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MILOS

CS M290-M400

Lifting Bracket

User manual

Original instructions

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Sep. 2019

Area Four Industries

Manufacturer:

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If you have a warranty claim, malfunction or spare part inquiry, contact your point of sale or the manufacturer.

If you have comments or improvement ideas for this document, please contact us by using the e-mail address found on the back cover of the document. All comments and ideas will be carefully considered in the future development of the product or this document.

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Contents

Change history

Issue	Date	Changes
1	Sep. 2019	First issue.

1 Introduction

This manual is intended for truss owners, providers, skilled riggers and any person who has been trained in working safely with trusses.

This manual assumes that you have been trained or you work under the control of a skilled person who has been trained in safety and assembly.

1.1 About this product

The MILOS CS M290-M400 lifting bracket (hereinafter referred to as “the MILOS lifting bracket”) is used for lifting and hanging trusses and attaching loads to trusses. It can be used for applications above people. The MILOS lifting bracket is a lifting accessory. This type of product is also commonly referred to as a “ceiling bracket” or “ceiling support”.

For information on related standards, see Chapter 1.5.

We have paid special attention to product safety when designing the product. The MILOS lifting bracket has a safety factor of 8:1 according to the European Machinery Directive 2006/42/EC.

The manufacturer is not liable for indirect consequential damage and financial loss. The manufacturer shall not be liable for any changes made to the product nor for any damage resulting from such changes.

1.2 Related information

For more information on the product, see www.milossystems.com/products/truss/.

1.3 About this manual

Before working with the product, read this manual carefully and pay attention to the information provided. Use this manual to familiarise yourself with the product, its proper use and safety regulations.

1.3.1 Safety conventions

Indicates a hazardous situation, which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations.

Indicates a hazardous situation, which, if not avoided, could result in death or serious injury.

Indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.

Indicates information considered important but not hazard-related.

1.4 Terminology

Trusses and truss elements are hereinafter referred to by the term “truss”.

Term	Definition
competent person	A person who is capable of identifying existing and predictable hazards in the workplace and who is authorised to take prompt corrective measures to eliminate them. Competent persons are supervised by qualified persons. See “qualified person”.
components	Parts of a whole.
identification sticker	A sticker on the product on which several pieces of information about the product can be found.
main chord	An element of a truss module that carries the forces associated with bending moments or axial forces, or a combination of them.
member	See ‘truss member’.
node point	A location where the centre line of the main chord intersects with the centre line of the diagonals or end braces.
qualified person	A person who, by possession of a recognised degree or certificate of professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve problems relating to the subject matter or work. A qualified person supervises the competent persons. See "competent person".
self-locking nut	A nut that resists loosening under vibrations and torque.
shackle	A U-shaped piece of metal secured with a clevis pin.
shall	Indicates that a rule is mandatory and must be followed.
should	Indicates that a rule is a recommendation, the advisability of which depends on the facts and conditions in each situation.
truss member	A part of a truss module.
truss structure	An assembly made of truss modules.
truss module	A lattice structure intended to be used on its own or in combination with other modules.
user	A person or a company assembling or using modules or systems.

1.5 Standards

The MILOS lifting bracket is a lifting accessory subject to the European Machinery Directive 2006/42/EC and to the German DGUV Information 215-313 for loads above people according to DGUV V17.

NOTICE

It is the sole responsibility of the owner or provider to check with the local authorities if the legislation used by MILOS is acceptable in the country of use.

For manufacturing, the following standards are considered:

- 2006/42/EC, European Machinery Directive.
- DGUV V17 Accident-Prevention Regulation for Staging and Production Facilities for the Entertainment Industry (formerly known as BGV C1).
- DGUV Information 215-313 for loads above people.
- DIN EN 1991-1-1, Eurocode 1: Actions on structures – Part 1-1: general actions - Densities, self-weight, imposed loads for buildings.
- DIN EN 1993, Eurocode 3: Design of steel structures.
- DIN EN 1999, Eurocode 9: Design of aluminium structures.

2 Safety

NOTICE

Read these safety texts carefully before working with the product.

NOTICE

Make sure manuals are available at all times for all users and employees.

Elements connected to this product are not covered by this manual. The use of truss modules is the sole responsibility of the operator.

2.1 Electrical safety

⚠ WARNING

ELECTRICAL HAZARD

When the MILOS lifting bracket is used in truss structures and the truss structures are in contact with electrical equipment, the truss structures might develop dangerous touch voltages in the event of an electrical fault. Before energising any of the electrical equipment, the user must ensure that the truss structure is properly earthed.
This applies to all elements made of electroconductive material that have equipment placed on or attached to them, or across wire and cable runs that, if damaged, could make electrical contact with metal parts.
It is extremely important to earth the truss structures because the audience and installers very often come into direct contact with the trusses when the suspended fixtures are electrically charged.

2.2 Personal protection equipment

For health and safety reasons, people moving, assembling, disassembling, maintaining, or transporting the product should wear adequate Personal Protection Equipment such as, but not limited to, gloves, sound protection, hard hats and safety shoes.

⚠ WARNING

PERSONAL INJURY HAZARD

Always wear hard hats, safety shoes, sound protection and protective gloves when moving, assembling, disassembling, maintaining, or transporting the product.

3 Limitations of use

Use the product only for its prescribed purpose. Any use other than that mentioned is considered to be a case of misuse. The user or operator and not the manufacturer shall be liable for any damage or injury resulting from such cases of misuse.

The MILOS lifting bracket can be used in environmental conditions varying from -40 up to +60°C (-40 up to 140°F).

3.1 Safe working load

The MILOS lifting bracket is composed of different elements that each have an individual working load limit. Each element has a sufficient safety factor for the intended use of the product. However, you should always use the product within the limits of the safe working load.

Before using the MILOS lifting bracket, a competent person should verify that the load to be applied (including the dynamic factors) does not exceed the load capacity of the lifting bracket. For information on the load capacity, see Chapter 7.

Always attach the MILOS lifting bracket symmetrically to the load.

WARNING

Never apply a pull if the shackle and lifting cable are more than 6 degrees from vertical.

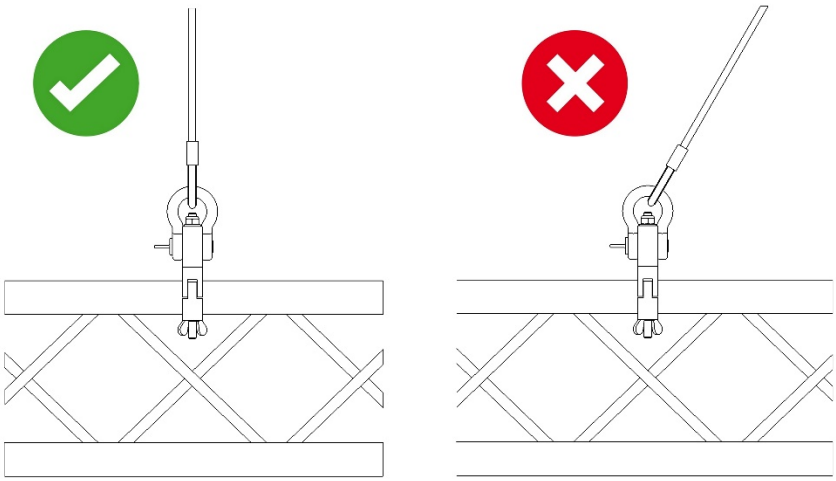

Figure 1 Attaching the lifting bracket to a truss – view A

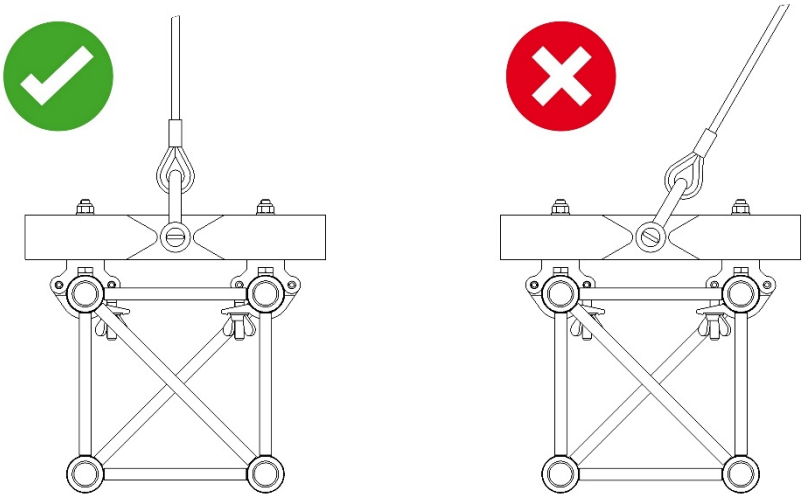

Figure 2 Attaching the lifting bracket to a truss – view B

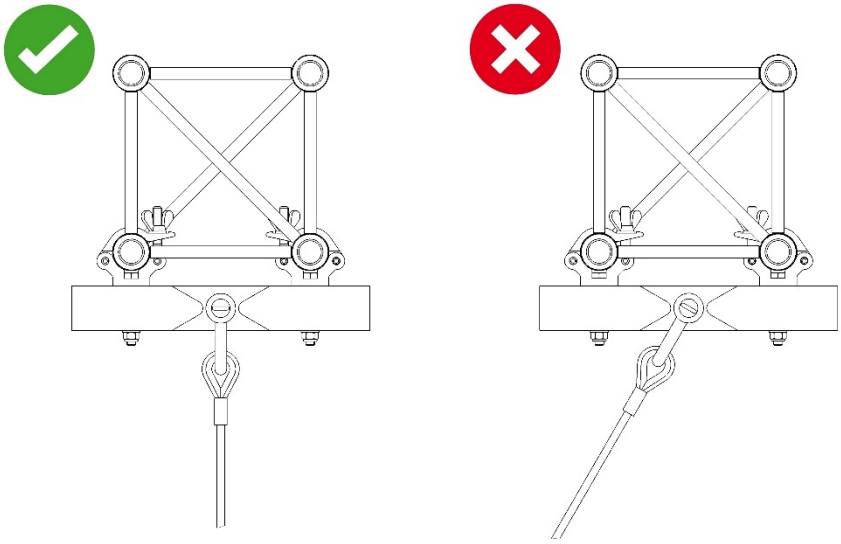

Figure 3: Another option for attaching the lifting bracket to a truss – view B

4 Transport, handling and storage

⚠ CAUTION

PERSONAL INJURY HAZARD

Vertical transportation or storage of the product can be hazardous for reasons of falling.

NOTICE

Make sure the product is stored dry and kept in a dry environment to avoid corrosion.

Handle the product with care. Do not drop it or drag it around. Do not throw sections on top of each other. Prevent damage from sharp edges such as the forks of a forklift.

Make sure the product cannot move or shake during transport. The abrasive motion of moving or shaking can lead to severe damage.

5 Identification

MILOS products can be recognised by identification stickers.

⚠ CAUTION

Make sure only MILOS original components are used. For more information, contact your distributor or the manufacturer.

NOTICE

There is always an identification sticker delivered with the product. Replace any missing identification stickers. Contact the manufacturer or its representative for information on the correct procedure.

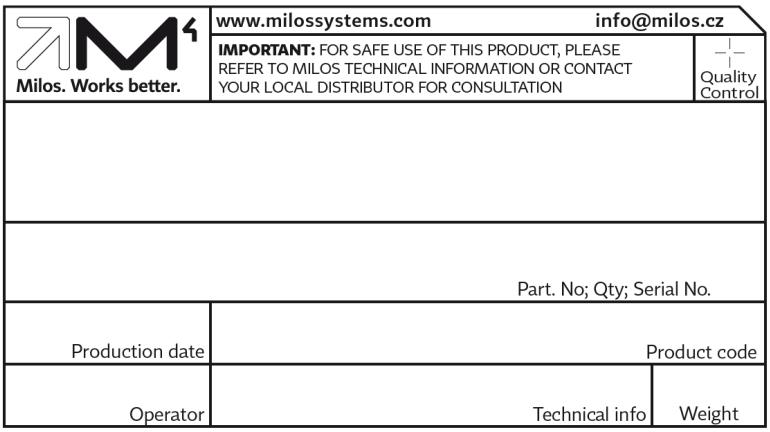

Figure 4: Identification sticker (with no product info)

6 Technical specifications

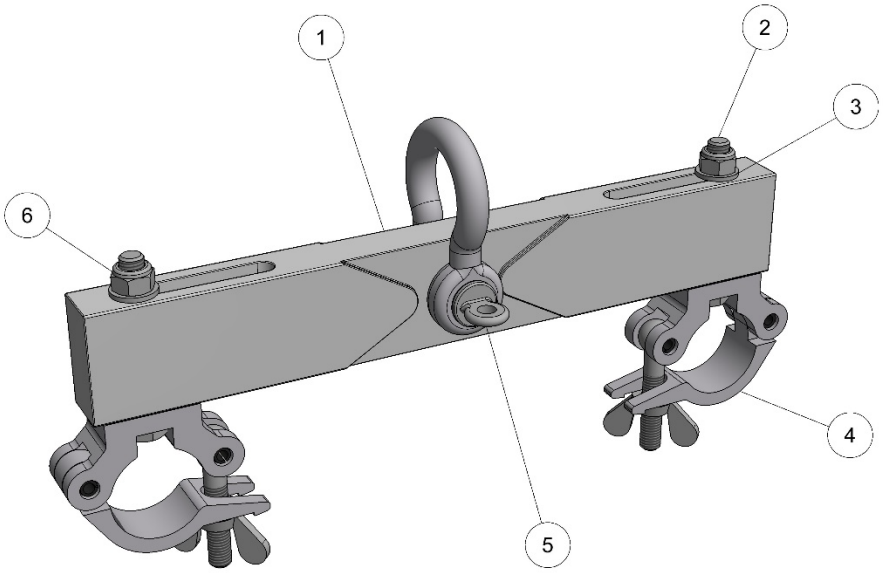

Figure 5: MILOS CS M290-M400 lifting bracket parts

	Part	**Technical specification**
1	Lifting bracket	Aluminium bar
2	Hexagon bolt	M12 x 90
3	Washer	M12
4	Cell clamp	Cell 207 clamp 30 mm (1.18 in), aluminium
5	Shackle	M19, 3,25t, type Omega
6	Self-locking nut	M12

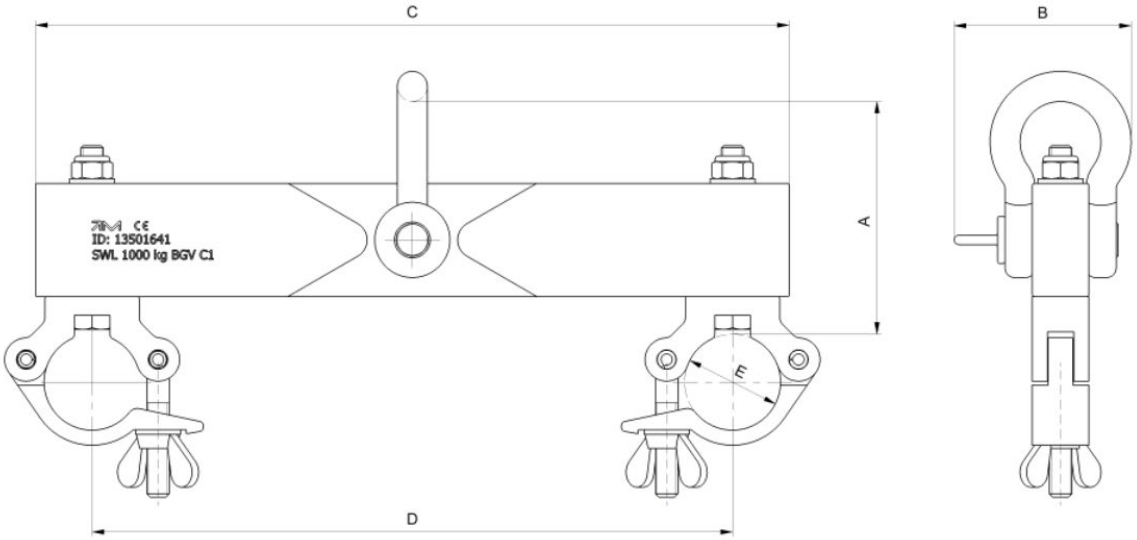

Figure 6: MILOS CS M290-M400 lifting bracket dimensions

	Dimension	Measurement
A	Effective height	123 mm (4.84 in)
B	Width incl. shackle	94 mm (3.70 in)
C	Length	400 mm (15.35 in)
D	Distance between cell clamps	207-350 mm (8.15 - 13.78 in)
E	Cell clamp diameter	48-51 mm (1.89 - 2.00 in)

Self-weight: 3.1 kg (6.84 lbs)

7 Load capacity

The MILOS lifting bracket is a lifting bracket with a load capacity of 1000 kg (2204 lbs) according to DGUV V17.

8 Approved accessories

For a complete overview of approved accessories, see our brochures or www.milossystems.com.

WARNING

By using excessive force when tightening accessories such as cell clamps, you may cause damage to the truss chords.

CAUTION

Pay special attention when using cell clamps. Their inside radius may not meet the tube they need to be attached to. This can lead to severe damage.

NOTICE

You should never allow accessories to damage other products.

9 Coatings and surface treatments

The MILOS lifting bracket is available in two versions:

- Brut aluminium
- Black powder coating

10 Slinging methods

Not applicable.

11 Assembly and disassembly

11.1 Required tools

- Spanner (wrench)

11.2 Attaching the MILOS lifting bracket to a truss

WARNING

Not placing the lifting bracket symmetrically to the cell clamps lowers the load capacity and could lead to failure.

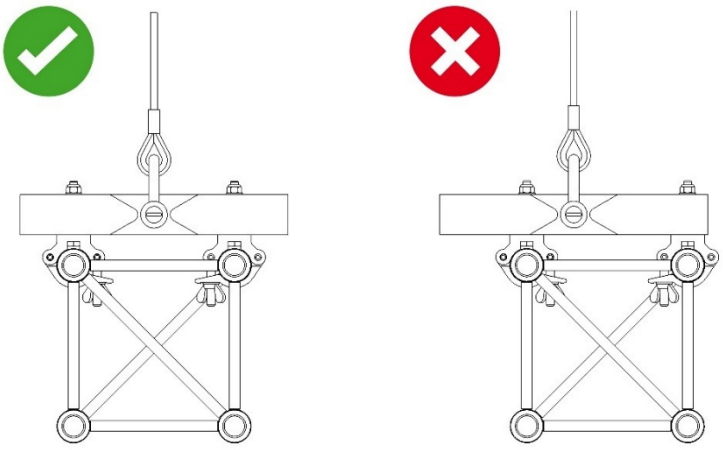

Figure 7 Symmetrical loading

WARNING

By using excessive force when tightening accessories such as cell clamps, you may cause damage to the truss chords.

1. Open the lids of both cell clamps and place the lifting bracket at the node points or as close to the node points of a truss as possible. Releasing the self-locking nuts slightly with a spanner may help to match the cell clamps to the main chords.
2. Make sure you attach the truss symmetrically between the cell clamps.
3. Close the lids of the both cell clamps and tighten the wingnuts securely.
4. If you released the self-locking nuts, tighten them with a spanner.
5. Put the shackle in the required position and tighten the pin of the shackle securely.

Before using the MILOS lifting bracket, a competent person should verify that the load to be applied (including the dynamic factors) does not exceed the load capacity of the lifting bracket. For information on load capacity, see Chapter 7.

11.3 Attaching the shackle to a lifting device

DANGER

Never exceed the allowed safe working load of the product.

WARNING

Inspect the lifting bracket before every use. Do not use it if it is damaged.

You can use the MILOS lifting bracket in the following ways:

- Hang a truss below the lifting bracket.
- Support a truss using the lifting bracket.
- Hang the lifting bracket below a truss to apply a load.
- Install the lifting bracket inside a truss to apply a load.

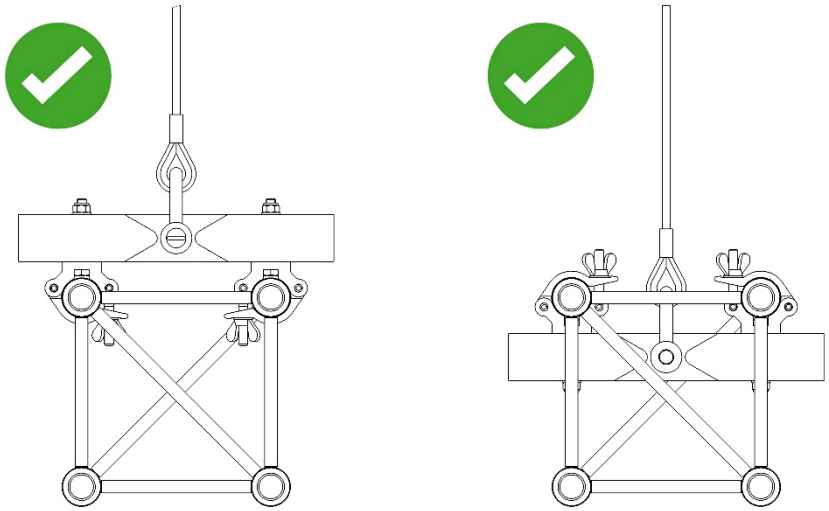

Figure 8 Correct usage of the MILOS lifting bracket.

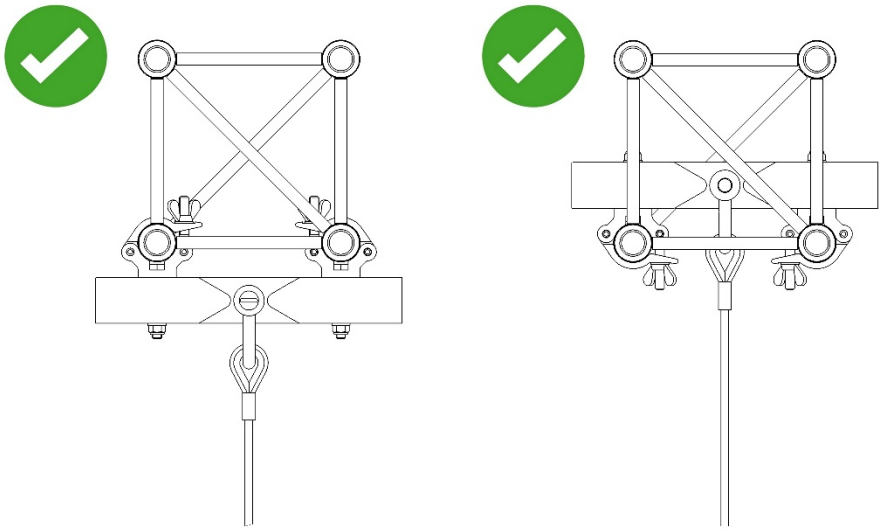

Figure 9: Correct usage of the MILOS lifting bracket (cont.)

To use the shackle with a lifting device:

1. Attach the shackle to a lifting device, steel wire, round sling, or a chain.
2. Before applying the load, make sure all bolts and nuts are tightened securely and cannot be released without a tool.
3. Apply the load, and lift up the load to a position where you can make sure all bolts and nuts are still tightened securely.
4. Continue lifting the load.

WARNING

All attached loads are included in the resultant force, for example, the dynamic forces caused by the lifting device.

Before using the MILOS lifting bracket, a competent person should verify that the applied load (including the dynamic factors) does not exceed the load capacity of the lifting bracket. For information on load capacity, see Chapter 7.

11.4 Detaching the MILOS lifting bracket

1. Lower the load until there is no more tension in the lifting bracket.
2. Detach the shackle from the lifting device.
3. Release the nuts of the cell clamps to detach the load from the lifting bracket.
4. Inspect the lifting bracket and store it properly.

NOTICE

Inspect the lifting bracket visually for signs of any external damage or wear.

For more information, see Chapter 12.

12 Maintenance

Repairs should be carried out and warranted by either the manufacturer or a suitably qualified person approved by the manufacturer.

Do not repair the product without first consulting the manufacturer.

13 Inspection

We recommend that a competent person carries out a careful and documented inspection at least once a year or as often as required by the circumstances or the intensity of use.

Perform the inspections as instructed later in this chapter to ensure the safe use of the product.

In case of an accident, misuse or malfunction, the product should be marked, discarded and inspected by a qualified person to establish its structural integrity for re-use. The product should be identified accordingly, and records of identification numbers and photos should be kept.

Do not use a damaged product.

Responsibility and liability for the safe use of the product lies predominantly with the user.

13.1 Inspection levels

13.1.1 Regular inspection

A competent person shall visually perform regular inspections prior to each use. You do not have to keep records. The regular inspection includes a visual inspection for signs of external damage and wear. If any damage is detected during the visual inspection, a qualified person shall carry out a detailed inspection based on the criteria described in Chapter 14.

13.1.2 Periodic inspections

A qualified person shall perform periodic visual inspections on behalf of the user in accordance with Chapter 14, and a record of the inspections shall be maintained.

13.2 Inspection frequency

13.2.1 Initial inspection

When first acquired, whether new or used, inspect the product as instructed in Chapter 14. Keep a record of the inspections and identification numbers.

13.2.2 Inspections after accident, incident or malfunction

If the MILOS lifting bracket elements were subjected to any accidents, inspect the elements as instructed in Chapter 14.

Examples of accidents, incidents or malfunctions are:

- Dropping the product on the floor from a height.
- Subjecting the product to shock loads.

13.3 Records

The owner shall keep records of initial and periodic inspections for a MILOS lifting bracket, which should be signed and dated by the person carrying out the inspections.

14 Discard criteria

In addition to the normal requirements related to use, professional assembly and disassembly, transportation and storage of the product, regular inspections are vital. Carefully inspect each individual element visually before each use, regardless of the respective field of use.

For information on the required frequency of inspections, see Chapter 13.2.

If any damage, such as breaks, cracks, bent elements, abrasions or similar, is noted during an inspection of the product that preclude further safe use, the product must be discarded and disposed of. In most cases, it is not enough to just identify the damage.

⚠ WARNING

If any part of the product shows significant visible damage or is suspected of containing a damaged element, visible or not, the product must be discarded and marked accordingly. A qualified person should assess the product.

⚠ WARNING

If in doubt when assessing individual damages, contact the manufacturer, supplier or a qualified person.

⚠ WARNING

Mark any damaged or worn material clearly and discard the material immediately.

Disposal through the manufacturer, supplier or a metal recycling company is the only safe way of protecting others from risks associated by defective material.

15 Warranty

For a period of 24 months, we undertake to repair, free of charge, any damage attributable to faulty materials or workmanship, provided that the product is forwarded, freight paid, to our factory or one of our contract service organisations.

The warranty period begins on the day of delivery, proven by a purchase receipt like an invoice, delivery note or their copies.

The warranty only is applicable for new products.

The warranty does not cover damage due to transport damage, negligent handling, overload or parts subject to normal wear and tear. Nor damages that originate from a case of misuse because of non-observance of the instructions in this manual.

The fitting of replacement parts not supplied by us, or modifications of our design by third parties, also invalidates the warranty.

Warranty repairs do not renew nor extend the warranty period.

16 Certificates

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DÉCLARATION CE DE CONFORMITÉ POUR LES MACHINES (2006/42/EG Annexe)

MILOS STRUCTRAL SYSTEMS
SPINDLERROVA 286
ROUDNICE NAD LADEM
413 01 CZECH REPUBLIC

déclare que:

MILOS: LIFTING BRACKET CS-M290-M400

- est en conformité avec la Directive pour les machines 2006/42/EG annexe I
- est en conformité avec les normes Européènnes harmonisées (parties/paragraphes de): DIN EN 1999-1, DIN EN 1993-1
- est en conformité avec les normes et spécifications techniques nationales et internationales (parties/paragraphes de): DGUV c1 (BGV C1 / GUV-V C1),

Roudnice nad Ladem, Czech Republic, 24-04-15

Mr. F. Zykan

CEO

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DICHIARAZIONE DI CONFORMITÀ CE PER LE MACCHINE
(Direttiva 2006/42/EEC)

MILOS STRUCTRAL SYSTEMS
SPINDLERROVA 286
ROUDNICE NAD LADEM
413 01 CZECH REPUBLIC

dichiariamo che:

MILOS: LIFTING BRACKET CS-M290-M400

- è in conformità alla Direttiva-CE Macchine 2006/42/EEC- annex 1
- è in conformità con norme europee di normalizzazione (o parti di):
  DIN EN 1999-1, DIN EN 1993-1
- è in conformità con norme tecniche e certificazione nazionali o internazionali (o parti di):
  DGUV c1 (BGV C1 / GUV-V C1),

Roudnice nad Ladem, Czech Republic, 24-04-15

Mr. F. Zykan

CEO

Milos. Works better.

EC-DECLARATION OF CONFORMITY FOR MACHINERY

(Directive 2006/42/EEC Annex I)

MILOS STRUCTRAL SYSTEMS
SPINDLERROVA 286
ROUDNICE NAD LADEM
413 01 CZECH REPUBLIC

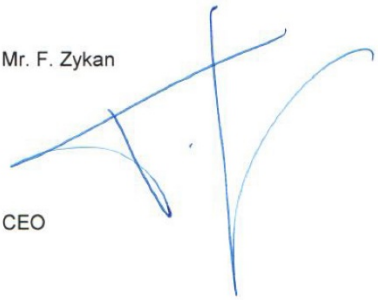
Herewith declares that:

MILOS: LIFTING BRACKET CS-M290-M400

- are in compliance with the Machinery Directive 2006/42/EEC annex I
- the following harmonized standards have been applied (or parts/clauses of): DIN EN 1999-1, DIN EN 1993-1
- the following national technical standards and specifications have been used (or parts/clauses of): DGUV c1 (BGV C1 / GUV-V C1),

Roudnice nad Ladem, Czech Republic, 24-04-15

Mr. F. Zykan



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EG-KONFORMITÄTSERKLÄRUNG FÜR MASCHINEN

(EG-Richtlinie 2006/42/EG, Anhang I)

MILOS STRUCTRAL SYSTEMS
SPINDLERROVA 286
ROUDNICE NAD LADEM
413 01 CZECH REPUBLIC

erklärt hiermit daß:

MILOS: LIFTING BRACKET CS-M290-M400

- Konform sind mit den einschlägigen Bestimmungen der EG-Maschinenrichtlinie 2006/42/EG, Anhang I

- Folgende harmonisierten Normen zur Anwendung gelangten (oder Teile/Klauseln hieraus): DIN EN 1999-1, DIN EN 1993-1

- Folgende nationale technische Normen und Spezifikationen zur Anwendung gelangten (oder Teile/Klauseln hieraus): DGUV c1 (BGV C1 / GUV-V C1),

Roudnice nad Ladem, Czech Republic, 24-04-2015

Mr. F. Zykan

CEO

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