

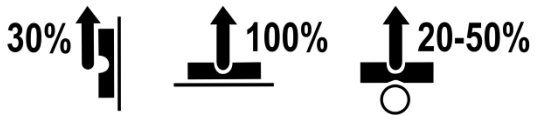


MAGLOGIX[®]


Operation Manual

Maglogix[®] MX-750-HL^R

EN Switchable Magnetic Hand Lifter



Contents

Safety Instructions, Proper Use, Device Description, Technical Data, Markings on the Hand Lifter, Start-up, Basic Information Concerning the Maximum Holding Force of the MX-750-HL ^R , Detailed Performance Data for the MX-750-HL ^R Magnetic Hand Lifter, Maintenance and Inspection of the Hand Lifter, EC Declaration of Conformity	Before use read and save these instructions!		Page 3
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Dear customer,

Thank you for purchasing a Maglogix[®] product. Please read these operating instructions closely before using your device for the first time and keep them along with the enclosed Product Control Card for later reference.

Safety Instructions

Serious accidents with fatal physical injuries can occur when using extremely strong magnetic clamps if they are improperly used and/or maintained. Please observe all safety instructions in this operation manual and contact the manufacturer if you have any questions.



Always...

- activate the Hand Lifter completely
- activate the Hand Lifter on metallic, ferromagnetic materials
- use the entire magnetic contact area for lifting
- lift on plane surfaces
- lift round pipes with the correct diameter
- ensure that the pipe is positioned correctly in the groove when using the Hand Lifter on round pipes
- check the magnetic holding force by shaking after picking up the load
- clean the magnetic contact area and keep it clear of dirt, chips and welding spatter
- set the Hand Lifter down gently to prevent damage to the magnetic contact area
- check the hazard area when pivoting the load
- respect the stated maximum load before pivoting
- inspect the magnetic surface and the entire Hand Lifter for damage
- follow the instructions in this operation manual
- instruct new operators in the safe use of switchable magnetic tools
- respect local, country-specific guidelines
- store in a dry place



Never...

- exceed the stated maximum load
- lift arched objects or objects with free form surfaces
- lift round pipes of a too big or too small diameter
- lift loads over people
- lift more than one work piece at a time
- switch the Hand Lifter off before setting down the load safely
- allow the load to sway or bring to a sharp and immediate stop
- lift loads exceeding the recommended dimensions
- lift loads with cavities, cut-out openings or drilled holes
- modify the Hand Lifter or remove operating labels
- use the Hand Lifter if damaged or missing parts
- strain the underside of the magnet through heavy impact or blows
- position yourself beneath the lifted load
- leave the load hanging unattended
- use the Hand Lifter without having been properly instructed
- use if you have not read and understood these operating instructions completely
- use the Hand Lifter to support, lift or transport persons
- operate the Hand Lifter in temperatures higher than 140°F (60°C)
- expose to corrosive substances



People with cardiac pacemakers or other medical appliances should not use this Hand Lifter until they have consulted with their physician.

Proper Use

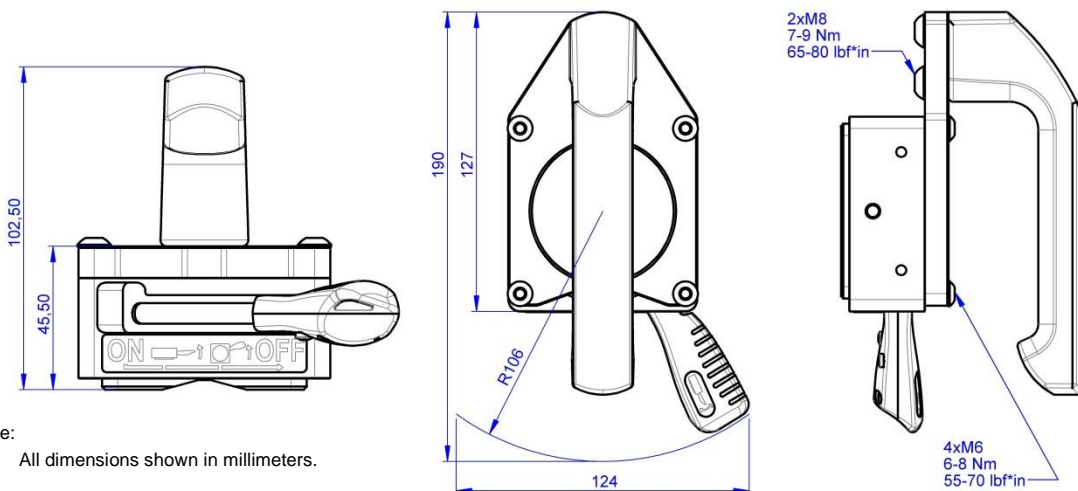
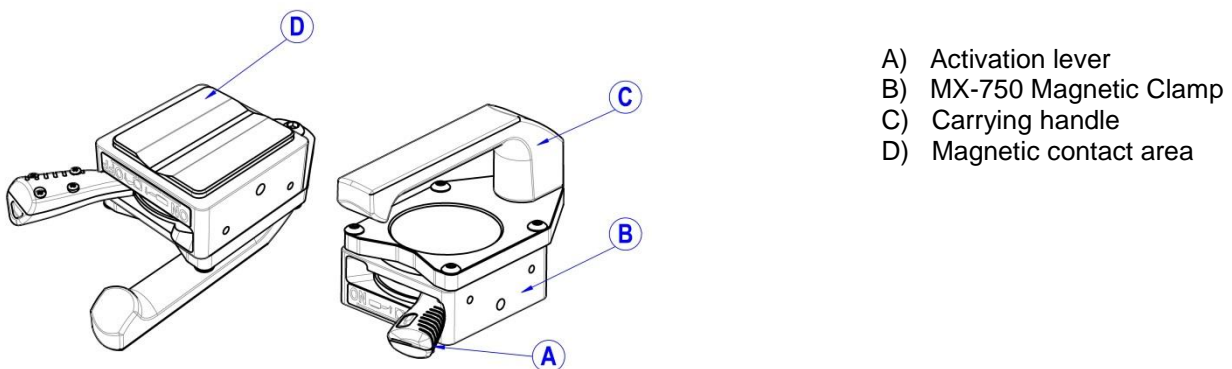
The Maglogix® Hand Lifter (MX-750-HL^R) is a switchable magnetic clamp equipped with permanent magnets and is designed for attachment to and the manual lifting (by hand) of ferromagnetic, metallic workpieces. The MX-750-HL may only be used according to its technical data and determination. Proper use includes adherence to the start-up, operating, environment and maintenance conditions specified by the manufacturer. The user bears sole responsibility for understanding this operating manual as well as for the proper use and maintenance of this Hand Lifter. Please contact the manufacturer if you have any questions prior to using this device.

Device Description

The MX-750-HL^R Hand Lifter's special design has a tightly compacted (shallow-profile) magnetic field that develops an incredible attractive force especially on thin ferromagnetic materials of less than 10 mm. The MX-750 Magnetic Clamp is switchable (ON/OFF) by means of a 60° manual activation lever (B). When switched and locked into the ON position, internal permanent magnets generate a powerful magnetic field into the magnetic contact area (C) and hold a ferromagnetic, metallic workpiece with incredible force. To deactivate the magnetic clamp, first lift the activation lever at its far end upwards to disengage the lever from its latching notch and return by 60° into the OFF position.

Note: Care must be taken because the activation lever can quickly/strongly spring back to the OFF position when working on thin materials.

A strong and stable carrying handle (C) made of aluminum is attached to the upper side of the MX-750 Magnetic Clamp. The load-bearing capacity of the Hand Lifter is equivalent to at least 1/3 of the maximum breakaway force of the magnet. Please refer to the following **Technical Data**. An additional groove in the magnetic contact area allows the user to attach the Hand Lifter to round pipes.



Be sure to read the operation instructions completely before using the Hand Lifter for the first time!

Technical Data

Product-Number:	41100.H.R.MX-750	
Designation:	MX-750-HL ^R Hand Lifter	
Breakaway force:	Up to 750 lbs. from 0.25" S235	Up to 340 kg from 6 mm S235
Max. load-bearing capacity: (on flat material with safety factor >3:1)	110 lbs. from 0.12" S235	50 kg from 3 mm S235
Max. load-bearing capacity: (at 90° inclination of the load with safety factor >3:1)	75 lbs. from 0.12" S235	35 kg from 3 mm S235
Max. load-bearing capacity: (on round pipes at 0° inclination)	20% - 50% of the breakaway force	20% - 50% of the breakaway force
Admissible diameter of round pipes	1" - 8"	25 mm - 200 mm
Dead weight of the unit:	3.74 lbs.	1.7 kg
Storage temperature:	-22°F to +140°F	-30°C to +60°C
Operating temperature:	-22°F to +140°F	-30°C to +60°C

Markings on the Hand Lifter

Detailed descriptions for the safe handling and proper operating conditions of the MX-750-HL can be found on the upper side of the Hand Lifter. If this label has been modified, damaged, or removed the manufacturer cannot be held responsible for any personal injuries, property damage or accidents resulting from this fact. To meet full compliance, the entire Hand Lifter must be returned to the manufacture for calibration and relabeling.



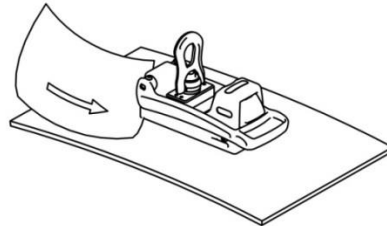
Product-Number 189414231.MX750H

Start-up

You have received a completely assembled Maglogix® MX-750-HL^R Hand Lifter and a detailed operating manual. Please check the condition of all items upon receipt for any damage incurred during transport, and make sure the delivery is complete. If you find any problems, please contact the manufacturer immediately.

1. Follow all safety instructions. Clean the workpiece in the area of attachment and the magnetic contact area of the Hand Lifter (see **Surface Quality**).

Caution: At the beginning of the application, watch for any deformation of the workpiece to the magnetic contact area when activating the Magnetic Clamp. If a small distance (air gap) forms between the magnetic contact area and the workpiece, the Magnetic Clamp will not reach the stated holding force and could detach itself. Please check for any air gap developing at the edges of the TiN-coated magnetic contact area. This air gap can be tested by slipping a sheet of 20 lbs. (80g/m²) paper into the gap. If the paper slips into the gap:



Immediately stop the application!

Never exceed the dimensions and/or the load-bearing capacity of the values given in **Detailed Performance Data, Table 2 & 3**.

2. Place the Hand Lifter as close to the center of gravity of the workpiece as possible.

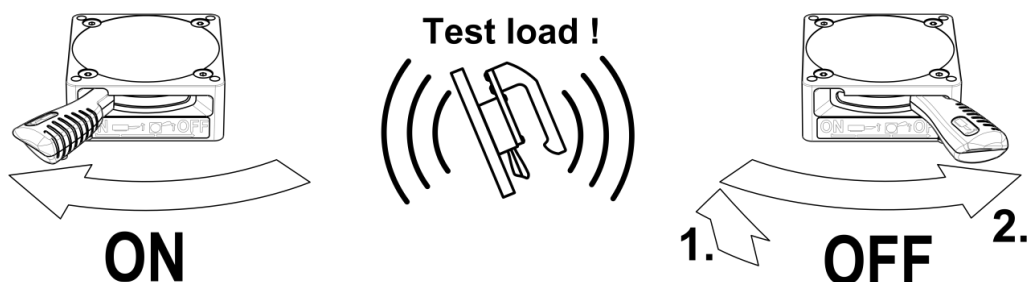
Note: Although the magnetic clamp of the Hand Lifter is in the OFF position, it still has a slight magnetic pre-tensioning in order to avoid inadvertent slippage or dropping of the Hand Lifter, and/or the workpiece. This pre-tension also allows for ease of positioning the Hand Lifter to the workpiece.

3. Rotate the magnetic clamp activation lever by 60° into the ON position. Always check to make sure the lever springs into the locking notch.
4. Perform a test lift. Lift the workpiece slightly and check for a secure and strong hold of the magnetic contact area to the workpieces by shaking.

Important

DO NOT allow other ferromagnetic materials within 2 inches of any exposed ACTIVATED magnetic contact area. Serious injury could occur from instantaneous magnetic attraction!

5. Move the load slowly and smoothly. Avoid swinging or jarring.
6. After the load has been set down safely, deactivate the magnetic clamp of the Hand Lifter and remove from the workpiece, especially if the application might exceed the **Maximum Operating Temperature** of the magnet clamp. To deactivate the magnetic clamp, first lift the activation lever at its far end upwards to disengage the lever from its latching notch (1) and return by 60° into the OFF position (2). Care must be taken because the activation lever can quickly/strongly spring back to the OFF position when working on thin materials.



Basic Information Concerning the Maximum Holding Force of the MX-750-HL^R

The magnetic contact area is located on the underside of the magnet incorporating multiple magnetic poles which generate the magnetic holding force when activated. The maximum holding force that can be achieved depends upon different factors which are explained below:

Material

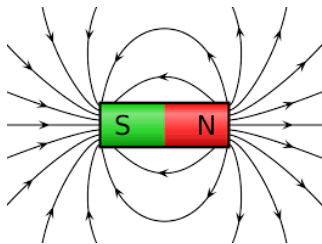
Every material reacts in different ways to the penetration of magnetic field lines. The breakaway force of the magnetic contact area is determined by using common (low carbon) A36 steel. The given load-bearing capacity of the magnet should be De-Rated based on **Table 1**. It is up to the user to determine adequate magnetic holding force for alloys not shown in this table.

Table 1

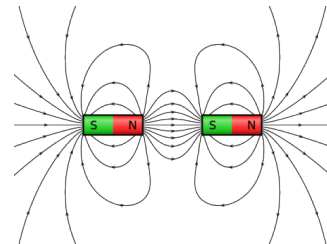
Material	Magnetic force in %
Non-alloyed steel (0.1-0.3% C content, includes A36)	100
Non-alloyed steel (0.3-0.5% C content)	90-95
Cast steel	90
Grey castiron	45
Nickel	11
Stainless steel, aluminium, brass	0

Material thickness

The magnetic flux (north to south field lines) of the permanent magnet requires a minimum material thickness to flow completely into and across the material below the magnetic contact area. Beyond this minimum material thickness, the maximum holding force continues to decrease (see **Detailed Performance Data**, Table 2 & 3).



Conventional (singular) switchable permanent magnet



Maglogix[®] (multi-field) switchable permanent magnet

Conventional switchable permanent magnets have a deep penetrating singular (north to south) magnetic field. The way conventional switchable permanent magnets hold onto steel would be similar to stapling paper together using one large heavy staple in the center of the page, and not bending the legs together.

The compact multi-field magnetic array of the Maglogix[®] switchable permanent magnets would be similar to stapling paper together in a circular pattern with many small lightweight staples close together, and bending the legs together to achieve an even greater holding force. An infinite number of small magnetic field arrays are the principle behind the Maglogix[®] patented switchable magnetic clamps.

Surface quality

The maximum holding force of a permanent magnet can be achieved in case of a closed magnetic circuit in which the magnetic field lines can connect up freely between the poles, thus creating a high magnetic flux. In contrast to iron, for example, air has very high resistance to magnetic flux. If an “air gap” (i.e. a space) is formed between the workpiece and the magnet contact area, the holding force will be reduced. In the same way, paint, rust, scale, surface coatings, grease or similar substances all constitute a space between the workpiece and magnetic contact area. Furthermore, an increase in surface roughness or unevenness has an adverse effect on the magnetic holding force. Reference values for your MX-750 can also be found in **Table 2 & 3**.

Load dimensions

When working with large workpieces such as girders or plates, the load can deform during the application. A large steel plate would bend downwards at the outer edges and create a curved surface which no longer has full contact with the magnetic contact area. The resulting air gap reduces the maximum load-bearing capacity of the magnetic clamp. Hollow objects or those smaller than the magnetic contact area of the magnet will also result in less holding power being available.

Load alignment

During lateral load ('shear' mode), the load-bearing capacity decreases dependent upon the coefficient of friction between the two materials.

Maximum operating temperature

The high-power permanent magnets installed in the magnetic clamp will maintain their load-bearing capacity up to a maximum operating temperature of 176°F (80°C). Exceeding this maximum operational temperature may cause irreversible damage.

Detailed Performance Data for the MX-750-HL^R Hand Lifter

Values shown for load capacity of the MX-750-HL^R Hand Lifter are based on material A36 comparable to S235 for the maximum, vertical tractive force with 0° deviation from the load axis and additionally under a 90° inclined load in accordance with EN13155, in each case with a 3:1 safety factor.

Note: The maximum total lifting weight by a single individual using the Hand Lifter should not exceed 70 lbs including the Hand Lifter.

Table 2: Flat material



Thickness of material	Load capacity in lbs.					
	Clean, flat, ground surface		Rusty, slightly scratched surface		Irregular, rusty or rough surface	
	Air gap <0.004 inches		Air gap = 0.01 inches		Air gap = 0.02 inches	
Inches	0°	90°	0°	90°	0°	90°
0.08	66	22	55	17	48	15
0.12	110	55	88	26	75	22
0.16	110	66	110	44	100	33
>0.20	110	75	110	55	110	33



Thickness of material	Load capacity in kg					
	Clean, flat, ground surface		Rusty, slightly scratched surface		Irregular, rusty or rough surface	
	Air gap <0.1 mm		Air gap = 0.25 mm		Air gap = 0.5 mm	
mm	0°	90°	0°	90°	0°	90°
2	30	10	25	8	22	7
3	50	25	40	12	35	10
4	50	30	50	20	48	15
>5	50	35	50	25	50	15

Detailed Performance Data for the MX-750-HL^R Hand Lifter on Round Pipes

Values shown for the performance of MX-750-HL^R Hand Lifter are based on measurements made on round pipes with material S235 JR, comparable to AISI 1020 Cold Rolled Steel, for the maximum, vertical breakaway force at 0 deviation from the load axis and a correct position in the groove of the magnetic contact area. These values include a safety factor of 3:1 in accordance with EN13155.

Tabelle 3: Round pipes

Inches	Load capacity in lbs.					
	1"	2"	3"	4"	8"	
	>0.2	66	88	110	88	-
	0.16	59	79	99	79	-
	1/8	56	75	94	75	-
	0.08	53	70	88	70	-

mm	Load capacity in kg					
	25	50	75	100	200	
	>5	30	40	50	40	-
	4	27	36	45	36	-
	3	26	34	43	34	-
	2	24	32	40	32	-



Avoid quick and abrupt rotations of the Hand Lifter especially when used on round objects since the workpiece could disengage from the groove of the magnet and the load-bearing capacity would suddenly be reduced.



Note: The maximum personal load capacity including magnetic Hand Lifter is 70 lbs. according to American standard.

Maintenance and Inspection of the Hand Lifter

The user is obliged to maintain and service the MX-750-HL^R Hand Lifter in compliance with the specifications in the operating manual and according to the country-specific standards and regulations.

The below maintenance intervals are classified according to the recommended schedule.

Before every use...

- visually inspect the entire Hand Lifter for damage
- clean the magnetic contact area of any contamination (i.e. rust, metal chips) that would cause unevenness of attachment or an air gap between the workpiece

Weekly...

- make sure the activation lever is not bent or the plastic of the activation lever is not cracked
- make sure the activation lever springs into the locking notch when in the ON position
- inspect the magnetic contact area for any protruding scratches, pressure point deformations, and/or cracks into the magnetic contact area. Have the Hand Lifter repaired by the manufacturer if any unevenness of the magnetic contact areas is identified.
- inspect the Handle for damage, deformation, cracks or wear and have it replaced if necessary

Monthly...

- check the markings and labeling on the Hand Lifter for legibility, damage, modification, or removal. To meet full compliance, the entire Hand Lifter must be returned to the manufacture for calibration and relabeling.

Annually...

- have the load-bearing capacity of the magnet checked by the supplier or an authorized workshop, should the application so require.



**Unauthorized repairs or modification to the Hand Lifter are not permitted.
If you have any questions, please contact the manufacturer.**

EC Declaration of conformity as defined by the Machinery Directive 2006/42/EC

We,

Alfra GmbH
2. Industriestr. 10
68766 Hockenheim/Germany

hereby declare that the switchable permanent magnet-type lifting magnet

MX-750-HL^R with mounted MX-750
from serial number 1583F0256 onwards

complies with the standard **EN ISO 12100:2010** and fulfills the requirements of the **Machinery Directive 2006/42/EC** concerning lifting accessories.

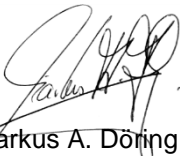
Static test of the magnet at >300 kg ; safety factor = 6
Max. loading capacity of the carrying handle = 100 kg ; safety factor = 2

This certificate is no longer valid if the product is modified without the manufacturer's consent. Furthermore, this certificate is no longer valid if the product is not used properly in accordance with the use cases documented in the user manual or if regular maintenance is not carried out in accordance with this manual or country-specific regulations.

Person authorized to compile the documents:

Alfra GmbH
2. Industriestr. 10
68766 Hockenheim/Germany

Hockenheim/Germany, 03.04.2017



Markus A. Döring
(Managing Director)

