

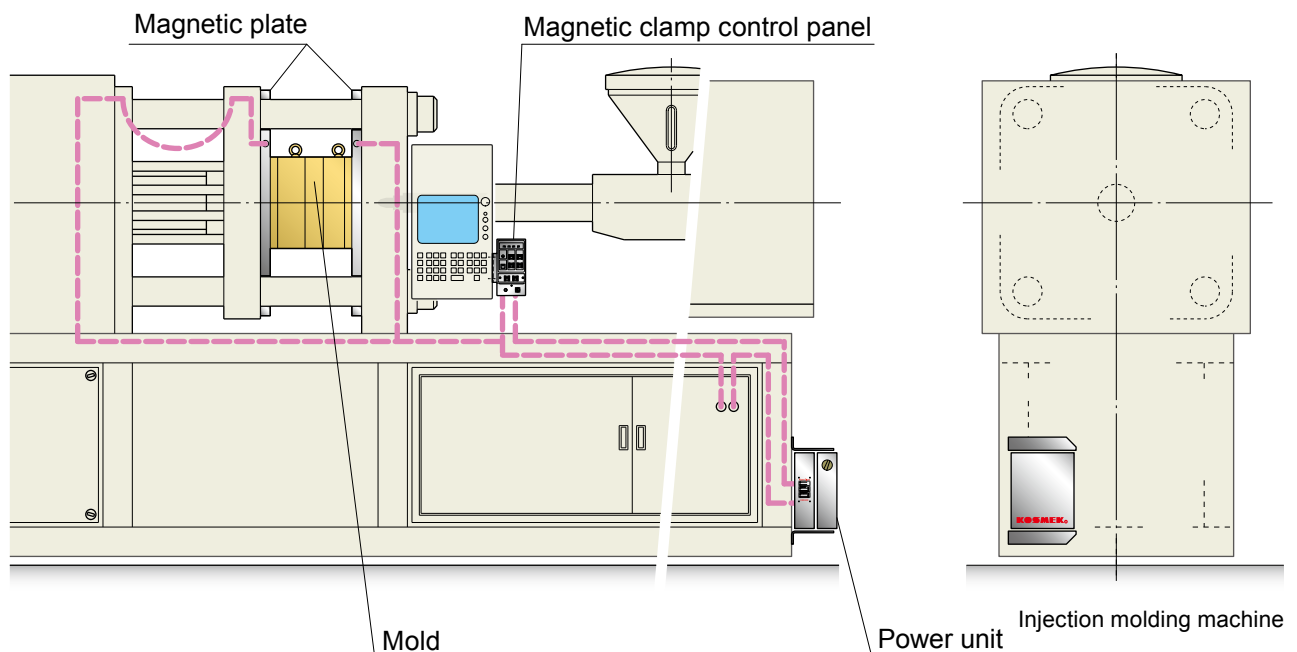
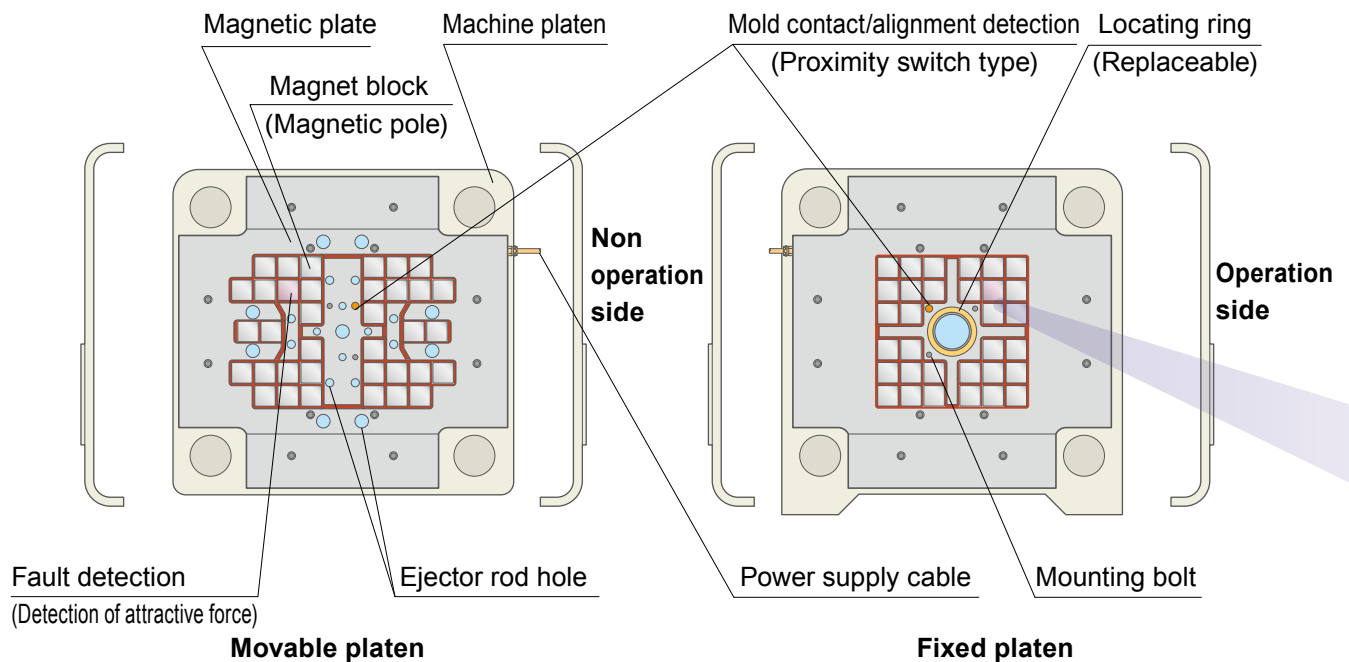
Magnet clamping systems



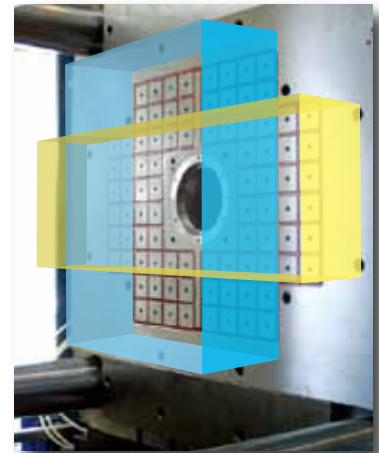
Magnetic Clamping

The magnetic clamping system employs two types of strong, permanent magnets eliminating the risk of molds falling due to a loss of magnetic force during power outages.

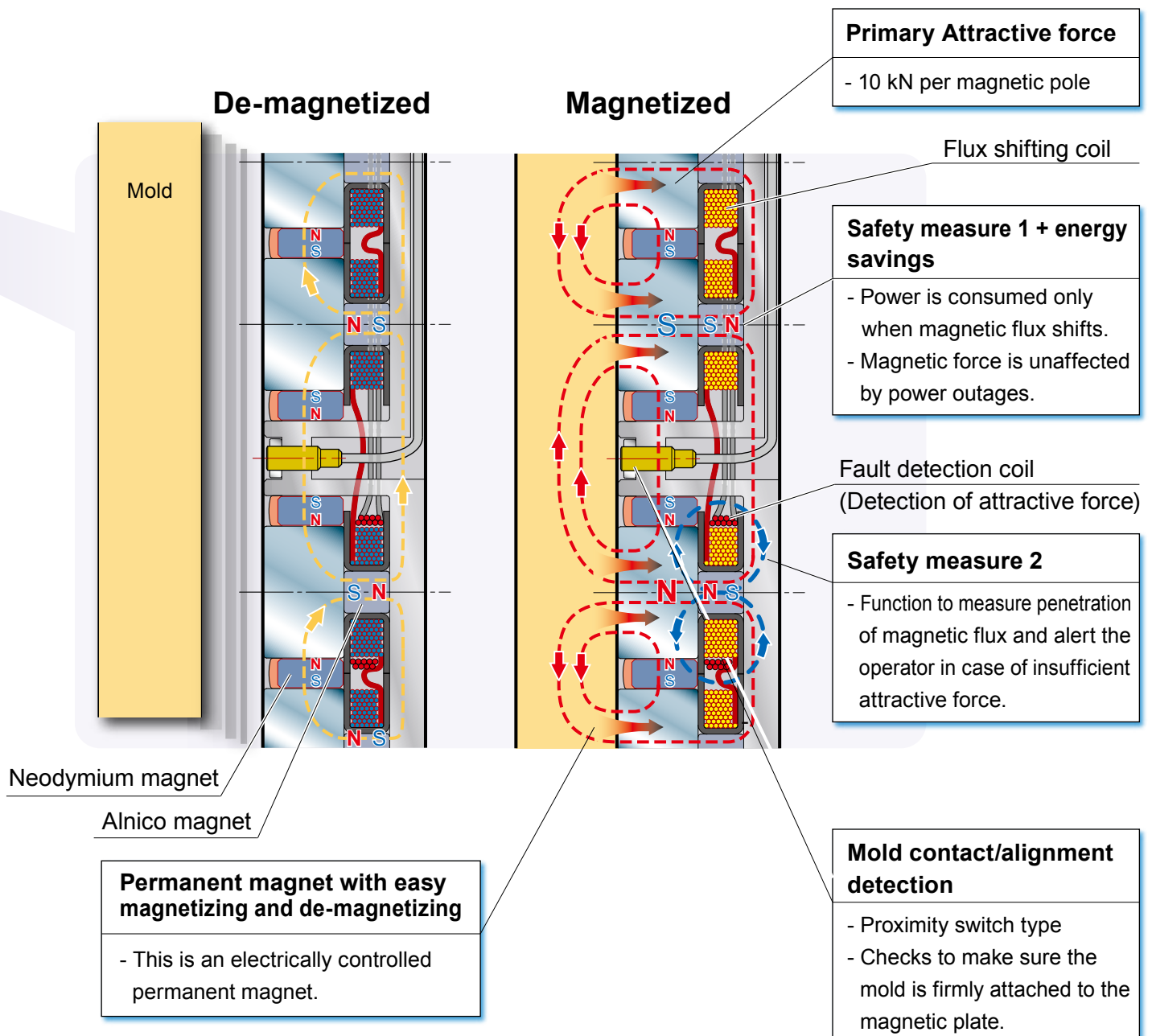
Electric power is only used when the magnetic force is initiated (magnetizing) and when it is released (de-magnetizing), so the system is perfect for energy savings and creating a clean operating environment.



The mold back plates need not be uniform.
Mold setting can be performed from operator side of machine.
It takes only a few seconds to switch between magnetizing and de-magnetizing.
Clamp operation time is dramatically reduced.

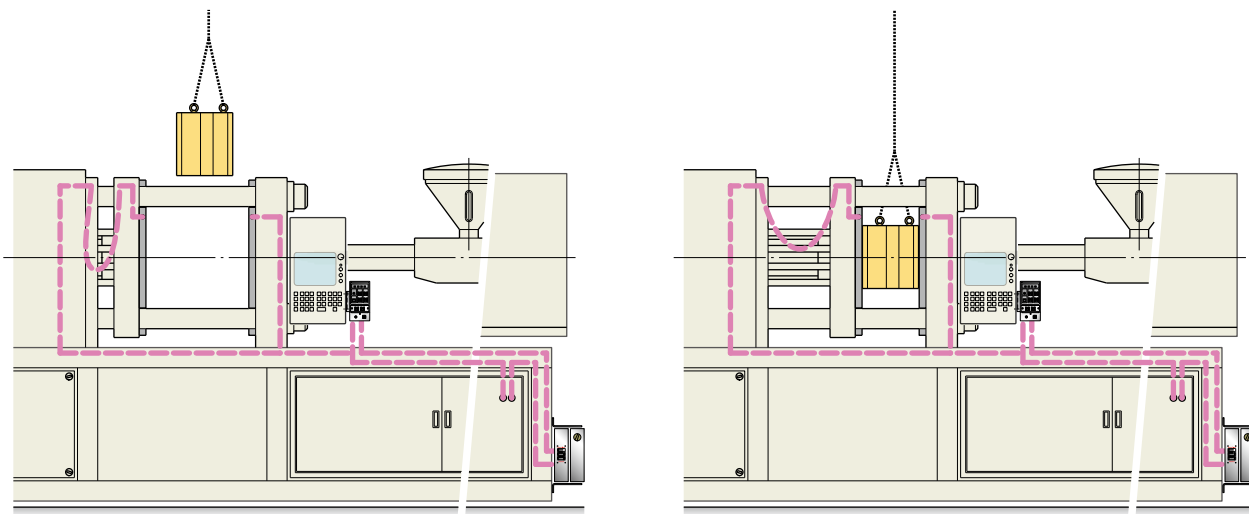


● Mechanism and Features



Magnetic Clamping

● Explanation of Operation (Safety Measures)



① Mold delivery (initial de-magnetizing)

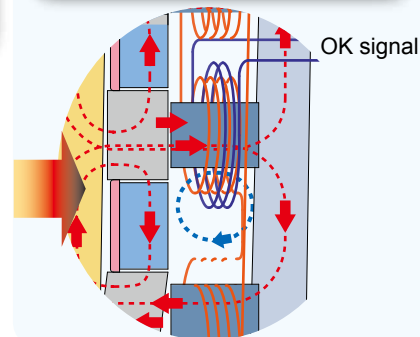
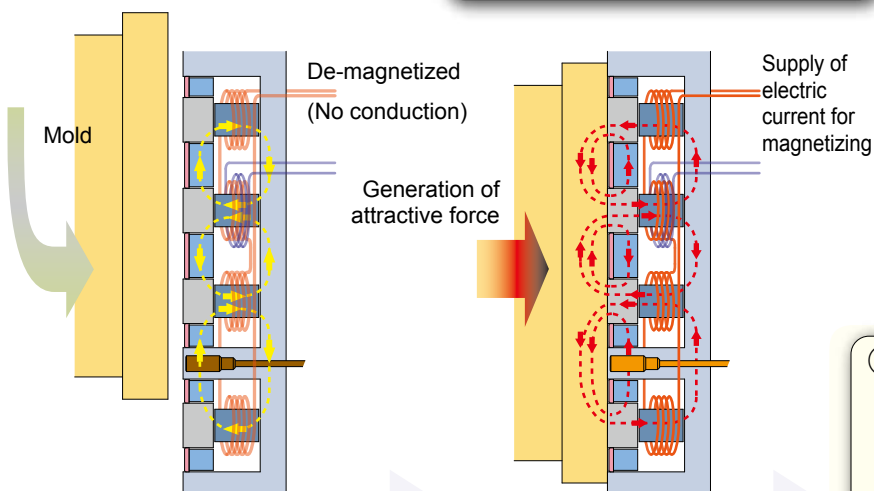
The magnetic force is balanced within the plate and is non-existent on the surface.

② Start magnetization after closing mold

The polarity of the alnico magnet wrapped around the coil is reversed when the electric current is supplied, shifting the magnetic flux. This operation generates magnetic force on the surface of the magnet block. The magnetic force becomes permanent.

②' Normal magnetizing

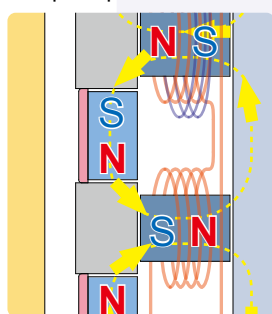
At the same time, when the magnetic flux penetrates properly (producing an attractive force), the magnetic force detection coil returns an OK signal to the control panel.



②" Abnormal magnetizing (insufficient penetration)

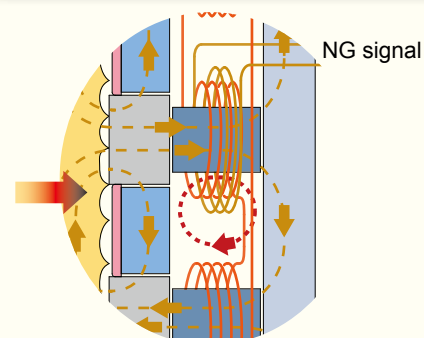
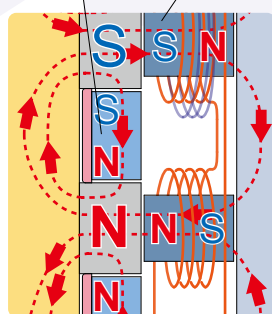
If there is clearance between the surface of the mold and the magnet caused by rust or some other intrusion, the magnetic force detection coil will return an NG signal to the control panel to alert the operator to insufficient penetration of the magnetic flux.

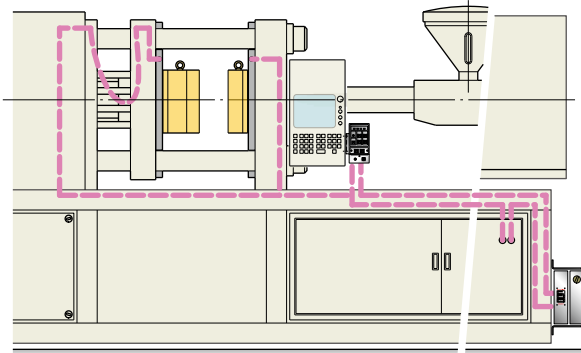
Enlarged drawing of magnetic flux shift principle



Neodymium magnet

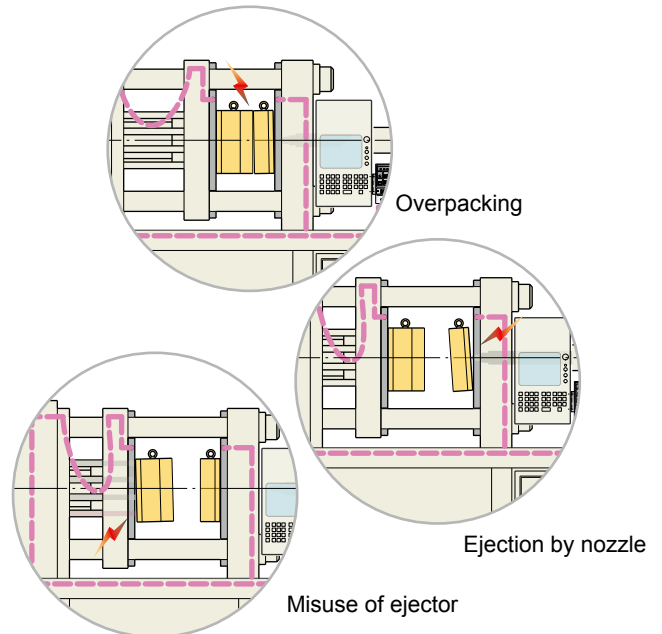
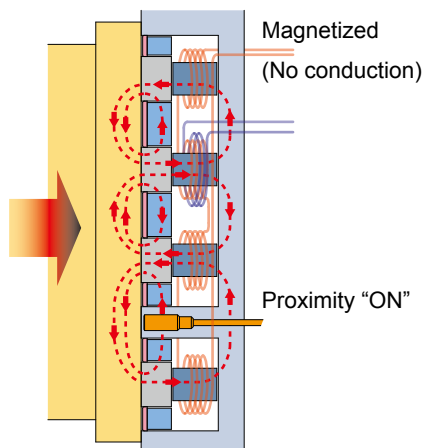
Alnico magnet





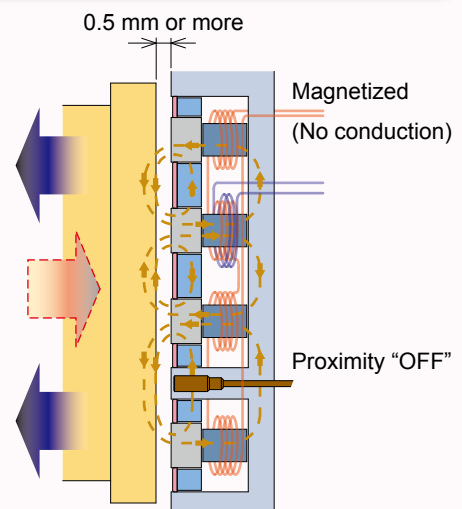
③ During molding production (normal)

The magnetic flux will be permanently maintained unless an electric current is supplied. During production, power is supplied only to the proximity switch, so there is almost no energy consumption.



③' During molding production (abnormal)

If a clearance of 0.5 mm is produced between the surfaces due to an excessive load during the forming process, an emergency stop signal will be sent.



Magnetic Clamping

Specifications

Magnet block type		8S	8U	5S	5U
Attractive force	kN	10	8.5	3.5	3.5
Magnet block dimensions	mm	□80	□80	□50	□50
Plate thickness	mm	51	51	35	45
Working temperature (mold contact surface)	°C	0~120	0~180	0~120	0~150
Magnetic flux height (depth of penetration on mold side)	mm	20	20	10	10
Mold fault detection distance	mm	0.5 or less *1			
Working voltage	V(AC)	200/230/400/460~480 (50/60Hz)			
Conduction time	sec.	1.4			

*1.Adjustments may be made for different molds and various conditions.

Magnetic plate

Model Code (fixed and movable platens are combined)

MEK 045 0 - 8S 11001

1 2 3 4

1 Molding machine clamping force

035 : 350 kN (35 tf)
 350 : 3500 kN (350 tf)
 15H : 15000 kN (1500 tf)

2 Design No.

*Numbers may change when interchangeability is lost due to changes in dimensions or major specifications.

3 Magnet block type

8S : □80mm • Nominal attractive force 10.0 kN • Standard specifications 0~120°C
 8U : □80mm • Nominal attractive force 8.5 kN • High temperature specifications 0~180°C
 5S : □50mm • Nominal attractive force 3.5 kN • Standard specifications 0~120°C
 5U : □50mm • Nominal attractive force 3.5 kN • High temperature specifications 0~150°C

4 SER.No.

Shipment control number for customer.

Molding Machine Capacity and Standard Attractive Force

Magnet block type	Applicable forming machine(kN)	Attractive force(kN)		Power consumption (kVA) *2
		Movable platen	Fixed platen	
5S/5U	300	28	28	1
	550	42	35	2
	1100	98	84	5
	1500	126	112	7
8S	1100	100	80	5
	1500	120	100	6
	2000	160	140	9
	2500	200	160	11
	2800	240	200	14
	3500	280	240	8
	4500	360	320	10
	5500	440	400	12 [24]
	6500	520	460	16 [32]
	8500	680	600	9 [36]
	10000	800	680	11 [44]
	13000	1040	880	16 [64]
	16000	1320	1160	9 [72]
	30000	2400	2080	9 [144]

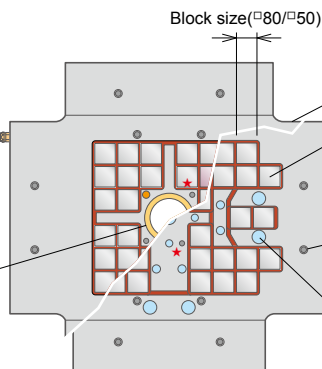
*2.Shows the power required for switching between magnetizing and de-magnetizing. Almost no power is consumed during the production. Figures in parenthesis [] are for when the electric current is supplied in parallel to the magnetic plate. Cycle time can be reduced.

Connector cable

Connector cables are, in principle, used on the non operation side of the molding machine. Depending on the number of connectors, it may be necessary to use the operation side as well.

Locating ring

(Fixed platen side)
 We will manufacture the locating ring according to the customer's or the machine manufacturer's specifications. The mechanism is such that they may be replaced as a consumable supply.



Magnetic plate

Magnet block

Layout will vary depending on the position of the screw holes on the molding machine panel and the various mold conditions.

*□80 and □50 cannot be used together.

Mounting bolt

Use tapped holes on the machine platen. Standard platen patterns don't include holes near the nozzle, so additional tapped holes are required.

Ejector rod hole

(Movable platen side)
 Match with the molding machine platen specifications.

Operation Control Panel

Model Code

YMB05 1 - V MEK 1 - N

1 Design No.

*Numbers may change when interchangeability is lost due to changes in dimensions or major specifications.

2 Mold delivery method

V : Vertical insertion method (crane)

H : Horizontal insertion method (dolly)

*Vertical and horizontal insertion methods are not combined.

3 For magnetic clamping

*See the separate catalogs for other clamping methods.

4 Power unit configuration *3

1 : Master+Slave×1 (4500kN class)

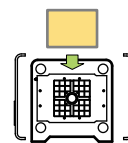
2 : Master+Slave×2 (10000kN class)

3 : Master+Slave×4 (20000kN class)

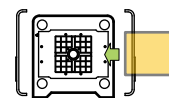
4 : Master+Slave×8 (30000kN class)

5 Special codes

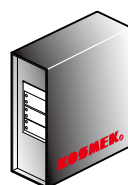
N : English label *4



Vertical insertion



Horizontal insertion



Master



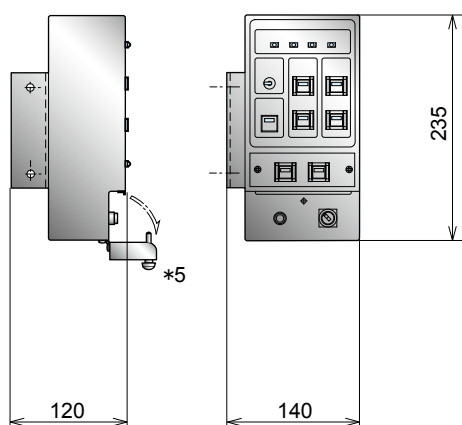
Slave

*3.The number of slaves will vary depending on the number of magnets in the configuration. Figures in parenthesis () show the reference clamping force of the applicable molding machine.

*4.Specifications and other documents will also be in English, and measurements will be in inches and pounds.

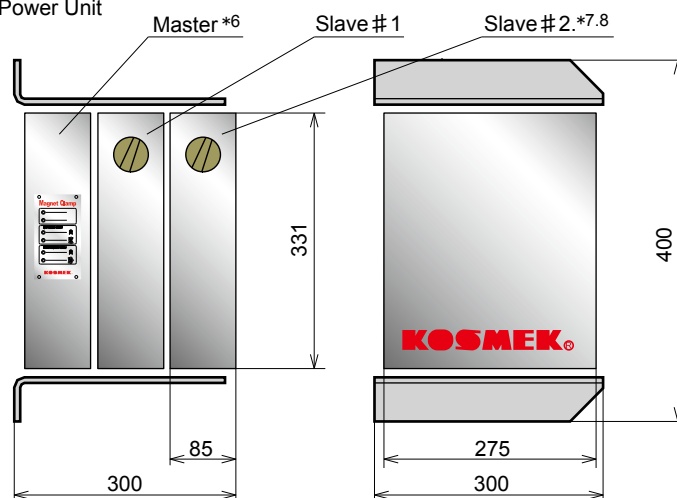
Outline Dimensions

- Operation Control Panel



*5.The drawing shows the bottom cover open.

- Power Unit



*6.Fault indicator lamps are provided on the masters.

*7.The number of slaves will vary depending on the molding machine capacity.

*8.Main power switches are provided on the slaves.

Interlock (interface)

Molding machine output	Description	Molding machine input	Description
Mold set mode	Signal indicating machine is in set-up (mold setting) mode. Machine opens and closes slowly.	Mold open OK	Signal showing clamping system is ready for mold to open.
Mold Closed	Signal showing mold is completely clamped. Prohibits release (de-magnetizing) operation when mold is open to prevent it from falling out.	Mold close OK	Signal showing clamping system is ready for mold to close.
Nozzle retraction limit	Signal showing nozzle or injection unit has been retracted. Prevents nozzle from being damaged when removing mold.	Mold Change ON	Signal showing mold is currently being replaced in clamping system.
Ejector retraction limit	Signal showing ejector has been retracted. Prevents ejector from being damaged when removing mold.	Clamp fault	Signal that detects clamping system faults and forces emergency stop of molding machine.
		Pressure Request (Pump Load)	A request to increase pressure so that machine can build tonnage on mold during mold change.

Remarks

①Signal delivery is at the dry contact point.

②Use output contact for micro signal for the molding machine. (DC24V 10mA)

③Rating of operation control panel output contact is DC 24 V 0.5 A.

④Names of parts may vary depending on the manufacturer of the molding machine.

⑤Contact us for information about input and output (special features) not listed above.

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