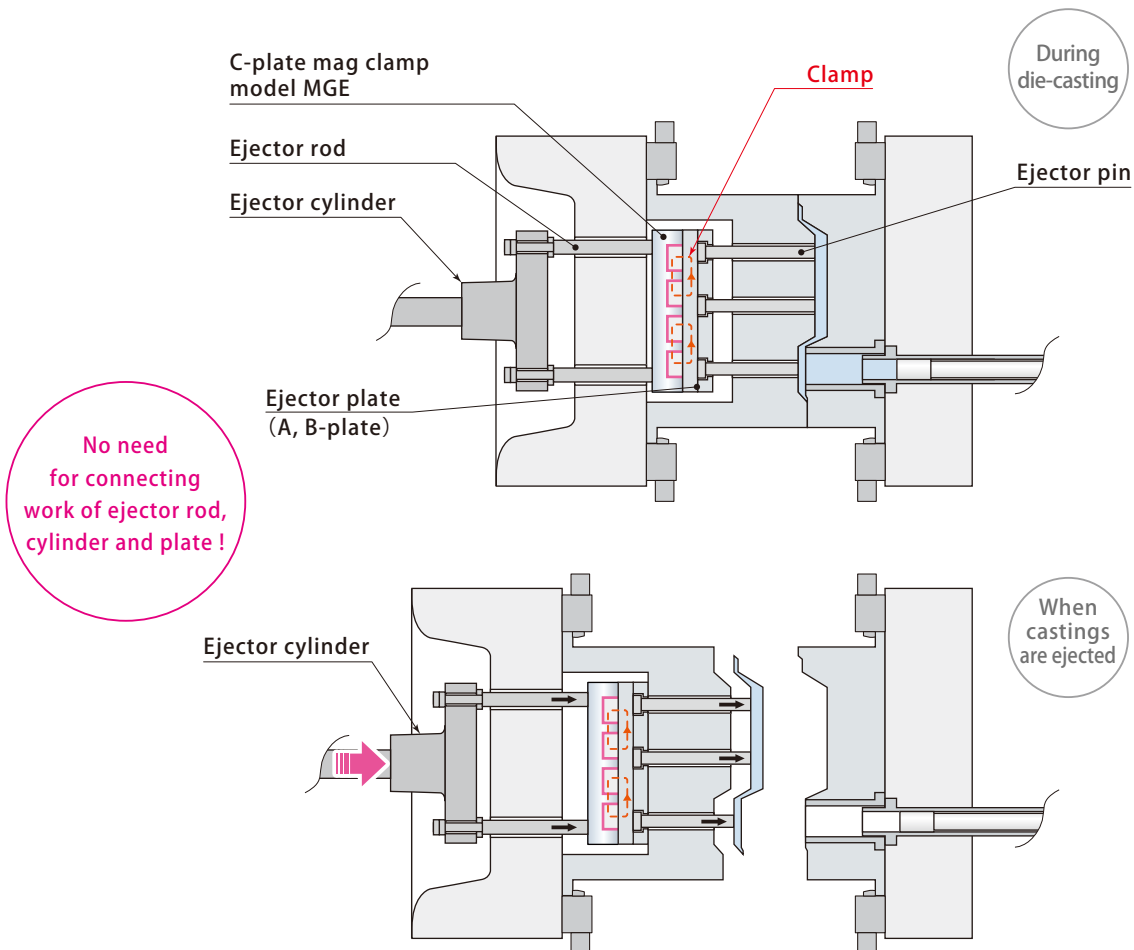
3,500kN (350ton) Die-casting machine C-plate mag clamp & Hydraulic clamp TYB



Max. clamping force: 59kN

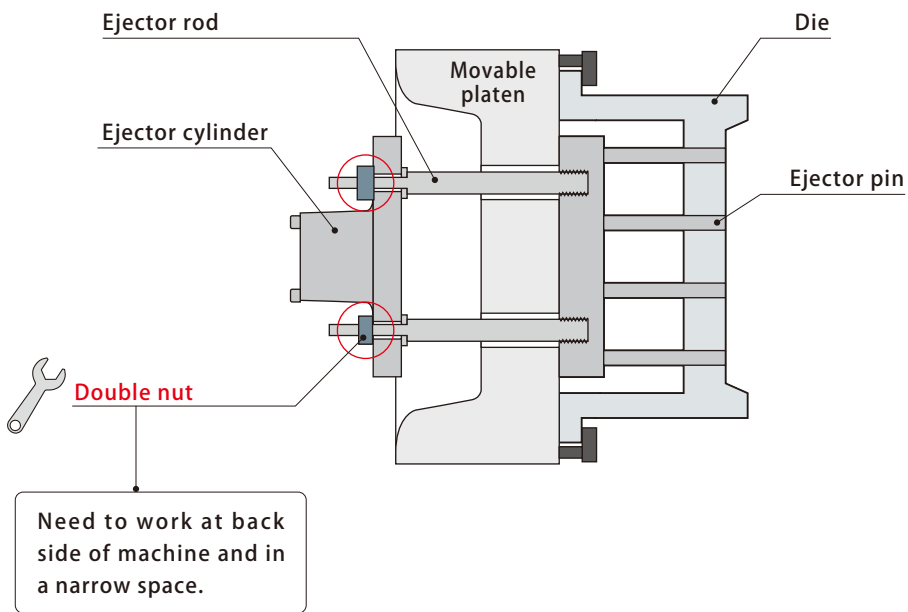
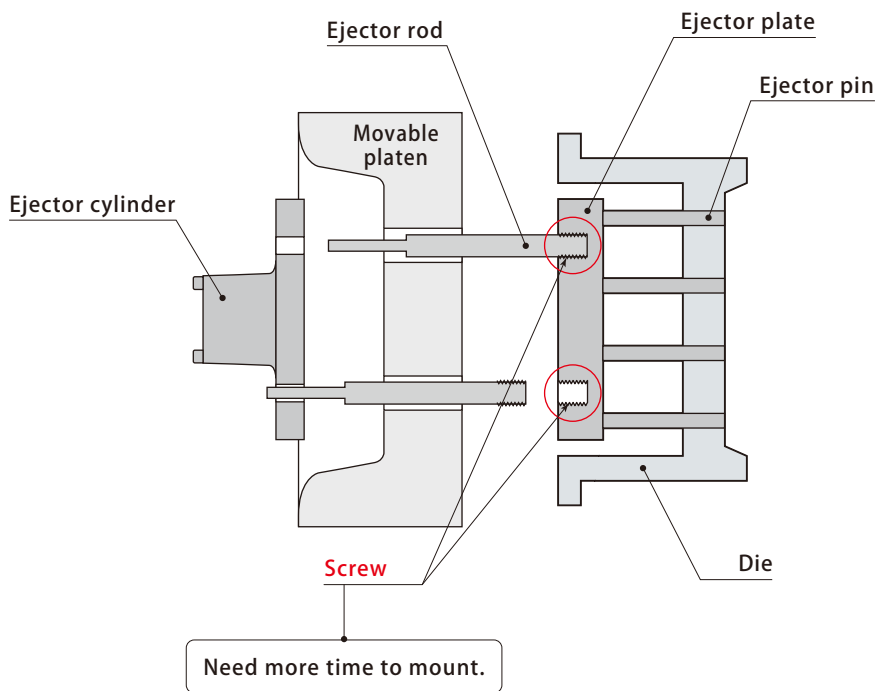


C plate (Magnet plate) and A/B plate connect at once by everlasting magnet and die connection is done.



In case of manual tightening connection rod ...

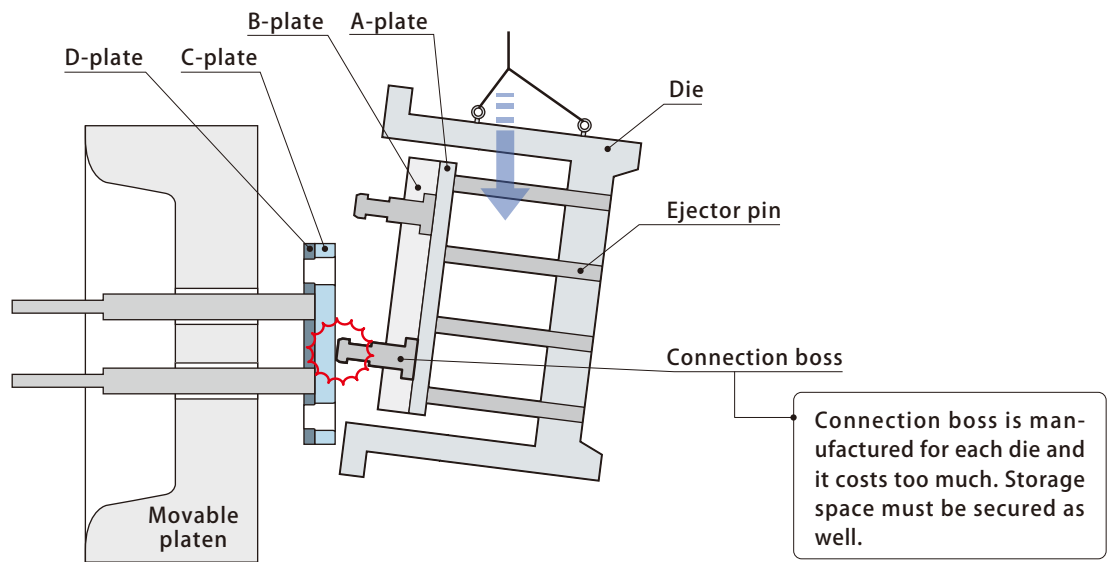
① Ejector rod is screwed on plate, ② Die is fixed on platen and ③ Ejector rod is mounted on cylinder from the back side in a conventional method. It wastes time to change a die.



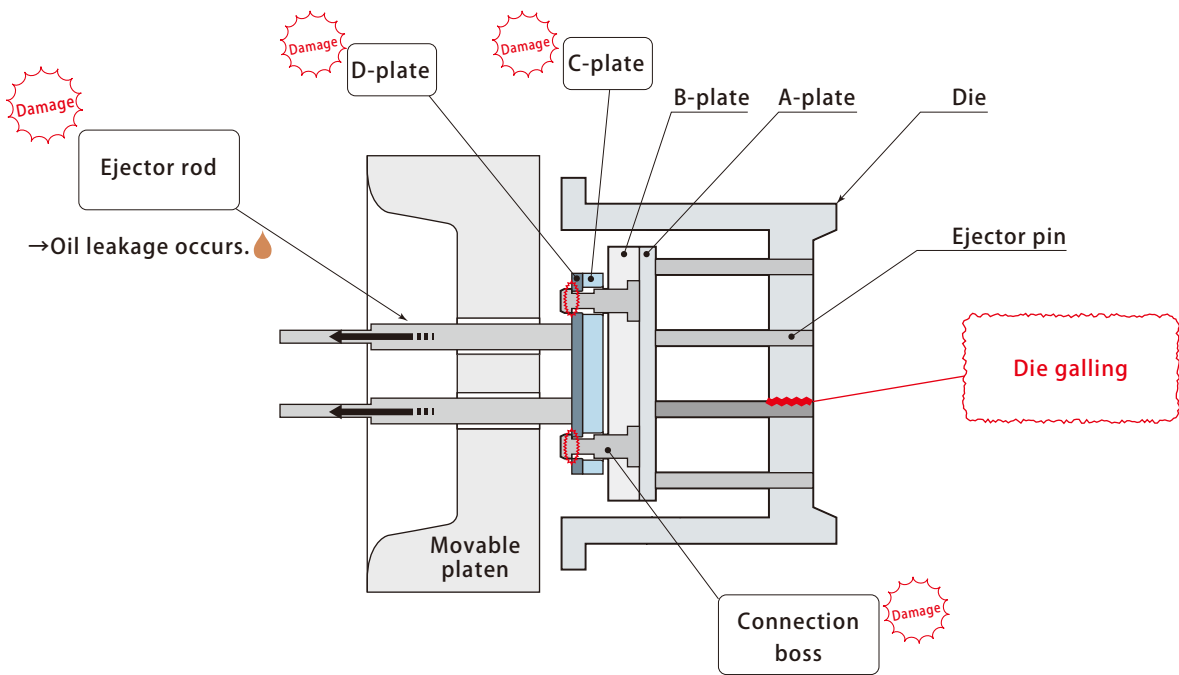
➡ The maintenance cost (repair, purchase for replacement and die repair) is high and there is a risk of production stop.

In case of hydraulic type automatic C plate of clamp ...

Hard to insert a connection boss when loading a die.
 (C plate and connection boss interfere with each other.)

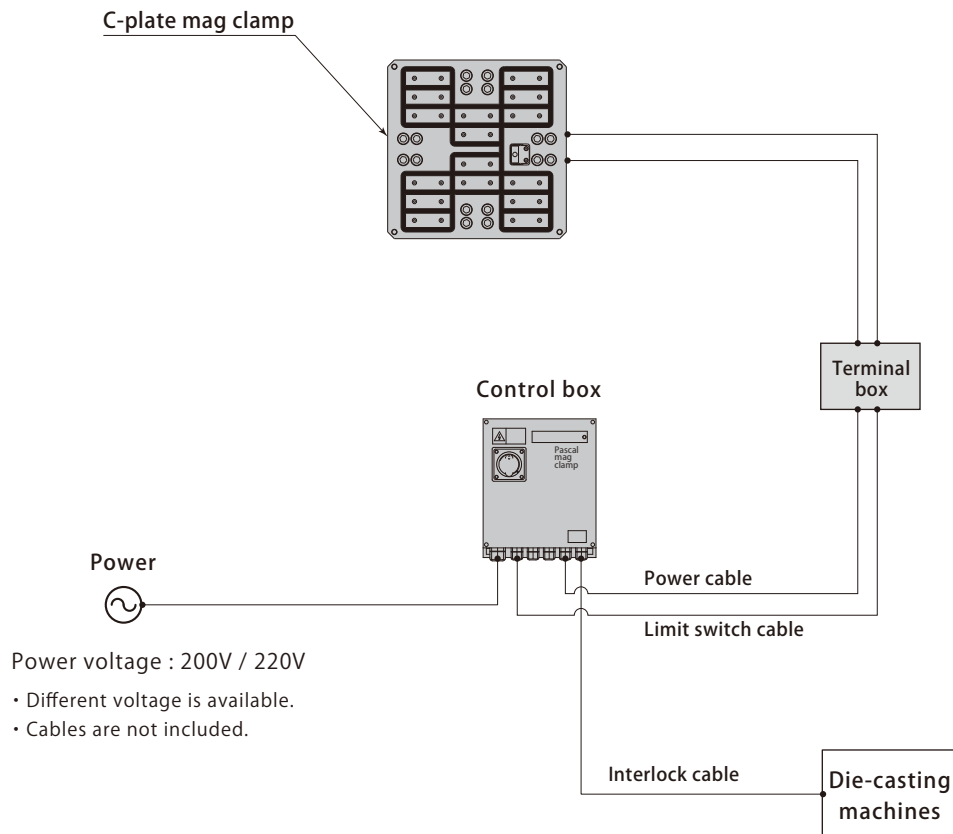


When die galling occurs, pull back force causes a damage.



➡ The maintenance cost (repair, purchase for replacement and die repair) is high and there is a risk of production stop.

System configuration



- The operation for clamp (connection) and unclamp (disconnection) are performed on operation panel of die-casting machine. Contact Pascal for the details.

Magnet plate

model MGE

Magnet core
Size: 32 × 100mm
Quantity: 16
Total clamping force: 59kN

Close contact detection proximity switch

- It detects that the ejector plate (A and B) is in close contact with magnet clamp when clamping.
- It detects a displacement of ejector plate.

Displacement detection core (Displacement detection system)
page → 46

● Specifications of magnet plate differ depending on dies. Contact Pascal for the details.

Control box

model EMGD-G



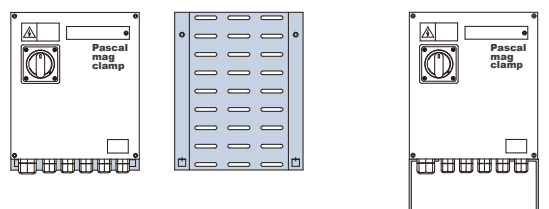
Height 400 × Width 350 × Depth 200 (mm)

Model	EMGD-G
Weight	25 kg

Mounting bracket

Wall mount type

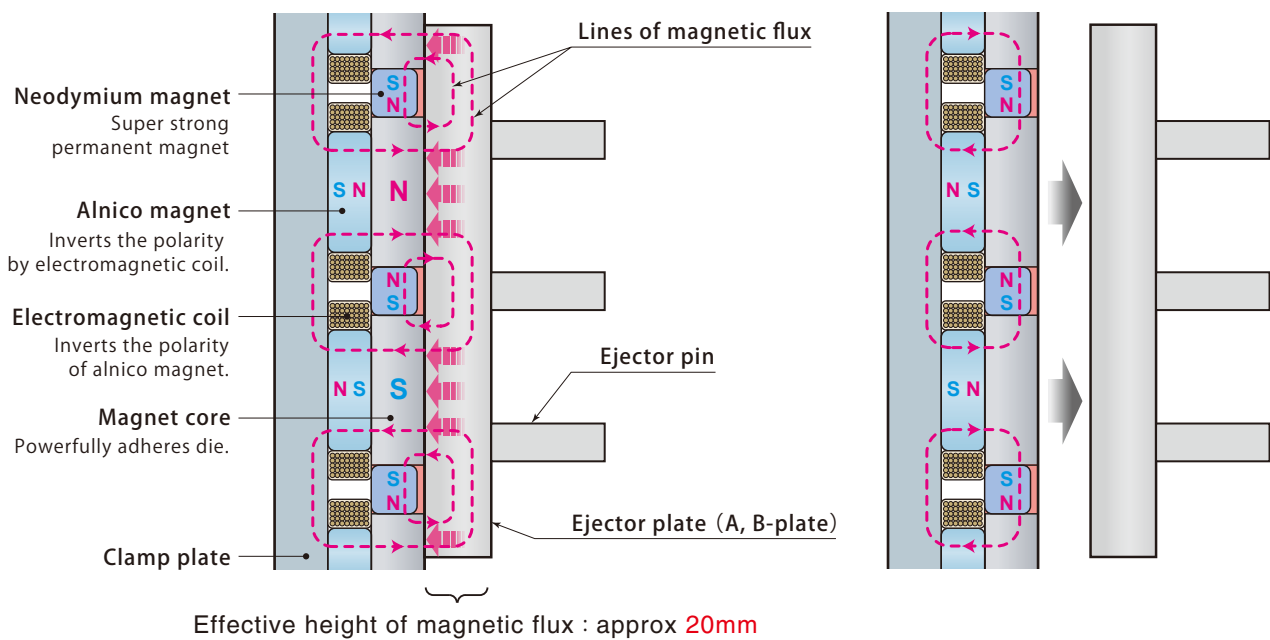
Self-standing type



Structure and function

Clamp (Magnetized)

Unclamp (Demagnetized)



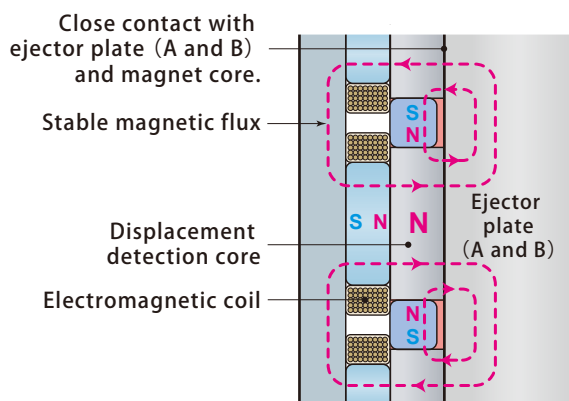
- ① Electromagnetic coil is energized for **0.5** sec.
- ② Polarity of alnico magnet is inverted.
- ③ Neodymium magnet and alnico magnet become homopolar.
- ④ Magnet core becomes a strong magnet to clamp the ejector plate.

- 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. Thus, it unclamps the ejector plate.

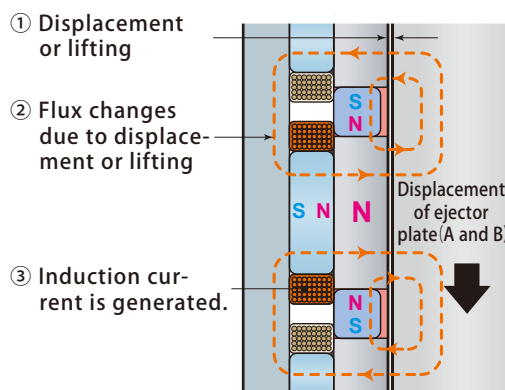
Displacement detection system (standard) PAT.

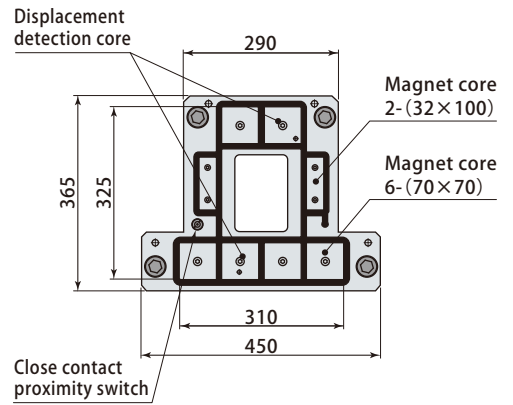
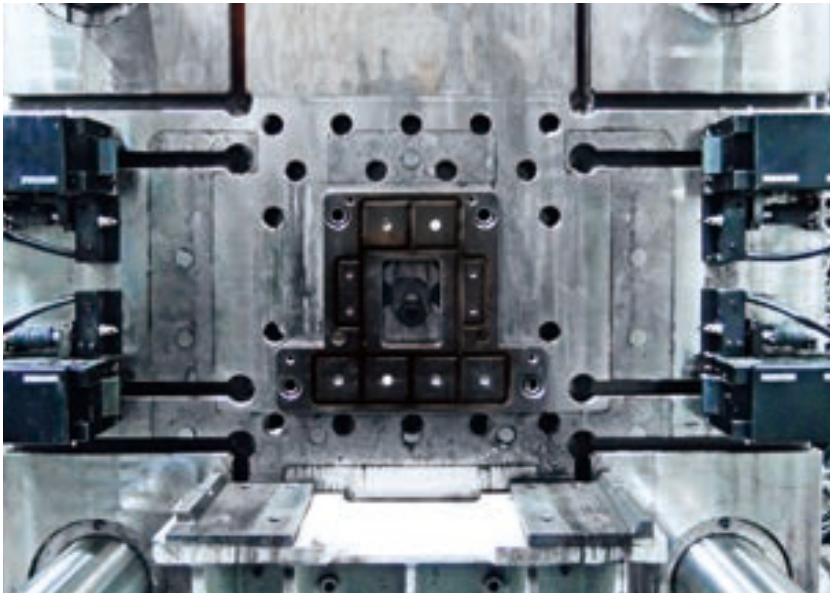
Displacement or lifting of die can be detected by the electromagnetic coils built into the magnet core near the center of clamp plates. (When the ejector plate moves, these electromagnetic coils detect an induction current signal.)

Normal clamping status



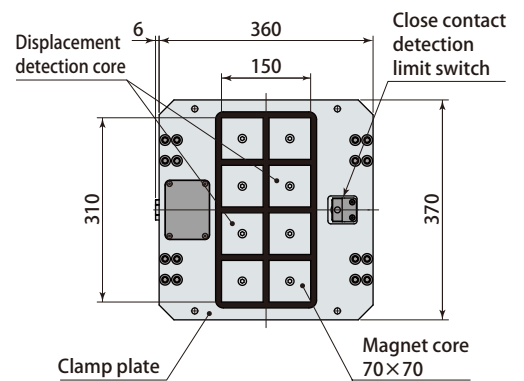
When the die moves





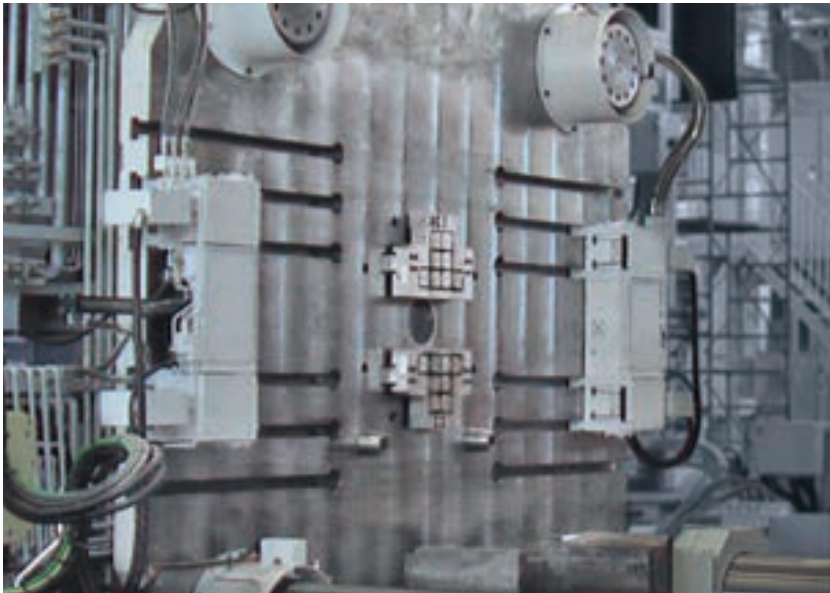
Max. clamping force : 50.9kN

8,500kN (850ton) Die-casting machine C-plate mag clamp & Hydraulic clamp TYB-Z

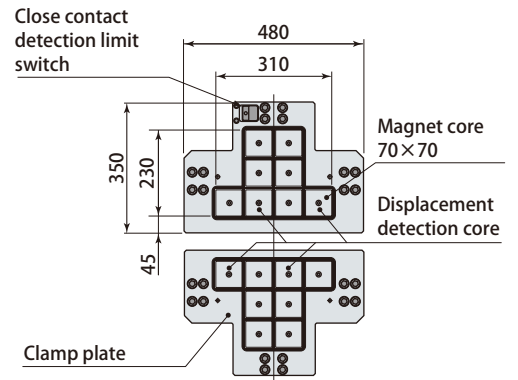


Max. clamping force : 59kN

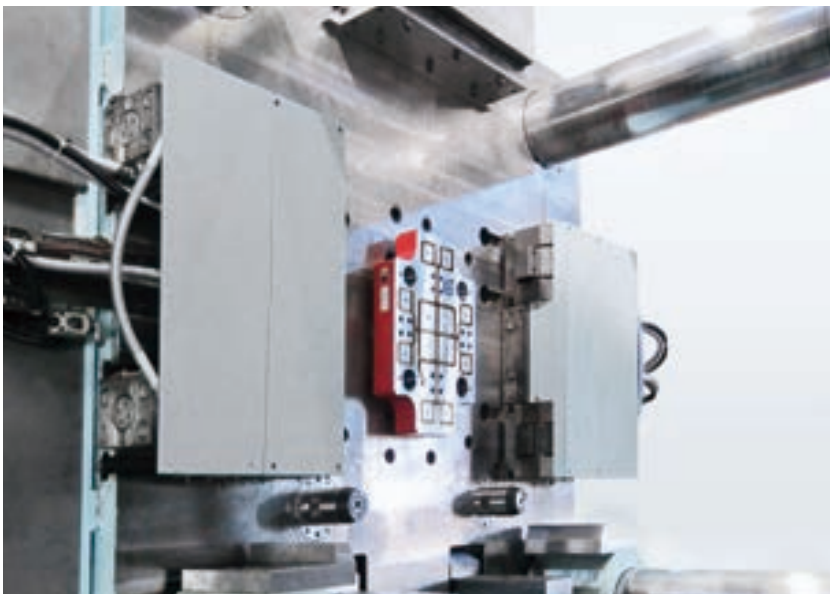
8,500kN (850ton) Die-casting machine C-plate mag clamp & Hydraulic clamp TYB



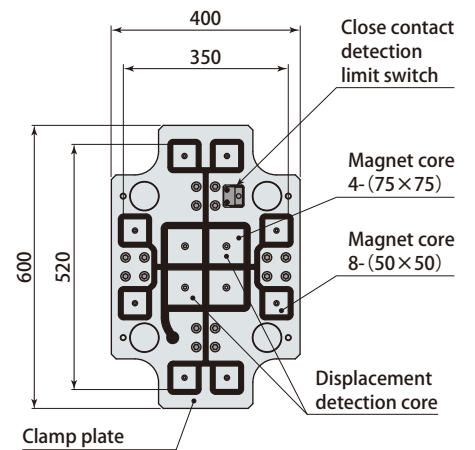
40,000kN (4,000ton) Die-casting machine C-plate mag clamp



Max. clamping force : 118kN (59kN×2)



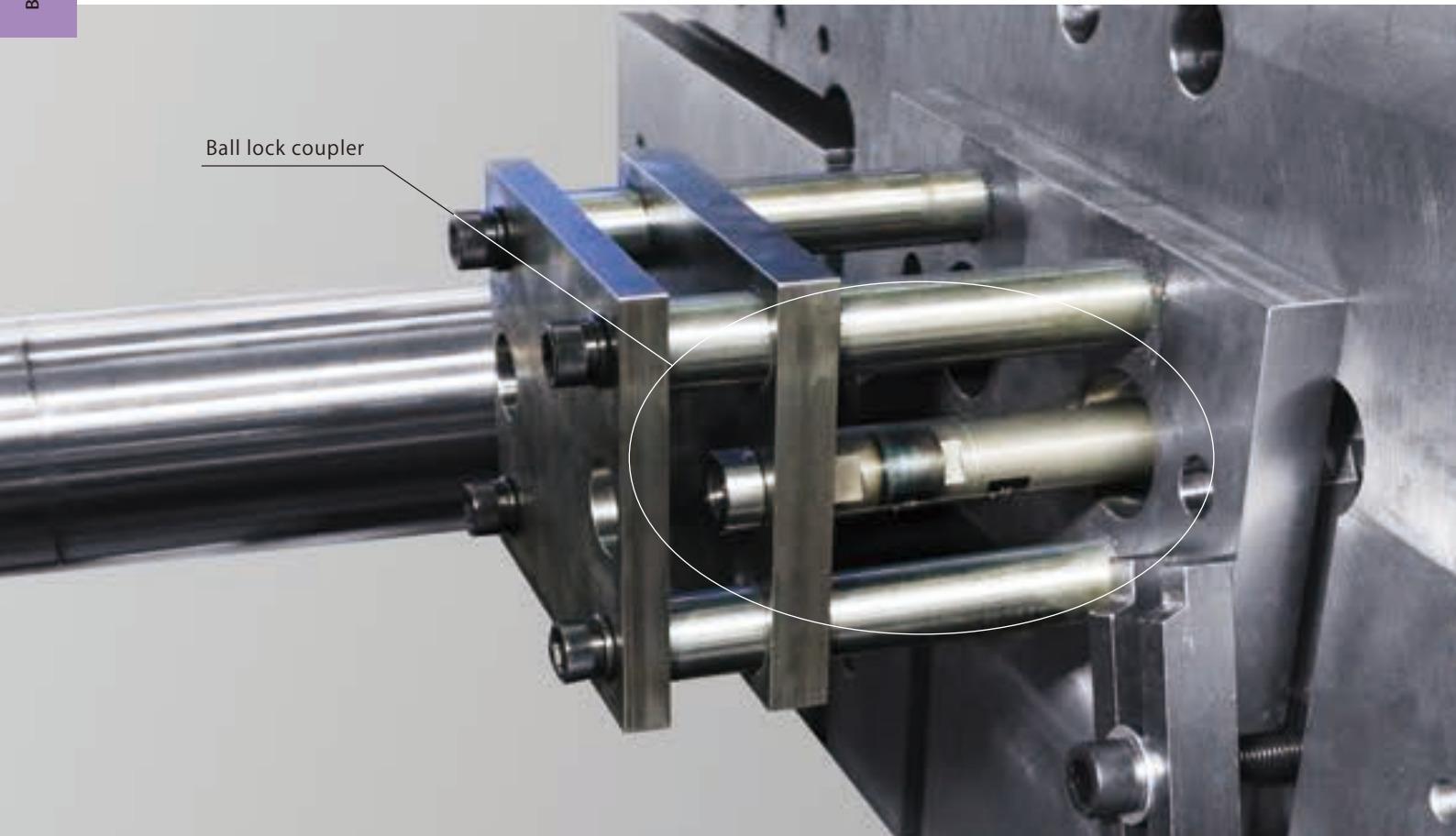
16,500kN (1,650ton) Die-casting machine C-plate mag clamp



Max. clamping force : 61kN

Automatic connection of ejector rod

Connection and disconnection of ejector cylinder and plate (A and B) on die side can be automatic by connecting and disconnecting the ejector rod with ball locking. Connection and disconnection is available outside the machine by button operation and it shortens a set up time.



Ball lock coupler



Ball lock coupler machine side

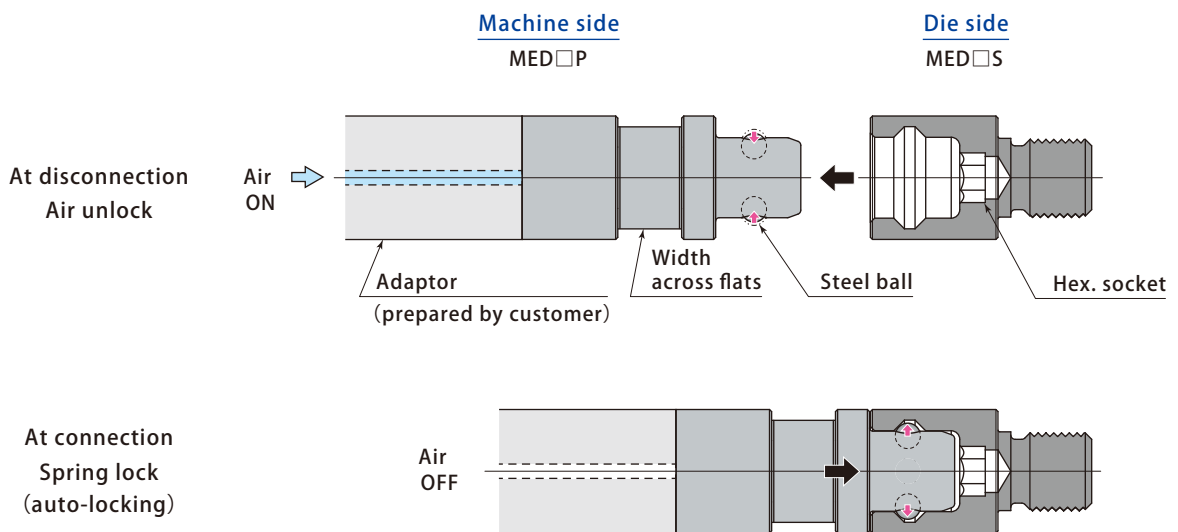
Ball lock coupler die side

Adaptor

Steel ball

Model designation

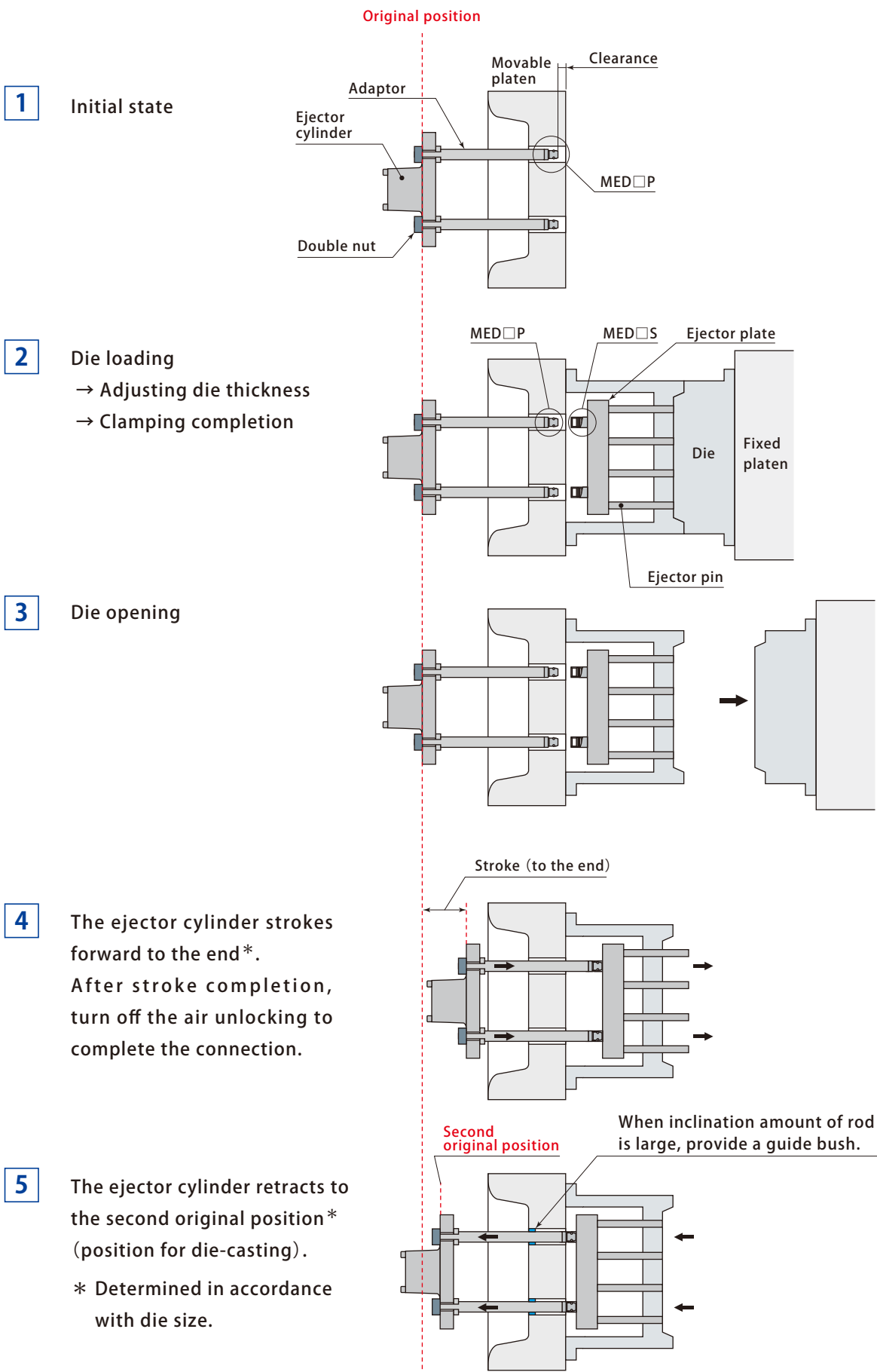
Machine side	Die side
MED 25 P	MED 25 S
⋮ Rod diameter	⋮ Rod diameter
25 : $\phi 25\text{mm}$	25 : $\phi 25\text{mm}$
29 : $\phi 29\text{mm}$	29 : $\phi 29\text{mm}$
37 : $\phi 37\text{mm}$	37 : $\phi 37\text{mm}$



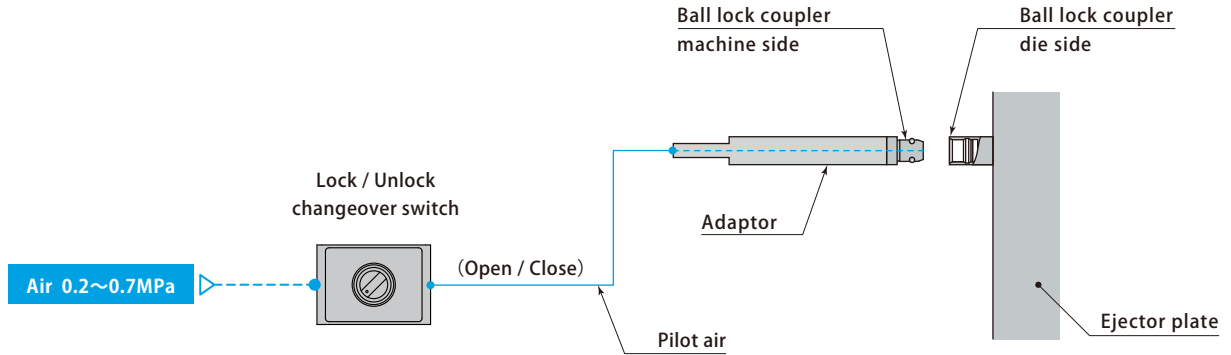
Model		MED25	MED29	MED37
Rod diameter	mm	$\phi 25$	$\phi 29$	$\phi 37$
Max. allowable load	When projected	kN	25	40
	When returned	kN	4.0	6.3
Operational system	Lock	Spring lock (automatic clamp)		
	Unlock	Air unlock		
Operating air pressure	MPa	0.2 ~ 0.7		
Operating temperature	$^{\circ}\text{C}$	0 ~ 70		
Weight	Machine side	g	140	195
	Die side	g	85	135
			385	260

● O-ring is included on machine side. (quantity : 1 , material : NBR)

Operational sequence



Air circuit diagram



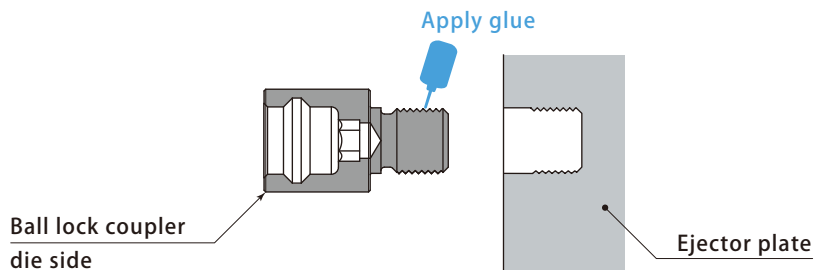
* In case that interlock is required, contact Pascal.

Caution in use

- When the air pressure is insufficient, unlocking may not be performed.
- Mount the ball lock couplers on machine side and die side with the tightening torque shown below. Excess and deficiency of tightening torque causes a malfunction.

Model		MED25	MED29	MED37
Tightening torque	N·m	50	80	130

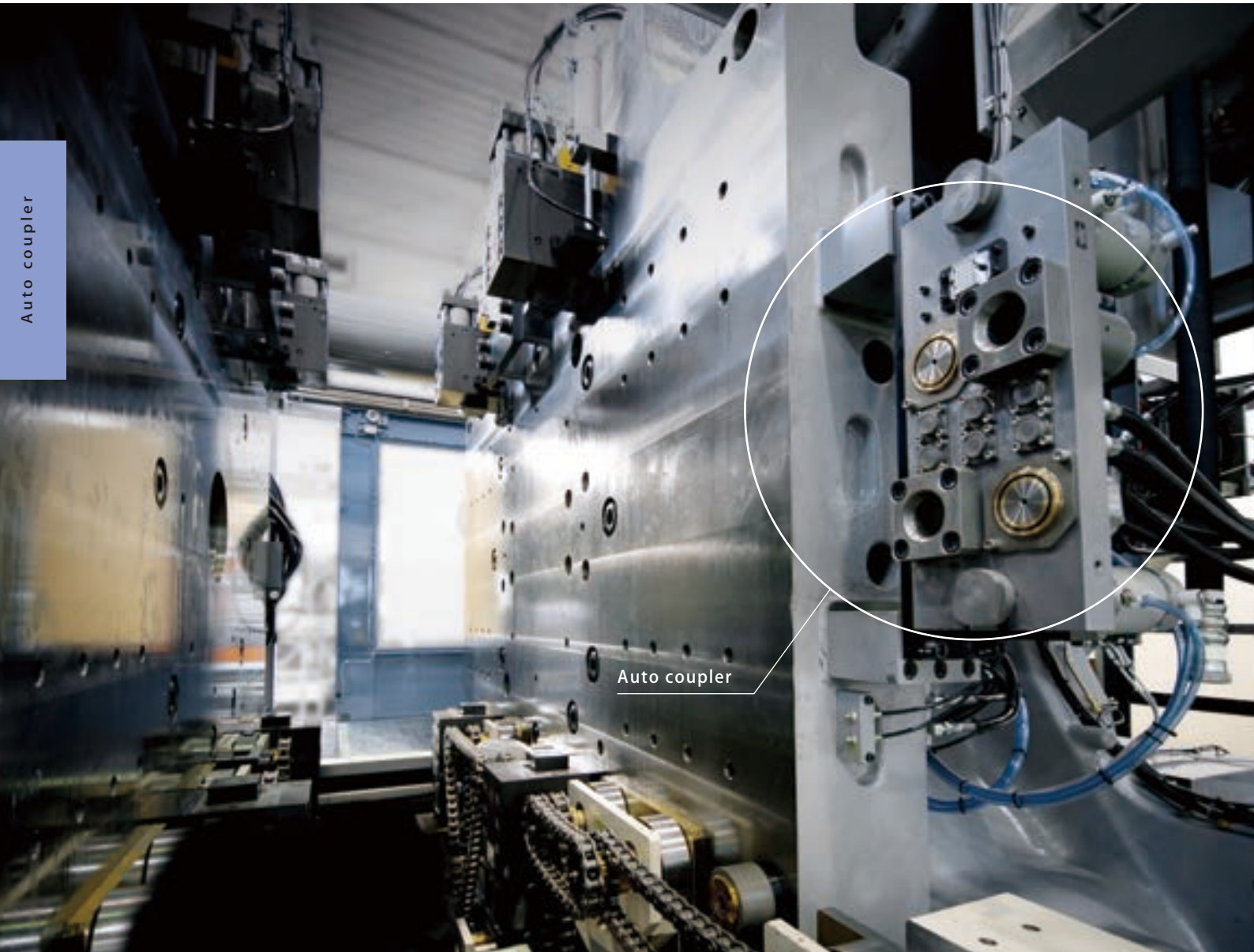
- Applying glue (moderate strength) is recommended on die side.
Recommended glue for screw lock : Loctite 243



- Make sure to use the adaptor which material has more strength than carbon steel for machine structural use (S45C etc.). In case of using a rolled steel for general structural use (SS400 etc.) , adaptor may be worn, deformed and damaged due to strength deficiency.

Auto coupler

Pascal has an extensive delivery records of automatic coupling system in the plastic molding, die stamping and die-casting line.



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

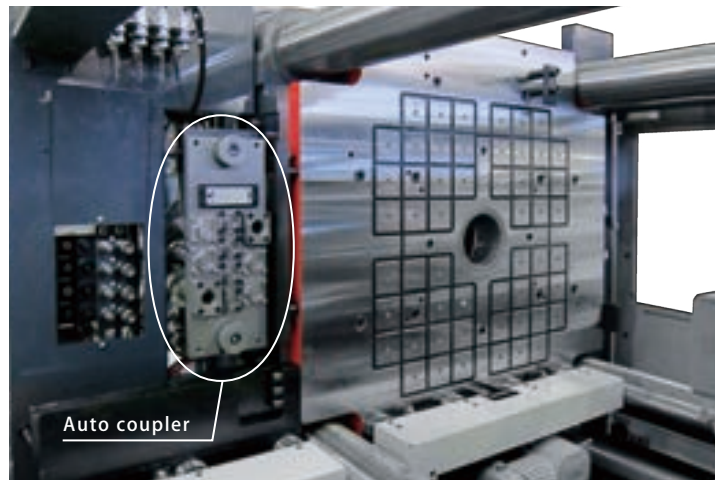
Auto coupler

S i z e	3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"
F l u i d	Oil, Water, Air
Max. working pressure	1 ~ 35 MPa

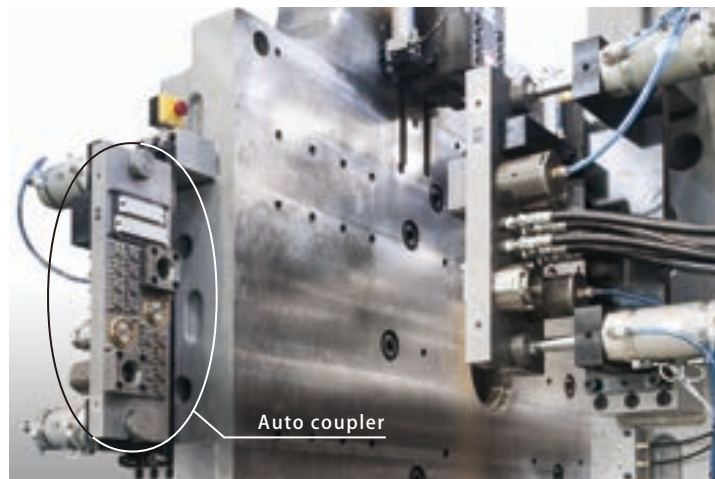
Electric connector

Max. current	60A	Lock guide, self-alignment mechanism	
		Allowable eccentricity	±5mm

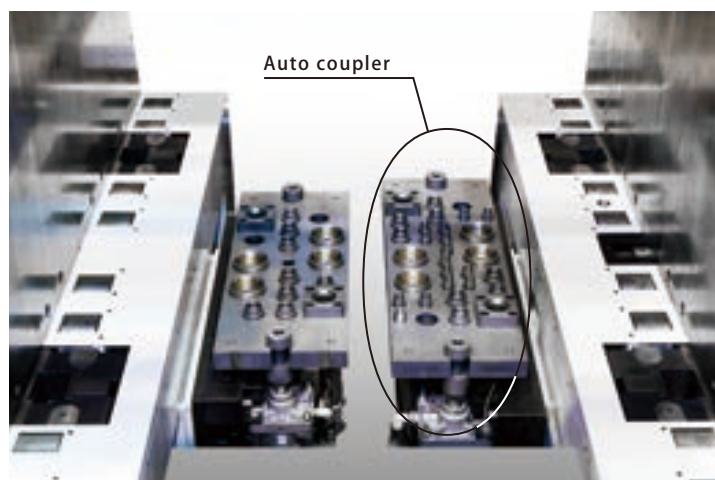
Automatic



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

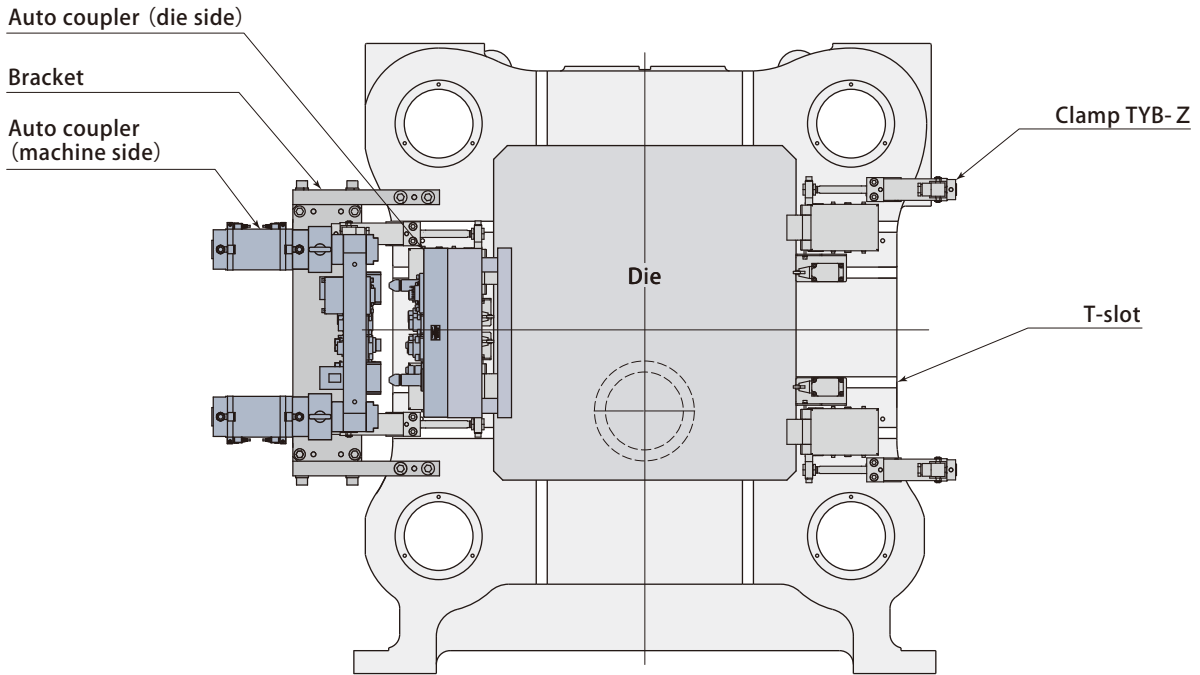


35,000kN (3,500ton) IMM Horizontal loading Auto coupler & Air clamp



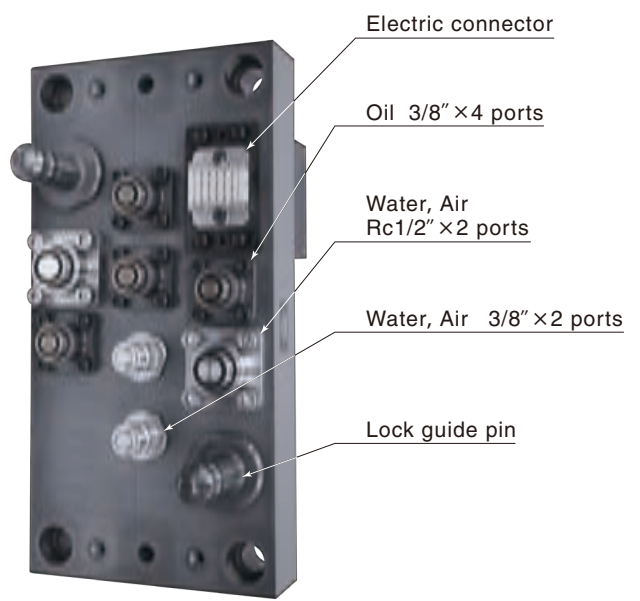
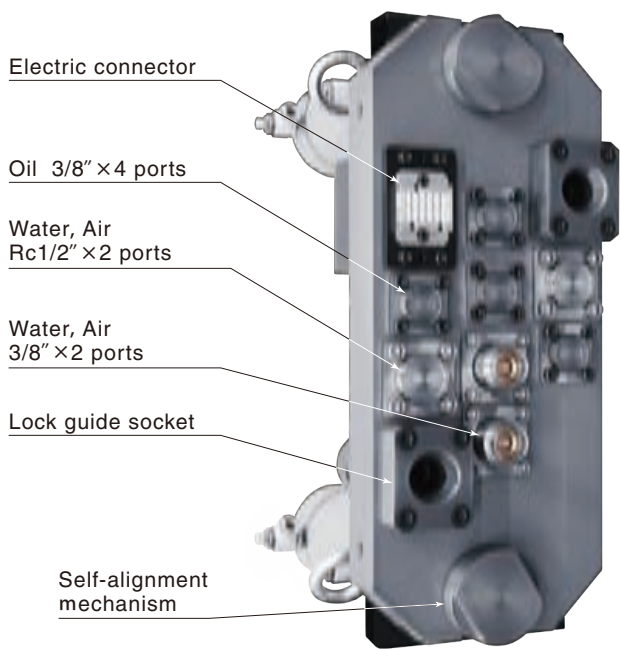
35,000kN (3,500ton) IMM Horizontal loading Auto coupler

Fixed side

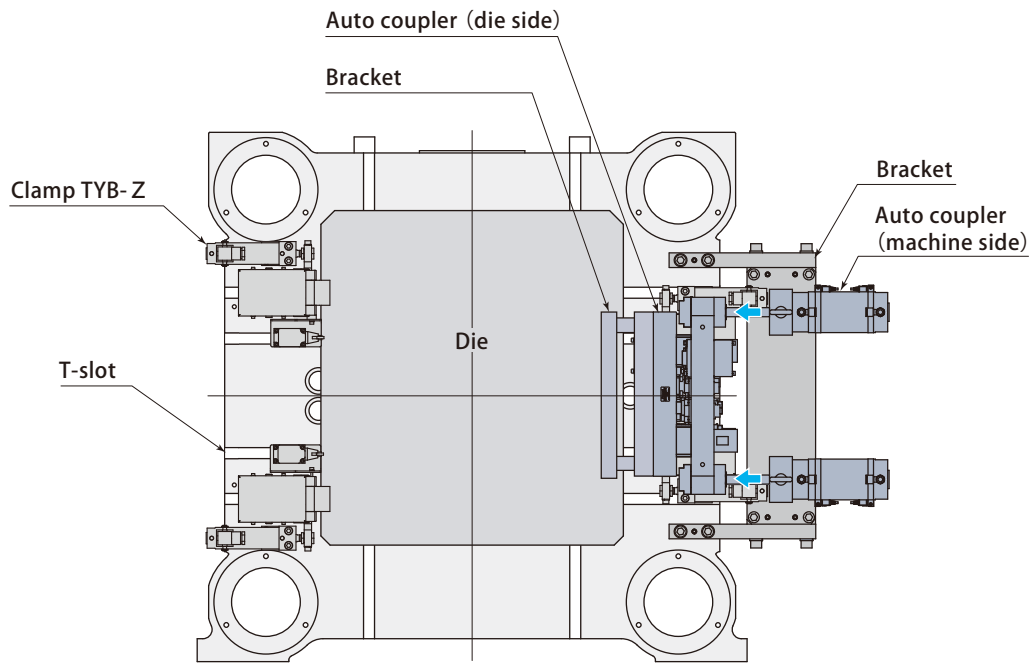


Machine side

Die side

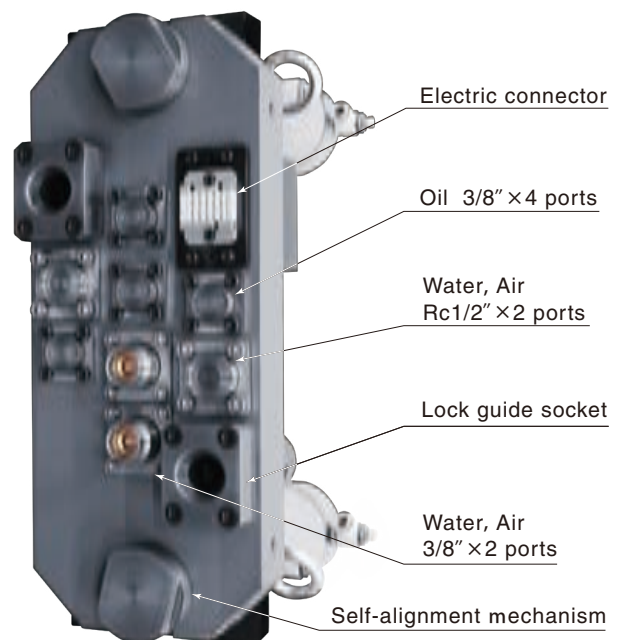
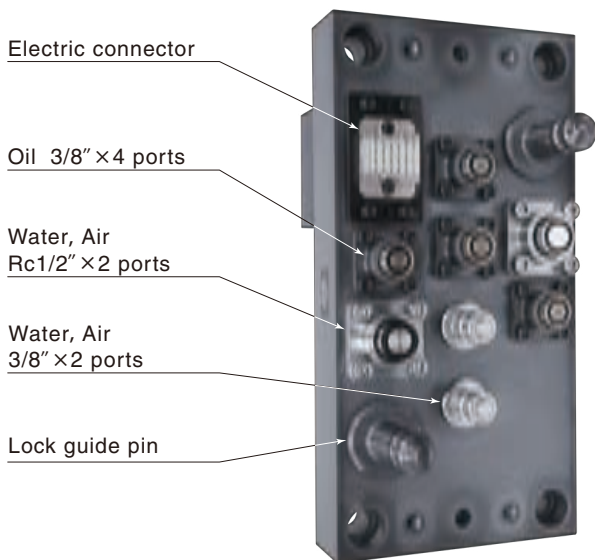


Movable side

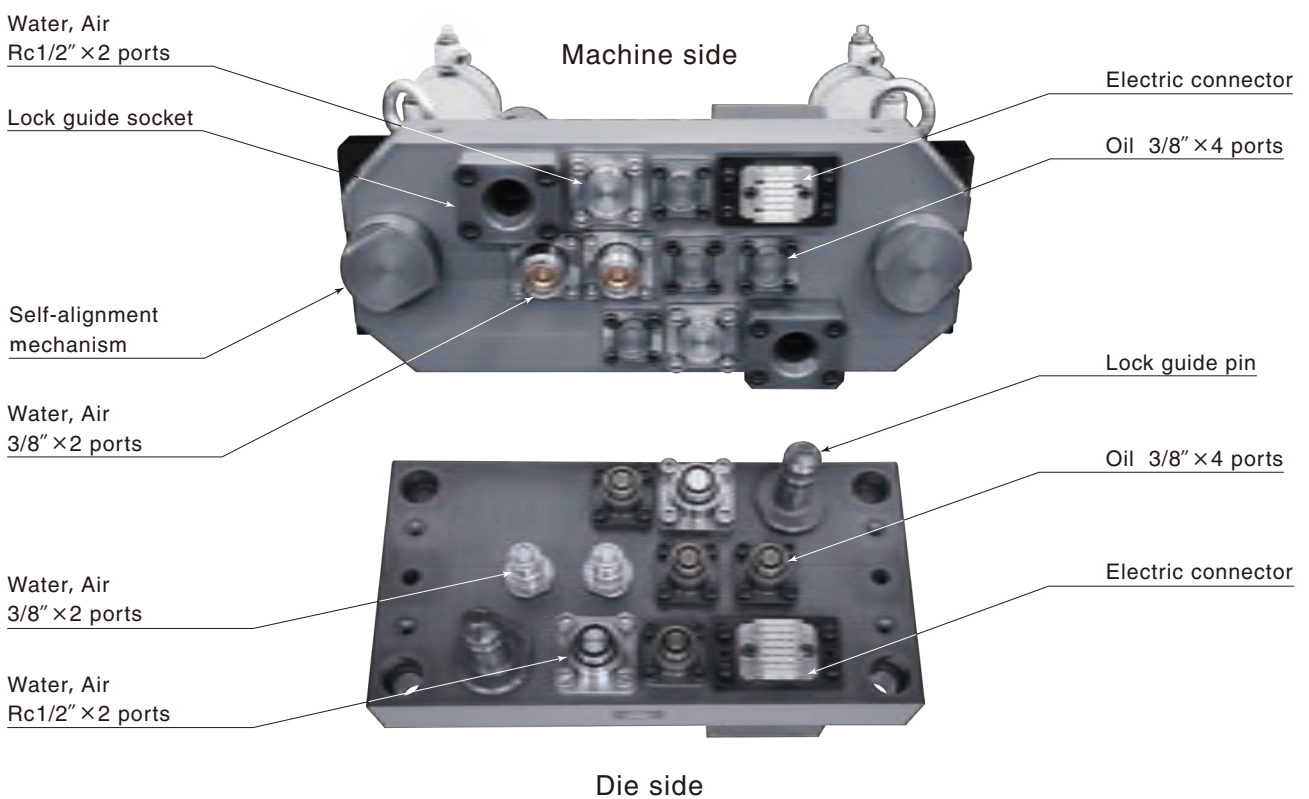
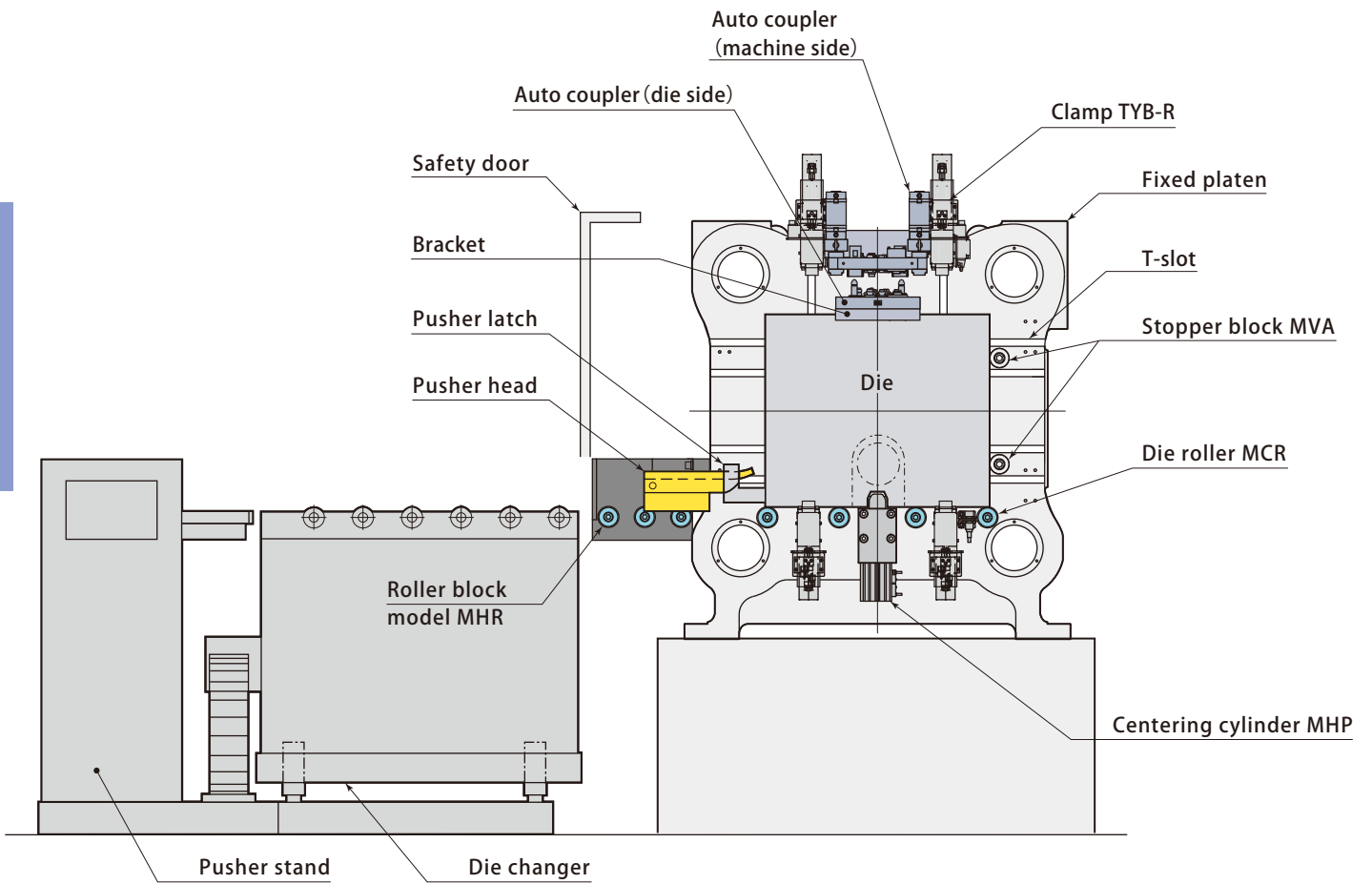


Die side

Machine side

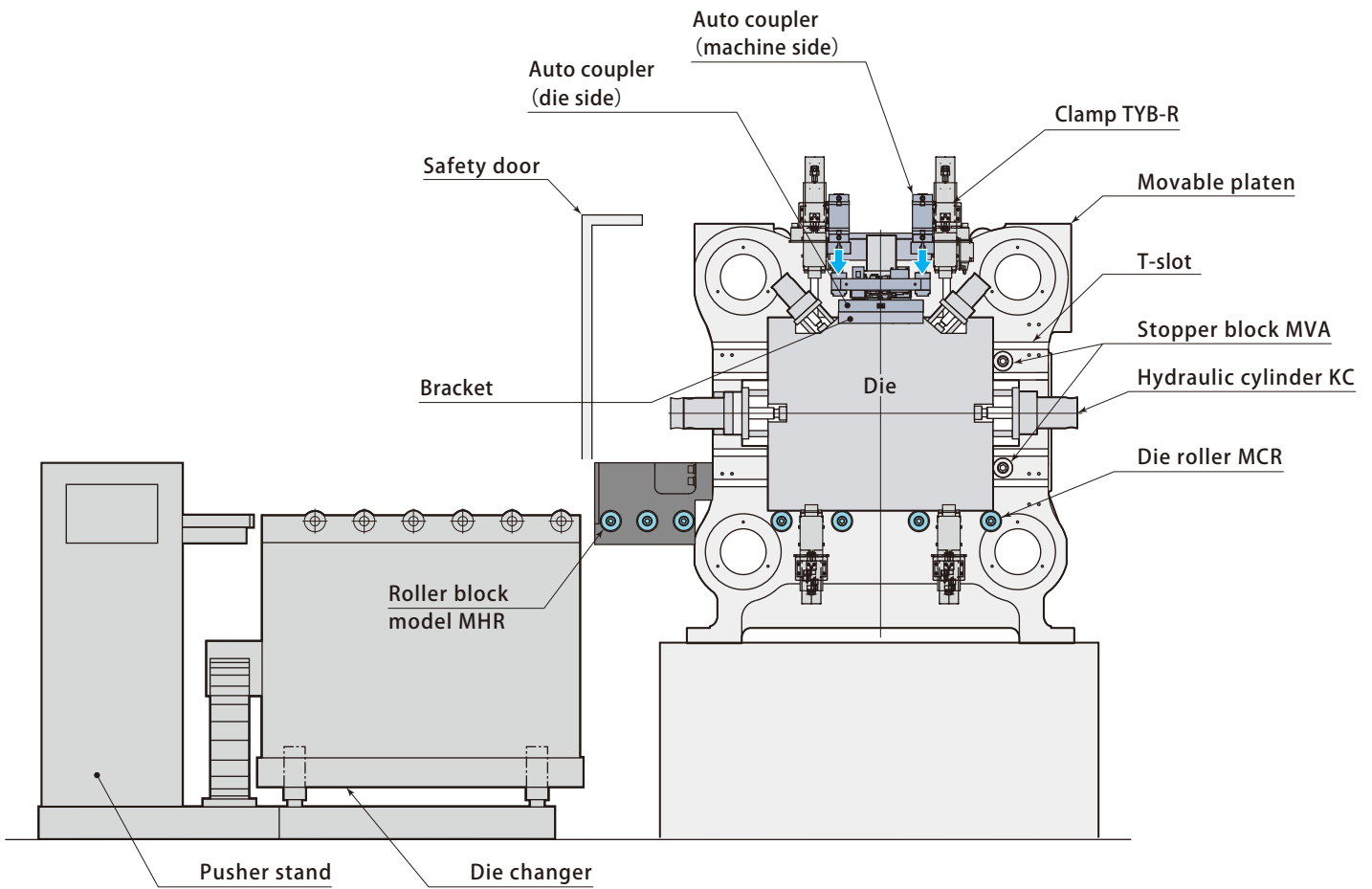


Fixed side

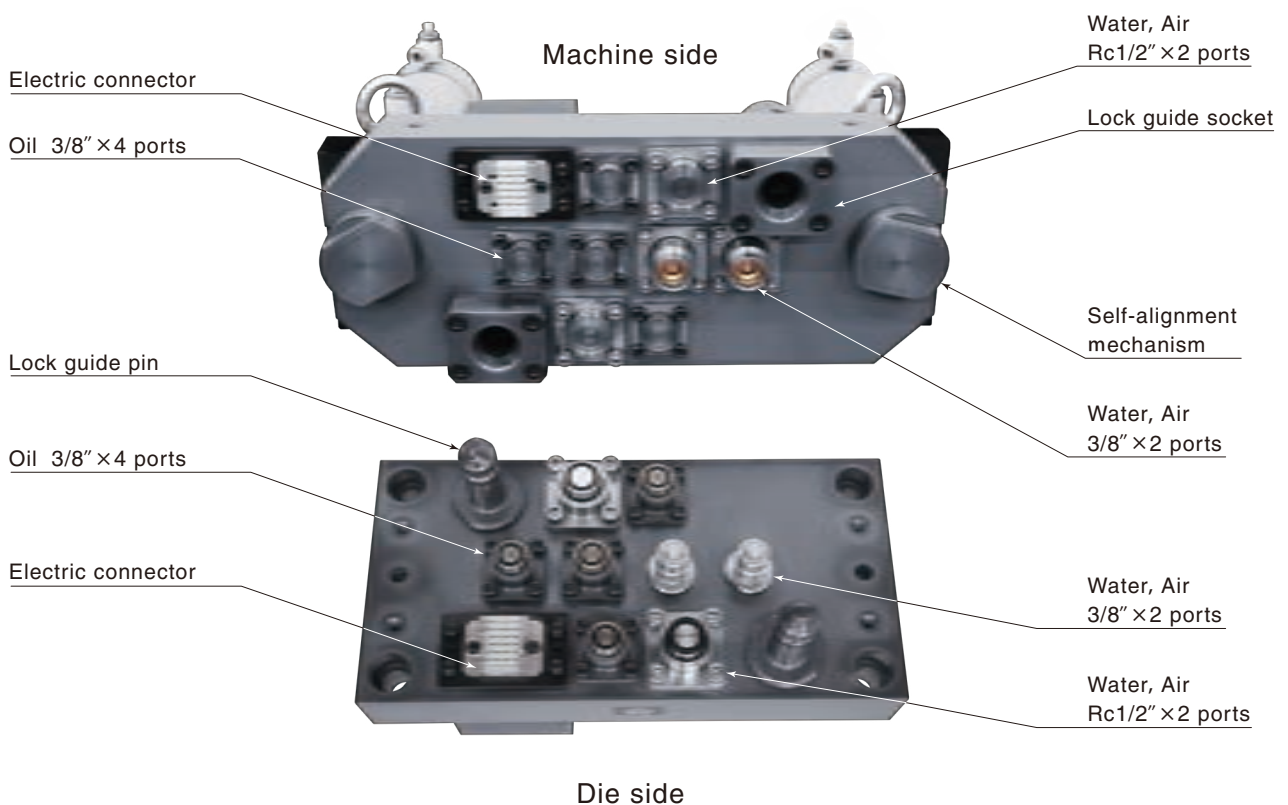


Auto coupler

Movable side

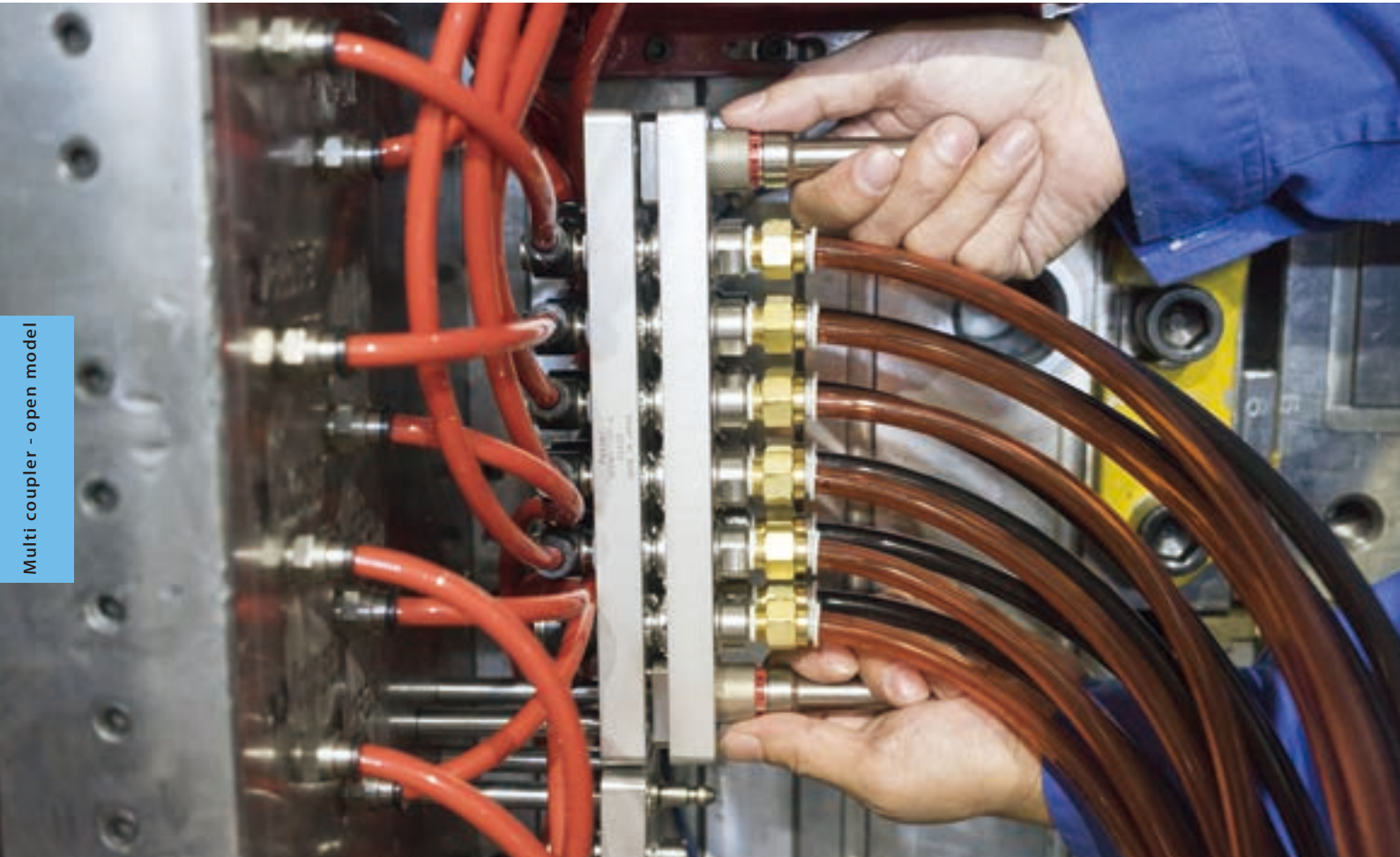


Auto coupler



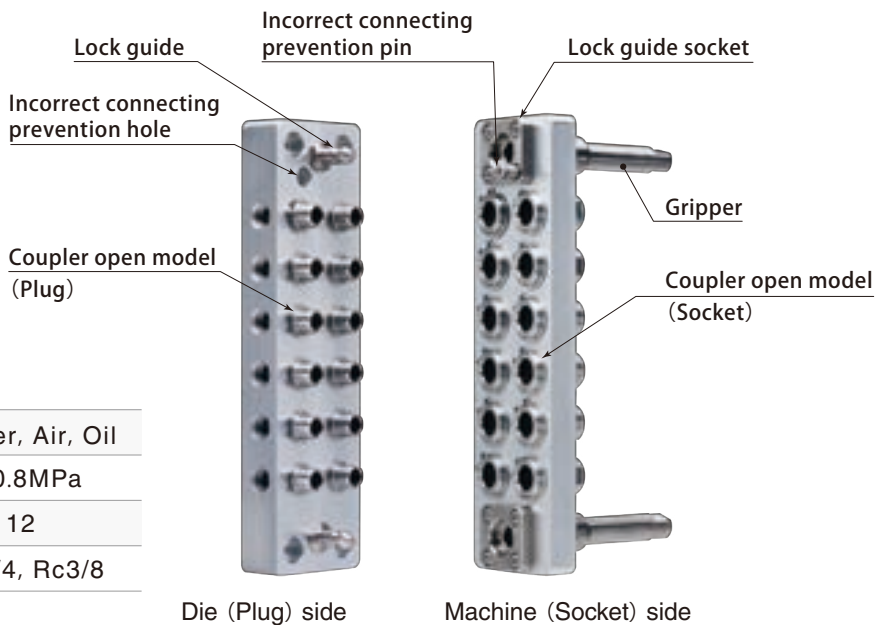
Easy and quick coupling

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



Multi coupler - open model

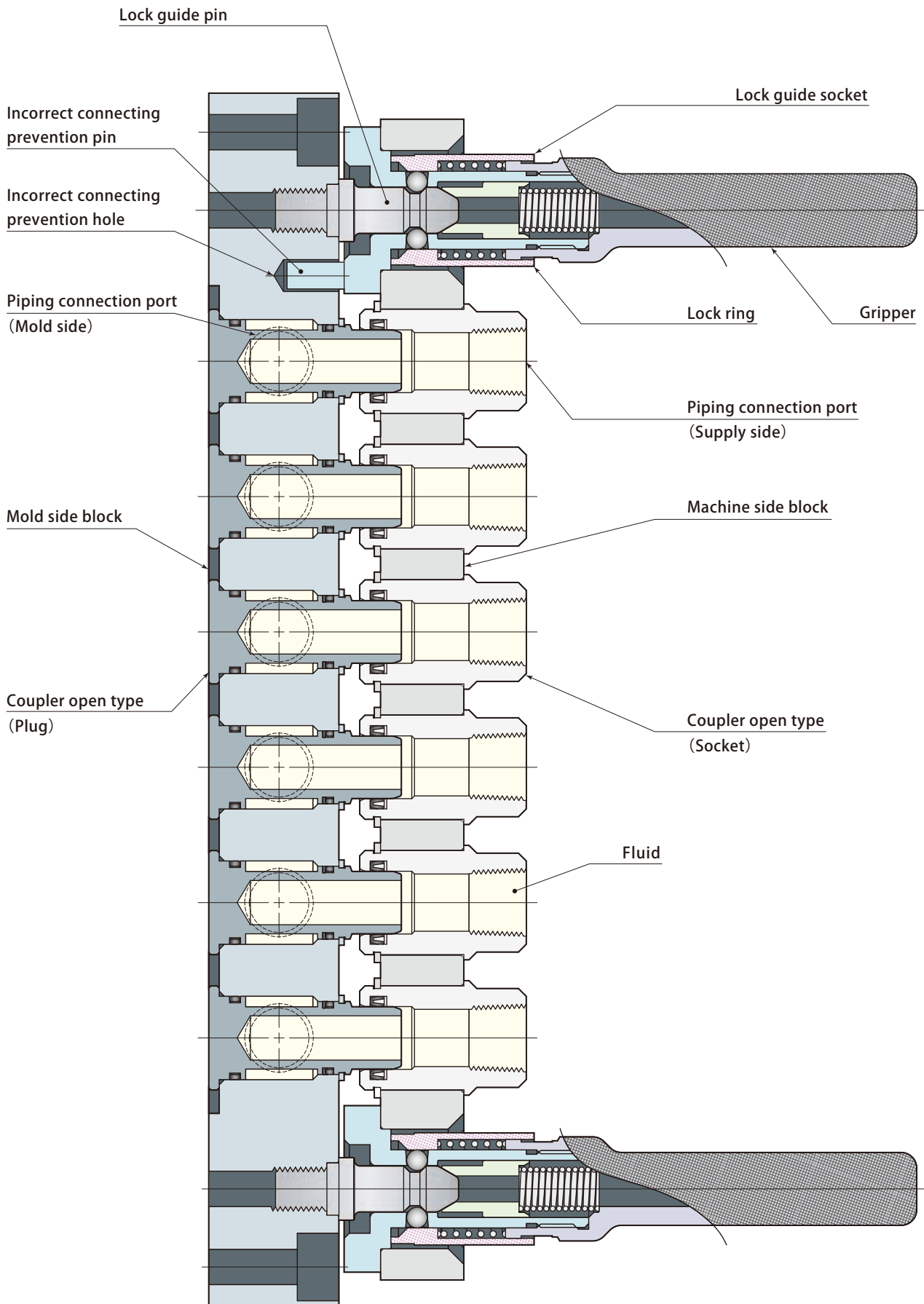
18,000kN (1,800ton) IMM Multi coupler open model



Manual

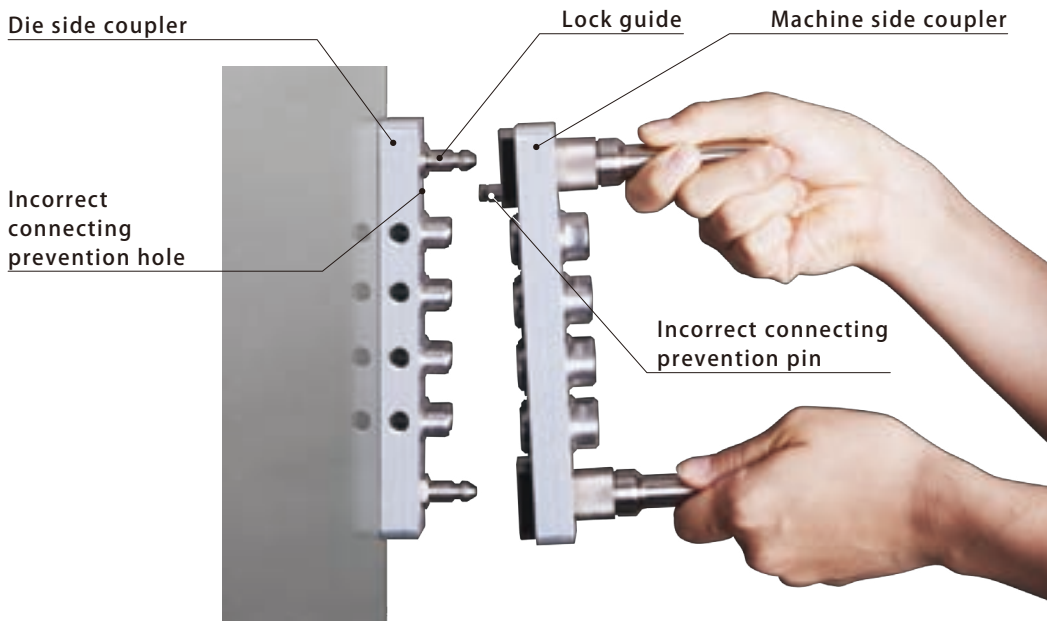
Fluid	Water, Air, Oil
Pressure	Till 0.8MPa
Number of ports	6, 8, 12
Pipe size	Rc1/4, Rc3/8

Structure

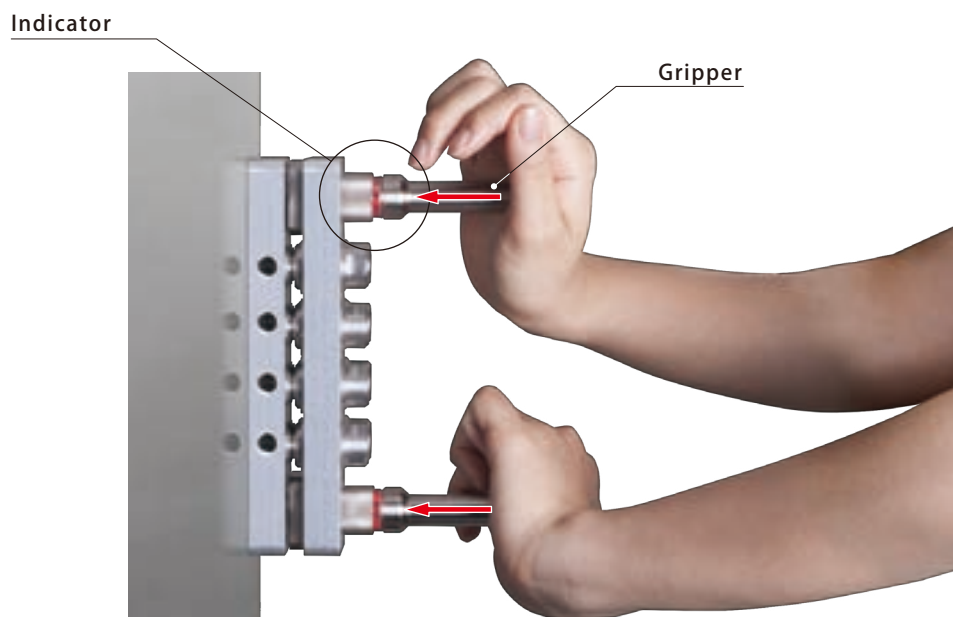


Locking operation

Insert the couplers along the guide.



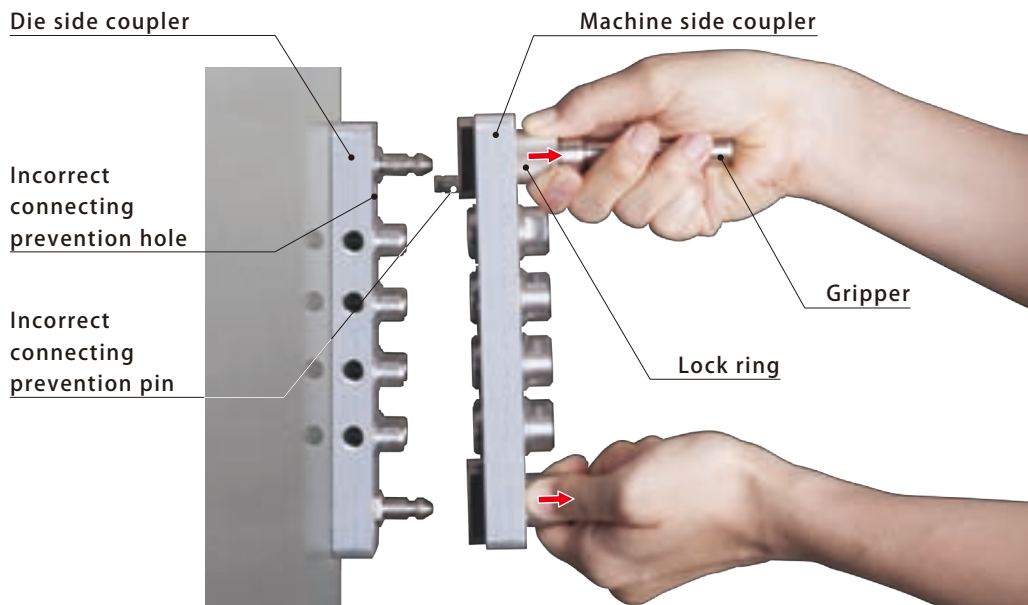
Push the gripper slightly and the locking has been completed.



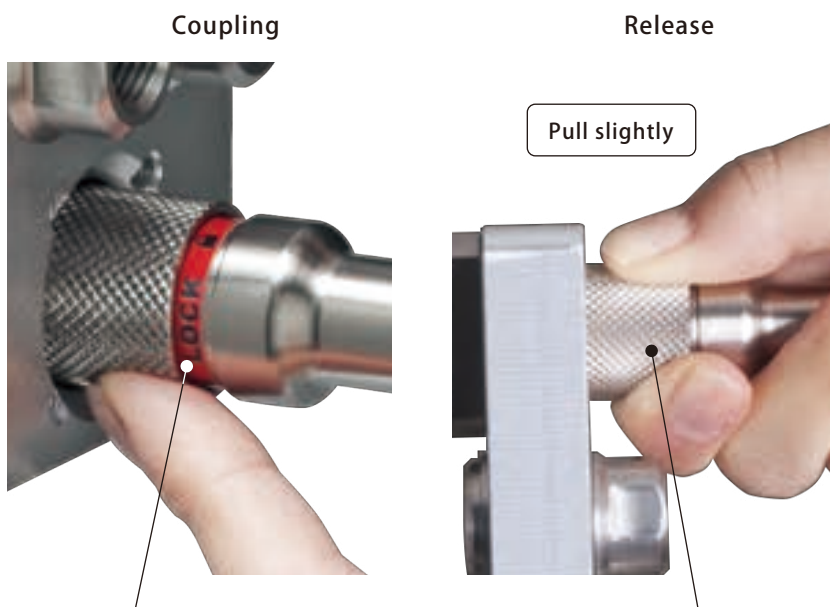
Multi coupler - open model

Release operation

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



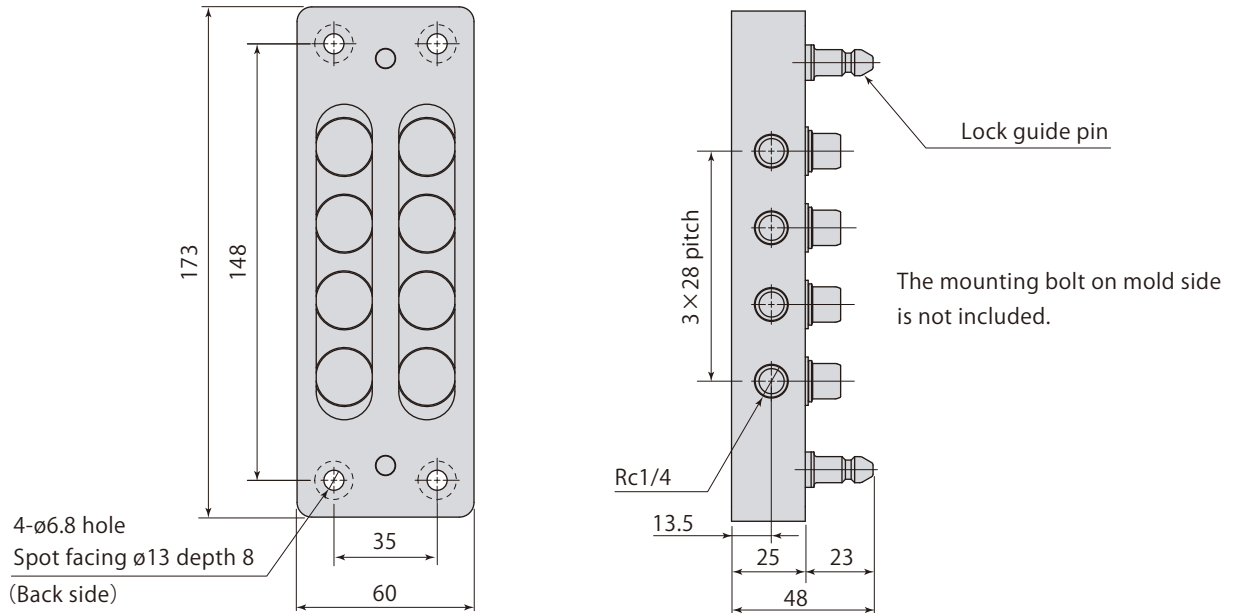
Multi coupler - open model



The locking completion can be recognized at a glance with this indicator.

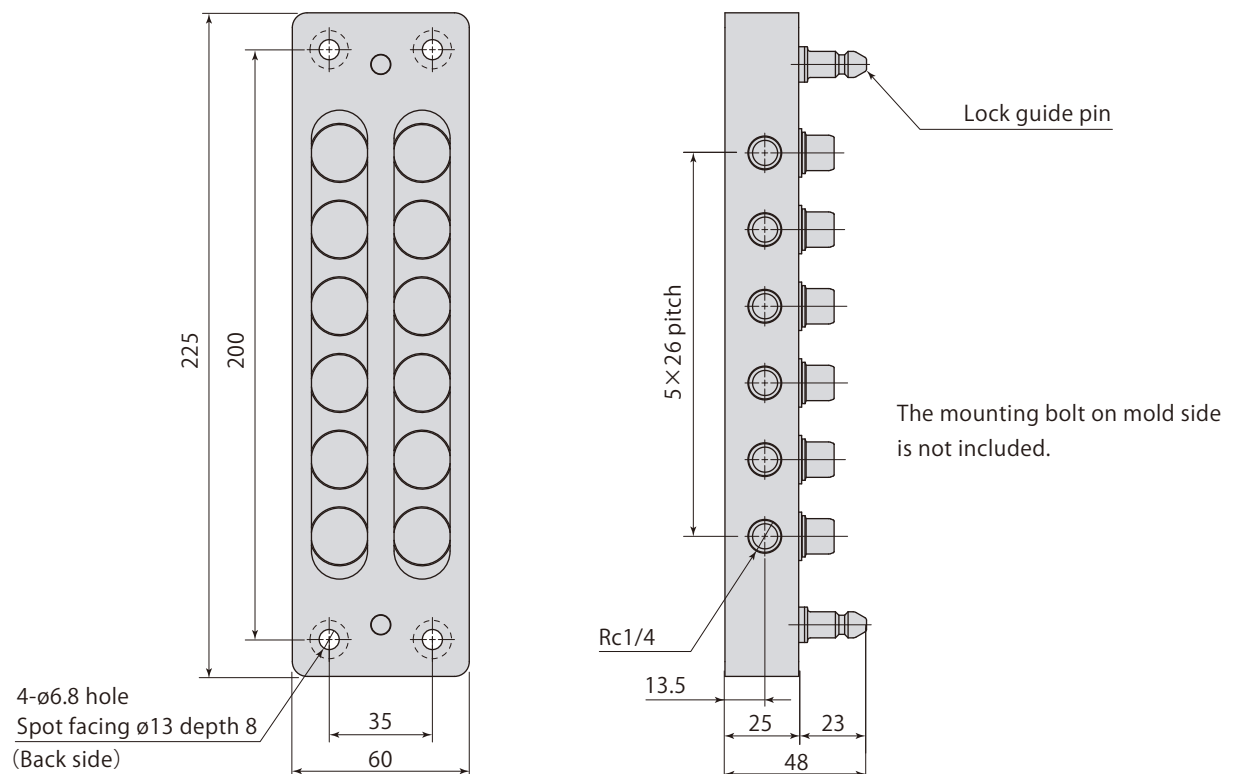
8 ports Mold side

MCA 02 - 08 P - A 1



12 ports Mold side

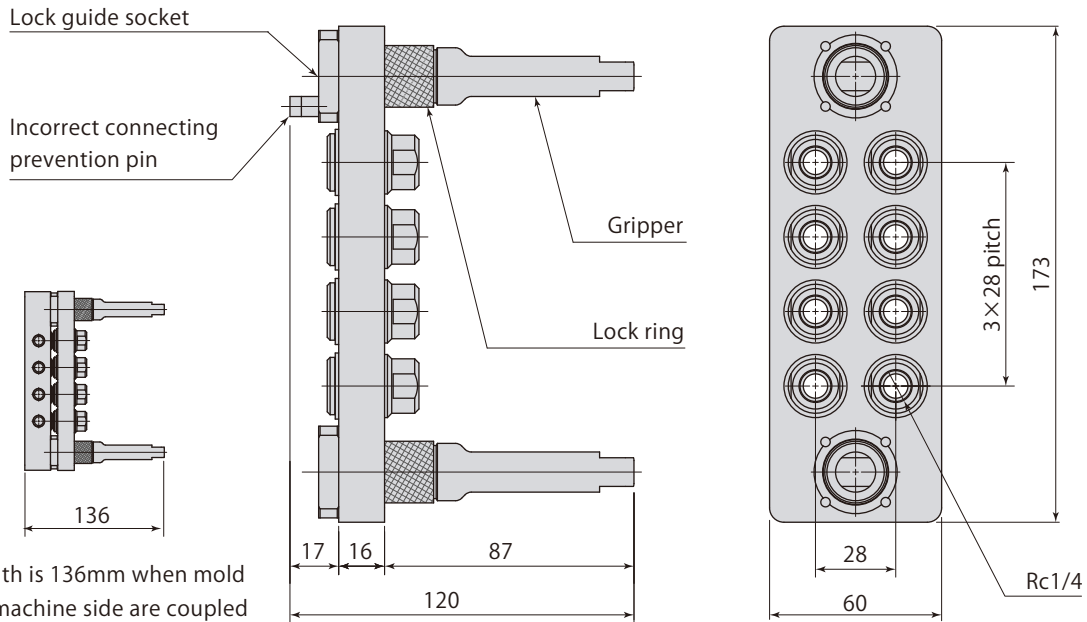
MCA 02 - 12 P - A 1



Multi coupler - open model

8 ports Machine side

MCA02-08S-A

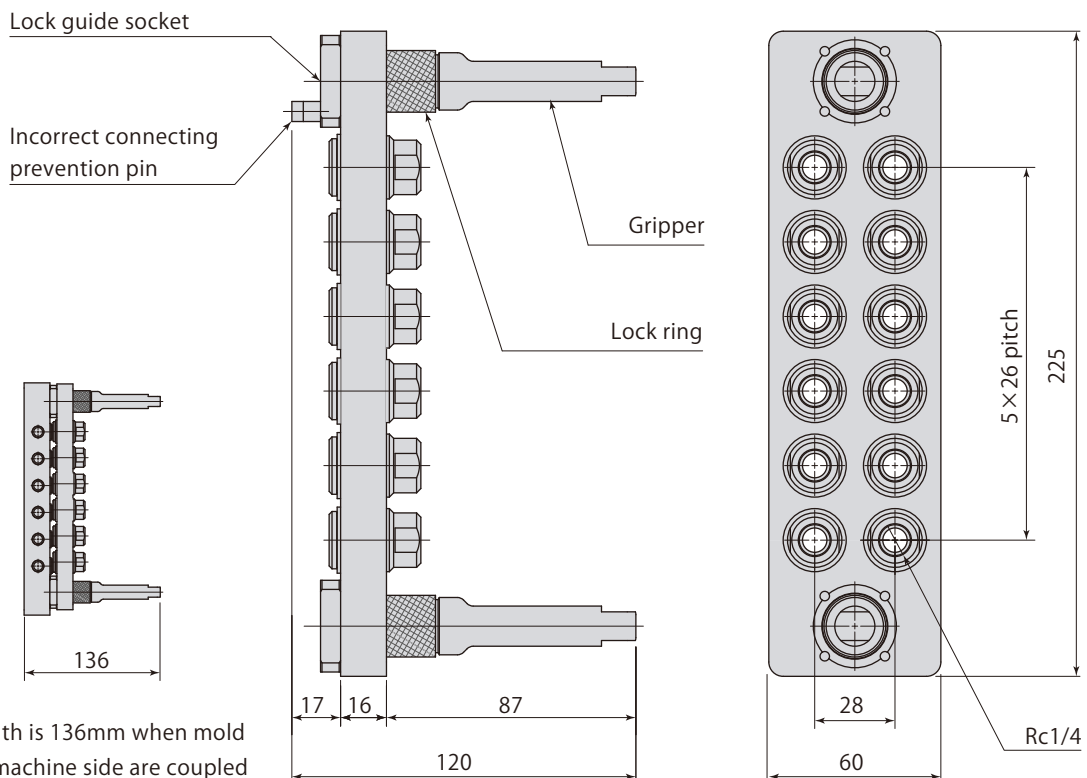


The breadth is 136mm when mold side and machine side are coupled together.

Multi coupler - open model

12 ports Machine side

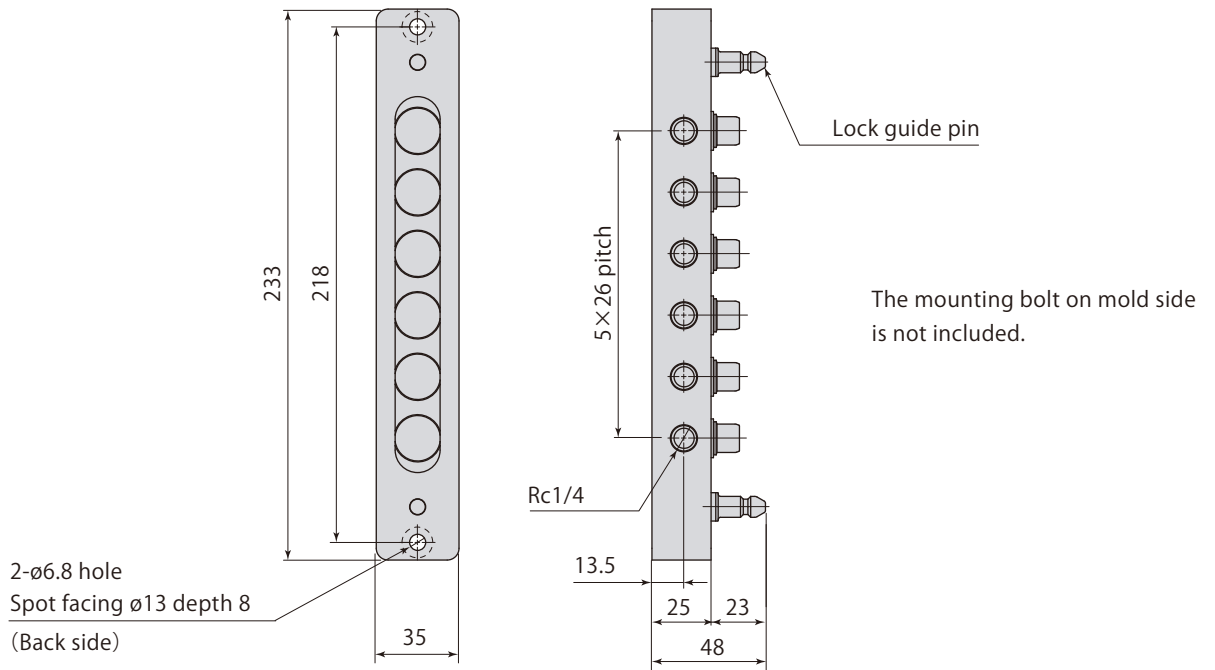
MCA02-12S-A



The breadth is 136mm when mold side and machine side are coupled together.

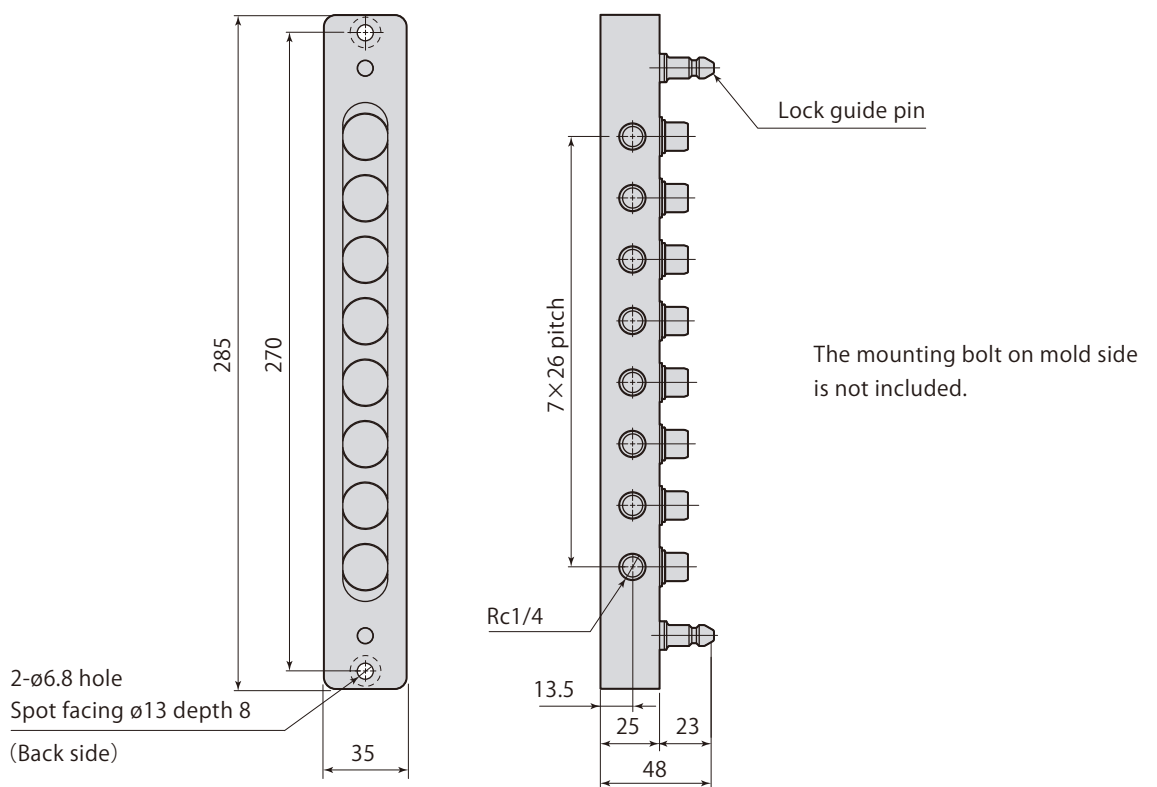
6 ports Mold side

MCA 02 - 06 P - B 1



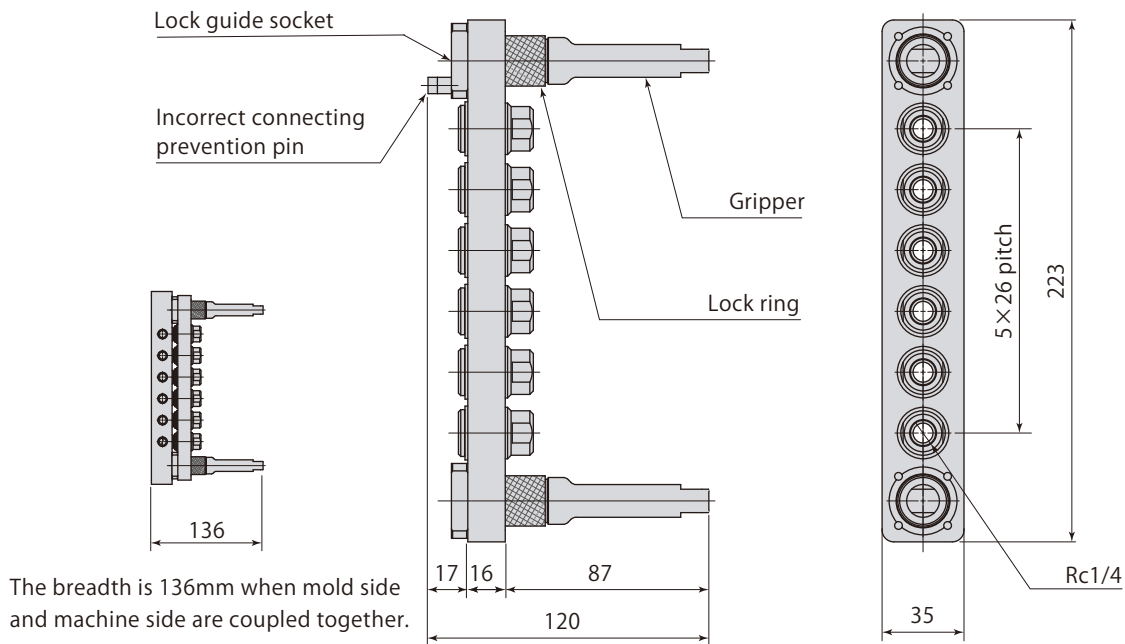
8 ports Mold side

MCA 02 - 08 P - B 1



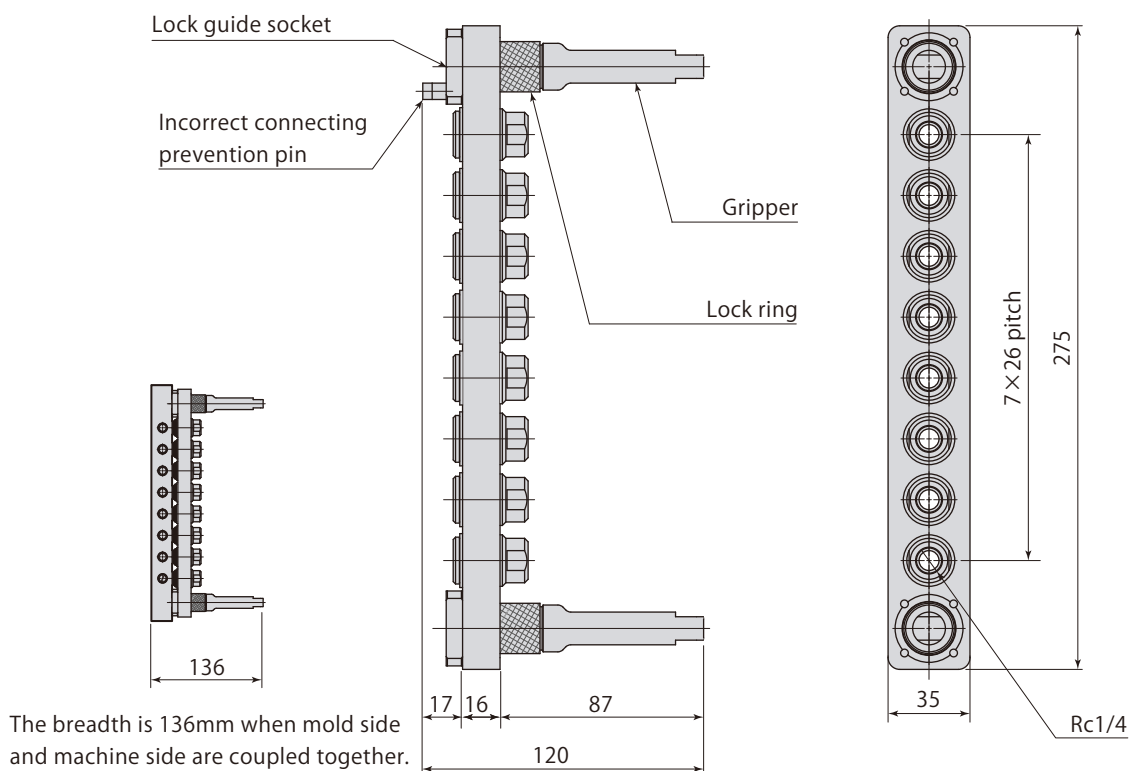
6 ports Machine side

MCA 02 - 06 S - B



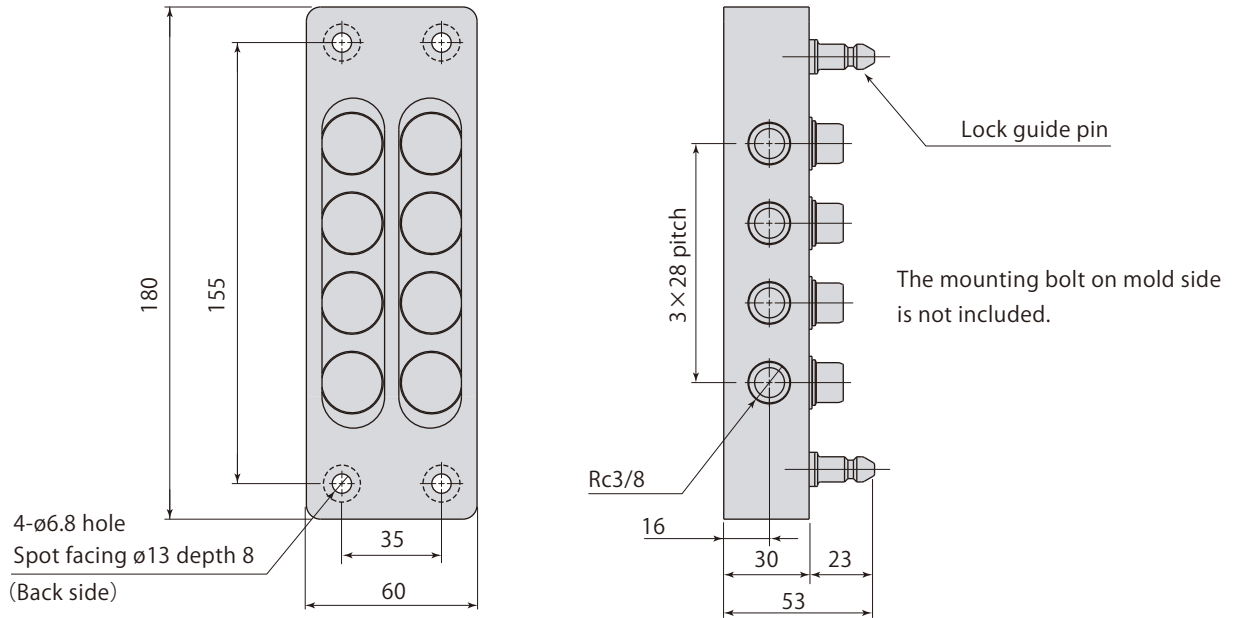
8 ports Machine side

MCA 02 - 08 S - B



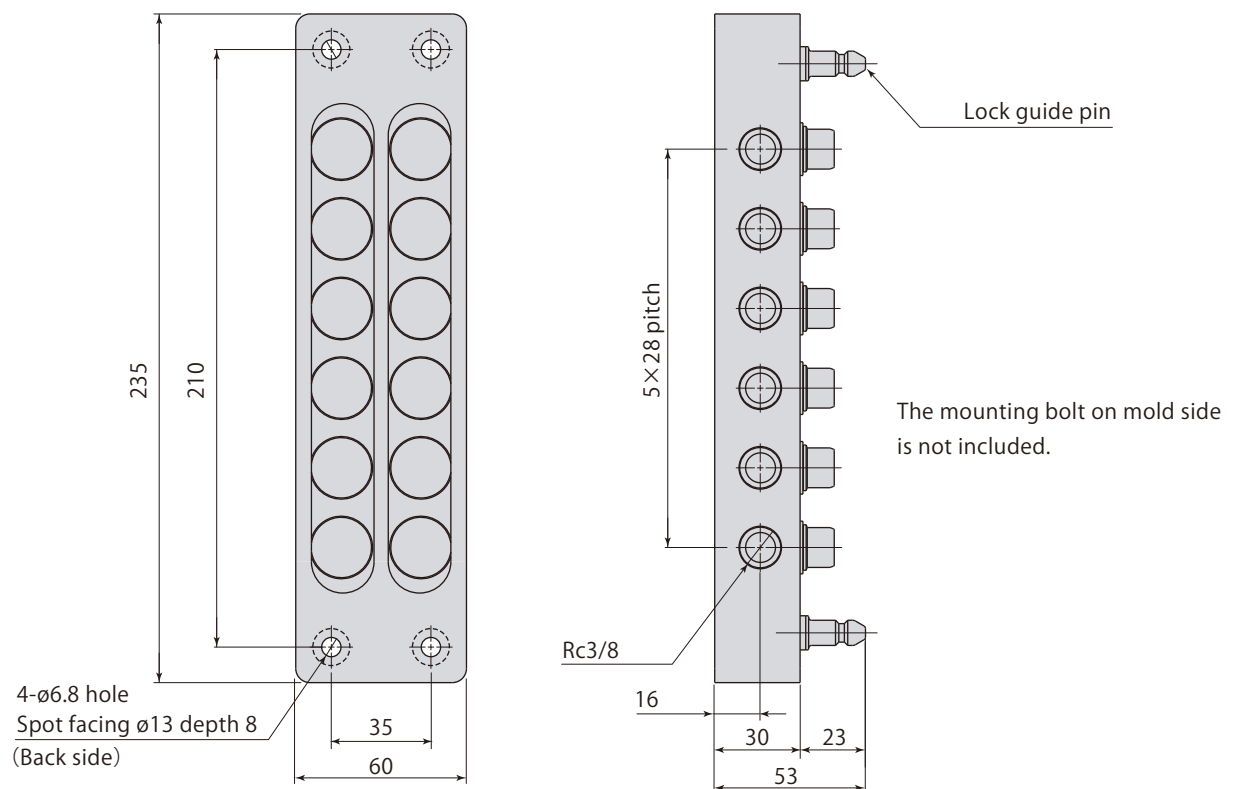
8 ports Mold side

MCA 03 - 08 P - A 1



12 ports Mold side

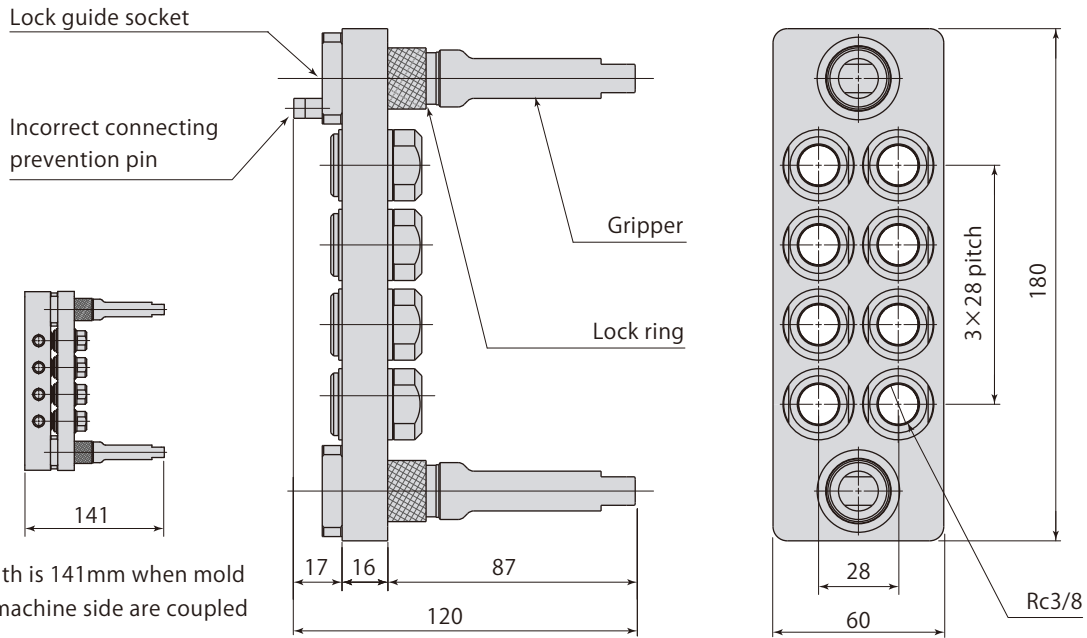
MCA 03 - 12 P - A 1



Multi coupler - open model

8 ports Machine side

MCA 03 - 08 S - A

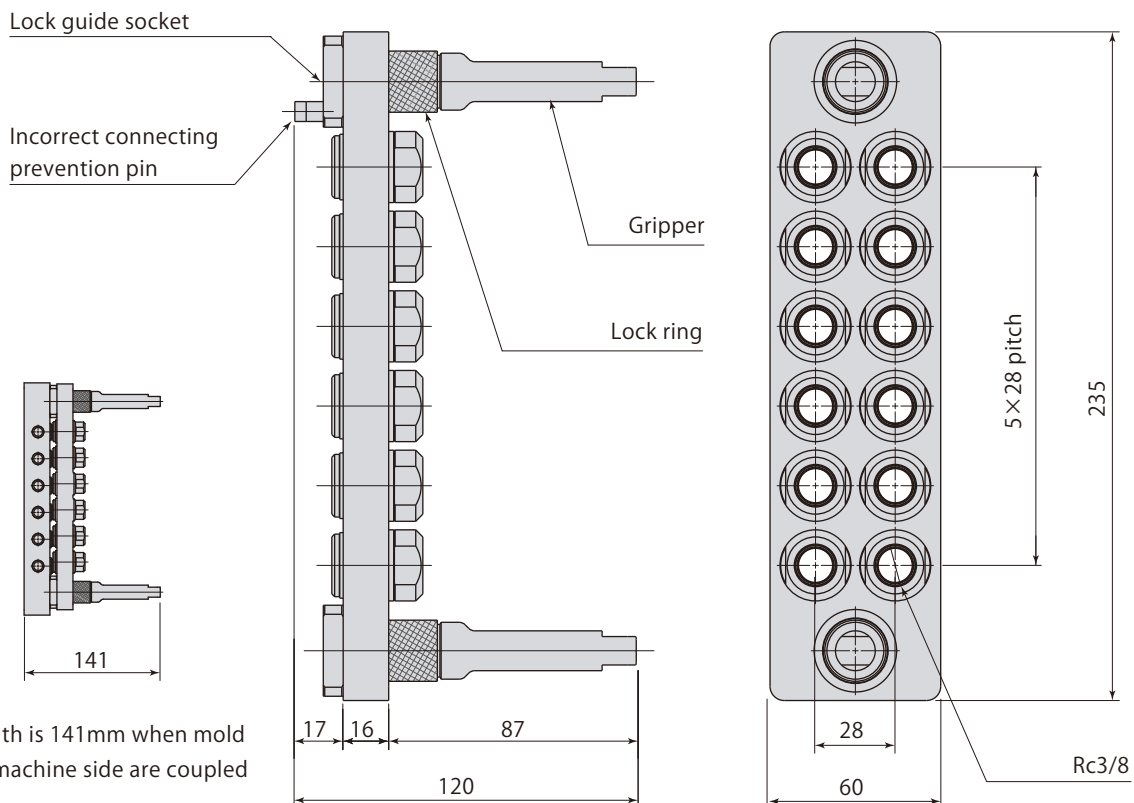


The breadth is 141mm when mold side and machine side are coupled together.

Multi coupler - open model

12 ports Machine side

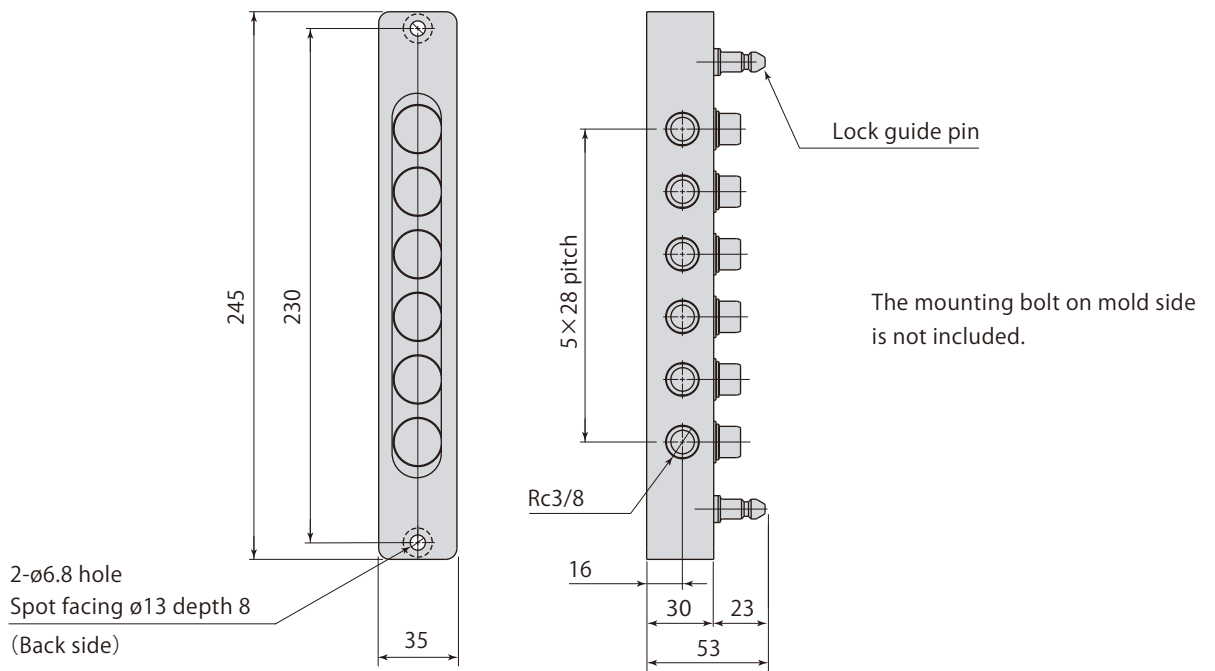
MCA 03 - 12 S - A



The breadth is 141mm when mold side and machine side are coupled together.

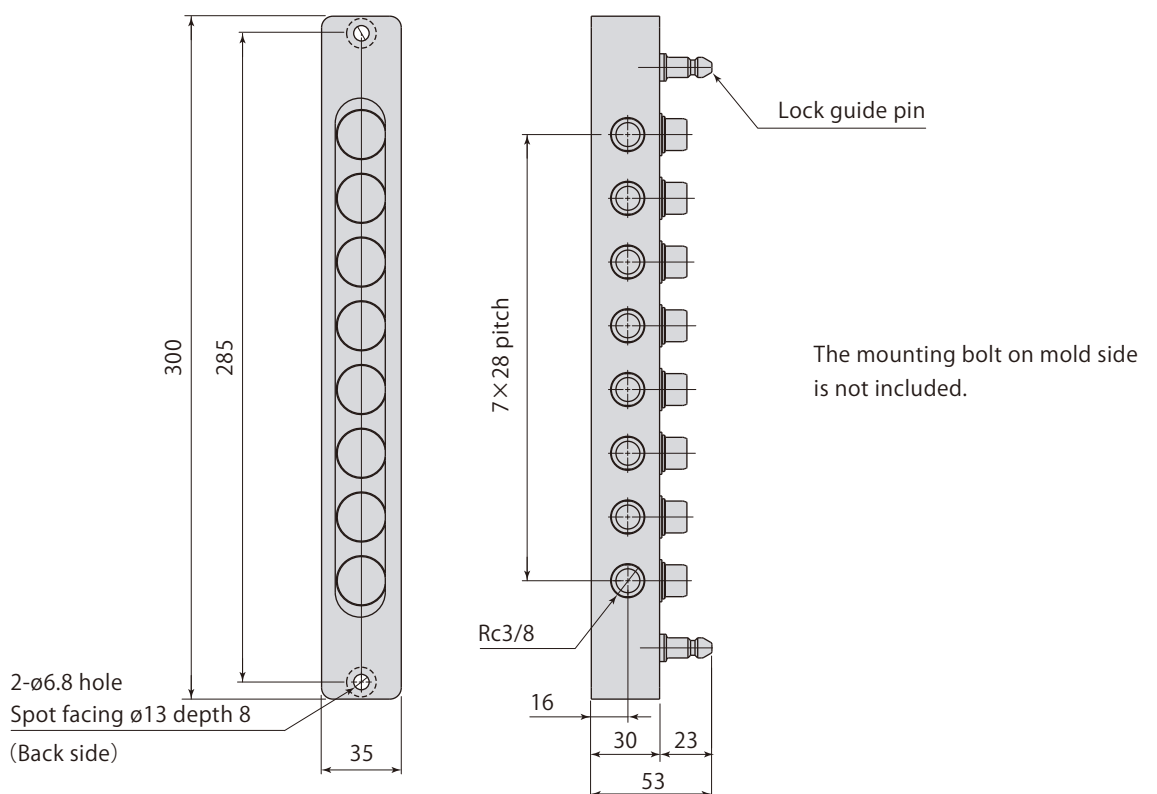
6 ports Mold side

MCA 03-06 P-B 1



8 ports Mold side

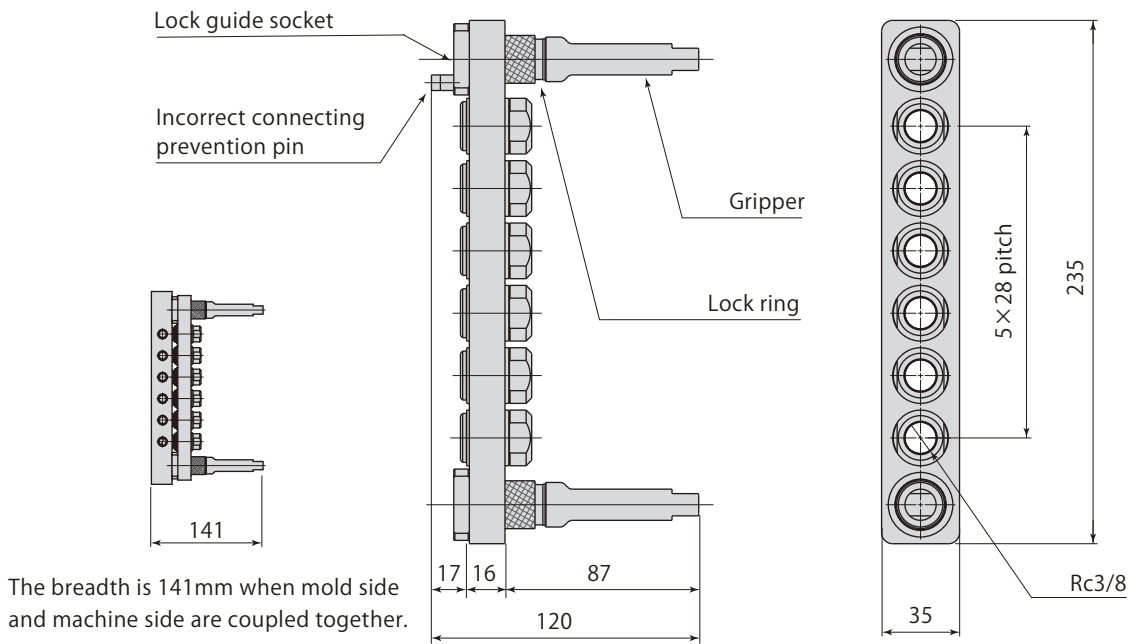
MCA 03-08 P-B 1



Multi coupler - open model

6 ports Machine side

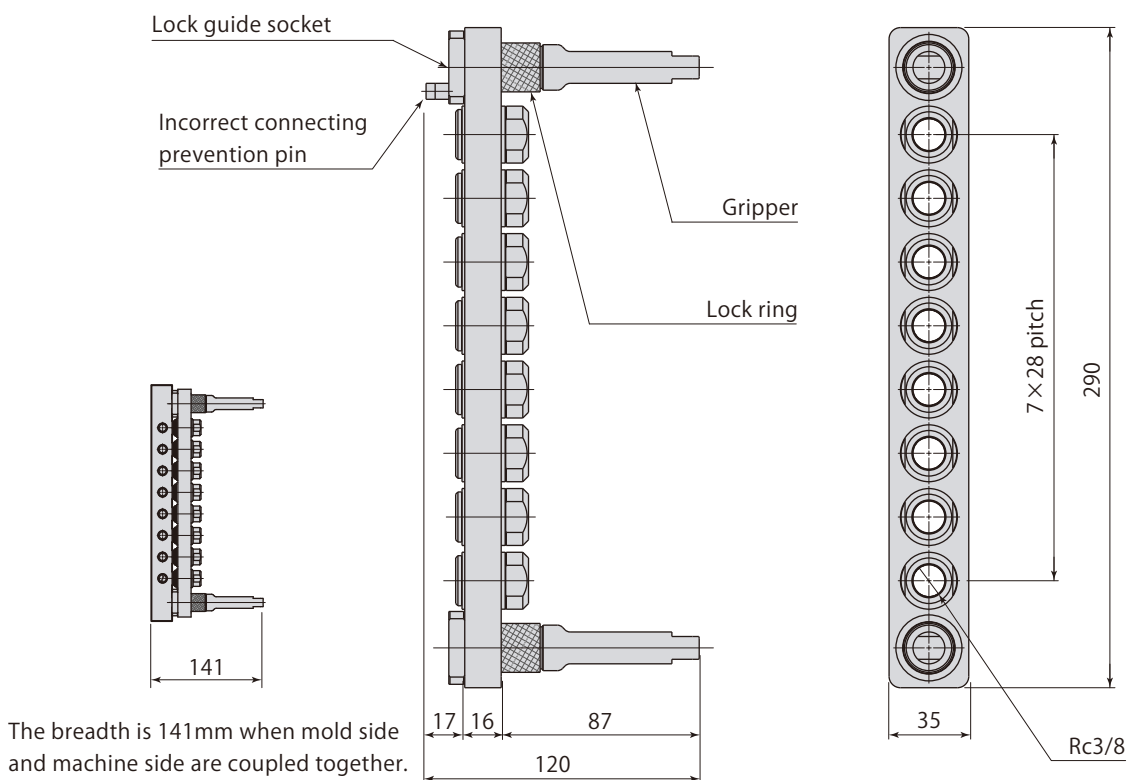
MCA 03 - 06 S - B



Multi coupler - open model

8 ports Machine side

MCA 03 - 08 S - B



Model designation

MCA 03 - 08 P - A 1

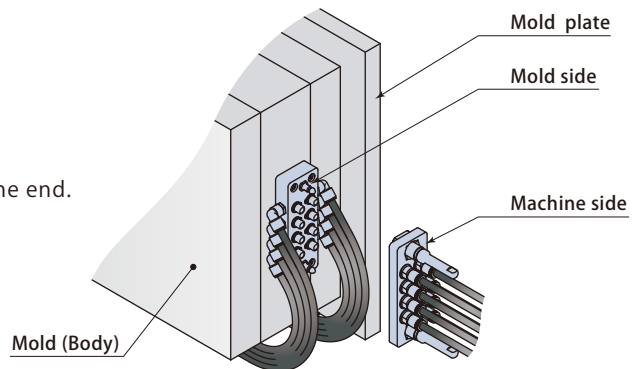
Connection port
 02 : Rc1/4 03 : Rc3/8

Number of port
 6 ports, 8 ports, 12 ports

Machine side / Mold side
 S : Machine side P : Mold side

Row type
 A : Double row type B : Single row type

For Mold side ,
 1 is added in the end.



Multi coupler - open model

Connection port	Number of port	Machine/Mold side	Mass kg	Model	Row type
Rc1/4	8 ports	Machine side	1.1	MCA02 -08S -A	Double row type
		Mold side	0.8	MCA02 -08P -A1	
	12 ports	Machine side	1.4	MCA02 -12S -A	
		Mold side	1.0	MCA02 -12P -A1	
	6 ports	Machine side	0.9	MCA02 -06S -B	Single row type
		Mold side	0.6	MCA02 -06P -B1	
	8 ports	Machine side	1.1	MCA02 -08S -B	
		Mold side	0.8	MCA02 -08P -B1	
Rc3/8	8 ports	Machine side	1.2	MCA03 -08S -A	Double row type
		Mold side	1.0	MCA03 -08P -A1	
	12 ports	Machine side	1.5	MCA03 -12S -A	
		Mold side	1.3	MCA03 -12P -A1	
	6 ports	Machine side	1.0	MCA03 -06S -B	Single row type
		Mold side	0.8	MCA03 -06P -B1	
	8 ports	Machine side	1.1	MCA03 -08S -B	
		Mold side	1.0	MCA03 -08P -B1	

Model		MCA02	MCA03
Connection port		Rc1/4	Rc3/8
Min. Passage area (per 1 port)	mm ²	57	86
Number of ports		6, 8, 12	
Max. working pressure	At connection	MPa 0.8	
	At disconnection	Open	
Body material	Coupler	Stainless steel (Surface treatment: Electrolytic nickel plating)	
	Plate	Aluminium alloy (Surface treatment: Electrolytic nickel plating)	
	Lock guide	Carbon steel (Surface treatment: Electrolytic nickel plating)	
Material of seal		Nitrile rubber (NBR)	
Fluid		Water, Air, General mineral based hydraulic oil	
Operating temperature		°C 0 ~ 70 (No freezing)	

- Select the multi coupler check valve model MCB in case that the operating temperature is over 70°C .
- Both machine side and mold side have no check valve for preventing fluid leakage inside the coupler.

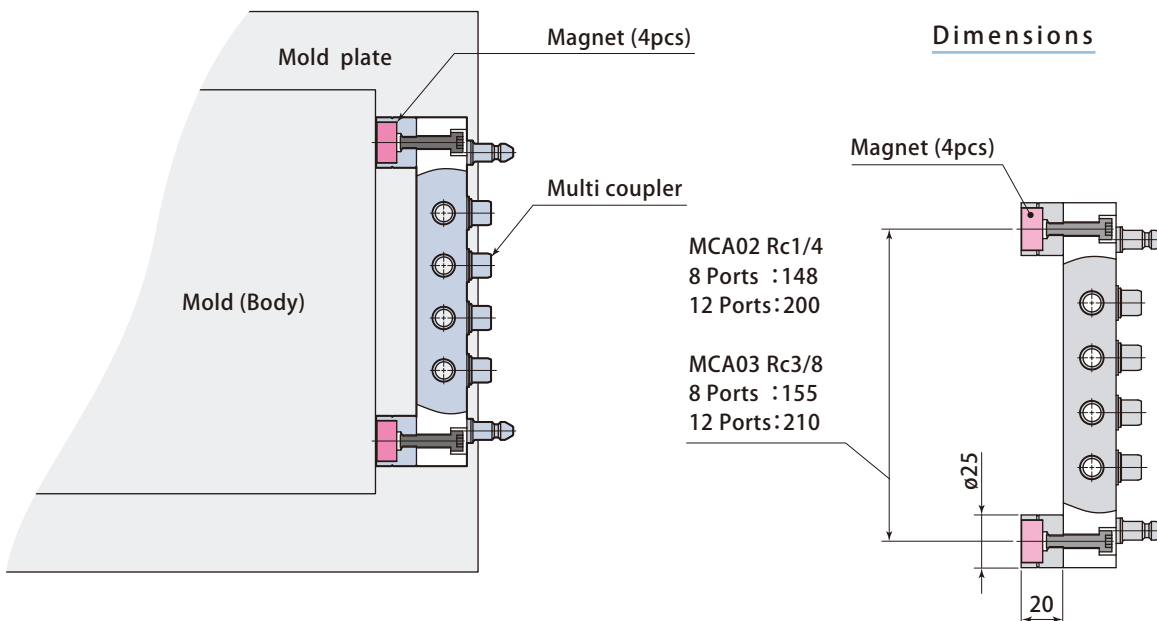
The multi coupler and mold can be installed by one touch operation with powerful permanent magnet.

Model designation

Double row type MCA - **MG** - **A**

Connection port	Number of port	Magnet mounting model	Row type
Rc1/4	8 ports	MCA-MG-A	Double row type
	12 ports		
	6 ports	—	Single row type
	8 ports		
Rc3/8	8 ports	MCA-MG-A	Double row type
	12 ports		
	6 ports	—	Single row type
	8 ports		

* The double row type is applicable for mounting the magnet. The single row type can not be applied.



● Accessory is not included. Purchase it separately.

Multi coupler - open model
accessory

Temporary holder for multi coupler

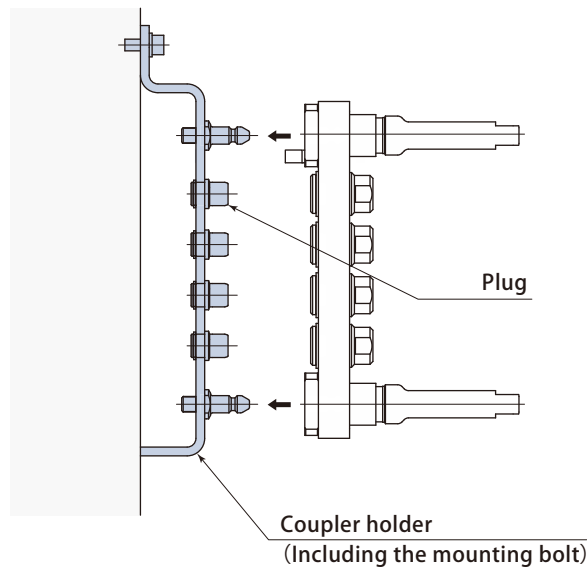
The plug is provided to coupler holder and the fluid does not leak outside even when couplers are pressurized the machine side.

Model designation

MCA 03 - 08 H - A

Connection port	Number of port	Coupler holder model	Row type
Rc1/4	8 ports	MCA02-08H-A	Double row type
	12 ports	MCA02-12H-A	
	6 ports	MCA02-06H-B	Single row type
	8 ports	MCA02-08H-B	
Rc3/8	8 ports	MCA03-08H-A	Double row type
	12 ports	MCA03-12H-A	
	6 ports	MCA03-06H-B	Single row type
	8 ports	MCA03-08H-B	

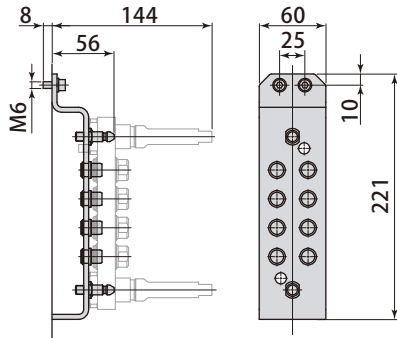
Multi coupler - open model
accessory



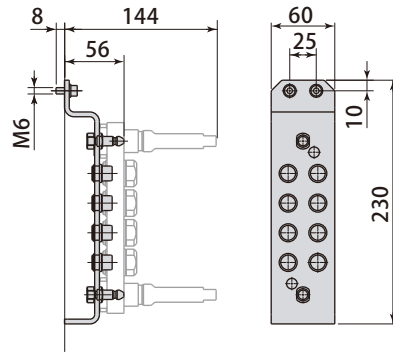
- Accessory is not included. Purchase it separately.

Dimensions

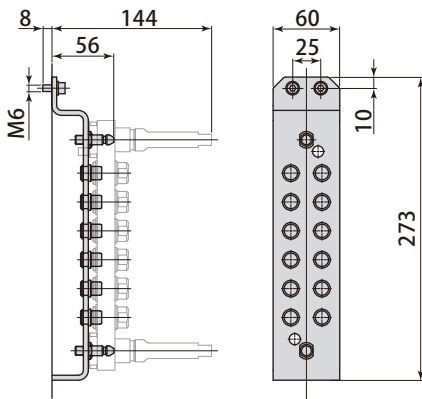
MCA02-08H-A



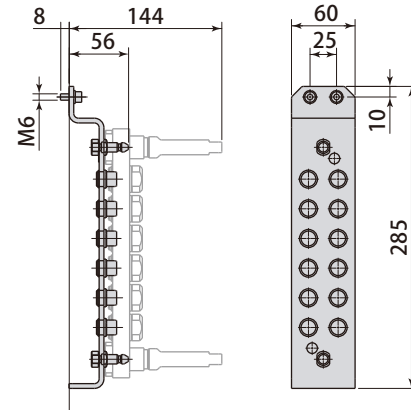
MCA03-08H-A



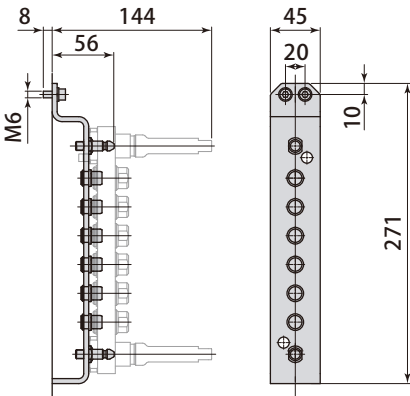
MCA02-12H-A



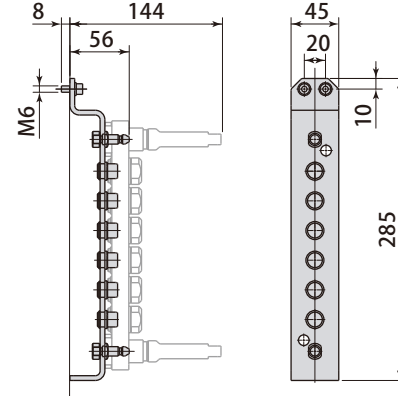
MCA03-12H-A



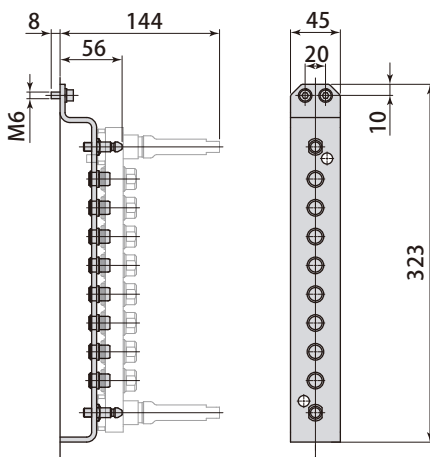
MCA02-06H-B



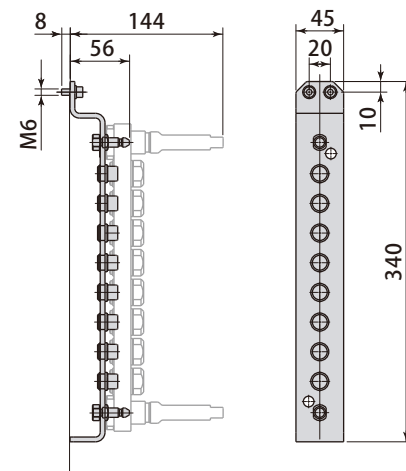
MCA03-06H-B



MCA02-08H-B

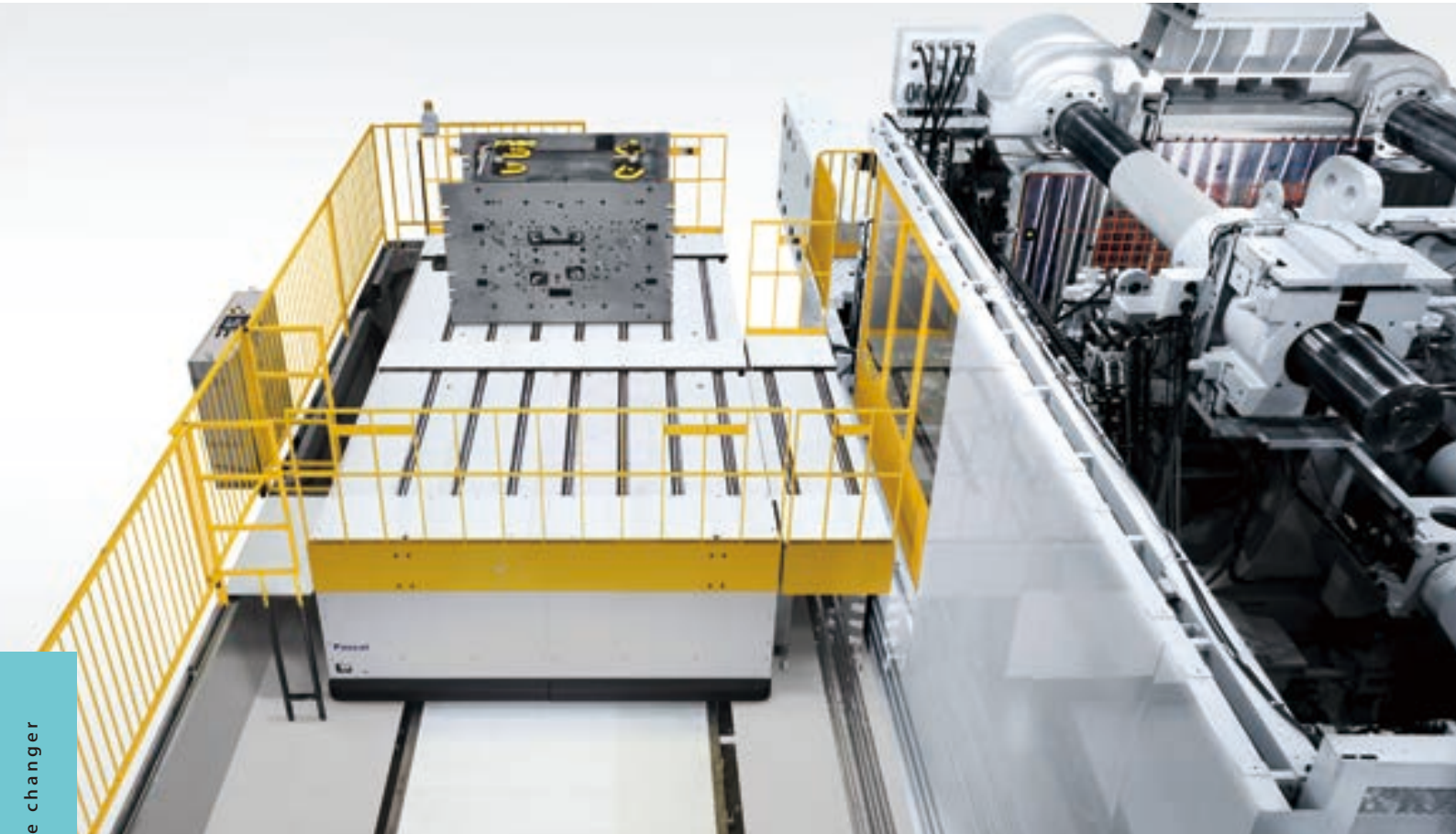


MCA03-08H-B



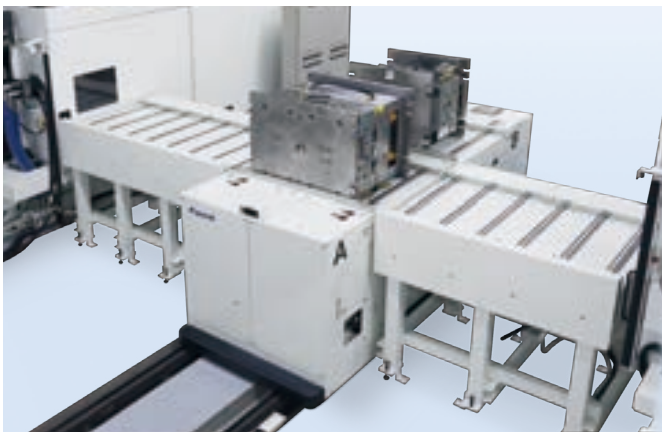
Overhead crane (vertical loading) to Die changer (horizontal loading)

Die changer is an automatic die changing system, which can change a die quickly and shorten the die change time a great deal, compared with the conventional type of die change operation by means of a forklift or overhead crane.

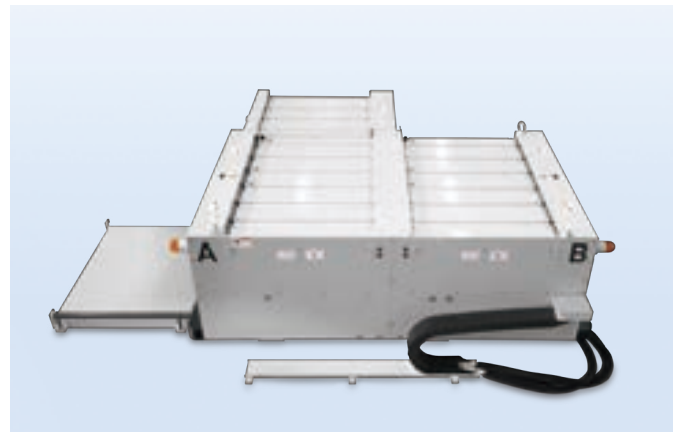


Die changer

30,000kN (3,000ton) IMM Horizontal loading Die changer : Powered, Drive roller type Number of load 2dies & Mag clamp

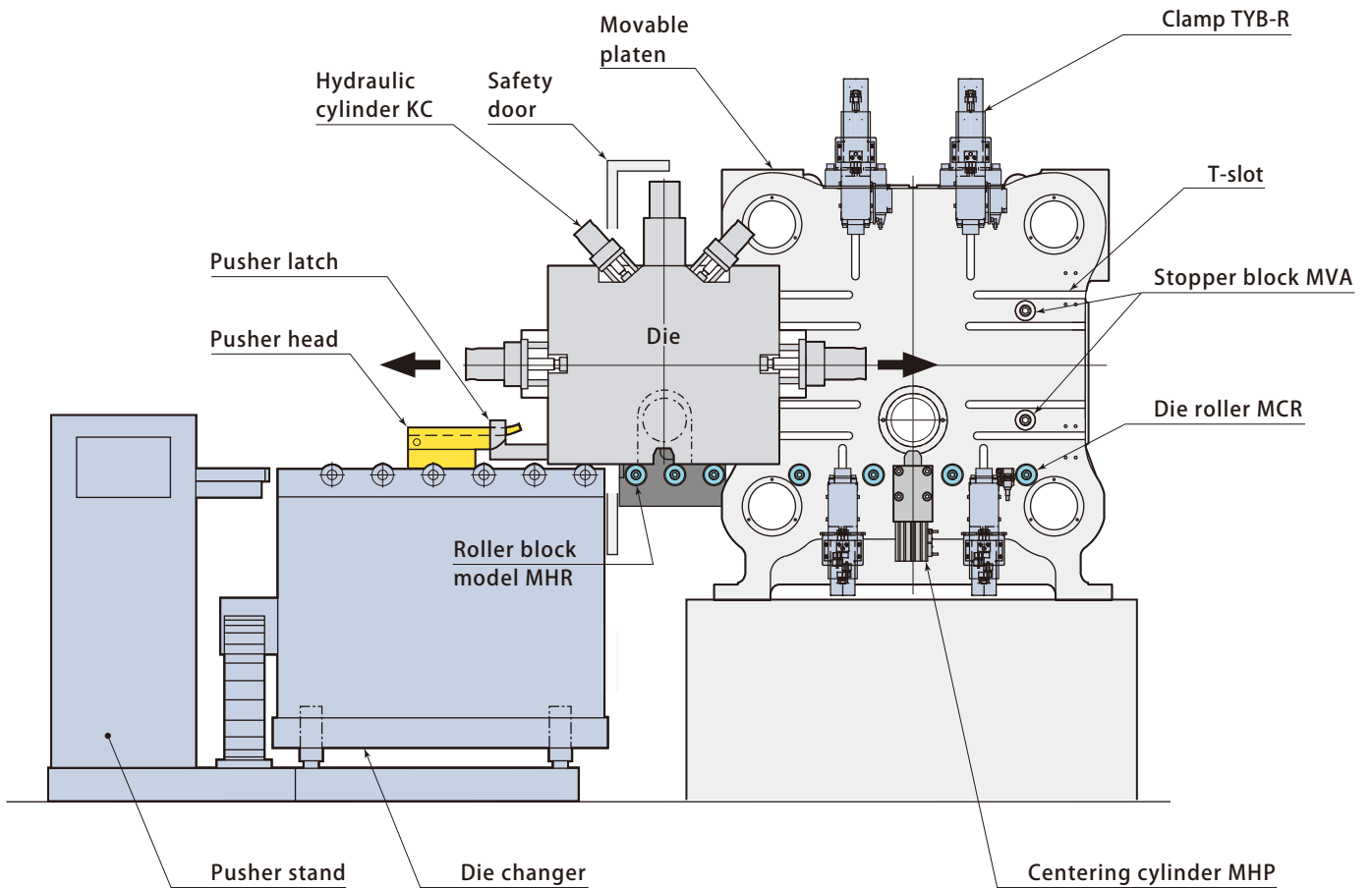


Die changer Powered, Drive roller type
Number of load 2dies



Die changer Powered, Drive roller type
Number of load 2dies

Die changer configuration example

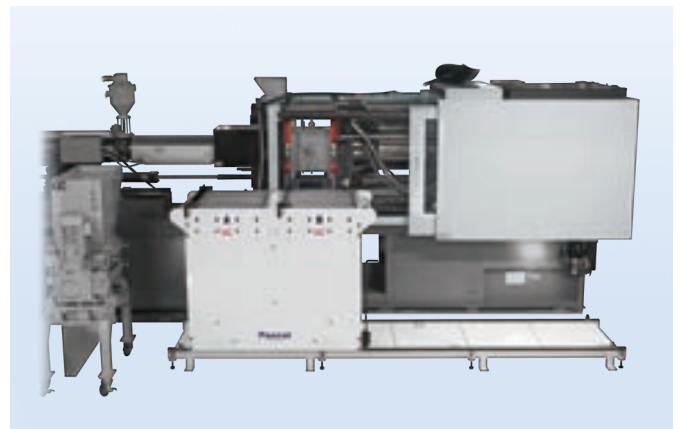


* For the installation of pusher, there are stand type (installed separately) and incorporated type in Die changer.

Die changer

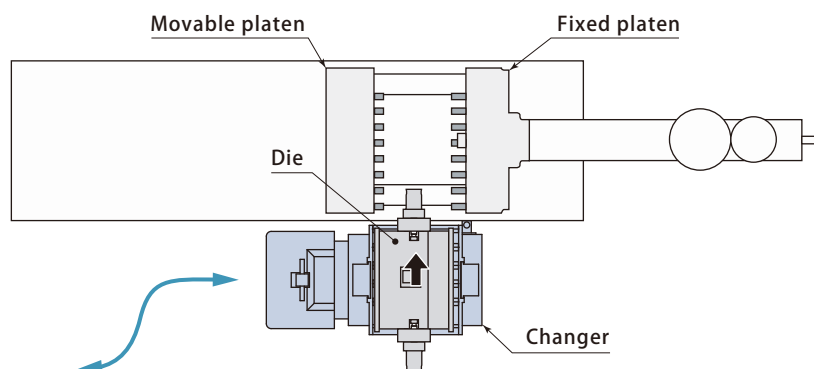


Die changer Powered, Pusher type
Fixed roller table Number of load 1die

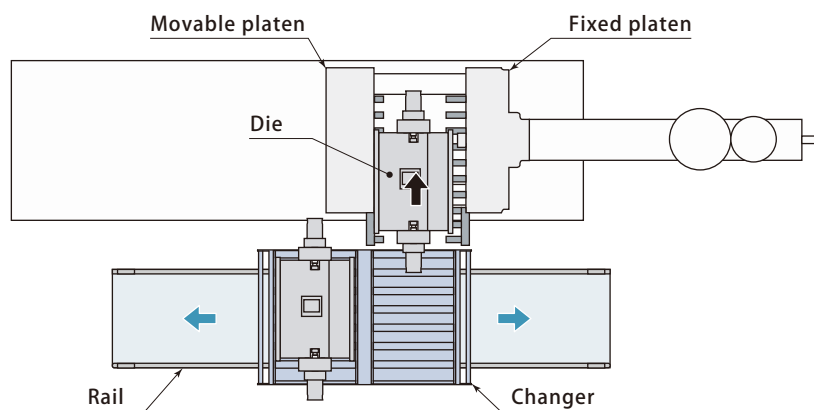


Die changer Manual loading, Rail type
Number of load 2dies

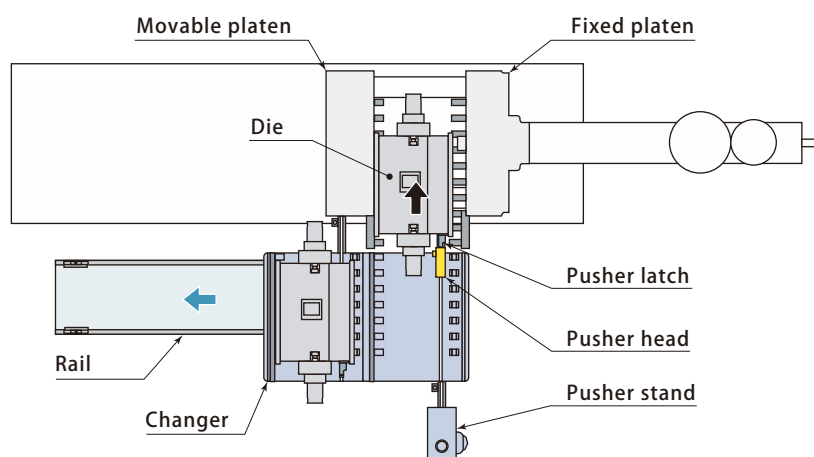
Manual loading Non track



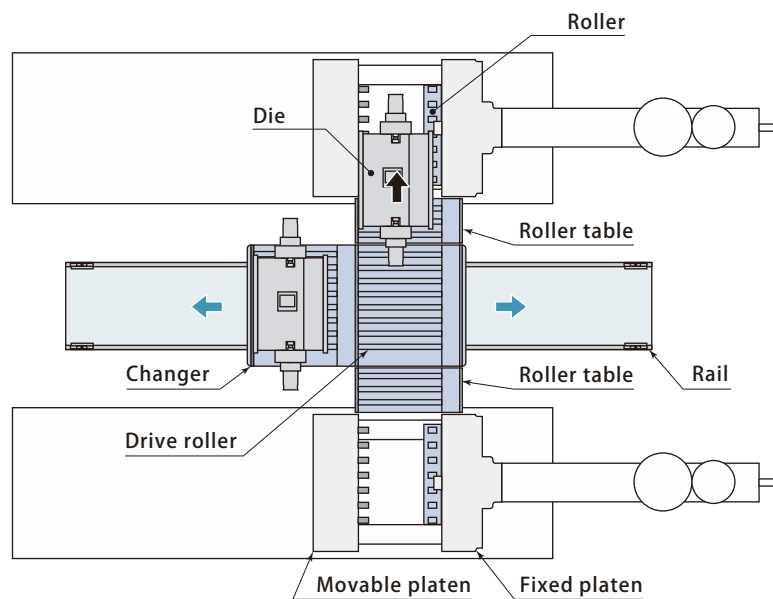
Manual loading Box framed rail type



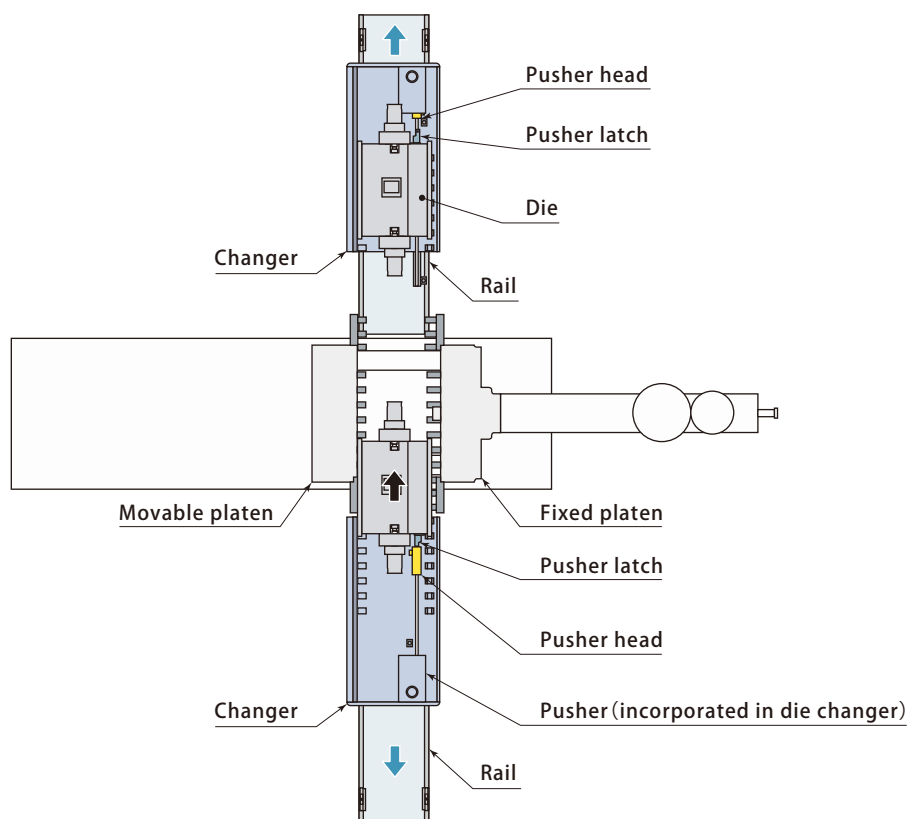
Pusher Short distance traveling 2 dies



Drive rollers 1 pitch traveling 2 dies Face to face layout



Pusher 1 pitch traveling 1die Pushing in/out style



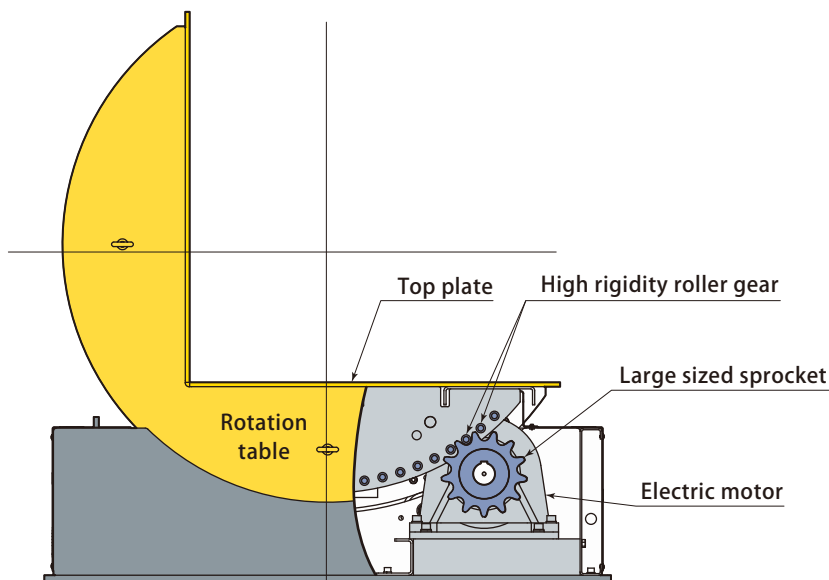
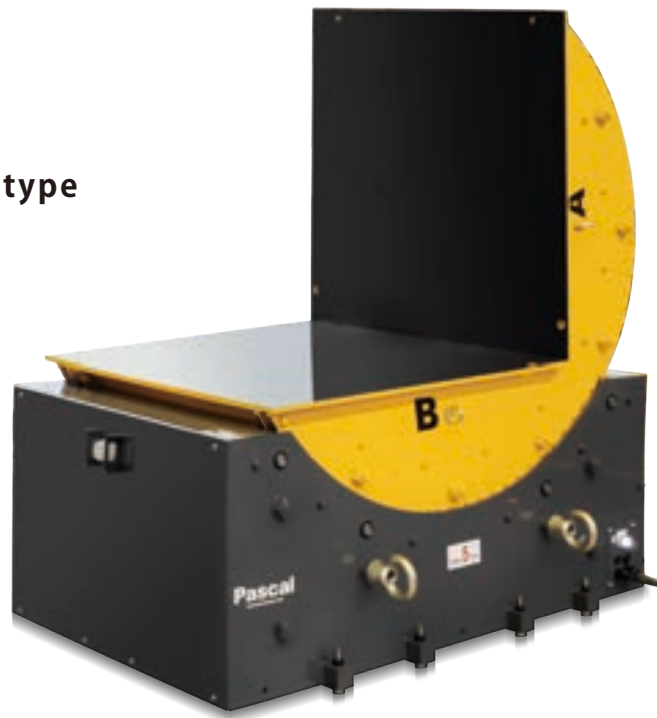
Dies and large sized components

The employer must take necessary action to protect workers from
For safe and quick rotating operation, Consider Pascal Rotator



Roller gear driven type

model **SMR**

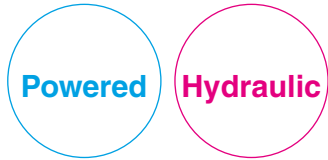


Model SMR rotates the table with high rigidity roller gear and large sized sprocket, which enables excellent in durability and safety by introducing roller gear driven type.

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

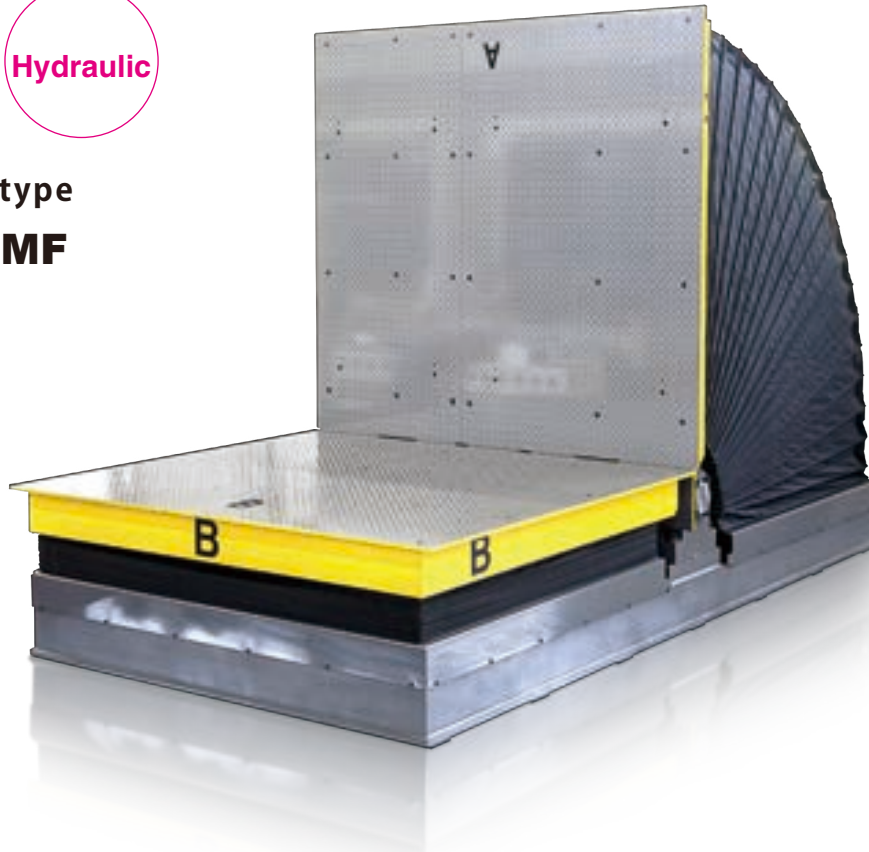
can be rotated safely and quickly.

dangerous work in accordance with Industrial Safety and Health Law.
for the die and coil materials in place of overhead cranes.



Flat type

model **SMF**



Model SMF is embeddable and flat table.

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

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

Pascal all products



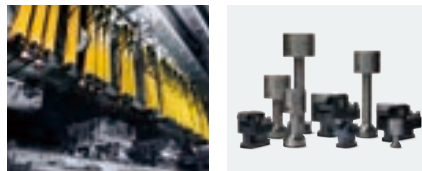
Bumper Connector Instrument panel Door Wheel Body

For plastic molding



Mag clamp Mold die clamping system Auto coupler

For sheetmetal stamping



Traveling clamp Stamping die clamp

For automotive parts die & mold

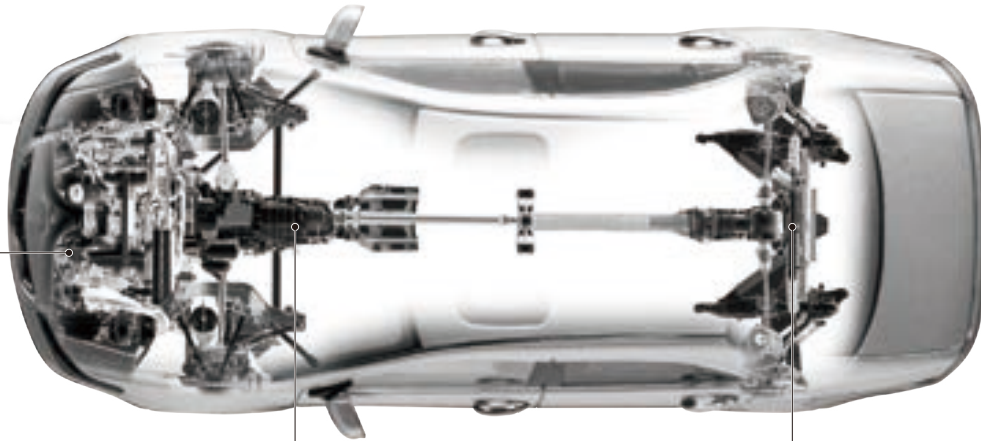


N2 gas springs

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

Molding machine :
Bumper ,
Instrument panel
etc...

Pascal products support automotive production lines globally.



Engine

Transmission

Axle

For die cast machine



Die-clamping system



C-plate mag clamp

For metal cutting work



Work clamp



Pallet clamp



Index table







N2 gas balancer



DOMESTIC LOCATIONS



JAPAN

Head office / R & D center  Itami, Hyogo

Sales office  Osaka, Hyogo
 Kumagaya, Saitama,
 Atsugi, Kanagawa
 Nagoya, Aichi
 Yamagata

Plant  Oita
 Yamagata



Head office / R & D center

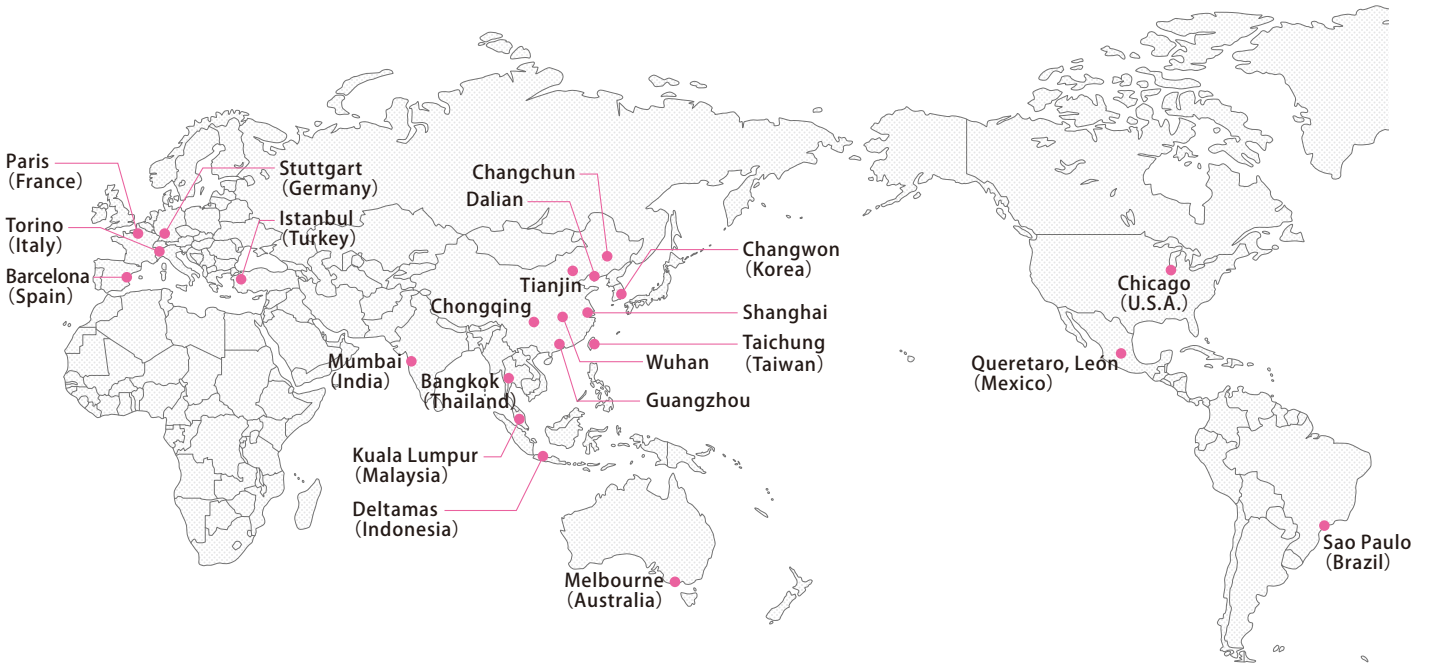


Oita plant



Yamagata plant

GLOBAL NETWORK



ASIA

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

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

AMERICA

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

EUROPE

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

Pascal

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