



**Lifting Equipment Engineers Association**

## **Guide to Documentation and Marking – Part 4 Lifting Accessories, Non-Fixed Load Lifting Attachments**

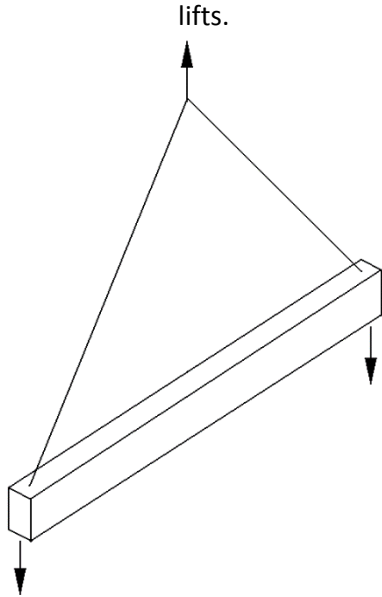
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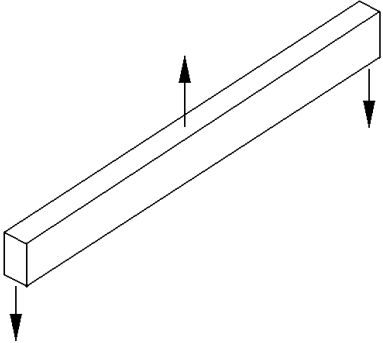
### **Introduction.**

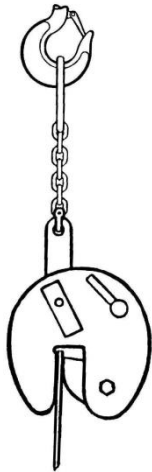
This guide is aimed at manufacturers, distributors and users of lifting equipment within the European Economic Area. It has been developed as a quick reference guide to ensure that lifting equipment is supplied with the correct documentation and marking as required by current legislation, standards and best practice guidance.

LEEA 059-4 is one of a series of guides related to documentation and marking of a range of generic forms of lifting equipment as listed below:

- Part 1 – Manual Lifting Machines
- Part 2 – Powered Lifting Machines
- Part 3 – Lifting Machine Supporting Structures
- Part 4 – Lifting Accessories, Non-fixed load lifting attachments.
- Part 5 – Lifting Accessories, Slings
- Part 6 – General accessories and Components for slings.

Item & Standard	Required Information
<p><b>Lifting Beams , Spreaders &amp; Frames</b></p> <p>Usually designed for a specific purpose or as general purpose beams for a range of specified lifts.</p>  <p><b>Spreader Beam</b></p>	<p><b>Documents to be supplied in accordance with the relevant legislation &amp; relevant standard:</b></p> <ul style="list-style-type: none"> <li>- <b>EC Declaration of Conformity (guidance LEEA 080.1)</b></li> <li>- <b>Manufacturer's instructions for use. (guidance LEEA SI.8.3)</b></li> </ul> <p><b>Marking requirements</b></p> <ul style="list-style-type: none"> <li>- <b>CE Mark</b></li> <li>- <b>Business name and address of the manufacturer.</b></li> <li>- <b>Serial number.</b></li> <li>- <b>Year of construction.</b></li> <li>- <b>Total mass of the assembly.</b></li> <li>- <b>Maximum working load in tonnes or kilograms.</b></li> </ul> <p><b>Information Which Should Be Exchanged Between the User &amp; the Designer or Supplier</b></p> <p>The following is the minimum amount of information which should be exchanged between the user and designer or supplier of a lifting beam, spreader or frame:</p> <ul style="list-style-type: none"> <li>- The reason for using a lifting beam instead of other methods of handling the load.</li> <li>- The total maximum weight of the load to be lifted together with any other forces which may be superimposed on the load.</li> <li>- A detailed description or drawing of the load to be lifted together with principal dimensions which affect the lifting operation including information on the position of the centre of gravity and available headroom.</li> <li>- Details of external obstructions to the use of the beam or spreader. Attention is drawn to the fact that a lifting beam could foul the structure of a double beam crane before the upper limit is reached.</li> <li>- The exact type, dimensions and capacity of the crane hook and safe working load of the crane. Particular attention should be paid to the safety catch fittings and guards.</li> <li>- The speed and duty rating of the crane.</li> <li>- Frequency of use.</li> <li>- Environmental considerations such as extremes of temperature or corrosive atmospheres.</li> <li>- The level of operatives' skill and ergonomic considerations. It should be made clear if the beam is to</li> </ul>

 <p><b>Lifting Beam</b></p> <p><b>BSEN 13155</b></p> <p><b>LEEA COPSULE- Section 20</b></p>	<p>be used by unskilled labour or if the design of the lifting operation requires the attention of a skilled fitter. If manipulation of the beam is necessary in order to carry out the lift then the labour availability and requirements should be specified.</p> <ul style="list-style-type: none"> <li>- Operating assembly and storage instructions.</li> <li>- Any additional tests required by the purchaser.</li> <li>- The weight of the lifting beam.</li> </ul>
<p><b>Plate Lifting Clamp</b></p> <p>Used mainly in the steel fabrication industry for attaching to plate metals allowing them to be manoeuvred.</p>	<p><b>Documents to be supplied in accordance with the relevant legislation &amp; relevant standard:</b></p> <ul style="list-style-type: none"> <li>- <b>EC Declaration of Conformity (guidance LEEA 080.1)</b></li> <li>- <b>Manufacturer's instructions for use. (guidance LEEA SI.9.4 and SI.10.3)</b></li> </ul> <p><b>Marking requirements</b></p> <ul style="list-style-type: none"> <li>- <b>CE Mark</b></li> <li>- <b>Business name and full address of the manufacturer</b></li> <li>- <b>Designation of the machinery</b></li> <li>- <b>Identification mark</b></li> <li>- <b>Weight of unloaded attachment, when it exceeds 5% of the WLL of the equipment or 50kg, whichever the less</b></li> <li>- <b>Year of manufacture</b></li> <li>- <b>Safe working load (minimum and maximum)</b></li> <li>- <b>Permissible gripping range</b></li> </ul>



**Type (1) Plate Clamp**



**Type (2) Plate Clamps**

**Type (1) additional marking**

- Range of safe working load in straight pull and, where applicable, also at an angle to the side plate of the clamp, specifying the angle.
- Range of plate thickness permitted.

**Type (2) - Permanently attached to sling, additional marking**

- Safe working load as an assembly.
- Range of plate thickness permitted.

**Type (2) - Loose clamps, additional marking**

- Safe working load per pair.
- Range of plate thickness permitted.
- Angle of use and method of reeving ie two leg or endless loop

**Information Which Should Be Exchanged Between the User & the Designer or Supplier**

Plate clamps are widely used, particularly in the steel fabrication industry, for handling a variety of work including individual pieces of plate, fabricated assemblies and bundles of plates. The term covers several designs which fall into two basic types:

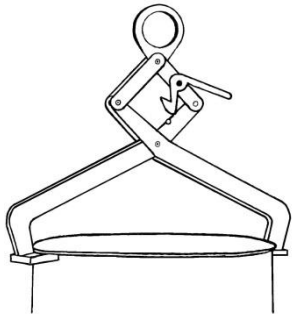
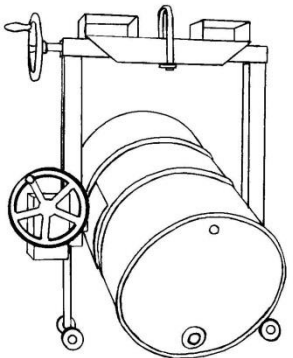
Type (1) – Clamps which grip the edge of the plate by friction. These are subdivided into those used to lift the plate in the vertical position only and those which lift from the horizontal to the vertical or vice-versa.

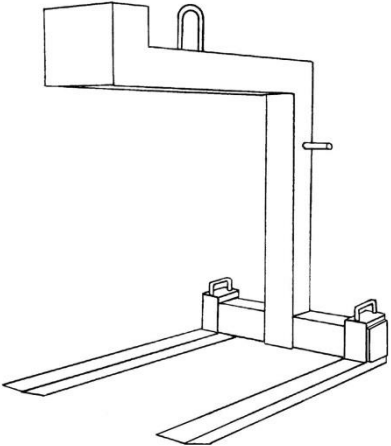
Type (2) – Clamps designed to lift the plate in a horizontal position only, when used in conjunction with a two leg sling or reeved onto an endless loop, according to design.

**Information for types 1 and 2**

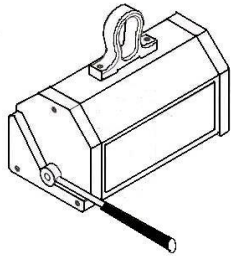
- (1) Thickness or range of plates to be handled.
- (2) Longest length and greatest width of plate to be handled.

<p style="text-align: center;"><b>BS EN 13155</b></p> <p><b>LEEA COPSULE- Section 21</b></p>	<p>(3) Maximum and minimum weight to be lifted.</p> <p>(4) Effective section of crane hook on which the clamp or clamp sling is to be used.</p> <p>(5) Whether the clamp is to be used to handle plates:</p> <ul style="list-style-type: none"> <li>(a) Horizontally only.</li> <li>(b) Vertically only.</li> <li>(c) Horizontal to vertical through 90° only.</li> <li>(d) Horizontal to horizontal through 180°.</li> <li>(e) At an angle to the plane of the clamp side plates.</li> </ul> <p>(6) Material of plate and hardness if other than mild steel.</p> <p>(7) If the plate is polished.</p> <p>(8) If slight marking of the plate is any detriment.</p> <p>(9) Details of any adverse conditions eg handling hot plates, acidic environment.</p> <p>(10) The amount of headroom available.</p> <p>(11) Thickness of any spacers or packing in between plates when stacked which may limit access for the clamp.</p> <p>(12) Details of any additional tests required.</p> <p>(13) Any special operating instructions.</p> <p><b>Additionally for Type (2) Only</b> In addition to the above:</p> <ul style="list-style-type: none"> <li>1. Maximum number of plates to be lifted at one time.</li> <li>2. If the clamps are to be supplied complete with sling or if not the type and length of sling to be used.</li> </ul>
<p style="text-align: center;"><b>Barrel Lifters</b></p> <p>A specialised lifting accessory which, when used with a lifting machine will lift a barrel and manipulate it whilst suspended (If fitted with the correct mechanism)</p>	<p><b>Documents to be supplied in accordance with the relevant legislation &amp; relevant standard:</b></p> <ul style="list-style-type: none"> <li>- <b>EC Declaration of Conformity</b></li> <li>- <b>Manufacturer's instructions for use.</b></li> </ul> <p><b>Marking requirements</b></p> <ul style="list-style-type: none"> <li>- <b>CE mark</b></li> <li>- <b>Business name and address of the manufacturer</b></li> <li>- <b>Designation of the machinery</b></li> </ul>

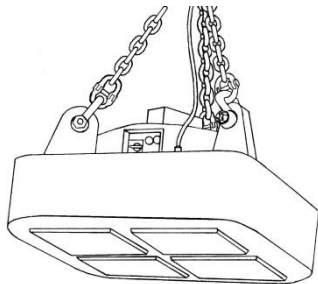
 <p><b>Scissor type Lifter</b></p>  <p><b>Adjustable / rotating type</b></p> <p><b>BS EN 13155</b> <b>LEE A COPSULE – Section 23</b></p>	<ul style="list-style-type: none"> <li>- <b>Identification mark</b></li> <li>- <b>Weight of unloaded attachment, when it exceeds 5% of the WLL of the equipment or 50kg, whichever the less</b></li> <li>- <b>Year of manufacture</b></li> <li>- <b>Safe working load (minimum and maximum)</b></li> <li>- <b>Permissible grabbing range</b></li> </ul> <p><b>Information Which Should Be Exchanged Between the User &amp; the Designer or Supplier</b></p> <p>Barrel lifters are normally used for closely defined applications. It is therefore usually possible to give the designer or supplier precise details of the task to be performed. This information should include, but is not necessarily limited to, the following:</p> <ol style="list-style-type: none"> <li>1. The gross barrel weight to be lifted.</li> <li>2. The material and composition of the barrel to be lifted, eg steel or plastic.</li> <li>3. The physical dimensions and the shape of the barrel to be lifted and position of the centre of gravity.</li> <li>4. The 'make up' of the load to be lifted, eg a liquid, powder or granules.</li> <li>5. The method of attachment to the barrel, eg scissor action, screw clamp.</li> <li>6. If the barrel is to be manipulated, the axis and extent of rotation required and method of manipulation.</li> <li>7. The number, shape and orientation of the gripping pads.</li> <li>8. The detail of the operating environment and service conditions, ie extremes of temperature, probability of shock loading and the uncertainty of the mass of the load.</li> <li>9. The available headroom.</li> <li>10. The type of suspension.</li> <li>11. The speed of the hoisting mechanism.</li> <li>12. Details of any possible surface contamination as this may be damaging to the material from which any gripping pads are made and may affect their ability to grip the barrel.</li> </ol>
<p><b>Crane Forks</b></p> <p>A device used in conjunction with a crane or other lifting machine to lift palletised loads of the type more normally associated with fork lift trucks</p>	<p><b>Documents to be supplied in accordance with the relevant legislation &amp; relevant standard:</b></p> <ul style="list-style-type: none"> <li>- <b>EC Declaration of Conformity</b></li> <li>- <b>Manufacturer's instructions for use.</b></li> </ul> <p><b>Marking requirements</b></p> <ul style="list-style-type: none"> <li>- <b>CE mark</b></li> </ul>

 <p><b>Counter balanced crane fork</b></p> <p><b>BS EN 13155</b> <b>LEEA COPSULE – Section 24</b></p>	<ul style="list-style-type: none"> <li>- <b>Business name and address of the manufacturer</b></li> <li>- <b>Designation of the machinery</b></li> <li>- <b>Identification mark</b></li> <li>- <b>Weight of unloaded attachment, when it exceeds 5% of the WLL of the equipment or 50kg, whichever the less</b></li> <li>- <b>Year of manufacture</b></li> <li>- <b>Safe working load (minimum and maximum)</b></li> <li>- <b>Permissible grabbing range</b></li> <li>- <b>The limits of the intended position of the load centre of gravity</b></li> <li>- <b>Where a minimum load is required to tilt the fork in accordance with EN 13155 clause 5.2.5.2, the minimum load must be displayed.</b></li> </ul> <p><b>Information Which Should Be Exchanged Between the User &amp; the Designer or Supplier</b></p> <p>Crane forks may be used for specific applications or for a variety of similar applications. It is therefore usually possible to give the designer or supplier precise or general details of the tasks to be performed. This information should include but is not necessarily limited to the following:</p> <ol style="list-style-type: none"> <li>1. The minimum and maximum mass of the load to be lifted.</li> <li>2. The size and type of pallet to be lifted or, if self palletised, the position of the fork arm apertures and method of securing the load elements eg banding, wrapping.</li> <li>3. The physical dimensions and shape of the load to be lifted.</li> <li>4. The make up of the load to be lifted, ie a single object or multiple objects, and if multiple, the method of securing them, eg building blocks secured by shrink wrap.</li> <li>5. The type of suspension, ie fixed, manual or automatic adjustment.</li> <li>6. The available headroom.</li> <li>7. The control features required, eg grab handles.</li> <li>8. Details of the operating environment and service conditions, eg extremes of temperature, probability of shock loading, uncertainty of mass of the load.</li> <li>9. Other safety features required, eg secondary positive holding device.</li> </ol>
<p><b>Magnetic Lifters</b></p> <p>Designed to lift specific magnetic materials. Not usually</p>	<p><b>Documents to be supplied in accordance with the relevant legislation &amp; relevant standard:</b></p> <ul style="list-style-type: none"> <li>- <b>EC Declaration of Conformity</b></li> <li>- <b>Manufacturer's instructions for use.</b></li> </ul>

designed for general lifting.  
Four main types: Battery fed  
electric lifting magnets, Mains  
fed electric lifting magnet,  
Permanent lifting magnet,  
Electro permanent lifting  
magnet



**Portable permanent magnet**



**Electro-permanent magnet**

**BS EN 13155**  
**LEE A COPSULE – Section 25**

### Marking requirements

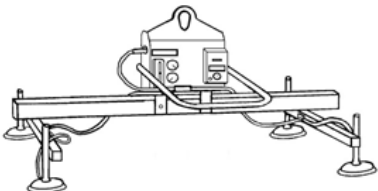
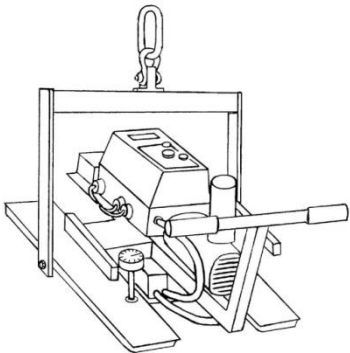
- **CE mark**
- **Business name and address of the manufacturer**
- **Designation of the machinery**
- **Identification mark**
- **Weight of unloaded attachment, when it exceeds 5% of the WLL of the equipment or 50kg, whichever the less**
- **Year of manufacture**
- **Safe working load (minimum and maximum)**

*Note: In the case of magnets, the lifting capacity depends, amongst other things, upon the material of the load, its thickness and surface, and the air gap between the load and the magnet. It is therefore recommended to state the maximum permissible loading as a function of the various parameters. However, it shall be recognized that the lifting capacity does not depend solely upon the magnetic forces but also can be limited by the lifting capacity of the suspension.*

### Information Which Should Be Exchanged Between the User & the Designer or Supplier

It is strongly recommended that as much detail as possible about the application(s) is given to the manufacturer or supplier. If the magnetic lifter is for a specific application, it is usually possible to provide precise details of the task to be performed. For general purpose use such as handling a variety of steel stock in a machine shop, the information may have to be restricted to a selection of typical examples. The information should include but is not necessarily limited to the following:

1. Mass of the load to be lifted.
2. Material of the load to be lifted, eg grade of steel, and the surface finish.
3. Shape and dimensions of the load to be lifted.
4. The structure of the load to be lifted eg a single slab, bundle or multiple sheets.
5. Details of the lifting operation including, height, travel and whether load shedding is required.
6. Characteristics of the lifting machine including the hoisting speed, travel speeds and headroom.
7. Method of connection to the lifting machine.
8. Availability of electrical supply if appropriate.
9. The control mechanism required, ie manual, power, integrated or remote.
10. The control features required eg load shedding.

	<p>11. Backup and other safety features required.</p> <p>12. Details of the operating environment and service conditions eg extremes of temperature, probability of shock loading, uncertainty of mass of the load, whether persons can quickly leave the danger zone.</p>
<p><b>Vacuum Lifters</b></p> <p>Uses a vacuum to lift a specific load. Not usually designed for general lifting. Four main types: Self actuating, Mechanically pumped, Venturi and Turbine.</p>  <p><b>Multi-pad vacuum lifter</b></p>  <p><b>Vacuum lifter with integral vacuum pump</b></p>	<p><b>Documents to be supplied in accordance with the relevant legislation &amp; relevant standard:</b></p> <ul style="list-style-type: none"> <li>- <b>EC Declaration of Conformity</b></li> <li>- <b>Manufacturer's instructions for use.</b></li> </ul> <p><b>Marking requirements:</b></p> <ul style="list-style-type: none"> <li>- <b>CE mark</b></li> <li>- <b>Business name and address of the manufacturer</b></li> <li>- <b>Designation of the machinery</b></li> <li>- <b>Identification mark</b></li> <li>- <b>Weight of unloaded attachment, when it exceeds 5% of the WLL of the equipment or 50kg, whichever the less</b></li> <li>- <b>Year of manufacture</b></li> <li>- <b>Safe working load (minimum and maximum)</b></li> </ul> <p><b>Information Which Should Be Exchanged Between the User &amp; the Designer or Supplier</b></p> <p>It is strongly recommended that as much detail as possible about the application(s) is given to the manufacturer or supplier. Vacuum lifters are normally used for closely defined applications. It is therefore usually possible to give the designer or supplier precise details of the task to be performed. This information should include but is not necessarily limited to the following:</p> <ol style="list-style-type: none"> <li>1. The mass of the load to be lifted</li> <li>2. The material and composition of the load to be lifted, eg surface finish and porosity.</li> <li>3. The physical dimensions and shape of the load to be lifted and location of the centre of gravity.</li> <li>4. The "make up" of the load to be lifted eg a single slabs, packages, boxes etc.</li> <li>5. The number, shape and orientation of the lifting pads.</li> <li>6. Details of the operating environment and service conditions eg extremes of temperature, probability of shock loading, uncertainty of mass of the load.</li> </ol>

<p><b>EN 13155</b> <b>LEEA COPSULE – Section 26</b></p>	<ol style="list-style-type: none"> <li>7. The available headroom.</li> <li>8. The type of suspension.</li> <li>9. The speed of the hoisting mechanism.</li> <li>10. Availability of electrical supply or compressed air supply if appropriate.</li> <li>11. The control mechanism required, that is, integrated or remote.</li> <li>12. Details of any possible surface contamination of the load as this may affect the material from which the pads are made.</li> <li>13. Back up and other safety features required.</li> </ol>
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