



Operation Instructions for FXE Lifting Magnets

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Operation Instructions for FXE Lifting Magnets

NOTE: Please read the operating and maintenance instructions prior to first use carefully. For questions or doubts you should contact your local dealer.

This manual is part of the lifting magnets and have to be available to the user at any time.

Caution:

Put the magnet on a tasks for which it is specifically adapted, in case of any doubts contact your dealer.

Do not change the original configuration of the device.

Please also note the regulations of the professional associations for handling slings.

1. SCOPE OF APPLICATION

FXE Lifting magnets are designed to lift flat steel parts, round materials may only be transported with special pole shoes!

2. TECHNICAL DATA:

Model	Dim. (mm)			Max. Load capacity* (kg)	Weight (kg)	Voltage	Fuse
	L	W	H				
FXE-LT 2000/50+	1600	420	511	2000	130	400V	25A gG
*from 20mm material thickness							

3. INTENDED USE

The Lifting Magnet FXE is controlled via 4 built pushbuttons, they are from left to right:

PICK-UP with red LED • FULL-MAG with green LED • SAFE with orange LED • DE-MAG with white LED

3.1 Connect the lifting magnets at 400V mains voltage. The white LED above the button DE-MAG flashes to indicate that the magnet is in an undefined state.

3.2 Lifting in PICK-UP mode:

To check whether the workpiece can be transported with sufficient safety, or to lift a single sheet metal from a stack. Place the magnet on the workpiece and press the PICK-UP button, the orange Cycyle LED will flash briefly above the SAFE key. The red LED above the PICK-UP button then lights up to indicate that the magnet is activated with partial power. **In this state, the workpiece may only be lifted slightly but must not be transported under any circumstances!**

3.3 Transport in FULL-MAG operation:

After checking the safety by means of the PICK-UP operation or directly from the DE-MAG switching state, the maximum magnetization can be triggered with this key. After pressing, the orange cycle LED above the SAFE key lights up briefly and then the green status LED above the FULL-MAG key turns on to indicate that the maximum magnetization has occurred. Carry out transports only if the green LED lights up and the alarm LED (SAFE) does not flash!

3.4 Releasing the workpiece by DE-MAG:

To release the workpiece, the SAFE and DE-MAG keys must be pressed simultaneously. The orange cycle LED above the SAFE key lights up briefly and then the white status LED above the DE-MAG key lights up.

The magnet modules must be positioned according to the application. Observe the load capacity tables on page 6

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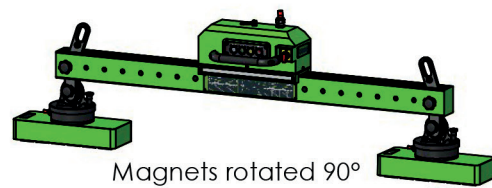
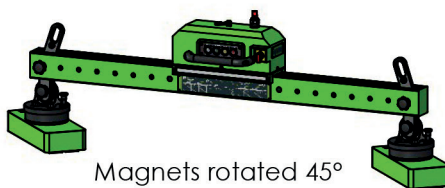
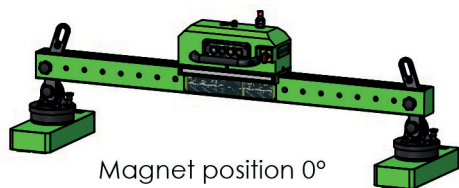


3.5 Rotation of the magnet modules by 45° or 90°

To rotate the magnet modules, pull the locking pin (pos. 1) and remove the locking bolt (pos. 2). Then turn the magnet module to the desired position (45° or 90°). Then reinsert the locking bolt and snap the locking pin back into place.

CAUTION: Only transport loads with a secured turning device. DO NOT transport loads if the locking pin has been removed!

The magnet modules must be positioned according to the application. Observe the load capacity tables on page 7



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LED status displays



The magnet is partially magnetized; ready for full magnetization.



The magnet is fully magnetized; ready for demagnetization.



The magnet is demagnetized; ready for magnetization.



The magnet is magnetized: ready for demagnetization.

Additional LED status indicators:

3.3 If there is insufficient magnetization the orange LED flashes above the SAFE button as an alarm signal. The cause may be a weak supply network, insufficient cable cross-sections, or a too high power internal resistance at the connection point.

Caution:

- Never activate the magnet before it is seated on the load - the achievable holding forces were up to 10x lower than when activating on the load!
- Perform command DEMAG only when the Load is laying secured!
- Disconnect the magnet only when its demagnetized!

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LED status indicators:



The magnet is demagnetized, the lifting eye is relieved; Ready for magnetization



The lifting eye is loaded; no magnetization recommended



The magnet is magnetized, the lifting eye is loaded; no demagnetization possible



The magnet is magnetized, the lifting eye is unloaded

ATTENTION: The magnet can only be demagnetized AFTER the load has been applied and the lifting eye has been released again.

IMPORTANT: Demagnetization with the lifting eye relieved must take place within 5 seconds, then demagnetization is only possible again after renewed loading and subsequent unloading of the lifting eye!

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4. FACTORS AFFECTING THE LIFTING FORCE OF THE LIFTING MAGNETS

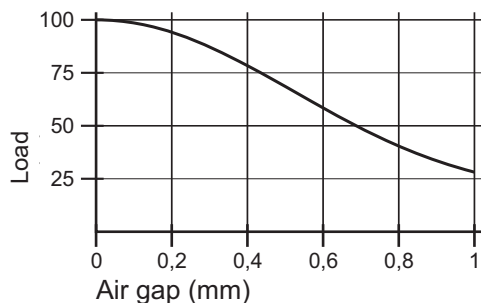
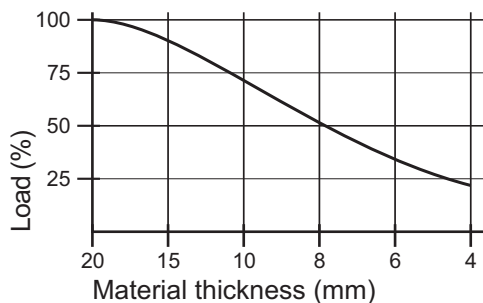
On the underside of the lifting magnets are the two magnetic poles, which transmit the magnetic force in the activated state to the load. The maximum possible forces and thus the Lifting capacity depend on the factors described in 4.1-4.5. Note this anytime and check BEFORE any application, whether the data of the lifting magnets and the load allows a safe transportation.

4.1 THE CONTACT SURFACE

The contact area between Lifting magnet and the load to be lifted should be clean and free of irregularities in any case. If a distance (air gap) is made between the lifting magnets and the load to be lifted, this reduces the lifting capacity. Rust, paint, dirt, paper, or a roughly machined surface can thus have an air gap result.

Example: FXE 400/50 is the pole size 50, FXE 500/80 is the pole size 80, etc.

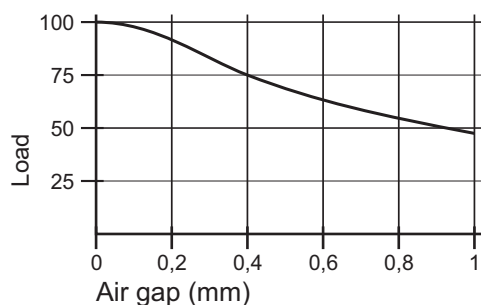
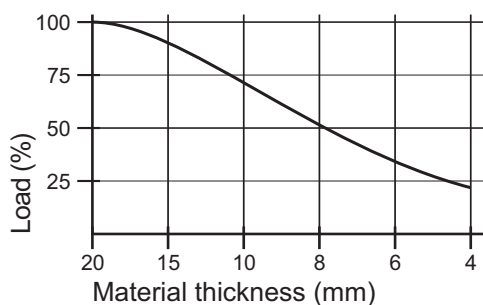
Pole Structure 50



The nominal values of the FXE Lifting magnets with pole structure type 50 are achieved up to an Air gap of 0.3 mm.

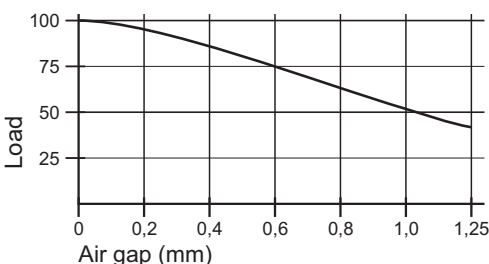
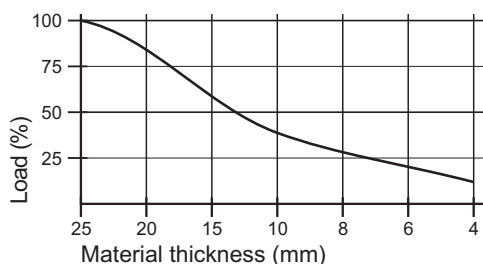
With air gap 0, the pole structure 50 reaches a holding force of 3.8 kN.

Pole Structure 50+



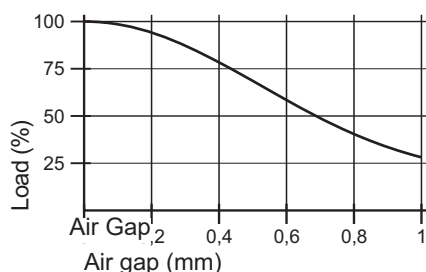
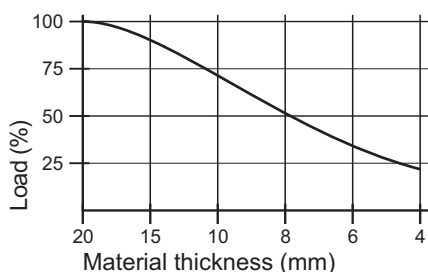
Pole structure 50+ has a reinforced Magnetic system with the same Pole size as the pole structure 50. With air gap 0, the pole structure 50+ reaches a holding force of 3.8 kN.

Pole Structure 80



The nominal values of the FXE Lifting magnets with pole structure 80 are achieved up to an air gap of 0.4mm. With air gap 0, the pole structure 80 reaches a holding force of 9 kN.

Pole Structure 100



The nominal values of the FXE Lifting magnets with pole structure 100 are achieved up to an air gap of 0.6mm. With air gap 0, the pole structure 100 reaches a holding force of 14.5 kN.

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4.2 THE MATERIAL THICKNESS

The magnetic flux of the lifting magnets requires a minimum material thickness. If the workpiece does not accomplish a minimum material thickness, this will reduce the lifting force. Basically higherv Lifting capacity requires increasing the thickness.

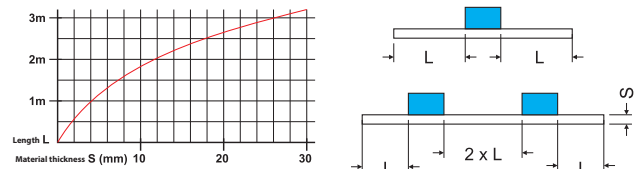
Max. load capacity: 0° position for sheet metal handling					
T material thickness	L min. (mm)	L max. (mm)	W min. (mm)	W max. (mm)	WLL (kg)
>= 3mm	800	2000	100	1000	50
>= 4mm	800	3500	100	1500	200
>= 6mm	800	4000	100	2000	400
>= 8mm	800	4000	100	2000	650
>= 10mm	800	4000	100	2000	750
>= 12mm	800	4000	100	2000	1200
>= 15mm	800	4000	100	2000	1500
>= 20mm	800	4000	100	2000	2000

Max. load capacity: 45° position for cut out handling				
T material thickness	L min. (mm)	L max. (mm)	W max. (mm)	WLL (kg)
>= 10mm	700	3000	1500	1000

Max. load capacity: 90° position for sheet stripe handling					
T material thickness	L min. (mm)	L max. (mm)	W min. (mm)	W max. (mm)	WLL (kg)
>= 3mm	800	3000	100	600	50
>= 4mm	800	3500	100	600	200
>= 6mm	800	4200	100	600	400
>= 8mm	800	4600	100	600	650
>= 10mm	800	5400	100	600	750
>= 12mm	800	6000	100	600	1200

4.3.THE WORKPIECE DIMENSIONS/INTRINSIC STABILITY

At great length and width of the workpiece it bends through and formes an air gap between the workpiece and the lifting magnets (primarily at low thicknesses). This reduces the lifting force of the lifting magnets. Not intrinsically stable workpieces also vibrate more than massive workpieces and the resulting, the dynamic forces act in addition to the contact surface.



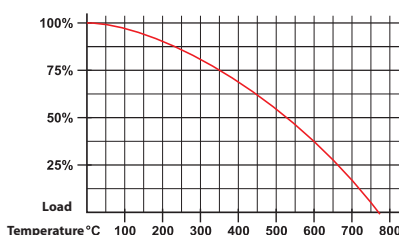
4.4 THE COMPOSITION OF THE LOAD TO BE LIFTED

Steel with low carbon content is a good magnetic conductor e.g. C-40 or St -37. Steel with a high carbon content or with other materials alloyed steel loses its magnetic properties, so that the power of the lifting magnets is reduced. Hardness and other methods which affect the steel structure also reduce the lifting power. The harder a steel, the lower its response to magnetic fields and it tends to residual magnetism. The nominal power of our Lifting magnets applies to steel with low carbon content, such as e.g. C-40 or St-37.

Material	Lifting capacity in %
mild steel 0,1 - 0,3 % C ST37/52	100
mild steel 0,4 - 0,5 % C	90
alloyed steel 2312/2379...	80 - 90
cast iron GGG	70 - 80
cast iron GG	45 - 60
alloyed steel hardened at 55-60 HRc	40 - 50
stainless steel	0
Brass, aluminum, copper	0

4.5 THE TEMPERATURE OF THE LOAD TO BE LIFTED

The higher the temperature, the faster the molecules of the steel swing, which causes a lower magnetic conductivity. Our figures are for a workpiece temperature up to max. 80°C.



CAUTION: You have to combine all the factors which reduce the lifting power and observe one to another.

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5. INSTRUCTIONS FOR COMMISSIONING AND OPERATION

To use the lifting magnets correctly, the device is to be placed on a clean, flat and smooth as possible steel surface of the load. The max. potential loads are shown in Table 1. For rough surfaces or thin steel parts is to reduce the lifting force correspondingly Chart 1 taken into account, as well as the other reduction factors in paragraph 4.

Notes on commissioning

Assignment:

Lifting magnets may be used only by persons who are familiar with these duties and when there is a commission. When handling loads the boundaries for the manual lifting and carrying of loads by a person have to be observed:

Persons:	Frequent Lifting and carrying under average Working conditions	Occasional Lifting and carrying under favorable Working conditions
Men	18 to 25 kg	40 to 50 kg
Women	8 to 10 kg	13 to 15 kg
pregnant Women	5 kg	10 kg

Personal Safety

Please note that safety clothing (helmet, gloves, safety shoes) must be worn when handling lifting magnets in order to minimise any risks.

Operation

Lifting magnets are applied, they are not charged on their carrying capacity addition and that the load is secured against falling. The following further points should be observed in handling lifting magnets:

- Loads are running loose items may not be transported.
- Initially raise only a few centimeters and check whether the load securely holds.
- Loads have to be raised and depose that accidental falling, falling apart, slipping or Unrolling of the load is avoided.
- With lifting magnets dangerous goods shall not be lifted.
- Lifting magnets are applied in a way, that people are not endangered.
- A load slippage in lifting operation must be avoided.
- No lift loads while persons resident in the work area
- never Embark under suspended loads
- Lifting Magnet only switch on suitable load
- Do not overload Hoist and slings, also calculate the weight of the lifting magnets.
- Do not poke suspended loads or put them in vibration

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6. RISKS / DEFECTS / DAMAGES

Lifting magnets are applied so that damage which can lead to impairment, is avoided .
Lifting magnets are observed during use for visible defects.
Obvious defects are, for example, deformation, cracks, breaks, incomplete labeling drawings. Lifting magnets with deficiencies which may affect the safety, must be withdrawn further use (replacement state).

Note in particular:

- No lifting of uneven and porous workpieces.
- Avoid burrs, sharp corners and edges.
- lift surfaces must be clean, dry, free from oil and grease and any loose surfaces coatings etc.
- An unintentional detachment from the crane hook must be avoided.
- Knocks, blows and falls are to be avoided in any case.
- Apply the Lifting magnet just in a dry environment.
- Oil the moving parts from time to time and protect it at the magnetic poles
Between longer intervals use corrosion protection.

7. REPAIR AND TESTING

Repair

Repair work on lifting magnets may be carried out by persons who have the necessary knowledge and skills (experts).

Testing

Examination before the first start

Lifting magnets may only be put into operation if any defects have been fixed and checked by a specialist.

Regular inspections

Lifting magnets must be checked from an expert at intervals not exceeding one year.

Extraordinary inspections

After damage or special events that may affect the viability, and are subjected to repair, an extraordinary inspection by specialist is necessary

Extent

The inspection before the initial commissioning and regular tests are essentially visual and functional tests. You have to extend to examination of the condition of the components and devices on the intended assembly and for completeness and effectiveness of safety devices.

The extent of the exceptional test depends on the nature and extent of the pollution, the incident or repair. The tests must be documented.

STORAGE AND DISPOSAL

Lifting magnets have to be stored in a way they do not tilt, fall or can slide. Lifting magnets should be stored protected from the weather and corrosive substances. For longer storage, it is advisable to lubricate the device. At the end of the use of lifting magnets or at end of life, the device must be disposed of properly and environmentally friendly, take note of the relevant provisions of the relevant authorities.

8. REMOTE CONTROL

Please note when using the radio remote control:
First set the slide switch on the back to ON position

- Function and operation of the individual buttons see section 3 of these instructions!
- The magnet should only ever be operated by one person!
- Range 8m
- When the red LED is lit, change battery!

- **Pick-Up 1 -> 3mm**
- **Pick-Up 2 -> 6mm**
- **Pick-Up 3 -> 10mm**



EC Declaration of Conformity

**For a safety component to confirm compliance with the Machinery Directive
2006/42 EC**

Herewith declared:

**Flaig Magnetsysteme GmbH & Co. KG
Feurenmoos 15
D-78739 Hardt
Germany**

**That the individual load lifting device designated below is placed on the market with
the following safety function:**

**Electro-permanent magnetic lifting beam for transporting flat ferromagnetic
workpieces by crane.**

Model	WLL on stiff Material from 20mm Material thickness
FXE-LT 2000/50+	2000 kg

Serien-Nr.: XXXX IB200 001-099

**Complies with the provisions of the Machinery Directives 2006/42 EC and the
national legislation implementing them.**

Applied harmonized standards: EN ISO 12100:2010 & EN 13155:2022

Hardt/Germany 06.06.2025



Horst Flaig (Documentation)



Horst Flaig (CEO)

SICHERHEITS-HINWEISE

HANDLING INSTRUCTIONS / CONSIGNES D'UTILISATION



Es besteht Verletzungsgefahr bei unsachgemäßer Behandlung von Magneten. Daher sollten Sie im Umgang mit Magneten folgendes unbedingt beachten:



Magnets can represent risks of injury in case of improper handling. We therefore recommend to respect the following instructions when handling with magnets:



Les aimants peuvent représenter un risque de blessure en cas d'utilisation inadéquate. C'est pourquoi nous vous conseillons de respecter les instructions suivantes concernant l'utilisation des aimants:



Die starken, anziehenden Kräfte der Magnete sind eine mögliche Gefahrenquelle - die Haut kann gequetscht (eingeklemmt) werden. Wir empfehlen deshalb mit geeigneten Schutzmaßnahmen zu arbeiten und zu vermeiden, dass Finger bzw. Haut zwischen die Magnete geraten! Bitte beachten Sie, dass sich Magnete selbst aus großen Abständen anziehen können - es besteht auch hier Verletzungsgefahr!

The strong adhesive forces of magnets are representing a possible source of danger - skin could be squeezed. We suggest therefore to work with usefull protection measures and to avoid, that fingers or skin are placed among the magnets!

Please pay attention, that magnets can be adhesive even over gib distances - here as well are existing dangers of injury!

Les grandes forces d'attraction magnétique représentent une source de risques potentiel - la peau pourrait être coincée. Nous recommandons donc de travailler avec des mesures de protection appropriées et d'éviter que les doigts ou la peau ne soient placés entre les aimants! Attention, les aimants peuvent aussi s'attirer sur des grandes distances - dans ce cas aussi il existe des risques de blessure!



Magnete können beim Zusammenprallen in scharfkantige Teile splintern. Jeglicher Zusammenprall sollte daher vermieden werden!

Magnets can splitter into sharp pieces when crashing. Therefore any chrash should be avoided!

Les aimants frittés éclatent en débris coupants en cas de choc. C'est la raison pour laquelle les chocs doivent être évités!



Magnete dürfen nicht in explosionsgefährdeter Umgebung eingebaut werden, weil sie Funken auslösen und Explosionsgefahr besteht!

Magnets are not allowed to be installed in explosive areas, as they can set off sparks which could cause explosions!

Les aimants ne doivent pas être montés dans un environnement explosif, car ils peuvent provoquer des étincelles qui pourraient déclencher une explosion!



Starke Magnetfelder können elektrische bzw. elektronische Geräte beeinflussen oder beschädigen. Dies gilt auch für Herzschrittmacher. Personen mit Herzschrittmacher müssen einen Sicherheitsabstand von mindestens 1 Meter einhalten!

Strong magnetic fields can influence or destroy electronic equipment. Persons with pacemakers must keep a safety distance of at least 1 meter!

Les champs magnétiques peuvent influencer ou endommager les appareils électriques ou électroniques. Cela s'applique aussi pour les stimulateurs cardiaques. Les personnes portant un stimulateur cardiaque doivent respecter une distance de sécurité d'au moins 1 mètre !



Nachteilige Auswirkungen von Magnetfeldern auf den menschlichen Körper sind uns nicht bekannt.

Negative effects of magnetic fields to the human body are unknown to us.

Des effets défavorables de champs magnétiques sur le corps humain nous ne sont pas connus.