

Other factors aside from the magnet material and the size of the magnet affecting the magnetic pulling force are:

an air gap (magnetically non-conductive materials act like an air gap)

the quality of the surface (roughness and shape)

the temperature

the content of ferro-magnetic material in the steel; the components must also be sufficiently thick to be able to absorb the entire magnetic flux.

The magnetic pulling force can also be impaired by alternating thermal stress and by chemical factors (aggressive baths, gases, etc.).

The diagrams and graphs below show guide values relating to the impact on the magnetic pulling force caused by different mechanical specifications.

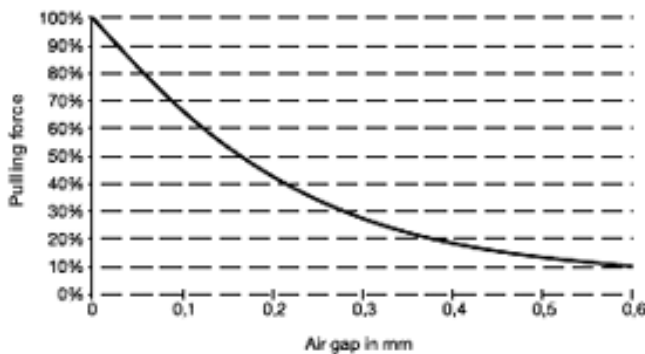
The nominal magnetic pulling forces shown in the tables of the standard pages are minimum values which are achieved at:

room temperature

perpendicular „tear-off“ under full surface contact of the magnet

workpieces made of low-carbon steel with a minimum thickness of 10 mm

## Influence of the air gap

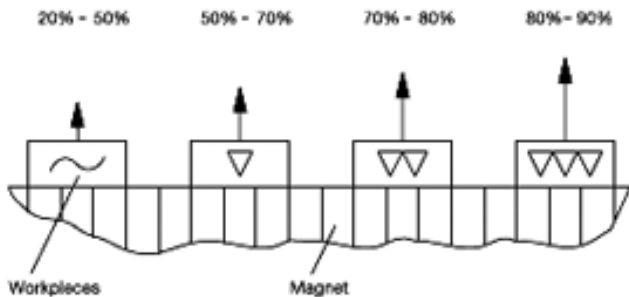


## Influence of the material (steel grade)

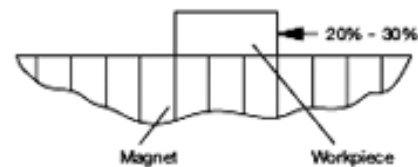
100% technically pure iron	86% C60
95% St37	84% 42CrMo4
95% C15	75% St50
94% 34CrNiMo6	72% X155CrMo12
93% St52-3	65% X210CrW12
92% 90MnV8	50% 20MnCr5
90% C45	30% GG
87% Ck45	0% non-ferrous metals

Hardened workpieces are bad conductors of the magnetic flux. The magnetic pulling force is therefore lower.

## Influence of the workpiece surface on the magnetic pulling force



Displacement force = 20% - 30% of the magnetic pulling force



The displacement force is also influenced by the surface roughness and the magnetic pulling force

## Force Measure

1 Newton (N = .225 lbs.)