



# Ultralift E Lifting Magnet

Safe Operation and Maintenance Manual

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# 1 General Information

Thank you for purchasing this Lifting Magnet.

This lifter is tested and rated to provide a 3:1 safety factor if used as instructed by this manual (See Section 3).

This lifter conforms to the requirements of:

The Supply of Machinery (Safety) Regulations 2008, as well as:

The Electrical Equipment (Safety) Regulations 2016

The Electromagnetic Compatibility Regulations 2016

The equipment, if used within the EU must be stored, maintained and inspected in accordance with the requirements of PUWER (1998). For areas outside the EU the equipment must be used, stored, maintained and inspected in compliance with the applicable work standards and other standards for suspended load handling.

## **BEFORE USE PLEASE CAREFULLY READ THIS MANUAL**

This **Safe Operation and Maintenance Manual** is an integral part of this equipment and should be stored in a safe place in order not to damage or deface it.

It should be retained throughout the lifetime of the lifter.

Should the lifter be resold please ensure the inspection record is supplied with the lifter.

The user manual is available from [eclipsemagnetics.com](http://eclipsemagnetics.com)  
If you've printed a copy of the user manual please include it with the lifter.

The lifter should be periodically re-tested in accordance with local legislation and the inspection record updated accordingly (See Section 7).

Always use LOLER, PUWER, ASME B30.20 and H&S advice.

## 2 Operation and Safety Instructions

### 2.1 Symbols and Terms Used

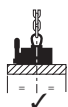
#### SYMBOLS



The Working Load Limit (formerly Safe Working Load, SWL) (flat plate)



The Working Load Limit (formerly Safe Working Load, SWL) (round bar)



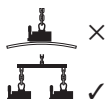
Correct orientation of load



Do not lift people



Do not lift load over people



Do not lift loads exceeding the recommended length



Air gap warning (See Load Characteristics in Section 4)

#### TERMS

##### Poles

The two parallel mild steel surfaces on the base of the lifter.

##### Air-gap

Any non-ferrous material that prevents the poles contacting the load. Paint, rust, scale or even an uneven surface can constitute an air-gap.

## 2.2 Important Safety Information

### **ALWAYS**

- Instruct new operators to read the handbook before using the Ultralift E Lifting Magnet
- Follow the instructions
- Use the entire pole area
- Fully engage the lifter in the “ON” position before lifting the load
- Wear suitable protective work-wear when using this equipment
- Maintain the pole feet in a good condition
- Check the suitability of equipment used in conjunction with the lifter



### **NEVER**

- Lift or transport people
- Lift loads while people are within the manoeuvring space
- Allow untrained personnel to operate the lifter
- Leave a load unattended
- Use the lifter outside the recommended operations
- Attempt to switch the lifter before setting down the load
- Position yourself beneath the lifted load
- Allow the load to sway
- Bring the load to a sharp and immediate stop
- Lift a load outside the capacity (WLL) of the lifter
- Lift a load with dimensions outside those recommended within this manual
- Alter the attitude of the load from horizontal to vertical
- Lift an unbalanced load
- Operate the lifter in temperatures higher than 40°C (104°F) and lower than -10°C (14°F)
- Operate the lifter in humidity higher than 80%
- Operate the lifter in explosive (EX) or static sensitive environment
- Submerge the lifter in water

## 2.3 Considerations for Use

The WLL data is generated by testing the magnetic lifters on a flat ground mild steel plate that has a thickness equal to or greater than that specified on the lifter data plate. This information is also shown in Section 4 of this manual.

The optimum performance of a magnetic lifter is achieved when the pole faces are in good condition and make intimate contact with a load of the recommended thickness.

Consideration should always be made to the size of the load (Section 4 Technical Data).

Whilst the load weight may be within the WLL of the lifter, as the unsupported area of the load increases, natural flexing will occur due to its own weight. This could have an adverse effect on the safety of the lift. If in doubt always use a spreader beam and multiple lifters.

### There are four factors that will reduce the magnetic clamping force:

#### 1 Air Gaps

The high magnetic forces generated by the Lifting Magnets allow the lifter to clamp components through air gaps. However this will ALWAYS have an adverse effect on the lifter performance. Air gaps are generated in a number of ways. For example paint, dust, scale or even a poor surface finish constitutes an air gap. The effect of air gaps are shown within Section 4 of this manual. These graphs demonstrate the reduction in clamping force generated by the lifter as the air gap increases.

#### 2 Load Thickness

Should the Lifting Magnet be used to lift plates thinner than recommended for the lifter there **will be**, dependent on the material thickness, a significant drop in clamping force. A selection of performance curves on thinner than recommended material is in Section 4 (Technical Data) of this manual.

#### 3 Material Types

Certain materials exhibit different characteristics in their ability to carry magnetism. For any material other than mild steel a **reduction factor** must be applied to calculate the clamping force.

Typically these are as follows: -

Ferrous alloy steels	<b>0.8</b>
High carbon steel	<b>0.7</b>
Cast iron	<b>0.55</b>

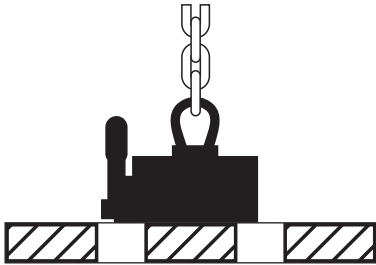
For example, when lifting cast iron using ULE0300 lifter:

mild steel WLL		= 300kg
cast iron reduction factor		= 0.55
cast iron WLL	= 300kg x 0.55	= 165kg

**4 Contact Area**

Maximum hold will only be achieved when the lifter has full contact with the component to be lifted.

If the full face of the poles does not come into contact with the component to be lifted, for instance due to holes in the component, the performance will be reduced pro-rata.



## 3 Getting Started

**It is important to familiarise yourself with all the features of the Lifting Magnet prior to use in a production environment.**

Remove the lifter from the packaging and position on a mild steel plate (load).

Secure the handle to the lifter using a hex key or allen key.

Note: It is recommended to use a thread-locking compound. Care should be taken to ensure the load does not exceed the stated capacity of the lifter.

### 3.1 Understanding Your Lifter



**The lifter is in the OFF position**



**To Switch the lifter ON**

Rotate the handle 120° anti-clockwise beyond the spring-loaded safety pin.

Ensure the lever is securely locked in place before commencing with the lift.



**The lifter is in the ON position**



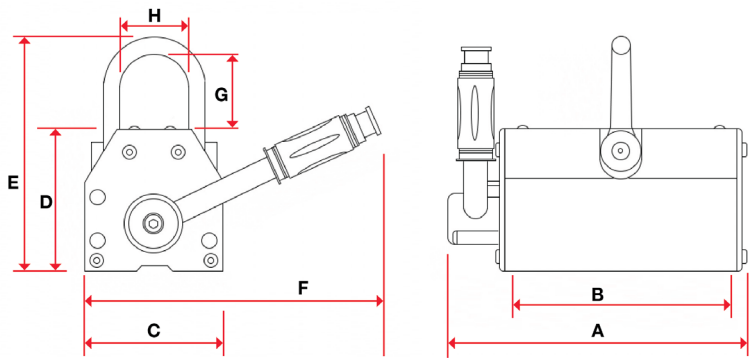
**To switch the lifter OFF**

Hold the handle and slide the locking pin (as illustrated) to allow an unobstructed rotation of the handle.

Rotate the handle 120° clockwise to the OFF Position.

# 4 Technical Data

## 4.1 Model Types

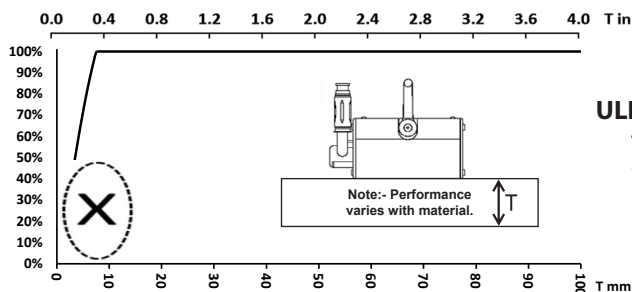


Model Number	Dimensions (mm)									Flat Section			Round Section	
										WLL*	Thickness Min.	Length Max.	WLL*	Diameter Max.
	A	B	C	D	E	F	G	H	kg	kg	mm	mm	kg	mm
ULE0100	131	91	65	75	124	185	45	32	3	100	15	1000	50	80
ULE0300	202	157	95	95	169	253	63	46	10	300	20	1500	150	100
ULE0600	283	248	120	118	220	280	90	61	23	600	30	2000	300	140
ULE1000	350	308	136	140	269	310	110	79	39	1000	40	2500	500	180

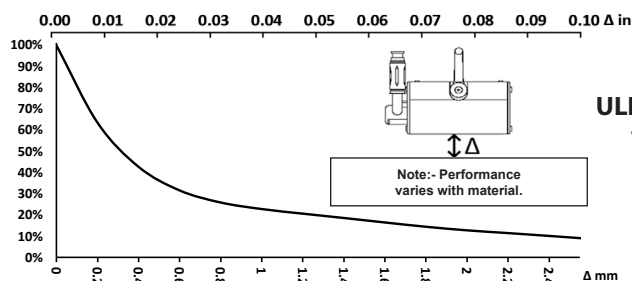
\* Please note that the Working Load Limit (WLL) is now used instead of Safe Working Load (SWL). The Lifting force values shown include the 3:1 safety factor and have been based on using thick high magnetic permeability steel with no air gaps. Air gaps, thinner materials and materials with lower magnetic permeability can all reduce the pull force a lifter can actually achieve. Please note that the achievable pull force is reduced when lifting thinner mild steel plate. Please note that the diameter of the round bar can affect the amount of lift that can be achieved. You must follow LOLER, PUWER, ASME B30.20 and H&S advice. You should always check for a downrate, factor in any downrate to then perform a safety lift, then perform a full lift only after a successful safety lift.

## 4.2 Performance Curves

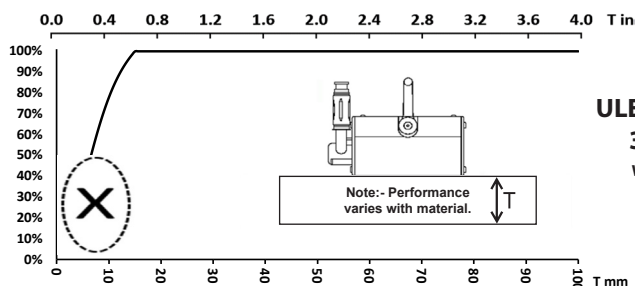
WLL  
kg  
(lb)



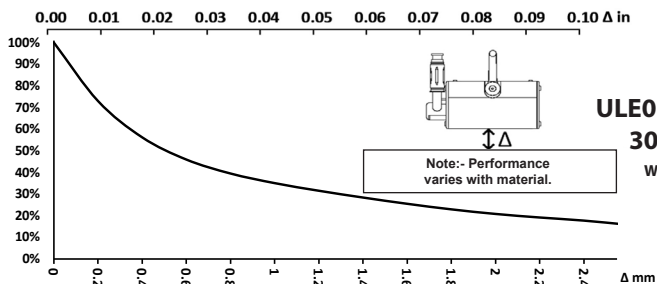
WLL  
kg  
(lb)



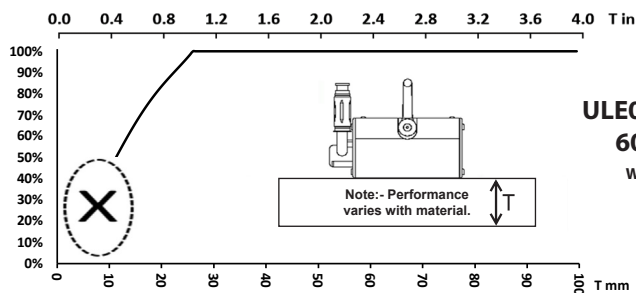
WLL  
kg  
(lb)



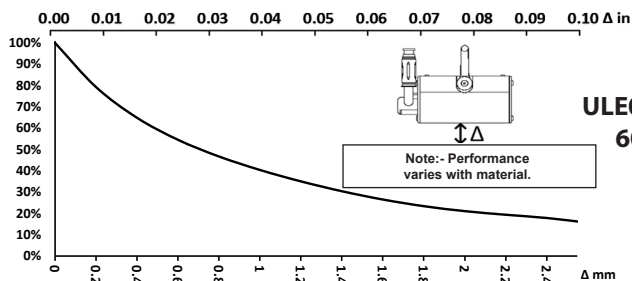
WLL  
kg  
(lb)



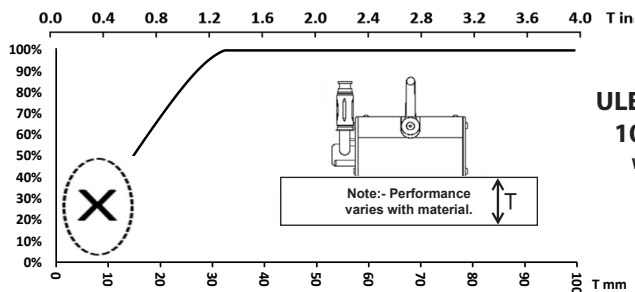
WLL  
kg  
(lb)



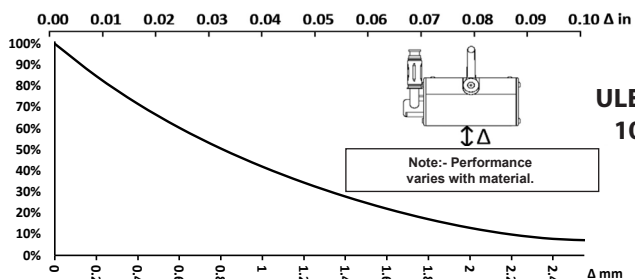
WLL  
kg  
(lb)



WLL  
kg  
(lb)



WLL  
kg  
(lb)



# 5 Periodic Inspection

If the Lifting Magnet is being used in the EU then it must be inspected and maintained in accordance with the requirements of PUWER (1998).

For areas outside the EU the Lifting Magnet must be inspected and maintained in compliance with the applicable work standards and other standards for suspended load handling (eg. ASME B30.20).

Should the data plates become detached or damaged please contact your supplier immediately for replacement plates.

In addition to statutory requirements it is recommend that you follow this maintenance schedule:

## MAINTENANCE SCHEDULE

Operation	Frequency			
	Daily	Weekly	Monthly	Annually
Inspect pole feet for damage	✓			
Inspect lifting eye for damage and security		✓		
Inspect data labels for damage			✓	
Proof test WLL				✓

# 6 Warranty

This Lifting Magnet is covered by a 1-year warranty from the date of invoice.

# 7 Inspection Record

This Lifting Magnet should be re-certified in accordance with the requirements of PUWER (1998) and LOLER (1998).

For areas outside the EU this Lifting Magnet must be inspected in compliance with the applicable work standards and other standards for suspended load handling (eg. ASME B30.20).

## Declaration of conformity

The Supply of Machinery (Safety) Regulations 2008, Annex II, A

**Manufacturer:** Eclipse Magnetics Ltd  
**Address:** Atlas Way, Sheffield, S4 7QQ, United Kingdom

This declaration is issued under the sole responsibility of the manufacturer.

**Product:** Ultralift (UL)  
**Description:** A permanent lifting magnet

This machinery fulfils all the relevant provisions of The Supply of Machinery (Safety) Regulations 2008, as well as:  
The Electrical Equipment (Safety) Regulations 2016  
The Electromagnetic Compatibility Regulations 2016

**Designated standards:**  
EN ISO 12100:2010, EN ISO 13854:2019, EN 13155:2020.

The specific technical documentation, in accordance with Appendix VII A, has been written and is available. The documentation will be transmitted to a reasoned request by national authorities.

Sheffield, 21.03.2022



Andrew Reeve  
Operations Director

UK  
CA