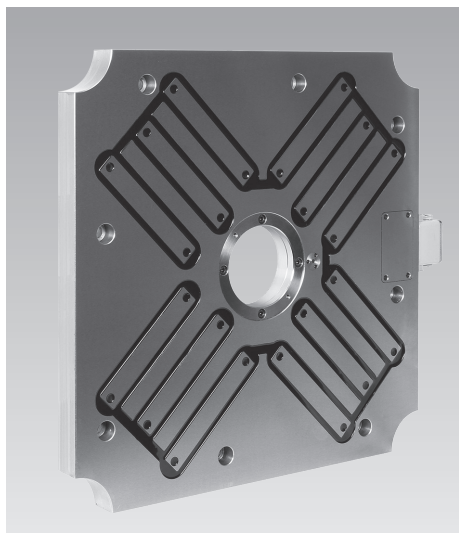


Magnetic Clamping Systems M-TECS P for temperatures up to 120°C



Advantages

- Standardization of moulds no longer required
- High safety by process monitoring
- Clamping of the moulds within a few seconds
- Ergonomic handling with ease
- Mould clamping also in the heated condition
- No further mounting holes required
- Minimum wear of the moulds
- Motion detection of the mould
- Mould clamping on the complete surface with minimum deformation

Application

Magnetic clamping systems M-TECS P are primarily used for automatic clamping of different moulds on injection moulding machines.

Description

With magnetic clamping systems, the moulds are magnetically clamped or unclamped at the touch of a button within a few seconds.

Since permanent magnets generate the force of the magnetic clamping plates, electric clamping is only required to magnetize the plates.

The magnetic clamping plates are de-energized in clamped condition and thus absolutely safe in case of power failure.

The complete clamping cycle is monitored by different sensors, thus guaranteeing reliable mould clamping.

All M-TECS magnetic clamping systems carry the CE mark.

Scope of system and delivery

Magnetic clamping systems M-TECS P are delivered as complete clamping systems with all required system components. The essential components of a system are:

- two magnetic clamping plates
- electric control in a splash-proof control box
- a manual remote control
- required electrical connection cables

Electric control

see catalogue sheet WZ 9.5660

Customized versions

All M-TECS magnetic clamping systems are customized and manufactured to meet specific requirements.

For example, the size and pole technology of the magnetic clamping plates are selected according to the application and the machine. Please contact us.

Technical basic data

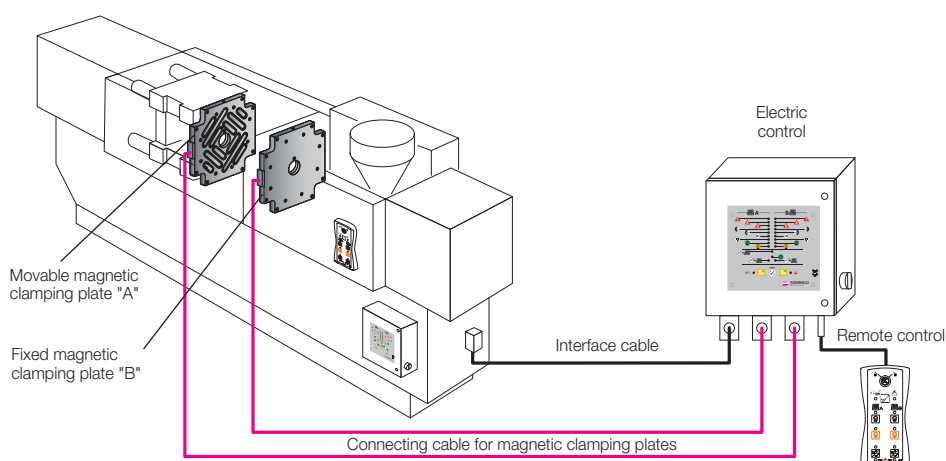
Size of the magnetic clamping plates		customized
Pole technology		square pole, long pole or a combination of both (see page 3)
Max. temperature	[°C]	120 (on request up to 240)
Specific magnetic force*	[kg/cm ²]	18
Effective magnetic force	[kg/cm ²]	5–12
Magnetic penetration depth	[mm]	20
Plate thickness	[mm]	47
Mounting		as per the existing Euromap grid

* force directly on the magnet

Safeties

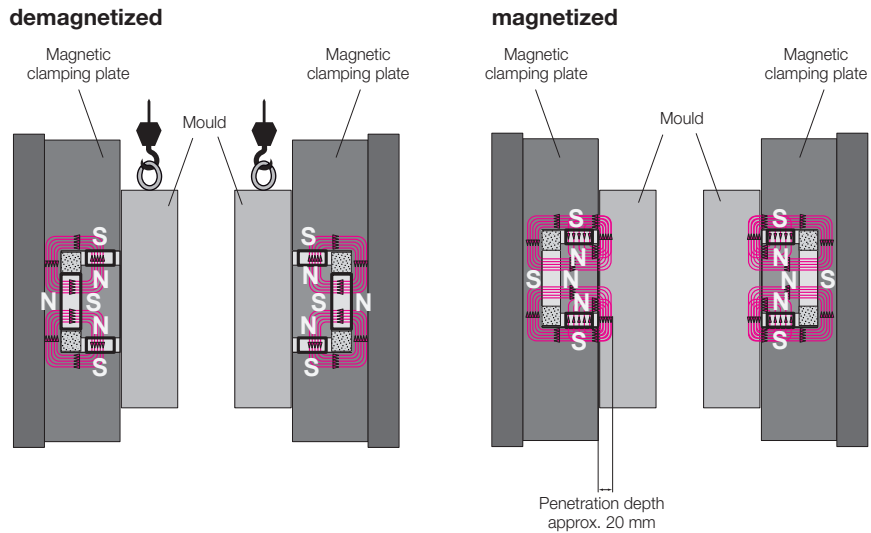
- The inductive limit switch checks the form-fit contact of the mould and guarantees a clamping without force loss.
- Sensors inside the coils register the slightest mould movements due to changes in the magnetic flow between the magnetic clamping plate and mould.
- A temperature sensor in the magnetic clamping plate prevents overheating and thus damage to the system.

Installation on an injection moulding machine



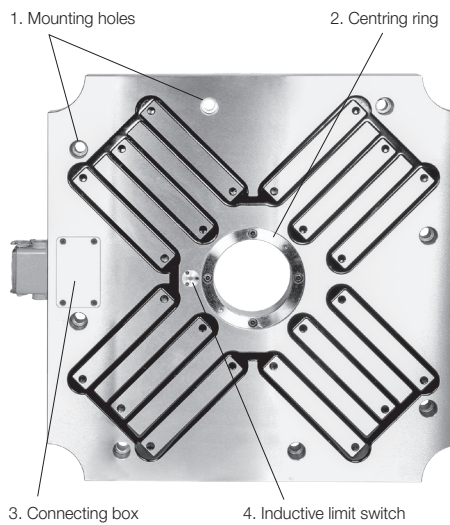
Functioning of the magnetic clamping plates

The electro-permanent magnetic clamping system is firmly kept in place even in the case of a power failure. Power is only required for approx. 1 to 2 seconds to magnetize the system. Then, the clamping system works independently of any power supply. The magnetic clamping force is exclusively generated by the permanent magnets. Only for unclamping the mould, electrical energy is required again (for 1 to 2 seconds) to demagnetize the clamping plate. An existing AlNiCo magnet in the core is re-polarised by a current pulse. This magnet affects the magnetic field and relocates it to the interior of the magnetic clamping plate (demagnetized) or approx. 20 mm outside the plate (magnetized).



Structure of the magnetic clamping plates

1. The mounting holes are completely designed according to the already existing mounting grid as per Euomap. Further bore holes in the machine bed are not required.
2. The centring ring is manufactured as per customer's specifications. An exchangeable centring ring is available as an accessory.
3. The completely sealed connecting box guarantees permanent access to the wiring of the plate connection.
4. The inductive limit switch checks the perfect contact of the mould and then releases the magnetization.



Further safety equipment in the plate:

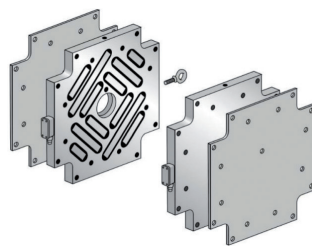
- Sensors inside the coils respond to induction and report the slightest mould movements.
- A temperature sensor in the magnetic clamping plate prevents overheating and thus damage to the system.

Accessories

Insulation plates

The insulation plates are mounted between the machine bed and the magnetic clamping plates. They enable uniform heat distribution and avoid that the heat passes from the mould to the machine.

The insulation plates are available with a thickness of 6 and 10 mm. Since the magnetic clamping plates are equipped with firmly mounted insulation plates, this investment is not required for all new moulds.



Centring ring

Too many tool changes can wear the centring on the magnetic clamping plate. An exchangeable centring ring guarantees the precise centring of the moulds without exchanging the complete clamping system.

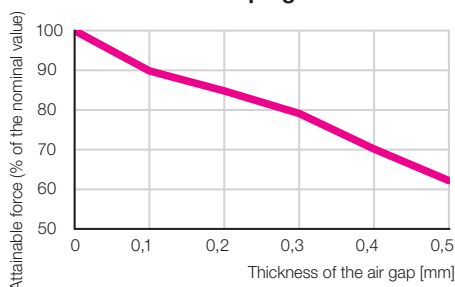


Force sensor "FES"



Force sensor "FES" for measuring the air gap and continuous monitoring and display of the retention force.

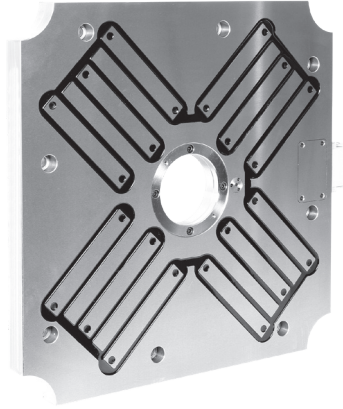
Reduction of the clamping force



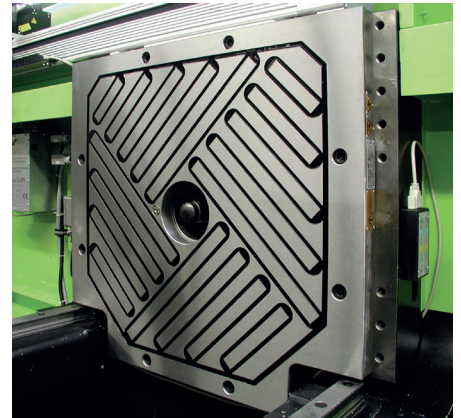
Long pole technology

Long poles are particularly suitable for small and medium-sized machines. Due to the long poles' geometric properties, a flexible arrangement is also possible in the case of many additional holes.

Plate thickness	[mm]	47
Pole size	[mm]	individual

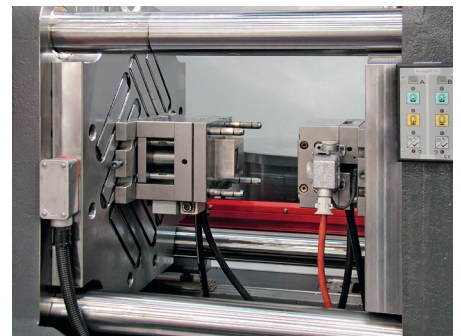
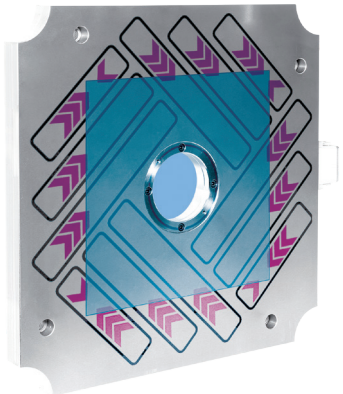


Application examples



Power concentration of the long pole technology

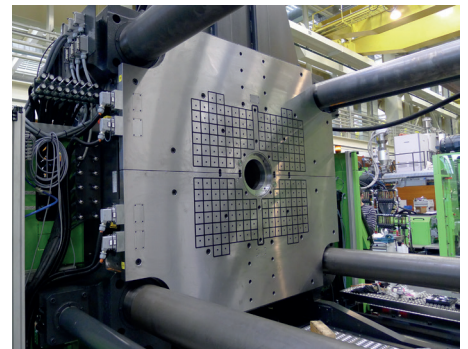
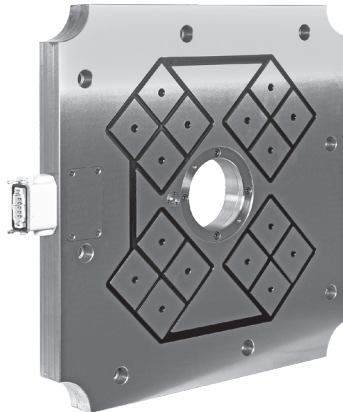
With long pole technology, a sufficiently high retention force is generated without full coverage of the poles. The magnetic field lines of the not-covered pole surface act on the mould in addition to the covered pole surface and enable a safe clamping of smallest moulds.



Square pole technology

Square poles are particularly suitable for large machines. With full coverage of the poles, the maximum retention force is obtained.

Plate thickness	[mm]	55
Pole size	[mm]	50x50 or 70x70



Combination of long and square pole technology

By the combination of long and square poles, Rivi Magnetics clamping systems combine the advantages of both pole technologies.

