WENtechnology

Magnetic Lifting System

MLX250/500/1000/2000

MLX250/500-SV

MLX250-SR

USER'S MANUAL

Index

1. User's Manual

This manual is for the MLX series of lifting magnets. Please retain a copy of this manual for your records and make it accessible to staff for as long as the magnet is in service.

It is important that all persons who use or maintain this magnet read this manual carefully before use.

While maintaining the essential characteristics of the products described in this manual, Wen Technology reserves the right to make any changes to the components, details, and accessories, which we consider appropriate for improving the product or for any constructive or business requirements, at any time without updating this manual.

This equipmnet generates magnetic fields.
Careless handling can cause accidents and injuries.
Read the following recommendations before handling.

- Avoid close proximity with iron objects other than work piece (i.e., beams, cranes, doors, etc.)
- Be especially careful when using tools near load. (i.e., knives, scissors, screwdrivers, etc.)
- When using two or more devices. Keep them separated at a safe distance to prevent them from attracting each other.
- If two magnets become stuck together or if a magnet will not separate from the load slide the magnet off to prevent pinching fingers (DO NOT PRY APART)
- Electronic equipment (i.e., pacemakers, hearing aid, computers, watches, measuring instruments and controls) and storage media (i.e. hard disc drives, floppy discs, credit cards, and magnetic tapes) can be distorted or damaged by magnetic fields. Keep items a suitable distance from the magnet.

2. Application

Operational loads at minimum thickness* (see tables A, B, D pg 6-8)

Lifting Magnets
MLX-250 = 550 lbs
MLX-500 = 1100 lbs
MLX-1000 = 2200 lbs
MLX-2000 = 4400 lbs

Vertical Lifting Magnets
MLX250-SV = 375 lbs
MLX500-SV = 550 lbs

Rotational Lifting Magnets
MLX250-SR = 130 lbs

*The load characteristics described on page 13 can affect the capacity. Tables A, B, and D shows the effect of an air gap and thickness of load on lifting capacity.

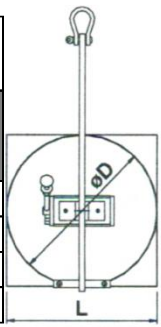
NEVER EXCEED LOADS OR MAXIMUM DIMENSIONS FOR EACH THICKNESS

Table A — Maximum weights and dimensions for flats and rounds lifting force perpendicular to the contact surface

(All values are for non-alloy Steel 0.1-0.3% C, for other materials apply a reduction according to table E)			Air Gap/ Surface Type					
			≥ 0.004 in Clean, polished, milled…		0.005-0.012 in Rusted or with coatings		0.013-0.020 in Irregular or well finished casting	
Type	Safety coefficient 3		Max Dimension (in)	Max Weight (lbs)	Max Dimension (in)	Max Weight (lbs)	Max Dimension (in)	Max Weight (lbs)
MLX-250	Thickness Flat Piece (in)	≥0.5	60 x 40	550	45 x 40	330	40 x 30	275
		0.4	60 x 40	475	45 x 30	320	40 x 20	275
		0.2	40 x 40	220	40 x 30	175	30 x 20	150
	Round ⌀min/⌀max (in)	2 / 13	115	275	115	165	115	130
MLX-500	Thickness Flat Piece (in)	≥0.75	80 x 40	1100	80 x 40	725	70 x 40	660
		0.4	70 x 40	725	45 x 40	550	40 x 30	500
		0.2	40 x 40	285	40 x 40	240	40 x 30	220
	Round ⌀min/⌀max (in)	2.4 / 15.75	115	550	115	360	115	330
MLX-1000	Thickness Flat Piece (in)	≥1.5	80 x 40	2200	80 x 40	1740	80 x 40	1600
		0.75	80 x 40	1740	80 x 40	1380	70 x 30	1260
		0.4	80 x 40	845	45 x 40	770	40 x 40	715
		0.2	45 x 40	350	40 x 40	315	40 x 40	300
	Round ⌀min/⌀max (in)	3.14 / 13	155	1100	155	850	155	800
MLX-2000	Thickness Flat Piece (in)	≥2	100 x 60	4400	100 x 60	3850	100 x 40	3525
		1	75 x 40	3000	75 x 40	2975	75 x 40	2640
		0.5	75 x 40	2000	70 x 40	1875	60 x 40	1760
	Round ⌀min/⌀max (in)	6 / 19.5	195	2200	195	1875	195	1760

Table B	Vertical Lifting (SV lifting device reqired)				
(All values are for non-alloy Steel 0.1-0.3% C, for other materials apply a reduction according to table E)			Air Gap / Surface Type		
			> 0.004 in Clean, polished, milled…	0.005-0.012 in Rusted or with coatings	0.013-0.020 in Irregular or well finished casting
Type	Safety coefficient 3		Max Weight (lbs)	Max Weight (lbs)	Max Weight (lbs)
MLX250-SV	Thickness Flat Piece (in)	0 .5 - 4 0.4	385 330	230 220	190 185
MLX500-SV	Thickness Flat Piece (in)	0 .75 - 4.75 0.5 0.4	770 660 500	500 440 385	460 395 350

Table C	Maximum and minimum dimensions (Vertical lifting device)	
Dimension	MLX250-SV Minimum-Maximum (in)	MLX500-SV Minimum-Maximum (in)
D	⌀8-⌀20	⌀8-⌀27.5
E	0.4 - 4	0.6 - 4.75
H	7.85 - 19.5	9.85 - 27.5
L	7.85 - 39.5	11.75 - 39.25



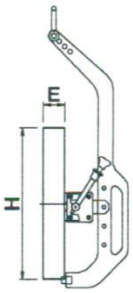
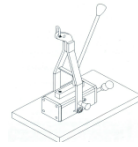


Table D	Rotational Lifting (SR lifting device required)	

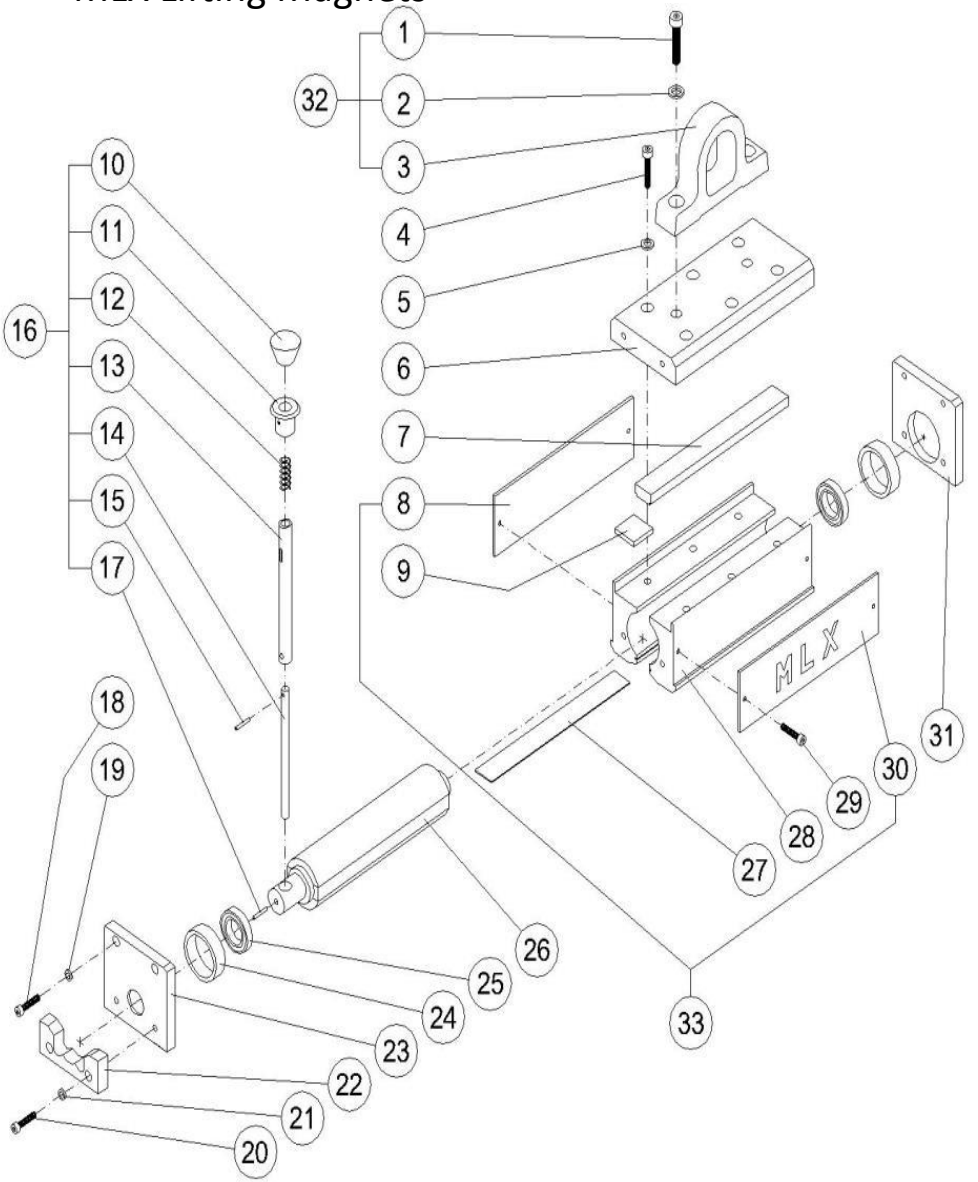
(all values are for non-alloy steel 0.1-0.3 % C, for other materials apply reduction according to table B)			Air gap / Surface Type		
			≤ 0.004 in Clean, polished milled,…	0.004-0.012 in Rusted or with coatings	0.012-0.020 in Irregular or well finished casting
Type Code	Safety Coefficient 3		Max. Weight (Lbs)	Max. Weight (Lbs)	Max. Weight (Lbs)
MLX250-SR	Thickness (in)	≥0.5	130	90	70
	Maximum Dimensions (in)		20 x 20	20 x 20	20 x 20

Table E	Reduction to be applied depending on type of material

Load material	Lifting force
Non-alloy Steel 0.1-0.3 % C	100%
Non-alloy steel 0.4-0.5 % C	90%
Nondistorting alloy-steel F-522	80-90%
Grey Casting	50-60%
Nondistorting alloy steel F-222 hardened to 55-60 HRc	40-50%
Austenitic Stainless steel, Brass, Aluminum, Copper	0%

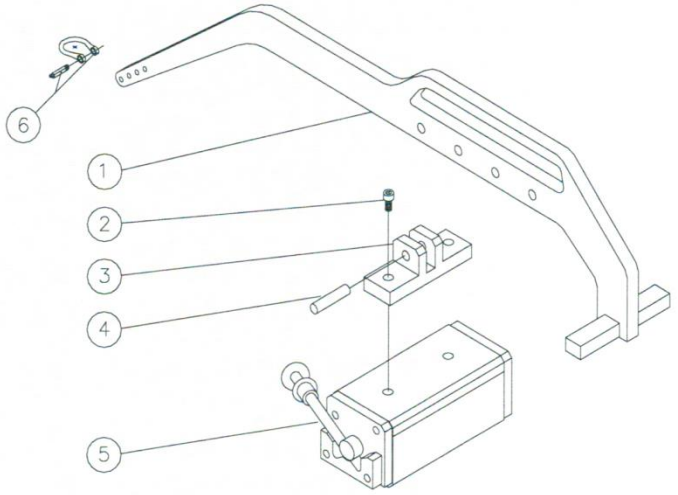
3. Components

MLX Lifting Magnets



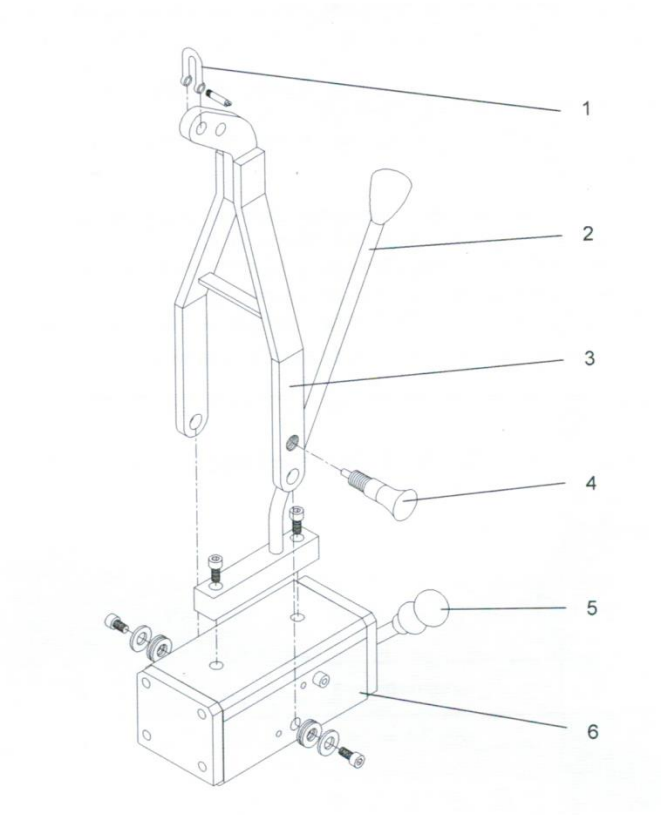
		MLX-250		MLX-500		MLX-1000		MLX-2000	
Piece	Description	Code	Qty	Code	Qty	Code	Qty	Code	Qty
1	Screw	_	2	_	2	_	2	_	2
2	Lock Washer	_	2	_	2	_	2	_	2
3	Bail	EM.31.002	1	EM.32.002	1	EM.32.002	1	EM.34.001	1
4	Screw	_	4	_	4	_	4	_	4
5	Lock Washer	_	4	_	4	_	4	_	4
6	Top Plate	_	1	_	1	_	1	_	1
7	Seperator	_	1	_	1	_	1	_	1
8	Label (sold as set)	_	1	_	1	_	1	_	1
9	NdFeB Magnet	_		_		_		_	
10	Knob	PM.21.101	1	PM.21.102	1	PM.21.103	1	PM.21.104	1
11	Latch Collar	PQ.54.003	1	PQ.54.013	1	PQ.54.023	1	PQ.54.033	1
12	Spring	MO.10.021	1	MO.10.022	1	MO.10.023	1	MO.10.024	1
13	Lever Tube	_	1	_	1	_	1	_	1
14	Lever Shaft	_	1	_	1	_	1	_	1
15	Pin	_	1	_	1	_	1	_	1
16	Complete Lever	MLX250H	1	MLX500H	1	MLX1000H	1	MLX2000H	1
17	Set Screw	_	1	_	1	_	1	_	1
18	Screw	_	6	_	6	_	6	_	6
19	Lock Washer	_	6	_	6	_	6	_	6
20	Screw	_	2	_	2	_	2	_	2
21	Lock Washer	_	2	_	2	_	2	_	2
22	Lever Position Lock	_	1	_	1	_	1	_	1
23	Shaft Cover	_	1	_	1	_	1	_	1
24	Bearing Support	_	2	_	2	_	2	_	
25	Bearing	_	2	_	2	_	2	_	2
26	Magnetic Rotor	_	1	_	1	_	1	_	1
27	Protective Sheet	_	1	_	1	_	1	_	1
28	Lateral Piece	_	2	_	2	_	2	_	2
29	Screw	_	4	_	4	_	4	_	4
30	Label (sold as set)	_	1	_	1	_	1	_	1
31	Back Cover	_	1	_	1	_	1	_	1
32	Lifter Bail Assembly	EM.31.002	1	EM.32.002	1	EM.32.002	1	EM.34.001	1
33	Label Assembly	MLX250L	1	MLX500L	1	MLX1000L	1	MLX2000L	1

SV Vertical Lifting Device



Piece	Description	MLX250-SV		MLX500-SV	
		Code	Qty	Code	Qty
1	Steel Arm		1		1
2	Screw		2		2
3	Bail		1		1
4	Pin		1		1
5	Lifting Magnet	MLX-250	1	MLX-500	1
	Shackle		1		1

SR Rotational Lifting Device



Component	Description	Code	Qty
1	Lifting Shackle	VA.00.029	1
2	Rotary System Handle	EM.31.925	1
3	Rotary System	EM.31.915	1
4	System Position Lock	PS.99.999	1
5	Lifter Handle	MLX250-H	1
6	MLX-250 Lifter	MLX250	1

4. Usage Factors

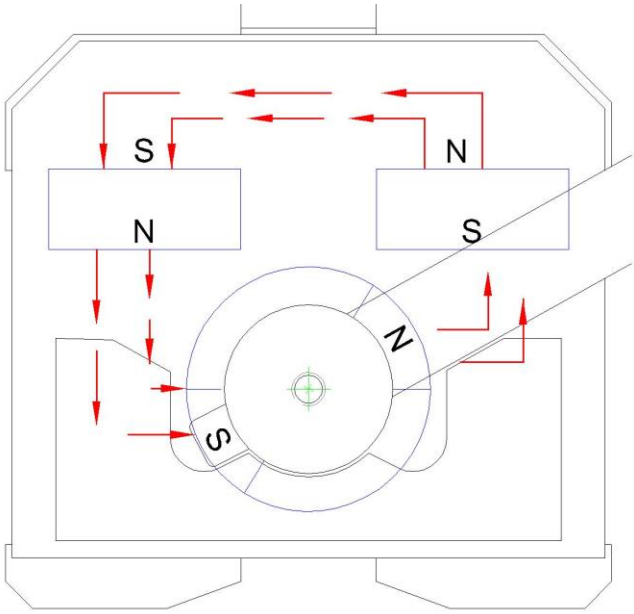
BEFORE USING THE LIFTING MAGNET READ THIS MANUAL CAREFULLY

IMPORTANT: The effectiveness of a lifting magnet depends on various factors which influence its magnetic capacity and which must be read and observed carefully

Factors Influencing the Capacity of Lifting Magnets

There are other characteristics of the load apart from weight which should be considered to evaluate the lifting capacity. This lifter uses magnetic force to attract the load, for this reason the load should be composed of material with magnetic properties (i.e. Iron)

The magnetic force is represented by lines of force (magnetic flux) which run from the north pole to the south pole of the magnet. Any situation that impedes this flow will reduce the lifting capacity of the magnet. There are four major factors that impede the flow of magnetic flux.



"OFF" POSITION

1. The contact surface:

The magnetic flux of the lifting magnet easily goes through iron, but not through air or non-magnetic materials. If the magnet and the load are not in direct contact (air gap) then the magnetic flux is weakened and the lifting force is reduced. Oxide, paint, dirt, paper or a rough finished surface produce an air gap and therefore a reduction in lifting force.

2. The thickness of the load:

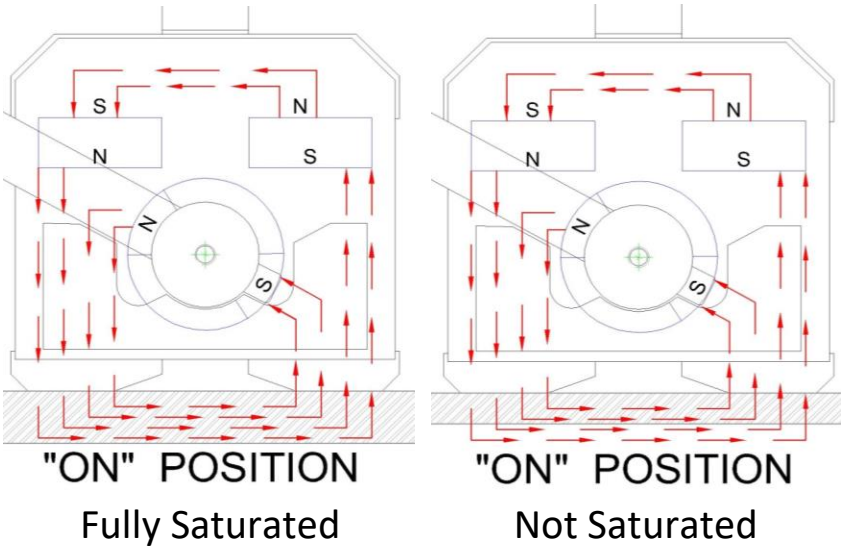
The magnetic flux of the lifting magnet requires a minimum amount of material (thickness). The ferromagnetic material becomes saturated when a given number of lines of flux are exceeded. When the load does not have this minimum thickness the lifting force is reduced.

3. The length and width of the load:

When the length or width of the load increases, the edges begin to flex downward and the flatness of the piece is reduced producing an air gap on the edges of the magnet. This is especially prevalent in thinner materials. When this occurs lifting force is reduced.

4. The composition of the load.

Low carbon steels are good magnetic conductors, for example ST-37 (non-alloy steel 0.1-.03% C). However, high carbon steels or alloys with other materials lose their magnetic properties and reduce the lifting force. Heat treatments affecting the structure of the steel also reduce lifting force. The higher the hardness of the steel the worse it behaves magnetically and it tends to keep the residual magnetism. The nominal force of these lifting magnets is for ST-37.



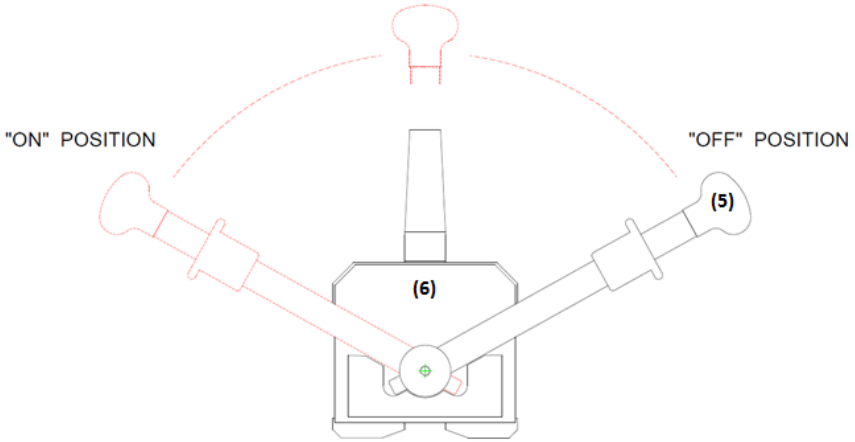
5. Instructions for Use

Magnetize/De-magnetize the Lifter (MLX-250/500/1000/2000)

1. The contact surfaces of the lifting magnet and the load should be clean and polished.
2. The surface of the load must be completely flat.
3. Place the lifter (6) in the center of the load, so that it is balanced when lifting.
4. To magnetize, unlock the lever (5) and turn to the magnetized position. Check that the lever is securely locked into position.
5. Check the hold and stability by raising the load a little.
6. Carry the load smoothly, without knocking or shaking.
7. To de-magnetize, be sure load is completely down, unlock lever and turn to demagnetized position

Caution:

1. Place lifting magnet on load before magnetizing.
2. Never stand below or near the raised load piece
3. Never exceed the maximum capacities.



SV - Vertical Lifting Device

This lifting device allows you to lift horizontal loads turning them vertical during the lifting process and turning them back to horizontal when setting back down.

1. Insert the shackle (6) into the appropriate hole aligned with the center of gravity of the load.
2. Inset the bail (3) into the appropriate position according to dimension H (see table C).
3. Place the lifter in the center of the load; ensure that the stops (7) are making contact with the load as shown.
   CAUTION: It is very important that the load is supported by the stops (7) to ensure rated capacity.
4. Follow magnetize/de-magnetize instructions (page 15)

SR - Rotational Lifting Device

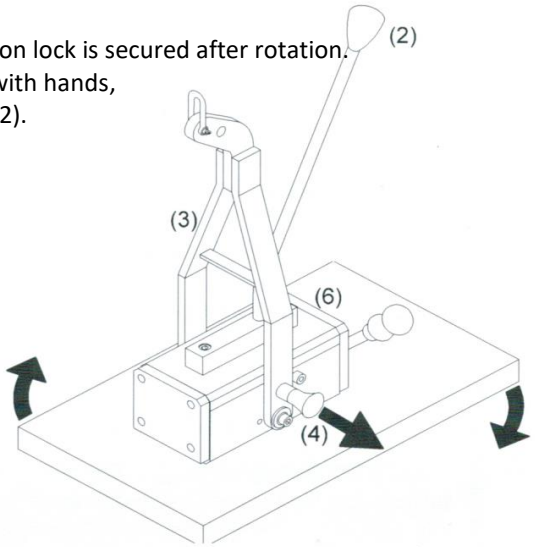
This lifting device allows for two positions to lift and hold the load: horizontal and vertical.

This device is designed to rotate the load after lifting.

1. Unlock the rotary device (3) by pulling the position lock (4).
   Move with the help of the lever (2) if needed.

2. Rotate the lifter (6) to the desired position (vertical or horizontal) by using the lever (2).
3. Follow magnetize/de-magnetize instruction (page 15)

IMPORTANT:
Ensure that the position lock is secured after rotation.
Do not handle piece with hands,
always use the lever (2).



ATTENTION

When magnetizing the lifting magnet, it is possible that a greater amount of force is required to turn the lever or that the lever will not turn.

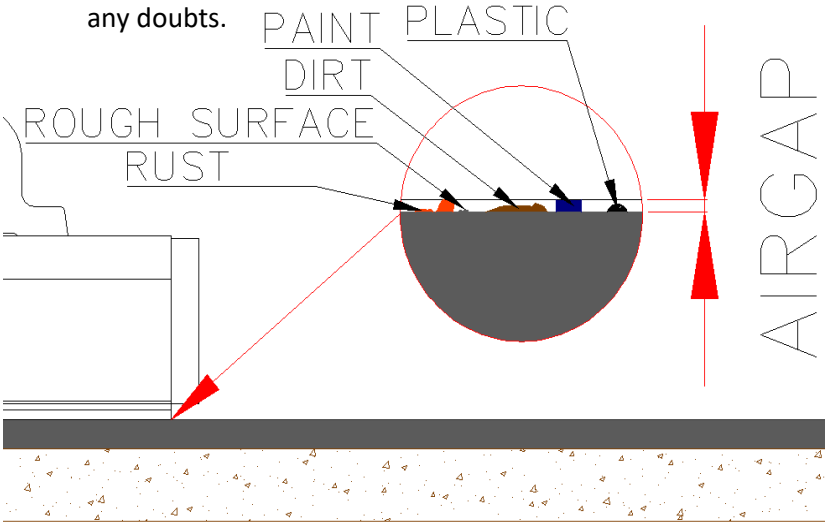
This can be caused by:

- A large air gap between the lifting magnet and the load.
- An insufficient thickness of the load.
- Material of the load may have insufficient magnetic properties.

(See factors influencing the capacity of the lifting magnets pg. 13)

If that is the case, take the following into account:

1. Effective clamping force is reduced (see tables of capacity pg.6-8)
2. During de-magnetization process the lever must be firmly held throughout the process to prevent a snapping effect. This is advisable in all circumstances even with an optimal load.
3. Do not hesitate to contact the supplier or manufacturer with any doubts.



6. Warranty and Service

- 2-Year Limited Warranty
- ASME BTH-1-2017 Service Class 2

Verify periodically that the set screw that holds the handle in place does not back off during use. Ensure handle locking mechanism is engaging properly.

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 reduced if this is not done.

Most nicks and burrs can be removed with a stone but severe irregularities such as uneven wear may require grinding.

If refinishing is required, it must be carried out by qualified personnel and the lifter re-certified prior to use.

The capacity of the lifting magnet must be verified periodically by an expert.

Repair work

This equipment may only be inspected or repaired by trained specialists. All repairs made improperly can cause considerable damage to machine and user.

Use only original spare parts **Wen Technology**

Please visit our website for more information on annual inspections and replacement parts. www.wentechnology.com/lifters/service

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