COLUMBUS McKINNON
CORPORATION

The safe use of Magnets

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2015

The TPM Magnet

Typ Type Type	Flachmaterial / Flat material Charge plane (type tôle)		Rundmaterial / Round material Charge ronde		Materiallänge Length of material Longueur de la charge	Prüflast Proof load Charge de test	Gewicht Weight Poids
	Tragfähigkeit* Capacity* Charge* max.	Mind. Materialstärke bei max. Tragfähigkeit Min. material thickness at max. capacity min. epaisseur de plaque pour un max. charge	Tragfähigkeit* Capacity* Charge* max.	bei Ø at Ø pour un Ø ompris entre	max.		
	[kg]	[mm]	[kg]	[mm]	[mm]	[kg]	[kg]
TPM 0,1	100	14	50	200 - 300	2.000	300	6,8
TPM 0,3	300	20	150	200 - 300	2.500	900	15,5
TPM 0,5	500	24	250	200 - 400	3.000	1.500	30,6
TPM 0,8	800	34	400	200 - 400	3.500	2.400	56,0
TPM 1,0	1.000	40	500	200 - 400	3.500	3.000	61,0
TPM 2,0	2.000	55	1.000	200 - 400	3.500	6.000	126,0

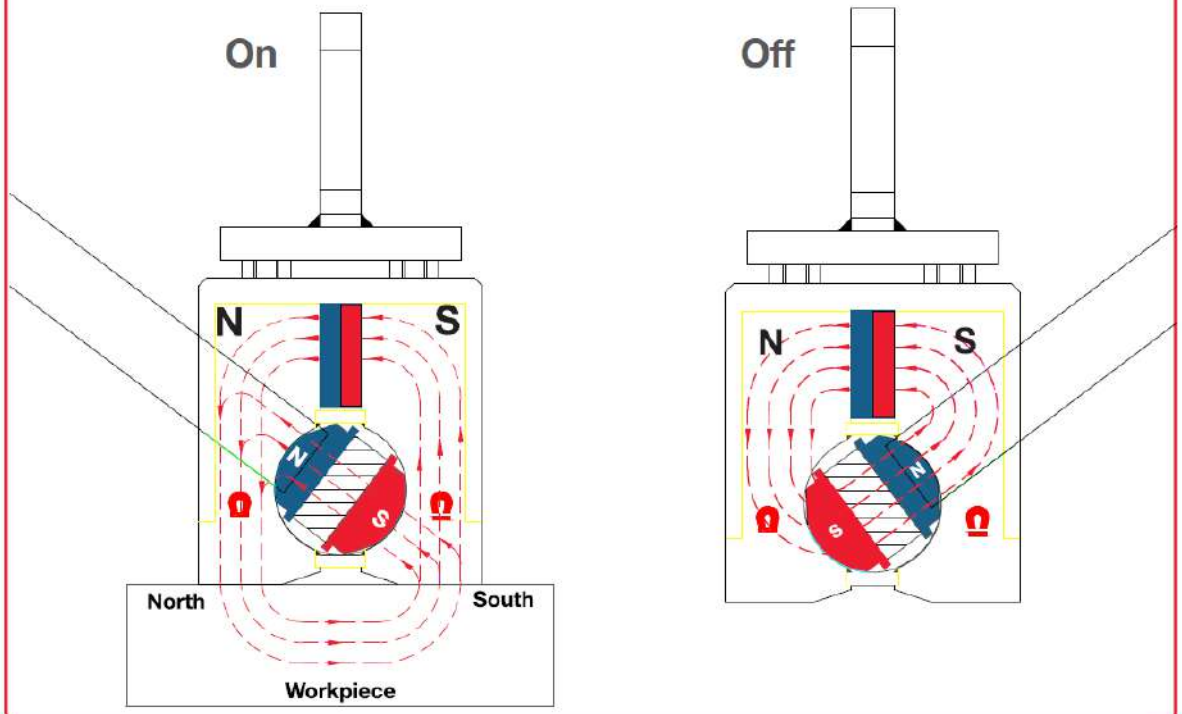
* gemessen auf ziehblankem Material St 37

* measured at mild steel St 37

How It Works

How it works

Manually rotating the handle changes the direction of the magnetic flux, thereby switching from on to off.



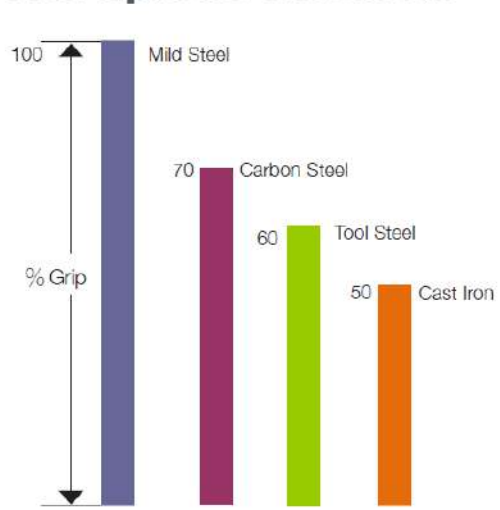
What can be lifted

Magnetic Materials

Not all materials are magnetic

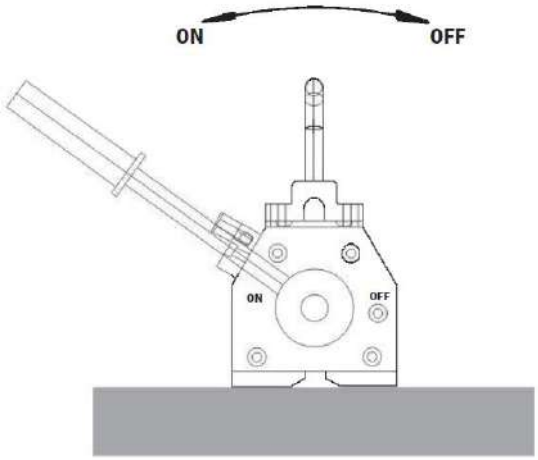
Not all materials have the same amount of magnetism

Tragfähigkeitsreduzierung Reduction of capacity Facteur de réduction	% von WLL % of WLL % de WLL
Temperatur / Temperature / Température ≤60°	100
Luftfeuchtigkeit / Humidity / Humidité ≤80%	100
St 37	100
St 52	95
Edelstahl / Alloy steel / Acier allié	80
Stahl mit hohem Kohlenstoffanteil / High carbon steel / Acier à forte teneur en carbone	70
Gußeisen / Cast iron / Fonte	45
Nickel / Nickel / Nickel	45
Austenitischer, nichtrostender Stahl, Messing, Aluminium Austenitic, stainless steel, brass, aluminium Acier inox ou austenitique, laiton, aluminium	0

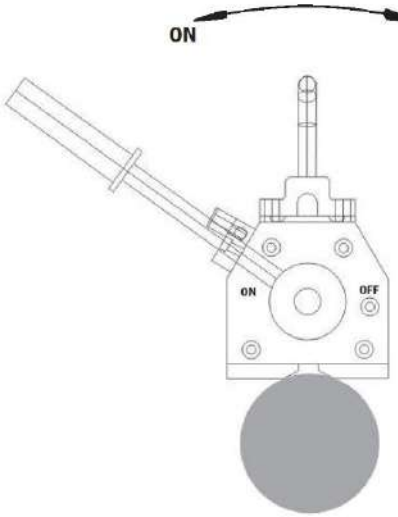


What can be lifted

Flat Plates



Round bar



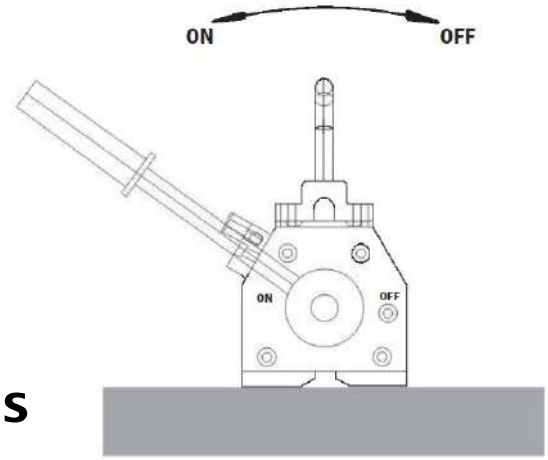
Only Single Items

Can be lifted

Separate stacks of plate

What can be lifted

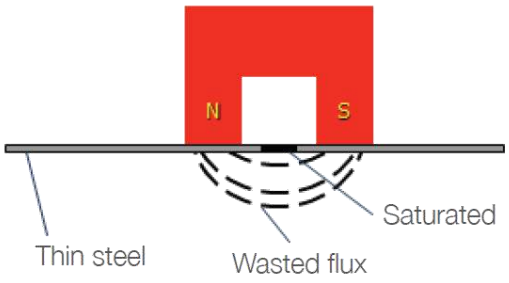
Flat Plates



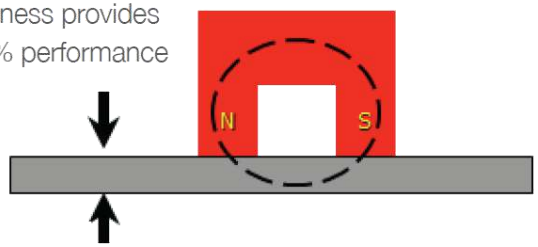
Min Thickness

Material Thickness

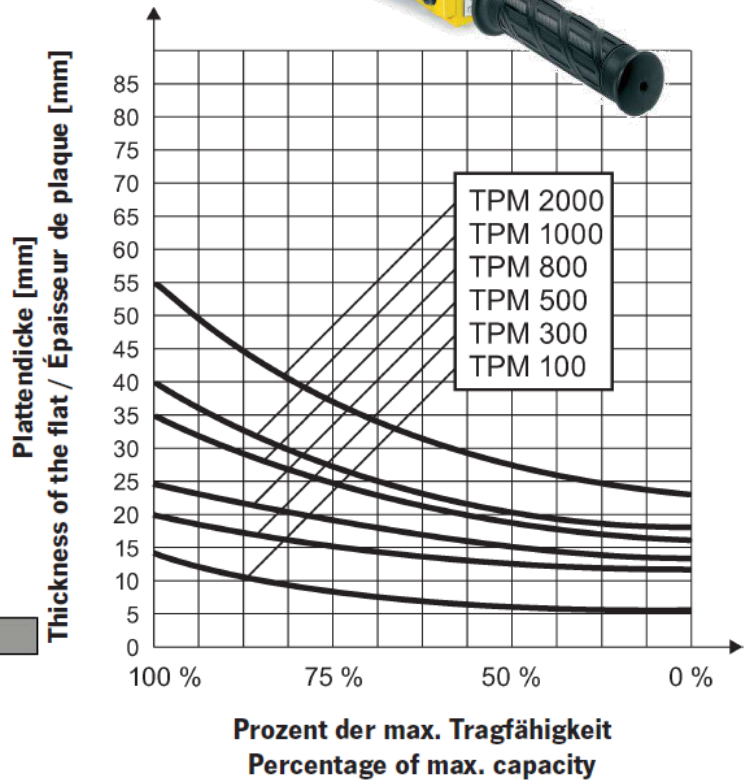
To achieve maximum clamping force minimum materials should be observed.



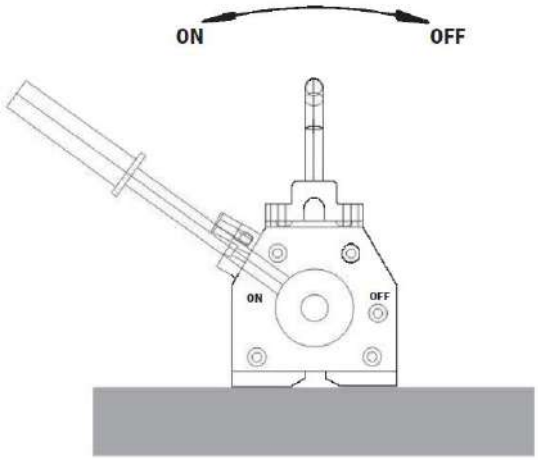
Minimum part thickness provides 100% performance



Closed Circuit
Maximum holding power



What can be lifted



Flat Plates

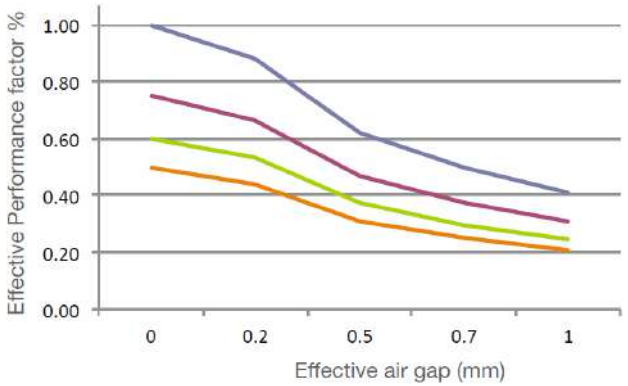
How flat?

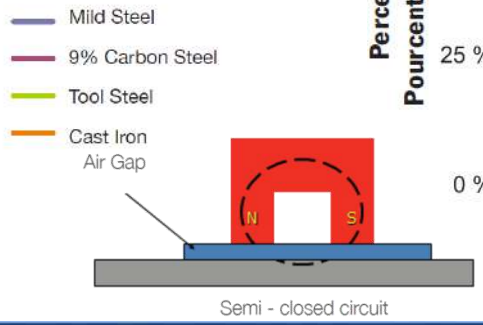
Surface finish?

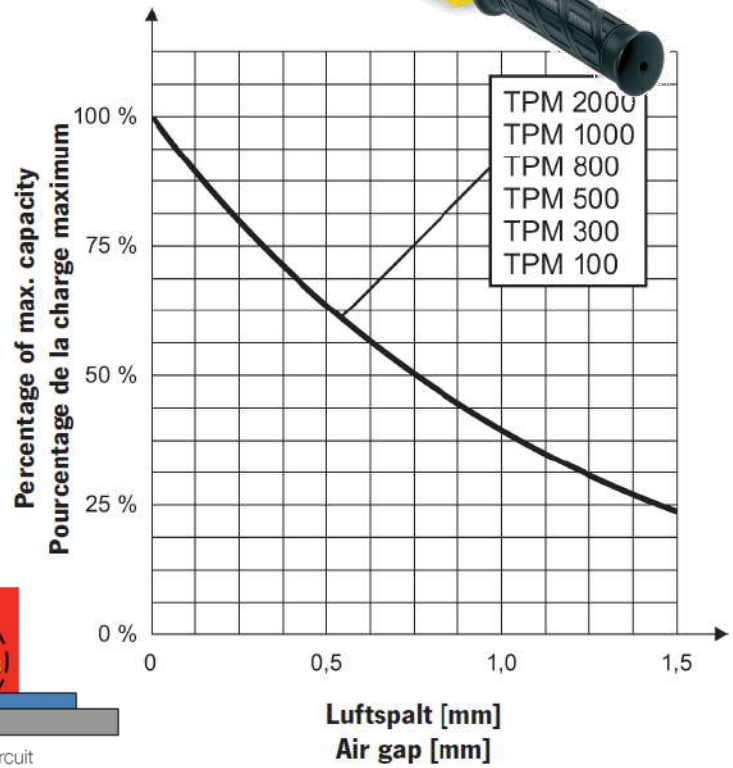
Air Gaps

Air Gaps

An air gap between the magnet and the load will also affect lifter performance. The chart below shows the effect on different materials.

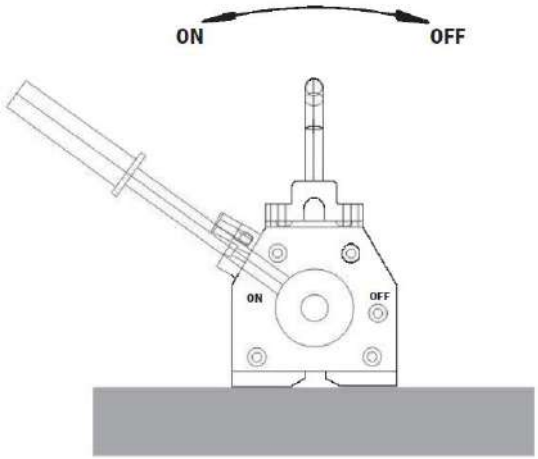






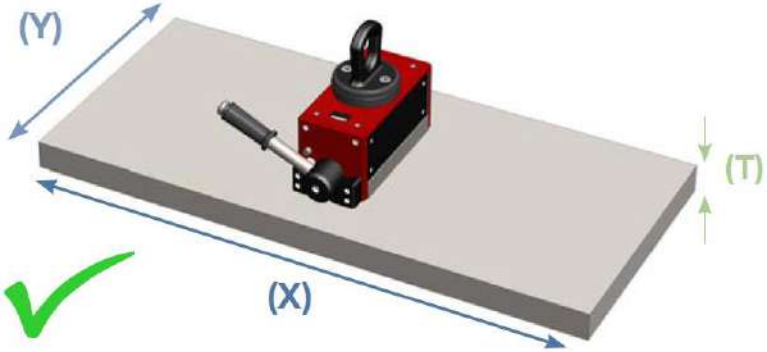
What can be lifted

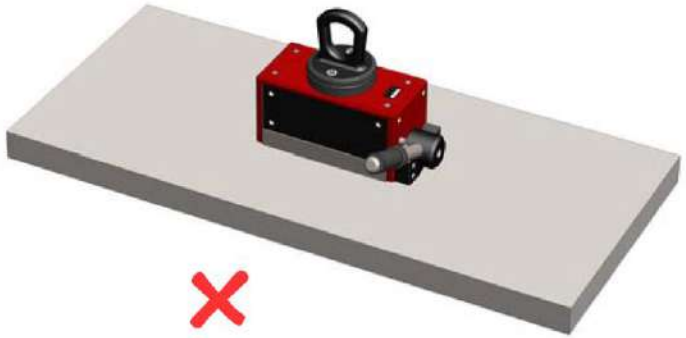
Flat Plates
How stiff?
How long?



Peel Effect

Component wider than the length of the magnet

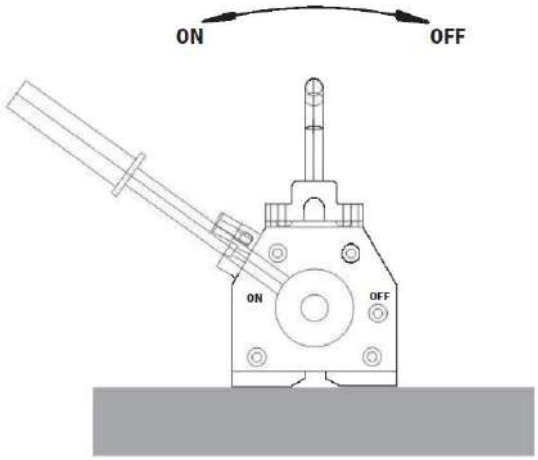




Magnet across increases clamping at possible point of peel.

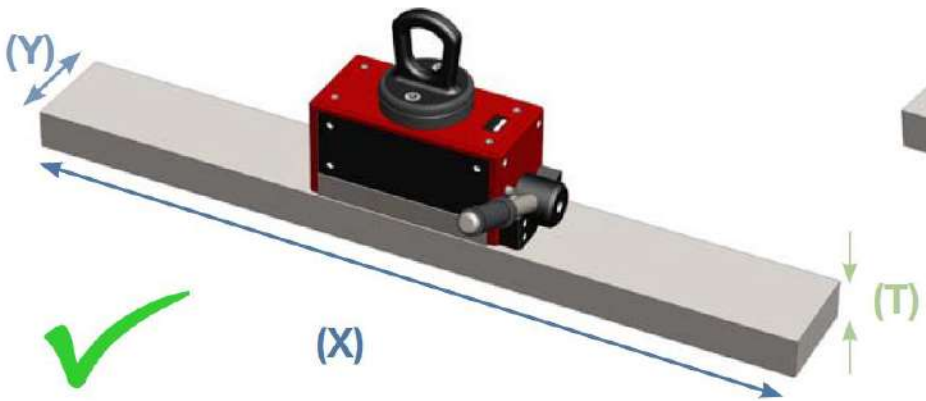
What can be lifted

Flat Plates
How stiff?
How long?

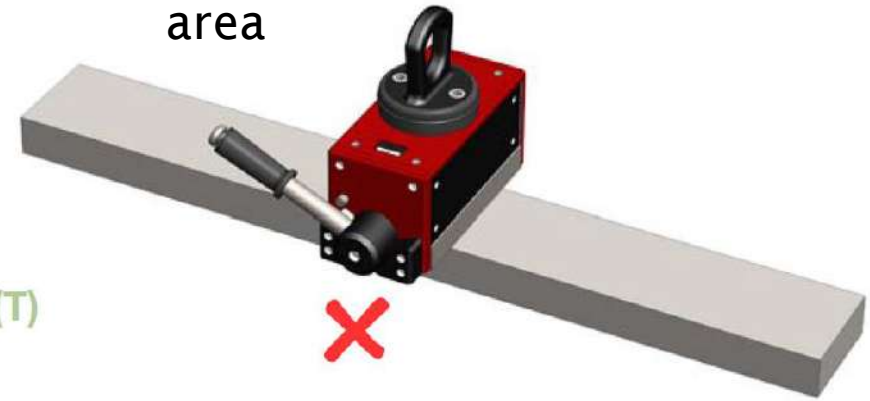


Peel Effect

Component width less than the magnet length



The small peel gap is better than the total loss of contact area

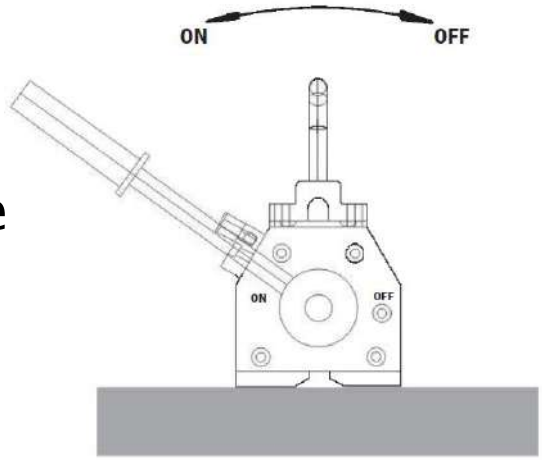


What can be lifted

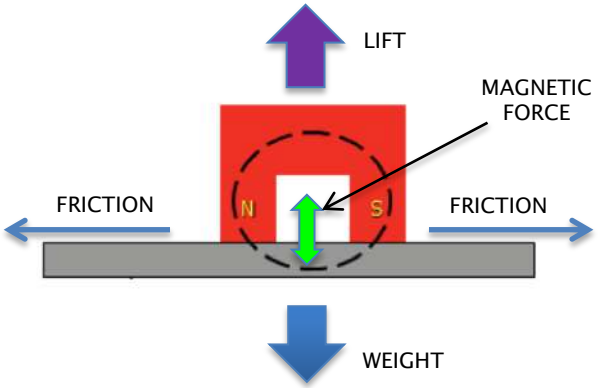
Flat Plates

Where is CoG?

Swing of crane



Tip Effect



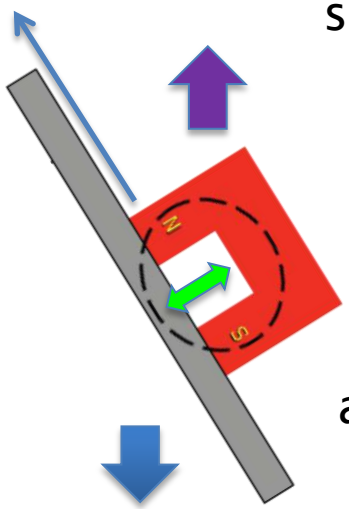
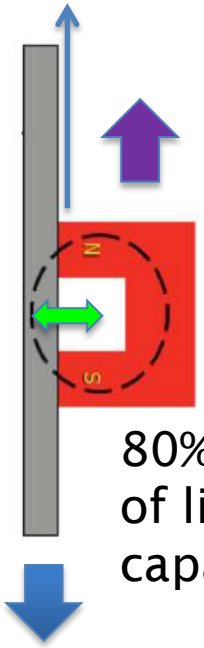


Plate will slip at angles over 10º!

Friction between the magnet and the plate is very small



80% loss of lifting capacity

The TPM Magnet

Remember:

- Single Pieces Only
  Separate stacks
- Material
  What is it?
- Thickness (diameter)
  Check Min Size
- Air Gap
  Flatness / Surface Finish
- Peel Effect
  Long Items
- Tip Effect
  CoG?, Limit Swing

Thank you