CrosbyIP

Definition of a lifting clamp

Application areas

Standard range – vertical

Standard range – horizontal

Standard range – miscellaneous

Special clamps

Competition and USP’s

Safe use of clamps
**Lifting clamp - clamp;** A lifting clamp is a tool designed to **lift a load**, between a pair of **claws** or clamping **jaws**, which are **pressed to the load by the weight of the load**.

**Clamping principals;**

- Penetration
- Friction
- Retaining
DEFINITION OF A LIFTING CLAMP

Methods of lifting

Vertical

Horizontal
DEFINITION OF A LIFTING CLAMP

Components of a lifting clamp

**Load carrying components**

- Lifting eye
- Lifting eye shaft
- Body
- Camsegment
- Camsegment shaft
- Pivot

**Non Load carrying components**

- Latch
- Spring
Components of a lifting clamp
Working principle of a vertical lifting clamp

**Pivoted link mechanism;**
Turn lifting force into clamping force.

**Pretension;**
Clamping force without load on lifting eye.

**Jaw opening**
Working principle of a vertical lifting clamp

“Open” position

“Closed” position
Clamping forces

N1 = Fk x A : B
N2 = \( \frac{1}{2} 2Fl \times C : B \)

Total clamping force = N1 + N2
DEFINITION OF A LIFTING CLAMP

Strength lifting clamp; Minimal demands

2x the working load limit (WLL); no deformation

3x the working load limit (WLL); may have deformation but the load must be held

The design criteria of the clamp is based on EN13155 and ASME B30.20
All CrosbyIP clamps (up to 22,5t) are load tested with certification up to 200% of WLL
Markings CrosbyIP clamp:

1. Manufacturer
2. Minimum & maximum WLL
3. Type
4. CE marking
5. Serial number
6. Jaw opening (mm & inch)
7. Year of production
8. RFID equipped

All data are permanently stamped on body.
**Delivered with clamp:**

1. Terms and conditions of warranty - Maintenance log
2. User instructions
3. Proof Load Test Certificate
4. Warranty certificate

All in various languages.
Easy to obtain spare parts

- Maintenance kits up to 9t for vertical clamps
- Repair kits up to 6t for vertical clamps
- Single spare parts for each clamp
APPLICATION AREAS

Offshore

Ship & yacht construction

Tank & vessel construction
APPLICATION AREAS

Steel constructions  Windpower energy  Aircraft industry
** Minimal working load:**

- **IP(U)10**
  - HRC < 37
  - 5% of stated WLL up to 27 HRC
  - 10% of stated WLL up to 37 HRC

- **IP(U)10S(tainless steel)**
  - HRC < 37
  - 5% of stated WLL up to 27 HRC
  - 10% of stated WLL up to 37 HRC

- **IP(U)10H(ard)**
  - HRC < 47
  - 10% of stated WLL up to 47 HRC

- **IPNM10: Non Marring**
  - HRC > 47
  - No minimum WLL at any hardness
VERTICAL TRANSPORT

- IPU10 – IP10
- IPU10S – IP10S
- IPU10H – IP10H
- IPU10A – IP10A
- IPTPU - IPTPUX
- IPV(U)(N)Z
- IPNM10 – IPNM10J – IPNM10P
**IP10 & IPU10**

WLL: 0.5 – 30 t IP(U)10

WLL: 6 – 30 t IP(U)10J (larger jaw opening)

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**UNIVERSAL – FOR LIFTING IN ANY DIRECTION**

The IP(U)10 vertical lifting clamps are used for the lifting, turning, moving or vertical transfer of steel plates and constructions from horizontal to vertical and down to horizontal (180°).

The IPU10 has a hinged lifting eye that allows for the clamp to place and lift the load from any direction.
Vertical transport of various plates
**STANDARD RANGE - VERTICAL**

**IP10 & IPU10**
To be used with a single or multiple slings.

Use only IPU10 clamps in multiple leg sling applications.

**WLL 12t**
Clamps 12t WLL and up are fitted with special hook-up facilities to enable easy placement of the clamp in horizontal position.
After the 2 smaller parts are welded together the partial ship deck is turned around by using an equalizing beam.

Then the other side is welded and transported to the almost finished ship deck.
Vertical transportation of round fabrications or pipes
**IP10S & IPU10S**

**WLL: 0,5 – 12 t IP(U)10S**

**IP(U)10S**

**FOR STAINLESS STEEL MATERIAL**

Vertical lifting clamps are suitable for the lifting, turning (180°) and vertical transfer of stainless steel materials.

For use on materials with a surface hardness up to 37HRC. Fitted with a pivot and camsegment made of stainless steel to avoid contact corrosion.
**IP10H & IPU10H**  
WLL: 0,5 – 6 t IP(U)10H

**HARD SURFACE MATERIAL**

Vertical lifting clamps are suitable for the lifting, turning (180°) and vertical transfer of steel plates and sections with extra hard surface hardness.

For use on materials with a surface hardness up to 47HRC (450 HB). Fitted with a pivot and camsegment made of extra hard wear-resistant material.
IP10A & IPU10A

WLL: 1 – 2 - 9 t IP(U)10A

AUTOMATICALLY LOCKING

The IP10A - IPU10A clamps automatically applies pre-tension on the material as soon as the clamp is placed on the plate, and stays in the locked position.

Applications for this clamp include placement on loads that are difficult to reach.
STANDARD RANGE - VERTICAL

Determine Center of Gravity, and ensure the load is proportionally divided over the clamps.
IPTPU & IPTPUX
WLL: 1,5 – 3 t IPTPU
WLL: 1,5 – 3 t IPTPUX (with supporting profiles)

FOR VERY THIN, LARGE PLATES
Used for lifting very thin, large plates from horizontal to vertical position and to turn them. The specific design of this model prevents the plates from ‘buckling’ while being lifted. IPTPUX is equipped with lateral supporting profiles.
IPV(U)(N)Z
WLL: 0.75 – 1.5 t IPV(U)(N)Z

FOR SMALL PROFILES
The IPV(U)(N)Z is specially designed for the transfer of small profiles.
IPVZ; with fixed lifting eye
IPVUZ; with hinged lifting eye
IPV(U)NZ; for even smaller profiles
IPNM10 & IPNM10(J)(P)

WLL: 0,5 – 2 t IPNM10
WLL: 0,5 – 1 t IPNM10J (larger jaw opening)

NON MARRING

The IPNM10 clamp is used for the lifting, turning, moving or vertical transfer of sheet, steel plates or fabrications from horizontal to vertical and down to horizontal (180°) as needed without marring the surface of the material.

Also available with protective cap (IPNM10P) to reduce risk of damage to surrounding plates. Also available the special IPNM10JC, with curved jaws.
STANDARD RANGE - VERTICAL

Refinishing of the material surface not needed with IPNM10 series.

To be used with;

Aluminum, stainless steel, painted materials, aircraft skins, composite materials & plastics.
HORIZONTAL TRANSPORT

- IPH10 - IPH10J - IPH10E
- IPHOZ
- IPHNM10
- IPBC
- IPHGZ - IPHGUZ
- IPPE
**IPH10(J)(E)**

WLL per pair: 0,5 – 12 t IPH10

WLL per pair: 3 – 12 t IPH10J(E) (larger jaw opening)

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**FOR HORIZONTAL LIFTING AND TRANSFER**

The IPH10 is suitable for lifting and transfer in horizontal position of non-sagging steel plates. The use of magnets ensures the clamps to remain in the proper position on the plate. Also equipped with a handle and torsion spring that combines to make the placing of the clamp onto the plate quick and easy.

These clamps must be used in pairs or more.

- IPH10     0,5t - 1t : with spring
- IPH10     2t - 12t : with torsion spring, magnets & handle
- IPH10E    2t - 12t : with handle

New! Patent pending!
Always be sure to use the right tools for the right application to ensure maximum reliability!

These clamps must be used in pairs or more.
Lifting with 2 (or more) persons is **time consuming** and **expensive**!
IPHOZ
WLL per pair : 0,75 – 15 t IPHOZ

IPHOZ

FOR HORIZONTAL LIFTING OF SAGGING MATERIAL

The IPHOZ horizontal lifting clamp is to be used for lifting and transferring, in horizontal position, of thin sheet and other materials that will sag or bend when lifted.

Can also be applied in combination with long chains or two leg slings.

These clamps must be used in pairs or more.
**NON MARRING**

The IPHNM10 horizontal lifting clamps have a pretension feature that allows the user to attach the clamps to the material for horizontal lifting and transfer of non-sagging material. To be used where material surface must not be damaged. Also applies for materials with a very smooth surface, composites and coated plates or plates with a very hard surface.

These clamps must be used in pairs or more.
STANDARD RANGE - HORIZONTAL

**IPBC**

WLL: 1 - 3 t IPBC

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**FOR HORIZONTAL TRANSFER – WITH PRETENSION**

The IPBC horizontal lifting clamps have a pretension feature that allows the user to attach the clamps to the material for horizontal lifting and transfer of sagging and non-sagging material. These clamps may also be used to handle material that will be used in shears, bending and rolling machines or other fabrication equipment. For horizontal plate lifting, must be used in pairs of more.

Also to be used for turning beams from “H” into the “I” position.

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FOR HORIZONTAL TRANSFER – WITH LOCKING DEVICE

The IPHG(U)Z lifting clamps have a pretension locking feature that allows the user to attach the clamps to the material for horizontal lifting and transfer of sagging and non-sagging material. These clamps may also be used to handle material that will be used in shears, bending and rolling machines or other fabrication equipment. May also be used to move and lift structural shapes such as I-Beams, H-Beams etc.

IPHGZ - IPHGUZ

WLL: 0,75 – 4,5 t IPHGZ
WLL: 1,5 – 4,5 t IPHGUZ

IPHG(U)Z
IPHG UZ Lifting angles!
Controlled tilting by using correct lifting angles

IPHG(U)Z

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At shears and bending machines, with springs.

Spring assembly

Used to protect the crane and the lifting equipment from the great impact of the press.
FOR LIFTING AND TRANSFER OF BUNDLES OF PLATES

The IPPE is suitable for the lifting and transfer of bundles of non-sagging steel plates in horizontal position.

The jaw opening can easily be adjusted. Raising the handle opens the clamps. This facilitates the easy and quick placing or removing of the clamps.

Must be used in pairs or more.

IPPE

WLL per pair: 3 - 12 t IPPEB (0-180 mm)
WLL per pair: 3 - 12 t IPPED (0-300 mm)
WLL per pair: 3 - 12 t IPPEH (0-420 mm)
HORIZONTAL TRANSPORT OF BEAMS

- IPTKU - IPTKUD
- IPBKZ
- IPBHZ
- IPBSNZ
- IPSTARTEC11
IMPROVED UNIVERSAL BEAM CLAMP

Suitable as a temporary tackle eye for a beam, lifting clamp and as a lashing clamp. The hinged and enlarged lifting eye increases the loading angles.

The IPTKU clamp is designed with a hexagon-head handle that allows easy opening and closing with a wrench (pneumatic or electrical) and optional a second locking device (IPTKUD). Frame can be galvanized.

Also available: IPTKUM for personal fall arrest. Sheradised and with double locking.
HORIZONTAL BEAM TRANSPORT

IPTKU

IPTKU tackle eye  IPTKU lifting clamp  IPTKU lashing clamp
PERSONAL FALL ARREST

The IPTKUM is suitable as an anchor device for 1 person, for the attachment of components forming part of a personal fall arrest protection system.

Galvanised (sheradised) frame and supplied with a double locking device.

Supplied with test certificate according to; EN 795:1996-07
FOR THE TRANSFER AND STACKING OF STEEL BEAMS

The IPBKZ beam clamp is used for lifting, transfer and stacking of H & I-Beams with the flange to remain in vertical position. This is created through an over-center lifting eye. This series of clamps can be used for vertical lifting and horizontal moving of beams, angles, etc., with the flange in vertical position, depending on the application desired.
The IPBHZ beam clamp is used for horizontal lifting and transfer of steel beams. The base is slotted to allow the clamps to be used from end of beams as well as from the flange. This series of clamps can be used in the vertical and horizontal lifting, transfer and stacking of different types of structural designs, such as I-Beams, H-Beams, angles, etc., depending on the application desired. Also for handling large pipe sections.
IPBHX special clamp for lifting and transfer of pipes and tubes
IPBSNZ

WLL: 1.5 – 4.5 t IPBSNZ

FOR THE LIFTING, TRANSFER AND STACKING OF STEEL BEAMS

The IPBSNZ beam clamp is used for lifting, transfer and stacking (the hoisting eye allows for level lifts) of beams in the I-position. Also for lifting fabrications and ship sections. Can be used in the vertical lift and horizontal moving, transfer and stacking of different types of structural designs, such as I-Beams, depending on the application desired.
The IPSTARTEC11 beam clamp has been specially designed for lifting with the web in vertical position, controlled tilting, transportation and stacking of steel “H” and “I” profiles. By placing the chain guide in the appropriate position, it is easy to switch from lifting to tilting and back again, which shifts the centre of gravity.
Transport IPSTARTEC11

Controlled tilting
MISCELLANEOUS

- IPVK
- IPDV
- IPCC
- IPBUZ - IPBUUZ
- IPSBU(U)Z - IPSBUS(U)Z
- IPBTO10
- IPSE
- IPSC
**IPVK**

WLL: 0,5 t

The IPVK drum clamp is for vertical lift and transfer of 215 to 225 liter drums with steel tops (50-55 gallon). Automatically locks on drum. Can be used separately or in pairs.

**IPDV**

WLL: 0,5 t

The IPDV drum clamp is for vertical lift and transfer of 215 to 225 liter drums with steel tops (50-55 gallon). Allows drum to remain in an upright position during lift.
The IPCC is suitable for vertical lifting and transfer of concrete pipe sections and wells. Very easy application and removal of clamps thanks to the built-in carrying-grips. These clamps must be used in pairs or more. Normally used with 7 mm chain (not included).
FOR BULB PROFILES

The IPBU(U)Z shipbuilding clamps are used for the lifting, transfer and placing of bulb profiles onto ship sections perpendicularly. These clamps are fitted with a locking device for both open and closed positions, which ensures complete reliability.

To be used exclusively for bulb profiles (not for plates).
To be used exclusively for **bulb profiles** (not for plates).
IPSBUZ - IPSBUUZ
WLL: 4,5 – 9 t IPSBU(S)UZ
WLL: 4,5 – 22,5 t IPSBU(S)Z

IPSBU(U)Z

FOR SHIP SECTIONS
The IPSBU(S)(U)Z shipbuilding clamps are used for the lifting, transfer and placing of bulb profiles onto ship sections perpendicularly. These clamps are fitted with a locking device for both open and closed positions, which ensures complete reliability.

To be used exclusively for bulb profiles (not for plates).
IPSBU(U)Z
WLL: 4,5 – 9 t IPSBU(S)UZ
WLL: 4,5 – 22,5 t IPSBU(S)Z

Transport of ship section by using IPSBUSUZ lifting clamps.
Temporary lifting eyes are attached to the deck plates to enable transport. After transport the lifting eyes are removed again.

= Time consuming.
**IPBTO10**
WLL: 1,5 – 6 t

The IPBTO10 is used as a temporary tackle eye in spaces which have been reinforced with HP (bulb) profiles such as engine rooms and ship sections.

Fitted with screwed spindle for easy attachment of the clamp.

Clamp automatically fixes when load is applied.

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**IPSC**
WLL: 1,5 – 3 t

The IPSC screw style clamp is for positioning and pulling of plates or fabrications.

Not to be used as a lifting clamp!

For steel with a surface hardness up to 30 HRC.
IPNM10JC (Jaw Curved)

Also available the special IPNM10JC, designed for lifting very hard surfaces.

The curved jaws makes it suitable for pipes and tubes, without marring the surface of the material.

Dimensions upon request.
REMOTE CONTROLLED CLAMP

The IP(U)10R is specially designed to be opened and closed from a distance with a rope, attached to the clamp.

DEEP JAW opening

The IP(U)10J2 is designed to grab over a beveled edge to ensure maximum grab and reliability.
Clamp specially designed to transport very thick plates with a large beveled edge.

Clamp has an extra deep jaw because of the large beveled edge. The deep jaw is designed to prevent the plate from moving within the jaw.
ALUMINUM BILLET CLAMPS

The IPSNX clamp is manufactured for lifting aluminum billets out of the pit and turn the billet into a horizontal position. Not to be used to pick up the billet in the horizontal position.
BILLETs
The 5 IPNX has specially been developed for lifting round billets.

MINIMAL MARRING
The IPGNS is a minimal marring clamp for WLL up to 6t, with either steel or stainless steel clamping plates which allows the clamp to be used in wet circumstances.
SHIP SECTIONS

For lifting big ship sections by gripping on the web of the beam (instead of the flange).

The IPSE is able to lift up to WLL 50 t.
IPGNS
Top quality
- Durable
- 100% proof tested at 2x WLL
- Welded body
- Fewer parts
- 10 years warranty (Not in USA)

Body and main parts are traceable (serial number)
Marking with minimum and maximum WLL, CE, jaw opening, serial number

User friendly
- Compact and ergonomic
- Lighter weight

Easy repair
- Fewer parts
- Easy to disassemble/reassemble
- Availability of parts and kits
- Tolerance lists available for repair (through factory trained repair personnel)

RFID equipped

Broad product line
Development of specials on request
Product innovations
Reinforced welded body:
Because of a welded frame the clamp is more robust and lighter weight thru the use of alloy steel plate.
Besides it is easy to disassemble/reassemble.
All vertical lifting clamps are equipped with “Lock Open/Lock Closed” feature that allows pretension before lifting.

**Pretension:**
All vertical clamps have pretension.

**Latch:**
The design of the latch shows when the clamp is in the “Lock Open” or Lock Closed” position. When the latch is in the closed position, it is in-line with the frame, avoiding interference with the load.
COMPETITION & USP’S

“Machined Flats” on lifting eye shaft

CrosbyIP

Others
PROPER USE OF CLAMPS

Safety first! / La sécurité avant tout!

**General / Généralités**
- Minimum load is 10% of clamp's rated WLL.
- Charge minimum autorisé: 10% du WLL, minimum 6.8 to 260.

**Round surfaces / Surfaces rondes**

<table>
<thead>
<tr>
<th>NO.</th>
<th>Ø</th>
<th>Material</th>
<th>Safe load kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25mm</td>
<td>steel</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>50mm</td>
<td>steel</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>65mm</td>
<td>steel</td>
<td>40</td>
</tr>
</tbody>
</table>

**Vertical transport / Levage vertical**
- Never exceed the WLL.
- Use jib (J) if required.

**Horizontal transport / Levage horizontal**
- Ensure use of a “verta” or “metal lifting eye”.
- Use good practice to secure the load.

**WARNING:**
Read, understand and follow the instructions and the product information in applicable operator's manual before using clamps.
Only trained and competent personnel should install, operate, inspect and repair this equipment. Only use genuine Crosby IP replacement parts.

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PROPER USE OF CLAMPS

General

- Steel
  - HRC < 37
- Stainless steel
  - HRC < 37
- Extra hard steel
  - HRC < 47
- Non Marring
  - HRC > 47
Minimum working load:

- 5% of stated WLL up to 27 HRC
- 10% of stated WLL up to 37 HRC
- 10% of stated WLL up to 47 HRC
## PROPER USE OF CLAMPS

### Round surfaces

<table>
<thead>
<tr>
<th>WLL (t)</th>
<th>Clamp</th>
<th>Min. inside diameter</th>
<th>Max. wall thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,5</td>
<td>IP(U)10</td>
<td>Round 160 mm</td>
<td>16 mm</td>
</tr>
<tr>
<td>1</td>
<td>IP(U)10</td>
<td>Round 160 mm</td>
<td>20 mm</td>
</tr>
<tr>
<td>2</td>
<td>IP(U)10</td>
<td>Round 400 mm</td>
<td>30 mm</td>
</tr>
<tr>
<td>3</td>
<td>IP(U)10</td>
<td>Round 600 mm</td>
<td>40 mm</td>
</tr>
<tr>
<td>4,5</td>
<td>IP(U)10</td>
<td>Round 600 mm</td>
<td>40 mm</td>
</tr>
<tr>
<td>6</td>
<td>IP(U)10</td>
<td>Round 600 mm</td>
<td>50 mm</td>
</tr>
</tbody>
</table>
Determine Center of Gravity and ensure the load is proportionally divided over all clamps.
Use an equalizing beam to ensure an equal share of load to all clamps.
Vertical transport

Never exceed the WLL
Vertical transport

Never lift more than 1 plate at a time
Lifting angle larger than 45°?

= lower WLL by 50%
Do not overload by exceeding lifting angles!
Lifting angles
Never use a crane hook which is;
- too large and/or
- too heavy for the lifting eye
The weight could open the clamp.

Vertical transport
PROPER USE OF CLAMPS

Vertical transport

Never pull plates from under a pile
Horizontal transport

Never use a vertical clamp for horizontal lifting
Never use a **vertical clamp** for **horizontal lifting**!
PROPER USE OF CLAMPS

Horizontal transport
Sagging Plates

Never exceed lifting angles

IPHOZ
PROPER USE OF CLAMPS

Horizontal transport
Non sagging Plates

Lifting angle larger than 45° = lower WLL by 50%

IPH10 Series
Maintenance

Ambient temperature and/or temperature of load material

- 40° C (-40° F)
+ 100° C (212° F)
Maintenance

Keep gripping surface and load surface clean
Read, understand and follow the **instructions** and the **product information** in applicable user manual before using the clamps (per EN13155 and ASME B30.20).

Only **trained** and **competent personnel** should install, operate, inspect and repair this equipment.

Only use **genuine** CrosbyIP replacement **parts**.
Be sure to work with a real CrosbyIP clamp!
Always use the right clamp for the right application!
Masterlink too small.

Lifting angle exceeded 15° for IP10

No latch in the chain hooks.
Crane hooks tip loaded used as lifting equipment.

or
Do not use standard IPU10 or IP10 clamps for lifting bulb profiles. The pivot and camsegment do not have full contact to the material.

Clamp especially designed for handling bulb profiles: IPSBU(U)Z or IPU10 with larger jaw openings.
Check all material before lifting!

- **Plate surface & clamp**: free of dirt and dry
- **Hardness material**: know the surface hardness of the material
- **Point of gravity**: where is it located?
- **Division of load**: divide proportionally
- **Weight**: min. load 10% of WLL clamp
- **Temperature**: between -40°C (-40°F) and +100°C (+212°F)

**Warning**: To avoid serious personal injury read instructions before using!
PROPER USE OF CLAMPS

Stocking of clamps
By **stocking** clamps in **closed position** the pivot and camsegment are touched and can be damaged without even using it! This causes **extra** and **unnecessary damage**.

**Always stock clamps with the latch in open-position!**
(avoid contact of camsegment and pivot)
Industry education & Technical support

Sales training
- Extensive product training
- Designed to extend the knowledge of the product range and application areas of CrosbyIP lifting clamps

User training
- Using the right clamp, in the right way, at the right place
- Employees are informed about proper lifting methods

Repair training
- Designed for inspection and periodic maintenance of CrosbyIP clamps.
- This certificate (valid for 4 years) qualifies Service Engineers to perform periodic maintenance- and repair services within organisation
MORE INFORMATION:

www.crosbyip.com
www.thecrosbygroup.com