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LIFTING MAGNETS
MLX-250/500/1000/2000

USER'S MANUAL – Metric

READ THIS MANUAL CAREFULLY BEFORE USING THE LIFTING MAGNET

IMPORTANT! The capacity of a lifting magnet depends on various factors which influence magnetic performance. These instructions must be carefully read and observed.

FACTORS INFLUENCING CAPACITY OF LIFTING MAGNETS

Besides weight, there are additional characteristics of the load which must be considered to evaluate the capacity of lifting magnets. Lifting magnets use magnetic force to grip the load so, for this reason, the load must be composed of a magnetic material (for example, iron).
The magnetic force is formed in lines of force (magnetic flux) which run from the North to the South poles of the lifting magnet. Any condition which impedes or limits the free flow of the magnetic flux reduces the lifting capacity. There are four major factors which impede the flow of magnetic flux.

1 The contact surface:

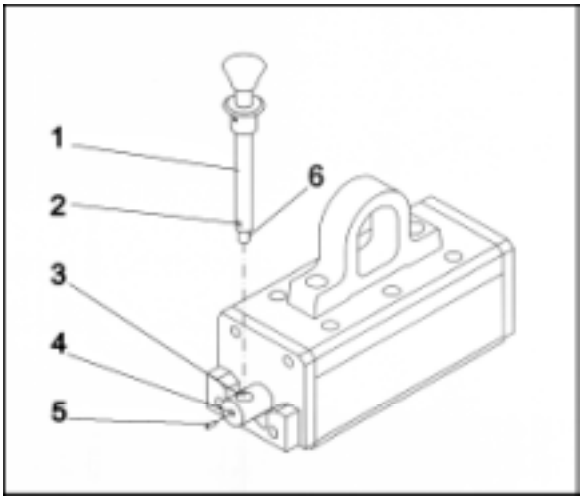
The magnetic flux of the lifting magnet easily passes through iron but does not pass easily through air or non-magnetic materials. If a separation (air gap) is caused between the lifting magnet and the load, the magnetic flux is weakened and this reduces the lifting force.

Oxide, paint, dirt, paper, plastic or a rough surface finish produce an air gap and therefore a reduction in the lifting capacity.

2 The thickness of the load:

The magnetic flux of the lifting magnet needs a minimum thickness of iron to work (the iron becomes saturated if a given flux density - number of lines of flux per unit volume - is exceeded).

When the piece does not have this minimum thickness the lifting force is reduced.



Attention! Ensure that the end of the stud (5) fully engages in the notch (2) of the handle and secures it in place. Check that the locking shaft (6) protrudes from the shaft as shown and blocks the handle from accidental rotation.

3 The length and width of the load:

As the load becomes longer and/or wider, there is a tendency for it to droop away from the lifter creating a contact surface that is curved and not flat. This curvature results in an air gap between the lifting magnet and the load resulting in a reduction of lifting capacity, especially with thin pieces. When this happens the lifting force is reduced.

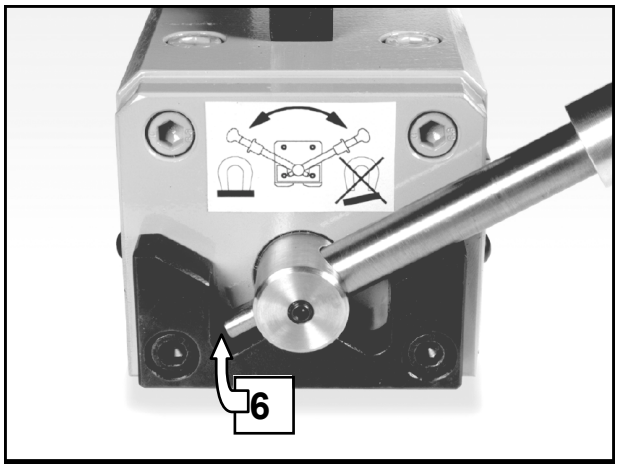
4 The composition of the load:

Low carbon steels are good magnetic conductors, for example non-alloy steel 0.1-0.3%C such as 1018 / A36. However, steels with high carbon and/or alloy contents have reduced magnetic properties and this reduces the lifting force. Heat treatment affecting the structure of the steel also reduces magnetic performance – harder steels have lower lifting force capacity and an increased tendency to retain residual magnetism.
The nominal force of these lifting magnets is for non-alloy steel 0.1-0.3%C.

INSTALLING HANDLE

Along with this lifting magnet, a handle is supplied that must be installed before operation. Follow these instructions:

- Fit the handle (1) in the hole (3) of the shaft of the lifter.
- Check that the notch (2) in the handle lines up with the tapped hole (4) of the shaft.
- Next insert the Allen stud (5) in the hole (4).



OPERATIONAL LOADS

MLX-250/500/1000/2000 lifting magnets are rated for the following maximum loads for flat pieces:

MLX-250 = 250 Kg **MLX-500 = 500 Kg** **MLX-1000 = 1,000 Kg** **MLX-2000 = 2,000 Kg**

However, the load characteristics previously described can affect the lifting capacity.Table A shows the effect of air gap and thickness of the load on lifting capacity and so determines the maximum load for different air gaps and thickness. Length and width must also be taken into account.
NEVER EXCEED LOADS OR MAXIMUM DIMENSIONS FOR EACH THICKNESS !

The values in Table A are for non-alloy steel 0.1-0.3%C. Any alloy may produce a reduction in lifting capacity (seeTable B). The values in Table A correspond to a Safety Coefficient of 3 (actual test load values are 3 times those shown in the table).
The maximum operating temperature and/or temperature of the load must never exceed 80°C.

WARNING! When pieces to be lifted are thin – less than thickness given for full load capacity - and are in a pile, more than one piece at a time may be attracted resulting in a danger that pieces not in direct contact with the lifter may fall during transport. **Never lift more than one piece!**

Table A - Metric (All values are for non-alloy steel 0.1-0.3 % C, for others materials apply reduction according Table B)			**Air gap / Surface type**					
			≤ 0.1 mm Clean, polished, milled,...		**0.1-0.3 mm Rusted or with coatings**		**0.3-0.5 mm Good casting or forging**	
Type Code	Safety coefficient 3		**Maximum dimension (mm)**	**Max. weight (Kg)**	**Maximum dimension (mm)**	**Max. weight (Kg)**	**Maximum dimension (mm)**	**Max. weight (Kg)**
MLX-250 16.11.002	Thickness Flat piece (mm)	≥ 15	1500x1000	250	1200x1000	150	1000x800	125
		10	1500x1000	220	1200x800	145	1000x600	125
		5	1000x1000	100	1000x800	80	800x600	70
	Round $Ø_{min.}$ / $Ø_{max.}$ (mm)	50 / 350	3.000	100	3000	75	3.000	60
MLX-500 16.11.005	Thickness Flat piece (mm)	≥ 20	2000x1000	500	2000x1000	330	1800x1000	300
		10	1800x1000	330	1200x1000	250	1000x800	230
		5	1000x1000	130	1000x1000	110	1000x800	100
	Round $Ø_{min.}$ / $Ø_{max.}$ (mm)	60 / 400	3000	250	3000	165	3000	150
MLX-1000 16.11.010	Thickness Flat piece (mm)	≥ 35	2000x1000	1000	2000x1000	790	2000x1000	725
		20	2000x1000	790	2000x1000	630	1800x1000	575
		10	2000x1000	385	1200x1000	350	1000x1000	325
		5	1200x1000	160	1000x1000	145	1000x1000	140
	Round $Ø_{min.}$ / $Ø_{max.}$ (mm)	80 / 400	4000	500	4000	390	4000	360
MLX-2000 16.11.020	Thickness Flat piece (mm)	≥ 50	2500x1500	2000	2500x1500	1750	2500x1000	1600
		25	2000x1000	1400	2000x1000	1350	2000x1000	1200
		15	2000x1000	900	1800x1000	850	1500x1000	800
	Round $Ø_{min.}$ / $Ø_{max.}$ (mm)	150 / 500	5000	1000	5000	850	5000	800

OPERATING INSTRUCTIONS

1 The contact surfaces of both the lifting magnet and the load must be clean and clear of interference.
2 The surface of the load must be smooth and in the case of rounded surfaces the diameter must be constant.
3 Place the lifting magnet in the centre of the piece.
4 To magnetise, first unlock the lever and turn to the magnetising position. Check that the lever is fixed in position with the safety lock.
5 Check the grip and the stability by raising the load a small amount.
6 Transport the load smoothly avoiding knocks and sharp movements.
7 To demagnetise, unlock the lever and turn it to the demagnetising position.

Table B	
Load material	**Lifting force**
Non-alloy steel 0.1-0.3 % C	100%
Non-alloy steel 0.4-0.5 % C	90%
Non-distorting alloy-steel	80-90%
Grey casting	50-60%
Non-distorting alloy-steel hardened to 55-60 HRc	40-50%
Austenitic stainless, Brass, Aluminium, Copper	0 %

WARNING! 1) Place the lifting magnet on the piece before magnetising.
2) Never position yourself below or near the raised load piece.
3) Never exceed the maximum capacities.

MAINTENANCE

The magnetic contact poles should be periodically inspected to ensure that there are no nicks or burring and are free from oxidation. Lifting force may be lost if this is not done. Burring can be removed with a file but severe irregularities may need grinding.
In the event that grinding of the pole feet is required, it is recommended that it be carried out by qualified personnel and that the lifter be re-certified at the same time.
It is recommended that the capacity of the lifting magnet be re-certified by qualified personnel every two years.