



## USE AND MAINTENANCE MANUAL CLAMPS Translation of original user manual

This use and maintenance manual has been issued according to standard **UNI ISO 12100-2:2009**  
Conforming to Machine Directive **2006/42/EC**  
Conforming to that required by standard **UNI EN 13155:2009 type C**

### Standards of reference:

UNI EN ISO 12100-1 Safety of the machinery – Basic concepts general principles for design - Part 1: Basic terminology methodology  
UNI EN 10204: Metal products - Types of inspection documents - Applicable also on non-metal products  
UNI ISO 8686-1 Lifting equipment -Design principles for loads and load combinations

- ISO International Standard
- EN European Standard
- UNI National standard
  
- UNI Italian National Body of Unification
- CEN European Committee for Standardisation
- ISO International Organization for Standardization

In compliance with Common CEN/CENELEC Regulations, the national standardisation bodies of the following countries are obliged to transpose European standards:

Austria, Belgium, Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Iceland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, the Netherlands, Poland, Portugal, United Kingdom, Czech Republic, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and Hungary.

## Clamp for handling loads

### Introduction

In accordance with accident-prevention standards, the company has written this instruction booklet to inform the users on how to use the clamps correctly.

It is therefore recommended to read and abide by all that is prescribed before using the equipment.

For any other loading situations not included in this booklet, abide by common safety standards.

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## 1. USING AND STORING THE USE AND MAINTENANCE MANUAL

- The use and maintenance manual is addressed to installation and maintenance managers and all the operators that use the equipment, **especially** for the parts regarding **safety** in the work place.
- The information contained in the manual indicates the correct use of the equipment according to the intended design and construction purposes.
- It also contains information regarding handling, installation, maintenance and overhauls, all within the limits established by the manufacturer inside the manual.
- The use and maintenance manual is an integral part of the equipment. It must be kept until its final dismantling. It must be stored in a protected place, close to the equipment, in order to be available when required.
- Should the manual be damaged or lost, the user must request a copy from the manufacturer.
- The manufacturer reserves the right to modify the equipment and the manuals without being obliged to update previous editions.
- The user can request information and updates which, when issued, also become an integral part of the user manual.
- Should ownership of the equipment be transferred, this manual must be transferred as well, as prescribed in the machinery directive 2006/42/EC.

### 1.1. Cases which release the manufacturer from liability.

The manufacturer is not liable in the following cases:

- improper use of the equipment or use by personnel not trained for professional operation;
- use contrary to specific regulations;
- incorrect installation;
- serious shortcomings in intended maintenance and overhauls;
- modifications, interventions or tampering of any type performed by unauthorised personnel.

The manufacturer declines any responsibility when the use of the lifting forks does not comply with the safety standards.

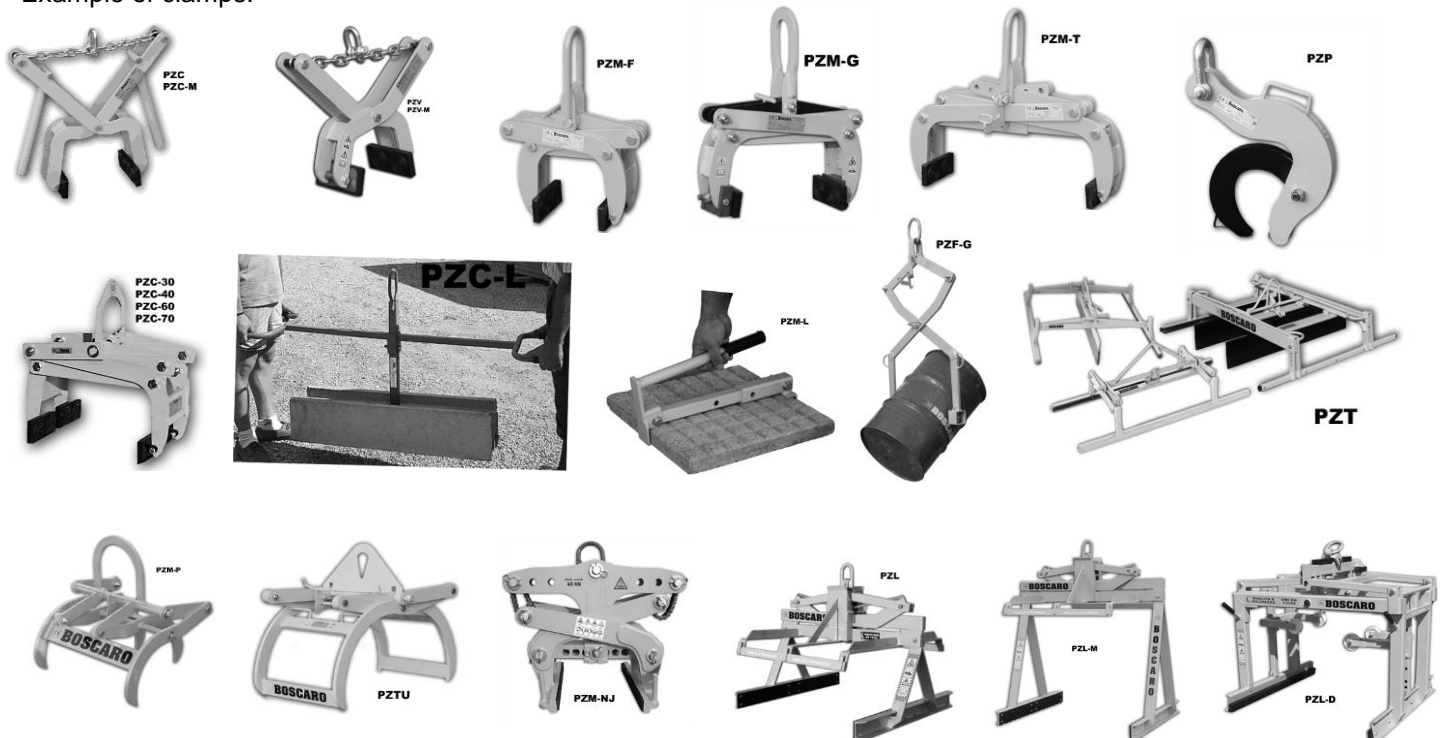
## 2. DESCRIPTION OF THE CLAMPS.

Clamp: equipment used to handle loads by holding a specific part of the load. (section 3.5 UNI EN 13155).

The clamps defined as "lifting accessories" are components or equipment not connected to the machine and placed between the machine and load, or on the load to allow the gripping.

They are used to facilitate and make safer loading and unloading operations, handling and installation of materials.

Example of clamps:



### 2.1. Technical characteristics.

The gripping force of Boscaro clamps works by friction.

Besides the serial number and year of manufacture, the identification plate of the clamps indicate also the maximum operating load and mass of the equipment without load, which together provide the gross weight; the lifting device must be obviously suitable for manoeuvring the gross weight.

The maximum operating load is the maximum weight that the clamp can lift.

In order to prevent load from being detached, use safety hooks with inlet closure.

Boscaro clamps undergo static tests with use coefficient equal to 2 without permanent deformation.

### 3. USE CONDITIONS

A visual and general inspection must be carried out every day before starting any type of work. Do not use the equipment before having well understood the indications of this manual.

Verifications before use:

- verification of the load suitability;
- load interval required and load centre of gravity position to prevent the load from sliding.

Verify that the material to be handled has the following requisites:

- Variable dimensions within the opening field of the clamps.
- The load weight must be within the capacity indicated in the plate applied on the fork.

#### **Operating modes:**

The Boscaro clamps have been designed and manufactured to handle and install loads that require tightening in a specific point, according to the requisites indicated in section 5.2.7 UNI EN 13155.

For lifting, the personnel in charge must carry out the several manoeuvres according to the information and train received and/or experience gained throughout the years.

#### **Using the clamps for handling loose materials in height or in ways different from that indicated is forbidden.**

The clamps to be used in the work site must have a secondary positive gripping device (e. g. mesh).

The secondary positive gripping device must prevent the load from being completely released as well as any loose part of the load (section 5.2.7.5 UNI EN 13155).

These requisites must not be applied if the clamp is intended to be used to lift only the lower part of the clamp at a height less than 1.8 m and:

- To move single bricks or construction material with weight lower than 50 Kg;
- To unload materials from vehicles on the ground.

To use the **protection secondary positive gripping devices**, refer to the relative use and maintenance manual.

#### **Using the clamp for lifting loose materials in height or in ways different from those indicated is forbidden.**

## 4. GENERAL SAFETY PRESCRIPTIONS

- The operators must use the PPE (personal protective equipment) made available in compliance with the information and training received.
- The individual contracting companies must inform, form and train workers (crane, loading and unloading operators) concerning the correct actions to be taken for lifting and high-level handling of loads. Without prejudice to the obligations of training workers as crane operators, as provided for in the Legislative Decree 81/08.
- Equipment must be chosen which is compatible with one's machines; the overall weight of the suspended load must be within the nominal capacity of the crane at normal operating conditions.
- The combination of the crane with non-fixed load lifting attachments must only be activated by trained personnel in safe conditions.
- Lifting and support must be carried out in controlled conditions and under the direction of a specifically designated person.
- Operations concerning use of cranes with non-fixed load lifting attachments must be suspended in the presence of wind which exceeds a maximum speed (not allowing full control of the machine), storms, ice, snow, fog or other adverse weather conditions which can endanger the safety of personnel.
- If more than one machine is used simultaneously at the same place, the crane operators must communicate via two-way radios, one held by the crane operator and another by the operator on the ground who performs harnessing.
- Measures must be taken to prevent workers from stopping below suspended loads.
- It is not allowed to have the loads pass over unprotected workplaces normally occupied by workers.
- It is strictly forbidden to use the equipment before having prevented access to persons and/or animals to the work area. To this purpose, the area must be fenced off and any type of measure considered appropriate must be taken to make the activity safer.
- Make sure that the signs indicating access of unauthorised personnel to the working area forbidden and the suspended loads hazard are well visible.
- It is strictly forbidden to pass within the range of action of the equipment.
- Danger of falling material.
- Danger of crushing.
- Danger of collision.
- It is strictly forbidden to pass with the load outside of the work area.
- The removable load gripping equipment (lifting forks and clamps activated by gravity) are suitable for lifting and handling unitary loads placed on pallets or similar equipment (see section 5.2.5 UNI EN 13155:2009), (complying with Italian P.D. 164 del 07/01/56 art. 58 section 4).
- Any work on the equipment must be performed on the ground and in a stable position.
- The safety of the equipment is linked to the efficiency of the safety systems of the machine upon which it is installed.
- This machine must be equipped with an acoustic indicator device to warn people that the machine and equipment are in operation.

## 5. INSTRUCTIONS

### 5.1 For personnel

- High lifting operations of loads must be carried out by specialised personnel, specifically trained for these manoeuvres. The use of productive or temporary personnel in general must be excluded.
- It is forbidden to abandon the workplace with the removable load gripping equipment running.

### 5.2. For transportation and deposit in warehouse

- When lifting and transporting the equipment, means suitable to the weight and clearance must be used. For lifting, connect to the shackle or part above the clamps by using the hook of the crane or chain solidly secured. The clamp must be stored carefully, making sure it is stable.

### 5.3. For use

- Use the clamp only to lift and handle material with the characteristics described in point 3.
- Make sure that the weight of the material to be handled is within the capacity indicated on the clamp identification plate and, obviously, that the material and equipment are within the capacity of the crane.
- In order to use the equipment correctly, ensure that the hook of the machine is equipped with inlet closure.
- If a welded link chain is installed between the crane hook and the clamp ring, ensure that it is equipped with a ring at the upper end and with a hook with inlet closure at the lower end. Make sure that this chain is suitable for the weight of the supported load, clamp plus material, (standard UNI EN 818-4).
- For correct lifting, remember that the centre of gravity of the lifted load must coincide with that of the clamp. Failure to comply with this condition can overturn the load.
- During lifting operations and handling, avoid rough accelerations and bumps. Use progressive speeds, warning with the buzzer supplied with the crane the beginning of the handling operations.
- Avoid using equipment to rip or tow any object, as the equipment has been designed to support loads in vertical position. This manoeuvre can be dangerous.
- When using, the clamp must be hold with hands gripping the specific handles when installed.
- The closure interval of the clamp must be adjusted (**PZC, PZC-M, PZC-L, PZV, PZV-M**) depending on the thickness of the handled materials, reducing or increasing the length of the chain or levers.
- The maximum opening must be adjusted so that the space between the J-bolt and material to be handled is not greater than cm. 4.
- For clamps suitable for telescopic handling, the J-bolt opening must be adjusted depending on the thickness **of the material to be handled (PZM-T26, PZM-T50 and PZM-T55G )**, extending or reducing the inner telescopic pipes, blocking them with the specific pin.
- These use instructions must be integrated with the use instructions of the chain harness provided by Boscaro (**PZB-3 e PZP-1, PZP-2, PZP-3**).
- For clamps mod. **PZP-1, PZP-2, PZP-3** the mobile part must face the outer side of the well or tank to be lifted.
- For clamps mod. **PZB-3** the mobile part must face the inner side of the well, tank, circular ring or pit to be lifted.
- For clamps equipped with shackles (**PZC, PZC-M, PZV, PZV-M, PZB-3, PZP-1, PZP-2, PZP-3**), ensure that the pin is fully tightened inside its seat. The product does not require maintenance, but inspection, carried out periodically, is required for any replacement in case of breakage or deformations.
- The clamps must be used complying with some specific requirements: free spaces, no person in the action area, buzzer at the beginning of the operations, use of danger signs in the involved area.

Failure to comply with the instructions described above can cause dangerous situations and/or damage the equipment, making it insecure.



## 6. MAINTENANCE AND REPLACEMENT OF COMPONENTS SUBJECT TO NORMAL WEAR

- Inspections must be made by personnel previously commissioned, formed and trained concerning use of the removable equipment of load gripping (clamps), without prejudice to the obligations of training workers as crane operators, as provided for in the Legislative Decree 81/08.
- The verification that such information, formation and training has been provided must be proven by a training record, kept by the contracting company.
- All maintenance and overhauls must be carried out with the equipment resting stably on the ground.

Italian **P.D. 547/55** recommends that the efficiency and proper maintenance of the materials making up these accessories be checked at least every three months.

We also recall that, based on that shown above, if a reduction of over 10% in the cross-section of the elements making up the accessories is detected, that accessory must be replaced. It must also be replaced in the presence of straining effects, which have permanently caused the elastic limit of the material to be exceeded.

### 6.1. Routine maintenance

It is mandatory that the clamps be inspected:

- every time it is removed from the warehouse and every day before operating it on the worksite;
- after a repair has been performed with the intervention noted in the use and maintenance manual;
- during the service lifetime of the equipment, every three months, noting the results in the use and maintenance manual.

The equipment must be checked to make sure it is efficient; this check consists in:

- checking that there are no cracks in the welding;
- checking the clearance of the articulation pins, especially the alignment of the levers;
- checking that the metallic structure has no breakage and/or deformations;
- checking the conditions of the screws and the correct tightening of the nuts;
- checking the condition of the springs, where present.
- replacing worn parts with original spare parts supplied by the manufacturer.

**Should any faults be found, contact the manufacturing company to overhaul the equipment. Operations performed incorrectly make the equipment dangerous. The clamp must be repaired and overhauled by our specialised personnel on our site. The use of non-original spare parts can endanger the equipment safety, as well as invalidate the EC conformity of the equipment.**

### 6.2. Replacing parts subject to normal wear

Pins, shackles and springs in the clamp are stressed parts subject to wear over time. If defects are detected, (e.g. yield and/or deformations) due to stress or improper use, they must be replaced.

Replace pins, shackles and springs if the following is detected:

- Presence of cracks.
- Presence of yield or deformations.
- After 2 years from the date of purchase, due to natural wear of the spring.

**The replaced parts must be disposed of as special waste.**

**The manufacturer declines all responsibility when the clamps are used without fully respecting safety standards. The instructions provided in this publication are not valid when the regulations of the bodies in charge are more restrictive and rigorous.**

### 6.4. Storage

The equipment must be rest stably on the floor, and be stored in a dry place away from dangerous substances that may damage its components (e.g. acids, alkaline solutions and solvents).

## 7. USE LIMITS

The equipment has been designed and dimensioned to perform 20,000 lifting cycles. When this limit has been reached, it must be overhauled at our workshop and replaced if necessary.

The wear of the clamp is subject to various situations (such as storage, careful use, etc.) and therefore the lifting cycles also depend on the circumstances mentioned above.

## 8. WARRANTY

The company guarantees its device for a maximum period of 12 months from the date of delivery regarding material or construction defects.

Upon receiving the goods, check:

- The data provided on the packing slip (addressee, type of goods, number of packages);
- That the goods received are without any type of damage.

**IN THE EVENT OF FAULTS, IMMEDIATELY NOTIFY THE CARRIER, WRITING A CLAIM ON THE PACKING SLIP, AND NOTIFY THE COMPANY WITHIN EIGHT DAYS FROM RECEPTION OF THE GOODS.**

Should manufacturing defects be found, the purchaser has the obligation of reporting this to the company within 8 days from the date of reception. The company shall take care of resolving the problem as quickly as possible free of charge. Parts damaged due to carelessness or negligence in use, inappropriate maintenance, improper use or normal wear, defects caused by tampering, damage caused by transportation, by failure to comply with the information contained in this manual and by any other circumstance which cannot be blamed on manufacturing defects are excluded from the warranty.







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