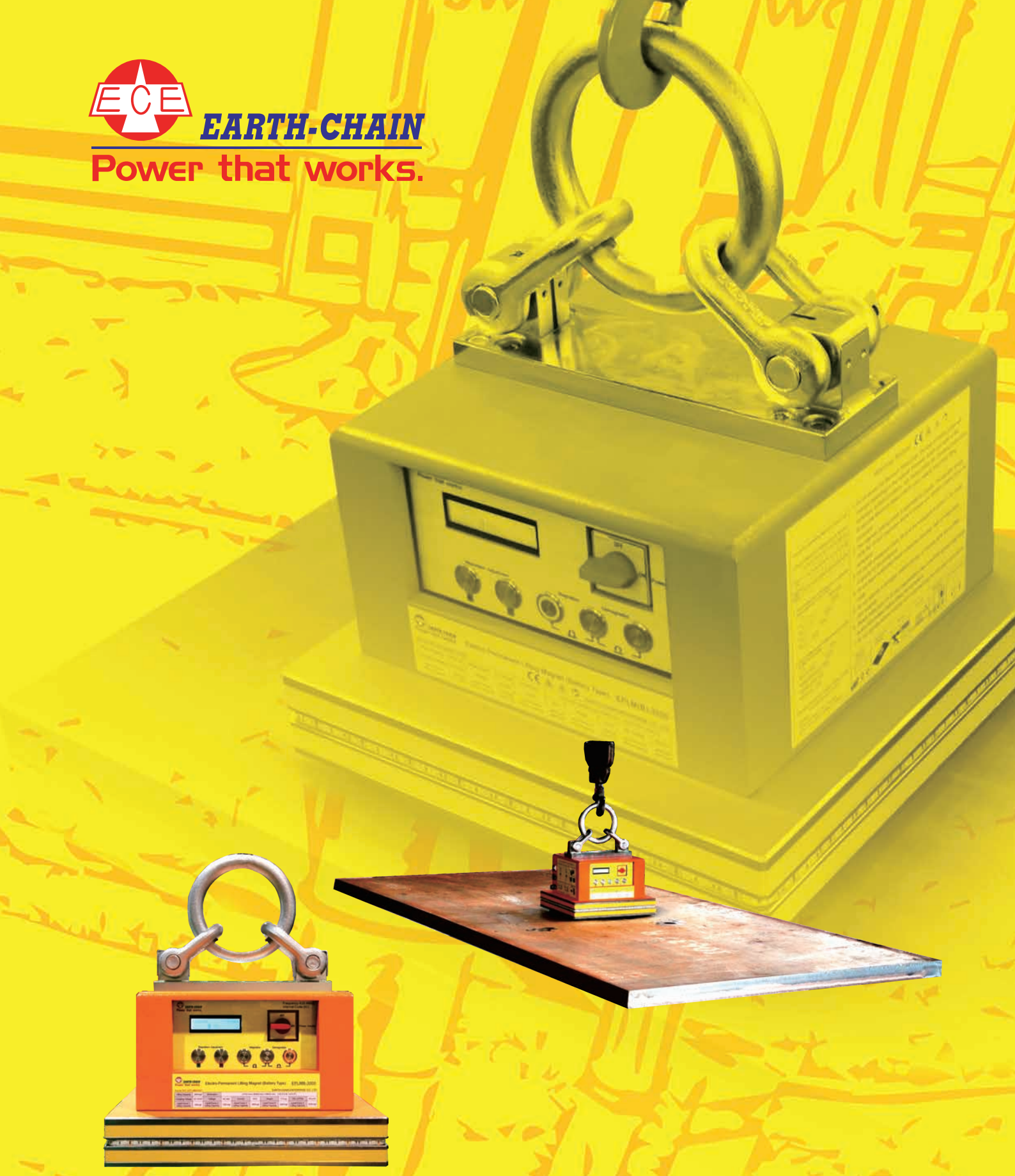
EARTH-CHAIN

Power that works.



Electro-Permanent Lifting Magnet (Battery Type) *EPLMB Series*

Electro-Permanent Lifting Magnet *EPLM Series*

Automated machine-magnet intelligent manufacturing process PLUS Digitization for smart energy saving

Earth-Chain Enterprise was established in 1988, we commit to be the professional magnetic application products manufacturer in past 35 years. We also market all over the world with own brand ECE, our agents /distributors located in more than 40 countries on five continents around the world. With ISO9001 2015 and CE certification, and more than 30 product patents and multiple magnetic application key technologies, we can not only offer products for greatly improving customer's machine operation efficiency and market competitiveness, but also bring different application concepts and magnetic chuck system application technologies for our customers.

In recent years, as the CNC machine tool industry responds to Industry 4.0 intelligent automation, technology is constantly improving with each passing day. Earth-Chain's R&D energy focuses on the field of sustainable development. Based on the market and customer's requirements, as well as own core professional technologies, we continuously improve and bring new application concepts and innovations in the of magnetic clamping system application technology.

In 2022, Earth-Chain expand and completed the intelligent plant with internet of machines & magnetic systems, which integrates CNC machine tools, robotic arms, magnetic clamping systems, monitoring and sensing software systems and other automated peripheral equipment in series. With intelligent process optimization, IoT, and big data collection, the new Earth-Chain plant not only has intelligent functions, such as fault prediction, precision compensation, automatic parameter setting and automatic scheduling, but also has the core key technology of energy saving and carbon reduction by combining permanent magnetic chuck and electronic control system.

Based on the experience while building our intelligent plant, Earth-Chain have the abilities to provide total magnetic solution for machine tool manufacturers and customers, creating a new era of “Automated machine-magnet intelligent manufacturing process” and “Digitization for smart energy saving” is our target.

EARTH-CHAIN

Electro-Permanent Lifting Magnet (Battery Type) EPLMB Series

Feature:

1. Battery type Permanent magnet electronic control structure design, with Neodymium (NdFeB). No electric power supply required to keep magnetic chuck ON and provides maximized safety in case of power failure.
2. Low-voltage safety warning system, can detect the lithium battery power through the screen at any time.
3. With explosion proof Lithium battery, the charger can be setting 110V~220V.
   EPLMB-3000B can be used for operating 160 cycles after the battery is fully charged.
   EPLMB-4000D can be used for operating 100 cycles after the battery is fully charged.
4. The magnetism is divided into 5 levels, it can be adjusted the best magnetic force level for different workpieces.
5. Modular design can be freely expanded the output port, and the number of EPLMB Lifters are according to the application.
6. The numbers of EPLMB can be operated by wireless remote control the maximum can be 10 pcs EPLMB Lifter. Under unobstructed environment, the wireless remote control distance can be 20 meters.
7. Custom-made：Replaceable induction block will be alternative option according to different workpiece sizes or shapes to meet the various applications requirements.
8. Proximity sensor device: When the hoisting and lifting is started the wireless remote control device can't carry out any operation to prevent potential risk of workpiece dropping caused by mistouch the button.

Application:

Suitable for large iron and steel plate lifting and moving.

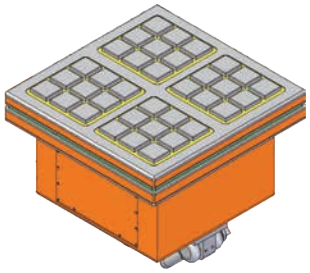
Warning!

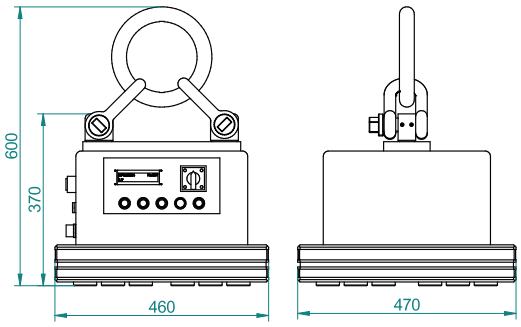
Do not operate at temperatures above 80℃(176°F).

Electro-Permanent Lifting Magnet (Battery Type) EPLMB Series

Specification

EPLMB-3000B:

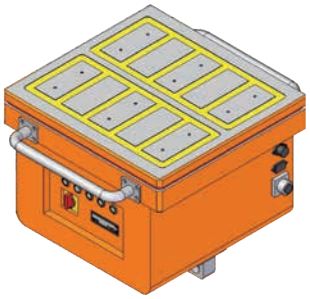


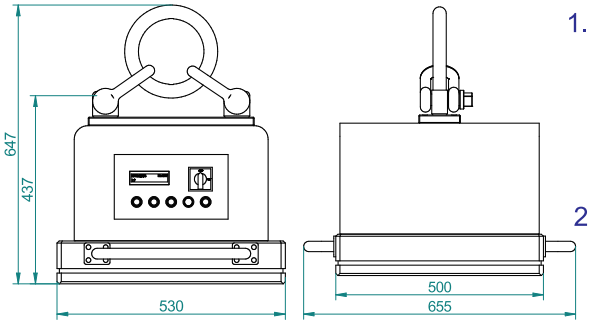


1. Suitable for flat and thin workpieces above 10mm.
2. EPLMB-3000B can be used for operating160 cycles after the battery is fully charged.

Lifting Capacity	3000 kgf	Safety Factor	3.3 times	Dimension	L460 mm x W470 mm x H600 mm (18.1"x18.4"x23.5")				
Charging Voltage	DC 54.6V	Voltage	DC 48V	Current	60 A	Weight	172 kg	NO. of Pole	36 pole
Level Force 1 Lifting Capacity	600 kgf (1320 lbf)	Level Force 2 Lifting Capacity	1200 kgf (2640 lbf)	Level Force 3 Lifting Capacity	1800 kgf (3960 lbf)	Level Force 4 Lifting Capacity	2400 kgf (5280 lbf)	Level Force 5 Lifting Capacity	3000 kgf (6600 lbf)

EPLMB-4000D:

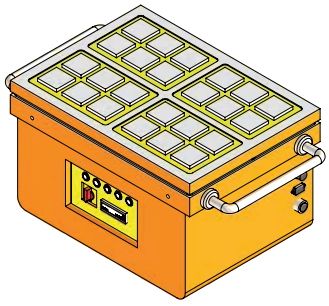


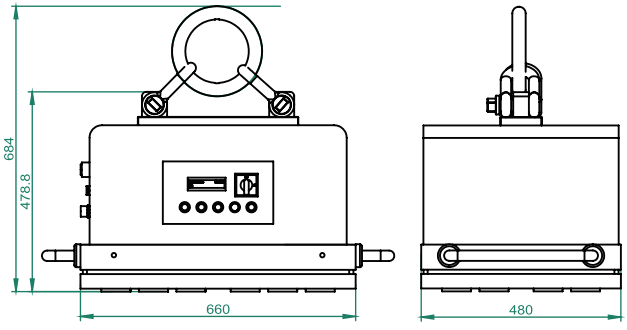


1. Suitable for steel plates, molds, cylindrical iron or irregular castings workpiece. (Special accessories are required- EPLMB-IB Series, see the detail of Option Accessories Page 3)
2. EPLMB-4000D can be used for operating 100 cycles after the battery is fully charged.

Lifting Capacity	4000 kgf	Safety Factor	3.3 times	Dimension	L530 mm x W500 mm x H647 mm (20.9"x19.7"x25.4")				
Charging Voltage	DC 71V	Voltage	DC 63V	Current	20 A	Weight	270 kg	NO. of Pole	10 pole
Level Force 1 Lifting Capacity	800 kgf (1760 lbf)	Level Force 2 Lifting Capacity	1600 kgf (3520 lbf)	Level Force 3 Lifting Capacity	2400 kgf (5280 lbf)	Level Force 4 Lifting Capacity	3200 kgf (7040 lbf)	Level Force 5 Lifting Capacity	4000 kgf (8800 lbf)

EPLMB-4000DS:





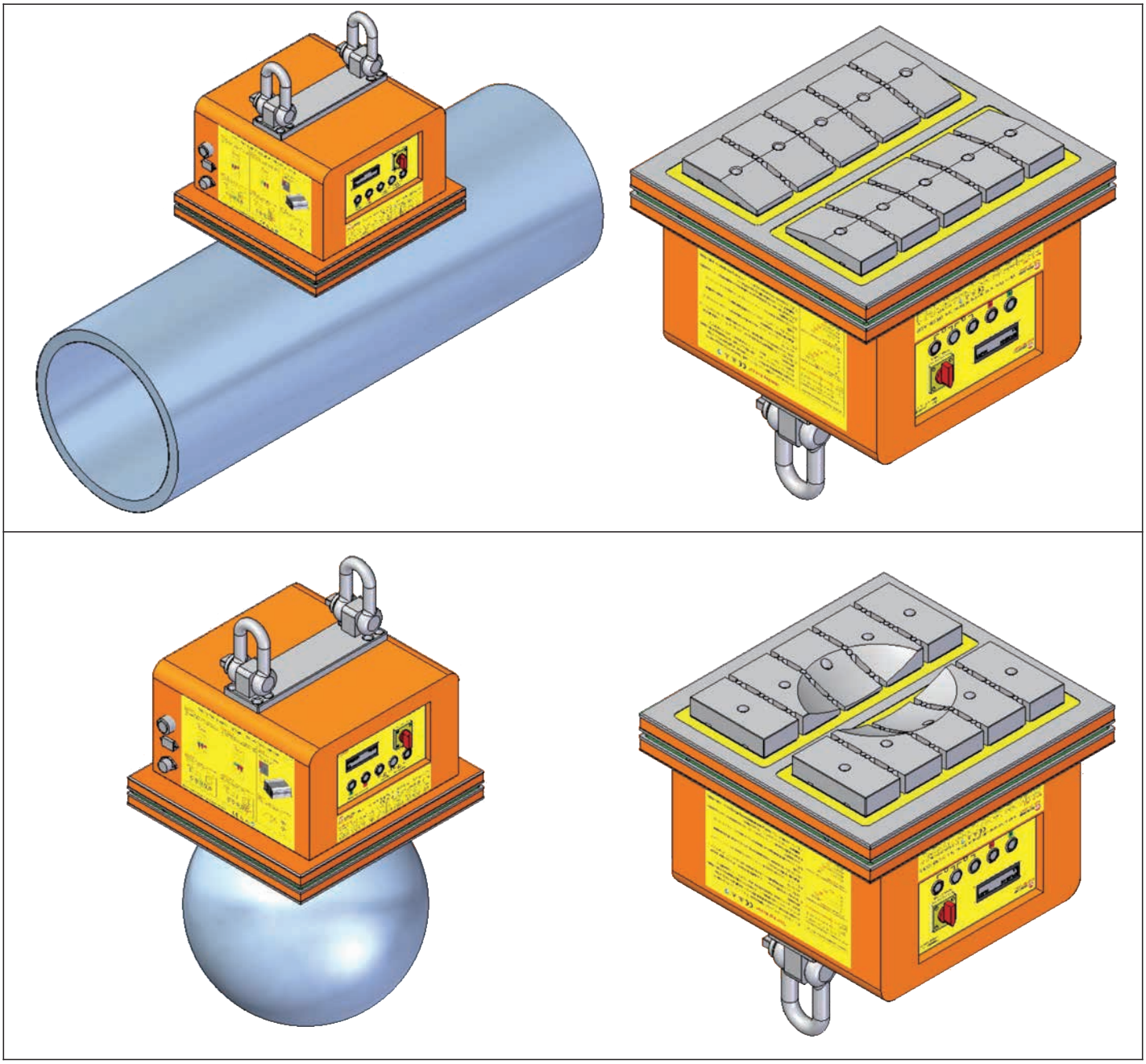
1. Suitable for flat and thin workpieces above 20mm.
2. EPLMB-4000DS can be used for operating 100 cycles after the battery is fully charged.

Lifting Capacity	4500 kgf	Safety Factor	3.3 times	Dimension	L660 mm x W480 mm x H684 mm (26.0"x18.9"x26.9")				
Charging Voltage	DC 71V	Voltage	DC 62V	Current	18 A	Weight	350 kg	NO. of Pole	24 pole
Level Force 1 Lifting Capacity	900 kgf (1980 lbf)	Level Force 2 Lifting Capacity	1800 kgf (3960 lbf)	Level Force 3 Lifting Capacity	2700 kgf (5940 lbf)	Level Force 4 Lifting Capacity	3600 kgf (7920 lbf)	Level Force 5 Lifting Capacity	4500 kgf (9900 lbf)

1. The Magnetic forces will changes depending on the thickness, attractive face roughness and quality of material and clearance between the workpiecec with EPLMB.
2. When lifting round steel, the maximum lifting capacity is 2,000kgf due to installation of V-shaped EPLMB-IB.

Option Accessories – Induction Block: EPLMB-IB Series

1. Induction Block EPLMB-IB series could be machining according to varies workpiece shapes to increase workpiece touch surface for improving lifting capacity.
2. The EPLMB series can be used with different Induction blocks EPLMB-IB for the variety workpiece shapes required.
3. Induction block EPLMB-IB Series can be replaced and used for various type of workpiece such as steel plates, iron blocks, molds, cylindrical iron or irregular castings etc. for more application efficiency.



When lifting round steel, the maximum lifting capacity is 2,000kgf due to installation of V-shaped EPLMB-IB.

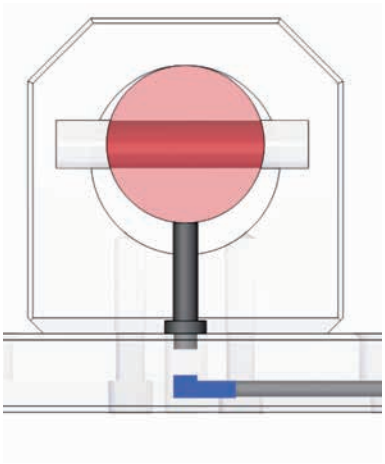
Safety sensor

With Safety sensor system, to prevent potential risk of workpiece dropping caused by mistouch the button.

With safety sensor, when the hook is pulled up, the demagnetization could not be conducted.
If the operator mistouches the button, the buzzer (alarm) will sound and the LED flashes red light to alert the operator (Fig I)

Fig I

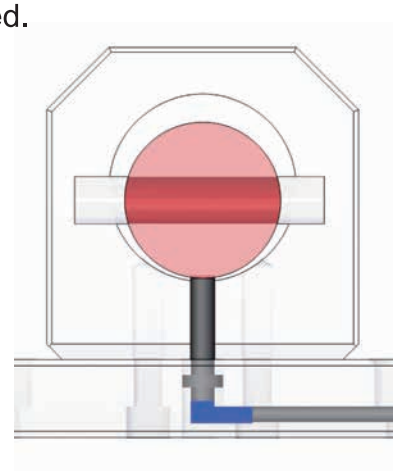
When the hook is pulled up, the safety sensor below will not be touched the hook and the magnetization/demagnetization could not be conducted.



The workpiece must be placed on the ground, the hook is slack and then demagnetization could be conducted. (Fig II)

Fig II

When the hook is slack, the hook will touch the safety sensor below will be united and the magnetization/demagnetization could be conducted.

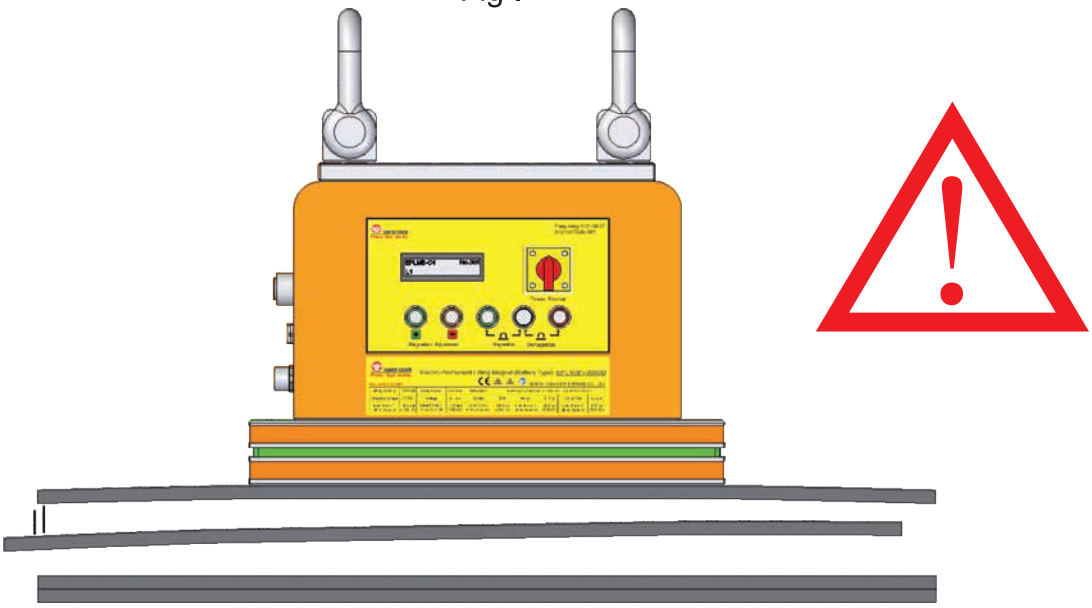


Five levels magnetism force setting

The magnetism is designed with an adjustable function and divided into 5 levels. Can be adjusted the magnetism based on the thickness of the workpiece. Thickness of workpiece above 5mm can be quickly lift/move.

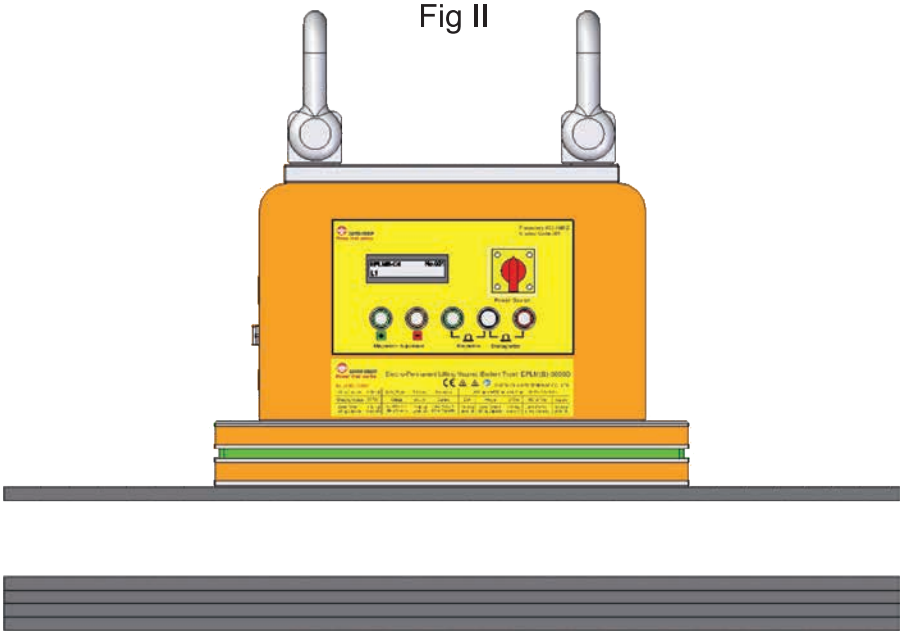
When the workpiece is thinner and stacking in several layers plates pile up, if the magnetic force of the 5 levels excessive magnetism it will cause danger due to lift other workpieces (Fig. 1).

Fig I



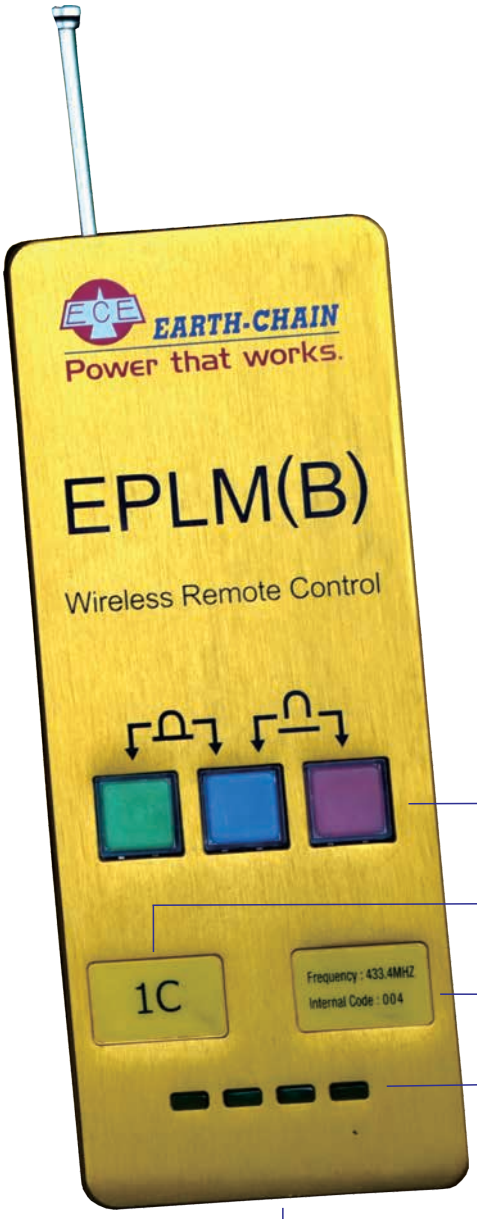
To reduce the magnetism to lower magnetic force level till to make sure the EPLMB lift will not lift other workpieces and then use this magnetic level to proceed with the operation. (Figure II).

Fig II



Electro-Permanent Lifting Magnet (Battery Type) EPLMB Series

Function:
Wireless Remote Control



C. Frequency number

Each (wireless) Remote Control with 1 controlled frequency number, for EPLMB wireless operation.

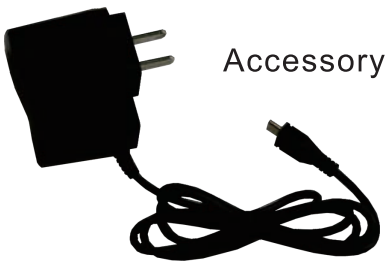
D. Battery levels

1. The battery levels will be displayed in lights numbers show electricity of remote wireless control when magnetized / demagnetized.
2. When battery power is 1 bar (0~25%) left, please charge it instantly.

Lights Numbers				Electricity of remote control
■	■	■	■	75~100 %
■	■	■		50~75 %
■	■			25~50 %
■				0~25 %

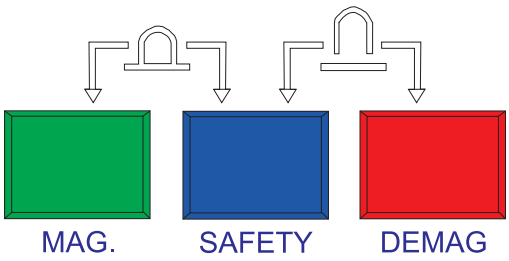
E. Power Input Port

1.Remote control can be fully charged by taking 2 hours charging period,
A fully charged Remote control can be used for operating 400 cycles.
2.Input power is 110V~240V, standardized for international general voltage specification.



Accessory: Charger

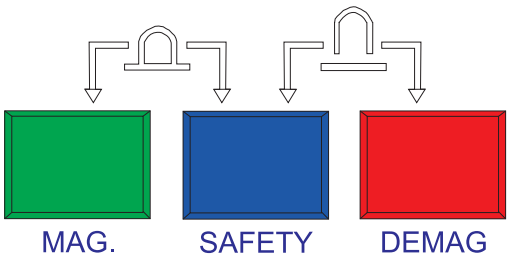
A. Magnetization/ Demagnetization



Magnetization :

Press and hold the green magnetize and the blue safety buttons together for one second to start magnetization cycle.

The green light on magnetize button illuminates, indicating magnetization is complete.



Demagnetization :

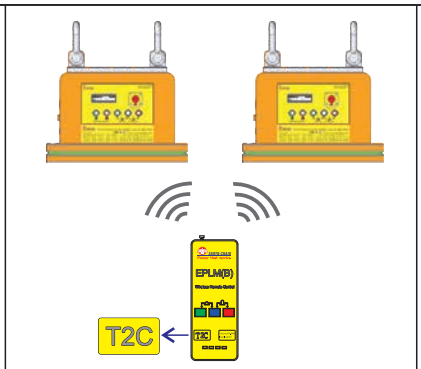
Press and hold the red demagnetize and the blue safety buttons together for one second to start demagnetization cycle.

The red light on demagnetize button illuminates, indicating demagnetization is complete.

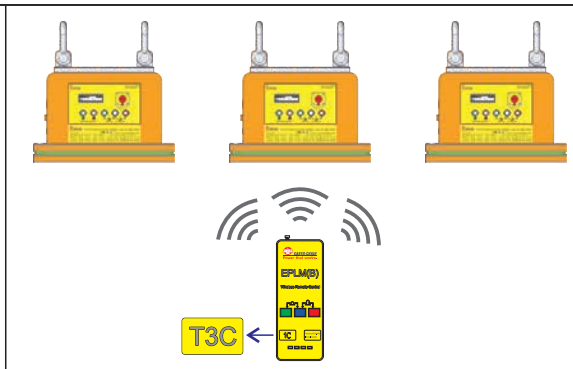
B. Setting number of EPLMB quantity

1. E.g.: 1C = 1 EPLMB chuck, T2C = 2 EPLMB chucks. The maximum of one wireless remote control can be 10 EPLMB chucks. (Shown as below illustration)
2. Each of the EPLMB has an individual frequency code for wireless remote control link.

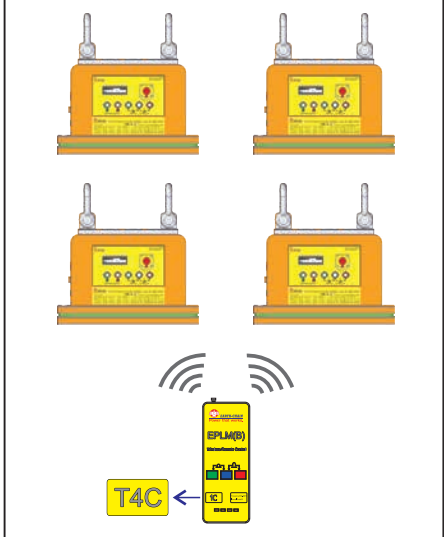
1C = Control 1x EPLMB



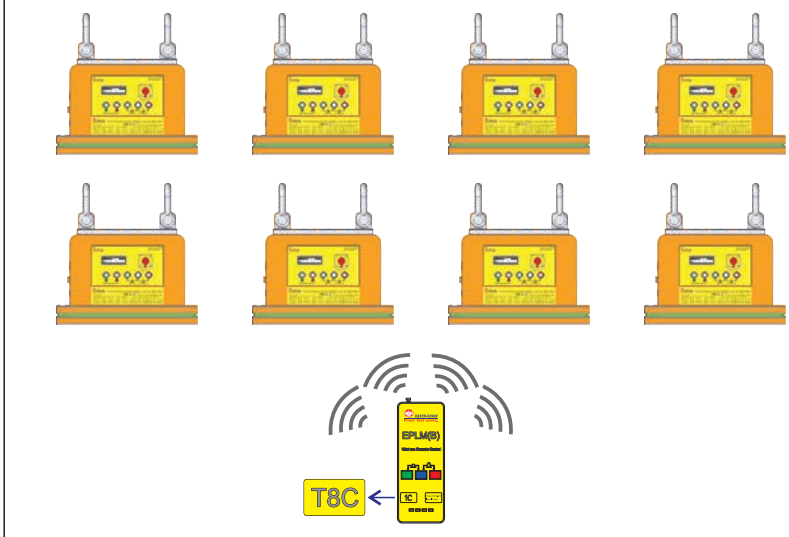
T2C = Control 2 x EPLMB simultaneously



T3C = Control 3 x EPLMB simultaneously



T4C = Control 4 x EPLMB simultaneously



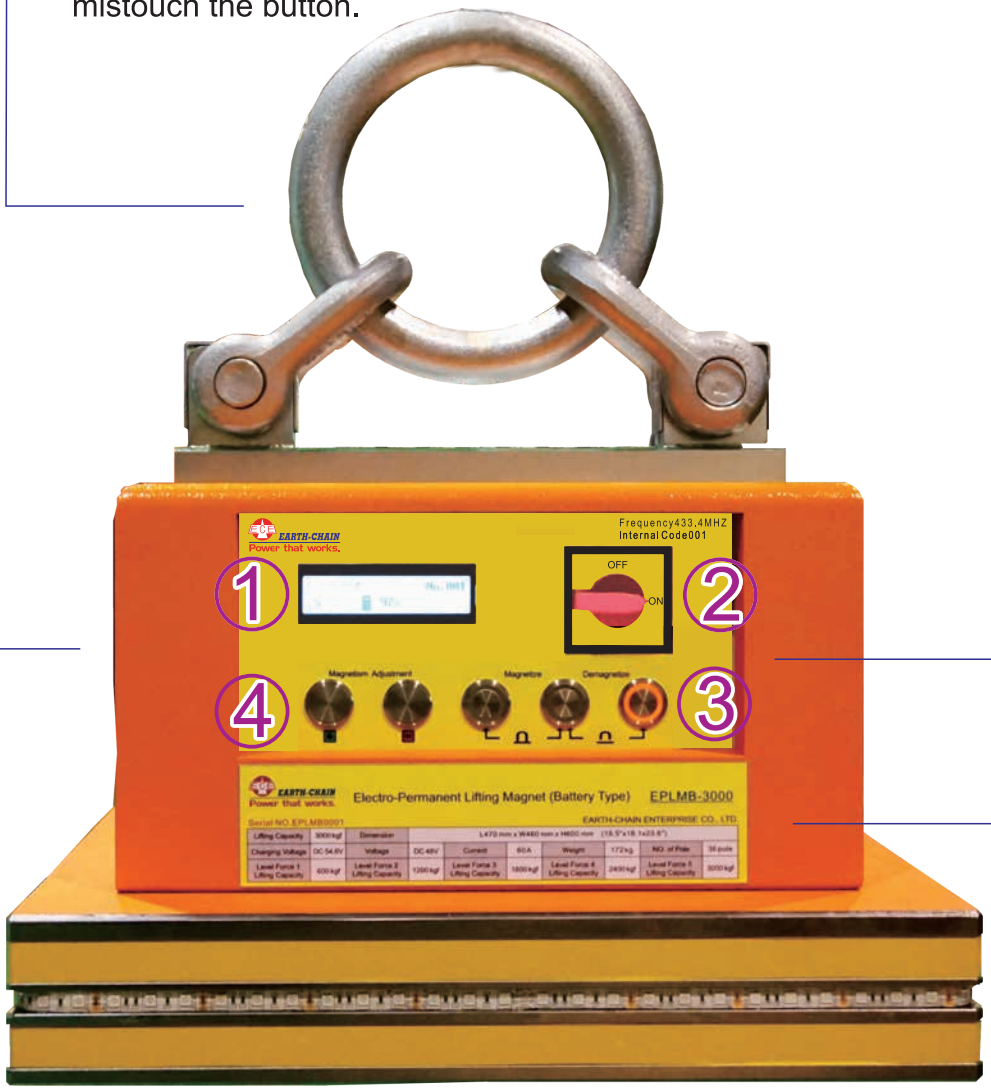
T8C = Control 8 x EPLMB simultaneously

Electro-Permanent Lifting Magnet (Battery Type) EPLMB Series

Function:

A. Hook module

With safety sensor, only when the hook is loose, the demagnetization conduct could be done to prevent potential risk of workpiece dropping caused by mistouch the button.



E. Side View:

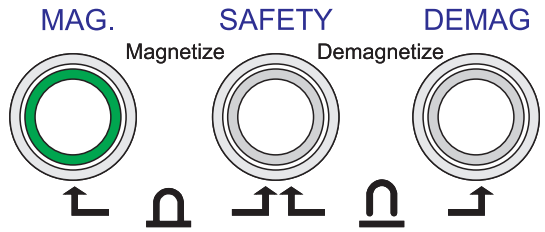
1. When abnormal status occurred such as low voltage or incorrect operation, the buzzer (alarm) will sound and the screen will displays the cause of the abnormality.

2. Charging port: Connect the input power for charger.

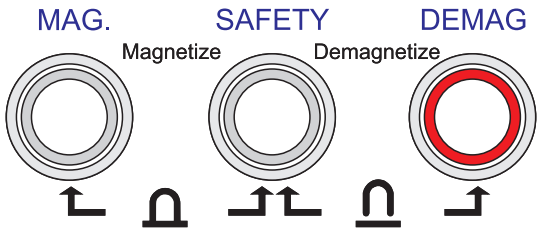
3. Label: Magnetization/demagnetization and charger instructions of remote control.

B. Panel

1. Status: Display Current status such as battery power, low voltage or operating error.
2. Power Switch.
3. Magnetization

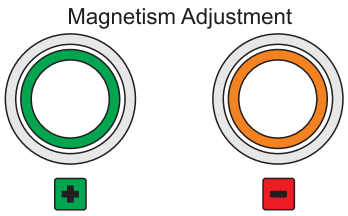


Magnetization
Press MAG and SAFETY buttons for 1 second simultaneously, then the green light of the MAG button ON mean magnetization is completed.



De-Magnetization
Press DEMAG and SAFETY buttons for 1 second simultaneously, then the red light of the DEMAG button ON mean demagnetization is completed.

4. Magnetism adjustment:



Relative magnetic force strength percentage table

Level No.	1	2	3	4	5
%	20	40	60	80	100

a. Make sure the EPLMB is on demagnetization state then adjust the magnetism to the required level and then magnetization.
b. The magnetism is designed with an adjustable function and divided into 5 levels. Can be adjusted the magnetism based on the thickness of the workpiece.
(Thickness of workpiece above 10mm can be quickly lift/move).

C. Specification:

EARTH-CHAIN Power that works.

Electro-Permanent Lifting Magnet (Battery Type) EPLMB-3000B

Serial NO.EPLMB-3000B

EARTH-CHAIN ENTERPRISE CO., LTD.

Lifting Capacity	3000 kgf	Safety Factor	3.3 times	Dimension	L460 mm x W470 mm x H600 mm (18.1"x18.4"x23.5")				
Charging Voltage	DC 54.6V	Voltage	DC 48V	Current	60 A	Weight	172 kg	NO. of Pole	36 pole
Level Force 1 Lifting Capacity	1320 lbf	Level Force 2 Lifting Capacity	2640 lbf	Level Force 3 Lifting Capacity	3960 lbf	Level Force 4 Lifting Capacity	5280 lbf	Level Force 5 Lifting Capacity	6600 lbf

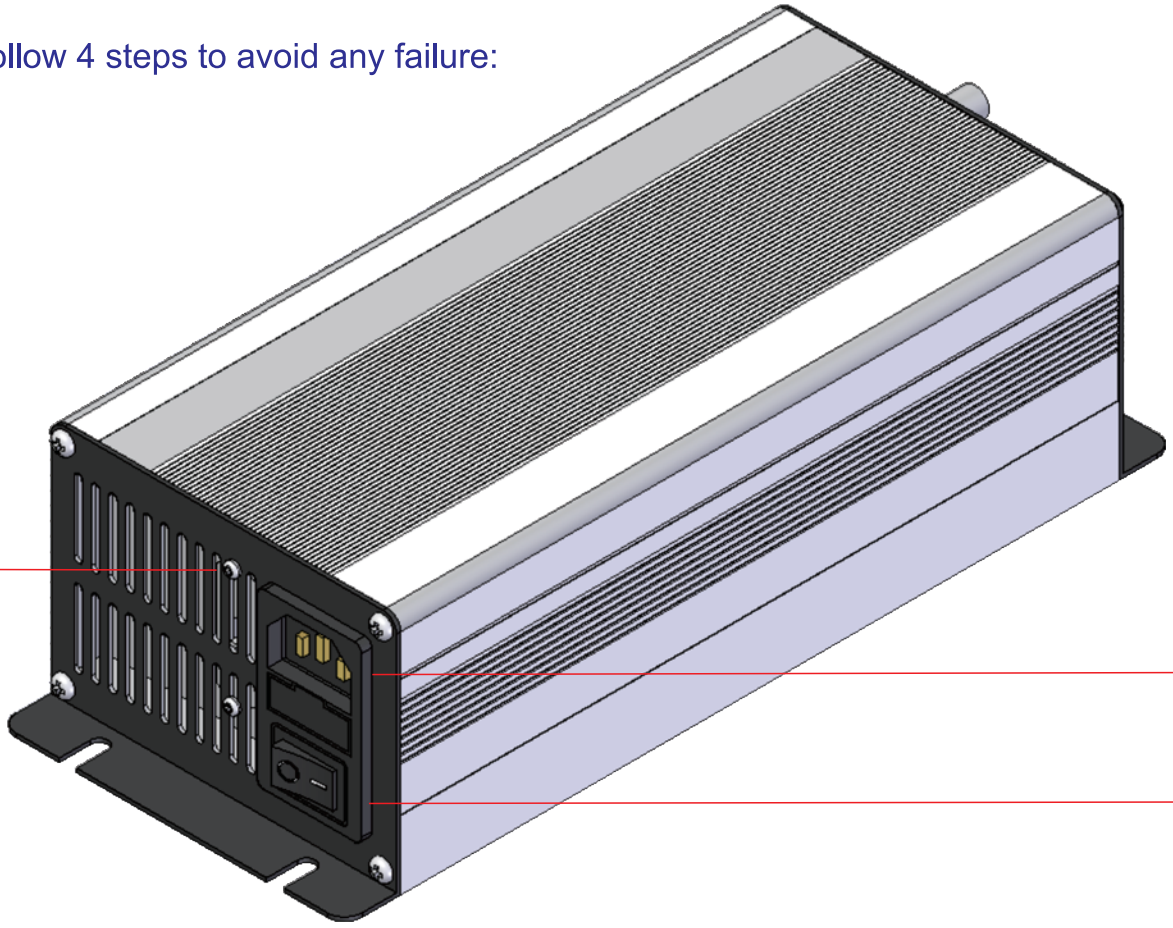
D. LED Lamp

To display the status of the system: Magnetization, demagnetization or incorrect operation. The red light flashes to warning the operator, the status display can be viewed the case of the abnormality.

Accessory: Charger

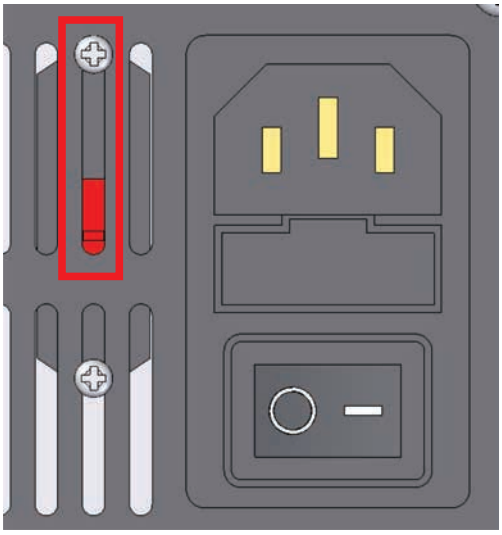
The battery could be fully charged by taking 2 hours charging period.
EPLMB-3000B can be used for operating 160 cycles after the battery is fully charged.
EPLMB-3000D and EPLMB-4000DS can be used for operating 100 cycles after the battery is fully charged.

Please follow 4 steps to avoid any failure:



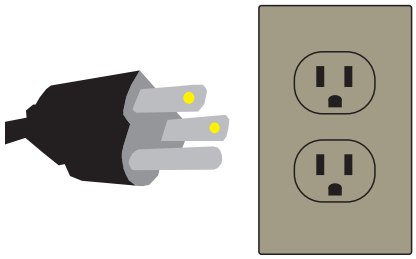
A. Voltage setting

The voltage can be set 110V or 220V. The upward adjustment is set to 110V, and the downward adjustment is set to 220V. Below example shows the voltage is 220V setting.



B. Power input socket

Please plug it into 110V or 220V socket and plug the charger voltage into the other end.

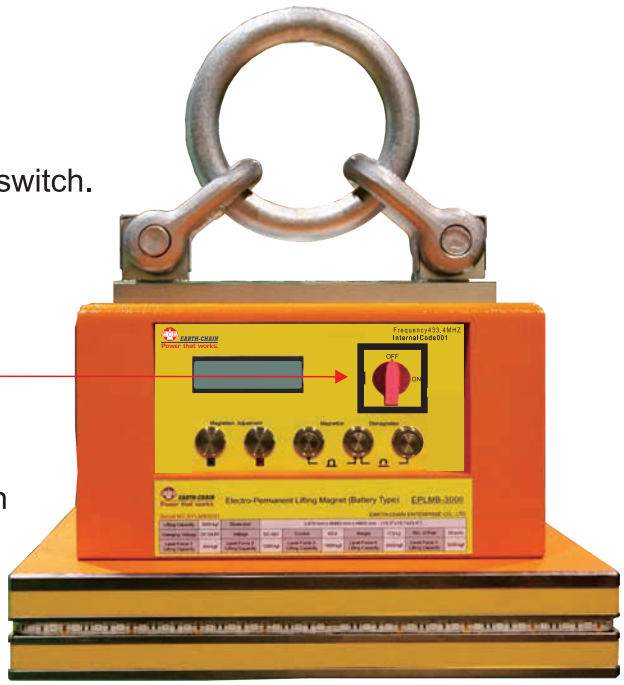


C. Power output cable

Please insert the power output cable into the charger socket (on the right side of the panel).

D. Turn off the panel switch

Before charging, please turn off the panel switch.

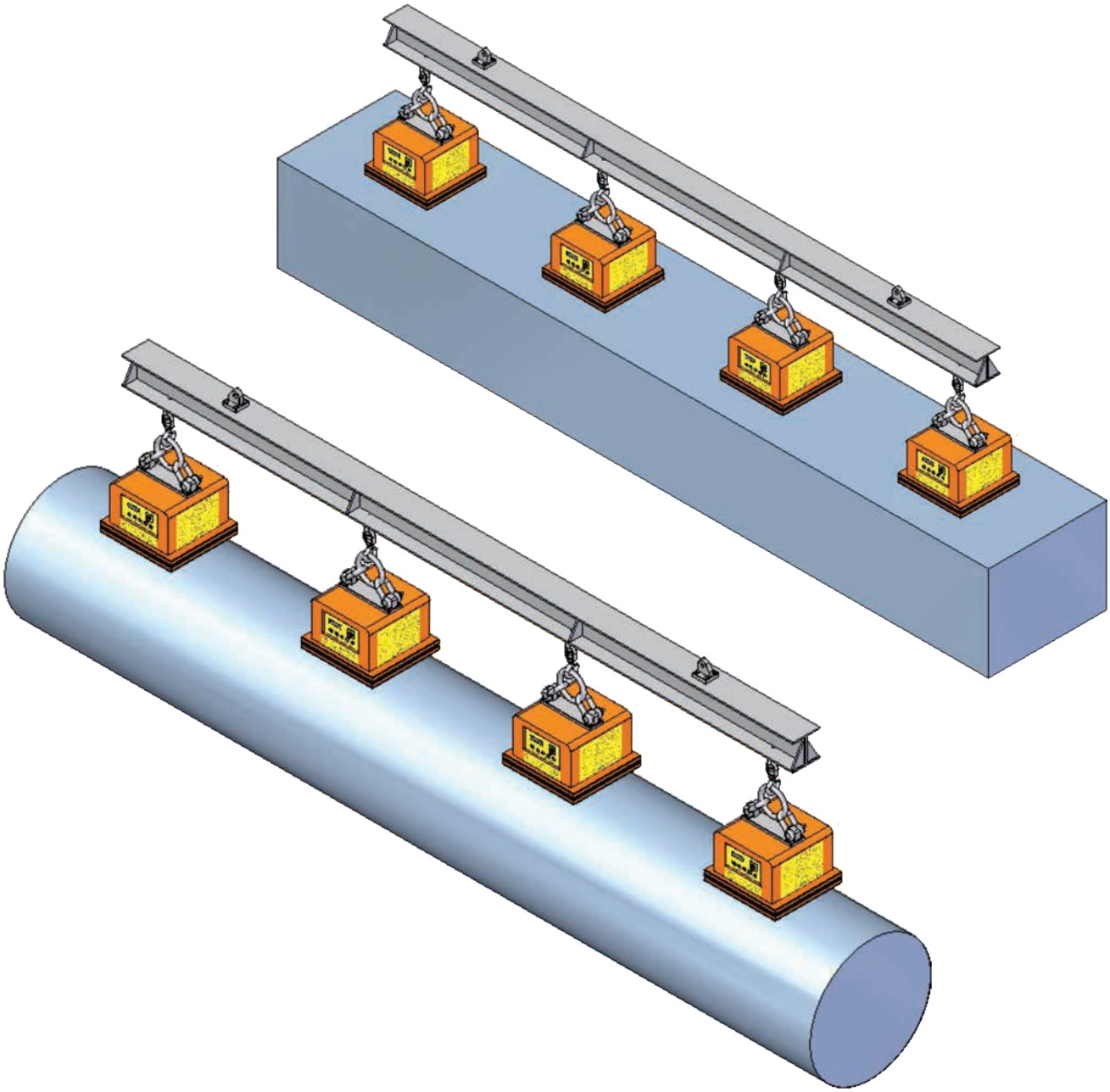


E. Turn on the charger power switch

After completing the above steps, then turn on the charger power switch for charging.

EPLMB Spreader Bars (Manntectured by Customer)

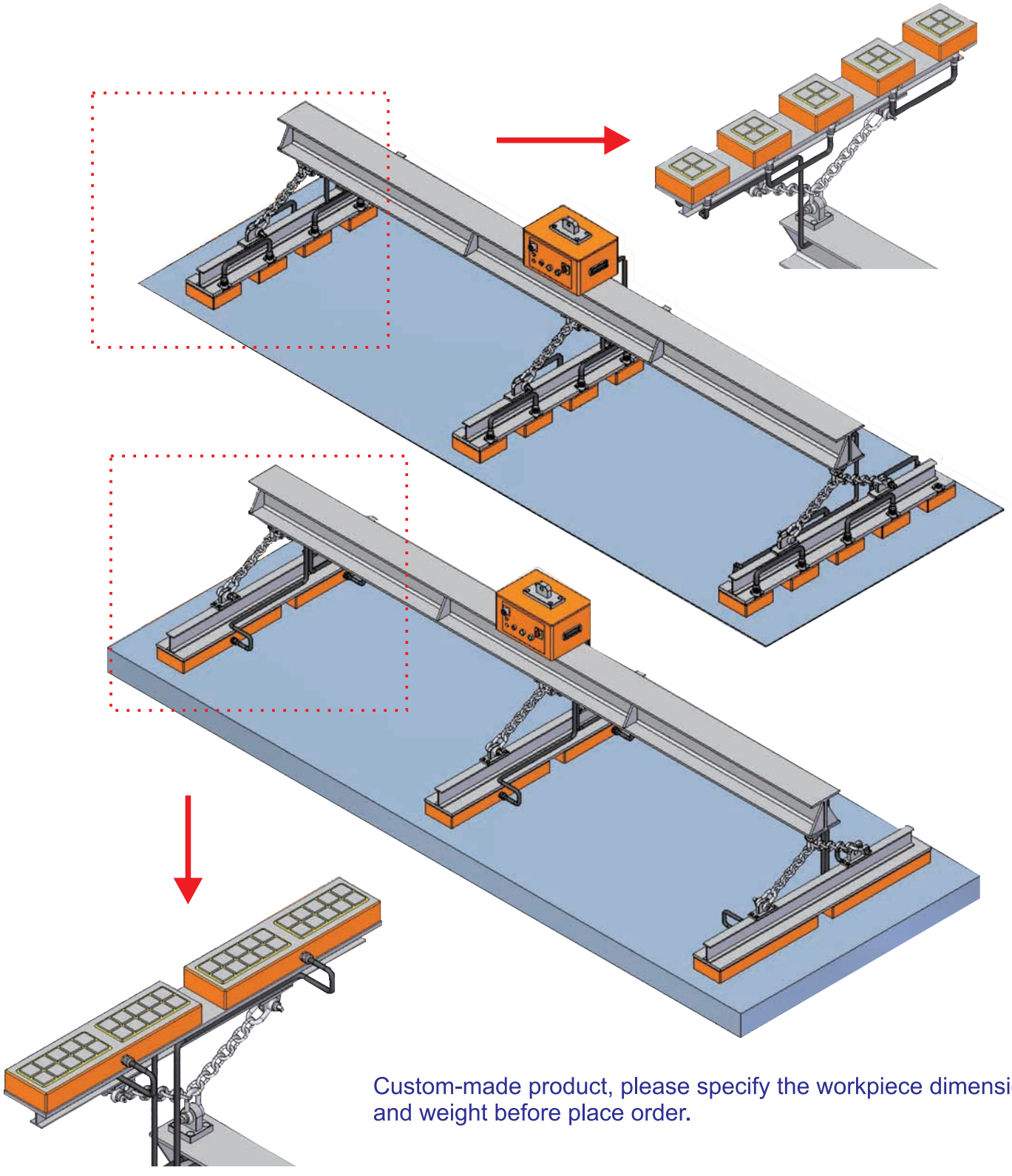
1. Spreader bars help keep large or irregular loads under control during transport.
2. Can be free to set up position, numbers and distance of EPLMB according to the dimension of workpiece and application for lifting balance, safety and convenience.
3. Operated by wireless remote control, a single operator can control multiple EPLMB Lifter simultaneously which can easily lift large workpieces and greatly reduce the time for personnel to operate the lifting workpiece.



Custom-made product, please specify the workpiece dimension and weight before place order.

EPLMB Spreader Bars (Manntectured by Customer)

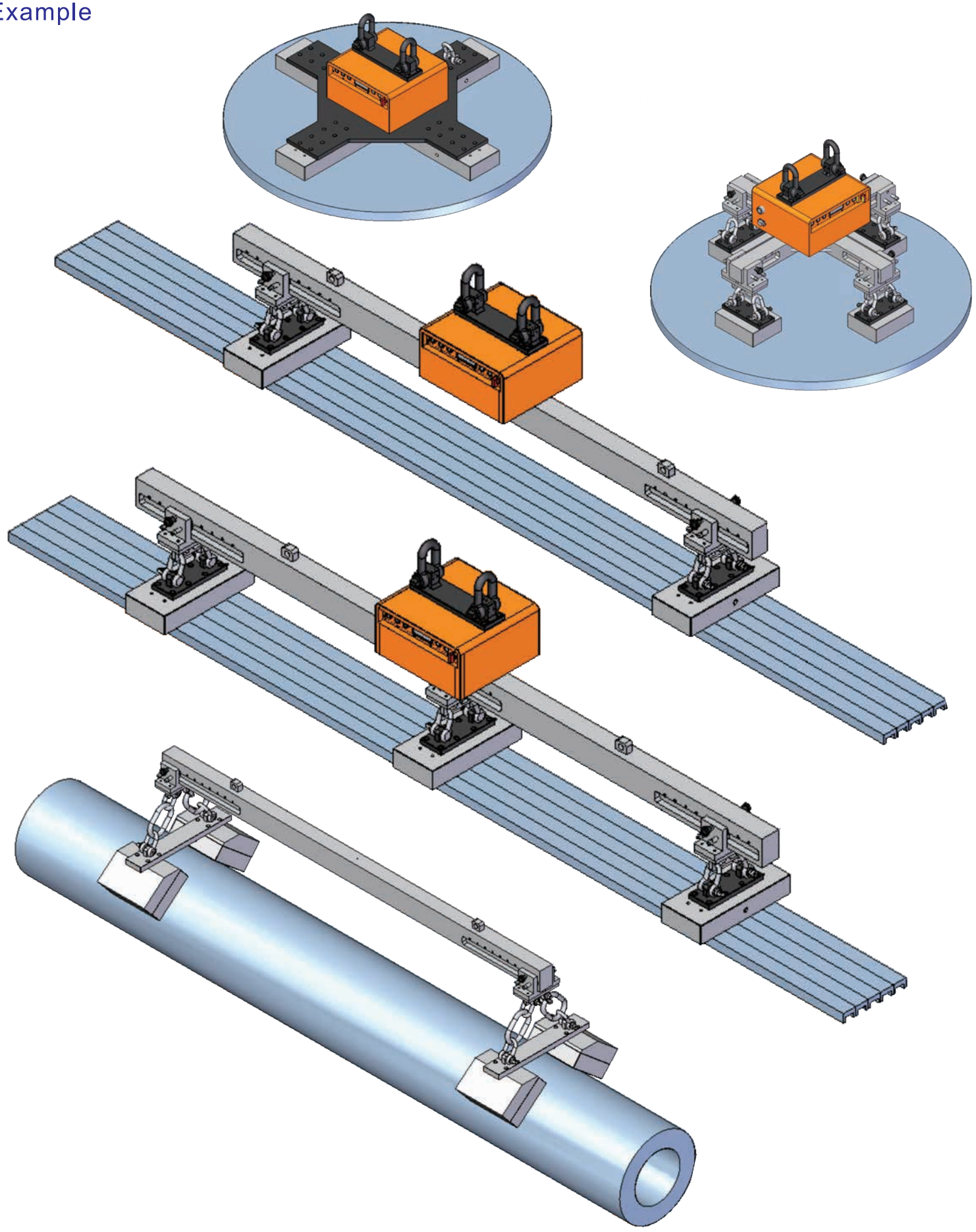
Electro-Permanent Lifting Magnet (battery type) EPLMBS series is Custom-Made professionally. It could be customized according to workpiece shape, size and weight, with Custom-Made structure design to meet the different application of customers' various industries.



Custom-made product, please specify the workpiece dimension and weight before place order.

Electro-Permanent Lifting Magnet (Battery Type) EPLMBS Series (Custom-made)

Example



Working Example

Electro-Permanent Lifting Magnet
EPLMS Series (Custom-made)

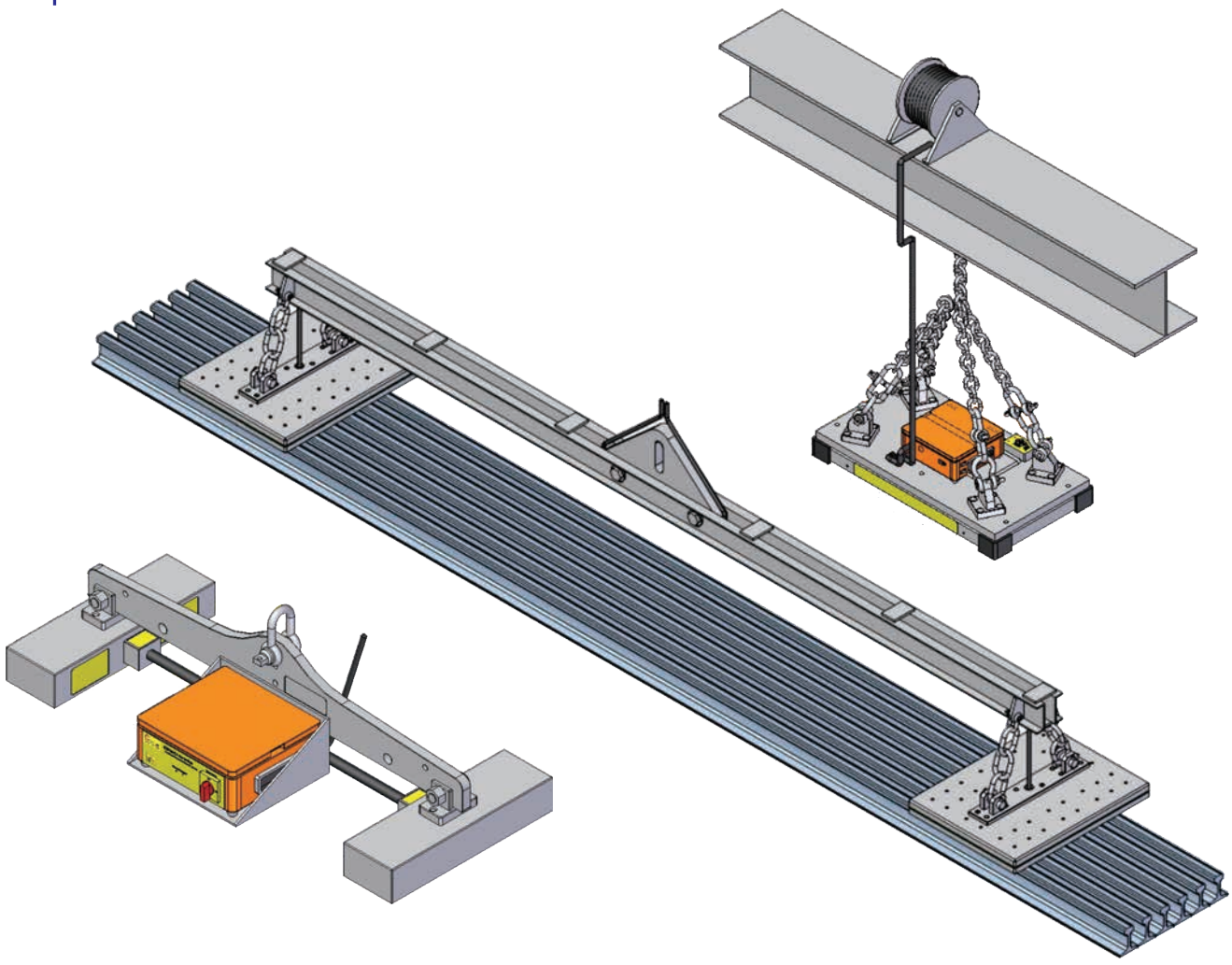
Feature:

1. Battery type Permanent magnet electronic control structure design, with Neodymium (NdFeB). No electric power supply required to keep magnetic chuck ON and provides maximized safety in case of power failure.
2. The magnetism is divided into 8 levels, it can be adjusted the best magnetic force level for different workpieces.
3. Modular design can be freely expanded the output port, and the number of EPLMS Lifters are according to the application.
4. The EPLMS series can be operated by wireless remote control and the distance can be 20 meters under unobstructed environment.
5. Custom-made：Replaceable induction block will be alternative option according to different workpiece sizes or shapes to meet the various applications requirements.
6. Proximity sensor device: When the hoisting and lifting is started the wireless remote control device can't carry out any operation to prevent any incorrect operation causing the workpiece drop down.

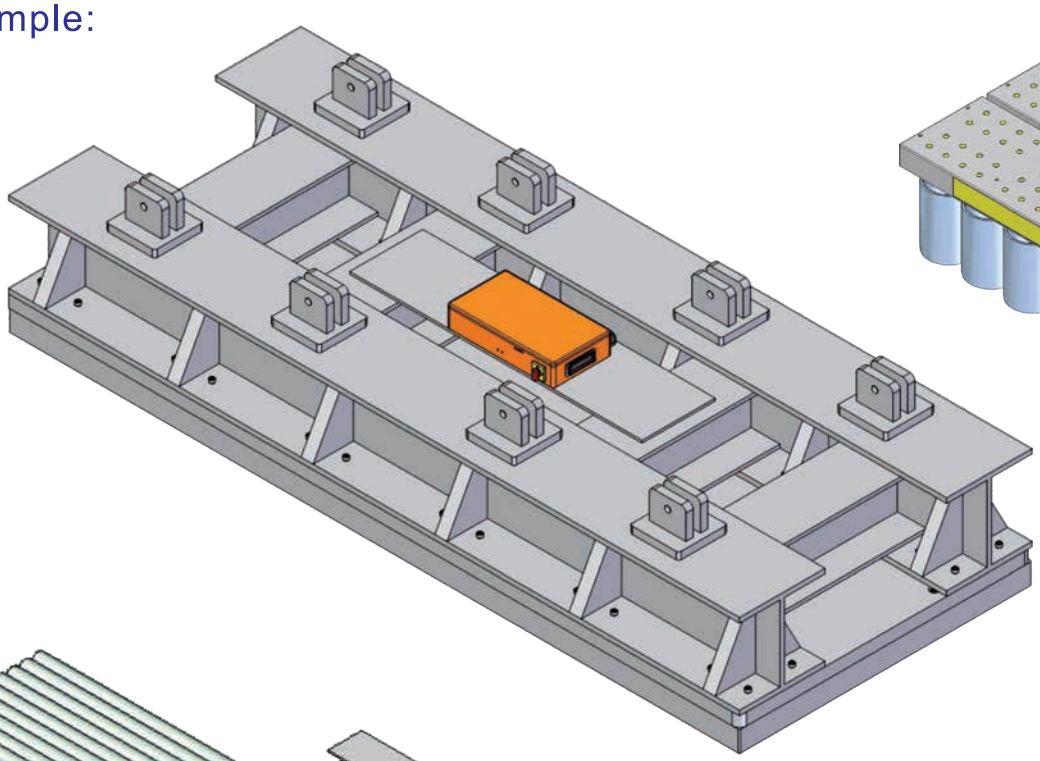
Application:

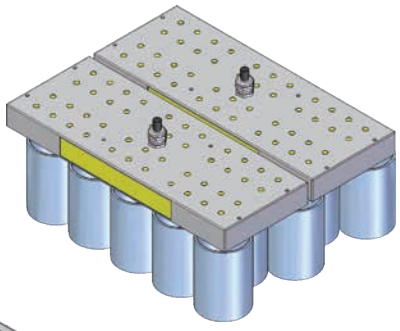
Suitable for large iron and steel plate lifting and moving.

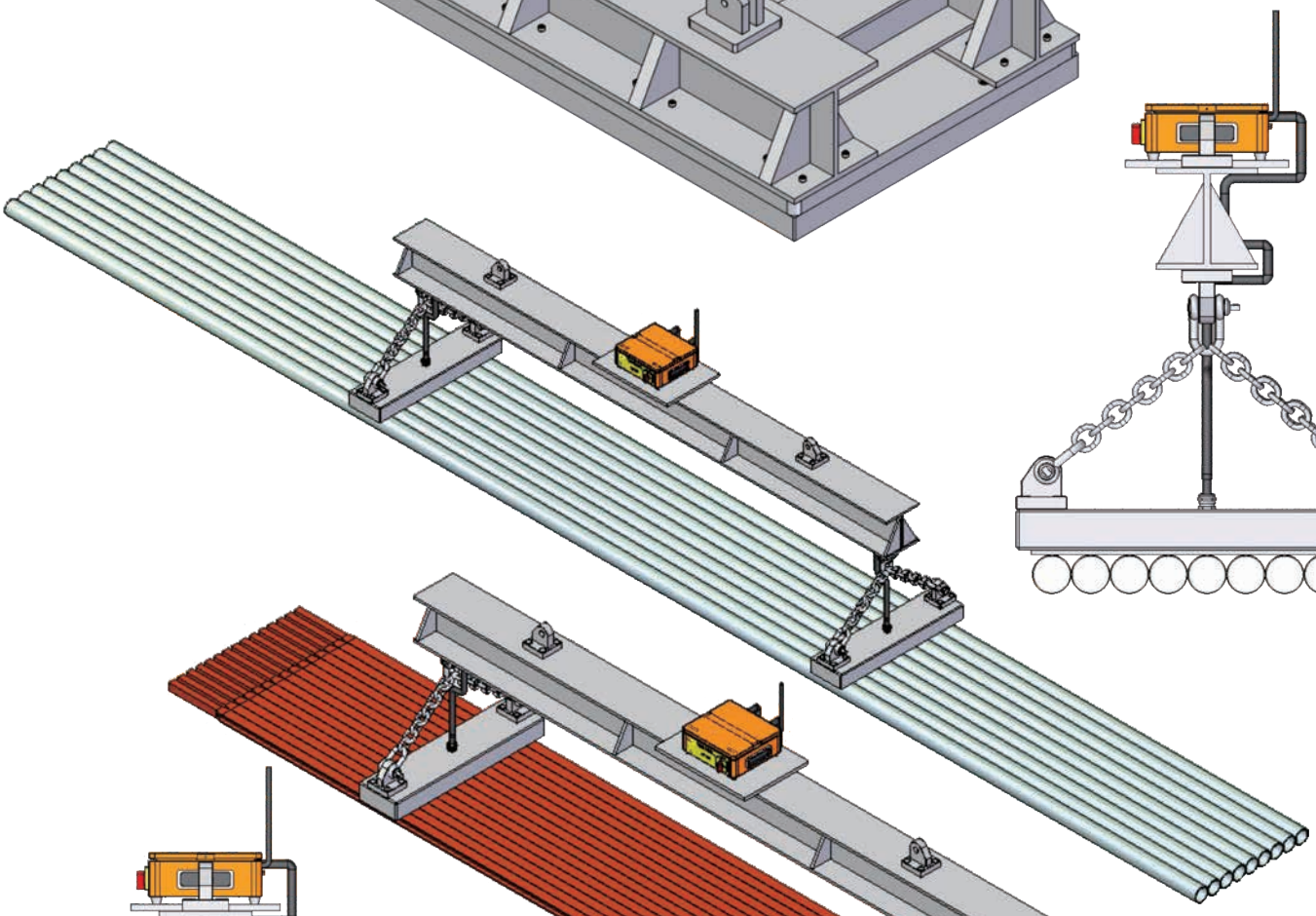
Example:

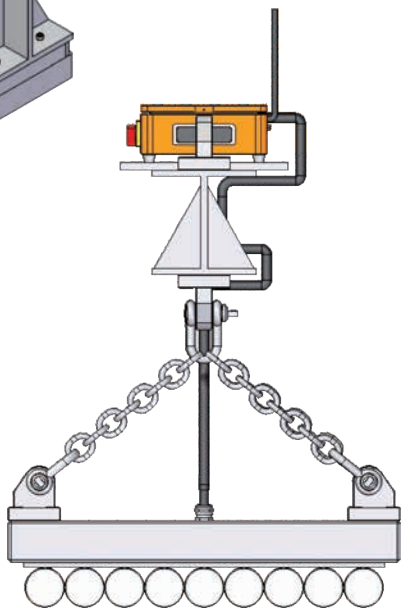


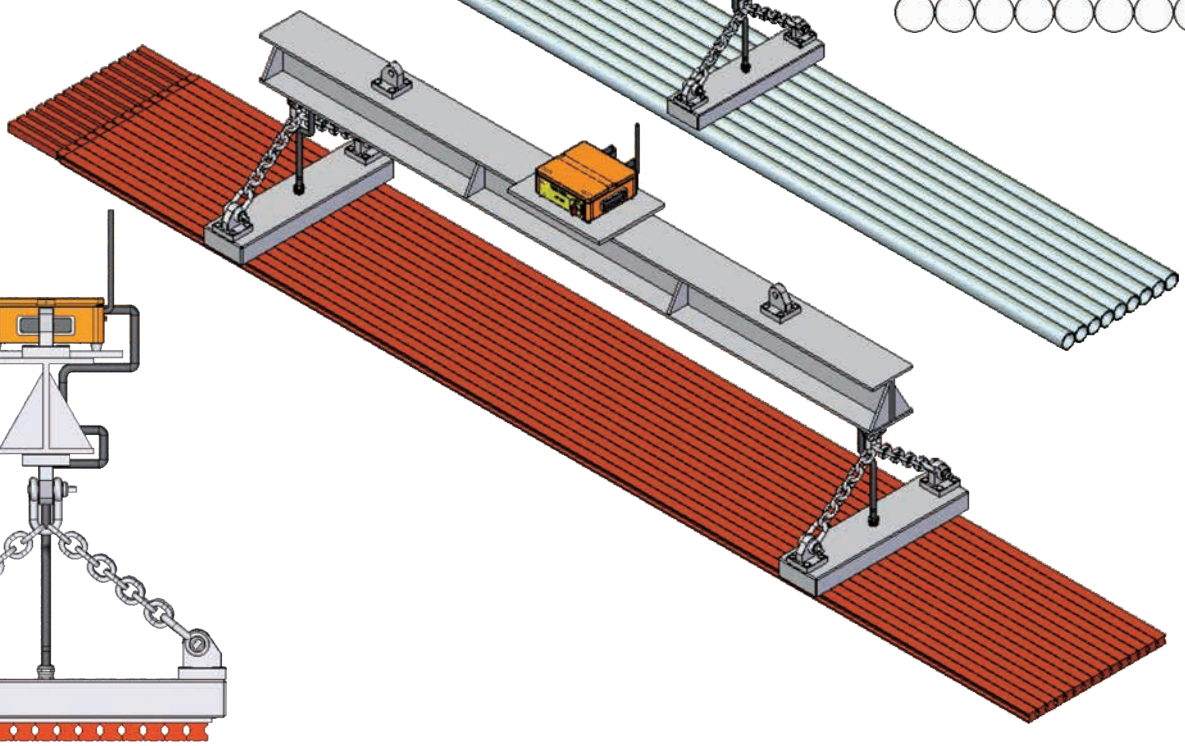
Example:

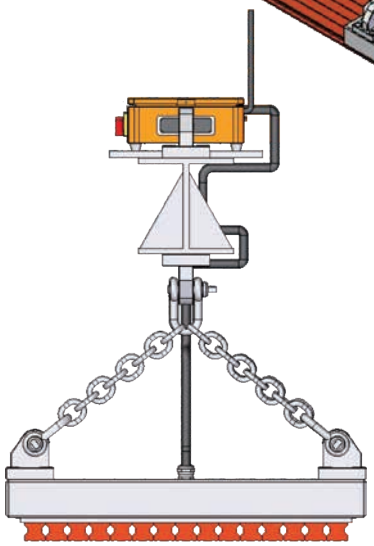


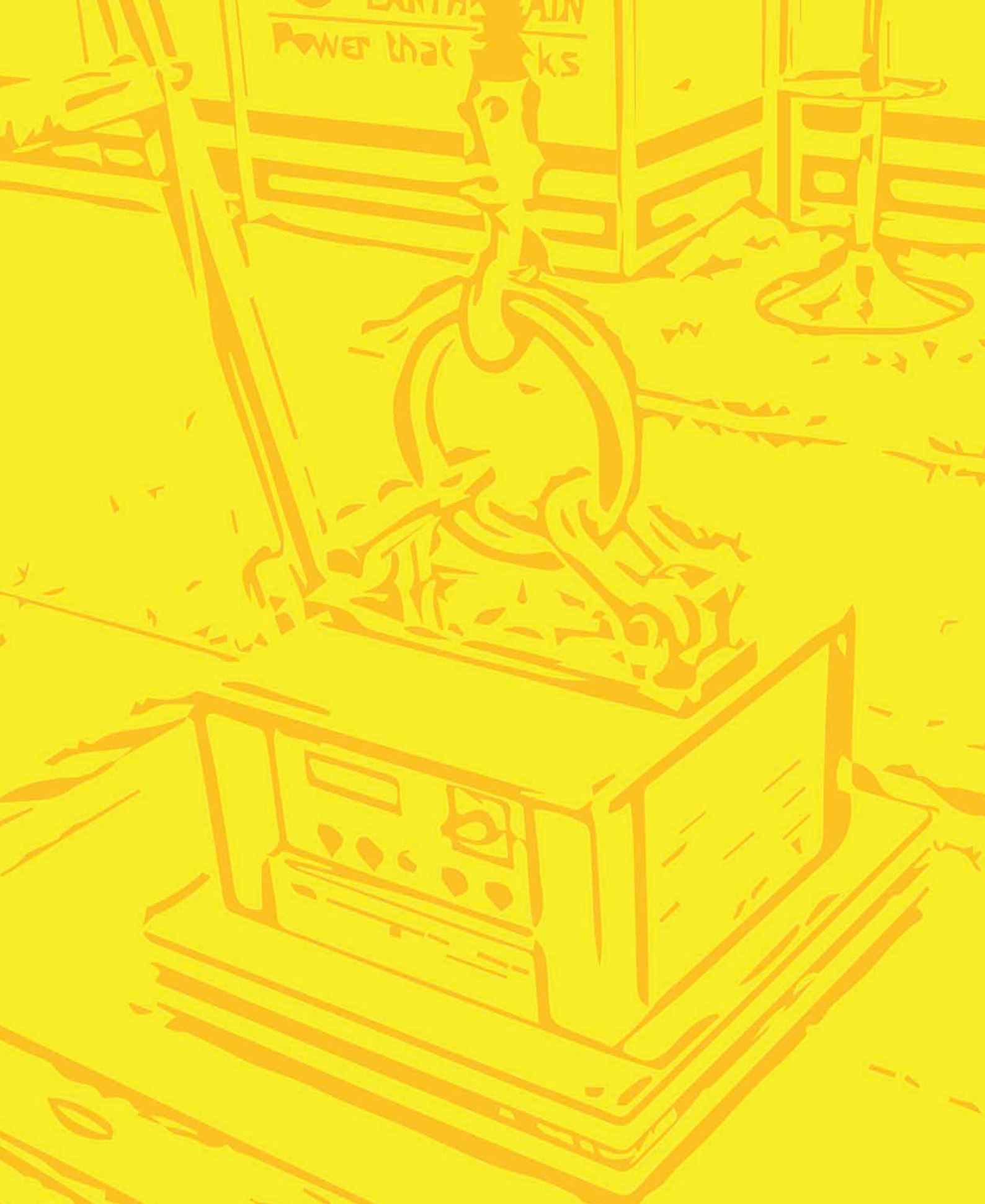












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