

# OPERATING SAFETY INSTRUCTION & MAINTENANCE MANUAL



## Permanent Magnetic Lifter

Model: BML

Capacities from 100kg to 2 tonne

Complies to AS4991:2004



*More than just lifting*

LIFTING | WINCHING | RIGGING | MOORING | LOAD RESTRAINTS | FALL PREVENTION | RESCUE EQUIPMENT | PERSONAL PROTECTION | 4WD



**Please read this Operating and Instruction Manual carefully before using this product**

# Introduction and Warnings

## Introduction

Thank you for purchasing a Beaver Permanent Magnetic Lifter. The information contained in this manual covers the operation and maintenance of the magnetic lifter. The book should be fully read and understood prior to the magnetic lifter being used. The magnetic lifter shall only be operated by a responsible and competent person. The information in this manual is based on the latest information available at the time of printing, Beaver reserves the right to make changes to specifications without notice.

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**THESE SYMBOLS  
MEAN  
ATTENTION  
BECOME ALERT  
YOUR SAFETY IS  
INVOLVED!**

## SIGNAL WORDS

Note use of the following signal words **DANGER**, **WARNING** AND **CAUTION** with safety messages. The appropriate signal word for each has been selected using the following guidelines:



Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. The signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.



Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.



Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

## Equipment Safety Guidelines

Every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to materials handling equipment. You, the operator can avoid many accidents by observing the following precautions in this manual. To avoid personal injury, study the following precautions and insist those working with you, or you yourself, follow them.

In order to provide a better view, certain illustrations in this manual may show an assembly with a safety shield removed. However, equipment should never be operated in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, disconnect power. Replace shield prior to use. Replace any **Caution**, **Warning**, **Danger** or Instruction safety label that is not readable or is missing.

Do not attempt to operate this equipment under the influence of alcohol or drugs.

Review safety instructions with all users. Operator should be a responsible adult.

**DO NOT ALLOW PERSONS TO OPERATE OR MOUNT THIS UNIT UNTIL THEY HAVE DEVELOPED A THOROUGH UNDERSTANDING OF SAFETY PRECAUTIONS AND HOW IT WORKS.**

*Never exceed the Rated Lifting Capacities (Ref. tables on Pages 5 & 6), of the Permanent Magnetic Lifter. If its ability to do a job, or to do so safely is in question - **DON'T TRY IT.***

# Main Construction and Specifications

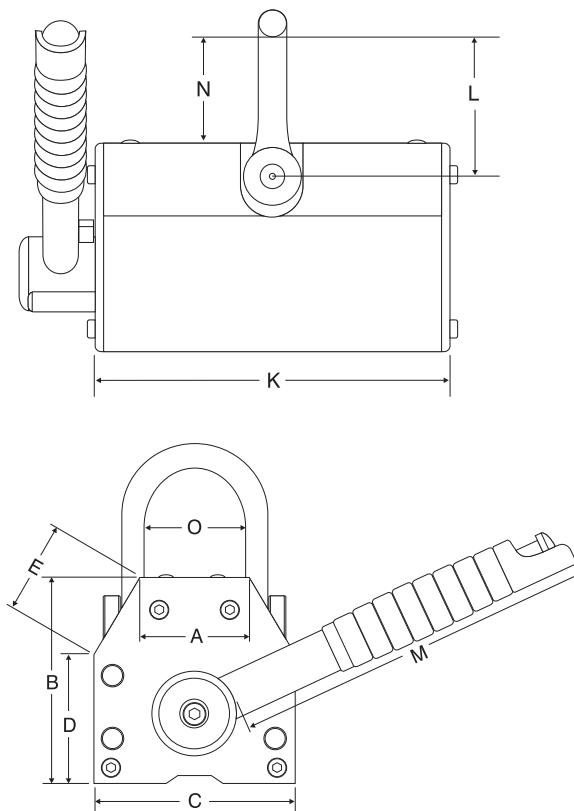
The Permanent Magnetic Lifters contain a NdFeB permanent magnet, which can generate high holding-power in a magnetic circuit. Turning the pole-core shaft through the control handle, initiates the ON / OFF function of the Permanent Magnetic Lifter, which is independent of any outside power supply. When in use, the permanent magnetic lifter bottom holding-face forms a pair of longitudinal magnetic poles for holding Ferromagnetic materials. There are V-slots in the holding face that are used for holding flat, as well as cylindrical work pieces.



## SPECIFICATIONS

| Beaver Code                   | 262010  | 262030  | 262060  | 262100  | 262200  |
|-------------------------------|---------|---------|---------|---------|---------|
| Model No.                     | BML-010 | BML-030 | BML-060 | BML-100 | BML-200 |
| Rated Capacity*               | 100kg   | 300kg   | 600kg   | 1t      | 2t      |
| A mm                          | 28      | 44      | 56      | 88      | 115     |
| B mm                          | 68      | 93      | 118     | 164     | 214     |
| C mm                          | 62      | 92      | 122     | 172     | 230     |
| D mm                          | 44      | 59      | 70      | 100     | 135     |
| E mm                          | 28      | 39      | 44      | 68      | 98      |
| K mm                          | 92      | 164     | 234     | 264     | 380     |
| L mm                          | 50      | 75      | 110     | 137     | 192     |
| M mm                          | 116     | 142     | 178     | 237     | 397     |
| N mm                          | 42      | 59      | 87      | 110     | 150     |
| O mm                          | 31      | 46      | 58      | 95      | 117     |
| Max. Handle Turning Force kgf | <4      | <8      | <8      | <16     | <16     |
| Net Wt. kg                    | 3       | 10      | 24      | 50      | 125     |

**NB \* Rated capacity is for flat steel plate only.**

## DIMENSIONS





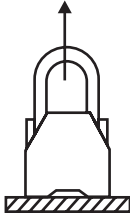
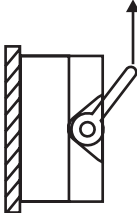

1. The Permanent Magnetic Lifter must be used within its rated range. To avoid accidents do not exceed the Permanent Magnetic Lifter's rated capacity.
  2. The lifting capacity of the Permanent Magnetic Lifter is influenced by the thickness and surface finish of the work piece. Therefore, before operation, it is necessary to inspect the thickness of the work piece. The percentage of the rated capacity that the Permanent Magnetic Lifter may hold can be determined from the steel thickness lifting capacity curve, shown in the performance chart on the side plate of the Permanent Magnetic Lifter. It is also necessary to inspect work piece surface finish. If its roughness  $R_a$  is  $<6.3\mu m$ , the lifting capacity is 100%. If the roughness  $R_a$  is  $>6.3\mu m$ , an air gap will exist. Estimate the air gap and find out the percentage of the Permanent Magnetic Lifter's lifting capacity from the air gap lifting capacity curve showing the performance chart on the side plate of the Permanent Magnetic Lifter. Combine these two factors and calculate the lifting capacity the Permanent Magnetic Lifter may hold.
-  **CAUTION**
3. The work-piece composition also influences the Permanent Magnetic Lifter's lifting capacity. The lifting-capacity coefficient of low-carbon steel is 100%, the coefficient of medium-carbon steel may reach 95%, the coefficient of high-carbon steel may reach 90%, the coefficient of low-alloy steel may reach 75% and the coefficient of cast-iron may reach 50%.
  4. The environment conditions for using the Permanent Magnetic Lifters should be:
    - Ambient temperature not over  $80^{\circ}C$
    - No strong vibration and shock
    - No corrosion existing on the surrounding medium
5. Before lifting, place the Permanent Magnetic Lifter on the work piece surface at the position where the line of the Permanent Magnetic Lifter lifting force passes through the centre of gravity of the work piece, then turn the handle from the release position, **OFF** to holding position, **ON**. Check that the sliding key on the handle is automatically locked by the security pin and that the handle cannot release. Then attach the lifting hoist to the shackle of the Permanent Magnetic Lifter in preparation for hoisting the load. If the lifter is placed with its line of lifting force deviating from the centre of gravity of the work piece, the work piece will incline, and the lifting capacity of the Permanent Magnetic Lifter will decrease as the angle of the work piece inclines. If necessary lower the work piece and re-adjust the position of the Permanent Magnetic Lifter.
  6. When lifting and handling cylindrical work pieces, the Permanent Magnetic Lifter should be placed on the cylindrical surface at the position where the line of lifting force passes through the centre of gravity of the work piece. Since the cylindrical surface contracts the V-slot of the lifter on only two lines the actual lifting capacity will generally be reduced to 30-50% of the lifting capacity. **NOTE:** The decrease in lifting capacity of the Permanent Magnetic Lifter is related to the diameter of the work piece.
-  **WARNING**
- Flat steel and cylindrical steel have vastly different rated lifting capacities. (Ref. page 5 for rated lifting capacities of flat and cylindrical steel).

1. When using or handling the Permanent Magnetic Lifter, care should be taken not to damage the unit. Rough treatment or severe shocks may influence the characteristics of the Permanent Magnetic Lifter.
2. When the Permanent Magnetic Lifter is not in contact with ferromagnetic material or the work piece, do not turn the handle.
3. When the Permanent Magnetic Lifter has materials attached, do not suspend or lift the load over people.
4. Always keep the Permanent Magnetic Lifter holding surfaces clean and smooth.
5. Regularly check the handle button, the sliding key and the security pin. Make sure that they are in good condition and that the handle can be securely locked.

## **WARNING**

6. If any of these are damaged, the security function will no longer be effective and repairs must be carried out before using the Permanent Magnetic Lifter again.
7. The Permanent Magnetic Lifter's functions should be checked every year by a qualified service agent or distributor.

## RATED CAPACITIES

| Model   | Beaver Code   | Horizontal   | Vertical  | Cylindrical   |
|---|---|--|---|---|
|  |  |  |  |  |
| <b>BML-010</b>  | 262010  | 100kg  | 30kg  | 30kg  |
| <b>BML-030</b>  | 262030  | 300kg  | 100kg   | 100kg   |
| <b>BML-060</b>  | 262060  | 600kg  | 200kg   | 200kg   |
| <b>BML-100</b>  | 262100  | 1t   | 300kg   | 300kg   |
| <b>BML-200</b>  | 262200  | 2t   | 600kg   | 600kg   |

**Working Temperature -40°C to 80°C**

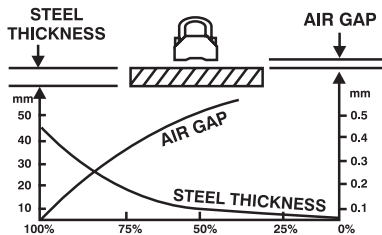
## **WARNING**

The above table is based on ferrous steel and must be read in conjunction with the charts on page 6 (Steel Thickness and Air Gap).

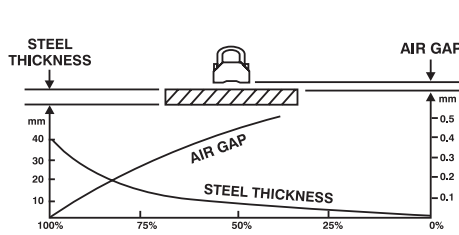
# Steel Thickness & Air Gap Requirements

## ⚠ WARNING

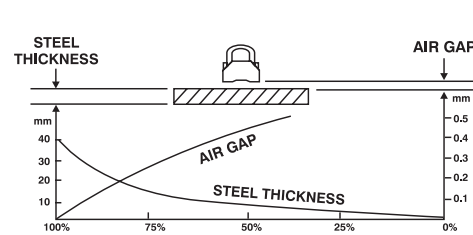
1. Tables are based on lifting flat ferrous steel plate lifted horizontally.
2. For lifting flat ferrous steel plate vertically and lifting cylindrical ferrous steel, see charts on page 5.  
(NB: No air gap or thin plate is permitted for applications in 2 above).



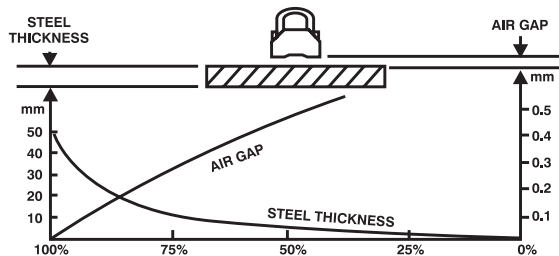
**BML-010**  
Rated Capacity 100kg



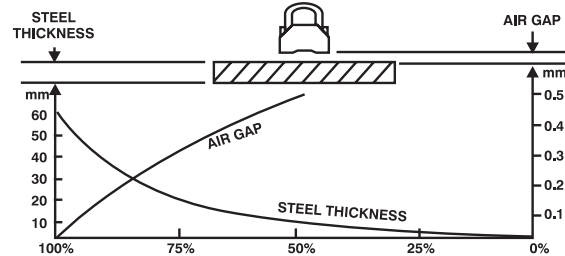
**BML-030**  
Rated Capacity 300kg



**BML-060**  
Rated Capacity 600kg



**BML-100**  
Rated Capacity 1 tonne



**BML-200**  
Rated Capacity 2 tonne

## IMPORTANT INFORMATION

### 1 Year Limited Warranty

Beaver offers a one year limited warranty on this product

#### Replacement Parts

Replacement parts for this equipment are available directly from BEAVER distributors. Consult the Beaver website for your nearest distributor.

#### Replacement Part Warranty

Beaver Sales Pty Limited makes every effort to assure that parts meet high quality and durability standards and warrants to the original retail consumer/purchaser of our parts that each such part(s) to be free from defects in materials and workmanship for a period of thirty (30) days from date of purchase.

#### Proof of Purchase

Please retain your dated sales receipt as proof of purchase to validate warranty period.

#### Limited Equipment Warranty

Beaver Sales makes every effort to assure that its products meet high quality and durability standards and warrants to the original retail consumer/purchaser of our products that each product be free from defects in materials and workmanship as follows:

##### 1 YEAR LIMITED WARRANTY ON THIS BEAVER PRODUCT

Warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities or to lack of maintenance. BEAVER LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD SPECIFIED ABOVE FROM THE DATE THE PRODUCT WAS PURCHASED AT RETAIL. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OR MERCHANT ABILITY AND FITNESS ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG THE IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. BEAVER SHALL IN NO EVENT BE LIABLE FOR DEATH, INJURIES TO PERSONS OR PROPERTY OR FOR INCIDENTAL, CONTINGENT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF OUR PRODUCTS.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

To take advantage of this warranty, the product or part must be returned for examination, normal road freight pre-paid to an authorised service centre designated by our Wetherill Park office. Proof of purchase date and an explanation of the complaint must accompany the merchandise.

If our inspection discloses a defect, BEAVER SALES will either repair or replace the product or refund the purchase price, if we cannot readily and quickly provide a repair or replacement, if you are willing to accept such refund. BEAVER SALES will return repaired product or replacement at BEAVER'S expense, but if it is determined there is no defect, or that the defect resulted from causes not within the scope of BEAVER'S warranty, then the user must bear the cost of storing and returning the product.

This warranty gives specific legal rights, and you have other rights, which vary, from state to state.

Beaver Sales Pty Limited  
340 Victoria Street Wetherill Park NSW 2164  
Phone 1300 783 606  
[www.beaver.com.au](http://www.beaver.com.au)



#### WARNING

The use of this product is beyond the control of Beaver Sales. The warranty of this product is limited to the replacement cost of this product should it be found to be defective in material and/or workmanship. The warranty is void if the Permanent Magnetic Lifter is damaged, worn or used improperly. Normal wear and tear is not considered grounds for replacement.

# Inspection Log



Test Certificate No. **BY** ..... Model No. **BML** .....  
Date introduced into service ..... Serial No. ....

| Date  | Comments | Signature |
|-------|----------|-----------|
| _____ | _____    | _____     |
| _____ | _____    | _____     |
| _____ | _____    | _____     |
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DISTRIBUTED BY:

