

MANUALE USO E MANUTENZIONE
USE AND MAINTENANCE MANUAL
MANUEL D'EMPLOI ET D'ENTRETIEN
GEBRAUCHS- UND WARTUNGSANLEITUNG
MANUAL DE USO Y MANTENIMIENTO
BRUKS- OCH UNDERHÅLLSANVISNING



SOLLEVATORE A COMANDO MANUALE PER SPESSORI SOTTILI

MANUAL LIFTERS FOR THIN THICKNESSES

PORTEUR A COMMANDE MANUELLE POUR FAIBLES EPAISSEURS

MANUELLER LASTHEBEMAGNET FÜR GERINGE STÄRKEN

ELEVADOR DE MANDO MANUAL PARA ESPESORES FINOS

LYFTANORDNING MED MANUELL STYRNING FÖR TUNNA TJOCKLEKAR



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GENERAL INFORMATION

We want to thank you for choosing one of **TECNOMAGNETE's** products.

This manual will help you improve your knowledge of the machine, so carefully read the following pages and always observe advices.

For further information about the machine, please call the **TECNOMAGNETE S.p.A.** customer care service. **(tel. +39-02.93759.207).**

IMPORTANCE OF THIS MANUAL

The following USE AND MAINTENANCE MANUAL is to be considered as an integral part of the machine.

It should be kept throughout the machine lifetime.

Make sure that any document relevant to the machine is enclosed with the manual.

If the machine should be resold, hand this manual over to the new machine owner.

MANUAL PRESERVATION

Correctly use this manual in order not to damage it.

Do not remove, tear or rewrite any page of this manual.

Keep it in a safe area, away from heat and humidity sources.

The descriptions and illustrations in the manual are not to be considered as binding.

Although the main features of the machine described in this manual are not subject to change, **TECNOMAGNETE S.p.A.** reserves the right to change those components, details and accessories it deems neccessary to improve the machine or meet manufacturing or commercial requirements, at any time and without updating this manual immediately.

This manual is the property of **TECNOMAGNETE S.p.A.** The reproduction of any part of it, in any given form, without prior written authorization from the manufacturer, is strictly forbidden.



COMPANY OUTLINES

Since 1972 **TECNOMAGNETE** has been manufacturing permanent electro-magnetic systems characterized by powerful, flexible and totally safe performances. Thanks to its innovative technology and design patents, registered throughout this period of time, the company has become a worldwide leading reference point in this field.

Tecnomagnete's permanent electro-magnetic systems are able to generate the magnetic attractive force necessary to retain or lift pieces, without the use of electric power during work stages.

The main activity areas are:

"LIFTING" DIVISION

- MTE Electro-permanent lifting units for any type of steel handling.
- BAT-GRIP **electro-permanent lifting units** with built-in battery.
- MaxX lifting units with manual control.

MACHINE TOOLS ANCHORING DIVISION

- QUADRISYSTEM chucks, to equip millers and working centres of all sizes
- TFP chucks for high accuracy grinding
- RADIAL-POLE chucks for finishing or rough machining operations on vertical turning lathes.
- QUAD-RAIL modules to anchor rails of any length
- MDS chucks for plunge spark erosion machines.

PRESS ANCHORING DIVISION

- QUAD-PRESS systems, for mould anchoring.

TECNOMAGNETE has installed about 50.000 plants all over the world in over twenty years of activity thanks to the wide range of solutions offered, thanks to the capacity of adapting to our customer's needs, thanks to the state of the art technology and thanks to an efficient customer pre/post sale service.



WARRANTY

All TECNOMAGNETE's appliances are guaranteed for a period of **5 years** from the date of invoice, unless otherwise stated in writing. The warranty covers all manufacturing faults and material defects. Replacements and repair operations are covered only if carried out by our company and at our servicing shops.

The faulty parts must be sent CARRIAGE FREE.

Once the components have been repaired they will be sent CARRIAGE PAID to the customer.

The warranty does not cover our company personnel aid during installation or dismantling operations. If for practical purposes one of our employees is sent to the premises, the charge will include transfer and travelling expenses.

Our warranty does not cover direct or indirect damage, to people or property, caused by our appliances and it does not cover repair operations carried out by the owner or by a third party.

Our warranty does not include:

- failure caused by incorrect use or assembly.
- damage caused by the use of replacement parts which differ from the ones advised.
- damage caused by incrustation.

WARRANTY FORFEITURE

- In case of delayed payment or other contract defaults; all repair operations carried out under warranty do not interrupt its duration
- Whenever our machines are repaired or modified without our authorization
- Whenever the serial number is damaged or removed
- When the damage is caused by improper use or functioning, or if the machine falls, is bumped or by other causes of malfunctioning not due to normal working conditions
- Whenever the unit seems tampered with, dismantled or repaired without TECNOMAGNETE's authorization

All disputes will be settled in the Court of Justice of Milan.

For problems or information contact the customer care service at the following address:

CUSTOMER CARE SERVICE



TECNOMAGNETE S.p.A.

Via Nerviano, 31 - 20020 Lainate (Mi) - ITALY Tel. +39-02.937.59.207 - Fax. +39-02.937.59.212 E-mail: service@tecnomagnete.it



0 FOREWORD



WARNING

The machine original configuration must not be modified in any way.

Using the machine in a different way than the one indicate by the manufacturer can damage the equipment and injure the operator.

In order to use the machine with different and special materials the operator should obtain the manufacturer's authorization.

SYMBOLS USED

Those operations which might be **dangerous** if not performed correctly are indicated with the following symbol:



Those operations which, in order to avoid risks, must be performed by **trained and authorized personnel** are indicated by the following symbol:





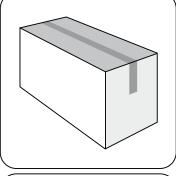
1 TRANSPORTATION AND HANDLING



1.1 PACKAGING

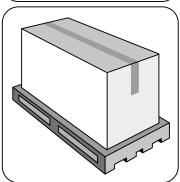
MaxX 125 - 250 - 300E - 500 - 600E MaxX TG 150 - 300

<u>Cardboard box</u>; the lifter is placed in the cardboard box and protected by a sheet, then wrapped in a layer of foamed polyurethane which ensures absolute mechanical protection against blows or accidents to the packaging.



MaxX 1000 - 1500 - 2000

<u>Cardboard box on wooden pallet</u>; the lifter is placed in the cardboard box (see above) and secured on a pallet to allow easy handling.



1.2 PACKAGING FEATURES

Model	Sizes	Packaging weight (Tare)	Weight of lifter plus packaging (Gross)	
	[mm]	[kg]	[kg]	
MaxX 125	130x130x200	0.3	4	
MaxX 250	195x145x200	0.5	7	
MaxX 300E	195x145x200	0.5	7	
MaxX 500	255x190x245	1	16	
MaxX 600E	255x190x245	1	16	
MaxX 1000	350x230x250	3.5	36	
MaxX 1500	400x300x300	5	66	
MaxX 2000	460x300x300	6	82	
MaxX TG 150	195x145x200	0.5	7	
MaxX TG 300	255x190x245	1	16	

2 MACHINE DESCRIPTION



The machine described in this manual is a manually controlled permanent magnet lifter designed to handle (hoisting, traversing and setting down) ferromagnetic material; (sheet, plates and round pieces of common ferrous material).

It exploits the properties of permanent magnets to create a magnetic field which attract ferrous materials. To activate it use the lever which rotates the nucleus with the permanent magnets inside. This rotation creates a magnetic flow that passes through the handled load during the machine working phase and short circuits inside the lifter during the release phase. (see par. 3.4)



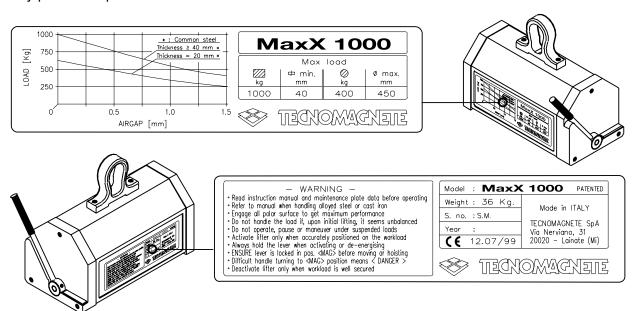
2.1 INFORMATION DATA

The manufacturer's **identification and CE RULING conformity plate** is placed on the machine of the equipment. It is also reported here below



The plate must not be removed at any time even if the machine should be sold again. Always refer to the **serial number** when contacting the manufacturer.

The company is not to be held responsible for damage to property or accidents to people which might occur if the above mentioned warnings are not observed. In such a case, the operator is the only person responsible.



2.2 FIELD OF USE

Machine shops, metallurgical and mechanical shops, iron metallurgical shops and in general all work locations requiring fast, reliable handling of ferrous loads by bridge or crane.

The lifter must be installed on a lifting installation in an environment with the necessary emergency exits.

The working environment must comply with the following limits:

- minimum temperature -10°C
- maximum temperature +60°C
- maximum humidity 80%

2.3 LIMITS OF USE

The permanent magnet equipment is really a magnetic anchor system with a clip anchor hook. It can, therefore, work as a lifter only if hung on a hook of the lifting and displacement machine. Limits of use of the permanent magnet lifters are specified on the identification plate applied on the lifter and in the Use and Maintenance Manual (see performance sheet).

2.4 IMPROPER USE

An improper use signal of the permanent magnet lifter concerns limits of use set for them (see performance sheet). Improper use means any procedure not set forth in the performance sheet or on the nameplate of the lifter.



3 TECHNICAL FEATURES

3.1 AVAILABILITY

MaxX 125 / MaxX 250 / MaxX 300E / MaxX 500 / MaxX 600E / MaxX 1000 / MaxX 1500 / MaxX TG 150 / MaxX TG 300

In order for the hoister to function in an appropriate and lasting way, the chosen model must be adequate for the work needed.

The parameters that must be taken into consideration are:

- **Lifting power:** it is to be determined by the maximum weight to be lifted (lifter plus load). It must never exceed that of the lifting apparatus (crane, etc.).
- Load features: the material must have a smooth and clean surface, must be of adequate thickness and must be ferromagnetic. The steel must be of low carbon content otherwise, if "bonded", appropriate reductions should be made (see par 3.3).

3.2 CONSTRUCTION

The **MaxX** mechanical structure provides very few components.

Rotor and stator, made of **steel** and with a high magnetic permeability degree, are obtained through mechanical manufacturing of a solid workpiece, controlled by digital machines. This ensures the desired uniformity, solidity and quality needed for mass-produced magnetic lifters. The material used (steel, aluminum, plastic) is easy to dispose of and to recycle when dismantling the machine.

The **magnetic material** used, with high specific energy, has allowed the manufacturer to highly reduce product weight and size. In order to ensure high quality of performance, the Maxx lifter is magnetized all in one go after assembly, by means of the greatest magnetizing apparatus ever made in Europe.

3.3 PERFORMANCE

The performances of each model and the characteristics of the load size limits are shown on the

following page. The above-mentioned technical characteristics are also indicated on the tag that is located on the hoist. All the manufactured models undergo testing that verifies their performance. This test is carried out by placing the hoist in position and starting it up on the 80mm thick mild steel plate with ground surface of a dynamometric machine (see photo). For any material other than soft steel the following **reduction factors** must be used to calculate the appropriate lifting power: alloy steel=0,8; steel with a high amount of carbon= 0,7; cast iron=0,45. The thickness of the load also influences the lifting power of the hoister; for those thicknesses smaller than the width of the pole there is a reduction in lifting power, approximately proportional to the ratio of the thickness (s) of the item to be lifted to the width (L) of the pole. Lifting power reduction factor = S/L.

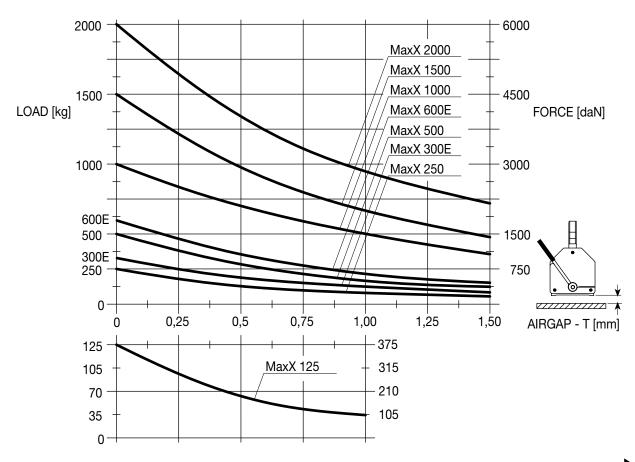
The load temperature must not exceed 80°C; for greater temperatures contact our technical staff.





LOAD CHARACTERISTICS MaxX					
LOAD CONDITIONS	MODEL	MAX LOAD [kg]	MIN. THICKNESS [mm]	MAX. LENGTH [mm]	MAX DIAMETER [mm]
	MaxX 125	125	20	1000	
	MaxX 250	250	20	1500	
	MaxX 300E	300	20	1500	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	MaxX 500	500	25	2000	
	MaxX 600E	600	25	2000	
	MaxX 1000	1000	40	3000	
	MaxX 1500	1500	45	3000	
	MaxX 2000	2000	55	3000	
	MaxX 125	50	10	1000	300
	MaxX 250	100	10	1500	300
	MaxX 300E	120	10	1500	300
	MaxX 500	200	15	2000	400
	MaxX 600E	240	15	2000	400
	MaxX 1000	400	25	3000	450
	MaxX 1500	600	30	3000	500
	MaxX 2000	800	35	3000	600

FORCE/LOAD CURVE - AIRGAP MaxX

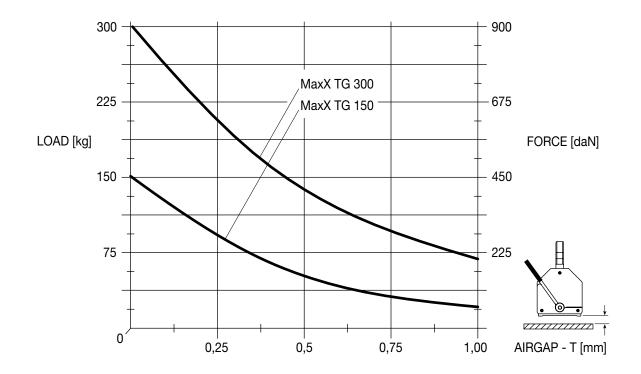


FORCE/LOAD CURVE - AIRGAP MaxX TG ▶

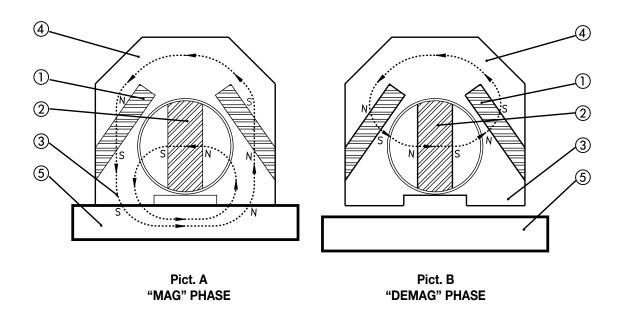


LOAD CHARACTERISTICS MaxX						
LOAD CONDITIONS	MODEL	MAX LOAD [kg]	MIN. THICKNESS [mm]	MAX. LENGTH [mm]	MAX DIAMETER [mm]	
	MaxX TG 150 MaxX TG 300	150 300	8 10	1500 2000		
	MaxX TG 150 MaxX TG 300	60 120	8 10	1500 2000	240 290	

FORCE/LOAD CURVE - AIRGAP MaxX



3.4 OPERATING CYCLE



- 1) STATIC PERMANENT MAGNET
- 2) REVERSIBLE PERMANENT MAGNET
- 3) MAGNETIC FLUX COLLECTORS (POLES)
- 4) FERROMAGNETIC CROWN
- 5) FERROMAGNETIC WORKPIECE TO BE CLAMPED

Magnetic circuit with two permanent magnet cores with high coercitivity of which one is static (1) and one is reversible (2) operating on pole shoes (3) and ferromagnetic crown (4).

In the MAG phase (Pict.A), the reversible core is in parallel with the static core. This generates a magnetic field which is completed through the workpiece by means of the pole shoes (3).

In the DEMAG phase (Pict.B), the two cores are placed in series (180° rotation of the reversible core) to form a magnetic field which is short-circuited in the ferrous yoke.



4 NORMAL USE



4.1 PRECAUTIONS



Even though the magnetism works through non-magnetic bodies such as dusty air and non-ferrous materials in general the **best efficiency** of any magnetic hoister is achieved when the poles (*) make **good contact** with the load.

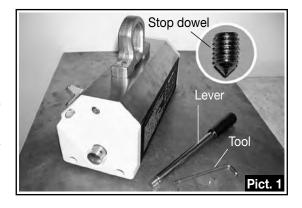
The annexed force curve (performance sheet) shows the drop of clamping force F (kgf) of the hoister with increase in the air gap "T" (in mm.), generated by anything improper such as spaces between poles and the load such as calamine, foreign bodies, low places, protuberances, strapping, etc.

- A) IT IS RECOMMENDED TO avoid as much as possible setting down the hoister in places on the load that are very dirty or deformed. If this happens, observe the performance instructions of the force/air-space curve for the load characteristics. This curve is shown on the hoister and in the annex of the manual with performance sheet.
- B) IT IS RECOMMENDED TO clean the surfaces of the load and the poles before putting down the lifting device. If this happens, observe the performance instructions of the force/air space curve for the load characteristics. This curve is shown on the hoister and in the enclosure of the manual performance sheet
- C) **IT IS RECOMMENDED TO** occasionally check the mechanical condition of the magnetic poles to make sure they are flat and not damaged by mechanical accidents during its time in use.
- (*) "Poles" means only the areas or surfaces of the hoister which make contact with the load.

4.2 START UP INSTRUCTIONS

After opening the lifter packing, installation and start-up are very simple and safe provided load limits of the lifter, crane and hook on which the lifter is suspended and the applicable standards are observed for handling suspended loads. (See note, on the next page).

- A) Remove lifter from packing and set on an iron plate (Pict. 1). This operation is to be done with a crane by hooking the lifter to the bracket.
- B) Remove both the lifter's "handle" (with the threaded end) and the "fixing lever" from the packaging.
 Models MaxX 125, 250, 300E, 500, 600E, MaxX TG 150 and 300 are delivered with the control lever installed, so the tool required to install it





is not supplied.

- C) Insert the "fixing lever" and rotate the central hub so that the "threaded hole" is visible.
- D) Insert the lever in the threaded hole and firmly lock it (Pict. 3).

Torque for tightening handles in manual hoister						
MaxX 125/250/300E	=	25	Nm			
MaxX 500/600E	=	48	Nm			
MaxX 1000	=	85	Nm			
MaxX 1500/2000	=	210	Nm			
MaxX TG 150	=	25	Nm			
MaxX TG 300	=	48	Nm			

- E) Insert the threaded end of the handle and screw it into position ensuring that the handle is tight.
- F) Place the lifter on the load to be handled.
 Carefully check that the load fits with the <u>prescribed</u>
 <u>capacity range of the lifter</u> (see nameplate or enclosed performance sheet).

Also check that the magnetic poles of the lifter are <u>perfectly and totally in contact with the load</u> to be handled.

If said load is round or tubular, make sure it is well centered between poles.



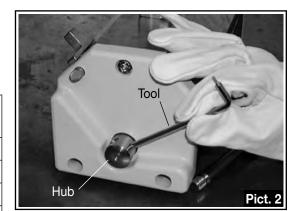
WARNING

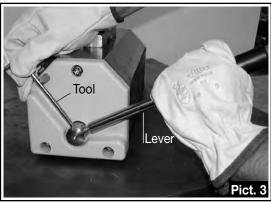
It is necessary for the operator to make sure the device mounted on the lifting machine can support the weight to be lifted so as to carry out the operation in complete safety.

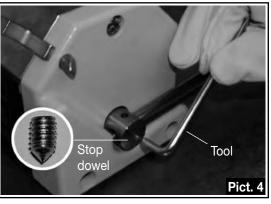
- G) Turn on the lifter by rotating the lever mechanism to the MAG position and lock the lever on the lever stop (see operating cycle description).
- H) Move the load observing applicable standards for handling any suspended loads.
 - -- No one should be in the operating area
- I) Set the load on the floor or support before releasing it, being careful that the load is perfectly settled on the floor or support and that the support is adequate for the load.
- L) To release the load, manually move the lever stop pin and rotate the lever system to the DEMAG position (see operating cycle description).
 - This operation must be carried out by energetically grasping the lever system with one hand (right or left), by moving the machine stop pin with the other hand and by simultaneously rotating the lever system **all the way to the rotary limit switch** ("DEMAG" position).

NOTE: The above mentioned operations must be performed in compliance with applicable work standards and other standards for suspended load handling.

-- No one should be in the operating area.



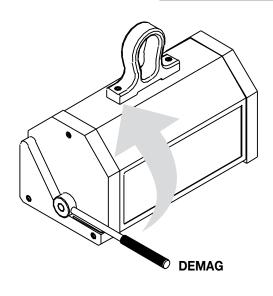






4.3 OPERATING PHASES

MAGNETIZATION PHASE

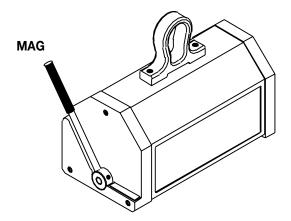


MAGNETIZATION

- 1) Firmly move the lever from DEMAG to MAG (Picture 1)
- 2) Make sure the lever is **perfectly locked** by the lever stop mechanism. (Picture 2).



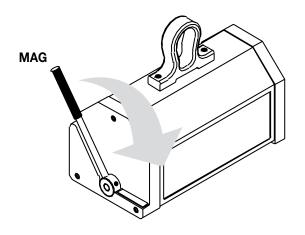




MAGNETIZED LIFTER



DEMAGNETIZATION PHASE

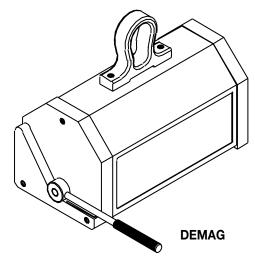


DEMAGNETIZATION

- 1) Grasp lever firmly and move the pin of the lever stop system in direction of arrow (Picture 1).
- 2) Firmly but gently move lever to DEMAG while rotating (Picture 2).







DEMAGNETIZED LIFTER





5 SAFETY MEASURES

5-A) DO NOT USE THE HOISTING DEVICE

to lift and transport people

5-B) DO NOT LIFT LOADS

while people are walking in the manoeuvring space

5-C) DO NOT WALK, STOP, OPERATE OR MANOEUVRE

beneath the lifted load

5-D) DO NOT LET UNTRAINED PERSONNEL

or children 16 or younger use the hoisting device

5-E) DO NOT USE THE HOISTING DEVICE

without proper working garnments or individual protection devices

5-F) DO NOT LEAVE

the lifted load unattended

5-G) DO NOT USE THE HOISTING DEVICE

for operations which differ from the prescribed ones

5-H) MAKE SURE THE LOAD DOES NOT SWAY

during transportation

5-I) DO NOT REACH THE AREA OF "END OF RUN"

at full speed when moving the load

5-L) DO NOT MAGNETIZE THE LIFTER

before setting it on the load

5-M) DO NOT HOIST LOAD

before locking the manual control lever in MAG position

5-N) DO NOT HOIST LOAD

weighing more that lifter capacity

5-O) DO NOT HOIST LOAD

with dimensions exceeding those shown on lifter nameplate or in manual (see performance sheet)

5-P) DO NOT HOIST LOAD

if unbalanced

5-Q) DO NOT HANDLE LOAD

before making sure of perfect magnetic hooking. To verify it carry out a test by lifting the load two or three inches (10cm)

5-R) DO NOT DEMAGNETIZE LIFTER

before firmly setting down entire load on the floor and making sure of perfect steadiness of load.

5-S) FOLLOW THE INSTRUCTIONS

given in the use and installation manuals

5-T) CHECK

the solidity of the supporting structure

5-U) MAKE SURE

the working space is free of obstacles before starting any operation

5-V) CHECK

maintenance conditions (cleanliness, lubrification...)

5-W) ALWAYS USE

entire lifter pole surface

5-Z) ALWAYS KEEP

contact poles areas perfectly flat and parallel



6 MAINTENANCE

The **MaxX** permanent magnet hoister needs absolutely no particular maintenance procedures by the user.

If any mechanical or other damage should occur, Tecnomagnete will provide for repair of the hoister on site while observing all the standards set forth in the guarantee in force if any.

Periodic check-ups

- **A)** Check the mechanical conditions of the magnetic poles of the hoister (load contact members). If they are damaged or very worn, immediately call Tecnomagnete before using the hoister further
- **B)** Check the name and data plates on the hoister for cleanliness and legibility. If they are illegible call Tecnomagnete before continuing use of the hoister.

Tecnomagnete is absolutely not responsible for any malfunction or accident due to repairs or modifications made to the hoister by the customer.



7 DISMANTLING

7.1 STORING

If the need arises to store the equipment for a certain amount of time observe the following instructions:

- → Clean all components.
- → Cover the equipment with a waterproof sheet.
- → Place the equipment in an isolated area in order to avoid tripping on it and lift the hook of the hoisting device at a height of more than 2.5m
- → Keep the equipment in a dry environment.

7.2 DISPOSAL OF EQUIPMENT

If the need arises to dispose of the equipment, it is mandatory to observe a few fundamental rules for the safeguarding of the environment.

Protective coverings, flexible pipes, plastic or non-metal material should be dismantled and disposed of separately.







DECLARATION OF CONFORMITY 2006/42/CE



TECNOMAGNETE S.p.A. Via Nerviano, 31 - 20020 Lainate (Mi) - ITALY

WE DECLARE ON OUR OWN RESPONSIBILITY THE MACHINE BELOW:

MANUAL LIFTER

Model:

<u>MaxX 125 / MaxX 250 / MaxX 300E / MaxX 500 / MaxX 600E / MaxX 1000 / MaxX 1500 / MaxX 2000</u> MaxX TG 150 / MaxX TG 300 / 1000 ATS / 2000 ATS

TO WHICH THIS DECLARATION REFERS, CONFORMS WITH THE REQUIREMENTS OF THE FOLLOWING DIRECTIVES

- UNI EN ISO 12100-1
- UNI EN ISO 12100-2
 - UNI EN 13155

IN COMPLIANCE WITH DIRECTIVE 2006/42/CE

Signature and stamp of authorized person

Name and address of notified body:

I.C.E.P.I. S.r.I.

Via E. Parmense, 11/A 29010 PONTENURE (PC)

NR. 0066

CE certification number: 12.07/99

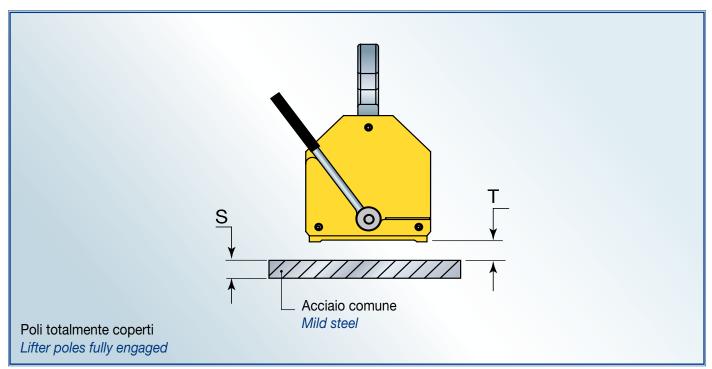
Attestato di collaudo / Test Certificate

Sollevatori Manuali Serie MaxX / Manual Lifter MaxX series

Valori di collaudo / Test values

Modello Type	* Forza testata a T (traferro) = 0 * Tested force at T (air gap) = 0			S (spessore) S (thickness)	Livello gaussmetrico Gaussmetric level		
MaxX 125	> 375 kg / 830 lb		Ë	mm <u>u</u>		20 mm 0,8 in	>= 9.000 G
MaxX 150 TG	> 450 kg / 1.000 lb	1 mm			20 mm 0,8 in	>= 7.000 G	
MaxX 250	> 750 kg / 1.660 lb	ro) = 1	= 0,04 in	20 mm 0,8 in	>= 10.000 G		
MaxX 300 E	> 900 kg / 2.000 lb	(trafe	r gap)	20 mm 0,8 in	>= 11.000 G		
MaxX 300 TG	> 900 kg / 2.000 lb	соаТ	ıt T (ai	30 mm 1,2 in	>= 8.000 G		
MaxX 500	> 1.500 kg / 3.300 lb	agneti	agnet	30 mm 1,2 in	>= 10.500 G		
MaxX 600 E	> 1.800 kg / 4.000 lb	Collaudo magnetico a T (traferro) =	Magnetic test at T (air gap) =	30 mm 1,2 in	>= 11.500 G		
MaxX 1000	> 3.000 kg / 6.600 lb	Colla	Ma	40 mm 1,6 in	>= 11.500 G		
MaxX 1500	> 4.500 kg / 9.900 lb			50 mm 2 in	>= 11.500 G		
MaxX 2000	> 6.000 kg / 13.200 lb			60 mm 2,4 in	>= 11.500 G		
* Tolleranza valori / Values tolerance ± 3%							

Schema di collaudo / Test layout







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