PRODUCT CATALOGUE

CONTAINER TECHNICS NV

CONTECH

CARGO LASHING & LIFTING

Dear Customer and Reader,

It is with great pride and pleasure that we at Container Technics hereby present to you our 2024 catalogue.
Our team of specialists has worked hard to create this updated overview of our fields of activity, namely cargo lashing and lifting gear for mainly coastal and sea-going vessels of all types.
This catalogue will not only trigger maritime customers. Stevedoring and general cargo handling companies all over the world will also be interested in what we have to offer.

For more than 40 years our focus has been on providing superior service, quality and reliability, and on maintaining long term partnerships with our customers.
In this catalogue we present our complete range of products in four comprehensible chapters: fixed and loose lashing equipment, followed by lifting and rigging gear.

A printed catalogue may be rare in the current digital world, but we notice that our customers remain attached to this tangible paper copy.
Customer support and easy access to all drawings and pictures of our assortment are also available on our website (**www.containertechnics.com**).
The latest news regarding our company and products can be found on LinkedIn.

Please enjoy browsing through our catalogue or visiting our website and feel free to contact us personally if you have any questions.

In conclusion, we at Container Technics would like to thank those who have made all of this possible for over 40 years: our customers!

Our commitment to serving you 24 hours a day, 7 days a week, is no idle promise!

Best regards,
The Container Technics Team

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INTRODUCTION TO CONTAINER LASHING



Definitions

Typical examples of force types

TENSION FORCE		
SHEAR FORCE		
COMPRESSION FORCE		

List of load abbreviations

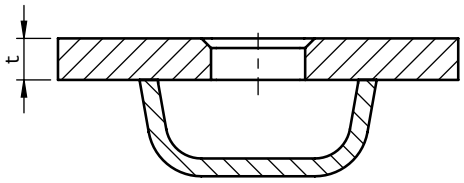
MSL	**Maximum Securing Load**	Maximum load allowed on a lashing item when used in practice
WLL	**Working Load Limit**	Maximum load allowed on a lifting item when used in practice
SWL	**Safe Working Load**	Maximum load allowed on a lifting item when used in practice
PL	**Proof Load**	Load applied on an item in test conditions. No plastic deformation may remain after this load has been applied.
TL	**Test Load**	= Proof Load
(M)BL	**(Minimum) Breaking Load**	Minimum load an item has to sustain before breaking
SF	**Safety Factor**	BL/MSL or BL/WLL. Typical value for most lashing items is 2. For lifting items 4 or more.
(D)WT	**Deadweight**	Own weight of a lifting item

Unless otherwise specified, all dimensions in this catalogue are in millimeters.

Chamfer Types

Chamfer type A

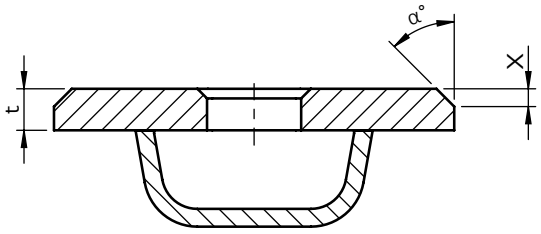
Without chamfer



t = typically 16 or 28mm

Chamfer type B

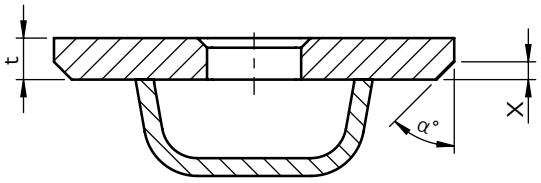
With chamfer from above



α = typically 30°, 45° and 60°
t = typically 16 or 28mm
X = to be specified

Chamfer type C

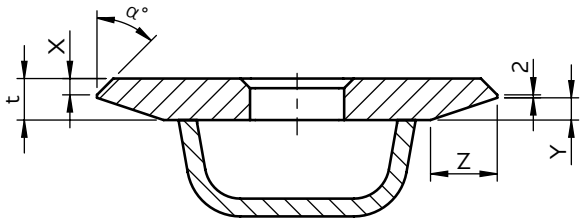
With chamfer from below



α = typically 30°, 45° and 60°
t = typically 16 or 28mm
X = to be specified

Chamfer type D

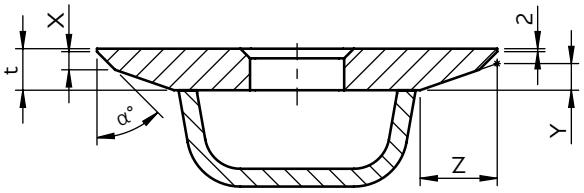
With chamfer from above and smooth transition of thickness



α = typically 30°, 45° and 60°
t = typically 16 or 28mm
X, Y = to be specified
Z = typically 3*Y

Chamfer type E

With chamfer from below and smooth transition of thickness



α = typically 30°, 45° and 60°
t = typically 16 or 28mm
X, Y = to be specified
Z = typically 3*Y

Containers

I. DESCRIPTION

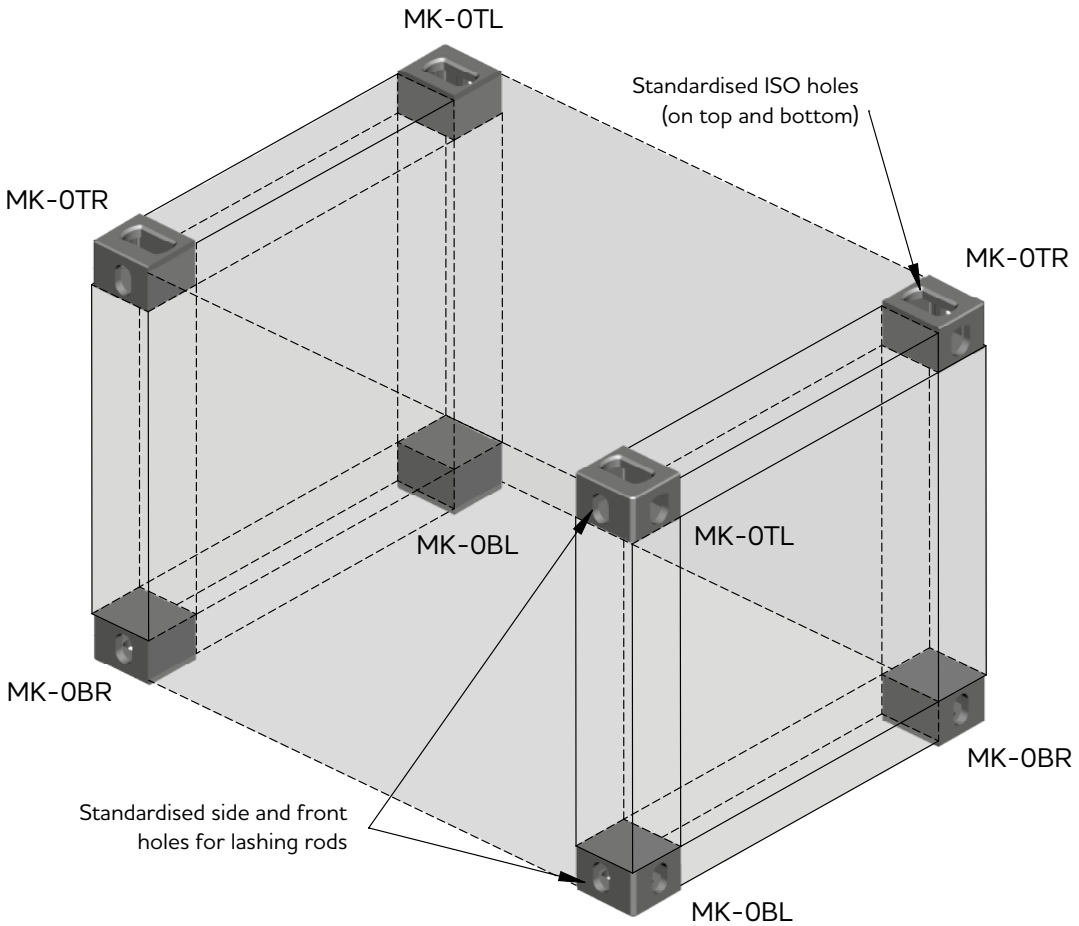
Shipping containers are standardised according to ISO standards such as ISO 668, 1496, ...

From a structural point of view, a container consists of a strong frame at the front side and a strong frame with a door at the aft side. Each of these frames is composed of 2 vertical corner posts, 2 horizontal girders at the bottom and on top, and 4 corner castings (2 at the bottom, 2 on top, see also page 118). These elements are designed to take all the external loads working on the container.

The rest of the container (roof, longitudinal walls, and bottom) is not taken into account for securing calculations, because these elements are weak in comparison to the end frames. Only for special, by the classification society defined, cases may the strength of these longitudinal elements be taken into account for the securing calculations.

Containers can be secured to a foundation or to eachother by connecting elements fitting into the ISO-holes located the underside of the bottom corner castings and in the upper side of the top corner castings.

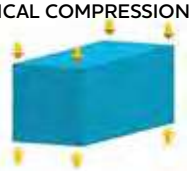
Containers can be additionally secured of stiffened by lashing elements fitting into the standardised front and side openings of the top and bottom corner castings.



II. STRENGTH

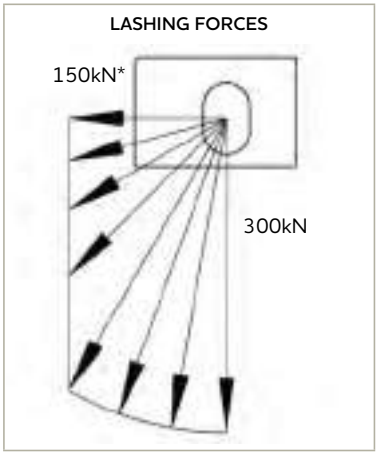
Containers are designed to sustain combinations of loads in various directions. The allowable forces on a container are however not standardised and defer from one classification organization to the other. An overview of these forces for standard containers is given in the table below.

■ ALLOWABLE FORCES ON CONTAINERS (In kN)

			STANDARDIZATION OF CLASSIFICATION SOCIETY					
			ISO	LRS	BV	DNV-GL	ABS	RINA
RACKING FORCE 	Door and front wall		150	150	150	150	150	150
	Side walls		75	150	100	150	125	100
	Side walls of open containers			75	75	75	75	75
VERTICAL TENSION FORCE 	Top	20'	118	250	250	250	250	250
		40'	150					
	Bottom	20'	110	250	250	250	250	250
		40'	140					
VERTICAL COMPRESSION FORCE 	Corner post		942	848	848	848	848	848
	Bottom corner	20'	1048	954	ns	ns	954	ns
		40'	1077					
HORIZONTAL TENSION FORCE 	Top	20'	150	340	200	200	250	200
		40'				250		
	Bottom	20'	150	500	300	200	350	300
		40'				250		
HORIZONTAL COMPRESSION FORCE 	Top	20'	100	340	200	250	250	200
		40'						
	Bottom	20'	150	500	300	400	350	300
		40'						

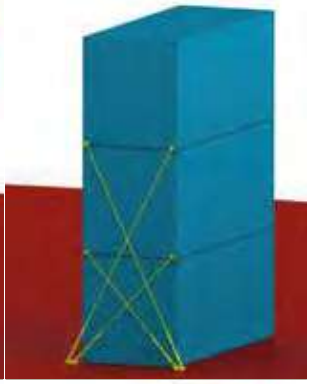
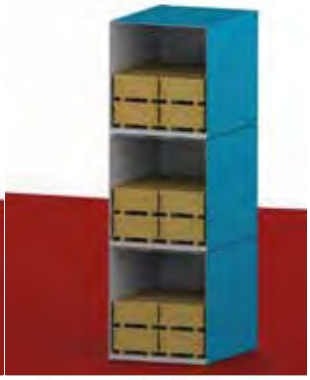
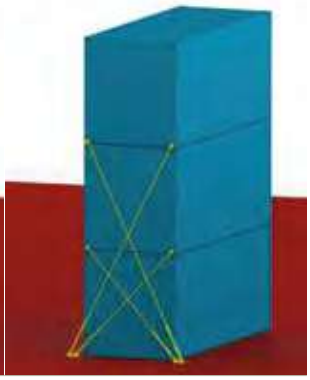
The allowable forces acting between two containers (for instance in buttresses) are to be taken as the appropriate sum of top and bottom forces.

LASHING FORCES



* max. Horizontal forces 225 kN acc. to LRS

When containers are stacked and secured on board, some of the forces given on the previous page may become too high due to the movement of the ship and external loads such as wind. An overview on the possible overloading and how to prevent them is given below.

LOAD	PROBLEM	SOLUTION
RACKING LOAD Transversal (rolling, wind) and longitudinal (pitching) forces parallel to deck tend to deform the container end and side frames. Excess racking forces can be reduced by stiffening the container frames with diagonal lashing rods.		
LIFTING LOAD Tranversal (rolling, wind) and longitudinal (pitching) forces parallel to deck, together with vertical forces tend to tip-over or lift the container or container stack, creating uplift force at some of the bottom corners. Excess lifting forces can be reduced by diagonal or vertical lashing rods in addition to twistlocks or stackers.		
COMPRESSION LOAD Transversal (rolling, wind) and longitudinal (pitching) forces parallel to deck, together with vertical forces tend to press down the container or container stack, creating compression force in the vertical corner posts. Excess compression forces can only be reduced by reducing the container weights or lowering the c.o.g. Adding extra internal lashing rods only increases the compression load.		
LASHING LOAD The reaction forces of the lashing rods are acting on the container castings. Excess lashing forces can be reduced by adding more lashing rods or changing the weight distribution.		

III. SIZES AND DISTANCES

Dimensions of various container types can be found in the table below.

Standardised longitudinal centre-to-centre distance between the holes of the end sockets of two adjacent 20' containers is 279mm in order to fit into one 40' module. (The same is valid for two 10' containers in a 20' module)

Transversal centre-to-centre distance between the side sockets of two adjacent containers is not fully standardised. Because – for practical reasons – a clearance of minimum 20 to 35mm is required between containers, transversal centre-to-centre distance between the holes of two 8' wide containers is standardised at 203mm. However, more and more pallet wide EURO-containers of 2500mm width are transported: transversal centre-to-centre distance between two 2500mm wide containers is standardised at 258mm. Other transversal centre-to-centre distances encountered are: 216mm, 265mm or 365mm (for two adjacent 2600mm wide containers).

In ships with cell guides, the cell guides are in most cases designed for 8' wide containers; so no 2500mm wide containers can be carried in the cell guide system. The lay-out of a cell guide system can be based on 2500mm wide containers: in the case of 8' wide containers being carried in such a system, compensating pieces have to be provided in order to limit the clearance of these 8' wide containers in the 2500mm cell guide system.

Cell guides are to be constructed with maximum 25mm clearance transversally and 38mm longitudinally (therefore the distance between the guides = container width + 25mm, container length + 38mm).

■ SIZES AND DISTANCES FOR VARIOUS CONTAINER TYPES

CONTAINER SIZE/TYPE	CONTAINER SIZES (mm)			CENTRE-TO-CENTRE (mm)		MAX. WEIGHT (t)	REMARKS
	LENGTH	WIDTH	HEIGHT	LENGTH	WIDTH[1]		
10' x 8' x 8' **10' x 8' x 8'6"**	2991	2438	2438 2591	2787	2259	10,16	ISO 668
20' x 8' x 8' **20' x 8' x 8'6"** **20' x 8' x 9'** **20' x 8' x 9'6"**	6058	2438	2438 2591 2743 2896	5853[2]	2259	24,0	ISO 668
20' x 2500 x 8'6" **20' x 2500 x 9'6"**	6058	2500	2591 2896	5853	2259	24,0	'EURO'
24' x 8' x 8' **24' x 8' x 8'6"**	7315	2438	2438 2591	7108		24,95	'MATSON'
24,5' x 8'6"5/32 x 8'6" **24,5' x 8'6"5/32 x 9'6"**	7430	2595	2591 2896	5838/7225[3]	2259		ISO
30' x 8' x 8' **30' x 8' x 8'6"**	9125	2438	2438 2591	8918	2259	25,4	ISO 668
35' x 2430 x 2590	10659	2438	2603		2134	27,4	'SEA LAND'
40' x 8' x 8' **40' x 8' x 8'6"** **40' x 8' x 9'** **40' x 8' x 9'6"**	12192	2438	2438 2591 2743 2896	11985	2259	30,48	ISO 668
40' x 2500 x 8'6" **40' x 2500 x 9'** **40' x 2500 x 9'6"**	12192	2500	2591 2743 2896	11985	2259	30,48	'EURO'
43' x 8' x 8'6"	13107	2438	2591	12900	2259	32,5	'Reefer'
45' x 8' x 9' **45' x 8' x 9'6"**	13716	2438	2743 2896	11985/ 13509	2259	30,48	US standard
48' x 8'6" x 9'6,5"	14630	2600	2900	11985/14423	2259	30,48	US standard
49' x 8'6"5/32 x 8'6" **49' x 8'6"5/32 x 9'6"**	14953	2595	2591 2896	11985/14728	2259	30,48	ISO
53' x 8'6" x 9'6,5"	16154	2600	2900	11985/16147	2259	30,48	US standard

■ TOLERANCES

Width: +0, -5mm for all containers
Height: +0, -5mm for all containers
Length: +0, -6mm for 10' - 24,5' containers
+0, -10mm for 30' - 53' containers

1 Transverse offset (distance from centre point to centre point of ISO holes) of all containers is 2259mm standard, except for 'SEALAND' containers.
2 Two 20' containers behind each other fit the offsets of one 40' container with a spacing of 76mm between the two containers (or 279mm c/c spacing).
3 Two 24,5' containers behind each other fit the offsets of one 49' container with a spacing of 51mm between the two containers (or 279mm c/c spacing).

Container Stowage Systems

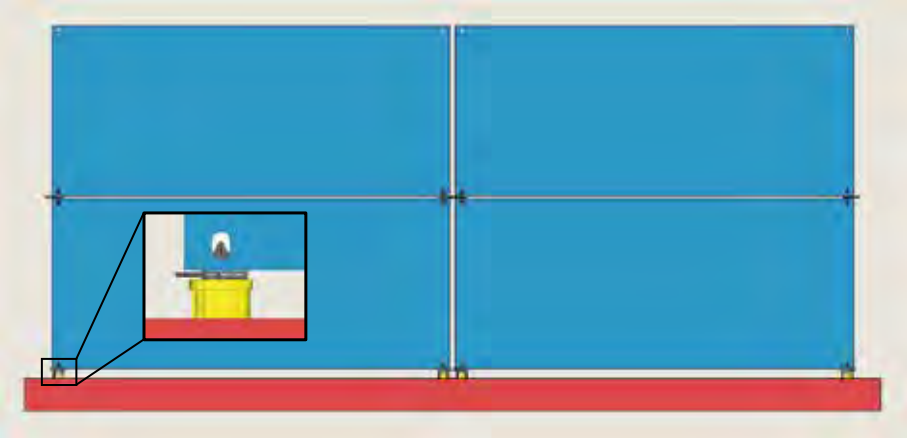
HATCH COVER ARRANGEMENTS

Hatch covers equipped for containers can be designed to stow containers in point load mode or line load mode.

POINT LOAD MODE

■ DEFINITION

The container is resting on its 4 bottom corner castings on the container fittings. The other parts of the container don't make contact with the hatch covers.



■ INSTALLATION OF FIXED FITTINGS ON HATCH COVERS

The foundations can be installed:
- Flush with the surrounding structure, e.g. a flush ISO foundation FF-81 (page 23)
- Raised above the surrounding structure, e.g. a raised ISO foundation FR-71 (page 27)

■ LOOSE LASHING GEAR

Standard twistlocks or bottom twistlocks are to be used.

T-1L



B-45L



B-55AL



■ PRINCIPLE

All forces of the container stack are transferred to the foundations through the 4 corner castings of the bottom container.

■ REMARKS

This is the most common design of hatch covers for container carrying vessels. In general the hatch covers have a higher stack load but they are also heavier than their line load counterparts.

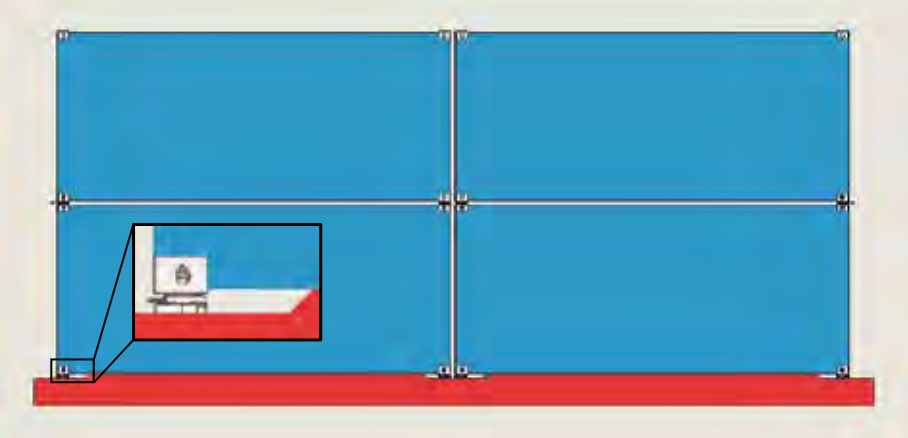
■ RESTRICTIONS

As the container is designed for point load mode, the standard limitations of forces acting on the containers are valid together with the allowable stack weight of the hatch cover.

LINE LOAD MODE

DEFINITION

The container is resting on its 2 longitudinal bottom girders. The 4 corner castings are not in contact with the structure below.



INSTALLATION OF FIXED FITTINGS ON HATCH COVERS

Sliding foundations are installed in recesses of the hatch covers. The depth of these recesses is 80mm* (although on older vessels this can be 72mm) to prevent corner castings being supported by the hatch cover structure below.

PRINCIPLE

As the container is resting on its bottom girders and the corner casting are "hanging" above the structure, the compressive force of the stack is transferred through these girders into the hatch covers. The shear and tension forces are transferred through the corner castings and the bottom twistlocks, which are placed in the recess.

LOOSE LASHING GEAR

Special bottom twistlocks for line load are to be used. These have a longer cone to overcome the additional height of the recess.

B-45LL



B-55LL



RESTRICTIONS

Due to the fact that forces from containers on higher levels are transferred into the unsupported cornerposts of the bottom containers, the weight on top of the bottom container and the number of tiers are limited by class regulations.

REMARKS

For a line load configuration the tolerances of the hatch cover, the type of twistlock and the condition of the container are important to attain a correct stowage and securing. A correct securing is done when:

- The corner casting of the container is not resting on the twistlock body
- The head of the twistlock is completely inserted in the ISO-hole of the corner casting
- The corner casting is not resting on the head of the twistlock
- The handle of the twistlock can easily be shifted into a locked position

When correct securing as described above is not possible, the following cases should be checked.

- Figure 1: The recess is not deep enough. Line load twistlocks are designed for recesses of 72-80mm
- Figure 2: A standard twistlock is used instead of a line load twistlock
- Figure 3: The recess is not deep enough and a standard twistlock is used
- Figure 4: Deformation or deflection of the hatch cover increases the actual depth of the recess. The line load twistlock will not lock as it appears to be too low.

PROTRUSION OF CORNER CASTINGS

FIGURE 1

Top of cone is hitting the inner body of the corner casting, top of hatch cover is to low for bottom twistlock with lengthened cone shaft.

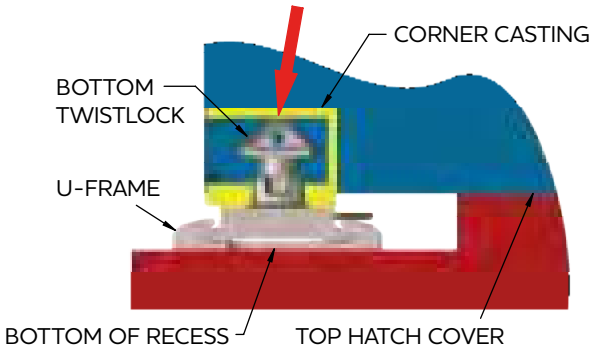


FIGURE 2

Cone of twistlock is not fully inserted into corner casting. Top of hatch cover is to high for standard bottom twistlock.

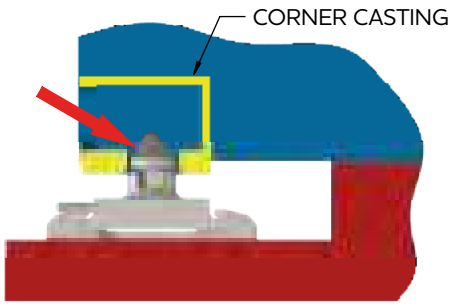


FIGURE 3

Bottom of corner casting is resting on body of bottom twistlock, top of hatch cover is to low.

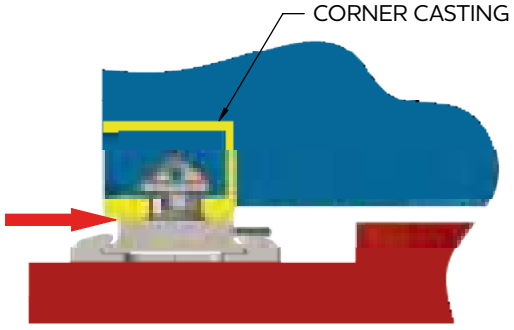
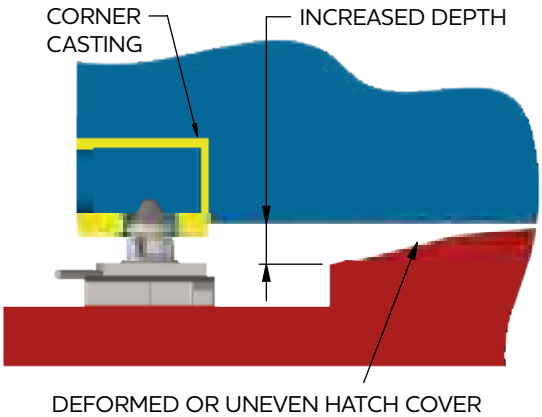


FIGURE 4

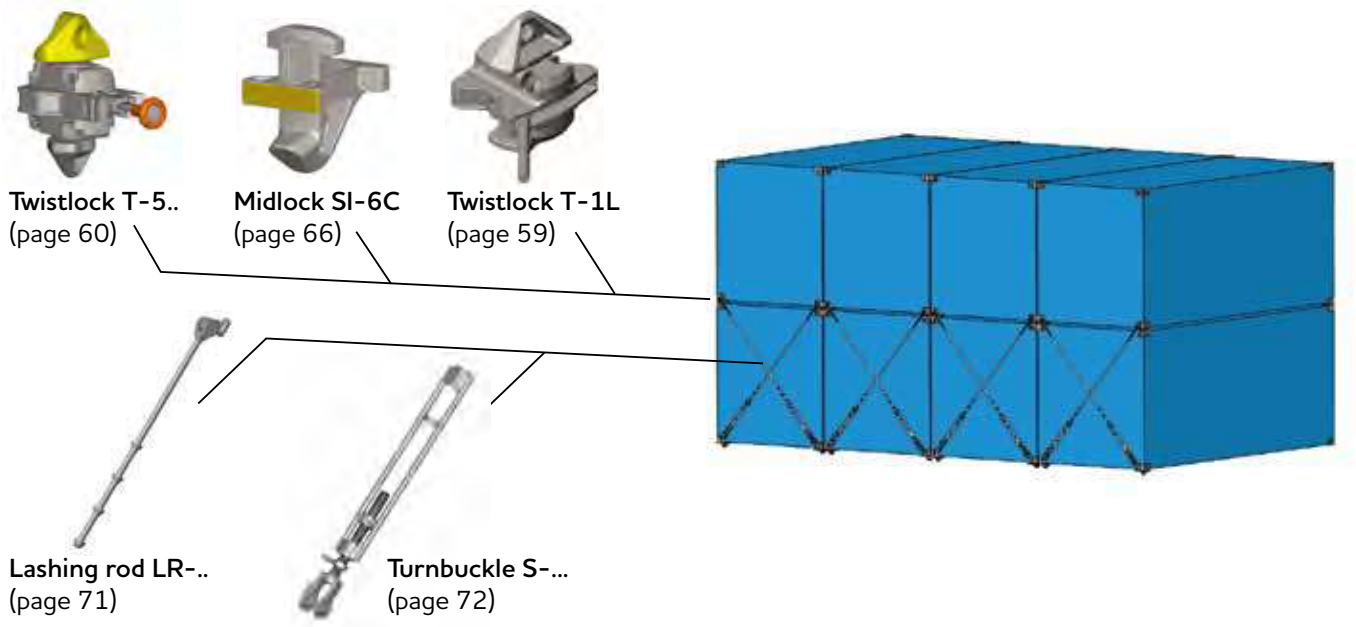
Top of hatch cover is deformed or uneven, twistlock is unable to lock.



NOTE: For clarity, in some of the above examples the U-frame, twistlock and ISO hole of the corner casting have been turned 90° from normal alignment.

Securing Arrangements

SECURING OF INDEPENDENT STACKS WITH TWISTLOCKS AND LASHING RODS



DESCRIPTION

This is the most common securing arrangement used nowadays. Containers are stowed in a stack and only connected with the containers above and below them. The containers are connected by means of twistlocks and midlocks which are inserted in the corner castings of the containers. All forces are transmitted through the twistlocks into the cornercastings and corner posts of the containers to the bottom structure.

As there's no connection with the containers of adjacent stacks or to side structures the lower containers are always subject to the highest forces. In case the allowable racking or uplift forces are exceeded, lashing rods with turnbuckles can be installed at both container ends. Installing lashing rods will increase the compression force in the corner post which can be limiting for high and heavy stacks of containers. In this cases external lashings can be a solution. The possible causes of failure and means of prevention can be found on page 11.

When using lashing rods the advised distance in between the containers is at least 860mm in accordance with the IMO MSC.1/Circ.1352.

CHARACTERISTICS

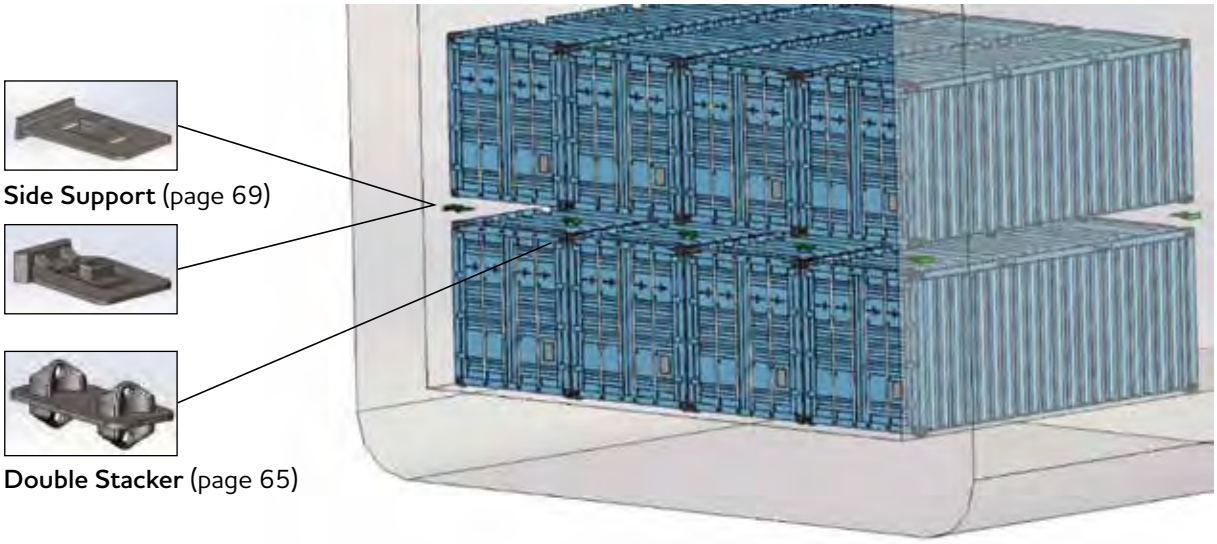
Advantages

+ Can be in compliance with requirements of OSHA and specialized container terminals
+ Flexible stowage possible
  > Combinations of containers with different heights is possible
  > One container can easily be loaded/unloaded without necessarily transferring containers in adjacent stacks.
+ Allows for fast loading and unloading operations

Disadvantages

– Stack weight is limited according to the strength of the bottom containers

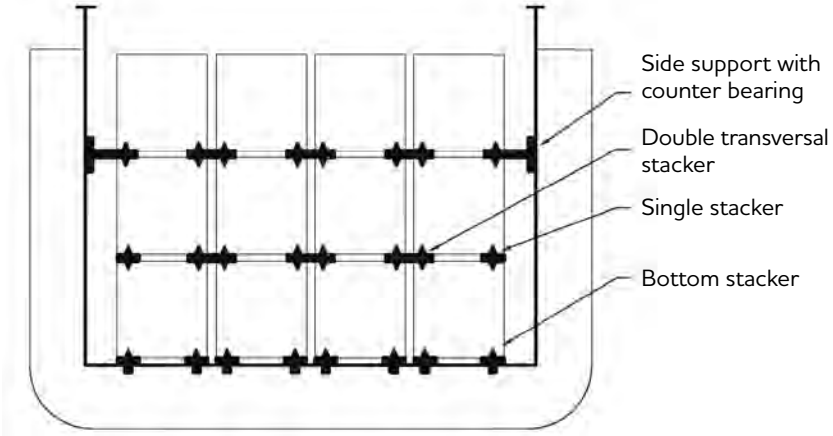
SECURING OF CONTAINERS STOWED IN BLOCK WITH SIDE SUPPORTS AND STACKERS



Side Support (page 69)

Double Stacker (page 65)

■ DESCRIPTION



This securing configuration can be used in the hold of ships with bulkheads reinforced for this purpose. All containers are transversally connected by double stackers, forming one solid block of containers. The forces acting on this block are transferred to the ships bulkheads by means of side supports and to the bottom using bottom stackers. Side supports can be of the pressure type or the tension-pressure type. The first can only transfer pressure into the bulkhead the latter needs to be inserted into the bulkhead-fittings and can transfer tension and pressure forces. The upper containers can be connected by bridge fittings and supported by top supports.

The type, position and number of supports required needs to be determined by detailed calculation taking into account the weight of all containers.

■ CHARACTERISTICS

Advantages

+ High stack loads can be achieved

Disadvantages

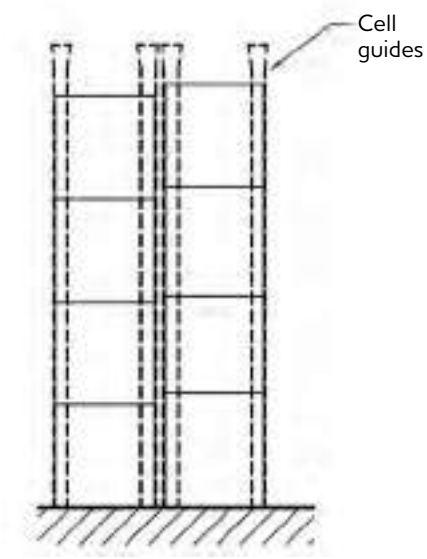
– Inflexible (un-)loading operations as it has to be done tier by tier and not stack by stack
– Slow and labor-intensive loading and unloading operations
– Mixture of containers with different heights only possible with additional height adapters
– Not in compliance with OSHA or requirements of specialized container terminals

SECURING OF INDEPENDENT STACKS IN CELL GUIDES WITH APPROPRIATE LENGTH

DESCRIPTION

Each stack of containers is well enclosed by 4 guiding elements or cell guides. These cell guides are rigidly connected with the ship structure and by consequence transfer the forces acting on the containers into the ship structure. Because every container is enclosed at its 4 corners by cell guides, no other securing materials between the containers are required. The maximum stack load of the containers is given by the gross weight of the containers or the specified stack weight by the cell-guide designer.





Cell guides are, in general, fixed structures which are designed for 1 size of containers. However, containers with a lower length can also be stowed. For example the stowage of 20ft containers in 40ft cell guides is a common practice. As only 1 end of the container is enclosed by the cell guides, additional securing measures are to be taken for this stowage configuration. On the tank top fixed stackers at the cell-end and bottom guidance at the free-end are placed to prevent the bottom containers from shifting. In between the container tiers single stackers are to be placed. Depending on the type of stackers and the ship's design, 2 or 4 stackers (SI-7D or SI-7F) need to be placed in between the layers for levelling the containers. The stack load of this stowage is limited by *class* rules.

CHARACTERISTICS

Advantages

+ In compliance with OSHA regulations and requirements of modern container terminals
+ High stack weights possible
+ Combinations of different container heights is no problem
+ No or limited manipulation of loose gear required

Disadvantages

– Cell guides are heavy steel structures and therefore reduce the deadweight of the ship
– Cell guides prevent the carriage of out of gauge containers and non-containerized cargo

Cargo Securing Manuals

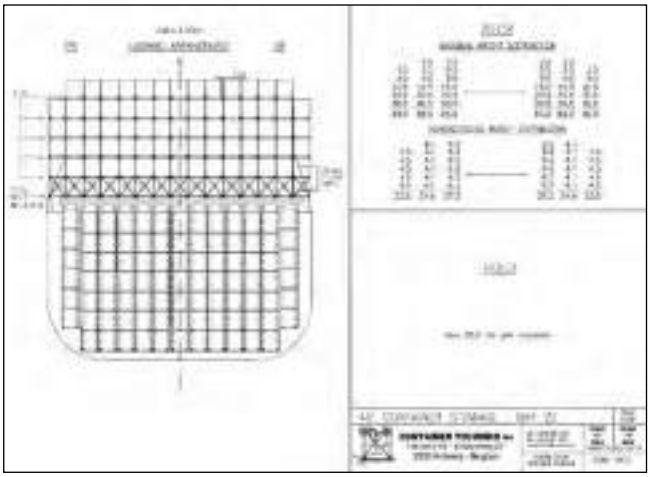
SOLAS Ch VI Carriage of Cargoes, Regulation 5 Stowage and Securing states that:

> *"All cargoes, other than solid and liquid bulk cargoes, cargo units and cargo transport units, shall be loaded, stowed and secured throughout the voyage in accordance with the Cargo Securing Manual".*

These manuals need to be approved by the flag state or by a classification society on behalf of the flag state in accordance with the *IMO Revised Guidelines on the Preparation of the Cargo Securing Manual and the Code of Safe Practice for Cargo Stowage and Securing.*

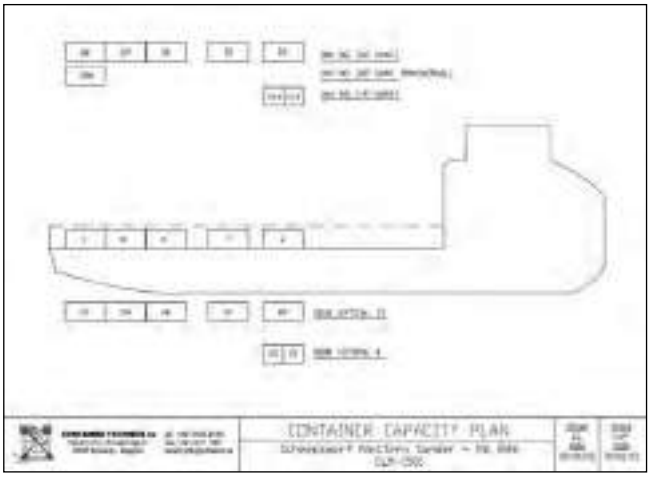
Due to our longtime experience we can provide Cargo Securing Manuals in accordance with all required regulations. The Cargo Securing Manual consists, inter alia, out of a list of all loose and fixed securing fittings, instructions on how to operate and maintain these fittings, general information on the stowage of cargoes, ship specific accelerations and example calculations, ...





For ships which are intended to carry containers, a Container Lashing Manual or Container Securing Manual is to be included in the Cargo Securing Manual. The Container Lashing Manual shows the allowable weight distribution of each container stack for 1 or more GM-values. It also gives guidance on the type and location of the container securing materials.

We always intend to deliver manuals which contain all information regarding types, maintenance and operation instructions of the securing items and in this way support the cargo securing operations of our customers in the best way. Each document is prepared in accordance with the regulations and specific requirements of the customer.





FIXED LASHING EQUIPMENT







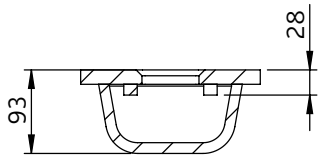


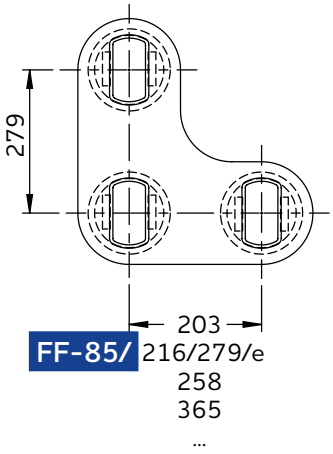
CONTAINER


Port of Baltimore, USA
Port of Baltimore, USA
EVERGREEN
EVERGREEN
EVERGREEN
EVERGREEN
EVERGREEN

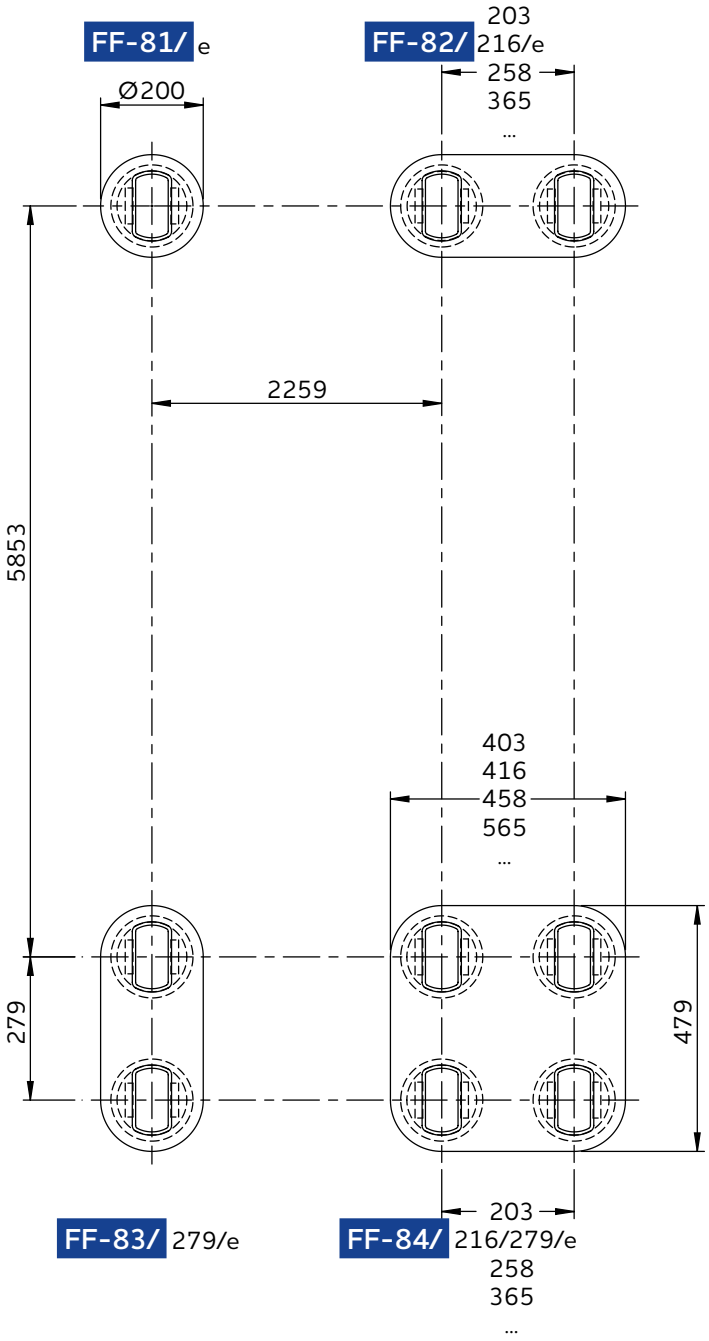
Flush ISO Foundations - With Collar







FF-85/ 216/279/e
258
365
...



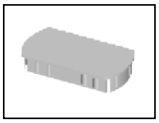
FF-83/ 279/e

FF-84/ 216/279/e
258
365
...

SPECIFICATIONS

(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval possible from any classification society
Edge preparation see page 8
Pressure tested for watertightness
For positioning tolerances see bottom page 12

PLUG FOR ISO-HOLE



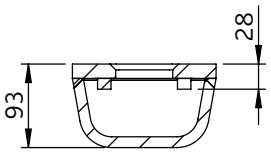
FF-70
plastic

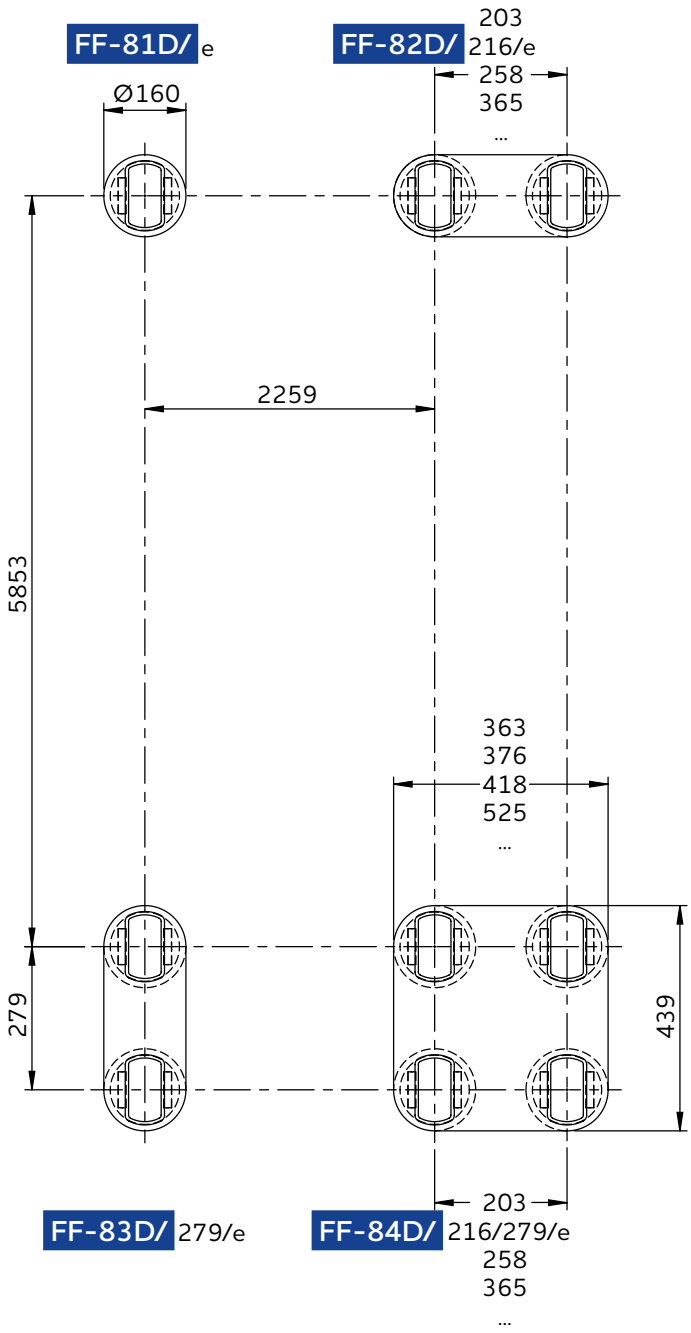


FF-90
rubber

Flush ISO Foundations - Without Collar



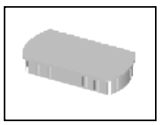




SPECIFICATIONS

(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval possible from any classification society
Edge preparation see page 8
Pressure tested for watertightness
For positioning tolerances see bottom page 12

PLUG FOR ISO-HOLE

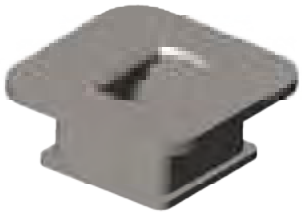


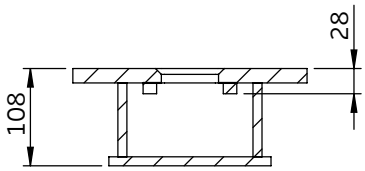
FF-70
plastic

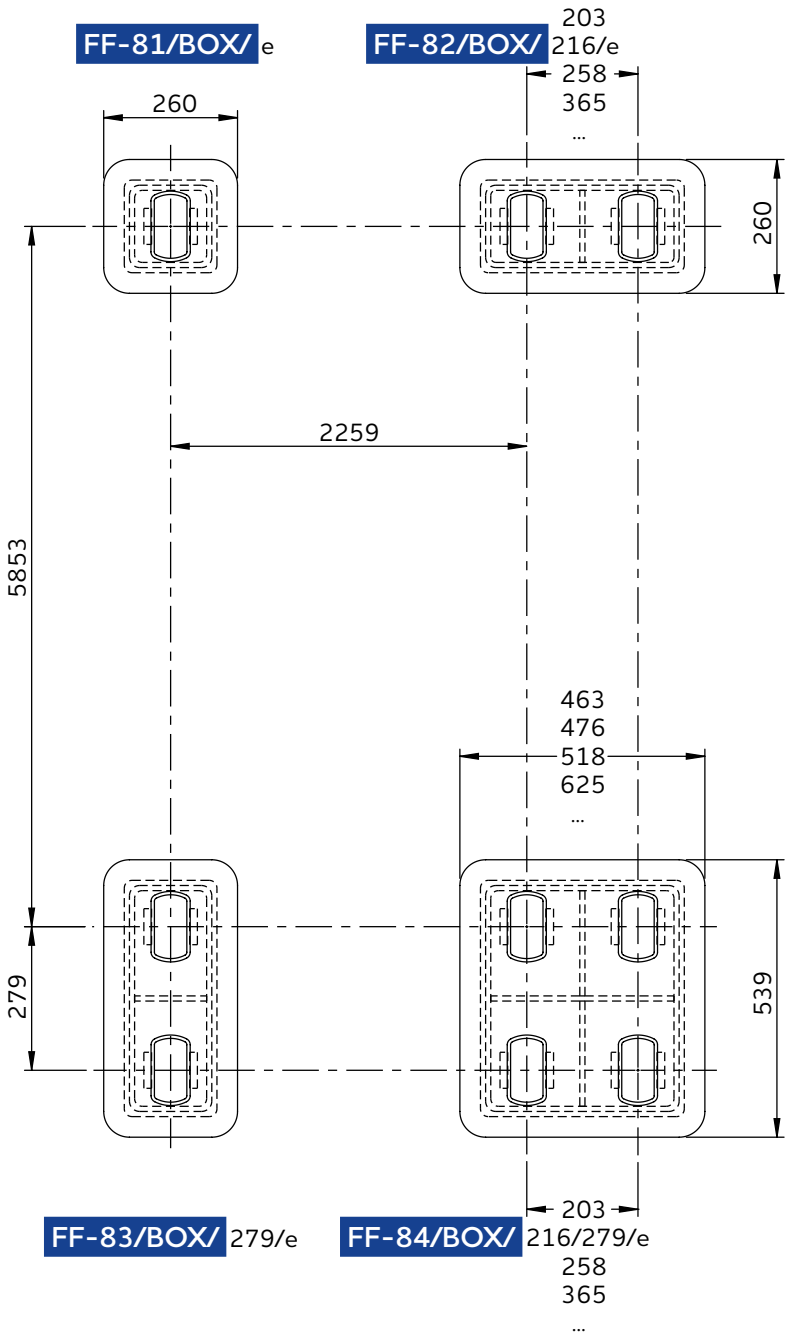


FF-90
rubber

Flush ISO Foundations - Box Shaped



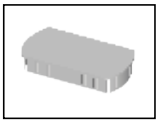




SPECIFICATIONS

(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval possible from any classification society
Edge preparation see page 8
Pressure tested for watertightness
For positioning tolerances see bottom page 12

PLUG FOR ISO-HOLE



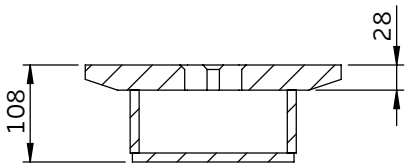
FF-70
plastic

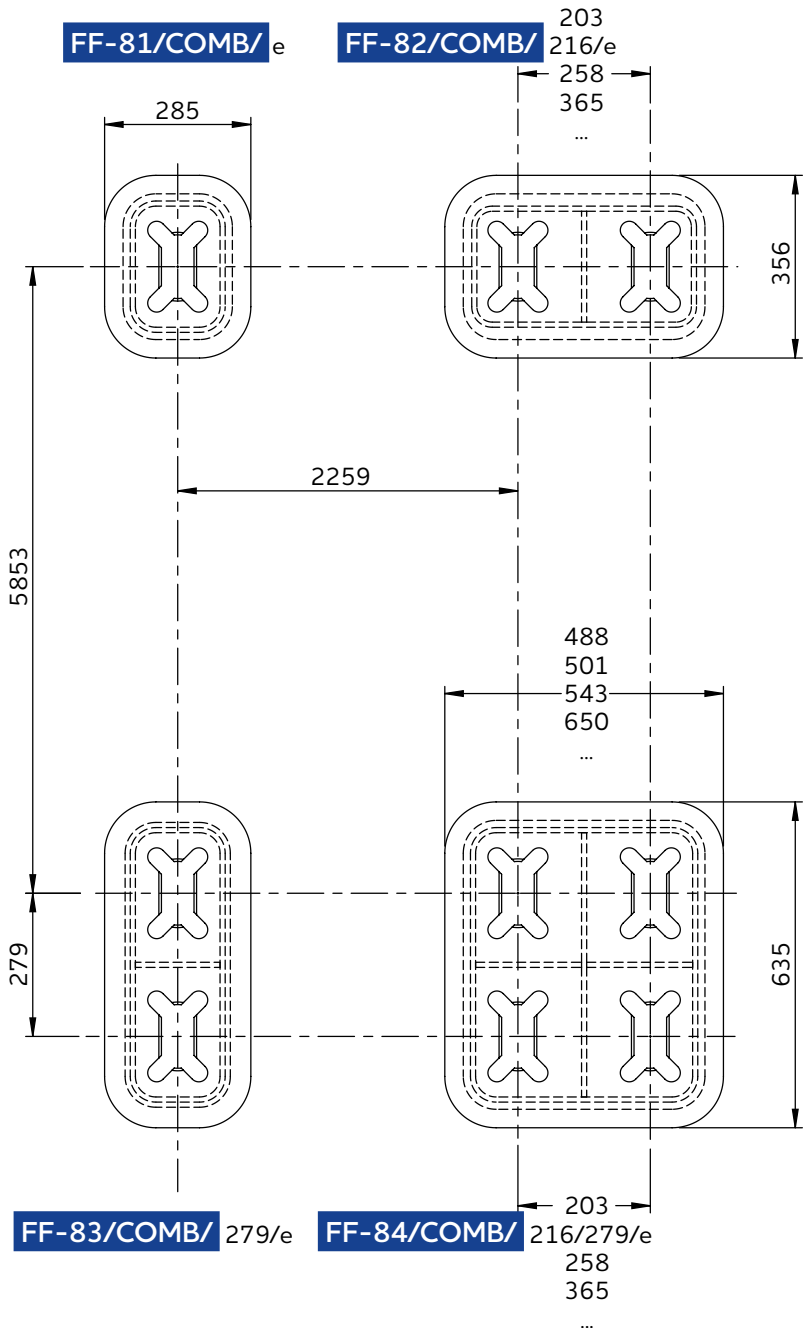


FF-90
rubber

Flush ISO Foundations - Combination





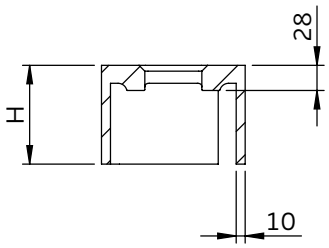


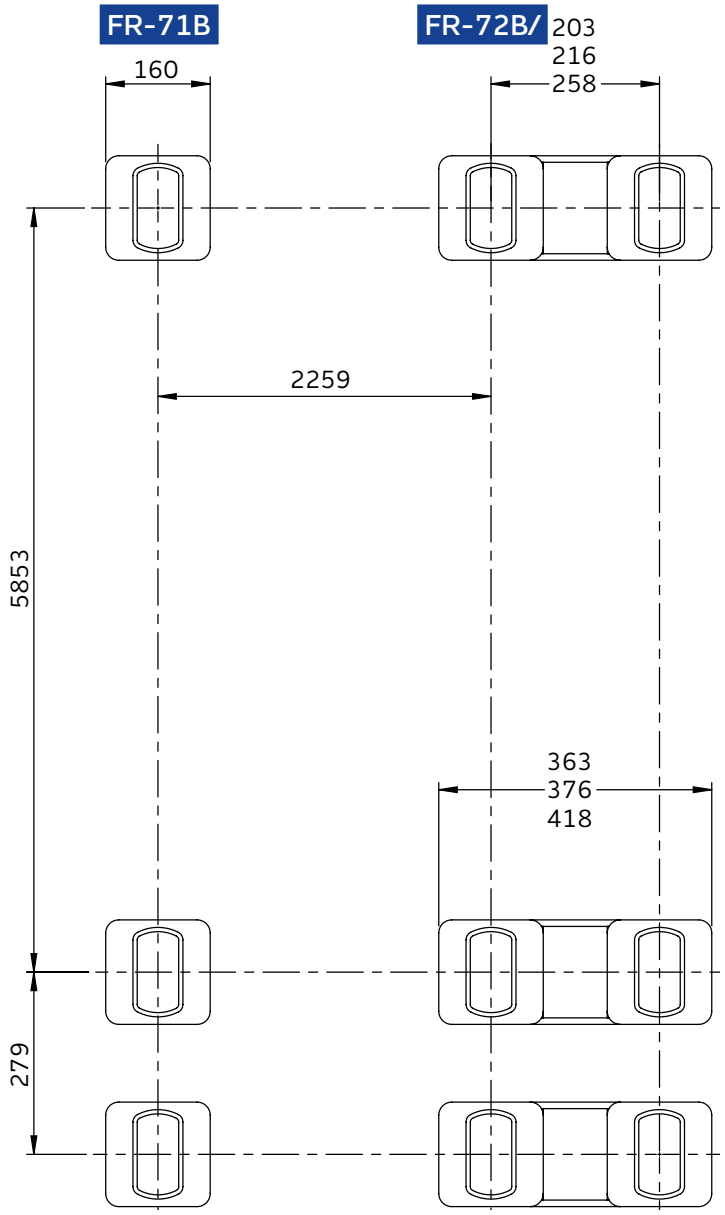
SPECIFICATIONS

(MSL) Max. securing load: tension 250kN, shear 210kN of ISO hole
(MSL) Max. securing load: tension 2x100kN of elephant foot sleeves
(MBL) Min. breaking load: tension 500kN, shear 420kN of ISO hole
(MBL) Min. breaking load: tension 2x200kN of elephant foot sleeves
Approval possible from any classification society
Edge preparation see page 8
Pressure tested for watertightness
To be used in combination with: twistlock & elephant foot
For positioning tolerances see bottom page 12

Raised ISO Foundations



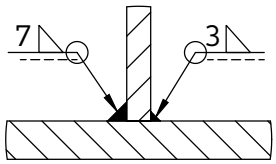




■ SPECIFICATIONS

(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval possible from any classification society
Standard H = 110mm
Maximum H = 160mm, minimum H = 65mm
For positioning tolerances see bottom page 12

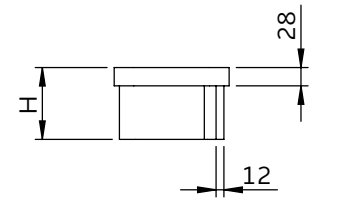
■ WELDING DETAIL



Raised ISO Foundations - Elongated

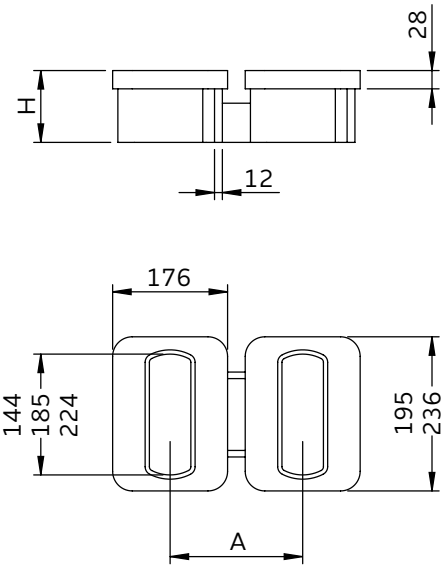
FR-71Q





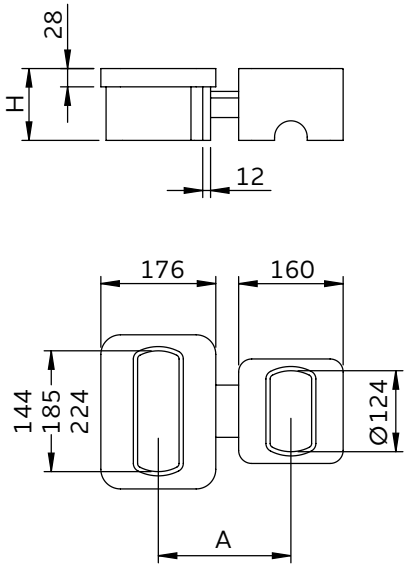
FR-72Q/A





FR-72DQ/A





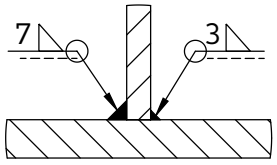
SLIDING RANGES

144mm ISO hole = sliding range of ±10mm
185mm ISO hole = sliding range of ±30mm
224mm ISO hole = sliding range of ±50mm

SPECIFICATIONS

(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval possible from any classification society
Standard H = 110mm
Maximum H = 160mm, minimum H = 65mm
A = center distance of ISO holes: 203, 216, 258mm

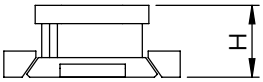
WELDING DETAIL

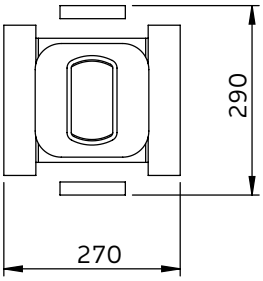


Sliding ISO Foundations - Longitudinal

FR-74Q

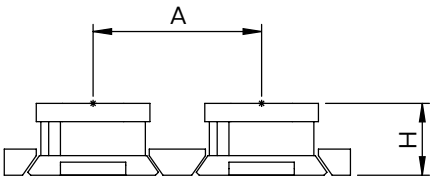


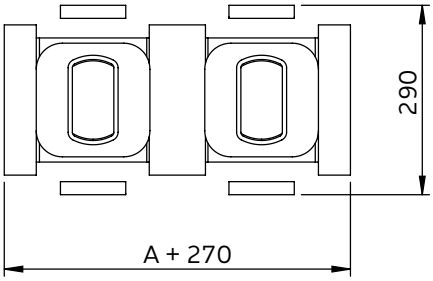




FR-75Q/A

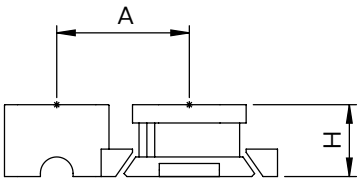


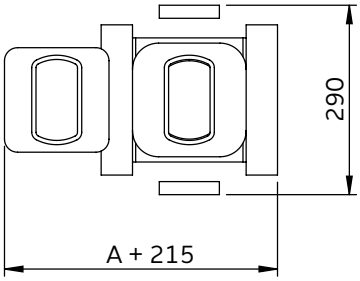




FR-75/A





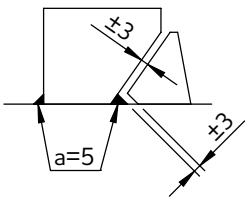


■ **SLIDING RANGES** ±30mm

■ SPECIFICATIONS

(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval possible from any classification society
Standard H = 110mm
Maximum H = 180mm, minimum H = 85mm
A = center distance of ISO holes: 203, 216, 258mm

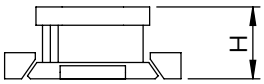
■ WELDING DETAIL

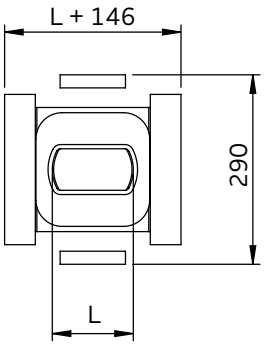


Sliding ISO Foundations - Transversal

FR-76Q

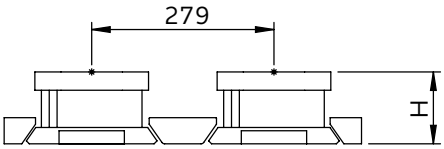


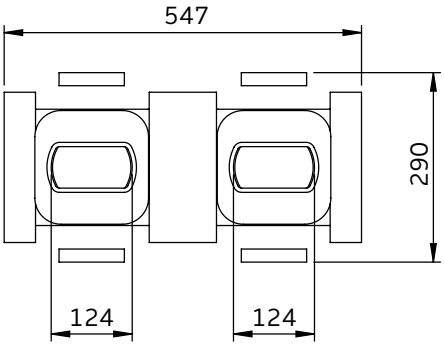




FR-77Q/279





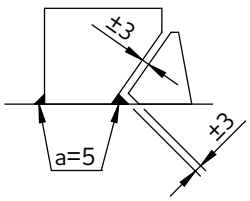


■ **SLIDING RANGES** ±30mm

■ **SPECIFICATIONS**

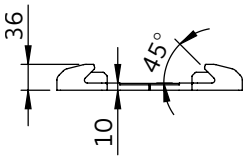
(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval possible from any classification society
Standard H = 110mm
Maximum H = 180mm, minimum H = 85mm
L = dimension of ISO hole: 124, 144, 185 & 224mm

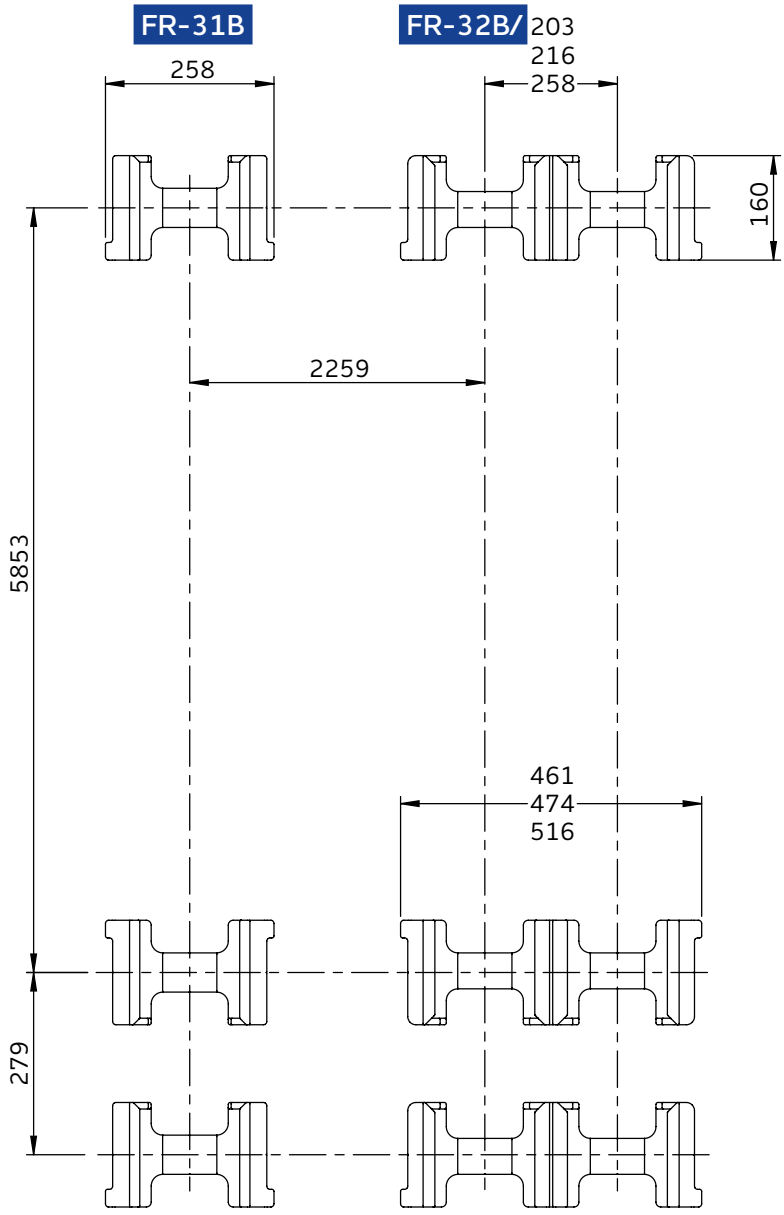
■ **WELDING DETAIL**



45° Dovetail Foundations - Standard



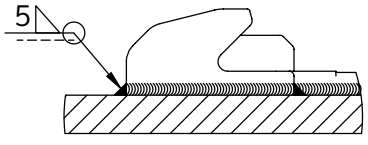




■ SPECIFICATIONS

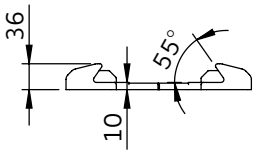
(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval possible from any classification society
Guiding angle 45°
To be used in combination with: B-45, B-45L, B-46 & B-46L

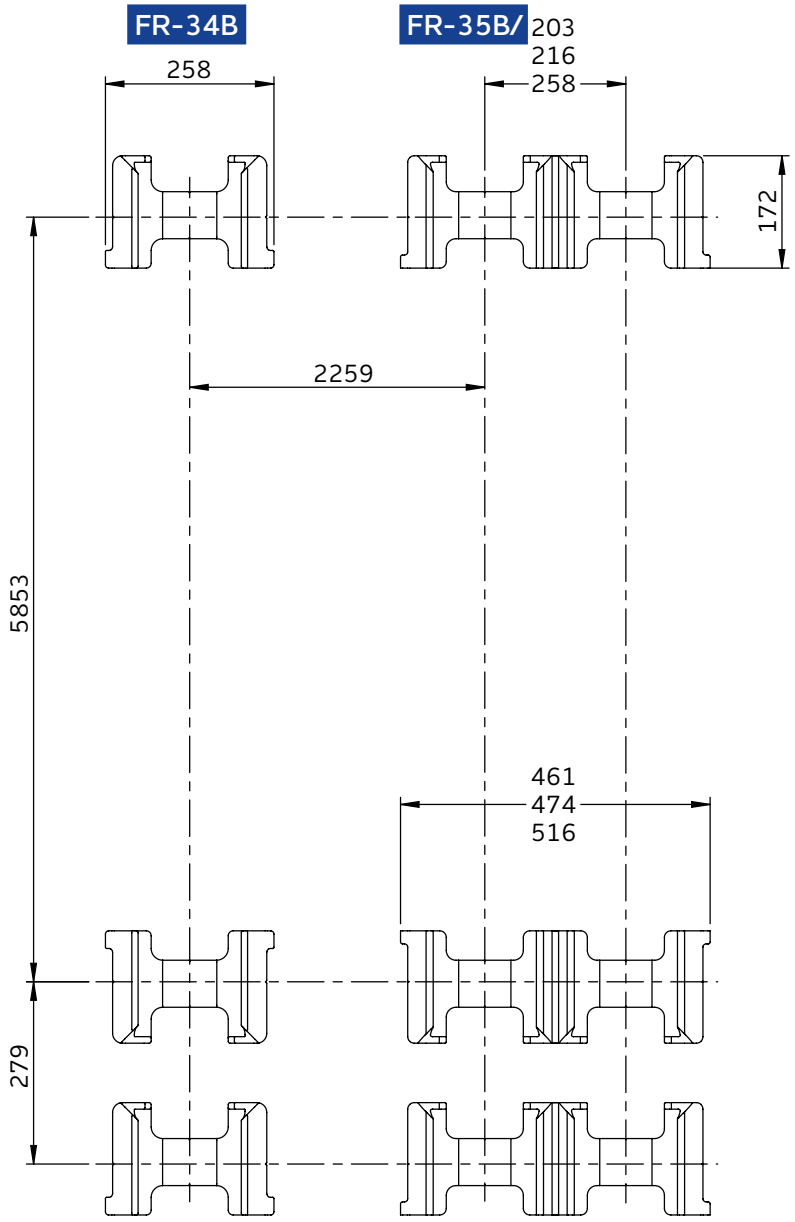
■ WELDING DETAIL



55° Dovetail Foundations - Standard



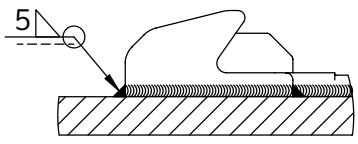




■ SPECIFICATIONS

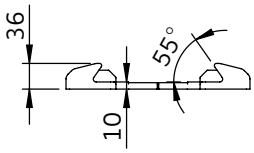
(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval possible from any classification society
Guiding angle 55°
To be used in combination with: B-55A, B-56 & B-57

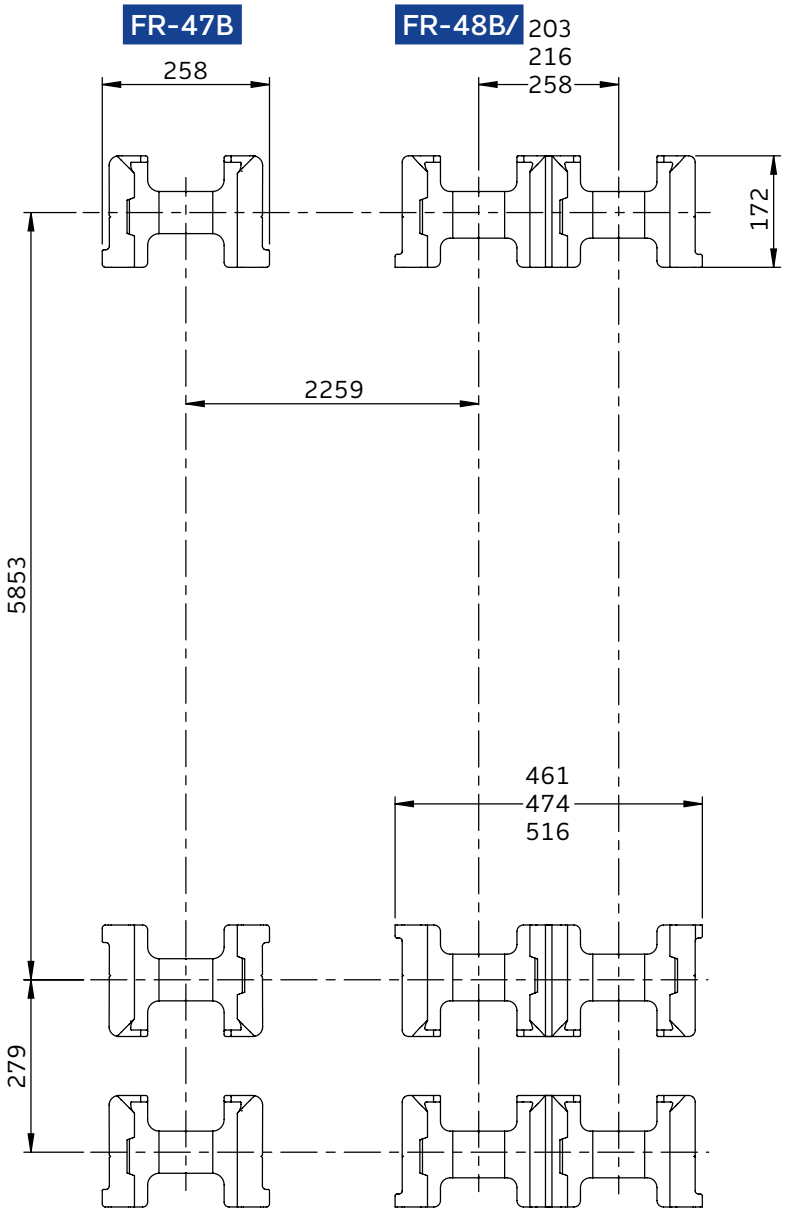
■ WELDING DETAIL



55° Dovetail Foundations - Standard



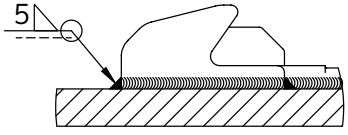




■ SPECIFICATIONS

(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval possible from any classification society
Guiding angle 55°
To be used in combination with: B-55A, B-56 & B-57

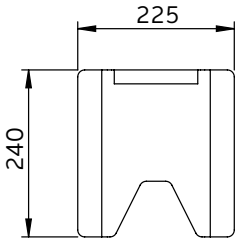
■ WELDING DETAIL

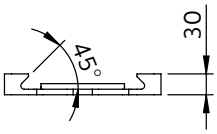


Dovetail Foundations - Elongated

FR-31Q





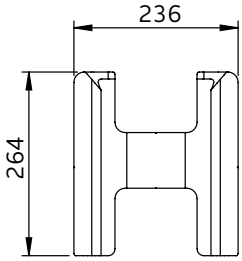


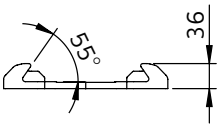
SPECIFICATIONS

(MSL) Max. securing load: tension 150kN, shear 210kN
(MBL) Min. breaking load: tension 300kN, shear 420kN
Approval possible from any classification society
Guiding angle 45°
To be used in combination with: B45 & B-46

FR-34BQ



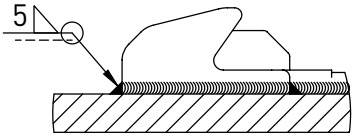




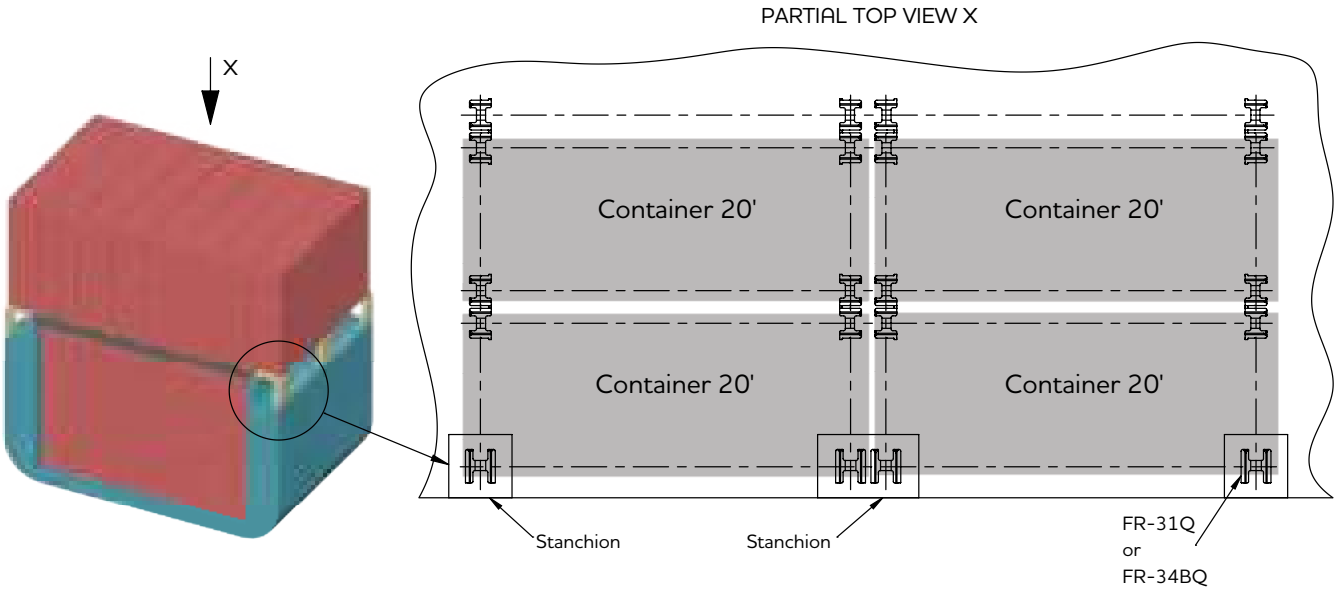
SPECIFICATIONS

(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. Breaking load: tension 500kN, shear 420kN
Approval possible from any classification society
Guiding angle 55°
To be used in combination with: B-55A, B-56 & B-57

WELDING DETAIL



TYPICAL ARRANGEMENT OF ELONGATED DOVETAIL FOUNDATIONS

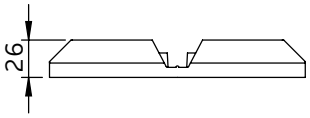


Breech Base Foundations

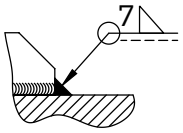
FR-22

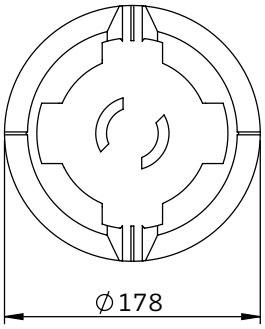
Raised breech base





■ WELDING DETAIL

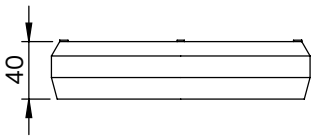




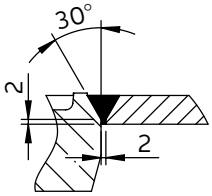
FF-31

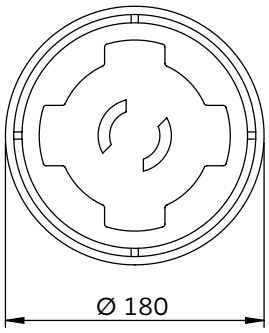
Flush breech base





■ WELDING DETAIL

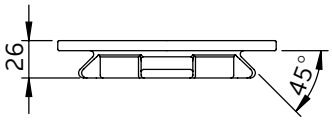


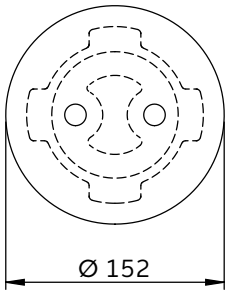


■ ACCESSORIES

FF-80

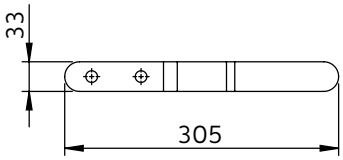
Breech base socket cover

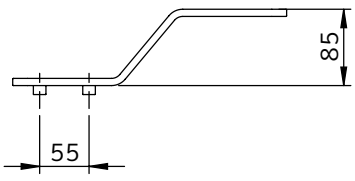




FF-80A

Wrench





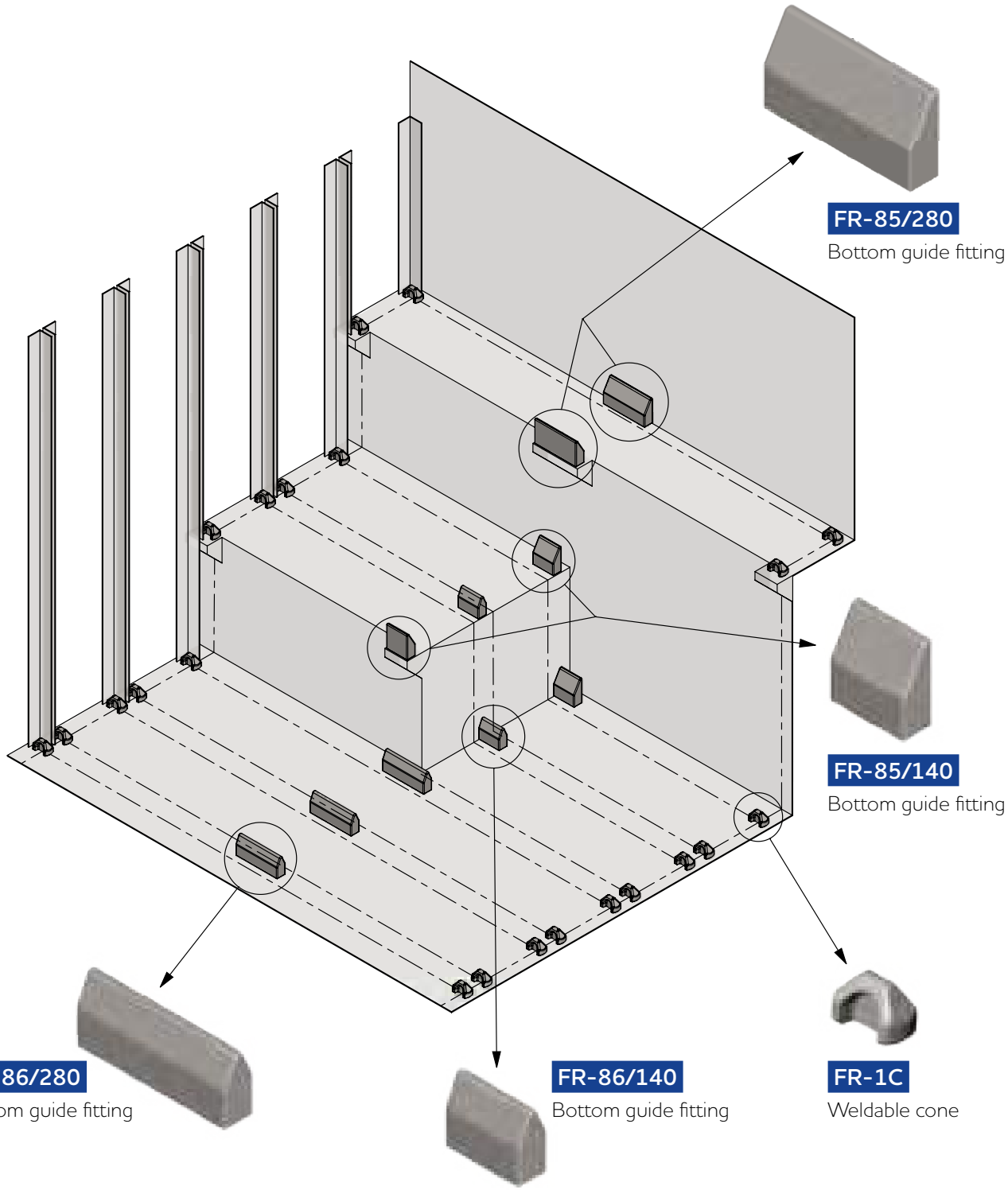
■ PRACTICE



■ SPECIFICATIONS

(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
To be used in combination with: B-22R, LE-12

Guide Fittings in Combination with Cell Guides



FR-85/280
Bottom guide fitting

FR-85/140
Bottom guide fitting

FR-86/280
Bottom guide fitting

FR-86/140
Bottom guide fitting

FR-1C
Weldable cone

■ SPECIFICATIONS

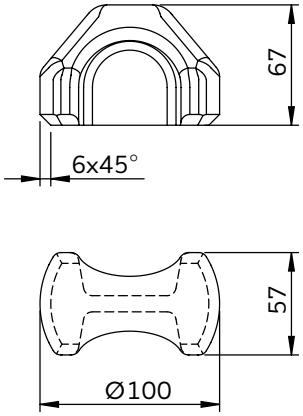
(MSL) Max. securing load: shear 210kN
(MBL) Min. breaking load: shear 420kN
Placed at free end of 20' containers, stowed in 40' cell guides

Welding Cones

FR-1C

Weldable cone

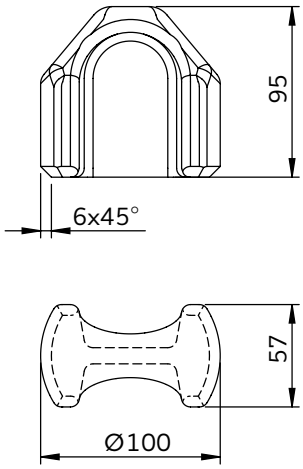




FR-1C/95

Weldable cone

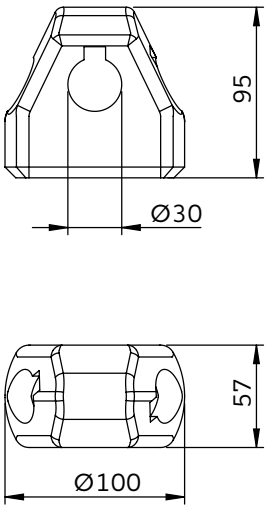




FR-3

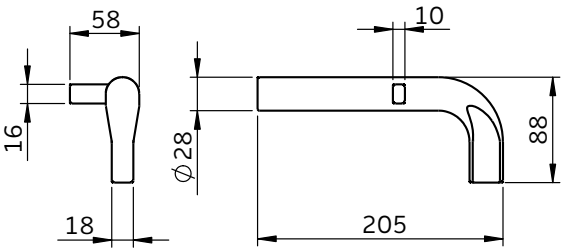
Weldable locking cone



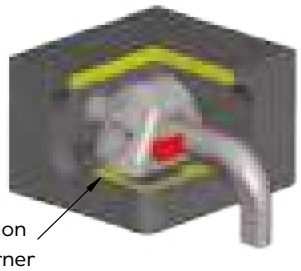


SB-1

Locking pin



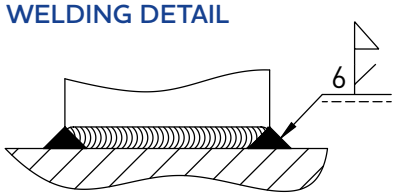
■ PRACTICE



■ SPECIFICATIONS

(MSL) Max. securing load: shear 210kN
(MSL) Max. securing load: tension for FR-3 with SB-1, 200kN
(MBL) Min. breaking load: shear 420kN
(MBL) Min. breaking load: tension for FR-3 with SB-1, 400kN

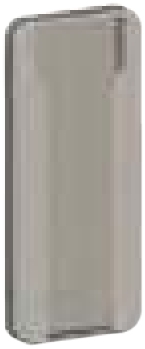
■ WELDING DETAIL

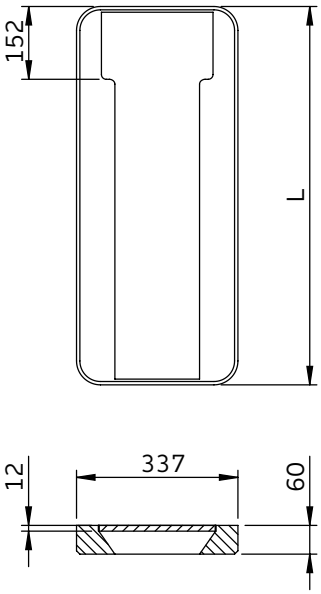


Counter Bearings

FF-55/L

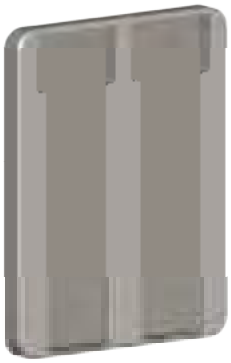
Single flush counter bearing

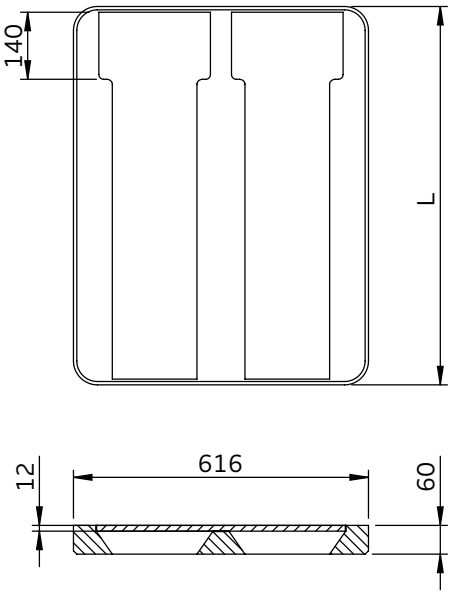




FF-56/L

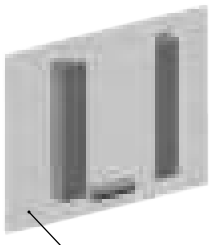
Double flush counter bearing

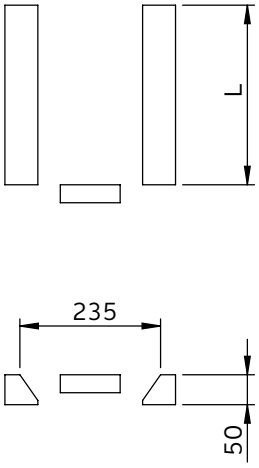




FR-61/L

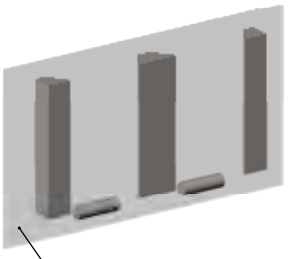
Single raised counter bearing

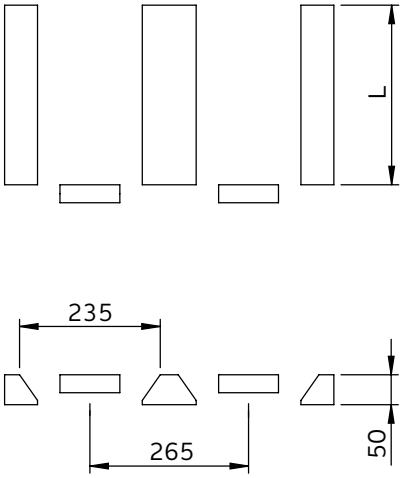




FR-62/L

Double raised counter bearing





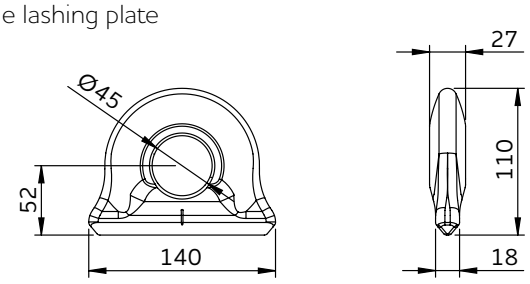
SPECIFICATIONS

(MSL) Max. securing load: tension 425kN
(MBL) Min. breaking load: tension 850kN
Other types on request
To be used in combination with: IT-14/A, TT-14/A

Lashing Plates

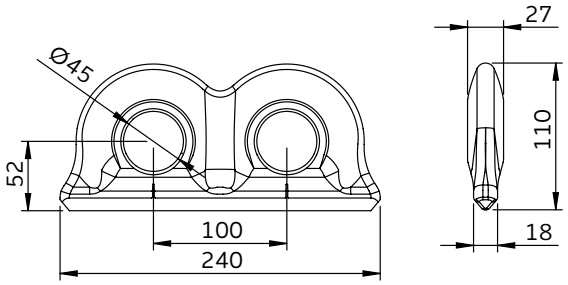
LE-31

Single lashing plate



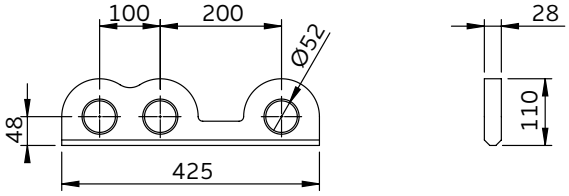
LE-32

Lashing plate with 2 eyes



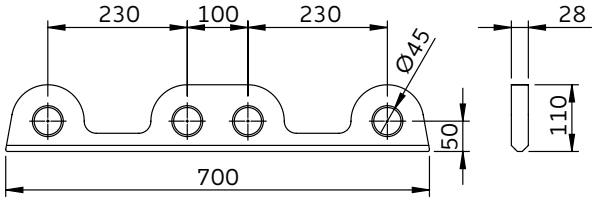
LE-33

Lashing plate with 3 eyes



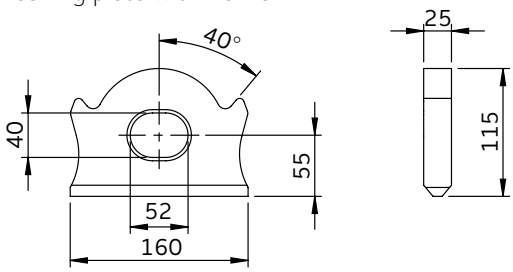
LE-34

Lashing plate with 4 eyes



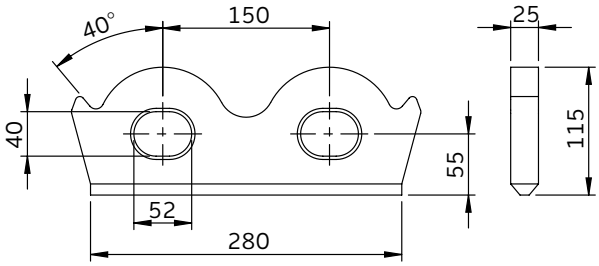
LE-31A

Single lashing plate with horns



LE-32A

Lashing plate with 2 eyes and horns



Because of the oval eye and special horns on both sides of the lashing plate the turnbuckle can either be:

- placed diagonally, or



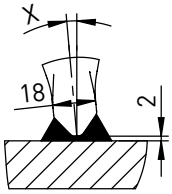
- laid down horizontally



■ SPECIFICATIONS

(MSL) Max. Securing load: tension 250kN
(MBL) Min. Breaking load: tension 500kN
Other types on request

■ WELDING DETAIL



Angle X as per alignment of lashing rod

GENERAL CARGO



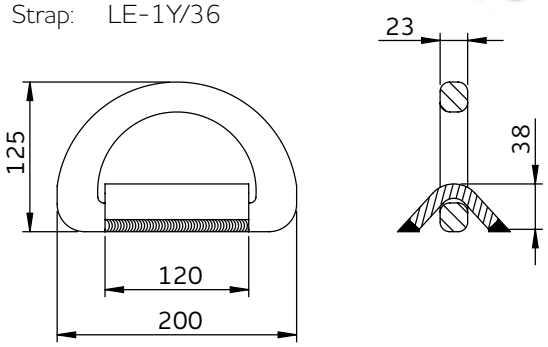
Cargo Lashing Eyes

LE-1/36

D-ring with strap

D-ring: LE-1X/36
Strap: LE-1Y/36





SPECIFICATIONS

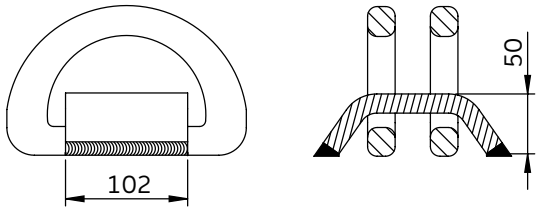
(MSL) Max. securing load: tension 180kN
(MBL) Min. breaking load: tension 360kN

LE-2/36

Double D-ring with strap

D-ring: LE-1X/36 (x2)
Strap: LE-2Y/36





SPECIFICATIONS

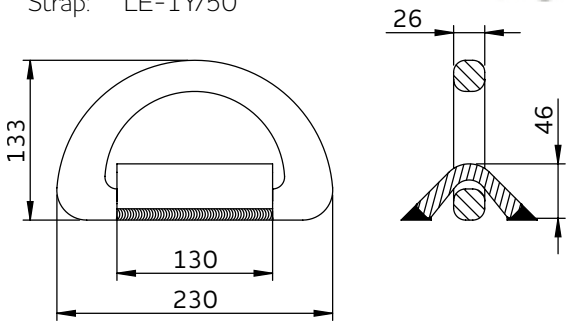
(MSL) Max. securing load per ring: tension 180kN
(MBL) Min. breaking load per ring: tension 360kN

LE-1/50

D-ring with strap

D-ring: LE-1X/50
Strap: LE-1Y/50





SPECIFICATIONS

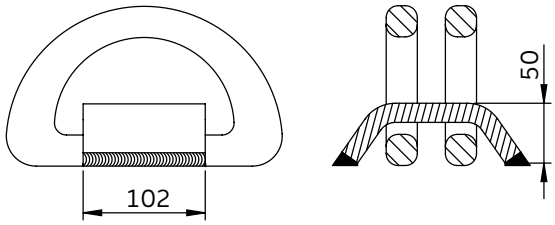
(MSL) Max. securing load: tension 245kN
(MBL) Min. breaking load: tension 490kN

LE-2/50

Double D-ring with strap

D-ring: LE-1X/50 (x2)
Strap: LE-2Y/50





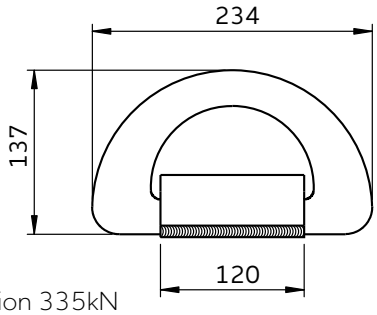
SPECIFICATIONS

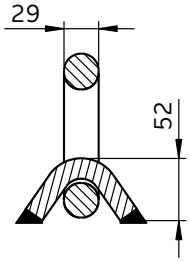
(MSL) Max. securing load per ring: tension 245kN
(MBL) Min. breaking load per ring: tension 490kN

LE-1/67

D-ring with strap

D-ring: LE-1X/67
Strap: LE-1Y/67







SPECIFICATIONS

(MSL) Max. securing load: tension 335kN
(MBL) Min. breaking load: tension 670kN

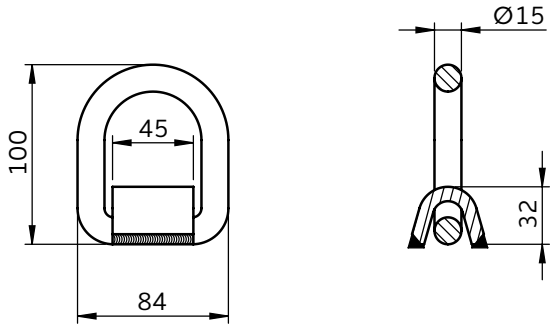
Cargo Lashing Eyes

LE-1/15

D-ring with strap

D-ring: LE-1X/15
Strap: LE-1Y/15





SPECIFICATIONS

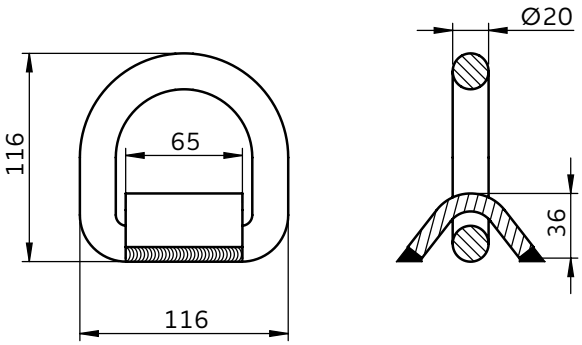
(MSL) Max. securing load: 75kN
(MBL) Min. breaking load: 150kN

LE-1/20

D-ring with strap

D-ring: LE-1X/20
Strap: LE-1Y/20





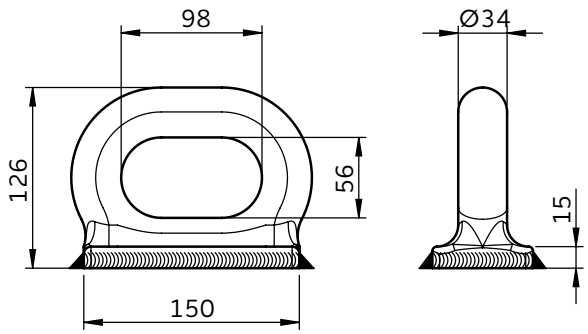
SPECIFICATIONS

(MSL) Max. securing load: 100kN
(MBL) Min. breaking load: 200kN

LE-7

Pad eye





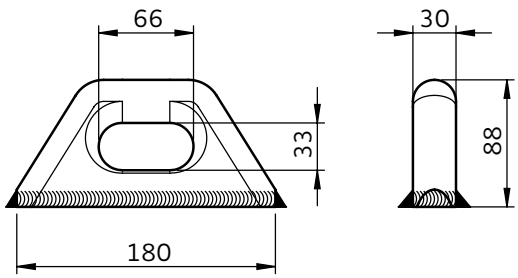
SPECIFICATIONS

(MSL) Max. securing load: tension 98kN (lashing applications)
(MBL) Min. breaking load: tension 196kN
Safe working load: 49kN (lifting applications)

LE-7C/3

Oval eye plate





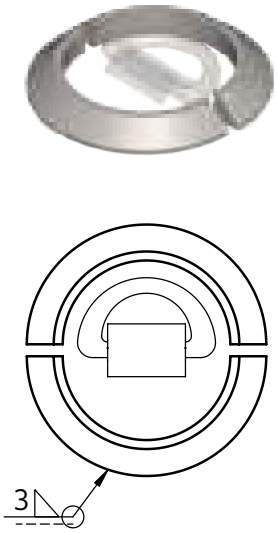
SPECIFICATIONS

(MSL) Max. securing load: 30kN
(MBL) Min. breaking load: 60kN

Cargo Lashing Points

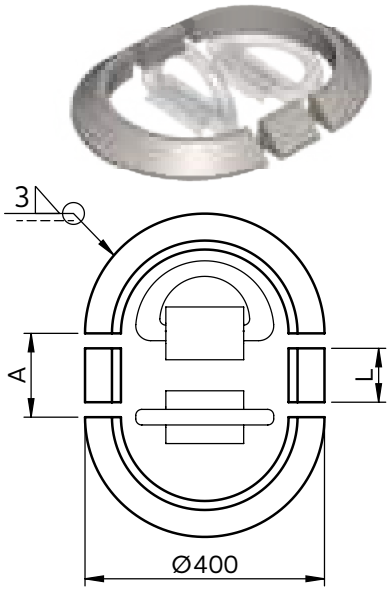
LE-1Z/50

Protection ring for single D-ring



LE-2Z/50

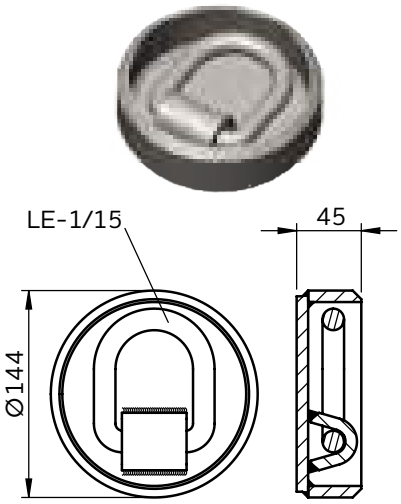
Protection ring for double D-ring



L = 0, in case of 1 D-ring
L = A -20mm, in case of 2 D-rings

LE-8C

Flush D-ring

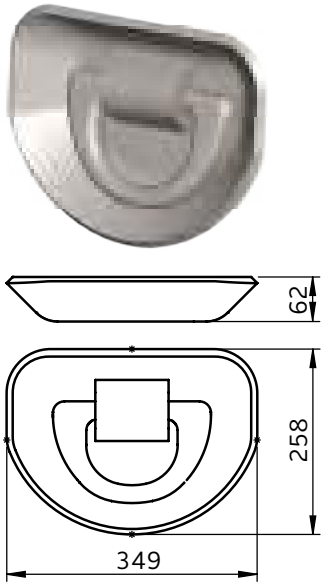


SPECIFICATIONS

(MSL) Max. securing load: tension 75kN
(MBL) Min. breaking load: tension 150kN

LE-8B

Flush D-ring

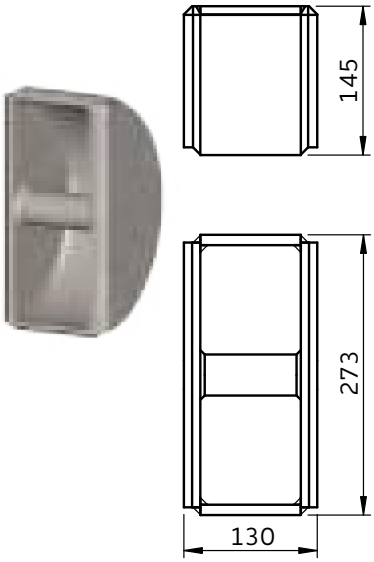


SPECIFICATIONS

(MSL) Max. securing load: tension 245kN
(MBL) Min. breaking load: tension 490kN

FF-3W/36

Flush lashing pot (welded)

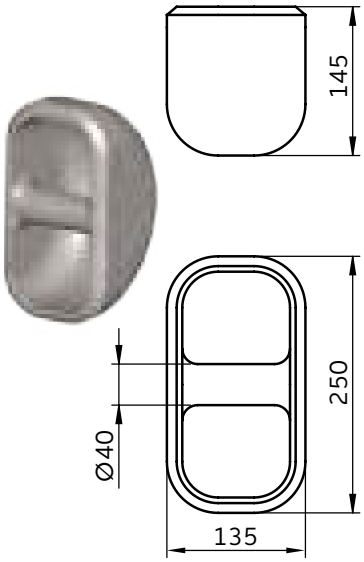


SPECIFICATIONS

(MSL) Max. securing load: tension 177kN
(MBL) Min. breaking load: tension 354kN

FF-3/50

Flush lashing pot



SPECIFICATIONS

(MSL) Max. securing load: tension 245kN
(MBL) Min. breaking load: tension 490kN

RORO



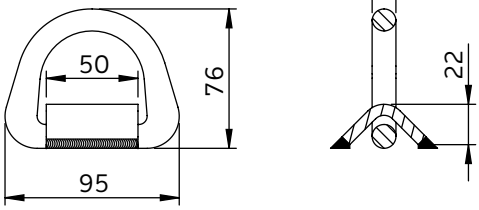
Car Lashing Eyes

LE-10

D-ring with strap

D-ring: LE-10X
Strap: LE-10Y





SPECIFICATIONS

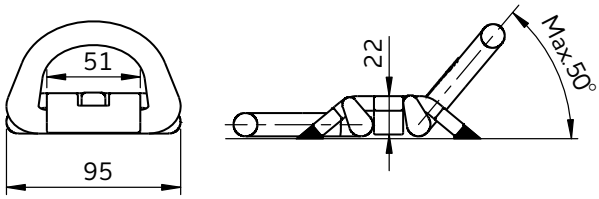
(MSL) Max. securing load: 38kN
(MBL) Min. breaking load: 76kN

LE-11

Double D-ring with strap

D-ring: LE-11X
Strap: LE-11Y



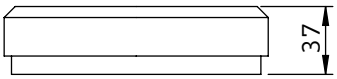


SPECIFICATIONS

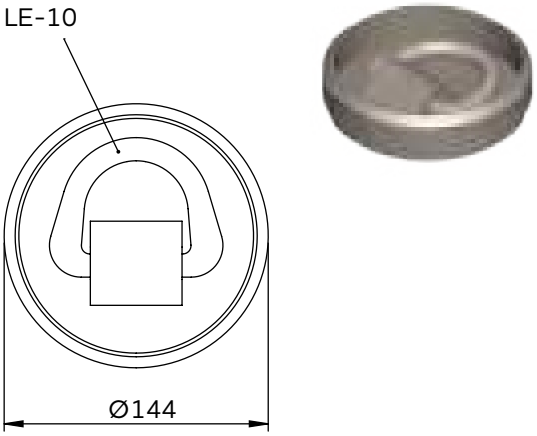
(MSL) Max. securing load per ring: 38kN
(MBL) Min. breaking load per ring: 76kN

LE-8F

Flush D-ring



LE-10

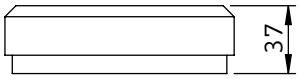


SPECIFICATIONS

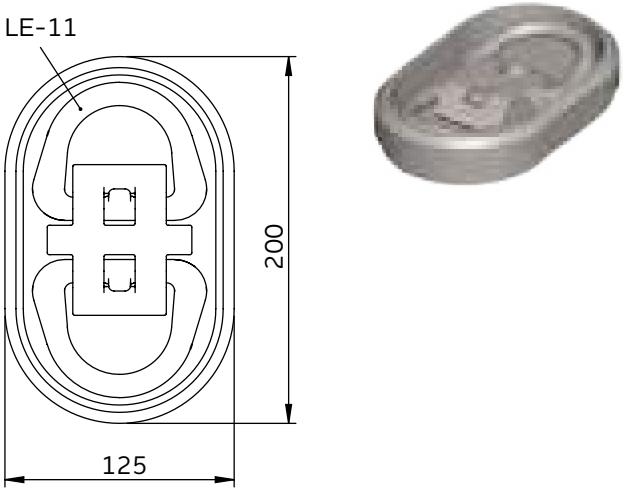
(MSL) Max. securing load: 38kN
(MBL) Min. breaking load: 76kN

LE-9E

Flush double D-ring



LE-11



SPECIFICATIONS

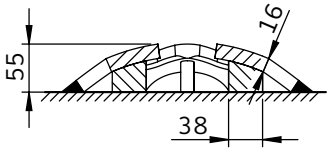
(MSL) Max. securing load per ring: 38kN
(MBL) Min. breaking load per ring: 76kN

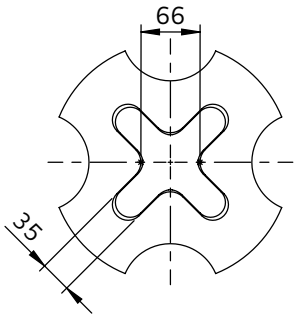
Elephant Foot Lashing Points

FR-6B

Convex lashing point







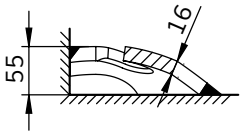
SPECIFICATIONS

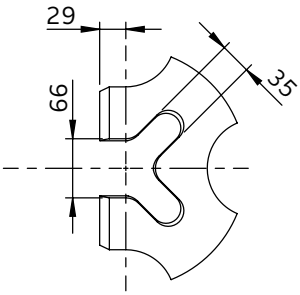
(MSL) Max. securing load: 2x100kN
(MBL) Min. breaking load: 2x200kN

FR-6A

Convex lashing point







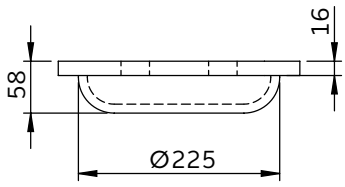
SPECIFICATIONS

(MSL) Max. securing load: 2x100kN
(MBL) Min. breaking load: 2x200kN

FF-8

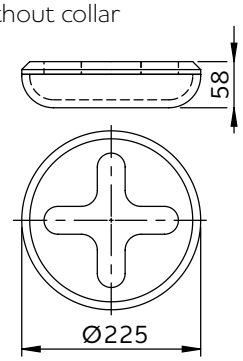
Elephant foot lashing point with collar

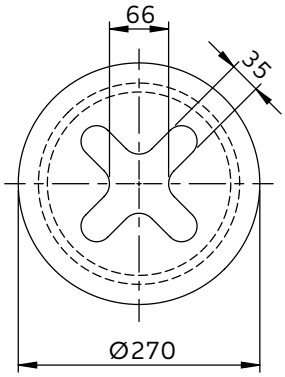




FF-8A

Elephant foot lashing point without collar





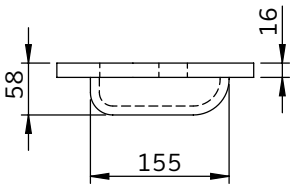
SPECIFICATIONS

(MSL) Max. securing load: 2x100kN
(MBL) Min. breaking load: 2x200kN

FF-9

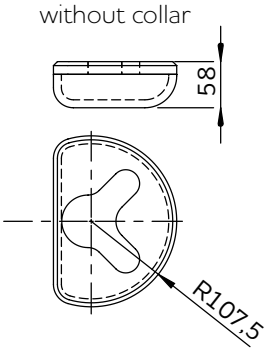
Elephant foot lashing point with collar

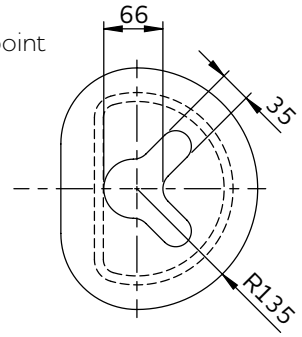




FF-9A

Elephant foot lashing point without collar





SPECIFICATIONS

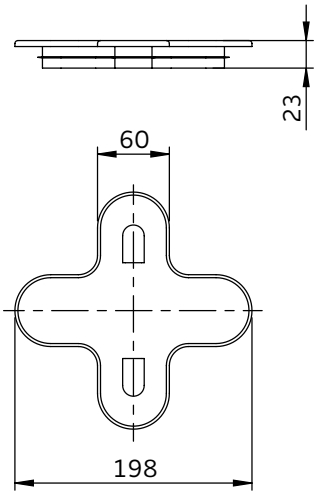
(MSL) Max. securing load: 2x100kN
(MBL) Min. breaking load: 2x200kN

Vehicle Lashing Points

FF-94

Plug





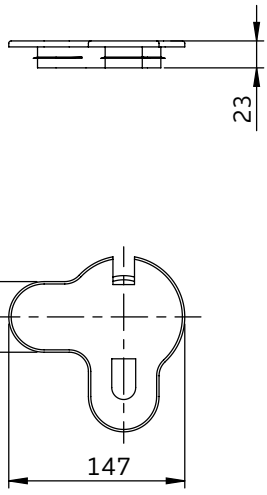
SPECIFICATIONS

Fits in FF-8 and FF-8A
Material: plastic

FF-92

Plug





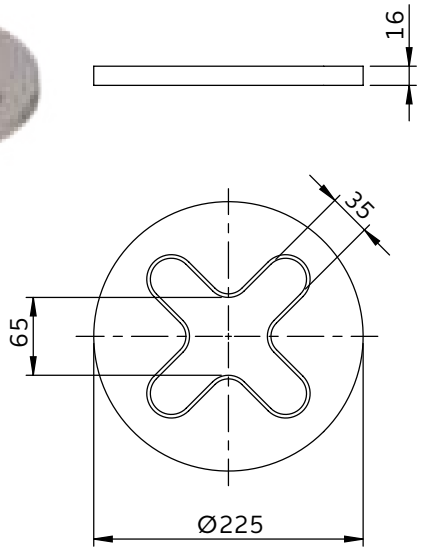
SPECIFICATIONS

Fits in FF-9 and FF-9A
Material: plastic

FF-8A/T

Top plate for elephant foot fitting





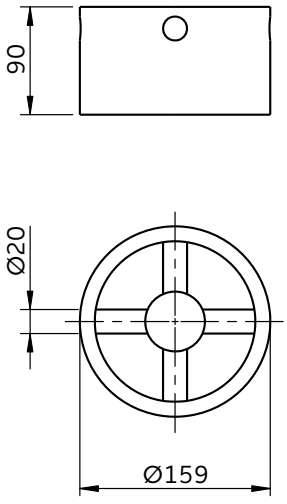
SPECIFICATIONS

(MSL) Max. securing load: 2x100kN
(MBL) Min. breaking load: 2x200kN
Edge preparation see page 8

FF-4B

Crossbar lashing pot





SPECIFICATIONS

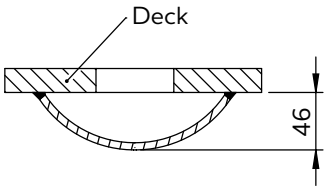
(MSL) Max. securing load: 2x45kN
(MBL) Min. breaking load: 2x90kN

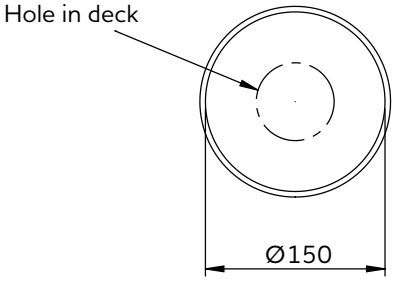
Car Lashing Points

FF-2/150

Cup for lashing hole







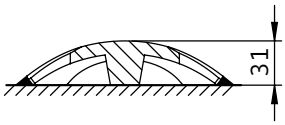
■ SPECIFICATIONS

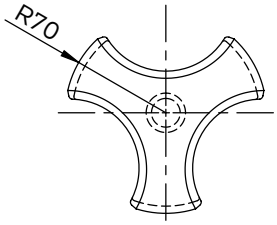
Prevents water ingress to lower decks

FR-7B

Car lashing point







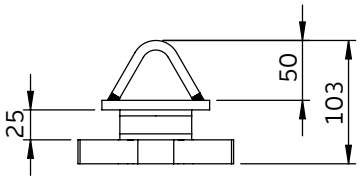
■ SPECIFICATIONS

(MSL) Max. securing load: 50kN
(MBL) Min. breaking load: 100kN

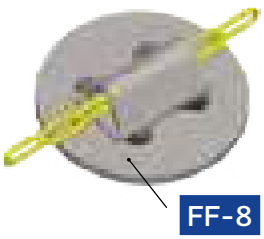
LE-46

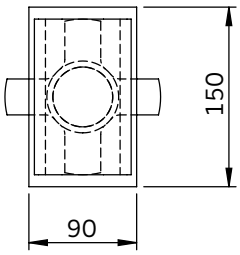
Chain strap





■ PRACTICE



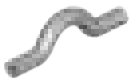


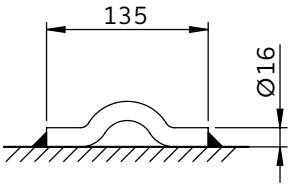
■ SPECIFICATIONS

(MSL) Max. securing load: shear 60kN
(MBL) Min. breaking load: shear 120kN

LE-14/1

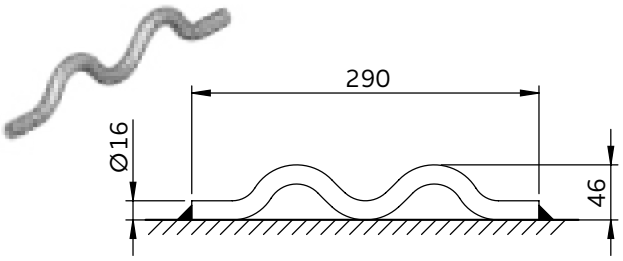
Crinckle bar





LE-14/2

Double crinckle bar



■ SPECIFICATIONS

(MSL) Max. securing load: 30kN
(MBL) Min. breaking load: 60kN

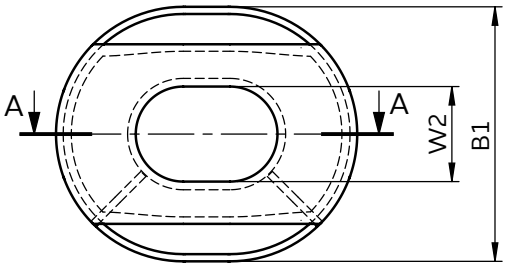
MOORING

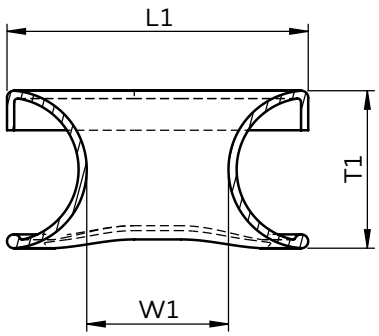


Panama Chocks

MC-A-..



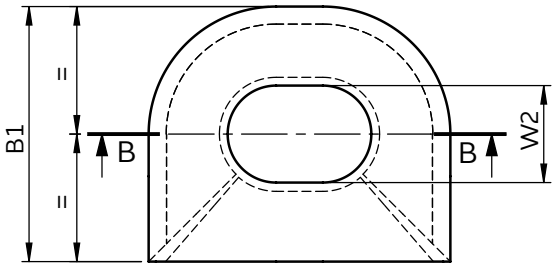


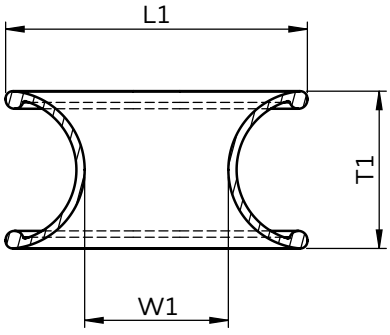


SECTION A-A

MC-C-..







SECTION B-B

REF.	NOM. TOWING PULL (kN)	DIMENSIONS (mm)					WEIGHT (kg)	
		B1	T1	L1	W1	W2	MC-A-..	MC-C-..
MC-..-3	30	390	250	450	200	140	42	48
MC-..-5	50	480	300	550	250	180	74	85
MC-..-8	80	585	360	680	320	225	120	136
MC-..-12	120	710	440	840	400	270	185	211
MC-..-20	200	840	520	1020	500	320	285	326
MC-..-32	320	1100	700	1300	600	400	795	840

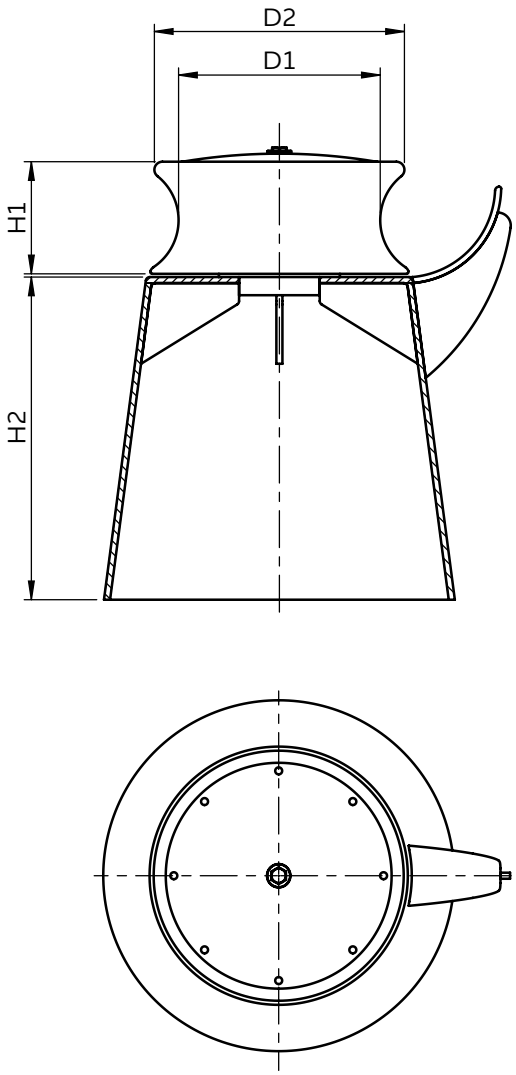
SPECIFICATIONS

In accordance with DIN 81915
Treatment: 1x shop primer

- Various types available on request

Warping Roller

MC-01





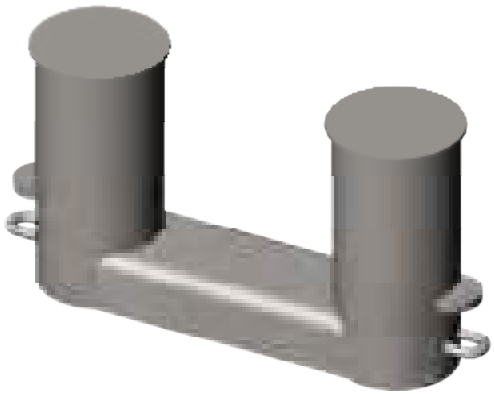
REF.	NOM. TOWING PULL (kN)	BREAKING LOAD OF ROPE (kN)	ROPE Ø (mm)	DIMENSIONS (mm)			
				D1	D2	H1	H2
MC-01/1	10	90	12	160	195	80	200-800
MC-01/2	20	150	16	200	245	102	200-800
MC-01/3	30	220	20	250	300	126	200-800
MC-01/5	50	350	24	320	390	160	200-800
MC-01/8	80	500	32	400	490	208	200-800
MC-01/12	120	800	40	450	560	256	200-800
MC-01/20	200	1150	48	500	620	278	200-600
MC-01/32	320	1750	48	560	740	348	200-600

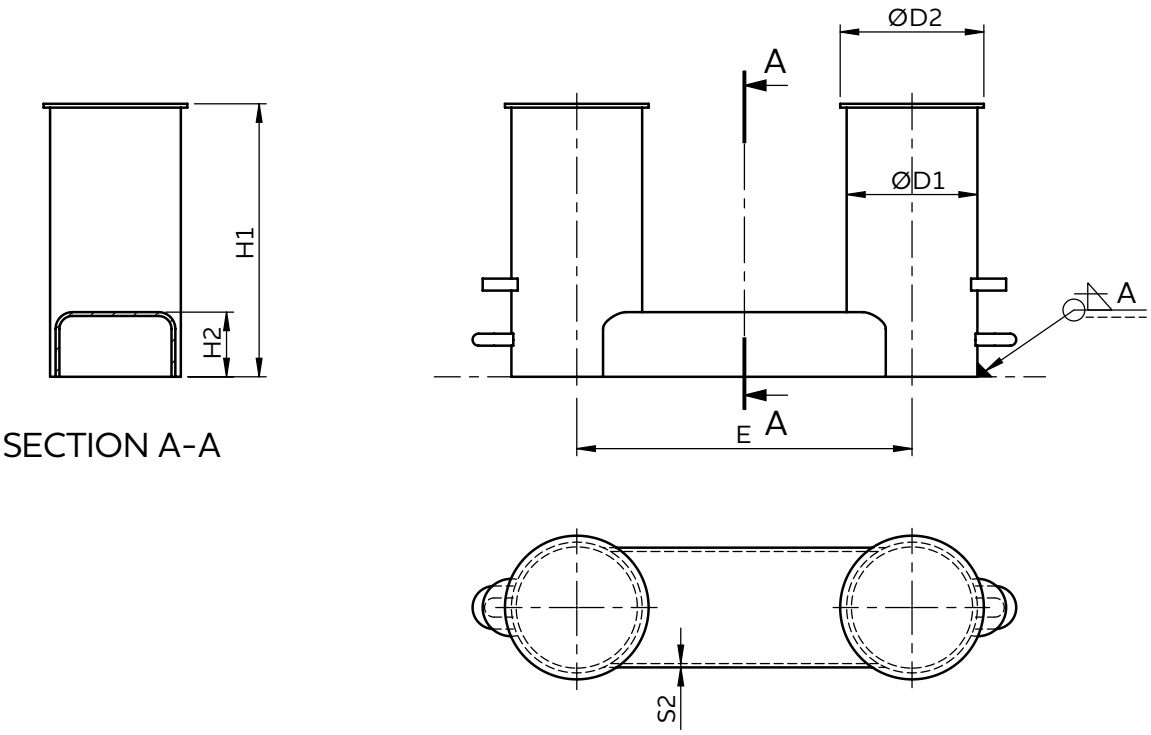
■ **SPECIFICATIONS**
In accordance with DIN 81907
Treatment: 1x shop primer

■ Various types available on request

Double Bollard

MC-02





SECTION A-A

REF.	NOM. TOWING PULL (kN)	WEIGHT (kg)	TUBE (D1) (mm)	DIMENSIONS (mm)						
				B	D2	E	H1	H2	S2	A
MC-02/1	10	15	139,7 x 5	130	160	350	305	105	5	4
MC-02/2	20	35	193,7 x 6,3	180	215	500	395	115	6	4
MC-02/3	30	85	273 x 10	250	300	650	505	135	8	5
MC-02/5	50	140	323,9 x 10	300	355	800	600	150	8	6
MC-02/8	80	235	355,6 x 14,2	330	390	950	685	175	10	8
MC-02/12	120	435	457 x 16	420	490	1100	770	195	16	12
MC-02/20	200	590	508 x 17,5	470	545	1250	870	230	16	12
MC-02/32	320	740	559 x 20	530	600	1400	880	270	16	12

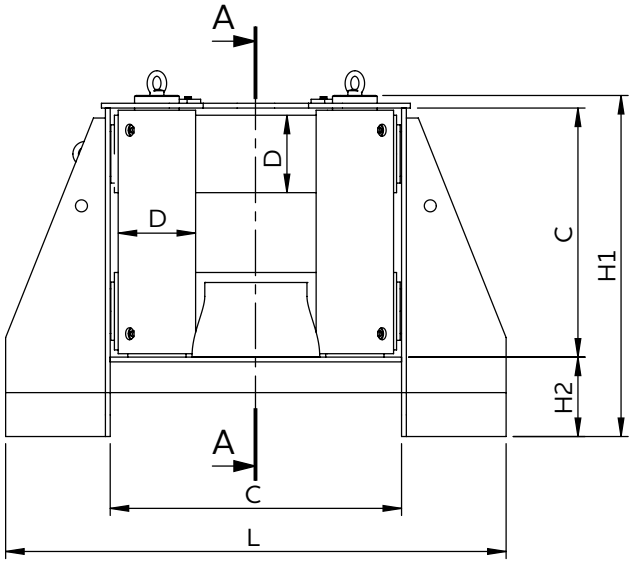
■ **SPECIFICATIONS**
In accordance with DIN 82607
Treatment: 1x shop primer

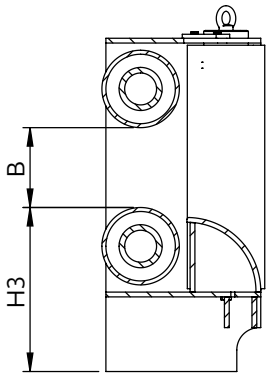
■ Various types available on request

Roller Fairleads

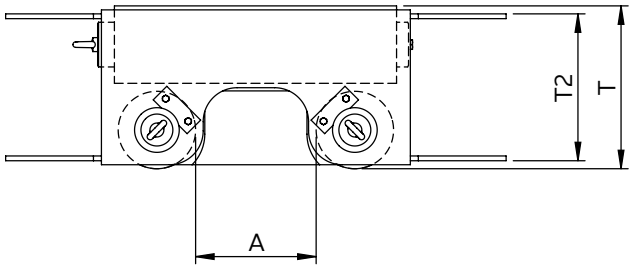
MC-07/D

Deck type





SECTION A-A





REF.	NOM. TOWING PULL (kN)	DIMENSIONS (mm)										WEIGHT (kg)
		L	T	H1	A	B	C	D	T2	H2	H3	
MC-07/D/1	10	460	130	348	120	80	260	60	120	70	160	30
MC-07/D/2	20	640	174	464	180	100	364	82	160	80	212	68
MC-07/D/3	30	800	219	579	220	120	454	102	180	100	267	140
MC-07/D/5	50	900	264	676	250	140	524	127	240	120	312	251
MC-07/D/8	80	1000	290	757	280	150	580	140	260	140	355	382
MC-07/D/12	120	1200	368	876	300	160	680	178	320	150	410	657
MC-07/D/16	160	1300	400	948	320	169	732	194	350	170	452	827
MC-07/D/20	200	1350	500	1082	340	180	856	244	450	180	518	1193
MC-07/D/32	320	1700	608	1355	400	250	1026	298	550	220	608	2200

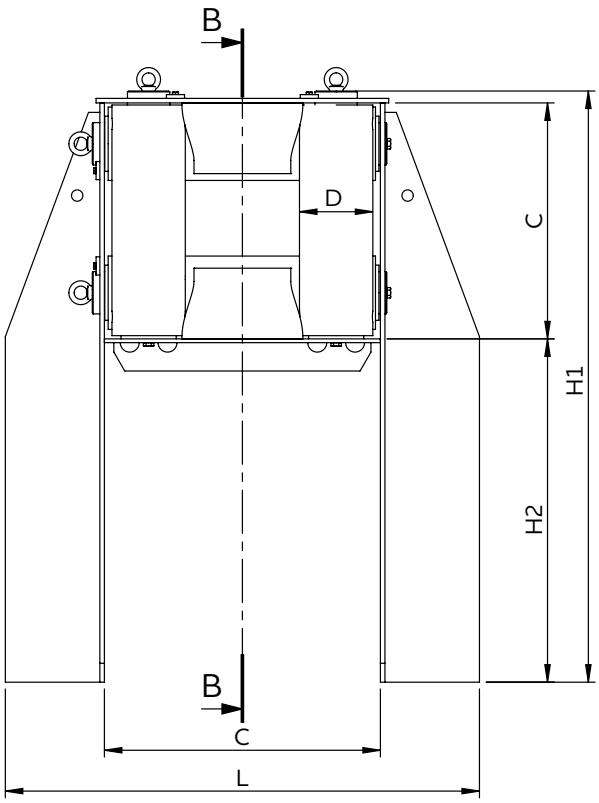
SPECIFICATIONS

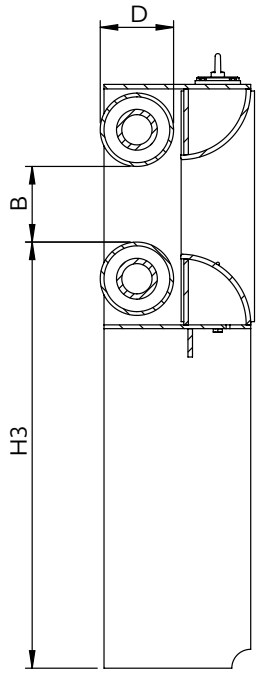
In accordance with DIN 81902
Treatment: 1x shop primer

- Various types available on request

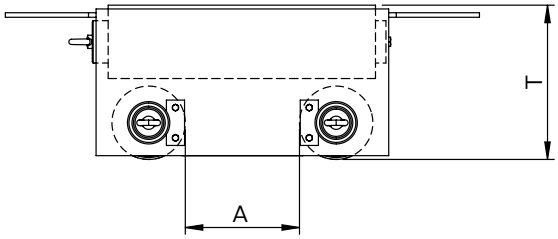
Roller Fairleads

MC-07/B
Bulwark type





SECTION B-B





REF.	NOM. TOWING PULL (kN)	DIMENSIONS (mm)					
		L	T	A	B	C	D
MC-07/B/1	10	460	130	120	80	260	60
MC-07/B/2	20	640	174	180	100	364	82
MC-07/B/3	30	800	219	220	120	454	102
MC-07/B/5	50	900	264	250	140	524	127
MC-07/B/8	80	1000	290	280	150	580	140
MC-07/B/12	120	1200	368	300	160	680	178
MC-07/B/16	160	1300	400	320	169	732	194
MC-07/B/20	200	1350	500	340	180	856	244
MC-07/B/32	320	1700	608	400	250	1026	298

SPECIFICATIONS

In accordance with DIN 81902
Treatment: 1x shop primer
Dimensions H1, H2 & H3 to be specified

■ Various types available on request

Notes


CONTEQ

LOOSE LASHING EQUIPMENT









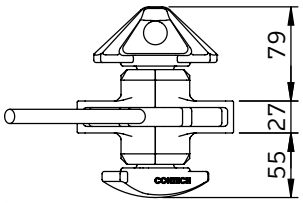
CONTAINER

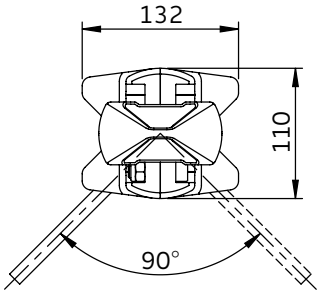


Manual Twistlocks

T-1
Twistlock (3-position)





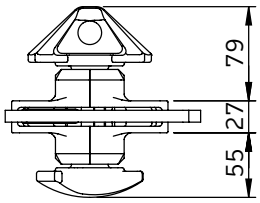


T-1L
left locking

T-1R
right locking

T-1/UP
Twistlock (3-position)

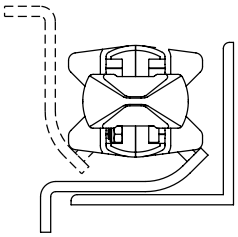


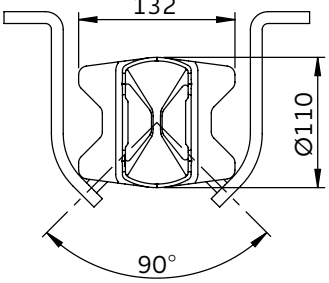


T-1R/UP
right locking

T-1L/UP
left locking

■ PRACTICE

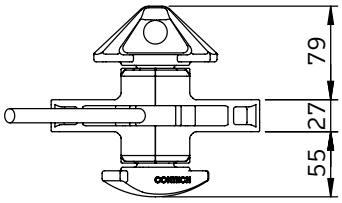


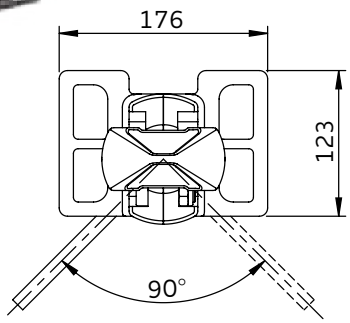


To be used in cell guides

T-2
Wide body twistlock





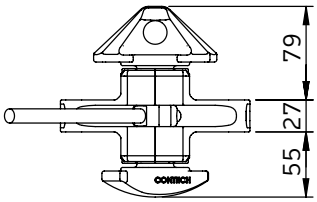


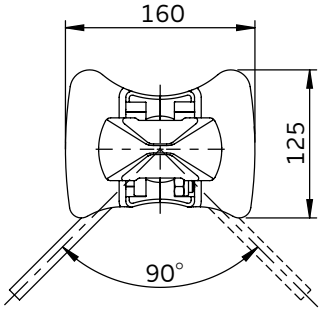
For flush ISO foundations

T-2L
left locking

T-2B
Wide body twistlock







For raised ISO foundations

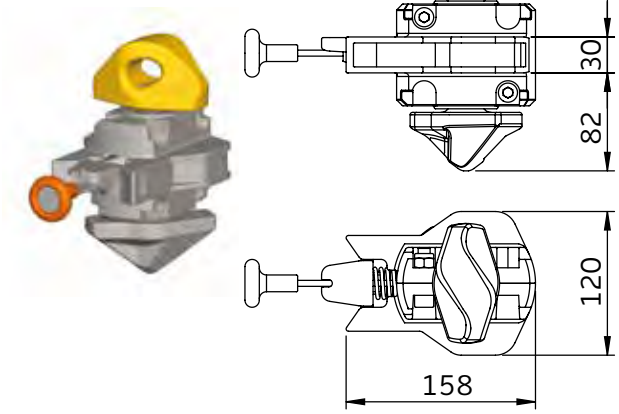
T-2BL
left locking

■ SPECIFICATIONS

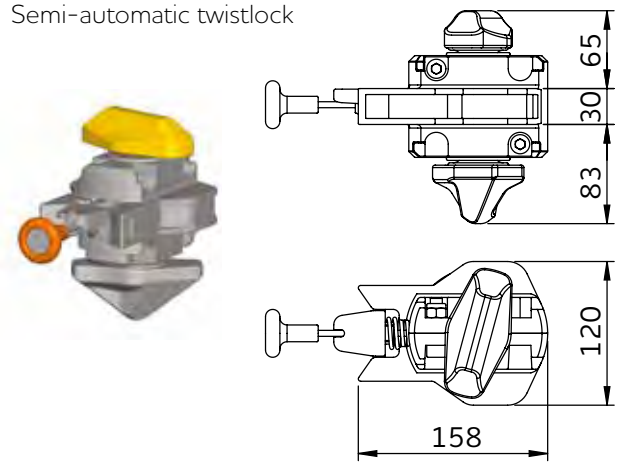
(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
To be used in ISO-holes

Semi-Automatic Twistlocks

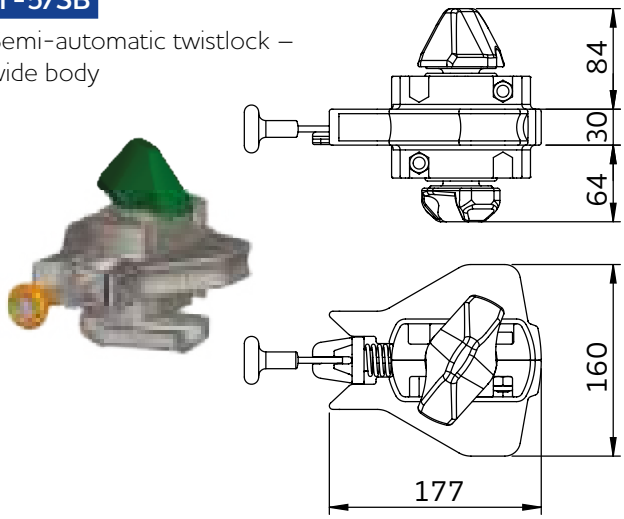
T-5
Semi-automatic twistlock



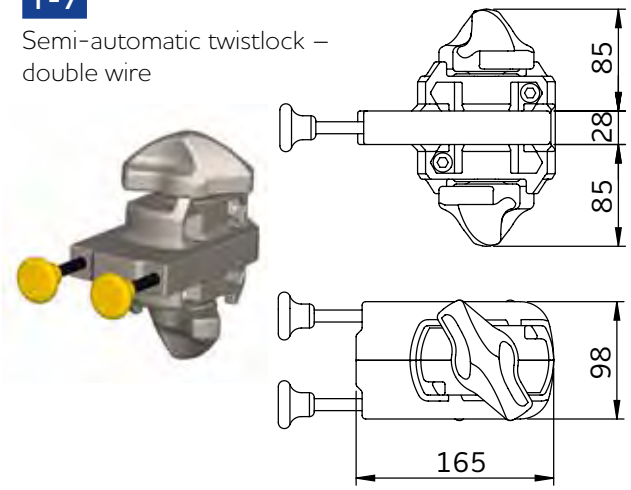
T-5B
Semi-automatic twistlock



T-5/SB
Semi-automatic twistlock – wide body



T-7
Semi-automatic twistlock – double wire

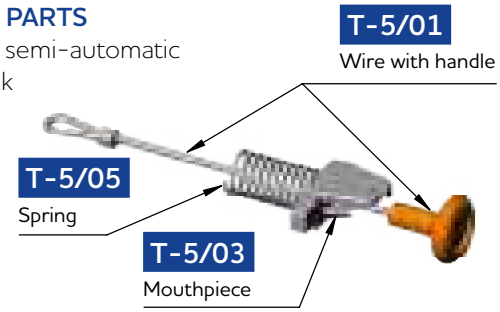


SPECIFICATIONS

(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
To be used in ISO-holes

SPARE PARTS

for T-5 semi-automatic twistlock



PT nut M10



Bolt DIN 912 M10x45



S-99A
Emergency tool

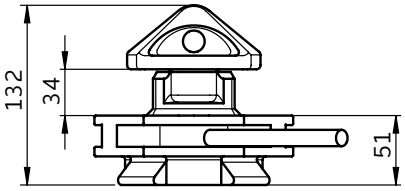


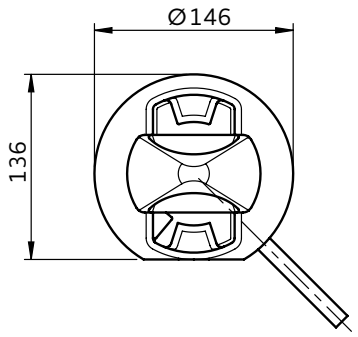
Bottom Twistlocks - Standard

B-22

Breech base bottom twistlock







B-22R
right locking

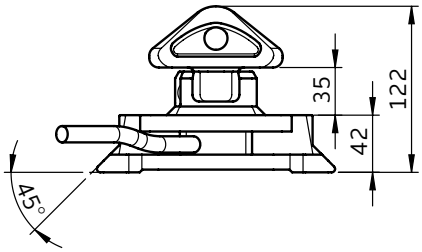
TO BE USED IN COMBINATION WITH:

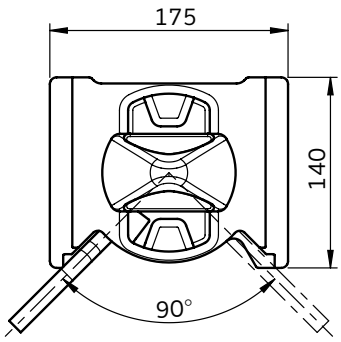
FF-31
FR-22

B-45

45° U-frame bottom twistlock







B-45L
left locking

B-45R
right locking

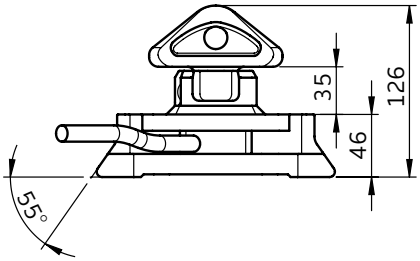
TO BE USED IN COMBINATION WITH:

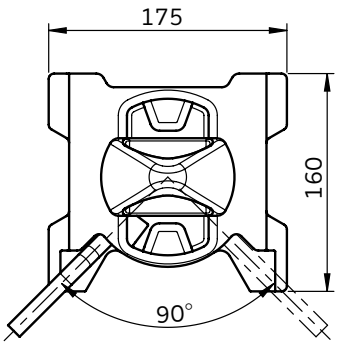
FR-31B
FR-32B/A
FR-31Q

B-55A

55° U-frame bottom twistlock
with cut-out section







B-55AL
left locking

B-55AR
right locking

TO BE USED IN COMBINATION WITH:

FR-34B
FR-35B/A
FR-34BQ
FR-47B
FR-48B/A

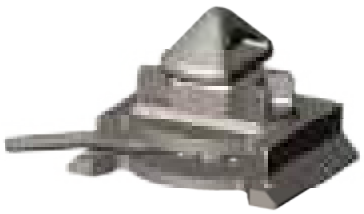
SPECIFICATIONS

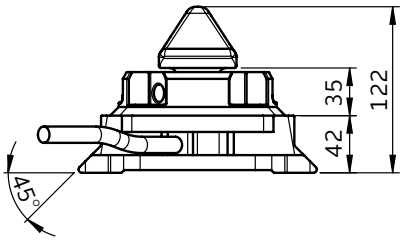
(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval from any classification society

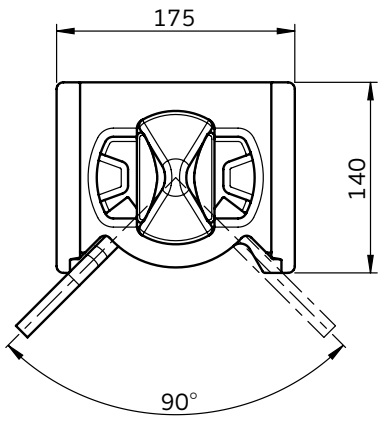
Bottom Twistlocks - Transversal

B-46

45° U-frame bottom twistlock







B-46L
left locking

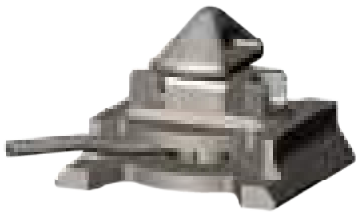
B-46R
right locking

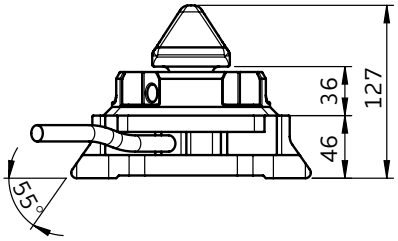
TO BE USED IN COMBINATION WITH:

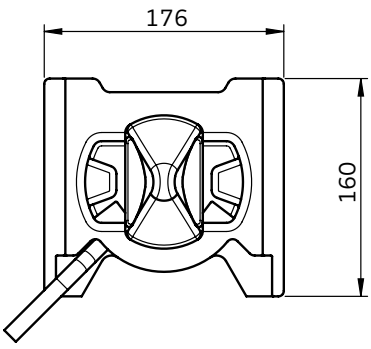
FR-31B
FR-32B/A
FR-31Q

B-56

55° U-frame bottom twistlock







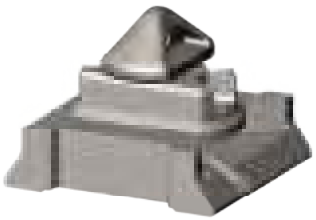
B-56L
left locking

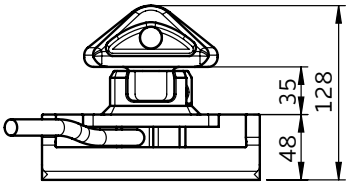
TO BE USED IN COMBINATION WITH:

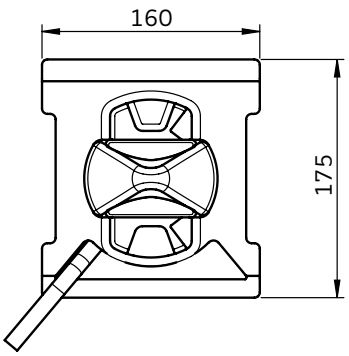
FR-34B
FR-35B/A
FR-34BQ
FR-47B
FR-48B/A

B-57

55° U-frame bottom twistlock







B-57L
left locking

TO BE USED IN COMBINATION WITH:

FR-34B
FR-35B/A
FR-34BQ
FR-47B
FR-48B/A

SPECIFICATIONS

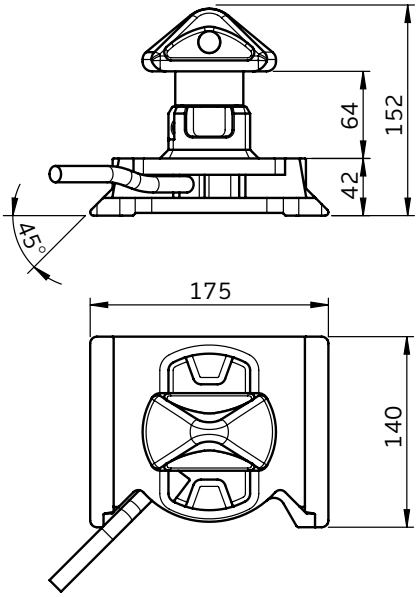
(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN

Bottom Twistlocks - Line Load

B-45LL

45° U-frame bottom twistlock





left locking

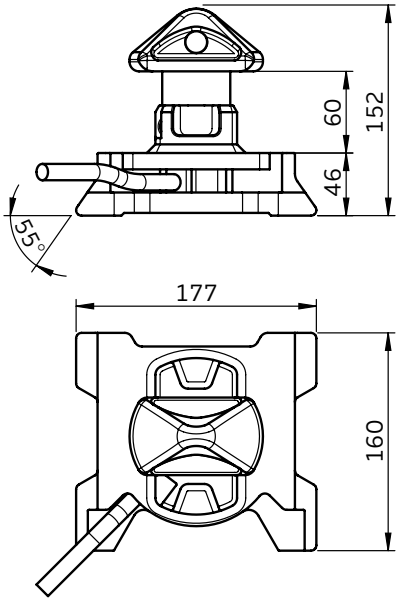
TO BE USED IN COMBINATION WITH:

FR-31B
FR-32B/A
FR-31Q

B-55LL

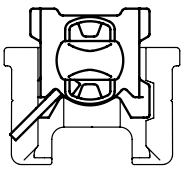
55° U-frame bottom twistlock





left locking

■ PRACTICE



TO BE USED IN COMBINATION WITH:

FR-34B
FR-35B/A
FR-34BQ
FR-47B
FR-48B/A

■ SPECIFICATIONS

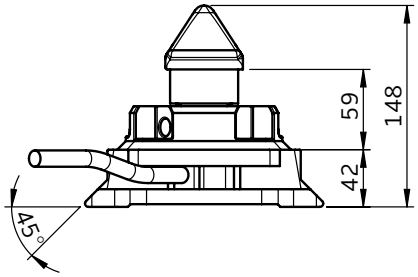
(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval from any classification society
For recess depth of 72 – 80mm

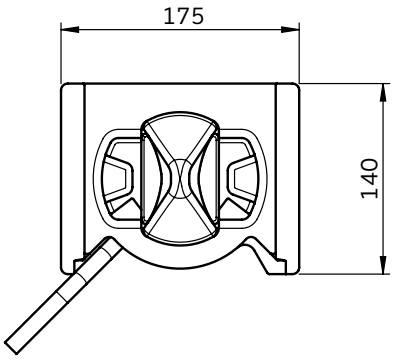
Bottom Twistlocks - Line Load Transversal

B-46LL

45° U-frame bottom twistlock







left locking

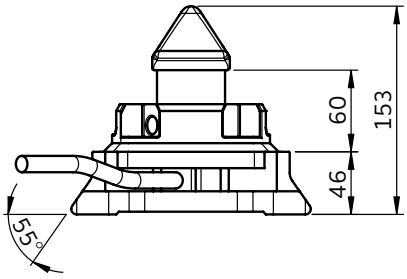
TO BE USED IN COMBINATION WITH:

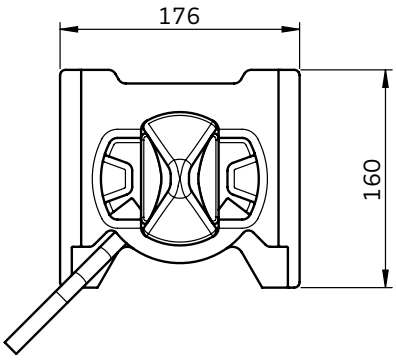
FR-31B
FR-32B/A
FR-31Q

B-56LL

55° U-frame bottom twistlock







left locking

TO BE USED IN COMBINATION WITH:

FR-34B
FR-35B/A
FR-34BQ
FR-47B
FR-48B/A

SPECIFICATIONS

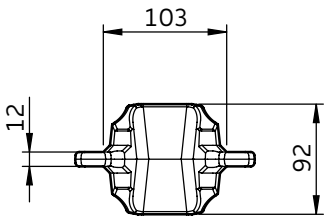
(MSL) Max. securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Approval from any classification society

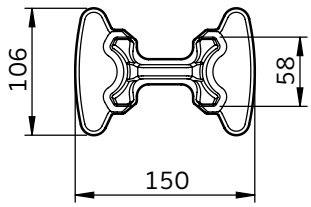
Stackers

SI-1

Single stacker



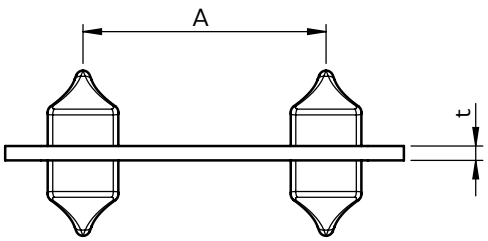


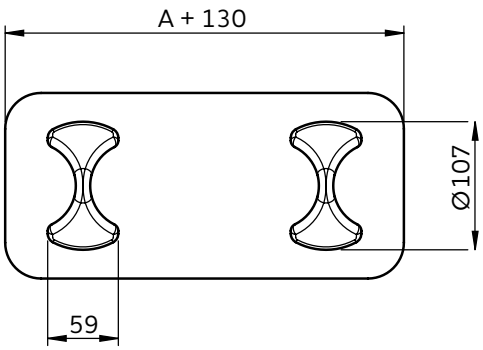


SI-2/A/t

Double stacker







STANDARD SIZES

REF.	t (mm)	A (mm)
SI-2/203	12	203
SI-2/216	12	216
SI-2/258	12	258
SI-2/366	15	366

SPECIFICATIONS

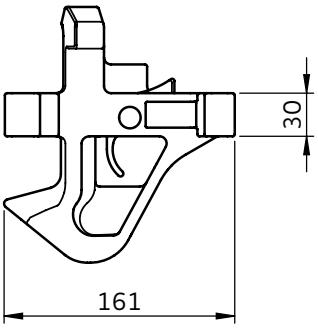
(MSL) Max. securing load: shear 210kN
(MBL) Min. breaking load: shear 420kN
Other thicknesses 't' upon request

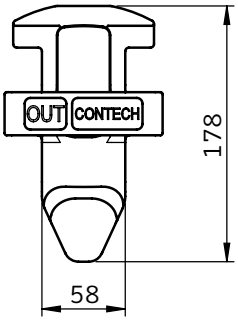
Midlock

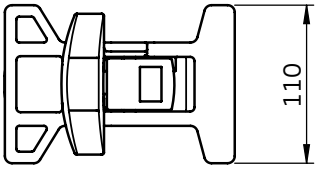
SI-6C

Midlock









SPECIFICATIONS

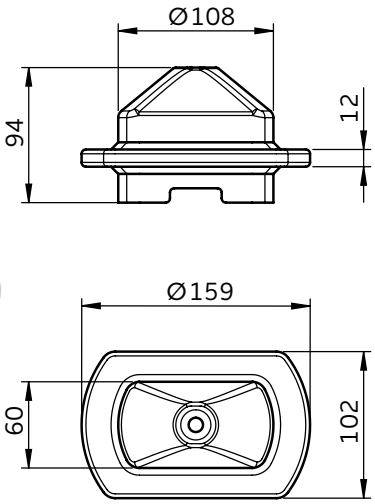
(MSL) Max. Securing load: tension 250kN, shear 210kN
(MBL) Min. breaking load: tension 500kN, shear 420kN
Only to be used in combination with intermediate twistlocks

Stackers

SB-5

ISO bottom stacker

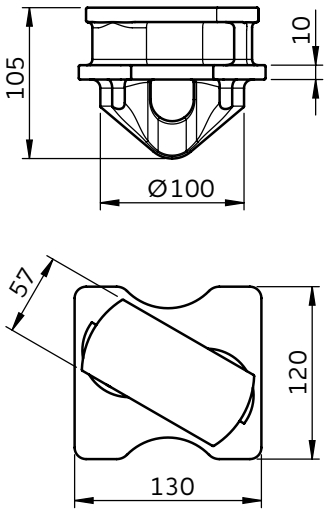




SI-5D

Terminal stacker





SPECIFICATIONS

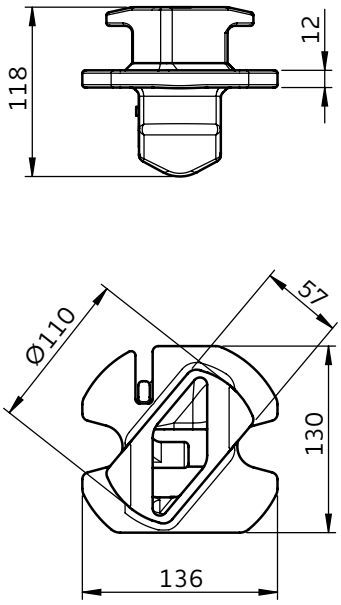
(MSL) Max. Securing load: shear 210kN
(MBL) Min. Breaking load: shear 420kN

Stackers

SI-7A

Safety stacker

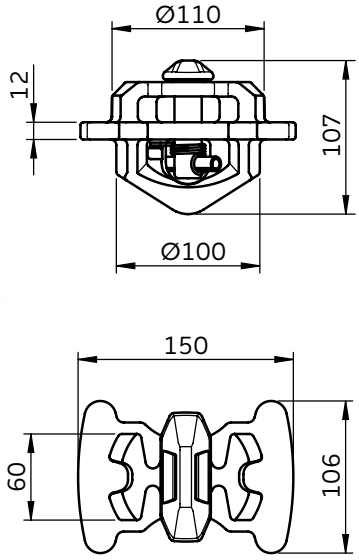




SI-7D

Self-hanging stacker

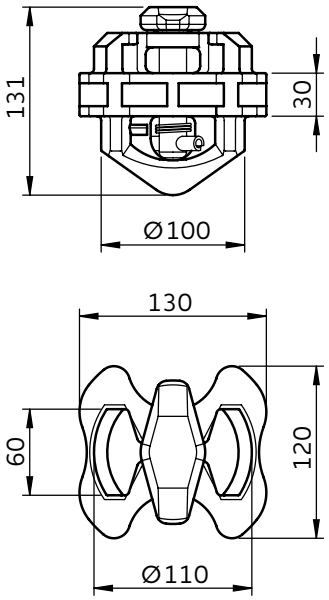




SI-7D/30

Self-hanging stacker

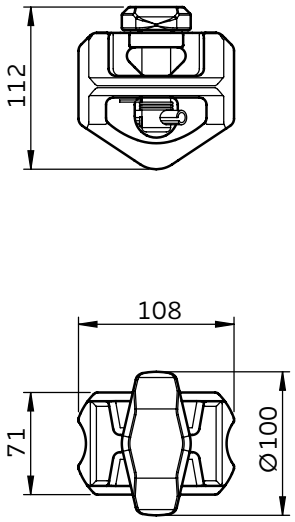




SI-7F

Safety stacker





SPECIFICATIONS

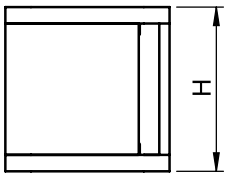
(MSL) Max. securing load: shear 210kN
(MBL) Min. breaking load: shear 420kN

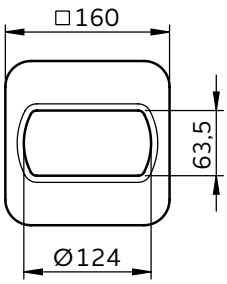
Height Adapter

SI-10

Height adapter





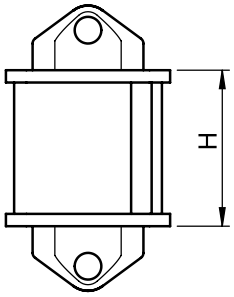


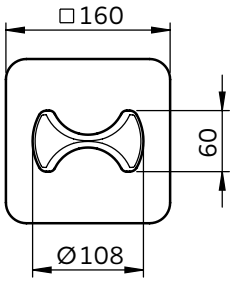
- H = 210mm

SI-11

Intermediate stacker





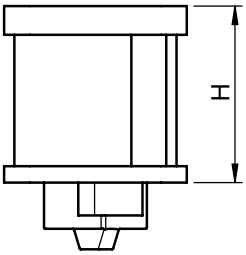


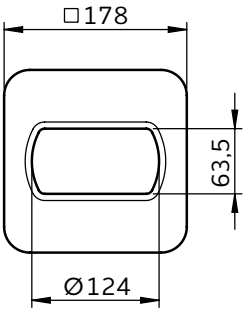
- H = 164mm
- No retrain for uplift

SI-12

Height adapter





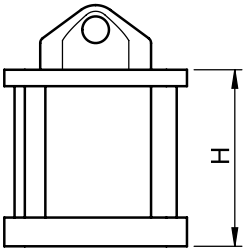


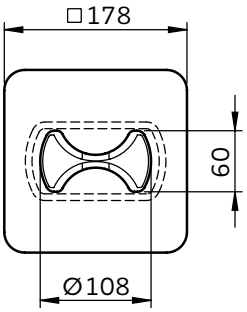
- H = 152mm
  = 305mm

SI-14

Compensating cone







- H = 152mm
  = 305mm
- No retrain for uplift

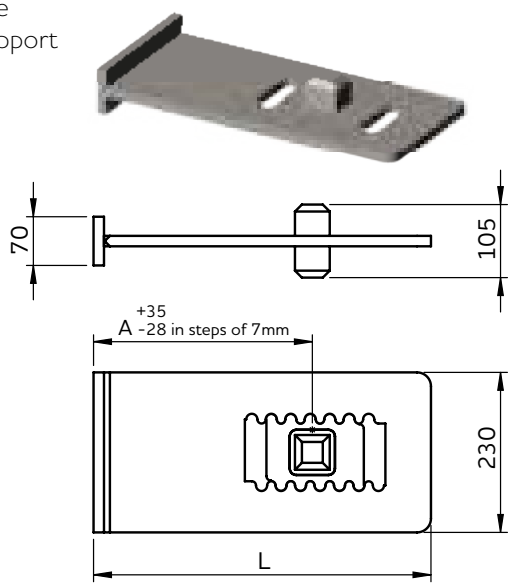
SPECIFICATIONS

Other heights upon request
Strength depends on height

Side Supports

IP-04

Intermediate pressure support

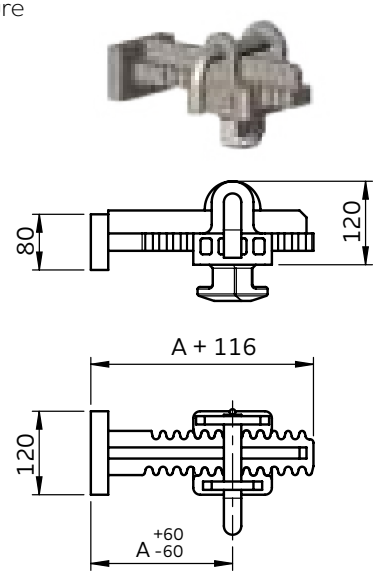


SPECIFICATIONS

(MSL) Max. securing load: tension 650kN
(MBL) Min. breaking load: tension 850kN

TP-04

Top pressure support

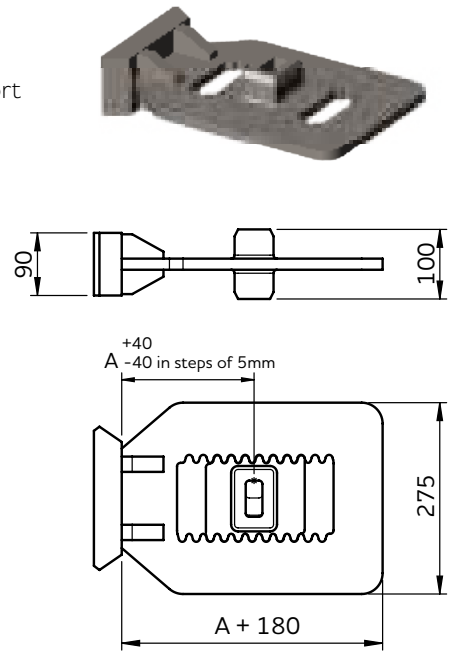


SPECIFICATIONS

(MSL) Max. securing load: tension 250kN
(MBL) Min. breaking load: tension 324kN

IT-14

Intermediate tension support

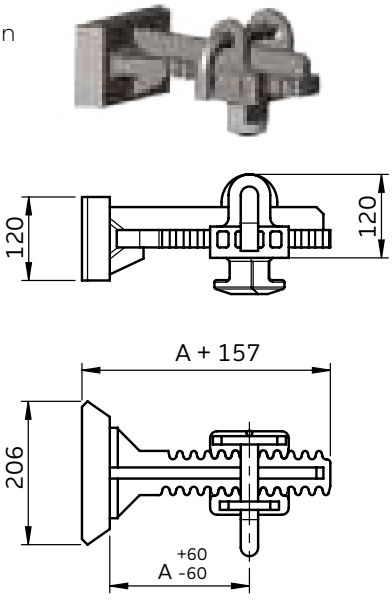


SPECIFICATIONS

(MSL) Max. securing load: tension 650kN
(MBL) Min. breaking load: tension 850kN

TT-14

Top tension support



SPECIFICATIONS

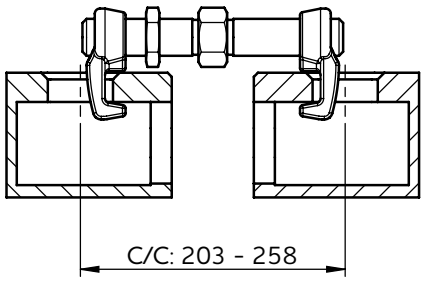
(MSL) Max. securing load: tension 250kN
(MBL) Min. breaking load: tension 324kN

Bridge Fittings

CL-1/50

Bridge fitting





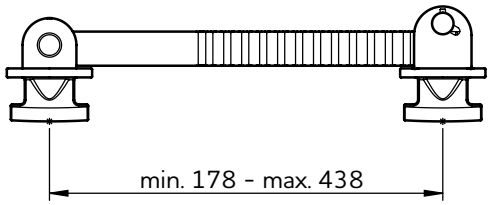
SPECIFICATIONS

(MSL) Max. securing load: tension 50kN
(MBL) Min. breaking load: tension 100kN

CL-6A

Bridge fitting





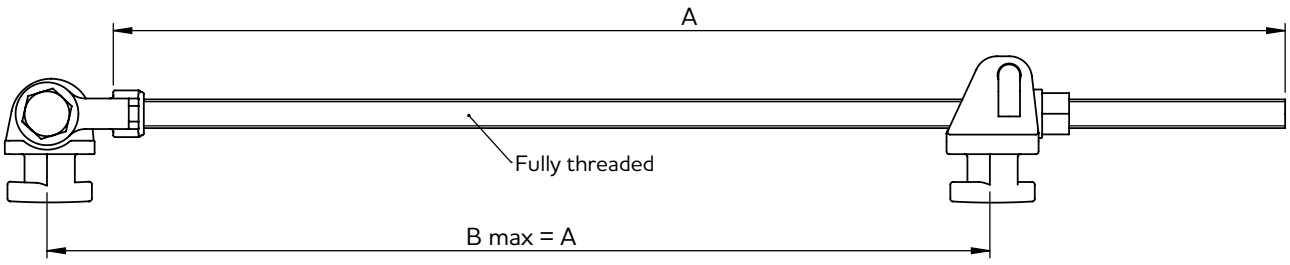
SPECIFICATIONS

(MSL) Max. securing load: tension 150kN
(MBL) Min. breaking load: tension 300kN

CL-3A/#

Bridge fitting





REF.	A (mm)	B MIN. - MAX. (mm)
CL-3A/2075	2075	1385 - 2075
CL-3A/488	488	178 - 488

SPECIFICATIONS

(MSL) Max. securing load: tension 176kN
(MBL) Min. breaking load: tension 353kN

Lashing Rods

LR-03/L (Eye type)
One tier high:
L = 2400
Two tier high:
L = 4600



LR-04/L (Extension rod)
L = 310
L = 420
L = 600



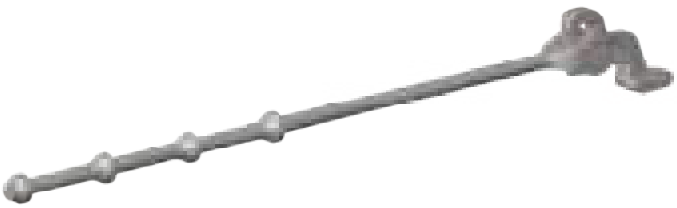
LR-63/L (Knob type)
One tier high:
L = 2450
Two tier high:
L = 4700
L = 4950

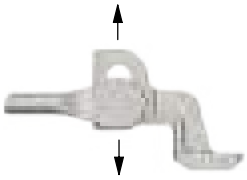


LR-64/L (Extension rod)
L = 405
L = 550



LR-63E/L (External type)





LR-65B/L (For vertical lashing)
Two tier high:
L = 4400





LR-65T/L (For vertical lashing)
Two tier high:
L = 4400





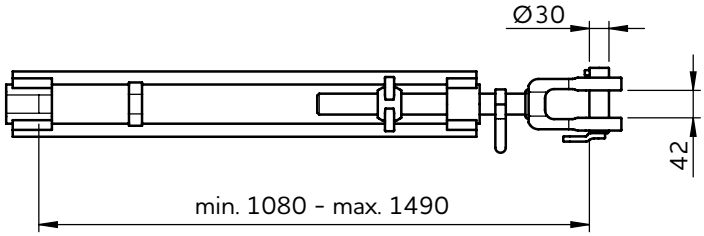
■ SPECIFICATIONS

(MSL) Max. securing load: tension 250kN
(MBL) Min. breaking load: tension 500kN

Turnbuckles

S-32B
Turnbuckle with jaw



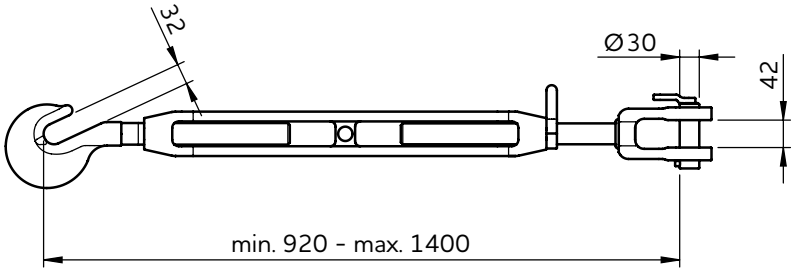


S-97A
Spanner for S-32B



S-312/50
Turnbuckle with jaw and hook





S-96
Pin spanner for S-312/50
S-24
S-25



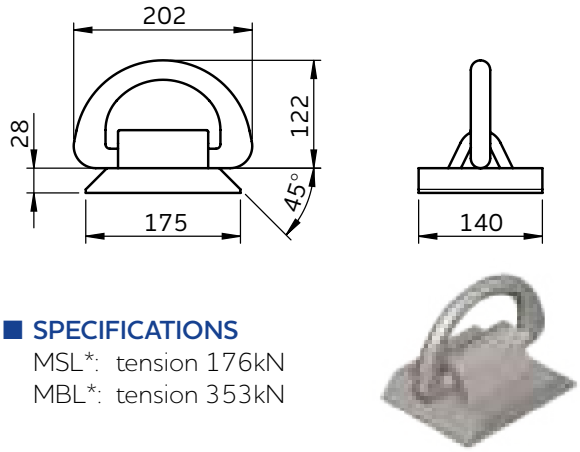
SPECIFICATIONS

(MSL) Max. securing load: tension 250kN
(MBL) Min. breaking load: tension 500kN

Removable Lashing Points

LE-4

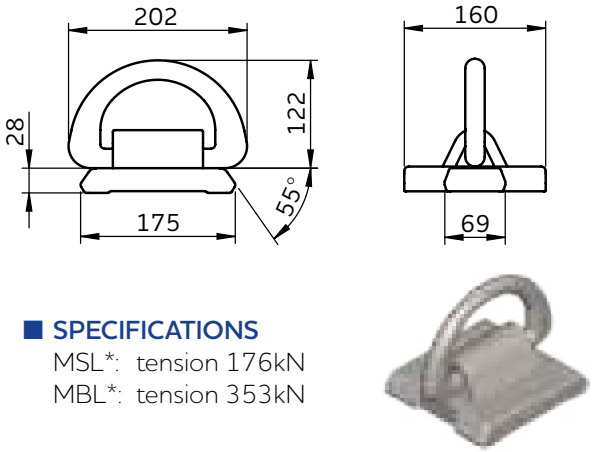
45° U-frame D-ring



SPECIFICATIONS
MSL*: tension 176kN
MBL*: tension 353kN

LE-5A

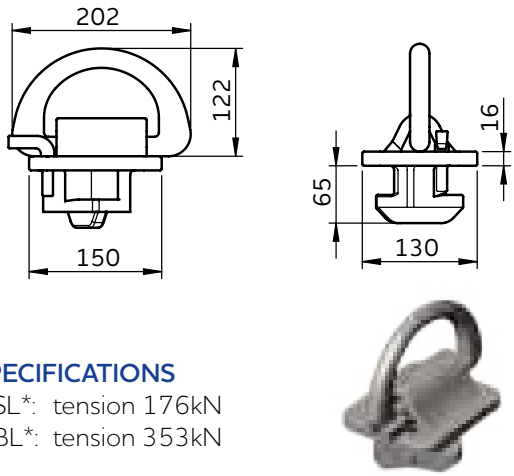
55° U-frame D-ring



SPECIFICATIONS
MSL*: tension 176kN
MBL*: tension 353kN

LE-3

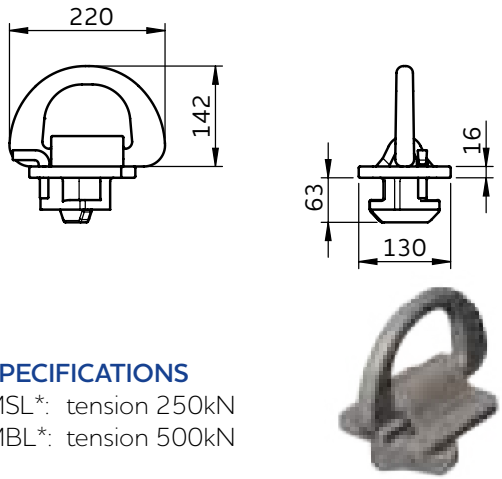
Turnfoot D-ring



SPECIFICATIONS
MSL*: tension 176kN
MBL*: tension 353kN

LE-3/50

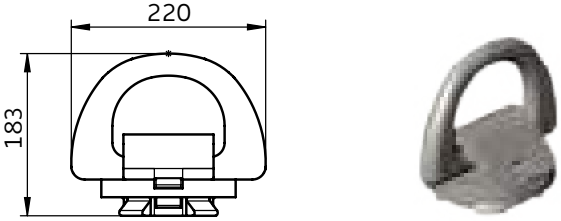
Turnfoot D-ring



SPECIFICATIONS
MSL*: tension 250kN
MBL*: tension 500kN

LE-12

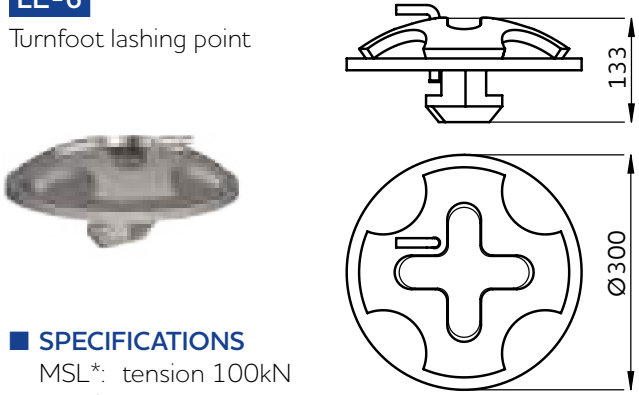
Breech base D-ring



SPECIFICATIONS
MSL*: tension 250kN
MBL*: tension 500kN

LE-6

Turnfoot lashing point



SPECIFICATIONS
MSL*: tension 100kN
MBL*: tension 200kN

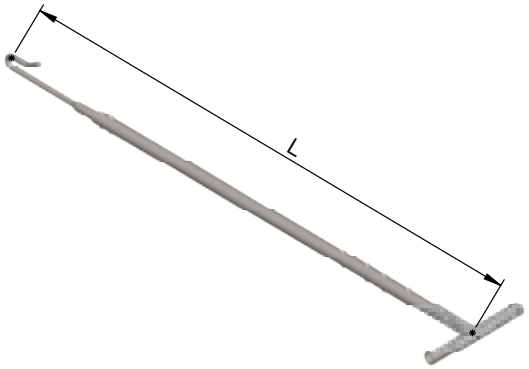
* MSL = Max. securing load
MBL = Min. breaking load

Tools

S-90/L

Actuator pole
(For standard twistlock)

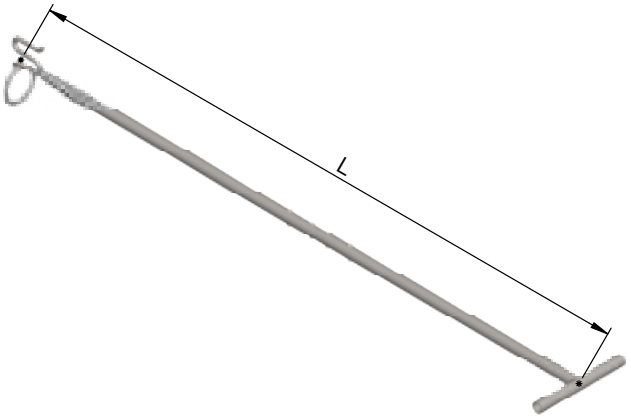
REF.	L IS ACCORDING TO ORDERS (mm)
S-90/4.0	4000
S-90/6.0	6000

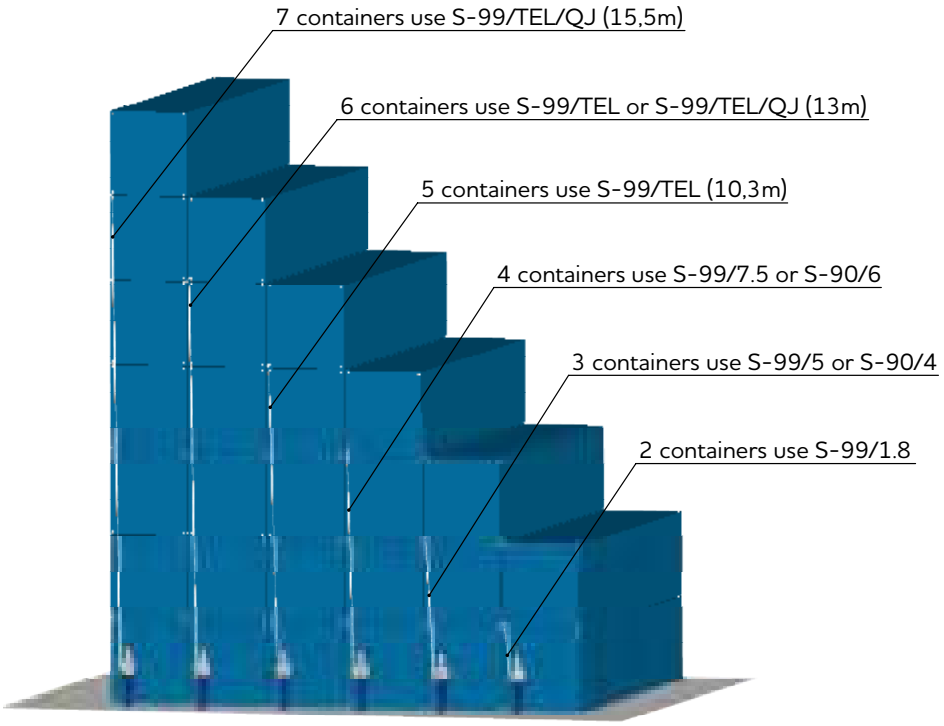


S-99/L

Operation pole
(For semi-automatic twistlock)

REF.	L IS ACCORDING TO ORDERS (mm)
S-99/7.5	7500
S-99/5.0	5000
S-99/1.8	1800





■ **Also available as telescopic or quick joint:**

S-99/TEL (telescopic)



S-99/TEL/QJ (quick joint)



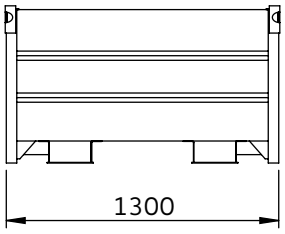
Flat Racks

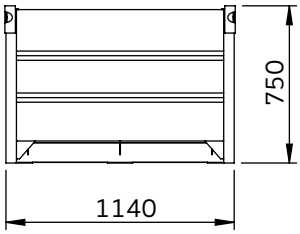
Z-8/2

Bin

REF.	WEIGHT (kg)	CAPACITY (t)	USE WITH
Z-8/2	106	2,0	Z-8/20

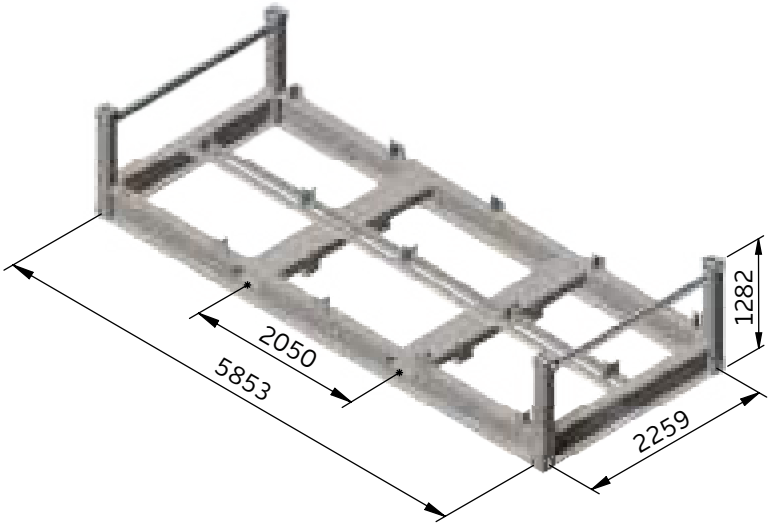






Z-8/20

20' Flat rack



SPECIFICATIONS

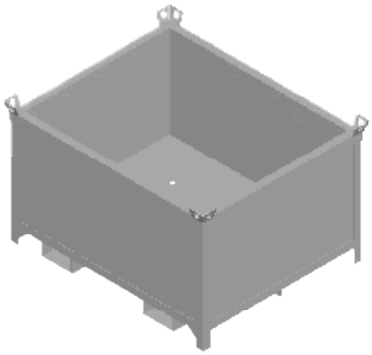
Capacity:	8 bins Z-8/2
Weight:	2100kg
Max. gross weight:	24t

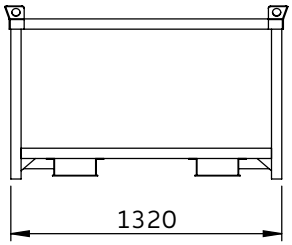
Flat Racks

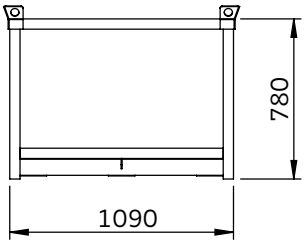
Z-8/3

Bin

REF.	Weight (kg)	CAPACITY (t)	USE WITH
Z-8/3	157	2,0	Z-8/40

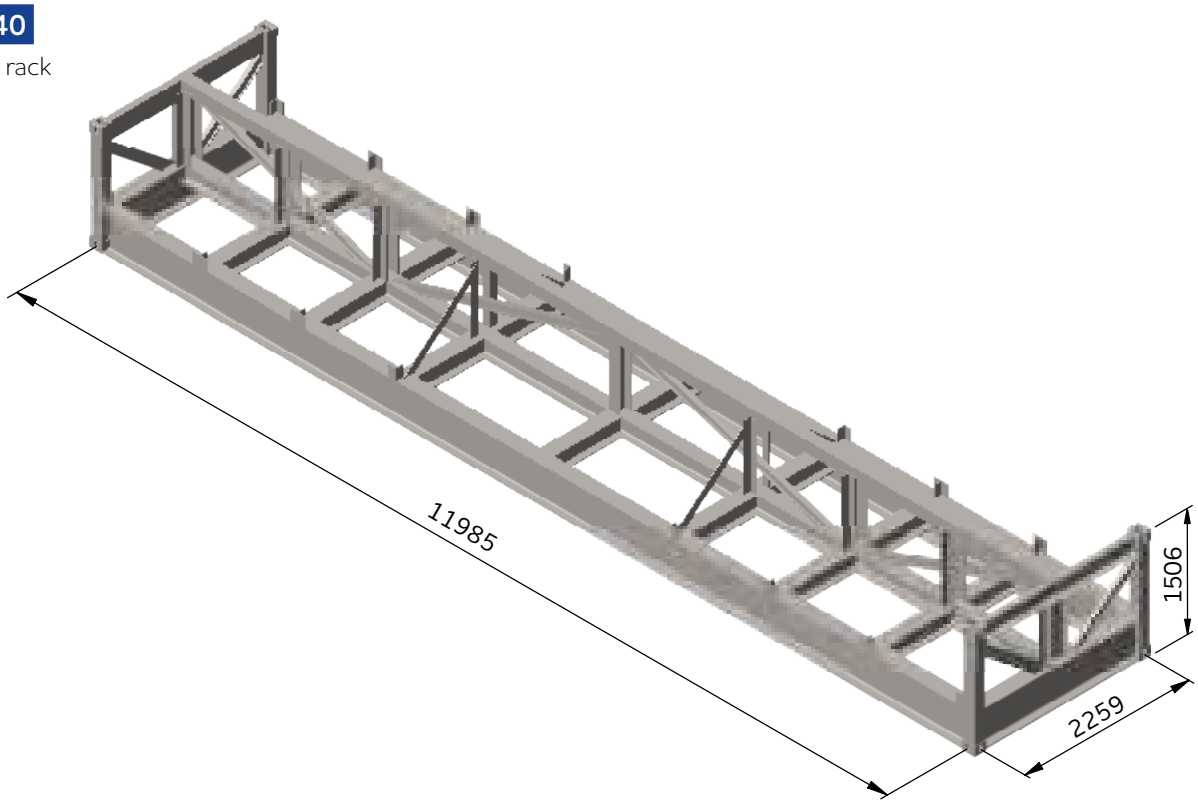






Z-8/40

40' flat rack



SPECIFICATIONS

Capacity:	12 bins Z-8/3
Weight:	4300kg
Max. gross weight:	28t

GENERAL CARGO



High Tensile Steel Turnbuckles

Instructions for use

IMPORTANT
Turnbuckles must be used for straight or in-line pulling only. Special attention should be paid to prevent overloading.

While tensioning, the forces on the turnbuckle must not be such that any deformation occurs. In case of deformation, the tension should be decreased immediately and deformed parts should be replaced. Should extreme circumstances or shock loading be applicable this must be taken into account when selecting the correct products to be used for the application.

Closed body rigging screws and commercial open body rigging screws are used for tensioning wires and ropes for minor loads (i.e. rope railings). The WLL values are only indicative, and these products are not suitable for bearing constructions.

For the rigging of wires, ropes, rods etc., Green Pin® turnbuckles and turnbuckles according to DIN 1480 with forged eyes or with welding ends are to be used.

The Working Load Limit (WLL) should be applied in a straight pull only and overloading is not permitted. Nor should side loads be applied, as the products have not been designed for this purpose.
It is required that the products are regularly inspected and that the inspection should take place in accordance with the safety standards given in the country of use. This is required because the products in use may be affected by wear, misuse, overloading etc. with a consequence of deformation and alteration of the steel structure.

Safe use of turnbuckles

Turnbuckles should be inspected before use to insure that:

- the threads of the body and the end fittings are of the same type;
- the threads of the body and the end fittings are undamaged

Furthermore, it must be ensured that the end fittings are correctly screwed into the body. Always use the locking nuts supplied to prevent the turnbuckles from unscrewing.

Never replace an end fitting, other than the one designed for the purpose, as it may not be suitable for the loads imposed.

High Tensile Steel Turnbuckles

In accordance with ASTM F 1145-92 (EX FF-T-791B)

Material: Drop forged high tensile steel SAE 1035 or 1045
Safety Factor: MBL = 5 x WLL
Finishing: Hot dipped galvanized

IMPORTANT: This material should NEVER be used for lifting.

G-6312



T 1

G-6314



T 2

G-6311



T 3

G-6315



T 4

G-6313



T 5

THREAD Ø X TAKE-UP (inch)	THREAD Ø X TAKE-UP (mm)	WLL T 3, 4, 5 (kg)	WLL T 1, 2 (kg)	LENGTH CLOSED (mm)	WEIGHT T 1 (kg)	WEIGHT T 2 (kg)	WEIGHT T 3 (kg)	WEIGHT T 4 (kg)	WEIGHT T 5 (kg)
⅜ x 6	9,53 x 152	540	450	302	0,36	0,47	0,47	0,51	0,57
½ x 6	12,7 x 152	1000	680	338	0,62	0,82	0,84	0,89	0,96
½ x 9	12,7 x 229	1000	680	414	0,85	1,06	1,05	1,10	1,18
½ x 12	12,7 x 305	1000	680	490	1,04	1,28	1,26	1,31	1,50
⅝ x 6	15,9 x 152	1590	1020	394	0,98	1,31	1,35	1,58	1,84
⅝ x 9	15,9 x 229	1590	1020	470	1,18	1,56	1,60	1,84	2,12
⅝ x 12	15,9 x 305	1590	1020	546	1,71	1,71	1,92	2,22	2,56
¾ x 6	19,1 x 152	2360	1360	432	1,53	2,04	2,03	2,34	2,68
¾ x 9	19,1 x 229	2360	1360	508	1,88	4,49	2,49	2,72	3,03
¾ x 12	19,1 x 305	2360	1360	584	2,30	2,30	2,65	2,95	3,29
¾ x 18	19,1 x 457	2360	1360	737	2,85	2,85	3,06	3,30	3,65
⅞ x 12	22,2 x 305	3270	1810	618	3,33	3,33	3,98	4,35	4,90
⅞ x 18	22,2 x 457	3270	1810	772	4,24	4,24	5,12	5,46	5,95
1 x 6	25,4 x 152	4540	2270	524	3,87	3,87	4,35	4,66	5,21
1 x 12	25,4 x 305	4540	2270	676	5,09	5,09	5,92	6,35	6,96
1 x 18	25,4 x 457	4540	2270	829	6,00	6,00	7,17	7,98	8,95
1 x 24	25,4 x 610	4540	2270	980	7,52	7,52	7,52	7,39	7,85
1¼ x 12	31,8 x 305	6900	2950	753	8,12	8,12	9,80	10,92	11,90
1¼ x 18	31,8 x 457	6900	2950	905	10,40	10,40	11,31	11,00	14,00
1¼ x 24	31,8 x 610	6900	2950	1058	12,10	12,10	12,10	12,90	13,00
1½ x 12	38,1 x 305	9710	3400	804	12,70	12,70	14,20	13,10	16,90
1½ x 18	38,1 x 457	9710	3400	956	15,10	15,10	16,50	14,70	18,70
1½ x 24	38,1 x 610	9710	3400	1109	17,10	17,10	17,10	17,80	18,40
1¾ x 18	44,5 x 457	12700	–	1049	–	–	23,10	22,30	25,00
1¾ x 24	44,5 x 610	12700	–	1201	–	–	26,30	27,50	28,70
2 x 24	51 x 610	16780	–	1295	–	–	40,70	42,90	45,40
2½ x 24	63,5 x 610	27220	–	1476	–	–	64,00	68,00	73,00
2¾ x 24	70,1 x 610	34020	–	1560	–	–	88,00	91,00	98,00

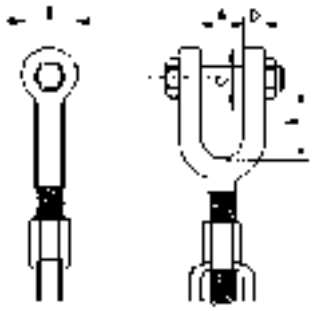
All the turnbuckles are provided with locking nuts.
T5 is supplied with pins for sizes ¾" up to and including 2¾" (locking nuts on request).

High Tensile Steel Turnbuckle Terminations

■ DIMENSIONS OF TERMINATIONS FOR TURNBUCKLES ON PREVIOUS PAGE

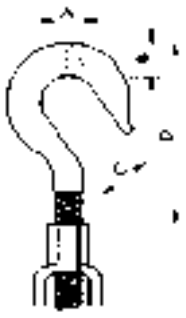
Clevis

Ø THREAD (inch)	Ø THREAD (mm)	WLL (kg)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
⅜	9,53	540	13	22	8,0	8	21
½	12,70	1000	16	26	9,5	10	25
⅝	15,90	1590	18	33	13,0	13	33
¾	19,10	2360	23	38	15,5	16	41
⅞	22,20	3270	27	44	19,0	18	48
1	25,40	4540	30	52	22,0	20	54
1¼	31,80	6900	44	73	29,0	25	67
1½	38,10	9710	52	70	35,0	27	80
1¾	44,50	12700	59	85	41,0	33	90
2	51,00	16780	64	93	51,0	39	108
2½	63,50	27220	75	114	57,0	38	143
2¾	70,00	34020	89	110	70,0	42	156



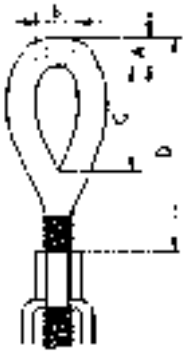
Hook

Ø THREAD (inch)	Ø THREAD (mm)	WLL (kg)	A (mm)	B (mm)	C (mm)	D (mm)
⅜	9,53	450	10	15	14	58
½	12,70	680	13	19	17	72
⅝	15,90	1020	16	23	22	90
¾	19,10	1360	20	27	25	98
⅞	22,20	1810	23	30	29	126
1	25,40	2270	25	35	32	144
1¼	31,80	2270	28	37	39	175
1½	38,10	3400	33	44	47	212



Eye

Ø THREAD (inch)	Ø THREAD (mm)	WLL (kg)	A (mm)	B (mm)	C (mm)	D (mm)
⅜	9,53	540	9	13	28	65
½	12,70	1000	12	18	36	80
⅝	15,90	1590	14	21	43	98
¾	19,10	2360	17	25	53	113
⅞	22,20	3270	20	31	59	118
1	25,40	4540	22	36	74	155
1¼	31,80	6900	29	45	88	197
1½	38,10	9710	32	54	105	215
1¾	44,50	12700	38	60	119	254
2	51,00	16780	45	69	146	308
2½	63,50	27220	51	79	165	344
2¾	70,00	34020	57	83	178	381



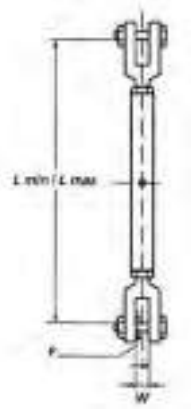
Heavy Duty Turnbuckles with Trapezium Thread

IMPORTANT: Turnbuckles should NEVER be used for lifting.

Jaw/Jaw

WLL (t)	L min LENGTH CLOSED (mm)	L max LENGTH OPEN (mm)	W JAW OPENING (mm)	P Ø PIN (mm)	WEIGHT (kg)
1,0	354	522	19	16	2
1,6	384	572	23	20	3
2,0	412	612	26	22	4
2,5	506	712	30	24	6
3,1	537	765	32	27	8
4,0	569	810	35	30	10
5,0	610	850	40	36	15
6,3	691	954	45	39	21
8,0	742	1038	50	45	31
10,0	793	1102	60	48	40
12,6	862	1202	65	52	52
16,0	926	1280	70	60	69
20,0	1010	1392	75	68	85
25,0	1084	1488	80	72	98
31,5	1170	1600	90	80	141
40,0	1280	1775	100	90	176
50,0	1390	1940	110	100	240
63,0	1525	2130	120	110	340
80,0	1655	2315	140	125	420
100,0	1750	2465	156	140	510
125,0	1880	2650	176	160	600
160,0	2090	2970	200	180	690







Turnbuckles with Metric Thread

IMPORTANT: Turnbuckles should NEVER be used for lifting.

Jaw/Jaw

THREAD	WLL (t)	MBL (t)	L min (mm)	L max (mm)	TAKE UP (mm)	DIMENSIONS (mm) A	P	U	V	W	WEIGHT (kg)
M8	0,3	1,5	203	305	102	127	6	21	9	9	0,2
M10	0,5	2,5	245	355	110	160	8	21	9	11	0,3
M12	0,7	3,5	345	525	180	230	10	35	13	19	0,8
M16	1,2	6,0	395	565	170	230	12	50	16	21	1,4
M20	1,5	7,5	395	555	160	230	16	46	18	21	2,2
M22	2,2	11,0	476	702	226	305	20	60	20	25	3,5
M24	3,2	16,0	580	860	280	360	22	63	24	30	4,1
M27	3,8	19,0	600	870	270	356	22	63	24	31	4,5
M33	5,0	25,0	650	930	280	385	24	74	30	38	6,4
M36	6,3	31,5	680	910	230	385	30	85	30	48	11,0
M39	7,0	35,0	670	949	279	407	34	90	32	47	11,0
M45	8,5	42,5	780	1020	240	410	35	120	43	50	19,0
M48	10,0	55,0	743	977	234	407	43	121	46	51	22,0
M56	12,6	63,0	862	1202	340	500	52	122	60	65	39,0
M64	16,0	80,0	925	1280	355	540	60	130	65	70	48,0



Oval Eye / Oval Eye

THREAD	WLL (t)	MBL (t)	L min (mm)	L max (mm)	TAKE UP (mm)	DIMENSIONS (mm) A	J	K	L	WEIGHT (kg)
M8	0,3	1,5	203	305	102	127	8	9	20	0,3
M10	0,5	2,5	235	349	114	152	8	11	25	0,4
M12	0,7	3,5	330	530	200	229	11	14	36	0,9
M16	1,2	6,0	377	560	183	229	14	18	40	1,2
M20	1,5	7,5	410	565	155	229	17	25	55	2,0
M22	2,2	11,0	486	730	244	305	17	25	55	3,1
M24	3,2	16,0	556	856	300	356	20	26	57	3,9
M27	3,8	19,0	576	856	280	356	20	26	57	4,8
M33	5,0	25,0	640	920	280	381	25	34	64	6,8
M36	6,3	31,5	650	920	270	381	27	38	75	9,0
M39	7,0	35,0	687	970	283	407	27	38	75	10,0
M45	8,5	42,5	720	1020	300	407	30	40	85	14,0
M48	10,0	50,0	770	1020	280	407	37	44	92	18,0



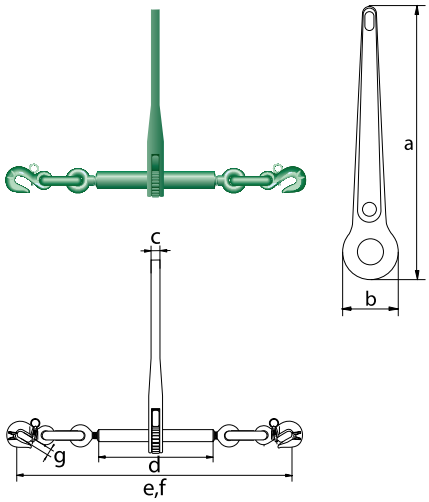
SPECIFICATIONS

Standard hot dip galvanized
Factory supplied with locking nuts
Bolt secured with nut and split pin
Straight or in-line pull only

Load Binders

Ratchet type load binder (EN 12195-3)

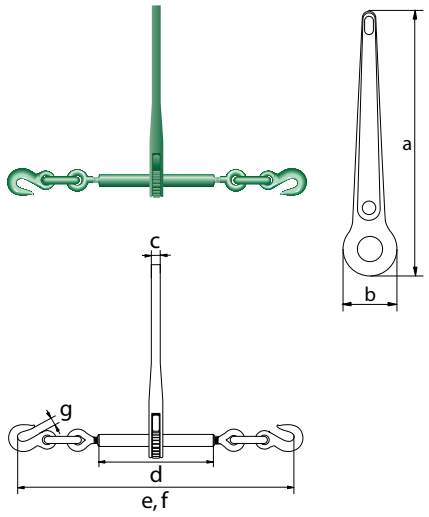
CHAIN Ø (mm)	LASHING CAPACITY (t)	MBL (t)	DIMENSIONS a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	g (mm)	TAKE-UP (mm)	WEIGHT (kg)
8	4,0	8,0	355	66	16	252	742	573	11	169	4,5
10	6,3	12,6	355	66	16	252	789	620	13	169	5,4
13	10,0	21,2	355	66	16	252	866	703	17	153	7,7
16	16,0	32,2	355	66	16	252	892	733	20	159	10,2



Material: Drop forged, Grade 8, quenched and tempered
Safety factor: MBL equals 2 x lashing capacity
Standard: EN 12195-3
Finishing: painted red or green

Ratchet type load binder (standard) (P71#)

CHAIN Ø (mm)	LASHING CAPACITY (t)	MBL (t)	DIMENSIONS a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	g (mm)	TAKE-UP (mm)	WEIGHT (kg)
8 - 10	2,45	8,6	355	66	16	254	750	580	13	170	4,8
10 - 13	4,17	15,0	355	66	16	254	770	600	16	170	5,9
13 - 16	5,90	20,9	355	66	16	254	840	685	19	155	7,9



Material: Drop forged/cast steel, quenched and tempered
Safety factor: MBL equals 3,5 x lashing capacity
Finishing: painted red or green

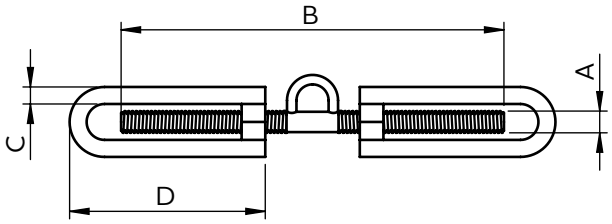


Wire Lashing

S-01

Hamburger turnbuckle





REF.	MBL (t)	THREAD Ø A (mm)	THREAD LENGTH B (mm)	BOW Ø C (mm)	BOW LENGTH D (mm)	WEIGHT (kg)
S-01/24/400	13	24	400	16	210	2,8
S-01/24/500	13	24	500	16	260	3,8
S-01/27/400	18	27	400	18	210	4,4
S-01/27/500	18	27	500	18	260	5,5
S-01/30/400	20	30	400	20	210	5,0
S-01/30/500	20	30	500	20	260	6,3
S-01/36/400	21	36	400	20	210	7,0
S-01/36/500	21	36	500	20	260	8,8

Lashing wire



CONSTRUCTION	Ø (mm)	MBL (kN)	WEIGHT (kg/100m)
6 x 12 + FC	8	20	14
6 x 19 + FC	10	29	22
6 x 19 + FC	12	46	28
6 x 19 + FC	14	59	43
6 x 19 + FC	16	165	87
6 x 19 + FC	18	206	108
6 x 19 + FC	20	251	132
6 x 19 + FC	22	308	162

Lashing fibre rope

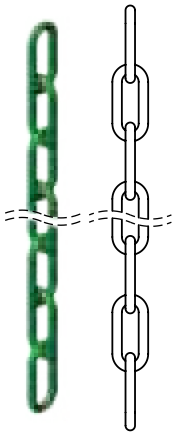




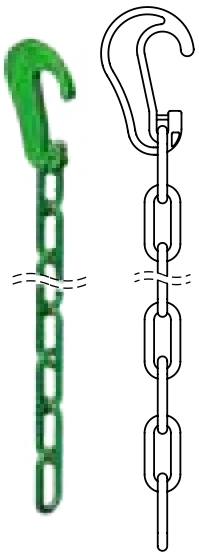
Ø (mm)	MBL (kN)	WEIGHT (kg/100m)
8	9,41	4,0
10	13,97	8,6
12	19,90	11,5

Lashing Chains

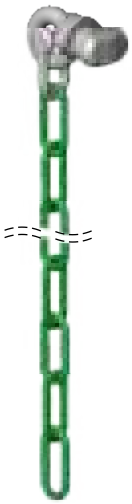
LC-00



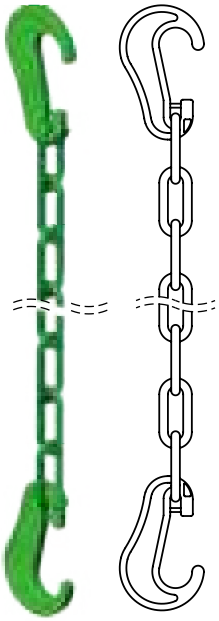
LC-01



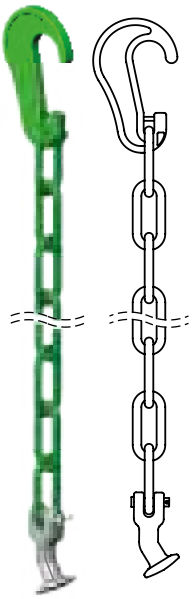
LC-03



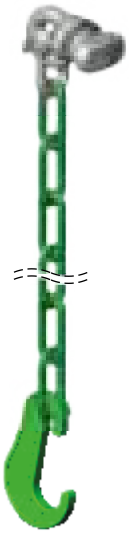
LC-11



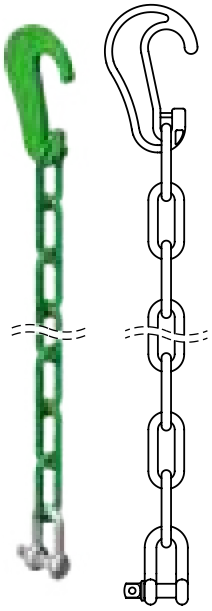
LC-12



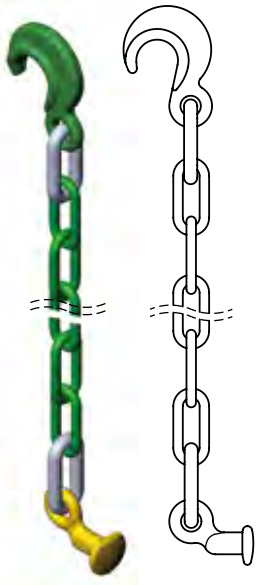
LC-13



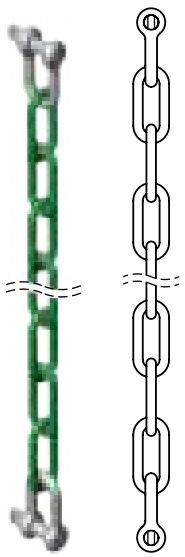
LC-14



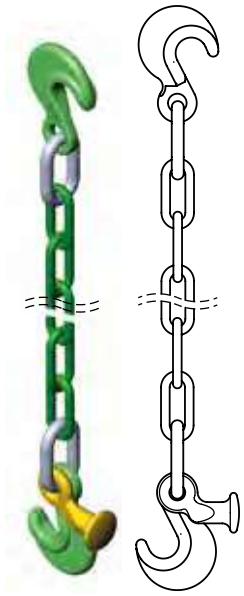
LC-112



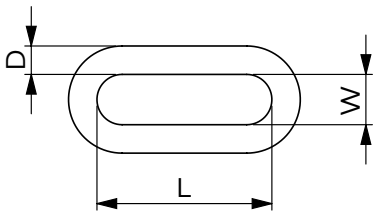
LC-44



LC-112A



Ø (mm)	LENGTH (mm)	WIDTH (mm)	WEIGHT (kg)	(MSL) MAX. SEC. LOAD (kN)	(MBL) MIN. BREAK. LOAD (kN)
9	56	15	1,45	50	100
11	65	18	2,20	75	150
13	80	23	3,00	100	200

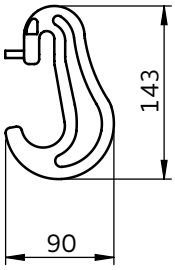


Hooks

H-12/9

Hook for 9mm lashing





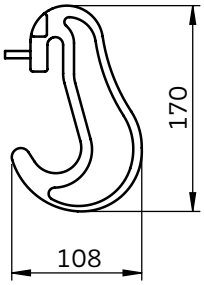
■ SPECIFICATIONS

(MSL) Max. securing load: tension 50kN
(MBL) Min. breaking load: tension 100kN

H-12/11

Hook for 11mm lashing





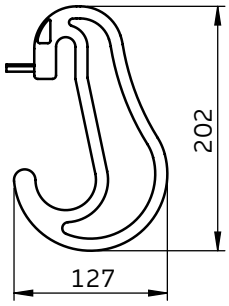
■ SPECIFICATIONS

(MSL) Max. securing load: tension 75kN
(MBL) Min. breaking load: tension 150kN

H-12/13

Hook for 13mm lashing





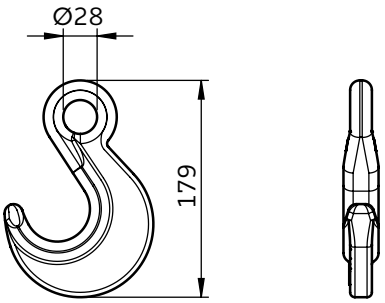
■ SPECIFICATIONS

(MSL) Max. securing load: tension 100kN
(MBL) Min. breaking load: tension 200kN

H-10

Eye hook





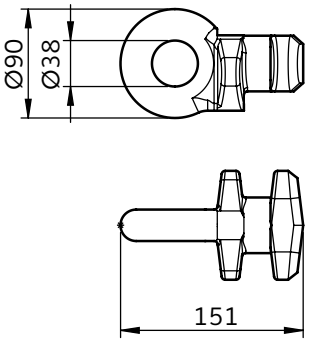
■ SPECIFICATIONS

(MSL) Max. securing load: tension 100kN
(MBL) Min. breaking load: tension 200kN

H-30

Securing pad



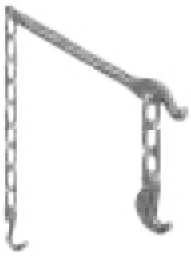


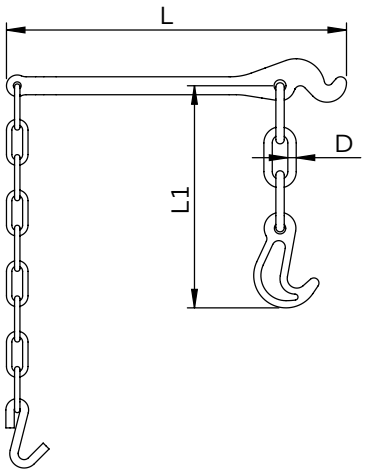
■ SPECIFICATIONS

(MSL) Max. securing load: tension 120kN
(MBL) Min. breaking load: tension 240kN

Chain Tension Levers

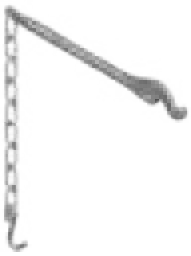
■ WITH FLAT HOOK FOR SHORTENING

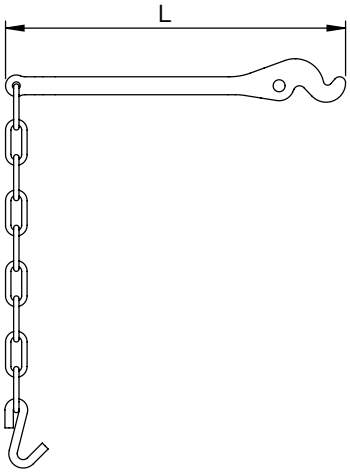




REF.	Ø (mm)	L (mm)	L1 (mm)	D (mm)	MSL (kN)	MBL (kN)	COLOR
S-510	9	575	250	11	50	100	Yellow
S-530	11	570	305	12	75	150	Blue
S-550	13	570	335	14	100	200	Green

■ WITHOUT FLAT HOOK FOR SHORTENING



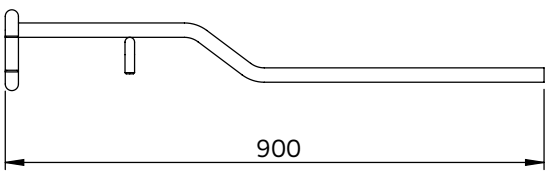


REF.	Ø (mm)	L (mm)	MSL (kN)	MBL (kN)	COLOR
S-540	11	570	75	150	Blue
S-560	13	570	100	200	Green

S-92B

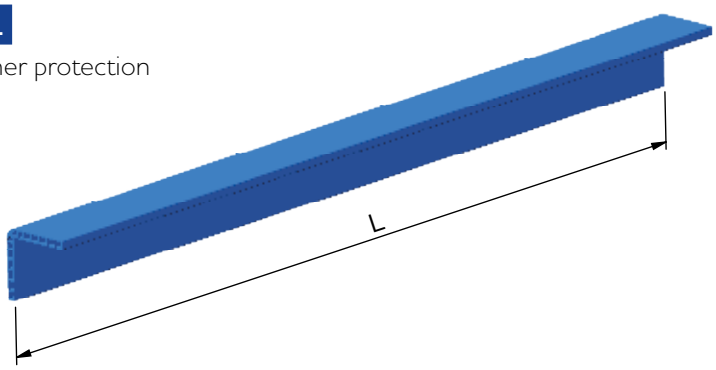
Lever extension

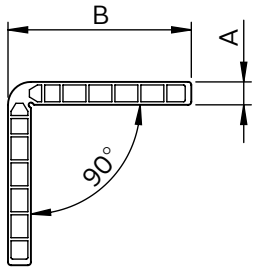




Cargo Accessories

Z-1
Corner protection

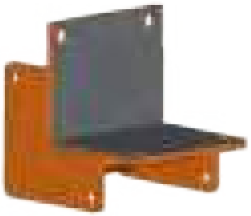


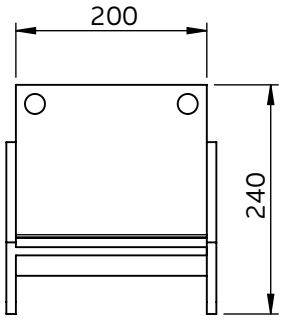


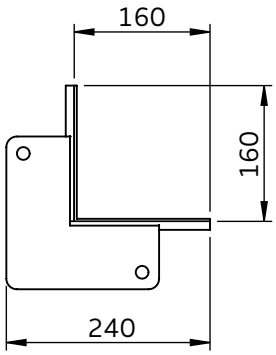
A (mm)	B (mm)
15	120
19	190

- Standard length = 1m & 3m

Z-2A
Heavy duty corner protection







Z-27
Transport trolley



- **SPECIFICATIONS**
  Capacity: 1t

Z-23
Traffic cone



Cargo Accessories

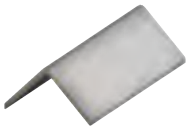
Z-25
Dunnage with bark

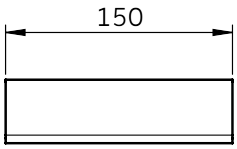


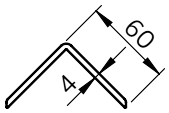
Z-37
Wooden beams



Z-1A
Cardboard corner protector





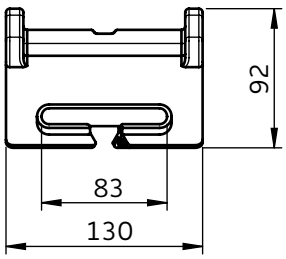


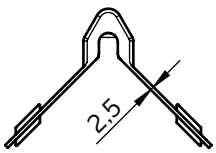
Z-10
Anti-skid mats



Z-1B
Plastic corner protector







Z-6
Stepladder

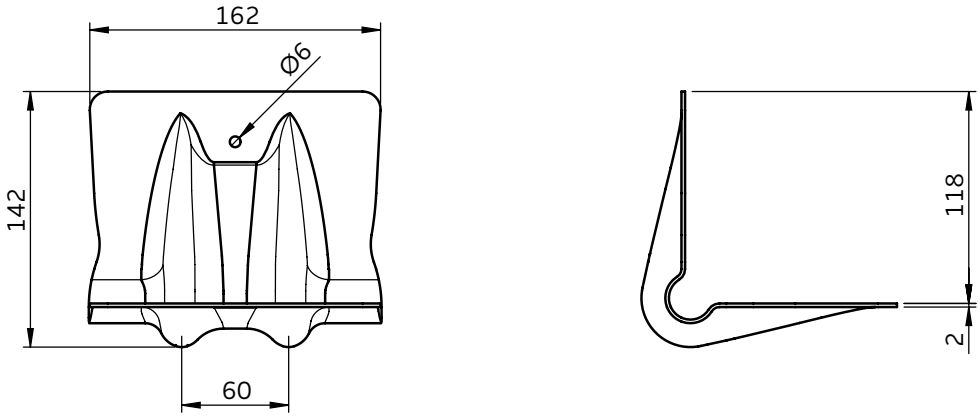


Cargo Accessories

Z-1S

Steel corner protector

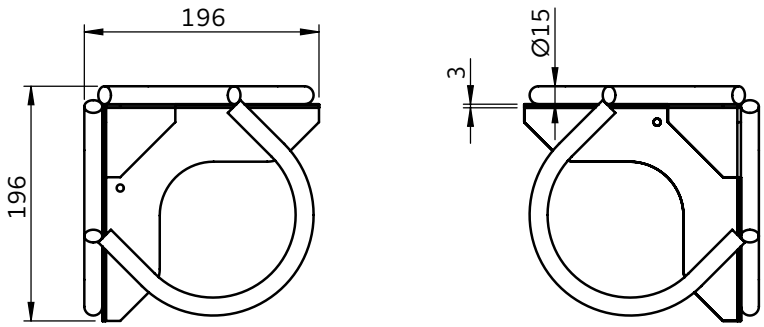




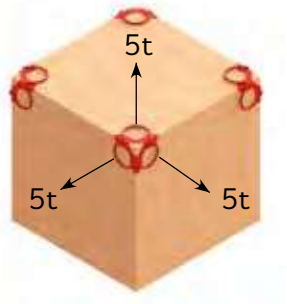
Z-2B

Corner lashing brace





■ PRACTICE



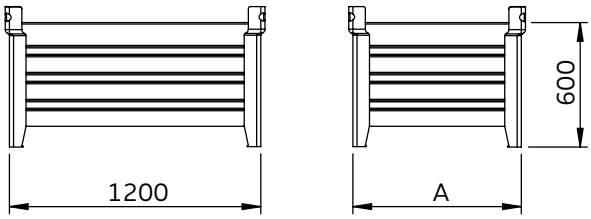
■ SPECIFICATIONS

Strength per eye:
(MSL) Max. securing load: tension 5t

Bins & Accessories

Z-8/1



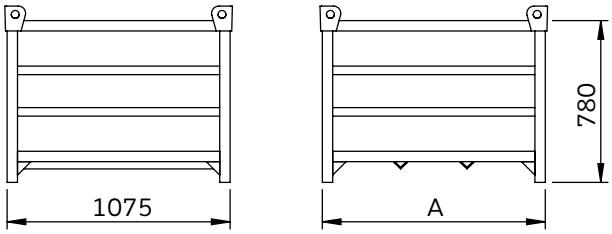


REF.	A (mm)	WEIGHT (kg)	CAPACITY (t)
Z-8/1	800	71	1,5

Z-8/4

Bin for flat rack





REF.	A (mm)	WEIGHT (kg)	CAPACITY (t)
Z-8/4	1075	100	2,0

Z-12

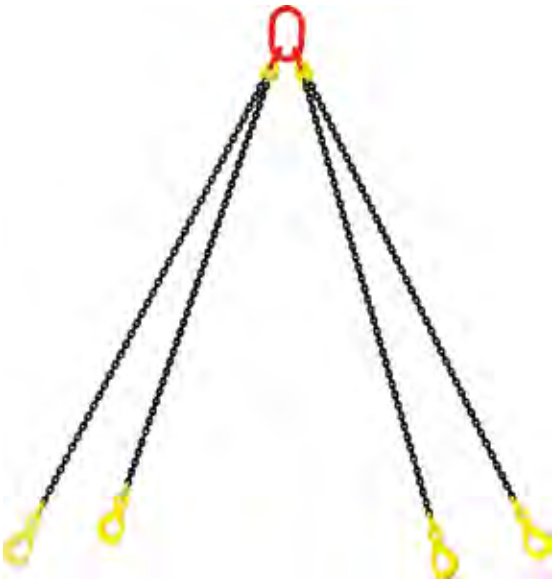
Tarpaulin for bins



Available for: Z-8/1
Z-8/2
Z-8/3
Z-8/4

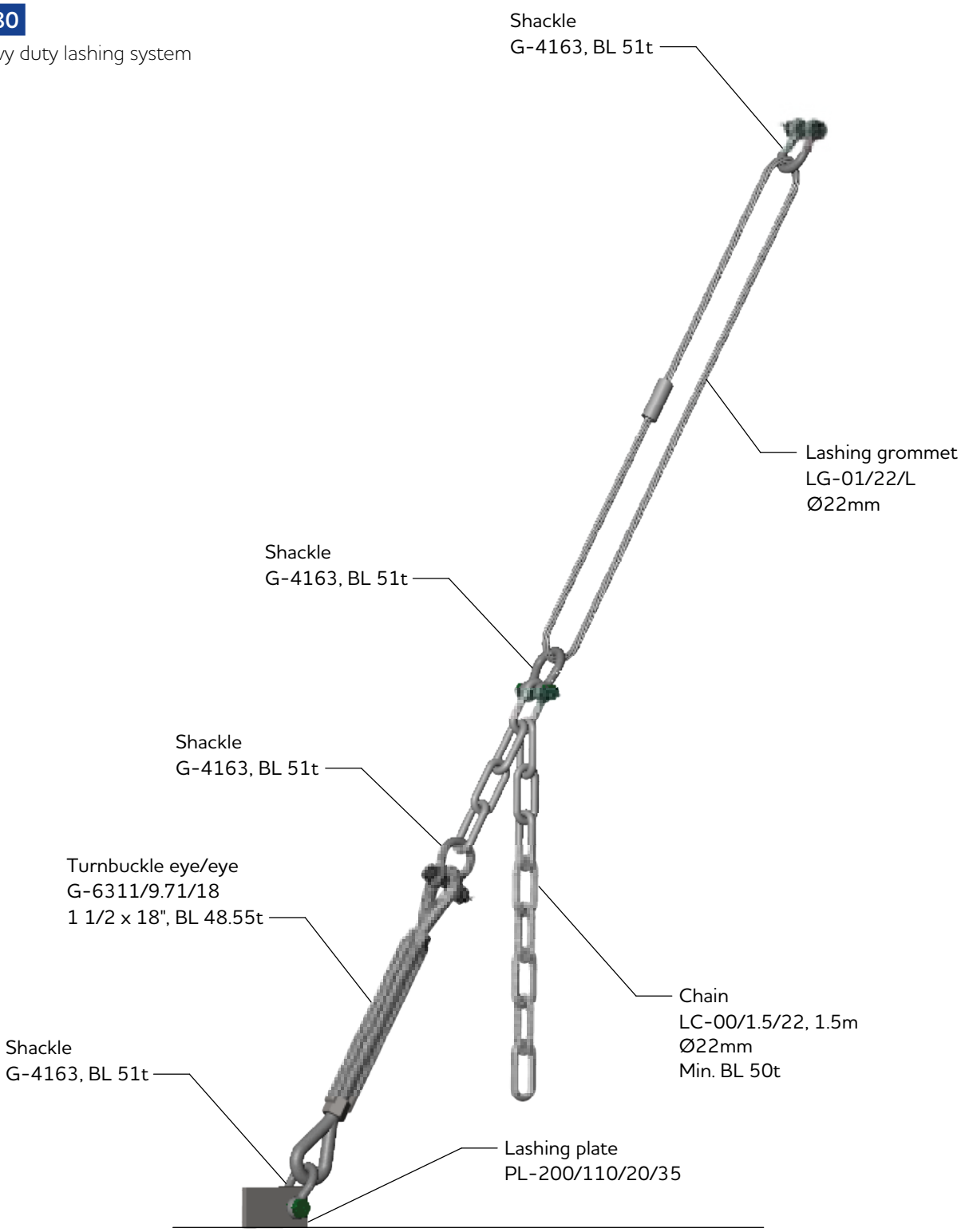
MK-3A

4-leg lifting chain for empty bins



Heavy Duty Lashing

Z-80
Heavy duty lashing system

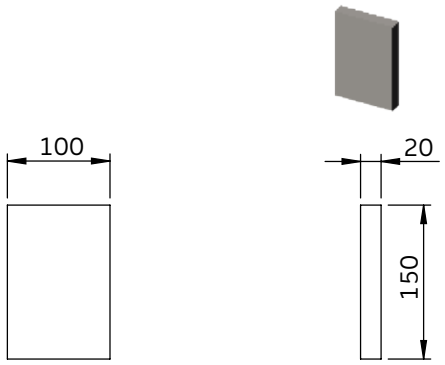


SPECIFICATIONS

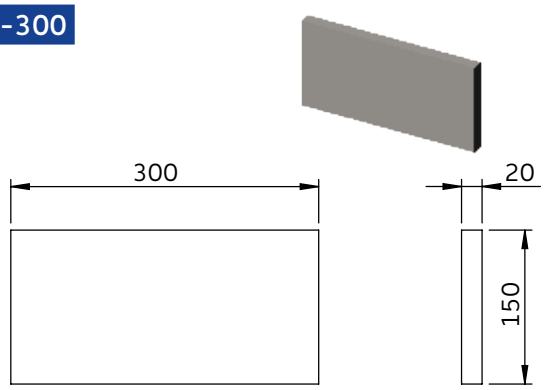
(MSL) Max. securing load: 10t
Safety factor: 4

Stopper Plates

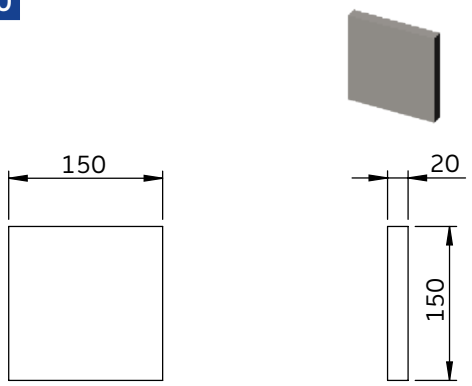
PL-100



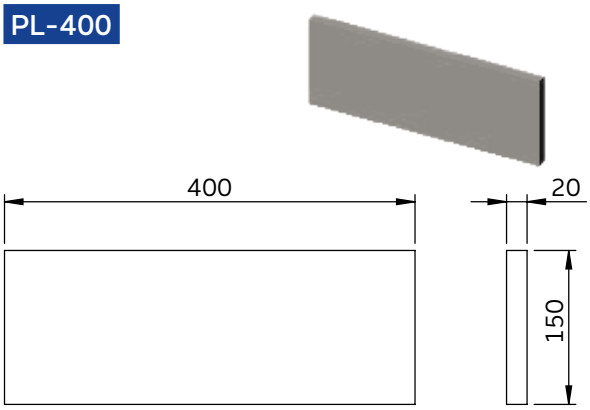
PL-300



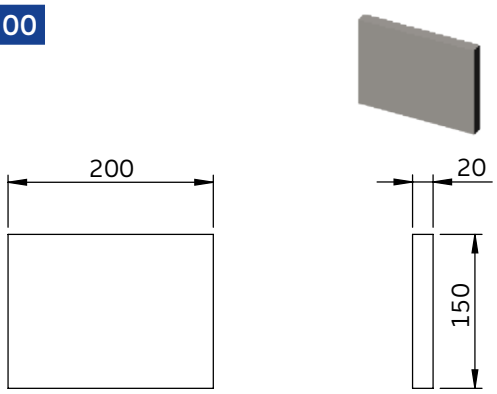
PL-150



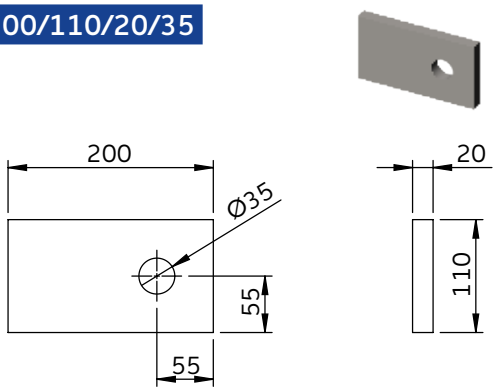
PL-400



PL-200

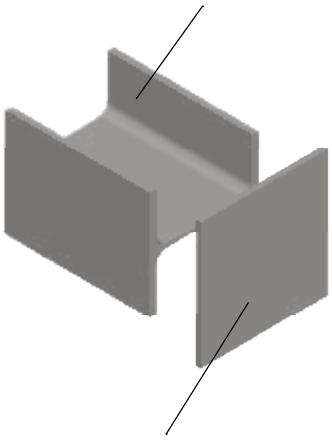


PL-200/110/20/35



■ STOPPER BEAM

HEB 300

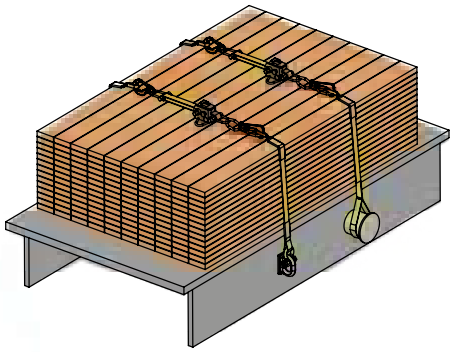


Face plate 350 x 350 x 15mm

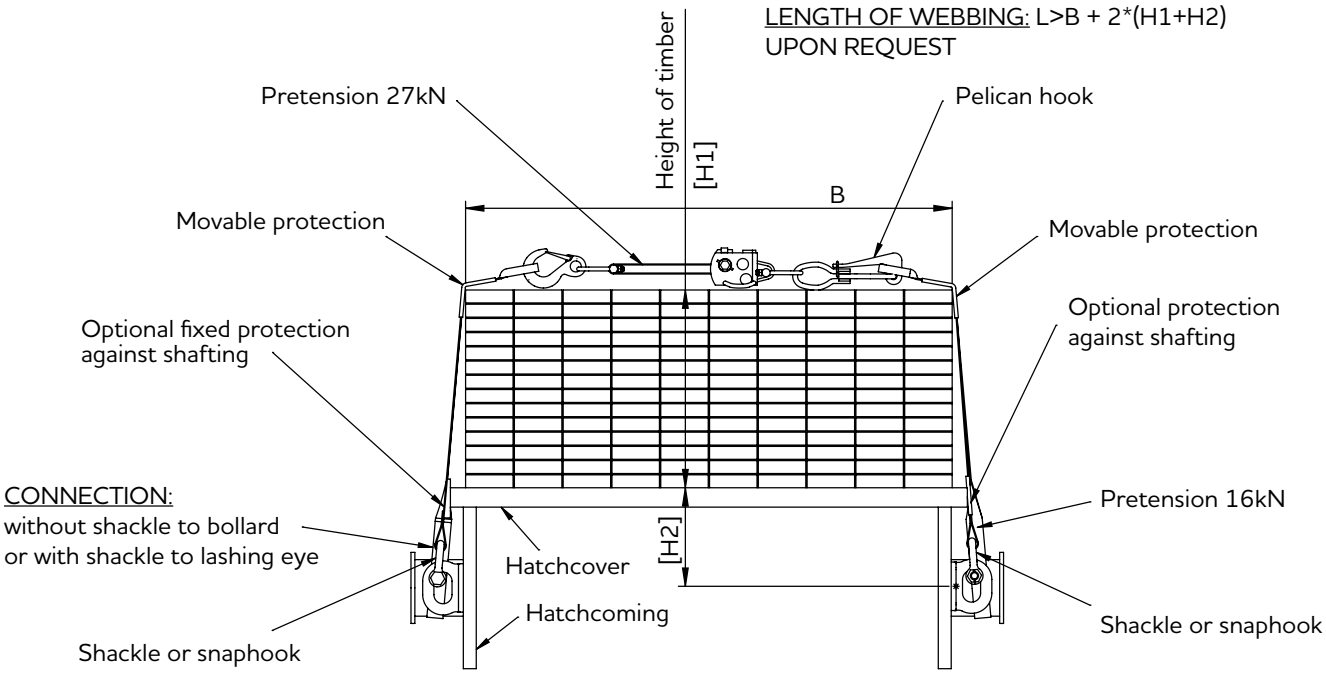
Complete Lashing System

Z-7

Timber lashing system







■ SPECIFICATIONS

(MSL) Max. securing load: 133kN

RORO

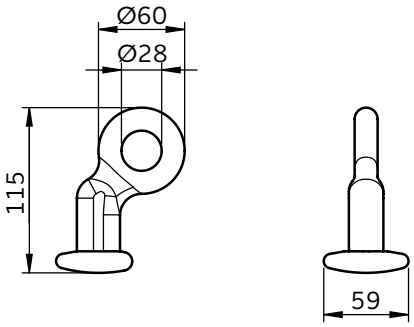


Hooks – Elephant foot

H-20

Elephant foot with eye





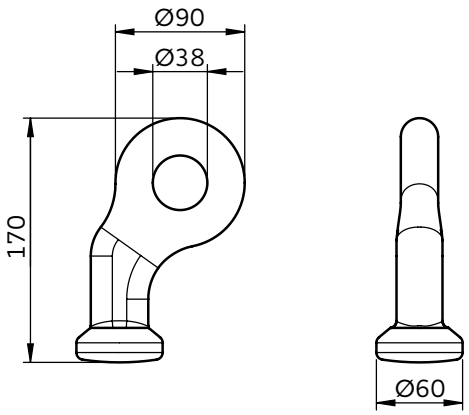
SPECIFICATIONS

(MSL) Max. securing load: tension 100kN
(MBL) Min. breaking load: tension 200kN

H-20/50

Elephant foot with eye





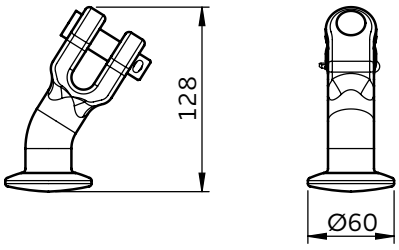
SPECIFICATIONS

(MSL) Max. securing load: tension 245kN
(MBL) Min. breaking load: tension 490kN

H-21

Elephant foot with jaw





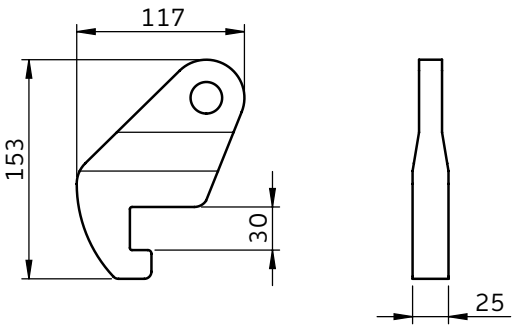
SPECIFICATIONS

(MSL) Max. securing load: tension 100kN
(MBL) Min. breaking load: tension 200kN

H-43

Hook for ISO-hole





SPECIFICATIONS

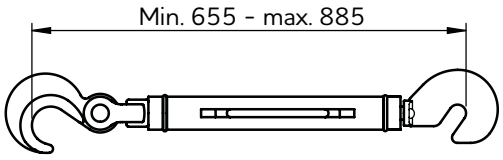
(MSL) Max. securing load: tension 100kN
(MBL) Min. breaking load: tension 200kN

Chain Spanners - Turnbuckles

S-21A

Chain turnbuckle:
hook - hook

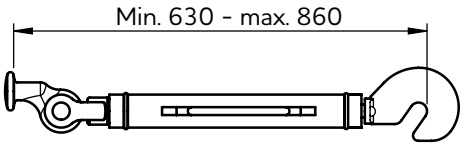




S-23

Chain turnbuckle:
elephant foot - hook

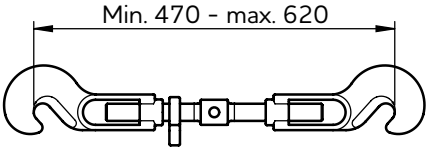




S-24

Chain turnbuckle:
hook - hook

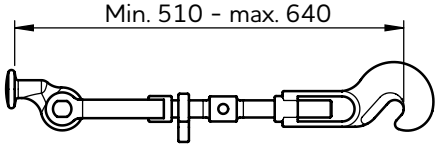




S-25

Chain turnbuckle:
elephant foot - hook

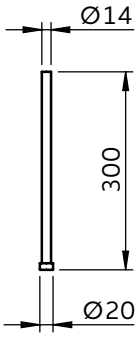




S-96

Spanner for S-312/50
S-24
S-25





SPECIFICATIONS

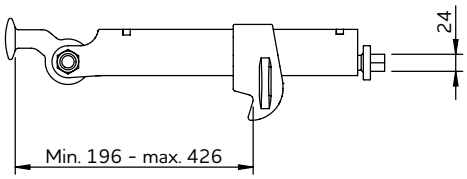
(MSL) Max. securing load: tension 100kN
(MBL) Min. breaking load: tension 200kN

Chain Spanners - Speedkings

S-42

Speedking with elephant foot

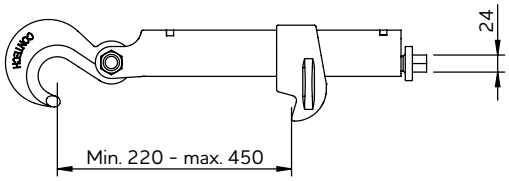




S-44

Speedking with hook

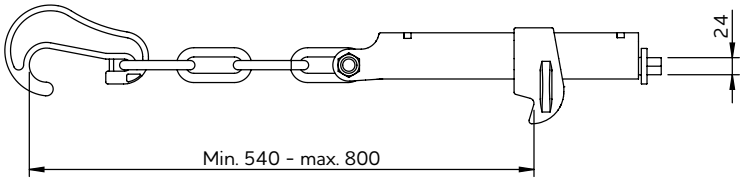




S-45A

Speedking with chain and hook

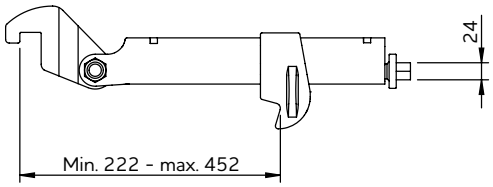




S-46

Speedking with ISO hook





■ TOOLS FOR SPEEDKINGS



S-98
Pneumatic tool



S-98A
24mm Hexagonal nut



S-98E/DW
Electric tool

■ SPECIFICATIONS

(MSL) Max. securing load: tension 100kN
(MBL) Min. breaking load: tension 200kN

Lashing Straps

RR-33/3/50

Hook-hook
Trailer lashing with ratchet



SPECIFICATIONS

(MBL) Min. breaking load:	12t
Length:	3m

RR-33/3/75

Hook-hook
(both hooks swivel type)
Trailer lashing with ratchet



SPECIFICATIONS

(MBL) Min. breaking load:	20t
Length:	3m

RR-34/3/50

Hook-elephant foot
Trailer lashing with ratchet



SPECIFICATIONS

(MBL) Min. breaking load:	12t
Length:	3m

RR-34/3/75

Hook (swivel)-elephant foot
Trailer lashing with ratchet



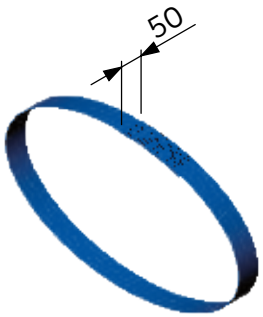
SPECIFICATIONS

(MBL) Min. breaking load:	20t
Length:	3m

Lashing Straps

RR-38/3/50

Truck loop

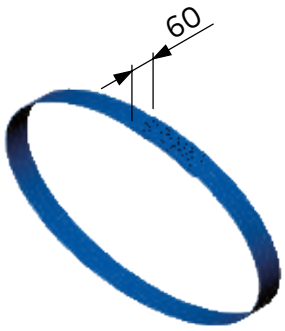


SPECIFICATIONS

Circumference:	3000mm
(MBL) Min. breaking load:	9t

RR-38/3/60

Truck loop



SPECIFICATIONS

Circumference:	3000mm
(MBL) Min. breaking load:	15t

RR-40

Car loop



SPECIFICATIONS

Circumference:	1000mm
(MBL) Min. breaking load:	2,5t

Lashing Straps

RR-32/L/50

Cargo lashing with ratchet



■ SPECIFICATIONS

(MBL) Min. breaking load: 5t
Length: 3m/5m/9m

RR-32/L/75

Cargo lashing with ratchet



■ SPECIFICATIONS

(MBL) Min. breaking load: 10t
Length: 10m/15m/25m

RR-321/L/50

Trailer lashing with ratchet



■ SPECIFICATIONS

(MBL) Min. breaking load: 5t
Length: 5m/9m

RR-321/L/75

Trailer lashing with ratchet

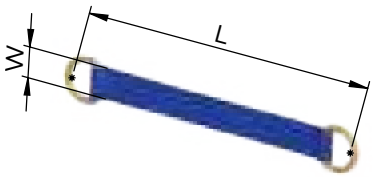


■ SPECIFICATIONS

(MBL) Min. breaking load: 10t
Length: 10m/15m

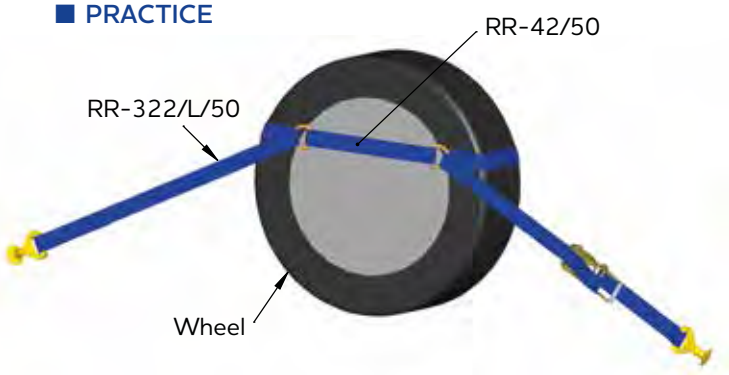
RR-42

For wheel lashing



REF.	L (mm)	W (mm)	MBL (t)
RR-42/50	520	50	5
RR-42/75	850	75	10

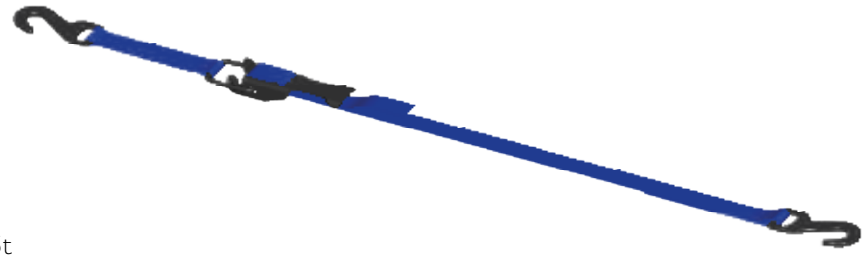
■ PRACTICE



Car Lashing Straps

RR-31

Car lashing



SPECIFICATIONS

(MBL) Min. breaking load: 1,5t
Max. working length: 2m

RR-31A and RR-31A/20

Car lashing with loop



SPECIFICATIONS

(MBL) Min. breaking load RR-31A: 1,5t
(MBL) Min. breaking load RR-31A/20: 2t
Max. working length: 2m

RR-31C/20

Car lashing with loop

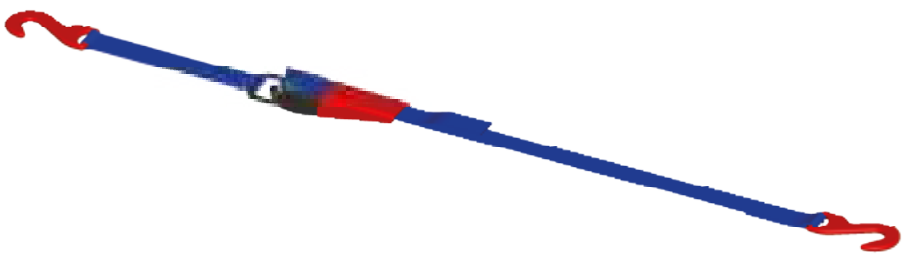


SPECIFICATIONS

(MBL) Min. breaking load: 2t
Max. working length: 2m

RR-31D

Car lashing



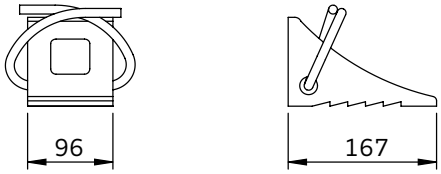
SPECIFICATIONS

(MBL) Min. breaking load: 2t
Max. working length: 2m

Chocks and Jacks

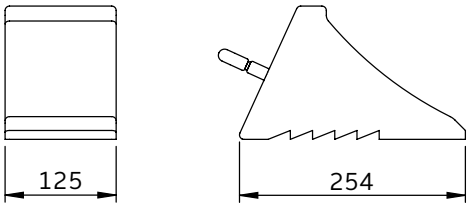
RR-01
Car chock





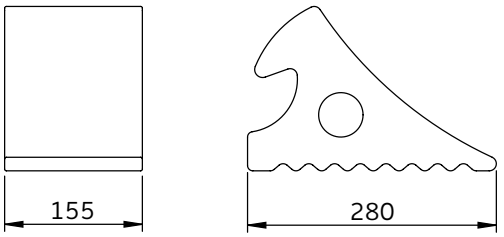
RR-02
Trailer chock





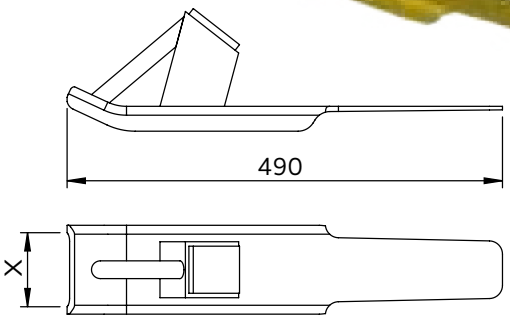
RR-02L
Trailer chock





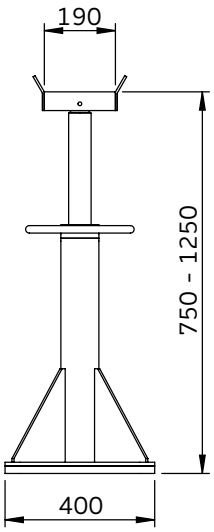
RR-03
Railway chock



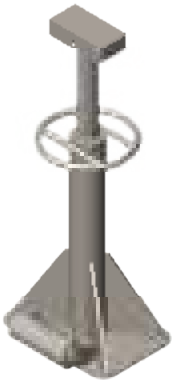


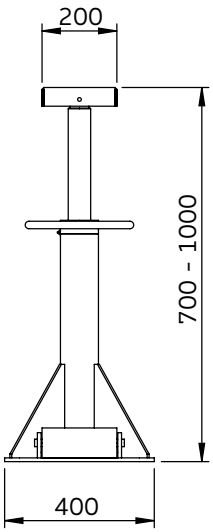
RR-11
Trailer jack





RR-14
Rail car jack

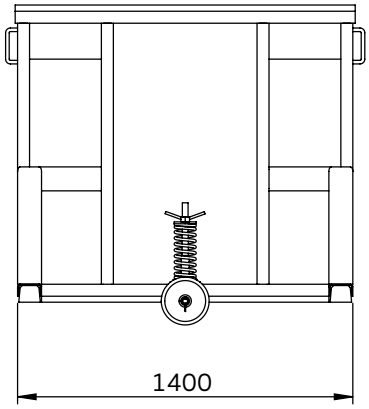


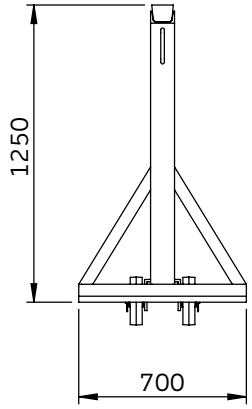


Trailer Horses

RR-21/140

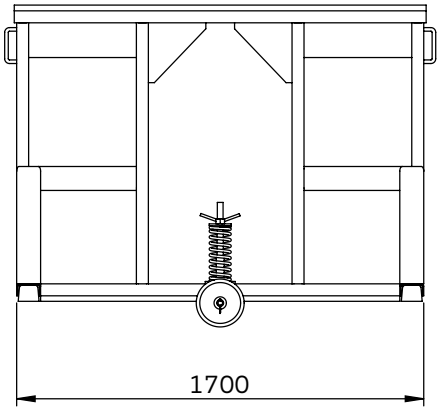


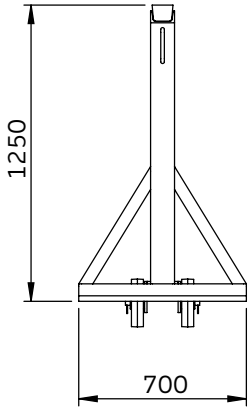




RR-21/170



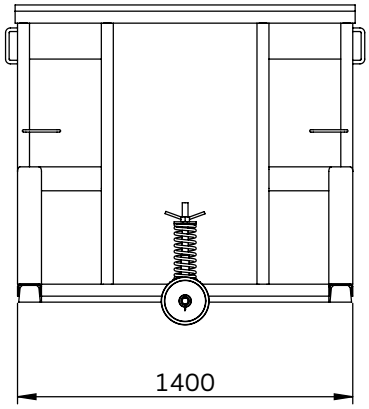


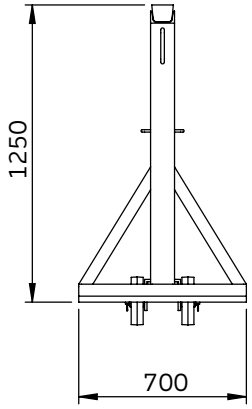


RR-21/140/GRI

With trailer chock carrying brackets







SPECIFICATIONS

(MBL) Min. Breaking load: compression 1000kN
Other types available on request

Trailer Horses

■ ALTERNATIVE PARTS

Rubber wheels



■ SPARE PARTS

Wheels



Wheel assembly



Notes



LIFTING GEAR









BEAMS & REGULATIONS



Regulations and Inspection in the Lifting Field

Regulations

THE MACHINERY DIRECTIVE

The founder text of regulations regarding lifting, the Machinery Directive has evolved many times since 1989 and presently bears the N° 2006/42/CE, which has been in force since 29/12/2009. This Directive fixes the essential health and safety requirements concerning the products design and imposes on all CE States to transpose enacted principles in their respective law.

Two main notions sum up the Directive philosophy:

a) The design of machines and partly completed machinery must eliminate or reduce the risks to the utmost and users must be informed of any remaining risks; in other words, the manufacturer should ascertain the employability of the material put on the market (i.e. that it satisfies all health and safety requirements, with a technical file, the issue of instructions, the delivery of a declaration of conformity and the affixing of CE marking);

b) Users of lifting equipment (machines, lifting accessories, accessory components, chains, metallic or textile wire ropes, lifting webbings) should choose them according to the performed work, the factory characteristics and take all the necessary steps to secure their safety, i.e. that they are fully responsible for checking when putting into service, of periodical examinations and when restarting.

STANDARDS

They refer to technical specifications published by standardization organisms (ISO, CEN, AFNOR) made with the participation of interested parties (manufacturers, users, notified bodies) and serve as a basis for the establishment of the supply agreements of new equipment; the reference to European standards (prefix EN) means – for the products respecting them – a presumption of conformity to the regulation: as for any standard, the conformity is not compulsory, but unquestionably constitutes an evidence of safety.

CE MARKING AND DECLARATION OF CONFORMITY

Marking certifies that the working equipment conforms with the technical rules and respects the clauses of the directives which concern it (assessment of conformity with internal checks, CE type examination, full quality assurance). Regulatory compulsory, the marking is used for the free movement of goods in the European Community, but is not a certification label.

Moreover, all lifting appliances, lifting accessories and machines – as defined in the Machinery Directive – must be delivered with a CE declaration of conformity and instructions (safety advice and forbidden dangerous uses). The final user must read this before putting the machinery or the accessory into use.

THE NEW LABOUR CODE AND THE PERIODICAL CHECKING

The corner stone of all regulations governing lifting, the Labour Code defines not only the duties of the factory manager regarding the putting at disposal of working equipment, but also the duties to be respected by their users. The Order of 1st March 2004 fixes very precisely the inspections to be performed on working equipment as well as on individual protective equipment, when putting into service and when restarting (examination of adequacy, examination concerning assembly and installation, operating test, static and dynamic tests).

Loads and factors - Inspection documents

MINIMUM BREAKING LOAD (MBL)

Value, specified in kN, reached at the point of a tensile test at which breaking or destruction occurs.

WORKING LOAD LIMIT (WLL) OR SAFE WORKING LOAD (SWL)

Maximum load that the material can support in service, while taking into account the safety factor.

SAFETY FACTOR / WORKING COEFFICIENT (SF)

Ratio between the breaking load and the working load limit MBL / WLL

TEST COEFFICIENT

Test coefficient means the arithmetic ratio between the load used to carry out the static or dynamic tests on lifting machinery or a lifting accessory and the maximum working load marked on the lifting machinery or lifting accessory.

- STATIC TEST: Static test means the test during which lifting machinery or a lifting accessory is first inspected and subjected to a force corresponding to the maximum working load multiplied by the appropriate static test coefficient and then re-inspected once the said load has been released to ensure that no damage has occurred. The factor is equal to 1,5 for hand powered lifting equipment and to 1,25 for the other equipment.

- DYNAMIC TEST: Dynamic test means the test during which lifting machinery is operated in all its possible configurations at the maximum working load multiplied by the appropriate dynamic test coefficient with account being taken of the dynamic behavior of the lifting machinery in order to check that it functions properly. The factor is equal to 1,1.

SAFETY FACTORS / WORKING COEFFICIENTS

- The working coefficient of wire-rope / rope-end combinations is equal to 5.
- The working coefficient of chains is equal to 4.
- The working coefficient for textile ropes or slings is dependent on the material, method of manufacture, dimensions and use. This coefficient must be chosen in such a way as to guarantee an adequate level of safety; it is equal to 7, provided the materials used are shown to be of very good quality and the method of manufacture is appropriate to the intended use. Should this not be the case, the coefficient is set at a higher level in order to secure an equivalent level of safety.
- All metallic components making up, or used with, a sling must have a working coefficient equal to 4.

TYPES OF INSPECTION DOCUMENTS ACCORDING TO EN 10204

a) Type 2.1: Declaration of compliance with the order:
Document in which the producer declares that the delivered products are conform to the order instructions, with no test results.

b) Type 2.2: Test report:
Document in which the producer declares that the delivered products are conform to the order instructions, and in which he supplies test results based on a non specific inspection.

b) Type 3.1: Inspection certificate:
Document in which the producer declares that the delivered products are conform to the order instructions, and in which he supplies test results, defined by the product specification, regulations and/or by the order. The document is authenticated by the authorized inspection representative of the producer, independent of manufacturing department.

c) Type 3.2: Inspection certificate:
Document prepared at the same time by the authorized inspection representative of the producer, independent of the manufacturing department, and either by the authorized inspection representative of the buyer, or by the inspector designated by regulations and in which they declare that the delivered products are conform to the order instructions, with test results supplied.

Lifting Beam Design

Container Technics nv is specialized in the delivery of custom-made lifting gear like spreader bars and lifting beams. The whole process from the design to delivery of the lifting gear is managed by our experts. They design the lifting gear to the customers' demands and in accordance with all relevant regulations i.e. from classification societies. Our logistic team is experienced in ensuring a smooth world-wide delivery.

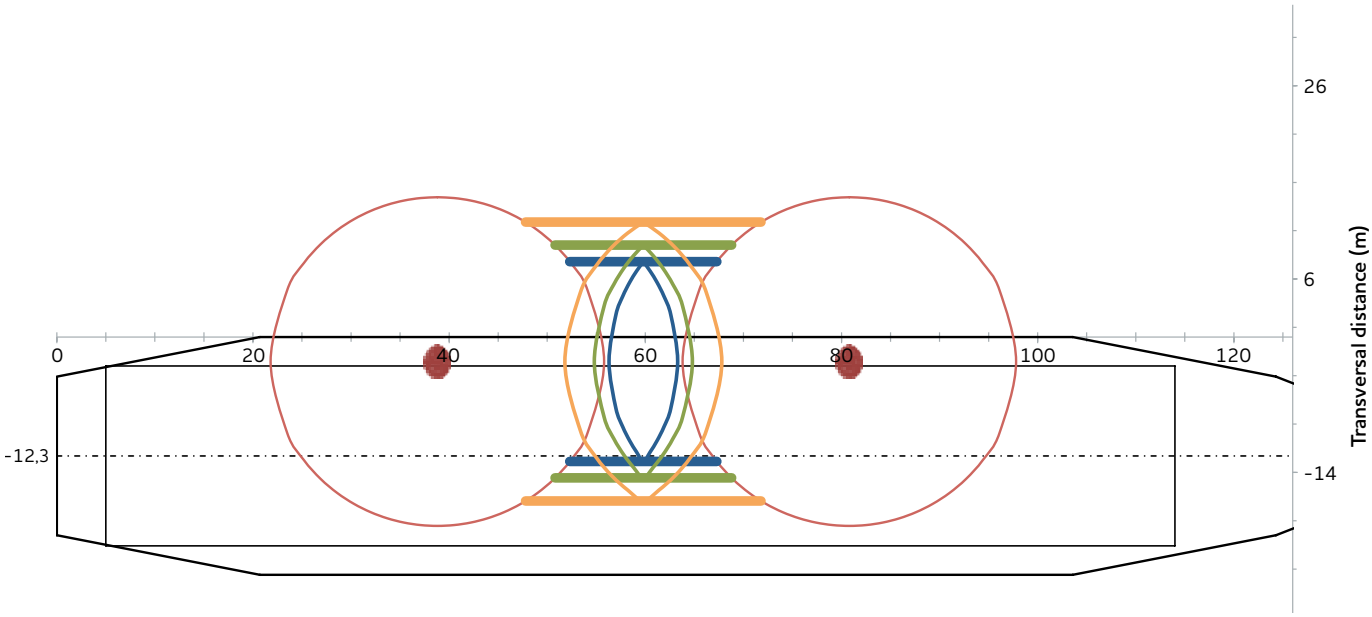
How we work

DESIGN → ENGINEERING → PRODUCTION → TESTING → DELIVERY

Design

A design always starts with the translation of the customers' demands into technical requirements for the lifting device. From this stage on we think along with our customers to create a design to suit their needs. For project and/or cargo specific lifting gear, these requirements are often very clear.

For lifting gear that will be on board of a specific ship during its entire lifetime, there is a lot of uncertainty about the load that is to be hoisted. For these lifting beams we always aim to make the design as flexible as possible to ensure that the lifting beam can satisfy not only current but also future market demands.



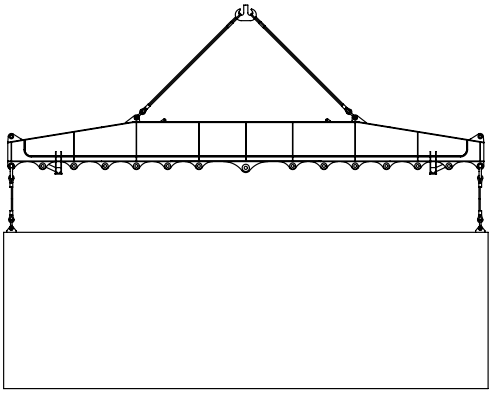
Lifting beams

Lifting beams are structures that can be used between the crane hook and the cargo to decrease the lifting height, avoid the induction of stress in the cargo or to combine two cranes to increase the total lifting capacity of the vessel.

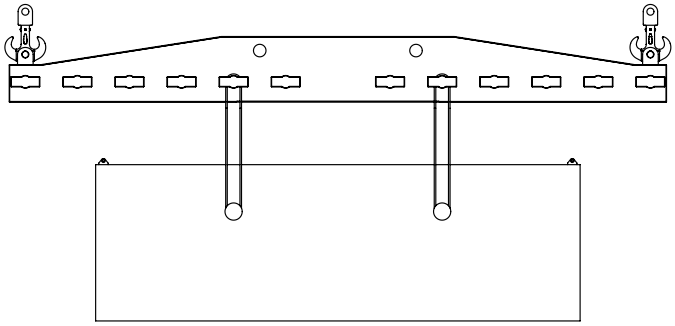
Lifting beams are designed in such a way as to create a horizontal distance between the connection point to the load and the connection point to the crane. This distance is called the bending lever and forms – in combination with the lifting capacity – the bending moment, which is one of the most important design factors of a lifting beam. The other important design characteristics are:

- Maximum length
- The capacity or SWL
- The type of connection points
- The number of connection points

These characteristics form the base on which the most suitable design is chosen. The two main types of lifting beams and their characteristics are shown below.



Lifting beam avoids adverse forces on cargo



Tandem lift with reduced lifting height

BOX-SHAPED LIFTING BEAMS

The most common box beam is equipped with bollards to facilitate the connection of the crane to the load. The key characteristics of such a beam are:

- Highly versatile
- Connection with grommets, heavy and expensive shackles are not required
- Ideal for heavy loads and long lengths
- Heavier but sturdier than its I-beam counterpart



Other types of connection points can be added or can replace the bollards as connection point between the load and the crane. A brief overview of the possibilities is shown in the pictures below.



Additional eye for crane connection



Eye structure for direct crane connection



With rounded top for oversling to load

I-SHAPED LIFTING BEAMS

The most common I-beam is provided with lifting eyes to facilitate the connection of the crane to the load. This implies that shackles compatible with the lifting eyes are to be used.

The I-shaped beams are most suited to:

- Lower capacities
- Shorter lengths

Typical limiting dimensions are about 15m and SWL: 180t

The main advantage compared to a box beam is the lower own weight of an I-shaped beam.

Although the use of lifting eyes is the most common solution, we can provide I-shaped beams with other connection points on request. Examples of other connection points are shown on the following page.





I-shaped beam with bollards and oversling

Spreader beams

Spreader beams avoid adverse loading of the cargo and its connection points when more than one connection point is to be connected to one connection point of the lifting appliance. In contrast to lifting beams, spreader beams are not designed for bending moments. This implies that spreader beams have their connection points to the load closely positioned to the crane connection points. Designing the lifting device according to this principle has the advantage of reducing its own weight and the disadvantage of reducing its flexibility and increasing the required lifting height. Making the beam more flexible means compromising on the own weight factor and as a consequence different kind of systems are developed: some with a stronger focus on a low own weight and some with a stronger focus on flexibility. The main types are shown below.

FIXED LENGTH SPREADER BEAMS WITH ONE PAIR OF EYES

- Lowest own weight
- Only one pair of top wires required
- No flexibility



FIXED LENGTH SPREADER BEAMS WITH MULTIPLE PAIRS OF EYES

- Relatively lightweight
- More versatile due to multiple connection points
- Multiple pairs of top wires required (one per eye-pair)
- Outer eyes limit positioning in hold when using the inner eyes



MODULAR SPREADER BEAM WITH BOLTED CONNECTION

- Versatile due to length adjustments
- No protruding parts obstructing position in hold
- Multiple pairs of top wires required
- Mounting of bolted connection takes time



MODULAR SPREADER BEAM WITH PIN CONNECTION

- Heavier than the fixed length and bolted beams
- Versatile due to length adjustments
- No protruding parts obstructing position in hold
- Multiple pairs of top wires required
- Fast and easy connection of multiple parts





EXTENDABLE SPREADER BEAM

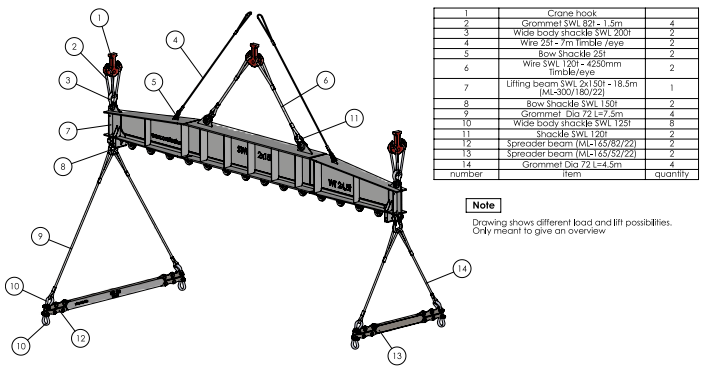
- Length of extension limited by minimum length
- Small length adjustments possible
- Heavy concept due to overlap
- Easily adjustable by sliding
- Multiple pairs of top wires required





Lifting Sets

The above concepts can also be used in combination. We can propose complete lifting solutions ranging from one lifting beam combined with two spreader beams to a whole set of different lifting beams.



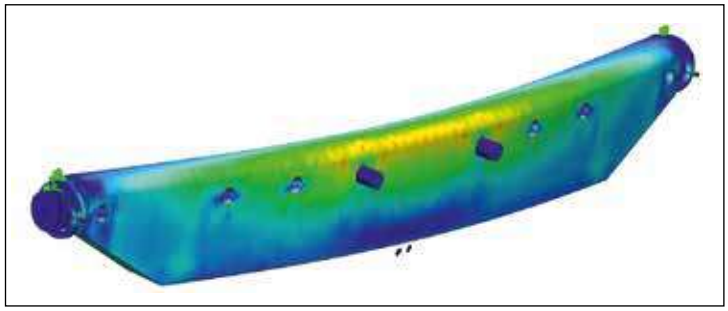
number	Item	quantity
1	Crane hook	
2	Grommet SWL 82t - 1.5m	4
3	Wide body shackle SWL 200t	2
4	Wire 25t - 7m Timble /eye	2
5	Bow Shackle 25t	2
6	Wire SWL 120t - 4250mm Timble/eye	2
7	Lifting beam SWL 2x150t - 18.5m (ML-300/180/22)	1
8	Bow Shackle SWL 150t	2
9	Grommet Dia 72 L=7.5m	4
10	Wide body shackle SWL 125t	8
11	Shackle SWL 120t	2
12	Spreader beam (ML-165/82/22)	2
13	Spreader beam (ML-165/52/22)	2
14	Grommet Dia 72 L=4.5m	4

Note

Drawing shows different load and lift possibilities.
Only meant to give an overview

Engineering

Once the conceptual design is agreed we start with the engineering of the lifting beam. Taking into account all limiting parameters – i.e. own weight, cost, bending moments, lifting height, ... – as determined during the conceptual phase we make the design as competitive as possible. We can design in accordance with the rules and regulations of all major classification societies such as DNV-GL, Lloyds Register of Shipping, Bureau Veritas, and (inter)national standards like CE and ASME. To do this we use 3D modeling and calculation programs such as Solidworks and Dlubal Rfem in addition to our in-house developed calculation sheets.



Production

When the design is finished – and in some cases approved by a third party – the manufacturer can start ordering materials and preparing the production drawings. To produce our designs, we work together with multiple manufacturers in Europe and Asia. This gives us the opportunity to look into the market and pick the right supplier on a project by project basis. All beams are made following strict procedures and are followed up by our engineers and – depending on the required certification – a third-party surveyor.





■ MATERIAL

We have experience in the delivery of lifting beams out of standard strength steels, e.g. D36, and high strength steels, e.g. S690. This gives us the opportunity to optimize the own weight of the lifting device taking into account its total cost. The materials are certified according the requirements of the applicable regulations.



■ PROOF LOAD TEST

A proof load test is performed on the lifting devices as required by the customer or according to the applicable regulations. The proof load tests often include more than one lifting configuration to ensure that the design is well fabricated and that no flaws are present in the design or production.

FINAL EXAMINATION



The beam is subject to a final control by a third party surveyor before its surface is coated or painted. The control includes a dimensional check and non-destructive testing of the weld. If all tests are passed the lifting beam is ready for the final stage: coating and painting.

COATING AND PAINTING

The lifting beams are painted following the agreed description with regards to the number of layers, layer thickness, marking and color. To protect areas sensitive to wear an additional protective coating, e.g. Zn-Al, can be applied. To guarantee the quality of the painting, an inspection report including the results of thickness measurements is made.







Delivery

After a final check the lifting beams are ready to be delivered.





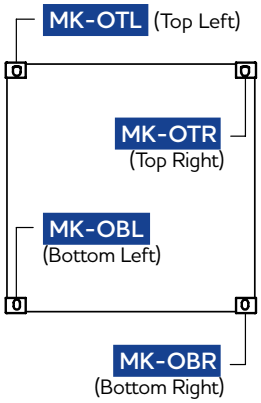
STOWAGE ON BOARD

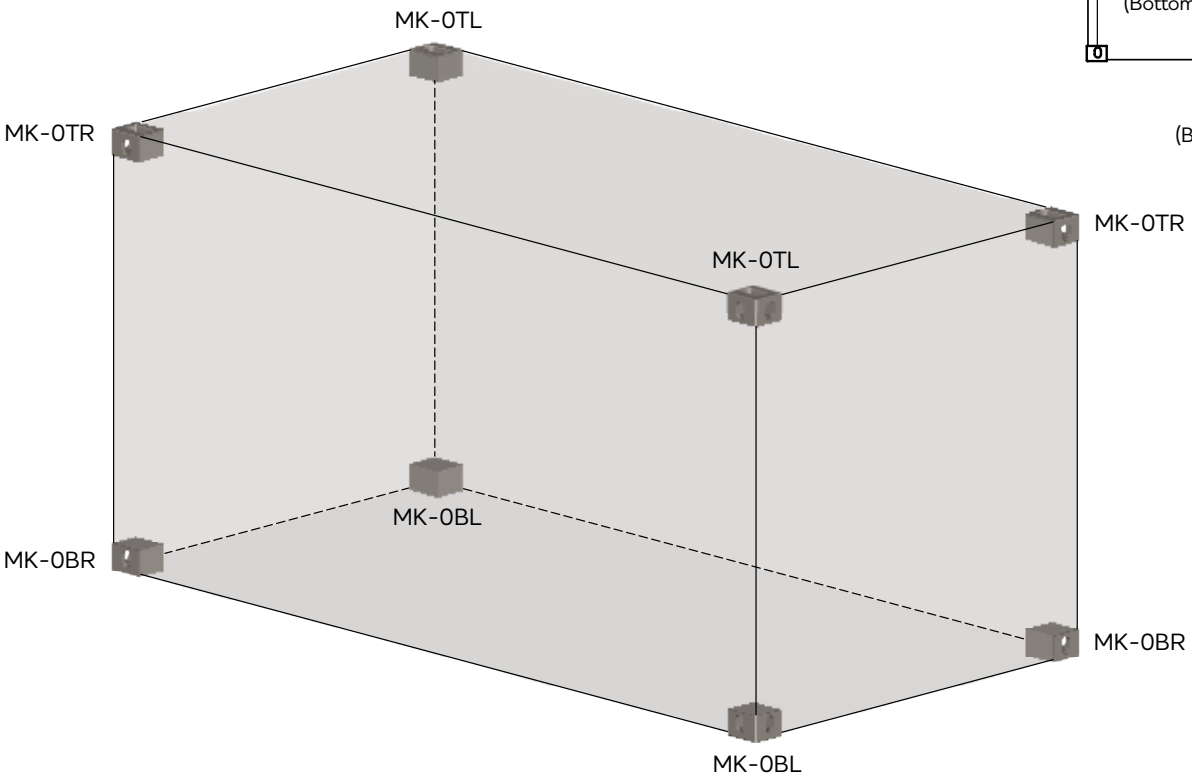


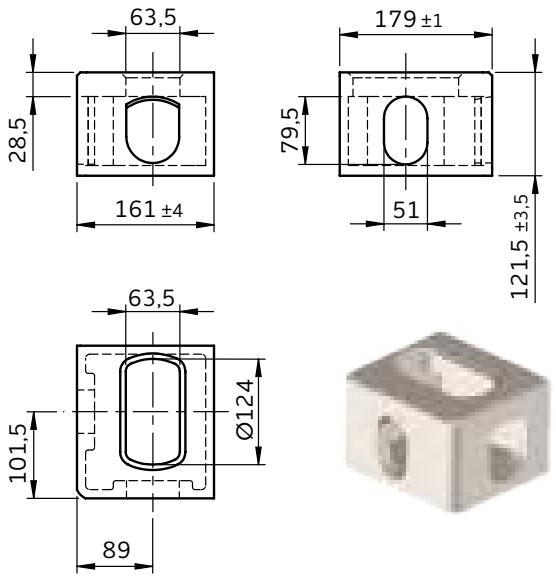
LIFTING SETS



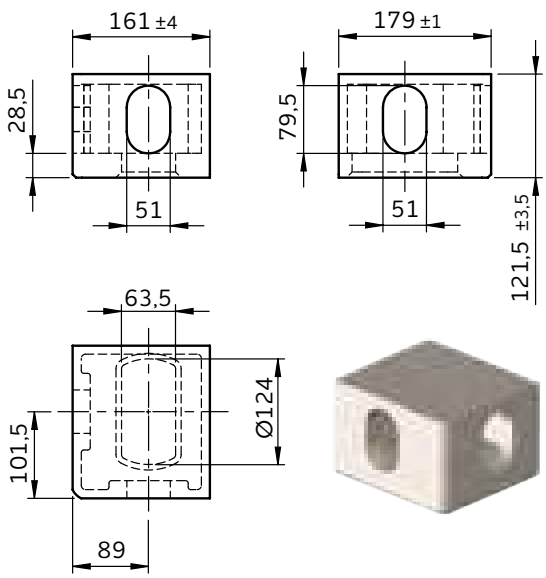
Corner Castings







MK-0TL (MK-0TR mirror inverted)

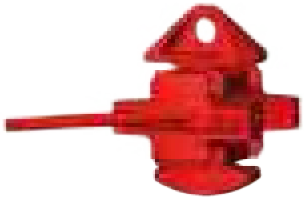


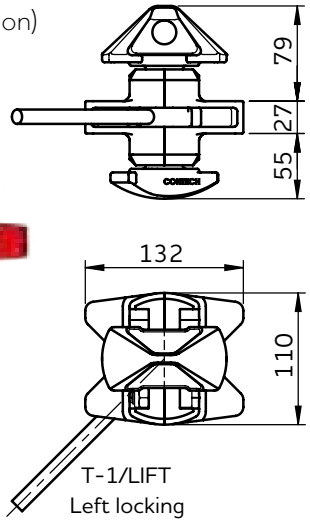
MK-0BL (MK-0BR mirror inverted)

Lifting Products

T-1/LIFT

Twistlock for lifting (3-position)



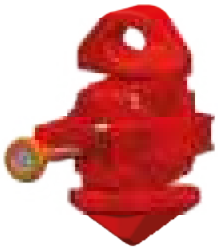


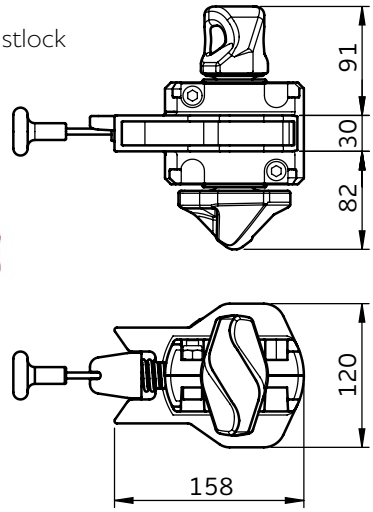
SPECIFICATIONS

(SWL) Safe working load: tension 100kN
(MBL) Min. breaking load: tension 500kN

T-5/LIFT

Semi-automatic twistlock for lifting





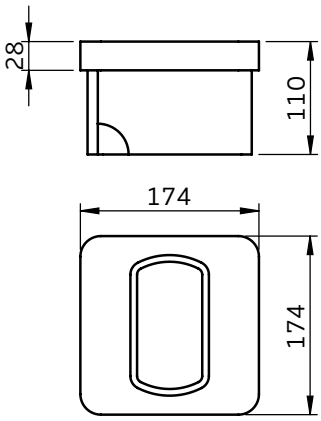
SPECIFICATIONS

(SWL) Safe working load: tension 100kN
(MBL) Min. breaking load: tension 500kN

FR-71/LIFT

ISO foundation for lifting





SPECIFICATIONS

(SWL) Safe working load: tension 125kN (Lifting); (MSL) 250kN (Lashing)
(MBL) Min. breaking load: tension 500kN (Lifting); 500kN (Lashing)

OTHER FOUNDATION VARIANTS

ISO foundations with eye for lifting



FR-71/LIFT/L



FR-71/LIFT/R



FR-71/LIFT/L2



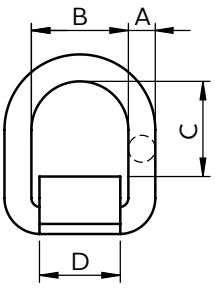
FR-71/LIFT/R2

More information available on request

LE-1/LIFT

Weld-on D-ring for lifting



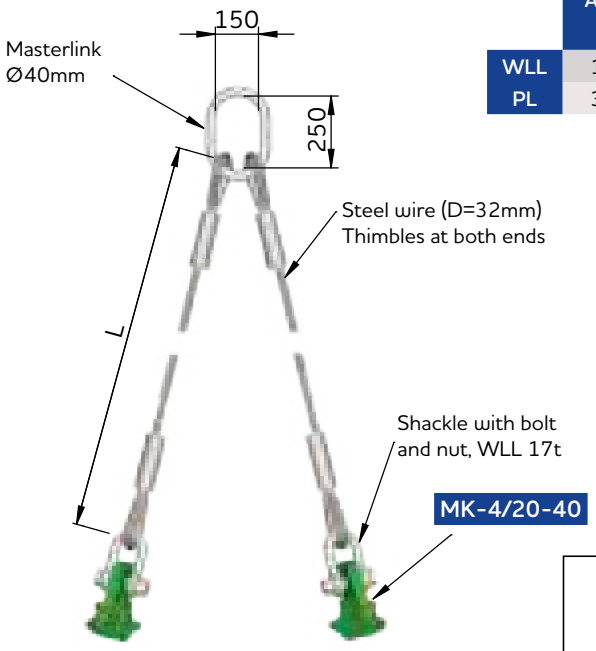


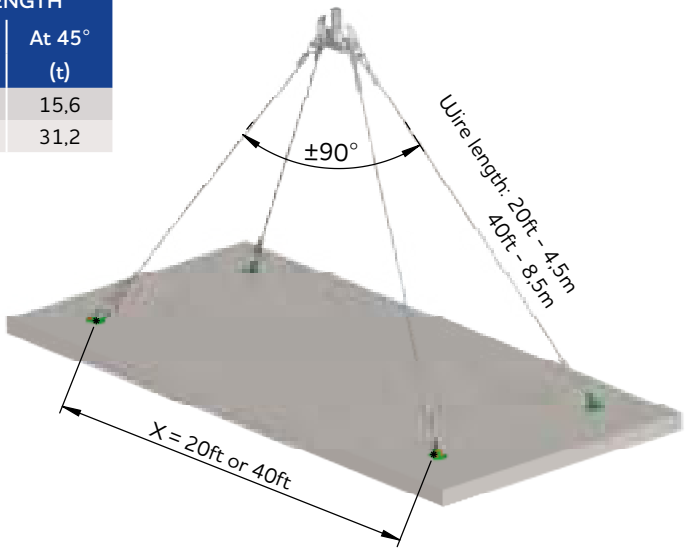
LASHING CAPACITY (t)	DIMENSIONS (mm) A	B	C	D	MBL (t)	WEIGHT (kg)
1,2	13	40	42	35	4,8	0,40
3,2	18	45	48	42	12,8	0,77
5,3	22	55	57	49	21,2	1,42
8,0	26	70	67	64	32,0	2,50
12,0	28	85	90	78	48,0	3,70
15,0	34	99	93	90	60,0	5,67

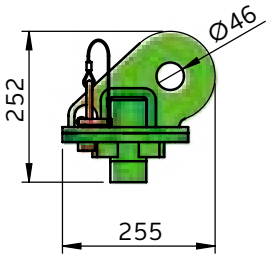
Hatch Cover Lifting Gear

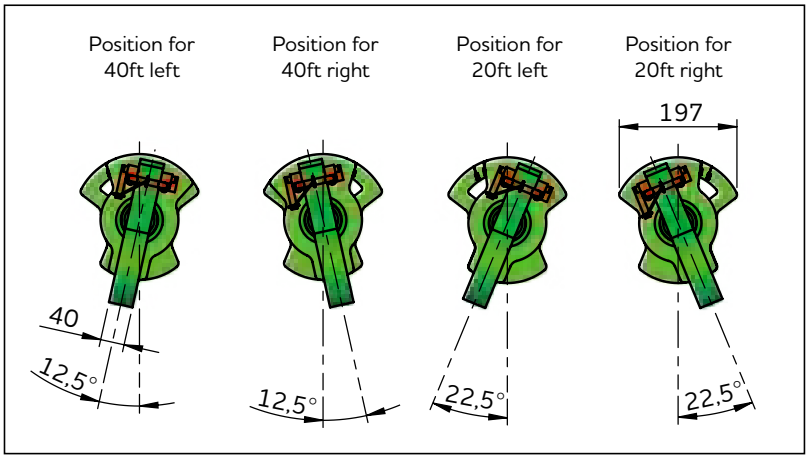
MK-4/20-40/set

	STRENGTH At 60° (t)	At 45° (t)
WLL	16,5	15,6
PL	33,0	31,2





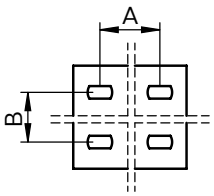




■ SPECIFICATIONS

WLL of total set is 36t
Combinations with higher WLL are available on request.
Material: Steel
Finish: Painted

■ ISO HOLES IN HATCH COVER



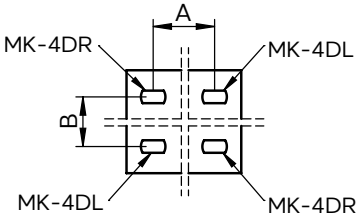
Use only when B ≤ 0,4A

MK-4D

Hatch cover lifting lug (Transversal)



■ ISO HOLES IN HATCH COVER



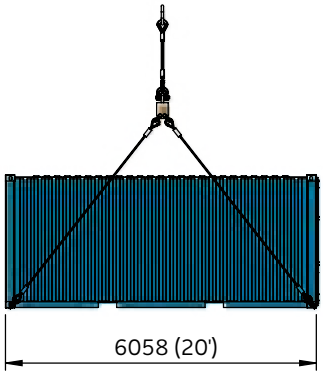
Use only when B ≥ 0,75 x A

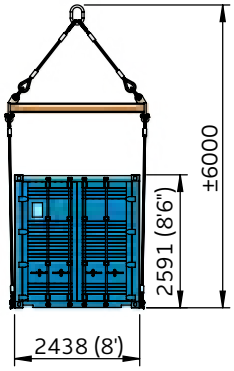
Cannot be used for 20' and 40' container positions

Bottom Lifting Sets

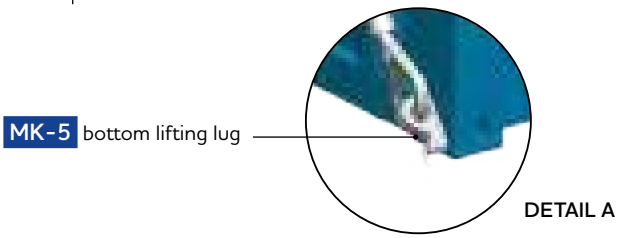
MK-5/20/SWL

Bottom lifting set for 20ft
Standard capacities: 25t, 32t, 40t and 56t



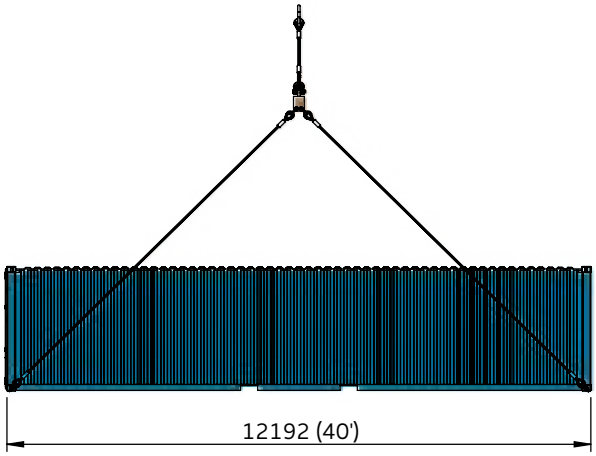


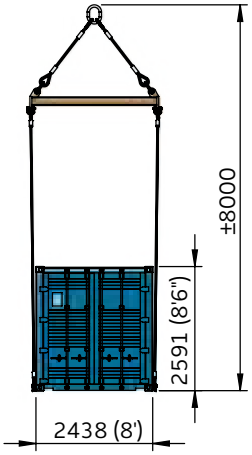




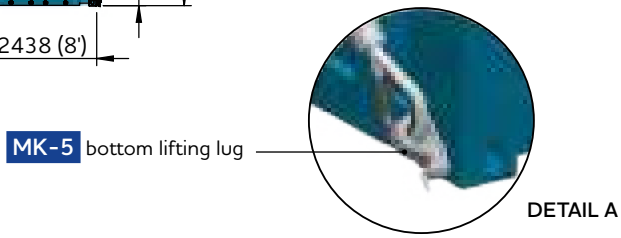
MK-5/40/SWL

Bottom lifting set for 40ft
Standard capacities: 25t, 32t, 40t and 56t





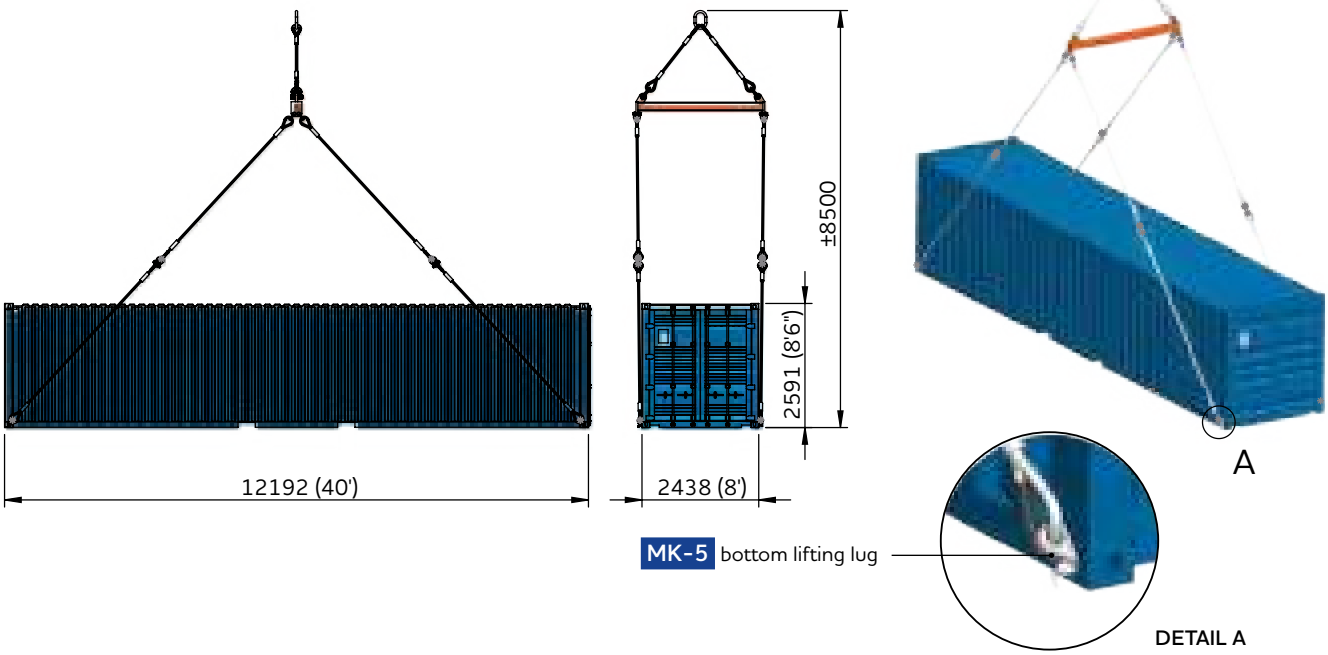




Bottom Lifting Sets

MK-5/20-40/SWL

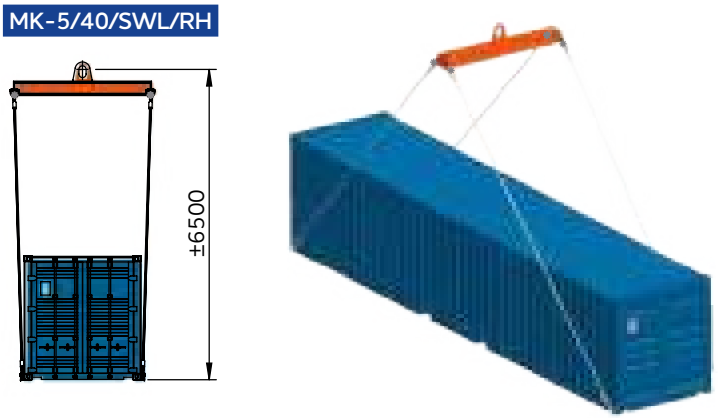
Bottom lifting set for 20ft & 40ft
Standard capacities: 25t, 32t, 40t and 56t



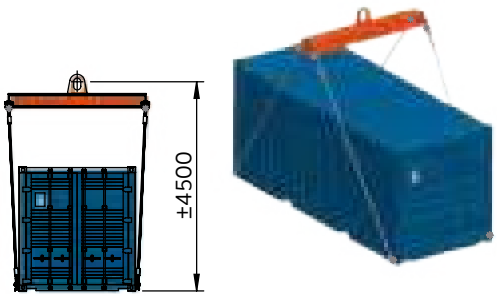
MK-5/#/SWL/RH

Bottom lifting set for reduced heights
Standard capacities: 25t, 32t, 40t and 56t
= 20ft, 40ft & 20ft-40ft

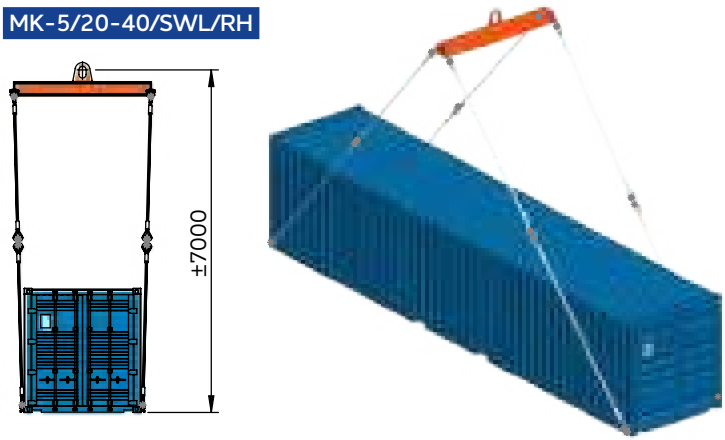
MK-5/40/SWL/RH



MK-5/20/SWL/RH



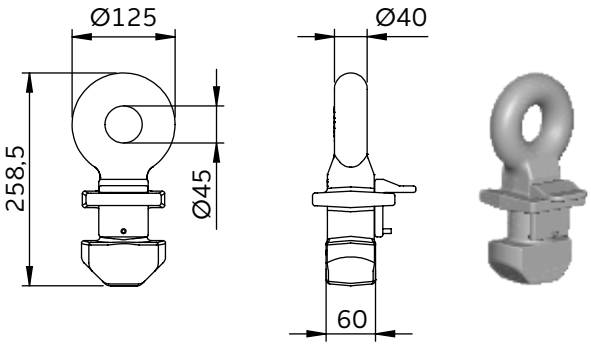
MK-5/20-40/SWL/RH



Lifting Gear for Containers / Cargo

MK-2 Top lifting lug

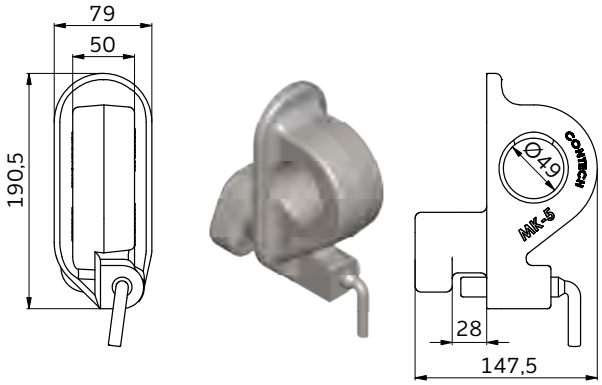
NOTE
Only for vertical lifting, example MK-8



SPECIFICATIONS
SWL: 15t

MK-5 ISO Bottom lifting lug

NOTE
Position angle from 0° to 45°;
top angle of wires from 0° to 90°



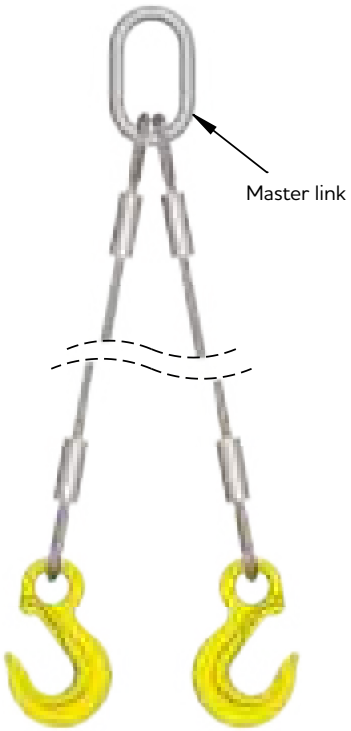
SPECIFICATIONS
SWL: 20t
PL: 40t

MK-2C/20 and MK-2C/40

Lifting gear for general cargo

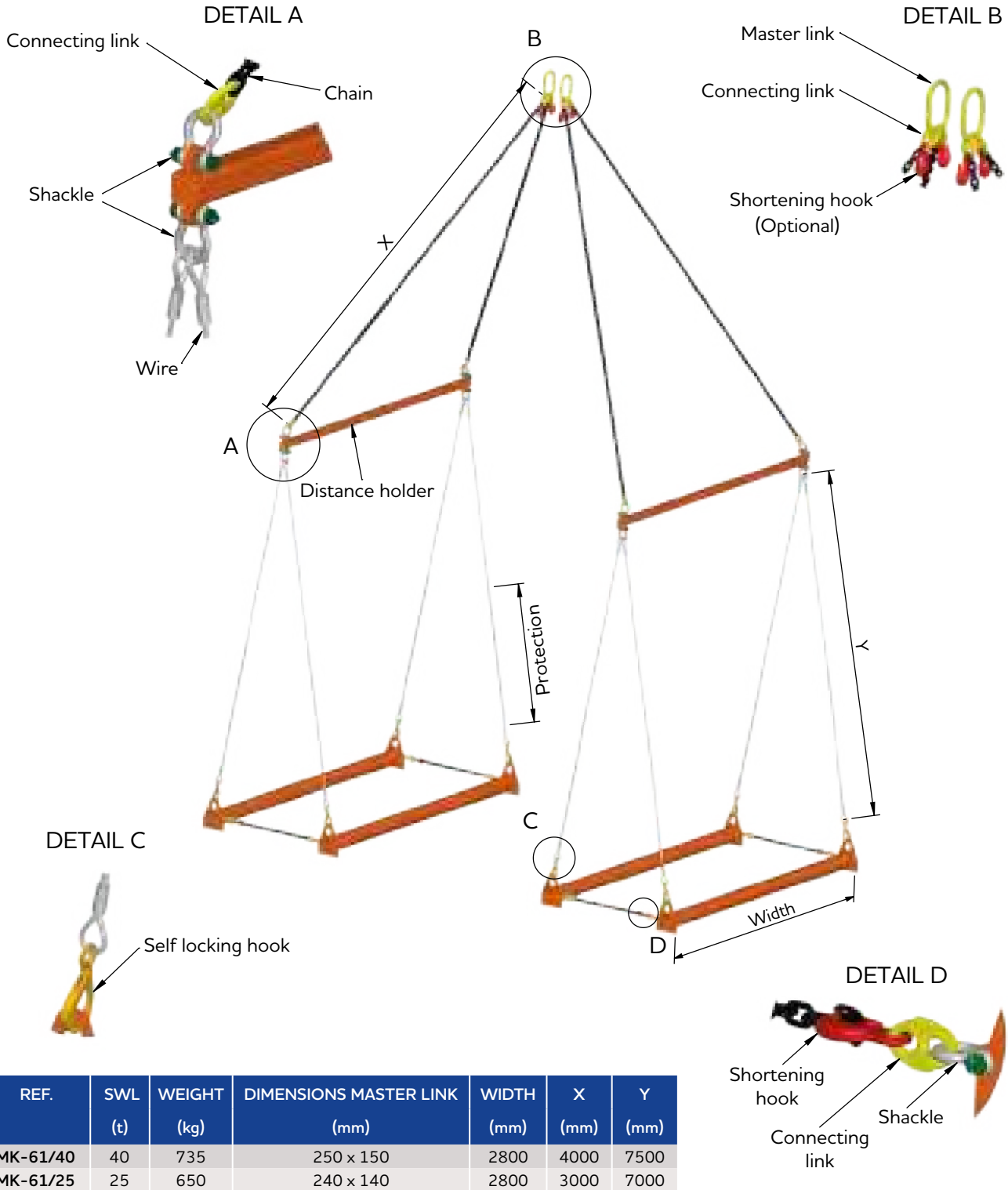
NOTE
For lifting 2 pcs, of these double leg slings are required,
Can also be used for top lifting of empty containers.

REF.	MASTER LINK (mm)	WIRE LENGTH (mm)	SWL (t)
MK-2C/20	240x140	4500	20
MK-2C/40	250x150	8500	30



Lifting Gear for Trucks, Vans and Cars

Double beam vehicle lifting gear

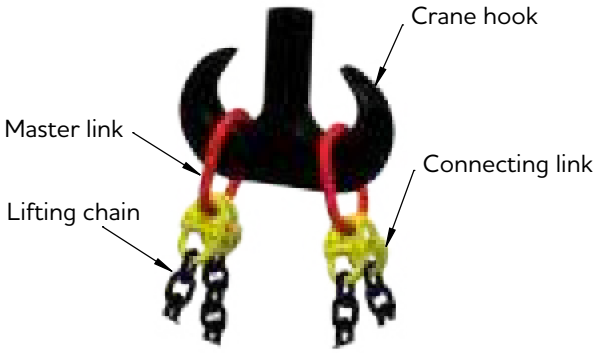


REF.	SWL (t)	WEIGHT (kg)	DIMENSIONS MASTER LINK (mm)	WIDTH (mm)	X (mm)	Y (mm)
MK-61/40	40	735	250 x 150	2800	4000	7500
MK-61/25	25	650	240 x 140	2800	3000	7000
MK-61/15	15	500	190 x 110	2800	3000	7000
MK-71/8	8	400	160 x 95	2200	3000	3000
MK-81/3	3	275	120 x 70	2000	3000	3000

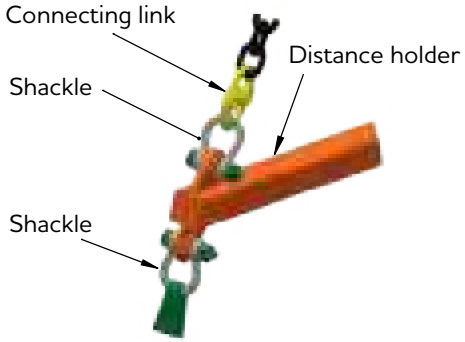
Lifting Gear for Trucks, Vans and Cars

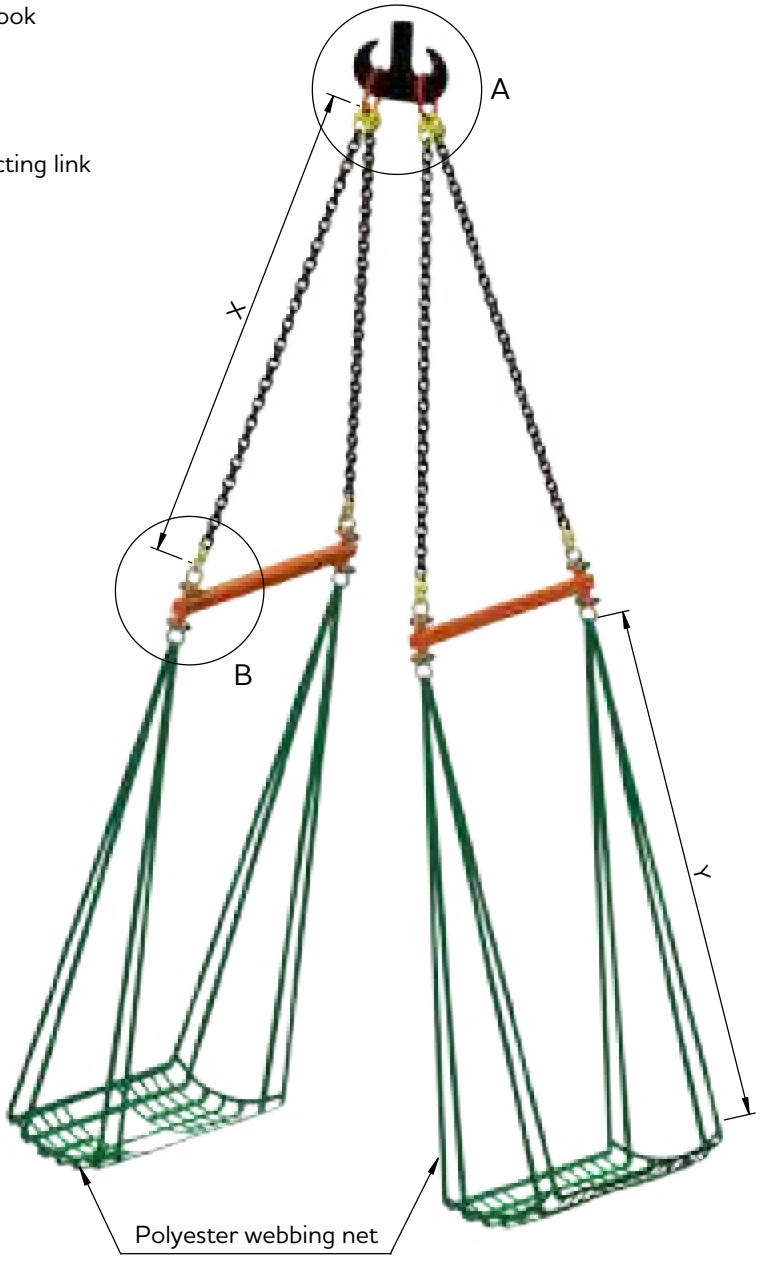
Lifting gear with polyester webbing net

DETAIL A



DETAIL B



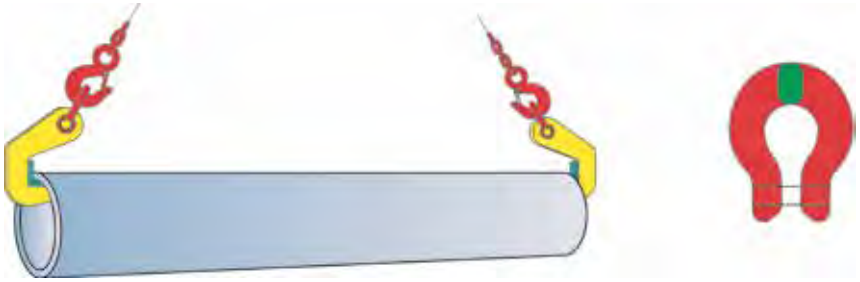


REF.	SWL (t)	WEIGHT (kg)	DIMENSIONS MASTER LINK (mm)	WIDTH (mm)	X (mm)	Y (mm)
MK-63/32	32	260	250 x 150	2800	3500	5000
MK-73/10	10	180	160 x 95	2200	3000	5000
MK-83/3	3	120	160 x 70	2000	3000	3500

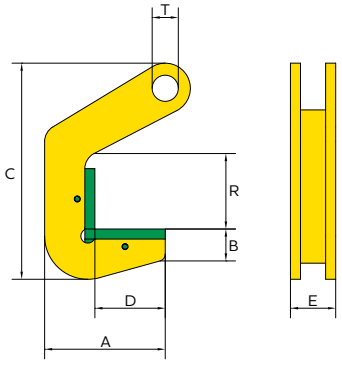
Lifting Clamp for Tubes

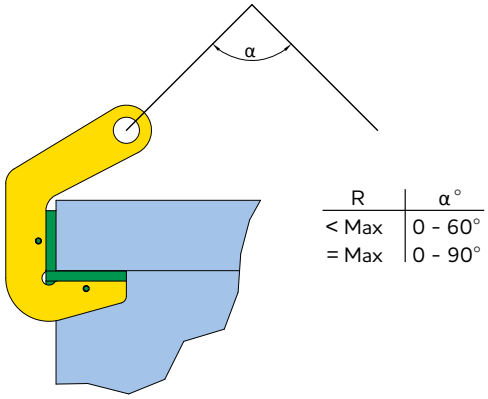


- For the horizontal lifting and transporting of steel and concrete pipes.
- Compact shape and relatively low unit weight combined with a high lifting capacity.
- The surface is equipped with special wear resistant plastic.
- TPH clamps are delivered in pairs.
- Replacement parts for the plastic cover are available and easy to change.









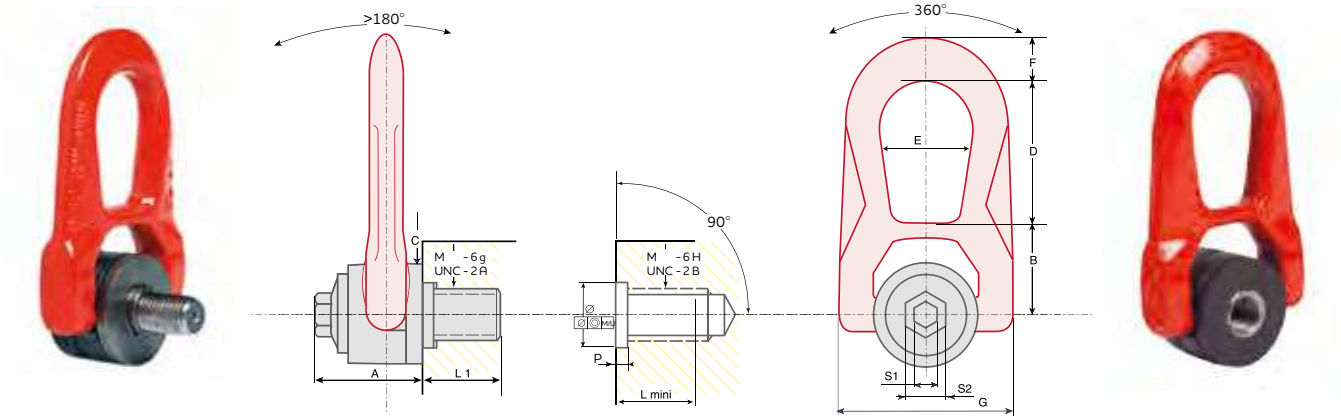
TYPE	CAPACITY PER PAIR (kg)	JAW OPENING (mm)	DIMENSIONS V (mm	S (mm)	W (mm)	U (mm)	T (mm)	X (mm)	Y (mm)	WEIGHT (kg)
1.5 TPH	1500	40	120	70	50	185	16	41	25	2,0
3 TPH	3000	40	120	70	50	185	16	41	25	2,0
4 TPH	4000	50	140	70	58	204	26	41	25	3,0
6 TPH	6000	50	140	70	58	204	26	41	25	3,0
8 TPH	8000	70	140	70	58	224	26	45	25	3,4
10 TPH	10000	70	140	70	58	224	26	85	45	7,0
12 TPH	12000	70	140	70	58	224	26	85	45	7,0
15 TPH	15000	70	155	70	76	250	26	100	60	9,0
20 TPH	20000	70	155	70	76	250	26	100	60	9,0
5 TPH-HD	5000	60	271	100	85	230	26	80	20	6,7
10 TPH-HD	10000	60	271	100	85	230	26	80	30	9,7
20 TPH-HD	20000	60	291	100	105	269	36	80	35	14,0
30 TPH-HD	30000	60	309	100	115	293	43	80	40	19,0
60 TPH-HD	60000	60	309	100	115	313	62	80	60	28,5

Double Swivel Lifting Rings

Lifting ring with double articulation – Class 8 high strength

- Double articulation allows it to line up perfectly with the sling
- Two possible ways to tighten: with an open spanner or with an Allen key
- Standard from M8 to M30, for loads from 0,3 to 6,3 tons

Other variants of fitting bolts upon request:
Stainless steel version available
The female version exists in 0,3 / 0,6 / 1 / 1,3 / 1,6 / 2 / 2,5 / 3 tons

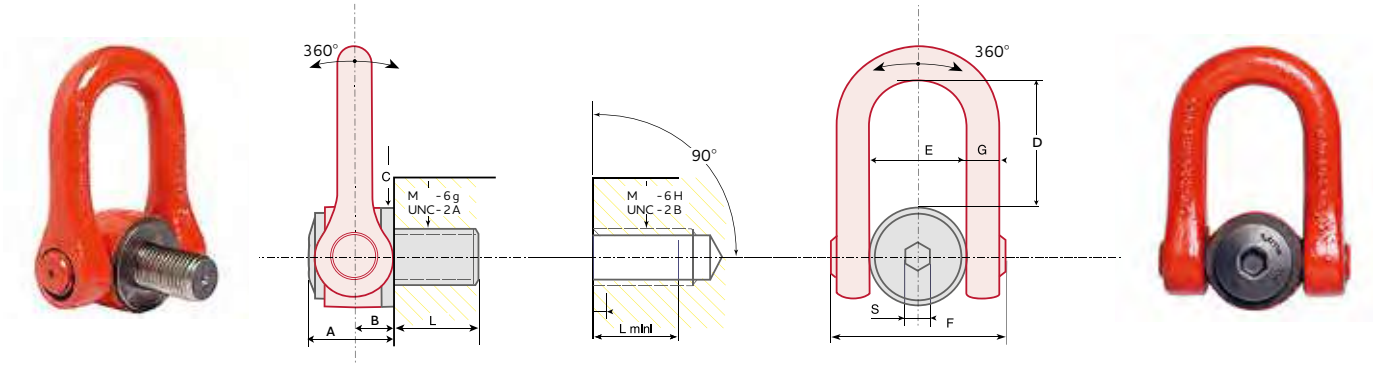


TYPE	WLL	L1 std	L2	L max	DIMENSIONS									TIGHTENING TORQUE
					S1	S2	A	B	C	D	E	F	G	
(mm)	(kg)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Nm)
M4 x 0,7	50	15	-	-	3	-	33	30	30	38	27	14	53	2
M5 x 0,8	75	15	-	-	4	-	33	30	30	38	27	14	53	3
M6 x 1,0	100	15	-	-	5	-	33	30	30	38	27	14	53	4
M8 x 1,25	300	14	-	179	8	16	33	30	30	38	27	14	53	6
M10 x 1,5	600	17	50/50	179	8	16	33	30	30	38	27	14	53	10
M12 x 1,75	1000	21	50/50	179	8	16	33	30	30	38	27	14	53	15
M14 x 2,0	1300	23	-	170	8	20	45	42	45	54	38	17	76	30
M16 x 2,0	1600	27	100/110	170	8	20	45	42	45	54	38	17	76	50
M18 x 2,5	2000	27	-	170	8	20	45	42	45	54	38	17	76	70
M20 x 2,5	2500	30	100/110	170	8	20	45	42	45	54	38	17	76	100
M22 x 2,5	3000	33	-	200	14	24	62	55	60	83	55	25	117	120
M24 x 3,0	4000	36	100/110	200	14	24	62	55	60	83	55	25	117	160
M27 x 3,0	5000	40	-	200	14	24	62	55	60	83	55	25	117	160
M30 x 3,5	6300	45	100/110	200	14	24	62	55	60	83	55	25	117	250

Safety factor = 5

Double Swivel Lifting Rings

Universal lifting ring – Class 8 high strength



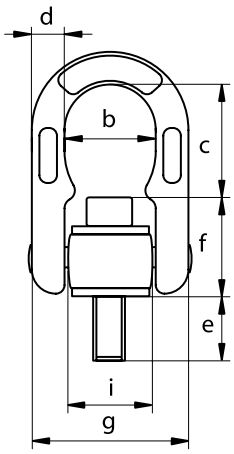
TYPE	WLL	L std	DIMENSIONS								TIGHTENING TORQUE	WEIGHT	SAFETY FACTOR
			S	A	B	C	D	E	F	G			
(mm)	(t)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Nm)	(kg)	
M30 x 3,5	7,3	45	19	61	31	70	104	73	145	29	250	5,5	5
M33 x 3,5	8,0	50	19	61	31	70	104	73	145	29	250	5,5	5
M36 x 4	10,0	54	19	61	31	70	104	73	145	29	320	5,5	5
M36 x 3	10,0	54	19	61	31	70	104	73	145	29	320	5,5	5
M39 x 4	10,0	58	19	61	31	70	104	73	145	29	329	5,7	5
M42 x 4,5	12,5	63	19	61	31	70	104	73	145	29	400	5,8	5
M42 x 3	12,5	63	19	61	31	70	104	73	145	29	400	5,8	4
M45 x 4,5	15,0	63	19	61	31	70	104	73	145	29	400	5,7	4
M48 x 5	20,0	68	19	79	38	90	125	91	184	33	600	11,0	4
M48 x 3	20,0	68	19	79	38	90	125	91	184	33	600	11,0	4
M48 x 4	20,0	68	19	79	38	90	125	91	184	33	600	11,0	4
M52 x 5	20,0	68	19	79	38	90	125	91	184	33	600	11,0	4
M56 x 5,5	25,0	78	19	79	38	90	125	91	184	33	600	11,3	4
M56 x 4	25,0	78	19	79	38	90	125	91	184	33	600	11,3	4
M64 x 6	32,1	90	19	79	38	90	125	91	184	33	600	12,0	4
M64 x 4	32,1	90	19	79	38	90	125	91	184	33	600	12,0	4
M72 x 6	25,0	90	19	79	38	90	125	91	184	33	600	14,0	4
M72 x 4	25,0	90	19	79	38	90	125	91	184	33	600	14,0	4
M80 x 6	32,1	90	19	79	38	90	125	91	184	33	600	15,0	4
M90 x 6	32,1	90	19	79	38	90	125	91	184	33	600	16,0	4
M100 x 6	32,1	90	19	79	38	90	125	91	184	33	600	16,0	4

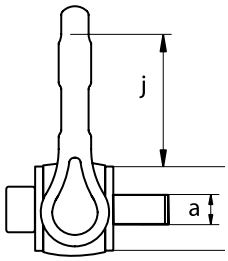
Double Swivel Lifting Rings

Swivel hoist ring - Grade 80 steel (Bolt-on) - type ADA

ADA







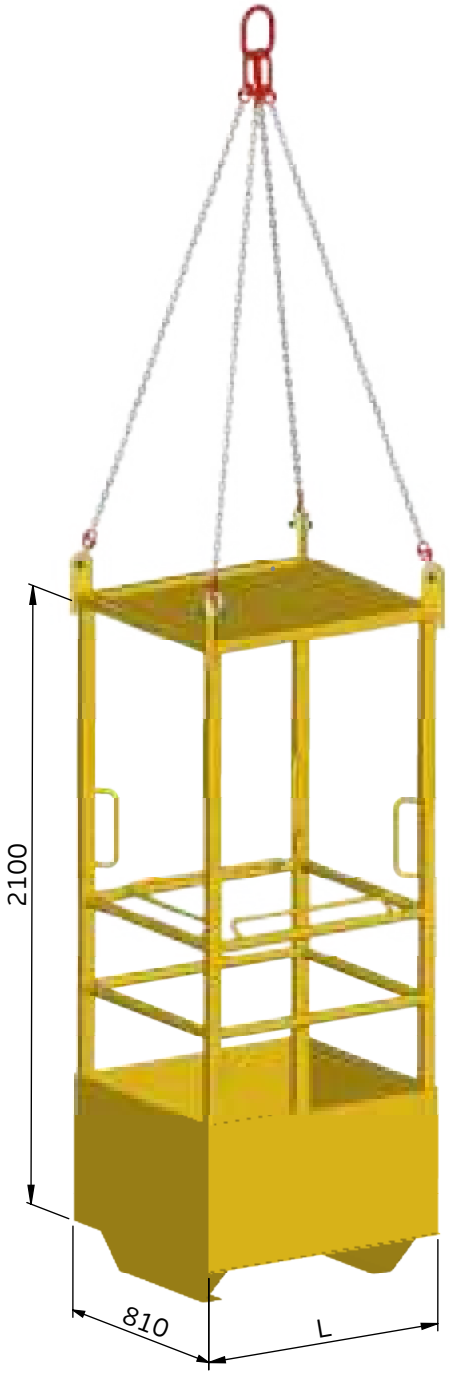
- These hoist rings are forged from Grade 8 alloy steel. They can rotate 360° and pivot 180°. They have ISO metric threads as standard. The cylindrical head of the screw prevents jamming during rotation of the shackle.
- The WLL indicated below are given in the worst conditions of use, i.e. 90° - it is necessary to check that the pivoting shackle can move freely.

TYPE	WLL	DIMENSIONS									HEX QUEY	TIGHTENING TORQUE	MBL	WEIGHT
		A	B	C	D	E	F	G	I	L				
(mm)	(t)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		(Nm)	(t)	(kg)
M8	0,4	8	35	15	13	34	44	68	13	18 52 92	6	6,5	2,0	0,43 0,45 0,47
M10	0,7	10	37	15	13	34	44	68	16	18 62 125	8	13,0	3,5	0,43 0,47 0,50
M12	1,0	12	39	15	13	34	44 53	68	18	23 62 125	10	22,0	5,0	0,46 0,49 0,53
M14	1,3	14	41	15	13	34	44	68	21	23	12	35,0	6,5	0,46
M16	1,6	16	43	15	13	34	53	68	24	23 92 172	10	55,0	8,0	0,47 0,60 0,70
M18	2,0	18	45	15	13	34	53	68	27	28	10	80,0	10,0	0,47
M20	2,5	20	47	15	13	34	53	68	30	32 112 172	10	110,0	12,5	0,47 0,75 0,87
M22	3,0	22	69	26	20	53	70	105	33	33	14	150,0	15,0	1,85
M24	4,0	24	71	26	20	53	70	105	36	33 112 172	14	190,0	20,0	1,87 2,15 2,33
M27	5,0	27	65	26	20	53	70	105	40	36 90	14	280,0	25,0	1,93 2,19
M30	6,3	30	65	26	20	53	70	105	40	45 90 240	14	380,0	31,5	2,00 2,27 3,05
M33	7,0	33	83	35	29	72	100	146	55	50	19	520,0	35,0	4,90
M36	10,0	36	83	35	29	72	100	146	55	54 110	19	600,0	50,0	5,20 5,72
M42	12,5	42	83	35	29	72	100	146	55	63 120	19	1000,0	62,5	5,50 6,07

Personnel Lifting Baskets

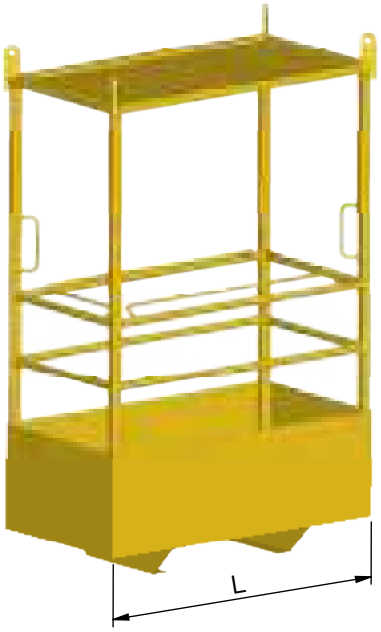
MK-124/1P

Basket for lifting 1 person



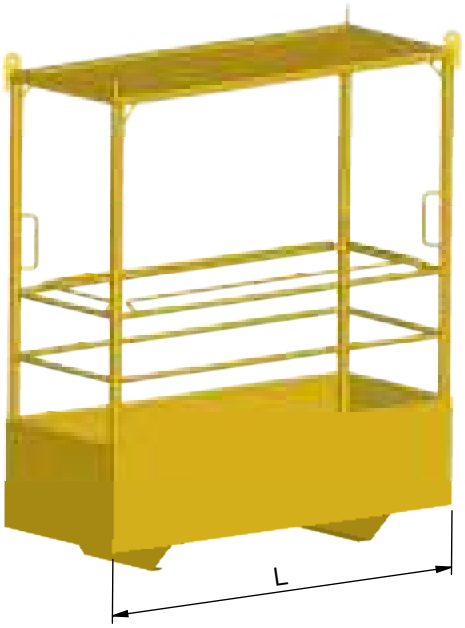
MK-124/2P

Basket for lifting 2 persons



MK-124/3P

Basket for lifting 3 persons



REF.	LENGTH (mm)	WEIGHT (kg)	WORKING LOAD (kg)
MK-124/1p	900	200	250
MK-124/2p	1500	300	250
MK-124/3p	2000	370	500

SPREADERS



Safely Lifting A Container



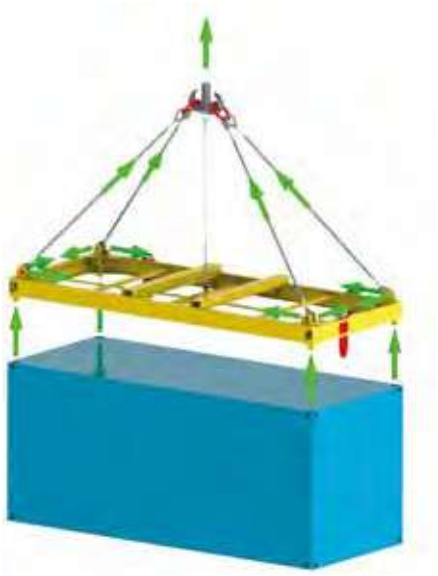
Hundreds of thousands of containers are lifted every day. Lifting a container is however not without risks. For a number reasons (limited lifting height, limited crane capacity, ...) it is often asked if a spreader is really necessary to lift a container. The answer is – in most cases – yes.

Why lifting a container by its top corners, using only a 4-legged sling, is not permitted

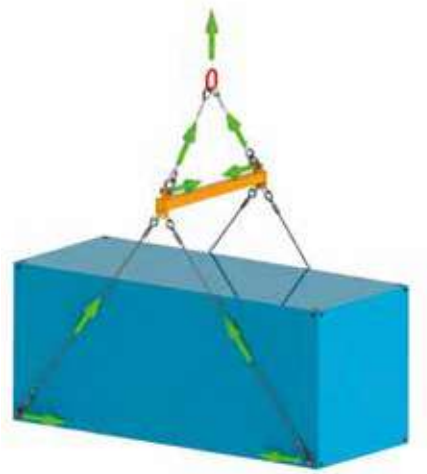
A typical 4-legged sling, attached to the four top corners of a container induces compression loads in the roof plane of the container, especially lengthwise.
Containers are not designed to take this compression load at the roof plane in a lengthwise direction. The actual strength of the roof varies from container to container, depending on the manufacturer, age, size ... Therefore it is possible that several lifts are made with only a 4-legged sling, and that no particular problem is noticed. The operator is lured into believing that this is a safe way of handling the containers. However, due to this practice, unseen damage is done to the container and every lift can lead to the instant breaking of the container.



Why a spreader should be used between the 4-legged sling and the container



When using a spreader like the MK-20 or MK-40, the compression load is no longer induced on the roof of the container, but directly on the spreader (which is designed for this load). The top frame of the container is thus free of compression loads. The container is now lifted vertically, which is the only configuration for top lifting, allowed by the international standard (ISO 1496).
The use of a (semi-automatic) spreader also has several other advantages, such as quicker handling of the containers and less operators required.

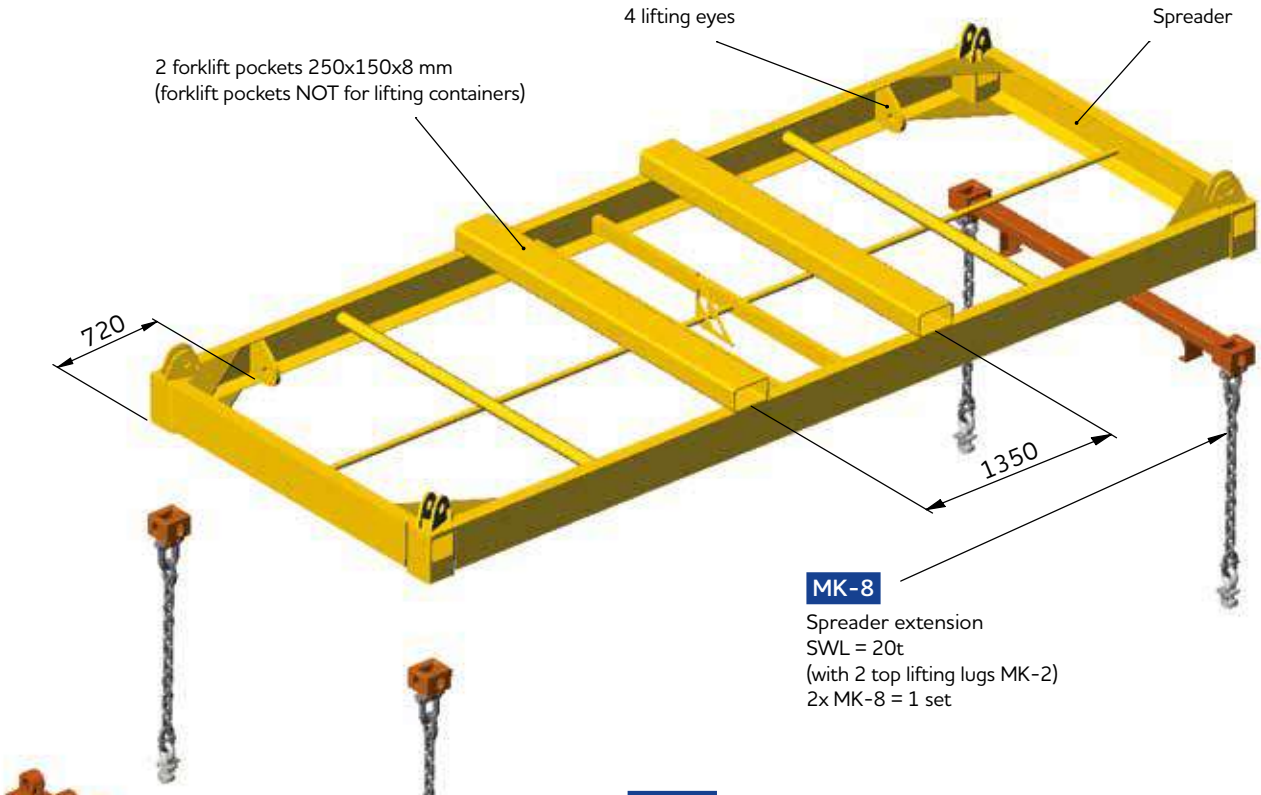


What to do if no spreader is available

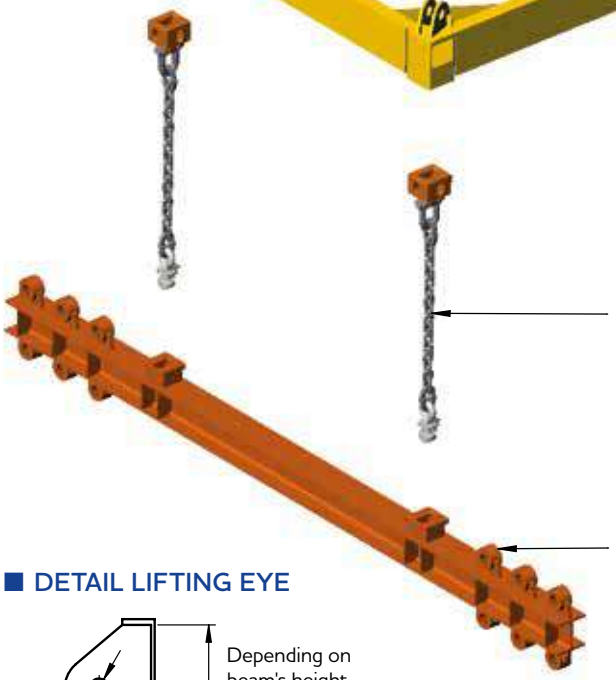
There is still a possibillity to lift a container without a spreader, using bottom lifting parts such as MK-5L & MK-5R. These parts fit the side holes of the bottom corners of the container. In this case, the compression load in a lengthwise direction is taken by the floor frame of the container, which is a lot stronger than the roof plane.

The transverse compression load is absorbed by the crossbar. This method of lifting is also mentioned in the ISO 1496 standard.
Another advantage of this system is that the required lifting height is in most cases less than when using a spreader.

Container Spreader + Options



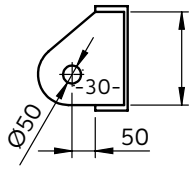
MK-8
Spreader extension
SWL = 20t
(with 2 top lifting lugs MK-2)
2x MK-8 = 1 set



MK-8A
Spreader extension with
top lifting lug MK-2)
(4 legs per spreader needed)
SWL = 12t

ML-42/46/22
Lifting beam for
special purposes

■ DETAIL LIFTING EYE



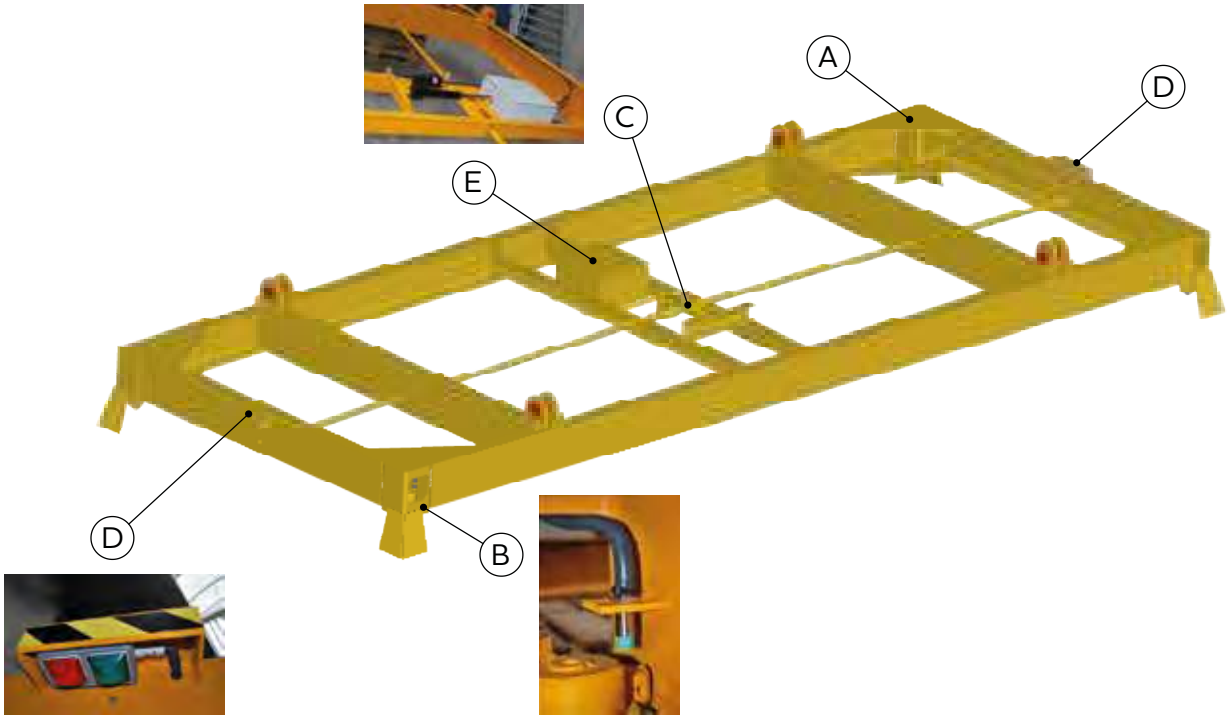
■ SPREADERS

REF.	SIZE (ft)	SWL (t)	PL (t)	WEIGHT (kg)
MK-10	10	25	35,6	650
MK-20	20	25	35,6	1060
	20	33*	44,0	1350
	20	50*	60,6	1750
MK-40	40	35	46,0	2100
	40	42*	53,2	2250

* Available from stock (if not sold)



Electrically Operated Spreader



This type of spreader is developed for use in places with limted overhead space like warehouses or underground processing plants. It is equipped with two lifting points along the central axis which accepts the hooks of a twin bridge crane system. A version with four points, or other custom made configurations are also possible.

The electric linear actuator (C) mounted in the centre of the spreader, operates the 4 twistlocks at the bottom corners of the spreader. Two sets of solid state proximity switches detect the position of the twistlocks (open or closed) (B) and the presence of the container at the corner (A).

The Siemens LOGO! PLC computer, located in the metal electric box in the centre of the spreader (E), controls the linear actuator and all the safety features, for example the blocking of the bridge crane lifting engines while the twistlocks are operating. This is to prevent for instance that the operator would lift the container while the twistlocks are not fully closed/open. Two sets of warning lamps with green and red lights (D), mounted on the sides of the spreader, display the system status and warn the user of operation errors.

This type of spreader can be operated either with a dedicated radio remote controller or, if required all the commands can be integrated seamlessly in the bridge crane controller.

The standard model for 20' containers has a SWL of 20 ton, but custom made designs are also available for other container sizes and/or different SWL values.





Notes