



# Lift Magnet

## *Selection Guide*

# Lift Magnet Considerations

Eriez' SafeHold® Permanent Lift Magnets are ideal for carrying semi-finished products such as machined parts, castings, press molds, steel plates, bars, tubes and more. These magnets are available in ceramic and rare earth models, lift up to 10,000 pounds, need no outside power source and can be turned ON and OFF with ease.

## Flats

- unload raw material
- load plates to burn/laser tables
- unload parts after cutting
- use multiple magnets on a spreader beam for large pieces



## Rounds

- excellent for loading bar stock into lathes
- wide range of diameters can be handled
- custom pole shoes available on some models if required



## Structural

- move/position angles, channels and tubes for welding
- handle both square and round structural tubing



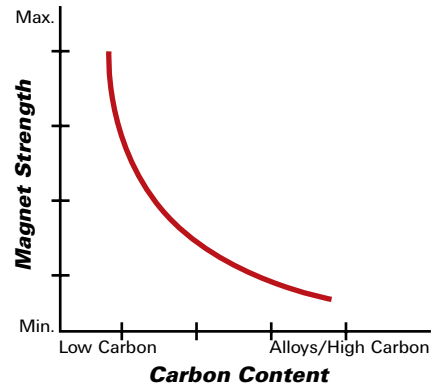
## Irregular Shapes

- handle castings both finished and rough
- move small fabrications, frames, etc.



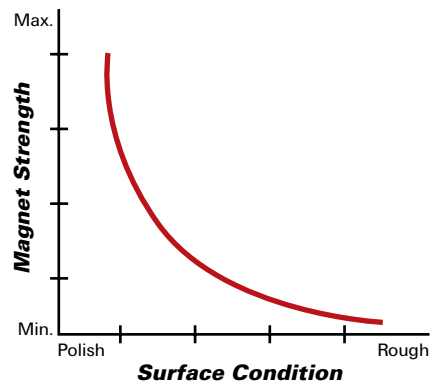
## Carbon Content

Magnet capacity is based on lifting low carbon steel. Materials containing less iron and more carbon reduce lifting capacity.



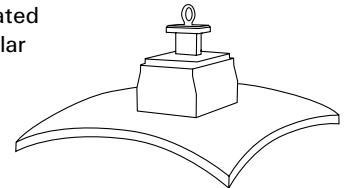
## Surface Condition (Air Gap)

Paint, coatings, scale, ice or other materials between the load surface and the magnet will adversely affect the holding power of the magnet. Magnet face and load surface must be clean and smooth.



## Sag - Unsupported Overhang

The holding power of a magnet is rated with the pull of the load perpendicular to the face of the magnet. Sagging or bending of the load at the ends causes a force that is not perpendicular to the magnet face. See sketch to the right. This "bending" causes a peeling action that may strip the load off the magnet. To ensure the overhang of a flexible load falls within acceptable limits, refer to the chart below. Beyond these limits, multiple magnets will be required.



UNSUPPORTED OVERHANG	12"	18"	24"	30"	36"	48"	60"	72"
MATERIAL THICKNESS	AMOUNT OF SAG IN MATERIAL CAUSED BY ITS OWN WEIGHT (inches)							
22 Ga. (.0299")	11/32	1-11/16	5-5/16	13-5/32	...	<b>UNSAFE</b>		
18 Ga. (.0478")	1/8	11/16	2-3/32	5-5/32	10-5/8			
16 Ga. (.0598")	3/32	7/16	1-11/32	2-9/32	6-3/4	21-9/16	...	...
14 Ga. (.0747")	1/16	9/32	7/8	2-1/8	4-3/8	13-13/16	...	...
11 Ga. (.120")	...	3/32	11/32	13/16	1-11/16	5-11/32	13-1/32	...
3/16	...	1/16	1/8	5/16	11/16	2-3/32	5-1/8	10-5/8
1/4	...	1/32	3/32	3/16	3/8	1-7/32	2-15/16	6-3/32
5/16	...	...	1/16	1/8	1/4	25/32	1-7/8	3-29/32
3/8	...	...	1/32	3/32	5/32	17/32	1-15/16	2-23/32
1/2	...	...	...	1/16	3/32	5/16	3/4	1-17/32
3/4	...	...	...	...	1/16	1/8	5/16	11/16

# SafeHold Permanent Lift

# FEATURES

## RPL Series



Lift, move or position round or flat materials with the same magnet. Super compact rare earth SafeHold RPL series manually operated permanent lift magnets offer the flexibility to handle multiple operations.

- Powerful rare earth magnets
- Lift flat and round material
- Five models with capacities up to 7,000 lbs on flat and 1,750 lbs on round material
- Locking mechanism built into handle for one hand operation
- Manual ON and OFF
- No power supply required

## XPL Series



Manually operated rare earth permanent lift magnets offer high capacity and versatility for their size and cost. Extremely easy to operate, these magnets are capable of handling flat and round material.

- Powerful rare earth magnets
- Lift flat and round material
- Six models with capacities up to 5,000 lbs on flat and 3,700 lbs on round material
- Specifically designed to handle wide ranges of diameters on round materials
- Easy to rotate handle with no backlash
- Manual ON and OFF
- No power supply required

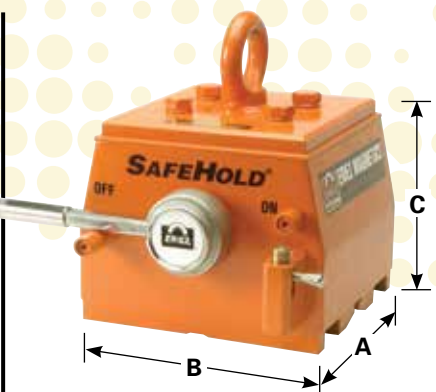
Model #	RPL - 3	RPL - 11	RPL - 22	RPL - 35	RPL - 70	XPL - 4/3	XPL - 8/6	XPL - 15/9	XPL-24/16	XPL - 30/24	XPL - 50/40	
<b>Flat - max cap (lbs.)</b>	300	1,100	2,200	3,500	7,000	400	800	1,500	2,400	3,000	5,000	
<b>Min Thickness - max cap (in.)</b>	1/2	1	1-1/4	1-1/2	2	3/8	3/8	3/4	1	1	2	
<b>Round - max cap (lbs.)</b>	150	550	1,100	1,750	—	300	600	900	1,600	2,400	3,700	
<b>Min to Max OD (in.)</b>	3	5	6-1/2	10	—	2-1/2 to 5	3 to 9	3 to 10	4 to 15	4 to 15	6 to 18	
<b>Material Thickness Capacity Ratings *</b>	<b>11 Gauge</b>	70	150	150	140	NR	125	150	175	200	200	200
	<b>1/4 inch</b>	150	350	350	300	NR	300	500	500	600	700	750
	<b>3/8 inch</b>	250	750	1,000	800	NR	400	800	1,000	1,200	1,400	1,500
	<b>1/2 inch</b>	300	1,000	1,500	1,300	NR	400	800	1,200	1,750	2,000	2,000
	<b>3/4 inch</b>	300	1,050	2,000	2,200	NR	400	800	1,500	2,000	2,000	2,000
	<b>1 inch</b>	300	1,100	2,100	2,500	NR	400	800	1,500	2,400	3,000	4,000
	<b>1-1/4 inch</b>	300	1,100	2,200	3,000	NR	400	800	1,500	2,400	3,000	4,000
	<b>1-1/2 inch</b>	300	1,100	2,200	3,500	5,500	400	800	1,500	2,400	3,000	4,500
	<b>1-3/4 inch</b>	300	1,100	2,200	3,500	6,000	400	800	1,500	2,400	3,000	4,700
<b>2 inch</b>	300	1,100	2,200	3,500	7,000	400	800	1,500	2,400	3,000	5,000	
<b>Dimensions</b>	<b>A (in.)</b>	3-9/16	6-3/8	9-1/8	10-5/8	14-7/8	3-3/8	4-1/2	5-5/16	5-5/16	5-5/16	6-1/8
	<b>B (in.)</b>	2-1/2	3-5/8	4-13/16	6-15/16	9-7/32	4	6-1/16	7-1/4	9-1/2	10-3/8	13-1/2
	<b>C (in.)</b>	2-5/8	3-9/16	4-5/8	6-13/32	8-11/32	4-11/16	4-11/16	5-7/8	6-7/8	7-13/16	9-7/8
	<b>Weight (lbs.)</b>	7	22	53	110	276	16	33	55	88	111	212

\*Notes: 1. Listed capacity ratings are on flat, clean, polished steel plate with magnet face in full contact with the load surface.  
 2. Material Thickness: Lifting capacity is lower on thinner materials.  
 3. NR - Not recommended

# Lift Magnets

# Electro Lifting Magnets

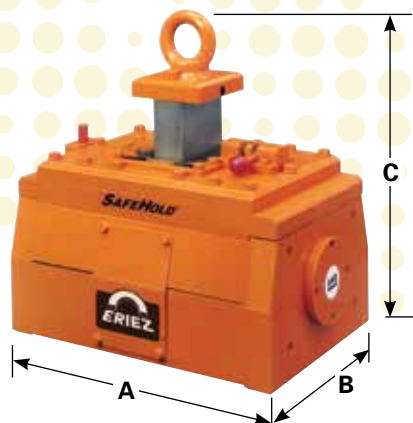
## EPL Series



EPL Series Permanent Lifting Magnets can lift and transfer steel and iron without slings, hooks or cables. Make quick work of difficult time consuming steel handling.

- Highest rated capacity permanent lift magnet on the market
- Handle flat materials with ease
- Four models with capacities up to 10,000 lbs on flat material
- Easy to rotate handle with no backlash
- Manual ON and OFF
- No power supply required

## APL Series



Permanent magnets that turn on and off automatically, without having to manually release the magnet. The SafeHold APL series is ideal for loading and unloading steel sheets from burn tables and anywhere that limits operator access.

- Crane activated On/Off mechanization
- No manual-magnet activation required
- Handle flat materials with ease and hands-free activation
- Four models with capacities up to 5,800 lbs on flat material
- Watch video of magnet in operation at <http://en-us.eriez.com/content/videos>
- No power supply required

## MPL Series



Lift, move or position in less time without having to manually release the magnet. Ideal for locations that limit operator access and they can handle both flat and round material. These permanent magnets turn off and on with the actuation of a switch on the magnet or an optional pendant.

- 1 model to 4,500 lbs.
- No risk of dropping load due to power failure
- No costly D.C. power supply
- No batteries to recharge or replace



Electromagnets are formed by sending electricity through wire coiled around a steel core. These magnets are controlled by regulating the amount of electricity passed through its coils. Applications range from lifting thin steel sheets to unloading ships, containers and railcars.

### Round Selecto® Magnets

are lightweight, power packed units that provide reliable, fast lifts for hundreds of applications. Available with integrated rectifier.



### Bi-Polar Electromagnets

are designed to provide greater holding capacity on coils, bundles of bar, re-bar and tubes

### Rectangular Magnets

offer rugged, deep-field construction ideal for handling billets, slabs and large fabrications as well as multiple-plate handling applications, such as loading and unloading ships, barges, rail cars and trucks; and for transfer operations.

### Lift Systems

using multiple magnets is often the best solution for lifting large sheets of steel. Eriez offers lift beams for its wide range of magnet shapes, sizes and capacities to form effective lifting systems.

### Voltage Regulators

Eriez' fixed and variable voltage rectifiers provide D.C. power for all types of electromagnets.

### Lift Magnet Drop Controllers

are used to ensure the release of the load after an electromagnet is turned off.

### Battery Back-up Systems

are also available for added safety of securing load in the event of interrupted power supply.

*Consult factory when considering electromagnets.*

EPL - 121	EPL - 154	EPL - 157	EPL - 197	APL - 150	APL - 152	APL - 154	APL - 156	MPL-45/30
650	4,000	7,500	10,000	900	1,650	3,600	5,800	4500
1/2	1-1/2	2	1-3/4	1/2	1-1/4	2	2	1-1/4
—	—	—	—	—	—	—	—	3,000
—	—	—	—	—	—	—	—	6 to 16
150	300	NR	NR	200	180	200	250	180
400	1,100	1,500	1,700	600	600	900	1,300	675
500	1,900	2,900	3,100	800	900	1,600	2,100	1,350
600	2,700	3,700	4,300	900	1,100	2,300	2,800	1,800
600	3,200	4,000	5,500	900	1,150	2,600	3,600	1,800
650	3,400	5,800	7,000	900	1,300	2,900	3,900	3,600
650	3,700	7,000	9,600	900	1,650	3,200	5,200	4,500
650	4,000	7,100	9,700	900	1,650	3,400	5,500	4,500
650	4,000	7,200	10,000	900	1,650	3,400	5,500	4,500
650	4,000	7,500	10,000	900	1,650	3,600	5,800	4,500
2-7/8	11-7/16	20	21-3/8	10-5/16	10-13/16	17-1/4	23	9-7/8
9-1/2	12	12	14	9-9/16	12	12	13-15/16	15-1/2
7-1/8	9	9	10-5/8	17-3/16	21-1/2	22-1/4	23-1/8	17-7/8
37	225	400	640	167	291	463	727	352

# Additional Lift Magnet Considerations

## **Load Factors**

Thin sheets, rough and irregular surfaces, odd shapes and scale all affect holding power adversely and must be considered in establishing a safety factor. The magnet must be positioned on the load center of gravity. Tilted or unbalanced loads significantly affect the holding power of the magnet.

## **Capacity**

Maximum attractive force is approximately twice the rated lifting capacity. Capacity ratings listed are on flat, clean, polished steel plate with magnet face in full contact with the load surface. The Load Factors listed above should be taken into account when determining appropriate safety factors for a given load. A minimum of 2 to 1 safety factor must be applied based on the actual breakaway force for a given load. Refer to **ASME Standard B30.20** for inspection and operating procedures of Close Proximity Operated Lifting Magnets and read Manufacturers' Operating Manual before using magnet.

## **Application Information**

### **Plates:**

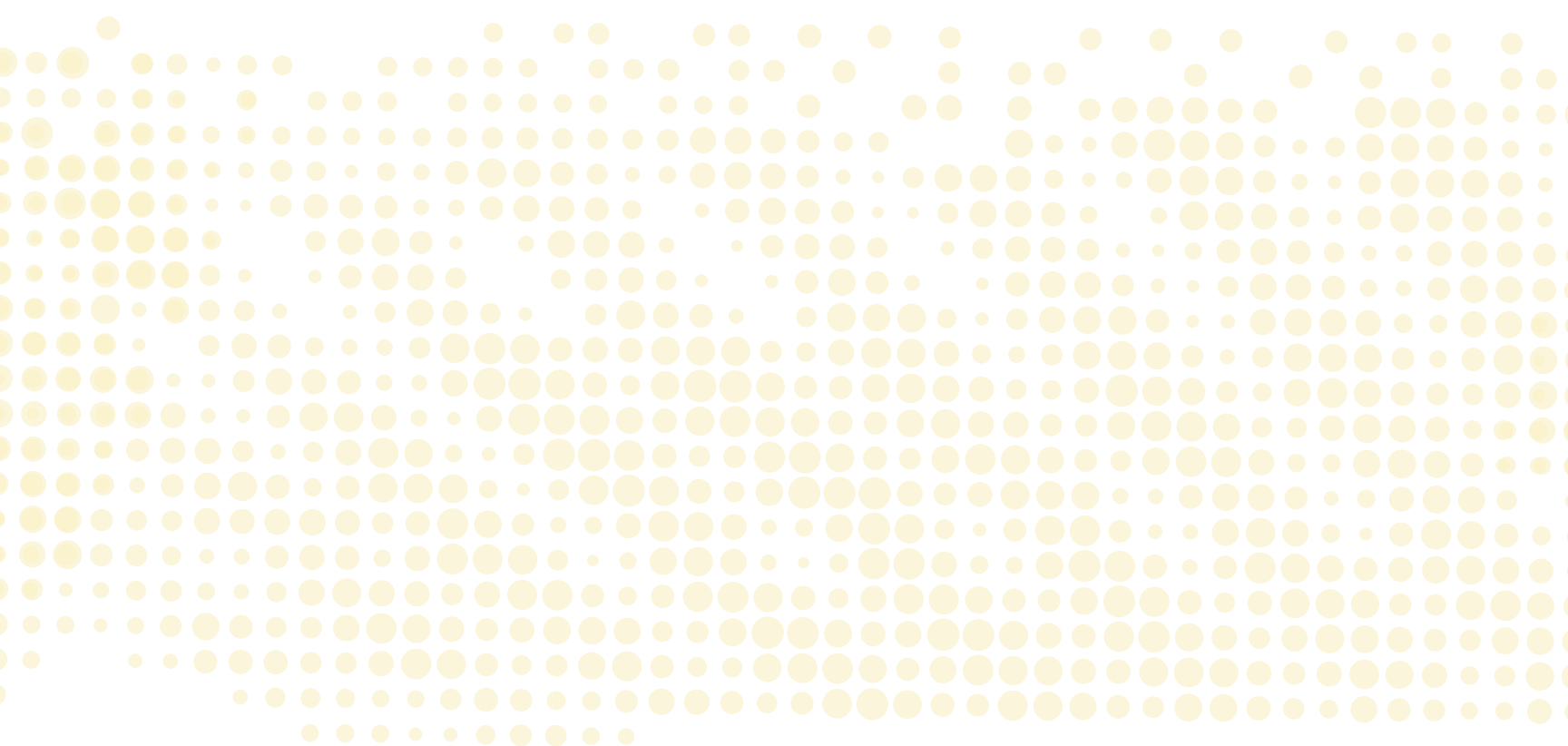
Material \_\_\_\_\_ Material Temp. \_\_\_\_\_ F°  
Maximum: Thickness \_\_\_\_\_ Width \_\_\_\_\_ Length \_\_\_\_\_ Weight \_\_\_\_\_  
Minimum: Thickness \_\_\_\_\_ Width \_\_\_\_\_ Length \_\_\_\_\_ Weight \_\_\_\_\_  
Are plates separated? Yes \_\_\_\_\_ No \_\_\_\_\_

### **Bar/Pipe:**

Material \_\_\_\_\_ Material Temp. \_\_\_\_\_ F°  
Maximum: O.D. \_\_\_\_\_ I.D. \_\_\_\_\_ Length \_\_\_\_\_ Weight \_\_\_\_\_  
Minimum: O.D. \_\_\_\_\_ I.D. \_\_\_\_\_ Length \_\_\_\_\_ Weight \_\_\_\_\_

### **Bundles:**

Material \_\_\_\_\_ Max O.D. \_\_\_\_\_ Min O.D. \_\_\_\_\_  
Length \_\_\_\_\_ Weight \_\_\_\_\_  
Method of banding:  
Tightly \_\_\_\_\_ Loosely \_\_\_\_\_ Wire \_\_\_\_\_ Strapping \_\_\_\_\_  
Describe bundle make-up and provide sketch: \_\_\_\_\_



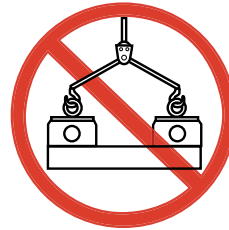
# General Safety Guidelines



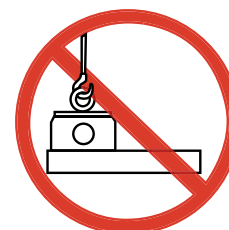
The lifting magnet face and the lifting magnet contact area on the load must be clean.



The operator should avoid carrying the load over people.



No hooking of two lifting magnets without the use of a properly designed spreader beam.



Care should be taken to make certain the load is correctly distributed for the lifting magnet being used.



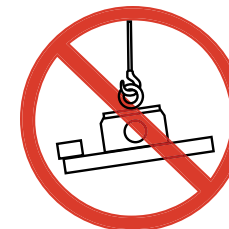
Nobody must be allowed to stand on top of lifted work-piece.



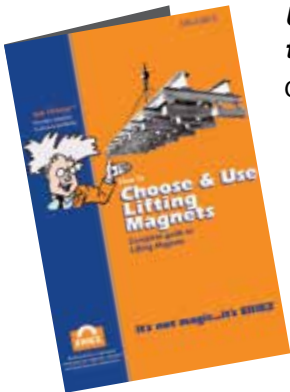
Do not allow load or magnet to come into contact with any obstruction.



Avoid placing the magnet in shear.



Avoid uneven lifts.



## Users Guide to Lifting Magnets!

Complete 20-page users guide to selecting the proper lift magnet. Reviews permanent and electromagnetic models, uses, safety factors and other influences in selection.

[www.eriez.com](http://www.eriez.com)

## Service & Repair



Contact Eriez for information on lift magnet recertification

## Distributed By:

*Note: Some safety warning labels or guarding may have been removed before photographing this equipment*  
Eriez, Eriez Magnetics, SafeHold and Selecto are registered trademarks of Eriez Manufacturing Co, Erie, PA



### World Authority in Separation Technologies

Headquarters: 2200 Asbury Road, Erie, PA 16506-1402 U.S.A.

Telephone: 814/835-6000 • 800/345-4946 • Fax: 814/838-4960 • International Fax: 814/833-3348

Web Site: <http://www.eriez.com> e-mail: [eriez@eriez.com](mailto:eriez@eriez.com)

Manufacturing Facilities: AUSTRALIA • BRAZIL • CANADA • CHINA • INDIA • JAPAN • MEXICO • SOUTH AFRICA • UNITED KINGDOM • UNITED STATES