The future of magnetic lifting is here.

ALFRA®

- Increased power to weight ratio
- Lifting of thinner materials
- Significant increase in weld zone area
- Safer and superior activation method
- Fully flexible double swivel lifting point
- Improved manual handling due to significant weight reduction
- Up to 70% lighter
- German engineering and quality

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OFFICE 34 YORK ST, WINGFIELD, SA, 5013

ACTIVE LIFTING EQUIPMENT CO PTY LTD

THE STORY OF THE COVER PICTURE

Flyweight for heavy duties
Five years ago at the Cologne hardware fair, we presented a new, globally unique magnet system for the first time: TML (Thin Material Lifting). These are three letters that represent many special properties. The most important: even with very thin-walled magnetic material, TML (from p.4) achieves massive holding forces – with exceptionally low weight of the product itself. Users employ lifting magnets from this innovative system even from a material thickness of only two millimetres – for example on construction sites, in shipyards or in metal construction.

Magnets from the TML system help our customers including with lifting loads, positioning flat and round steel, welding or plasma cutting.

Success story of an idea
This has given rise to an independent programme for "lifting – positioning – problem-solving", the diversity of which you can see for yourself in the present catalogue. One thing here makes us especially proud: we supply certified quality "made in Germany", which is very popular. Application solutions for our magnetic and lifting technology make everyday working life easier for metalworkers all over the world. ALFRA holding magnets from the TMC range (Thin Material Clamping, from page 28) in particular are increasingly in demand by users from a wide variety of industries, for example for levelling panels, in platform construction, in fixing and clamping technology or for lifting pipes.

One technology – many applications
What could be more obvious than further improvement of our own traditional product range with new technology? TML magnets with the permanent magnetic technology in the ALFRA special catalogue for steel and metal construction can therefore also be found in use in our metal core drilling machines (from page 13).

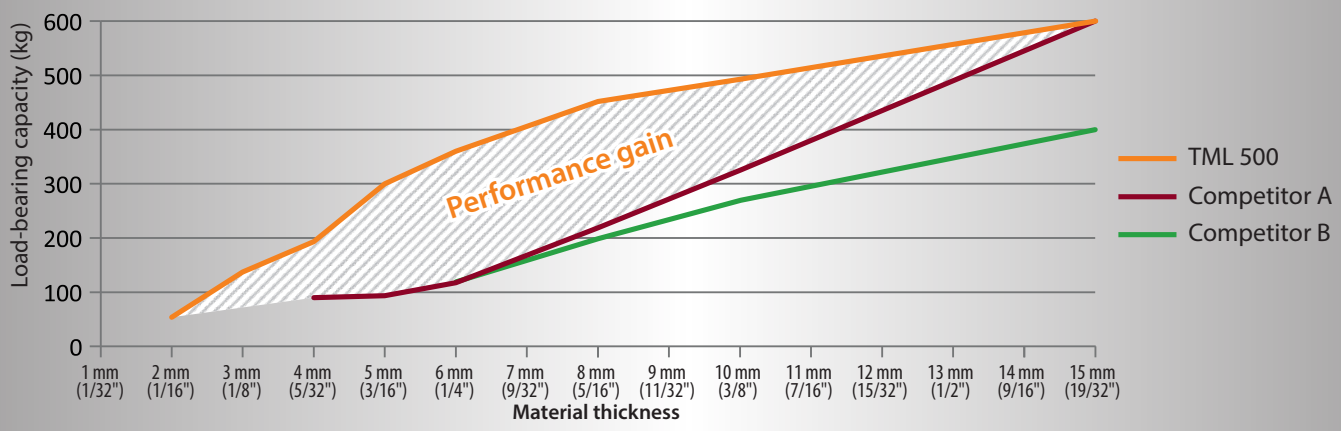
Yet we at ALFRA do even more for you. Above and beyond the highest quality requirements, other values count in the development and production of our tools: energy awareness and safety optimisation are not empty phrases for our dedicated employees but rather the benchmark for completion of their tasks.

We hope you enjoy the ALFRA magnetic and lifting technology catalogue and perfect work progress using our products.

TML – THE BENEFITS AT A GLANCE

In which way do ALFRA TML Magnets stand out from conventional magnets?

Graph A – The TML provides more performance!

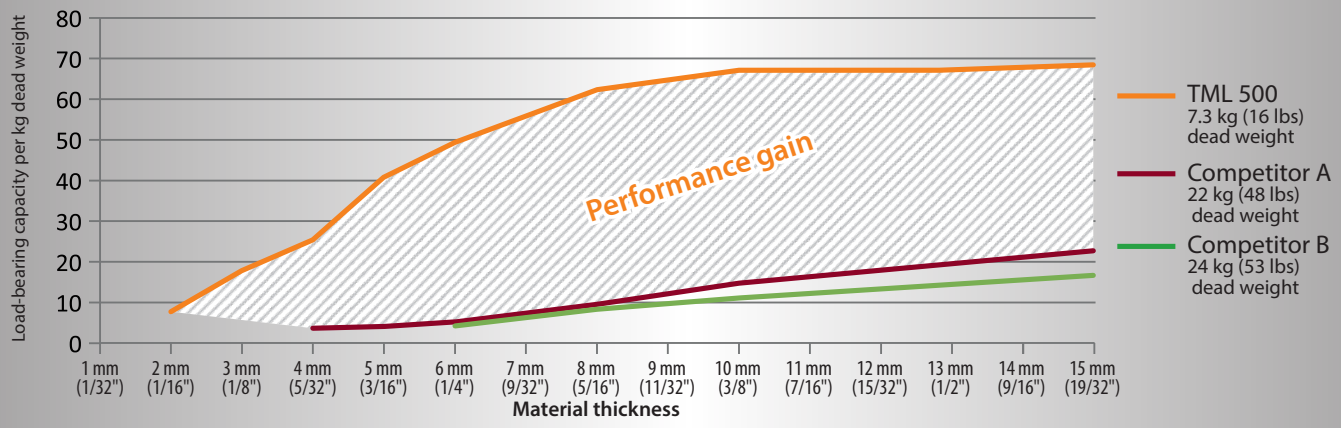


A comparison of the performance data of the TML 500 and two conventional magnets reveals how powerful the TML 500 is, especially when used on thin materials.

The hatched area shows the ‚performance gain' of the TML and illustrates how big the performance difference is between TML and conventional magnets.

The measurements were taken on thin-walled steel S235 by means of a pull-off station certified by the TÜV (German Technical Inspection Association).
The result: Whereas competitors A and B are not able to generate a sufficient magnetic field on thin materials, the TML achieves a load-bearing capacity of 50 kg (110 lbs) on just 2 mm (1/16") and 195 kg (430 lbs) on 4 mm (5/32") material thickness – this is unique to ALFRA.

Graph B – Less weight but more performance!



When taking the ratio of the magnets' load capacity in graph A and their dead weight into account, the hatched ‚performance gain' shows the efficiency of TML magnets in contrast to their competitors.

Conventional lifting magnets exhibit lower performance due to their extremely high dead weight and their relatively low adhesive force. The TML, however, weighs just a fraction of the weight of competitors A and B while achieving a considerably higher load-bearing capacity.

TML Lifting Magnets–the ideal tools to lift thin materials with thicknesses as low as 2 mm (1/16")!

FURTHER BENEFITS OF THE ALFRA MAGNETIC SYSTEM

Hardened steel bottom plate with TiN-coating eliminating the need to regrind the magnetic bottom plate: reduced maintenance.

Slight premagnetisation for the easy positioning of the magnet.

One-handed activation.

Additional connection threads inside the housing allow for customisation of the magnets.

New design allows for the use of the magnet even between the flanges of a steel beam.

The magnetic field concentrates directly on the material and reduces scattering losses to a minimum.

Fully flexible double swivel lifting point - 180° pivot, 360°rotation.

Welding is possible at a distance of just 15 mm (9/16") from the magnet's external side.

TML

US Patent No.
8350663B1

ALFRA is the worldwide license holder for the new, patented magnetic system that allows you

MAGNETIC SYSTEMS PATENTED US Patent No. 8350663B1

ALFRA sets new standards in magnet technology!

Our Permanent Magnets are activated according to a patented principle, completely independent of the mains supply–providing 100 % safety and permanent stability!

"This is the world's best magnetic lifting tech-nology which will drastically improve the way you operate. The power to weight ratio is more than double that of other brands."

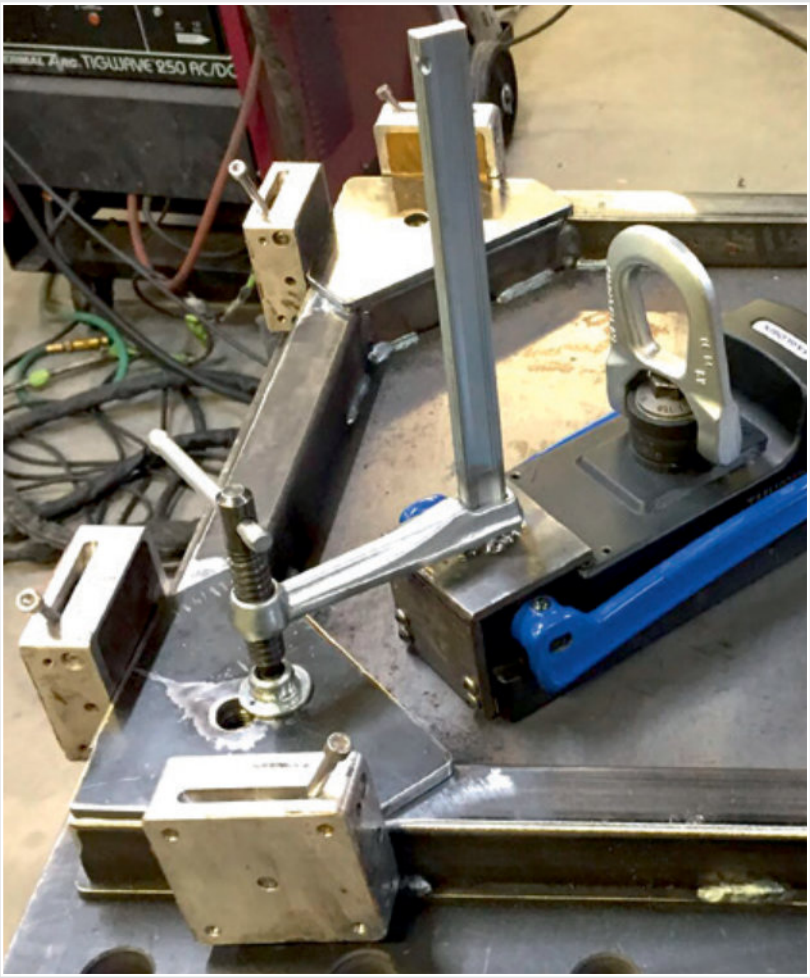
SHIPBUILDING–TURKU/FINLAND – ALEKSI

LIFTING–RECIFE/BRAZIL – PEDRO

PLASMA CUTTING–MANCHESTER/UK – STEVE

CONTAINER CONSTRUCTION–WROCŁAW/POLAND – MAREK

ALFRA MAGNETS IN ACTION



METAL CONSTRUCTION–NUREMBERG/GERMANY – OLIVER

HALL CONSTRUCTION– BLOOMFIELD/USA – RICARDO

MOULD CONSTRUCTION– SYDNEY/AUSTRALIA – ANDY

CUSTOM CONSTRUCTION– PRAGUE/CZECH REPUBLIC – PETR

MAGNETIC AND LIFTING TECHNOLOGY - OVERVIEW

LOAD-LIFTING - FLAT STEEL

KG	50 KG (110 LBS)	100 KG (220 LBS)	250 KG (550 LBS)	500 KG (1,100 LBS)	1,000 KG (2,200 LBS)
	TMH 50	TML 100	TML 250	TML 500	TML 1000
Page	17	15	10	12	14
Prod.-No.	41100.H	41100.L	41250	41500	41700
Max. load-bearing capacity	50 kg (110 lbs)	100 kg (220 lbs)	250 kg (550 lbs)	500 kg (1,100 lb)	1,000 kg (2,200 lbs)
Breakaway force	> 300 kg (660 lbs) on 6 mm (1/4") steel S235 (without adapter plate)	> 300 kg (660 lbs) on 6 mm (1/4") steel S235	> 750 kg (1,653 lbs) on 10 mm (3/8") steel S235	> 1,500 kg (3,300 lbs) on 15 mm (9/16") steel S235	3,400 kg (7,500 lbs) on 12 mm (1/2") steel S235
Min. material thickness	1 mm (1/32")	1 mm (1/32")	2 mm (1/16")	2 mm (1/16")	2 mm (1/16")
Dead weight	1.6 kg (3.5 lbs)	1.7 kg (3.7 lbs)	3.5 kg (7.7 lbs)	7.3 kg (16 lbs)	18.0 kg (238 lbs)
Dimensions LxW	126 x 80 mm (4-15/16" x 3-1/8")	82.5 x 80 mm (3-1/4" x 3-1/8")	191 x 71 mm (7-1/2" x 2 -13/16")	265 x 118 mm (10-7/16" x 4-5/8")	403 x 103 mm (15-7/8" x 4-1/16")

LOAD-LIFTING - ROUND STEEL

KG LBS	50 KG (110 LBS)	90 KG (200 LBS)	400 KG (880 LBS)
	TMH 50 R	TML 90 R	TML 400 R
Page	18	16	19
Prod.-No.	41100.H.R	41100.L.R	41400.R
Pipe diameter	25 - 200 mm (1" - 7-7/8")	25 - 200 mm (1" - 7-7/8")	50 - 400 mm (2" - 15-3/4")
Max. load-bearing capacity	50 kg* (110 lbs)*	90 kg* (200 lbs)*	400 kg* (880 lbs)*
Breakaway force	> 270 kg (595 lbs) on 6 mm (1/4") steel S235	> 270 kg (595 lbs) on 6 mm (1/4") steel S235	> 1,200 kg (2,650 lbs) on 15 mm (9/16") S235
Min. material thickness	1 mm (1/32")	1 mm (1/32")	2 mm (1/16")
Dead weight	1.6 kg (3.5 lbs)	1.8 kg (4 lbs)	8.2 kg (18 lbs)
Dimensions LxW	126 x 80 mm (4-15/16" x 3-1/8")	82.5 x 80 mm (3-1/4" x 3-1/8")	265 x 118 mm(10-7/16" x 4-5/8")

*Max. load-bearing capacity on round pipes: 20 - 50 % of flat material subject to pipe diameter and material thickness

MAGNETIC
SYSTEMS
PATENTED
US Patent No.
8350663B1
TML250

LIFTING MAGNET TML 250

1. Only 3.5 kg (7.7 lbs) dead weight
2. Max. load-bearing capacity: 250 kg (550 lbs) (with 3:1 safety factor)
3. 360° rotatable and 180° pivotable load swivel
4. One-handed operation ('inside' steel beam possible)

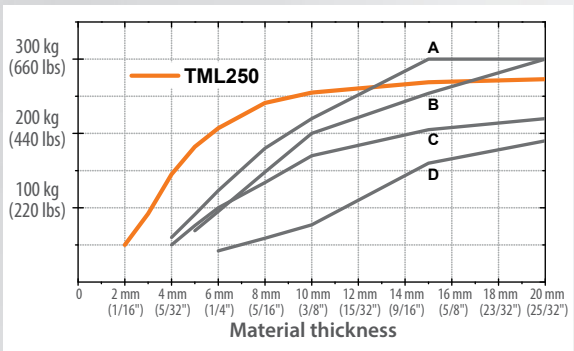
MADE IN GERMANY

US Patent No. 8350663B1

- Up to 250 kg (550 lbs) load-bearing capacity from a material thickness of 10 mm (3/8") and 90 kg (195 lbs) from just 3 mm (1/8") material thickness on steel S235 plus 3:1 safety factor (i.e. the force that leads to the breakaway of the metal sheet must represent triple the maximum holding force)
- Outstanding performance on thin-walled materials
- Up to 70 % less dead weight with at least the same performance in contrast to conventional magnets
- Easy activation with minimal effort due to the ergonomic activation lever
- Innovative operational concept allowing for an enlarged operating range
- 360° rotatable and 180° pivotable load swivel
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

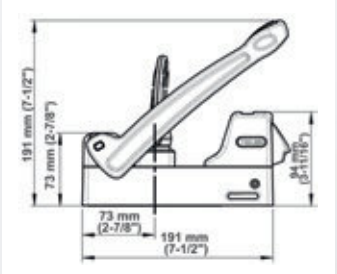
Technical data TML 250:

- Dead weight: 3.5 kg (7.7 lbs)
- Breakaway force: > 750 kg (1,653 lbs) on 10 mm (3/8") steel S235
- Max. load-bearing capacity: 250 kg (550 lbs) (with 3:1 safety factor)
- Length: 240 mm (9-7/16") (closed lever), width: 91 mm (3-9/16"), height: 191 mm (7-1/2") (opened lever)
- Magnetic contact area: length: 135 mm (5-5/16"), width: 65 mm (2-9/16")



Competitors:

A: 300 kg (660 lbs) Permanent magnet; 9 kg (19.8 lbs) Dead weight
B: 300 kg (660 lbs) Permanent magnet; 11 kg (24.2 lbs) Dead weight
C: 250 kg (550 lbs) Permanent magnet; 10 kg (22 lbs) Dead weight
D: 250 kg (550 lbs) Permanent magnet; 10 kg (22 lbs) Dead weight



	Prod.-No.
ALFRA TML 250	41250

MAGNETIC
SYSTEMS
PATENTED
US Patent No.
8350663B1

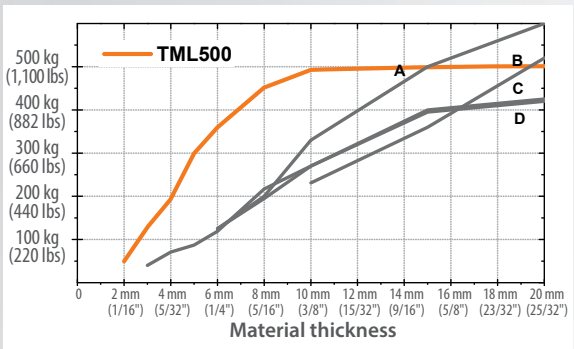
LIFTING MAGNET TML 500

1. Only 7.3 kg (16 lbs) dead weight
2. Max. load-bearing capacity: 500 kg (1,100 lb) (with 3:1 safety factor)
3. 360° rotatable and 180° pivotable load swivel
4. One-handed operation ('inside' steel beam possible)

- Up to 490 kg (1100 lbs) load-bearing capacity from a material thickness of 10 mm (3/8") and 300 kg (660 lbs) from just 5 mm (3/16") material thickness on steel S235 plus 3:1 safety factor (i.e. the force which leads to the breakaway of the metal sheet must represent triple the maximum holding force)
- Outstanding performance on thin-walled materials (useable from as low as 2 mm; 1/16")
- Up to 70 % less dead weight with at least the same performance in contrast to conventional magnets
- Easy activation with minimal effort due to the ergonomic activation lever
- Innovative operational concept allowing for an enlarged operating range
- 360° rotatable and 180° pivotable load swivel
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

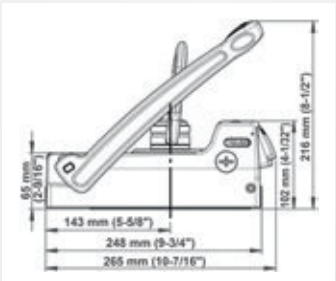
Technical data TML 500:

- Dead weight: 7.3 kg (16 lbs)
- Breakaway force: > 1,500 kg (3,300 lbs) on 15 mm (9/16") steel S235
- Max. load-bearing capacity: 500 kg (1,100 lb) (with 3:1 safety factor)
- Max. load-bearing capacity during vertical lifts (90° inclination of the load): 150 kg (330 lbs) (from 15 mm; 9/16" on steel S235 with 3:1 safety factor)
- Length: 295 mm (11-5/8")(closed lever), width: 118 mm (4-5/8"), height: 216 mm (8-1/2") (opened lever)
- Magnetic contact area: length: 185 mm (7-1/4"), width: 88 mm (3-7/16")



Competitors:

A: 600 kg (1,320 lbs) Permanent magnet; 22 kg (48.5 lbs) Dead weight
B: 600 kg (1,320 lbs) Permanent magnet; 24 kg (52.9 lbs) Dead weight
C: 500 kg (1,100 lbs) Permanent magnet; 20 kg (44 lbs) Dead weight
D: 500 kg (1,100 lbs) Permanent magnet; 8 kg (17.6 lbs) Dead weight



	Prod.-No.
ALFRA TML 500	41500

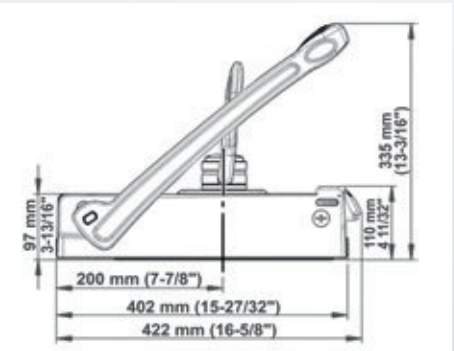
LIFTING MAGNET TML 1000

1. Only 18.0 kg (40 lbs) dead weight
2. Max. load-bearing capacity: 1.000 kg (2,200 lbs) (with 3:1 safety factor)
3. 360° rotatable and 180° pivotable load swivel
4. One-handed operation ('inside' steel beam possible)

- Up to 1,000 kg (2,200 lbs) load-bearing capacity from a material thickness of 10 mm (3/8") on steel S235 plus 3:1 safety factor (i.e. the force which leads to the breakaway of the metal sheet must represent triple the maximum holding force)
- Outstanding performance on thin-walled materials (useable from as low as 2 mm; 1/16")
- Up to 70 % less dead weight with at least the same performance in contrast to conventional magnets
- Easy activation with minimal effort due to the ergonomic activation lever
- Innovative operational concept allowing for an enlarged operating range
- 360° rotatable and 180° pivotable load swivel
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TML 1000:

- Dead weight: 18.0 kg (40 lbs)
- Breakaway force: > 3,400 kg (7,500 lbs) on 12 mm (1/2") steel S235
- Max. load-bearing capacity: 1,000 kg (2,200 lbs) (with 3:1 safety factor)
- Max. load-bearing capacity during vertical lifts (90° inclination of the load): 300 kg (660 lbs) (from 12 mm; 15/32" on steel S235 with 3:1 safety factor)
- Length: 470 mm (18-1/2") (closed lever), width: 154 mm (6-1/16"), height: 335 mm (13-3/16") (opened lever)
- Magnetic contact area: Length: 387 mm (15-1/4"), width: 92 mm (3-5/8")



	Prod.-No.
ALFRA TML 1000	41700

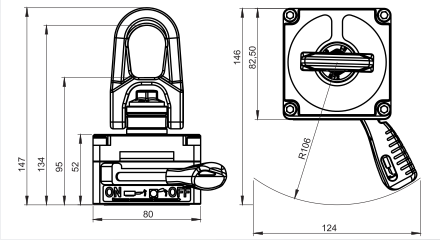
LIFTING MAGNET TML 100

1. Only 1.7 kg (3.7 lbs) dead weight
2. Max. load-bearing capacity: 100 kg (220 lbs) (with 3:1 safety factor)
3. 360° rotable and 180° pivotable load swivel
4. Easy one-handed operation

- Max. load-bearing capacity of 50 kg (110 lbs) with 3 mm (1/8") (material thickness and 100 kg load-bearing capacity from just 6 mm (plus triple safety factor)
- Outstanding performance on thin-walled materials (operable from just 1 mm; 1/32")
- 360° rotable and 180° pivotable load swivel – even under full load
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TML 100:

- Dead weight: 1.7 kg (3.7 lbs)
- Breakaway force: > 300 kg (660 lbs) on 6 mm (1/4") steel S235
- Max. load-bearing capacity during vertical lifts (90° inclination of the load): 30 kg (66 lbs) (from 6 mm ; 1/4" steel S235 with 3:1 safety factor)
- Length: 82.5 mm (3-1/4"); width: 80 mm (3-1/8"); height (load swivel in horizontal position): 85 mm (3-3/8"), height (load swivel in vertical position): 147 mm (5-13/16")



	Prod.-No.
ALFRA TML 100	41100.L

LIFTING MAGNET TML 90 R

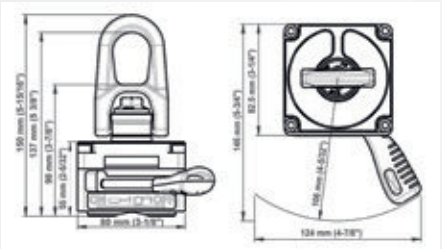
R With prism for pipes and curved surfaces
Lifts pipes 25 mm (1") to 200 mm (7-7/8") in diameter

1. Only 1.8 kg (4 lbs) dead weight
2. Max. load-bearing capacity: 90 kg (200 lbs) (with 3:1 safety factor)
3. 360° rotatable and 180° pivotable load swivel
4. Easy one-handed operation

MADE IN GERMANY

US Patent No. 8350663B1

- Lifts pipes from 25 mm (1") to 200 mm (7-7/8") in diameter
- Outstanding performance on thin-walled materials (operable from just 1 mm; 1/32")
- 360° rotable and 180° pivotable load swivel – even under full load
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

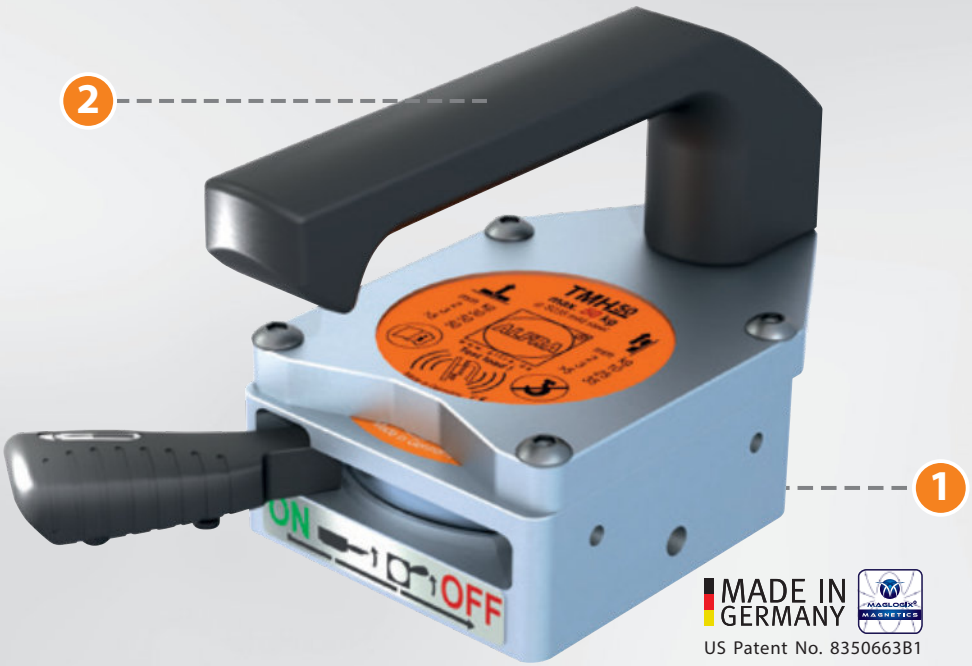


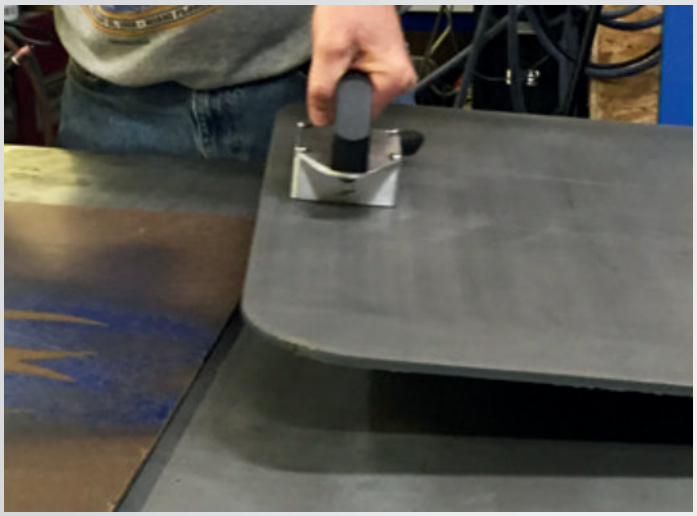
Technical data TML 90 R:
- Dead weight: 1.8 kg (4 lbs)
- Breakaway force: > 270 kg (595 lbs) on 6 mm (1/4") steel S 235
- Max. load-bearing capacity with round pipes: 20 - 50 % of the load-bearing capacity on flat material (see TML 100), depending on pipe diameter and material thickness
- Length: 82.5 mm (3-1/4"); width: 80 mm (3-1/8");
  height (load swivel in horizontal position): 88 mm (3-7/16")
  height (load swivel in vertical position): 150 mm (5-15/16")

	Prod.-No.
ALFRA TML 90 R	41100.L.R

MANUAL LIFTING MAGNET TMH 50

1. Only 1.6 kg (3.5 lbs) dead weight
2. Large, stable handle





- Up to 50 kg (110 lbs) load-bearing capacity on a steel sheet S235 with a thickness of just 3 mm (1/8")
- Protects hands and fingers from hot and sharp-edged steel
- A must have for everyone who needs to move welding parts from one place to another (max. temperature: 60°C; 140°F)
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TMH 50:

- Dead weight: 1.6 kg (3.5 lbs)
- Breakaway force: > 300 kg (660 lbs) on 6 mm (1/4") steel S235 (without adapter plate)
- Max. load-bearing capacity on flat material: 50 kg (110 lbs) (on 3 mm; 1/8" steel S235)
- Max. load-bearing capacity during vertical lifts: 35 kg (77 lbs) (on 3 mm; 1/8" steel S235)
- Length: 126 mm (4-15/16"); width: 80 mm (3-1/8"); height: 100 mm (3-15/16") (incl. lever: length 190 mm; 7-1/2", width 124 mm; 4-7/8")

	Prod.-No.
ALFRA TMH 50	41100.H

MANUAL LIFTING MAGNET TMH 50 R

1. Only 1.6 kg (3.5 lbs) dead weight
2. Large, stable handle

R With prism for pipes and curved surfaces
Lifts pipes from 25 mm (1") to 200 mm (7-7/8") in diameter

- Lifts pipes from 25 mm (1") to 200 mm (7-7/8") in diameter
- Protects hands and fingers from hot and sharp-edged steel
- A must have for everyone who needs to move welding parts from one place to another (max. temperature: 60°C; 140°F)
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TMH 50 R:

- Dead weight: 1.6 kg (3.5 lbs)
- Breakaway force: > 270 kg (660 lbs) on 6 mm; 1/4" steel S235
- Max. load-bearing capacity on round pipes: 20 - 50 % of flat material (see TMH 50), subject to pipe diameter and material thickness
- Length: 126 mm (4-15/16"); width: 80 mm (3-1/8"); height: 100 mm (3-15/16") (incl. lever: length 190 mm; 7-1/2", width 124 mm; 4-7/8")

	Prod.-No.
ALFRA TMH 50 R	41100.H.R

LIFTING MAGNET TML 400 R

R With prism for pipes and curved surfaces
Lifts pipes from 50 mm (2") to 400 mm (15-3/4") in diameter

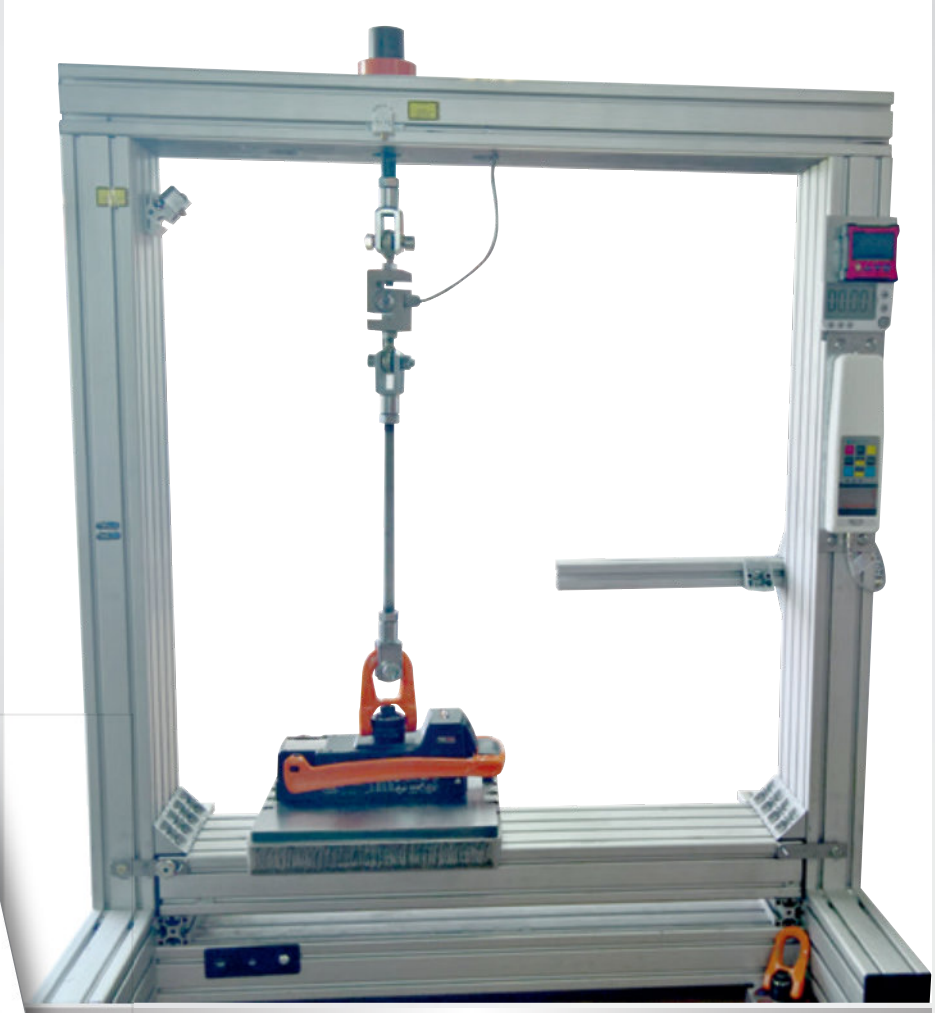
1. Only 8.2 kg (18 lbs) dead weight
2. Max. load-bearing capacity: 400 kg (880 lbs) (with 3:1 safety factor)
3. 360° rotatable and 180° pivotable load swivel
4. Easy one-handed operation

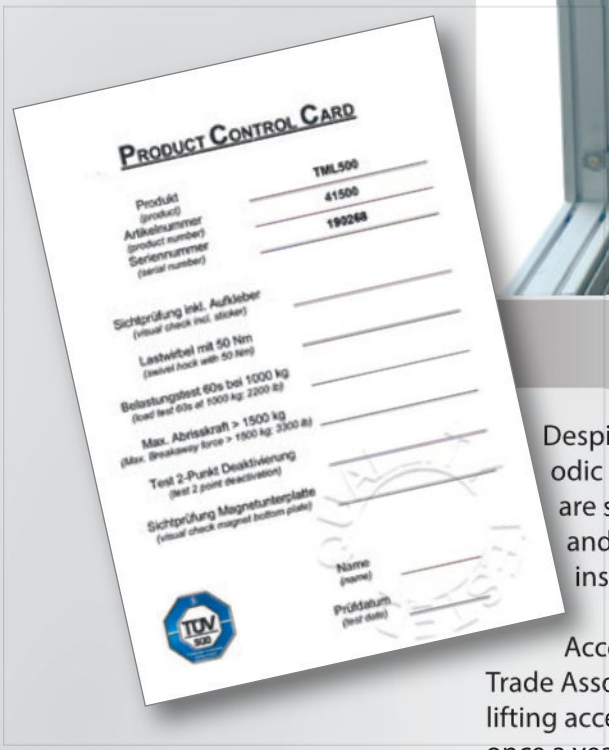
- Lifts pipes from 50 mm (2") to 400 mm (15-3/4") in diameter
- Outstanding performance on thin-walled materials (operable from just 2 mm; 1/16")
- 360° rotable and 180° pivotable load swivel–even under full load
- Wear-resistant magnetic contact area made of hardened steel with TiN-coating preventing damages and guaranteeing a long lifetime

Technical data TML 400 R:
- Dead weight: 8.2 kg (18 lbs)
- Breakaway force: > 1,200 kg (2,650 lbs) on 15 mm (9/16") S235
- Max. load-bearing capacity with round pipes: 20 - 50 % of the load-bearing capacity on flat material (see TML 500), depending on pipe diameter and material thickness
- Length: 295 mm (11-5/8") (closed lever); width: 118 mm (4-5/8"); height: 216 mm (8-1/2") (open lever)

	Prod.-No.
ALFRA TML 400 R	41400.R

SERVICE AND INSPECTIONS CARRIED OUT BY THE MANUFACTURER IN ACCORDANCE WITH LEGAL REQUIREMENTS





PRODUCT CONTROL CARD

Produkt (product)	TML500
Artikelnummer (product number)	41500
Seriennummer (serial number)	190268
Sichtprüfung inkl. Aufkleber (visual check incl. sticker)	
Lastwirbel mit 50 Nm (swivel hook with 50 Nm)	
Belastungstest 60s bei 1000 kg (load test 60s at 1000 kg: 2200 lb)	
Max. Abrisskraft > 1500 kg (Max. Breakaway force > 1500 kg: 3300 lb)	
Test 2-Punkt Deaktivierung (test 2 point deactivation)	
Sichtprüfung Magnetunterplatte (visual check magnet bottom plate)	
Name (name)	
Prüfdatum (test date)	

TÜV-CERTIFIED TESTING STATION IN OUR PRODUCTION SITE IN BERLIN

Despite utmost care and periodic maintenance, magnets are subject to permanent wear and tear and require regular inspections.

According to the German Trade Association Regulation 500, lifting accessories must be inspected once a year by a competent person (see BGR 500, chapter 2.8 “Operation of Lifting Accessories used with Lifting Machinery”).
We will be glad to assume the annual inspection for you first-hand and guarantee that it will be performed quickly, cost-effectively and in accordance with legal requirements.

Our engineers will evaluate your magnet with the highest possible professional expertise and repair it if necessary.

Our sales agents will be pleased to make an appointment for you. You may also send us an email:

TML-Test@alfra.de

INTERESTING FACTS ABOUT TML/TMC MAGNETS FREQUENTLY ASKED QUESTIONS

1. What is the highlight of the new magnets?
Whether it is a Lifting Magnet, Positioning Magnet or a Welding Angle–magnets made by ALFRA are distinguishable due to their innovative design and provide outstanding performance and infinite new application possibilities. The patented magnetic system eliminates scattering losses and the magnet generates an extremely compact magnetic field.
A particular highlight is that the magnets are lightweight: A TML or TMC magnet easily and effortlessly achieves a lifting force that conventional lifting magnets can only reach with three times (if at all) the amount of dead weight. Another reason to choose an ALFRA Lifting Magnet is that TML and TMC magnets attain an excellent performance even on thin material–with a minimum thickness of only 1 mm!

2. How do I know how much the magnets can lift?
An illustrative graph can be found on the magnet's label indicating its load-bearing capacity, dependent upon the material's thickness. For detailed information on the load-bearing capacity of TML magnets and the factors that influence it, please refer to the operating instructions of your Lifting Magnet.
The TML 250 can for example safely lift 50 kg (195 lbs) of steel at a thickness of 2 mm (1/16") and 240 kg (530 lbs) of steel at a thickness of 8 mm (5/16"). A safety factor of 3:1 is always included. That means that, in fact, the magnet could lift 150 kg (330 lbs) of steel at a thickness of 2 mm (1/16") and 720 kg (1,590 lbs) of steel at a thickness of 8 mm (5/16") before it breaks away.
The 3:1 safety factor is required by law. Be sure to work within the safety measures of the lifting scale and observe the performance data and safety instructions of the operating manual.

3. What do the terms residual magnetism and pretension mean?
These terms describe a reduced magnetic field that the magnet generates even when it is not activated. This pretension allows the customer to attach the magnet onto a vertical surface or even over his head and align the magnet without it falling off.
Thus, he can move the magnet to the perfect position for an optimum lifting process before pushing the activation lever down.

4. What is an air gap?
The small distance that may form between the magnetic contact area and the surface of the workpiece is referred to as an air gap. It may for instance occur due to a deformation of the material during the lifting process. An air gap that is too big will result in the breakaway of the magnet from the material surface. Therefore the entire magnetic contact area should rest on a plane surface of the material being lifted.

5. What is the advantage of the tight-fitting activation lever of the TML 250, 400 R, 500 and 1000?
The activation lever of conventional magnets protrudes at an angle of 90 degrees and sticks out to the side of the magnet–in most cases by several centimeters/inches. For this reason, the magnet can only be attached to areas that are wide enough for the protruding lever.
Due to its special design, the stable activation lever of the ALFRA TML magnets, TML 250, 400 R, 500 and 1000 rests closely against the magnet housing. As the lever of the TML magnet is parallel to the base body of the magnet, it allows for the easy and effortless attachment of the magnet to narrow areas e.g. between I-beams.

6. Why is the bottom plate of ALFRA magnets hardened and coated?
The magnetic contact area is located on the underside of the magnet. The installed permanent magnets generate an extremely powerful magnetic field to ensure an optimum magnetic adhesion.
High-quality, specially hardened steel with approx. 450 HV 30 (approx. 1400N/mm^2) prevents damage to the magnetic contact area and protects it from wear and tear. A TiN-coating by means of 2500 HV 0.05 additionally increases the durability of the magnetic contact area. For this reason, ALFRA magnets provide a long service life. However, this is not the only benefit. In contrast to conventional magnets, the bottom plate of the TML and TMC magnets no longer needs to be regrinded.

7. What is a magnetic shearing stroke?
The term shearing stroke describes the vertical lifting of a work piece. The most common kind of shearing stroke is the sidelong vertical lifting of steel sheets or thin steel beams from a stack.
Due to this, the Lifting Magnet is able to vertically lift the work piece up to 90°. In contrast to conventional magnets, the TML Lifting Magnet even allows for the lifting of a 4 mm (5/32") thick single steel sheet from a stack. This means that the magnet's attractive force will not be exerted onto the subjacent work piece. With an ALFRA TML magnet, the so-called 'sticking together' of two work pieces now belongs in the past.

8. Can rust or paint reduce the magnet's load capacity?
Magnetic Clamps and Lifting Magnets also achieve an excellent adhesive force even on rusty, lacquered or powder-coated surfaces. For detailed information on the performance of your TMC or TML magnet please refer to the operating instructions.

INTERESTING FACTS ABOUT TML/TMC MAGNETS
FREQUENTLY ASKED QUESTIONS

9. What is the impact of extreme temperature on TML/TMC magnets?
Even high temperatures of up to 60°C (140°F) have no impact on the performance of our TML and TMC magnets. At temperatures above 60°C (140°F) or in the event of heat generation near the magnet (e.g. during welding), the integrated high performance permanent magnets may be damaged. For this reason the magnet should be removed from the heat source as quickly as possible. Low temperatures do not decrease the performance of your magnet either since the magnetic molecules align simultaneously in one direction (and thus maintain the magnetic field). Although the magnet slowly loses its lifting power at -150°C (-238°F), the use of TML/TMC magnets at low temperatures must be restricted due to certain components:
Components made of aluminum or plastic for example become brittle and may break at a temperature below -30°C (-22°F). The grease does not endure very low temperatures and may become hard. To ensure a long service life and the safety function of your ALFRA magnet, TMC magnets may only be used up to -30°C (-22°F) maximum and TML magnets up to -10°C (14°F) maximum.

10. Why do TML and TMC magnets have different operating temperatures?
The Lifting Magnets TML 250, 400 R, 500 and 1000 are equipped with a special safety tab whose proper function may be limited at very low temperatures. The TML 500 is additionally equipped with a special feature–a hydraulic damper. Thanks to the integrated
variable damper the user can adjust the recoil energy according to the desired requirements. As the oil inside the damper loses its viscosity with decreasing temperature, the magnet must not be used below -10°C (14°F). TML and TMC models without a safety tab and variable damper may still operate up to -30°C (-22°F).

11. Does the magnet require examination after a certain period of time?
Lifting accessories such as our TML magnets must be checked regularly. This includes particularly an annual inspection of the triple safety factor. Maintenance and care of the magnets are subject to country-specific regulations and standards. In Germany regular inspections are prescribed by sec.3, subs.3 of the German Ordinance on Industrial Safety and Health (BetrSichV). The examination of the triple safety factor must be performed once a year by a competent person according to the German Trade Association Regulation BGR 500. The operator is responsible for the adherence to the regular inspection of the magnet. Always observe the regulations in your country. Clamping Magnets such as the TMC 300 must not be used for the lifting or transportation of loads and thus do not require an annual examination.

12. Who is allowed to perform the inspection?
According to the Trade Association Regulation 500 (chapter 2.8: sec.3.15), the employer determines the requirements that the person carrying out the inspection must fulfill ('competent person').
They can be experts such as engineers, machine and crane foremen or specially trained persons provided that they possess adequate knowledge as well as sufficient experience of slings and lifting accessories and are familiar with the relevant national occupational health and safety regulations, trade association regulations and generally accepted rules of technology (e.g. BGR regulations, DIN- EN-standards,
DIN-standards, ISO standards). Furthermore, the examination of the triple safety factor for the Lifting Magnet requires a special pull-off unit which is equipped with calibrated test equipment.
We would be happy to perform the inspection of your ALFRA lifting accessories for you at our premises.

13. Can loads also be lifted vertically?
Due to the innovative ALFRA Magnetic System, the vertical lifting of loads is no longer a problem. In particular, the TML 400 R, 500 and 1000 are excellent devices to lift components vertically. The magnet's load swivel (also called load hook) is pulled up vertically by means of a flexible soft eye, following the direction of the force action, and lies close to the level housing of the TML magnet.

14. Which forces act during a vertical lift?
There are some particularities to note in terms of the vertical lifting of loads. If the load and the magnet surface tilt at an angle other than 0° to horizontal, the load-bearing capacity decreases due to the new alignment of the magnet to the gravity of Earth. As soon as the load is suspended vertically, i.e. at an angle of 90°, friction will be the only effect exerted by the magnet. Depending on the material being lifted this is not more than 10 - 35% of the maximum load-bearing capacity. Further information on the use of TML magnets during pivoting or vertical lifting can be found in the operation manual of your ALFRA magnet. All information and safety instructions contained in the operation manual must be closely observed.

15. Are the magnets only suitable for the lifting of loads?
The wide range of ALFRA magnets includes a multitude of applications that go far beyond the lifting of loads. For example, TML magnets are ideally suited to shearing loads. Moreover, magnets made by ALFRA also represent the ideal tools to facilitate your work if you want to align, position or join ferromagnetic workpieces.

Visit ALFRA on Youtube and discover a multitude of interesting applications: simply type the product name and ALFRA to be convinced of the benefits of our permanent magnets!

We wish you much joy and success when using our products.

Your Alfra GmbH

ACTIVE LIFTING EQUIPMENT CO PTY LTD

CALL 08 8359 1241
VISIT ACTIVELIFTING.COM.AU
OFFICE 34 YORK STREET
WINGFIELD, SA, 5013

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