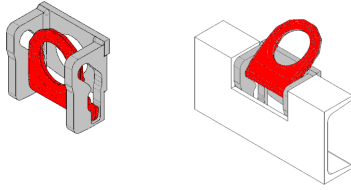


### 1 INTRODUCTION



THIELE lashing cassette modules (for short ZK modules) are mounted within the frames of road trucks, especially low-bed trailers, and serve as lashing points via which loads can be safely secured.

These assembly instructions describe in particular how ZK modules are to be safely installed and put to use. Make sure to carefully observe these instructions before mounting and using the lashing elements.

These assembly instructions must be kept on hand until the lashing elements are taken out of service.

### 2 PRODUCT DESCRIPTION

The following types of THIELE ZK modules are available:

- LC 5 000 daN Type „N“, Article No. F352390 (standard)
- LC 5000 daN Type „S“, Article No. F352395
- LC 10 000 daN Type „N“, Article No. F352380 (standard)
- LC 10 000 daN Type „S“, Article No. F352385

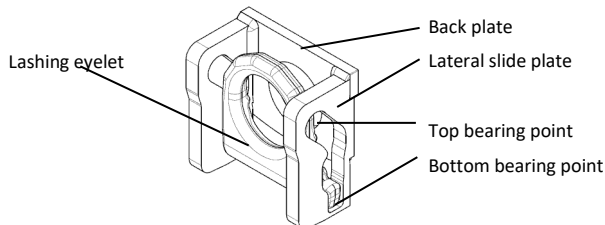
LC = Lashing Capacity

The cassette plates are designated „N“ and „S“.

„N“ indicates the standard version with red painted lashing eye.

The „S“ version with unpainted lashing eye is suitable for hot-dip galvanising up to a maximum temperature of 500 °C, including lashing eye.

ZK modules consist of a movable centrally arranged lashing eyelet (powder coated in red paint) surrounded by a cassette or box-like structure in the form of three plates (untreated) welded together.



The lashing eyelet is forged of high-grade chain steel and satisfies requirements as per EN 1677-1 and EN 12640; moreover, it is marked with applicable lashing capacity in daN (1 daN = 1 kg), manufacturer's sign as well as a traceability code.

ZK modules are delivered in pre-assembled condition.

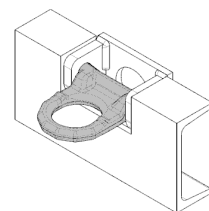
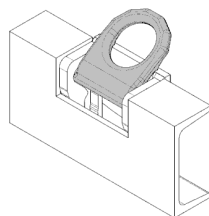
ZK modules have been designed for installation into the longitudinal C-shaped frame sections of low-bed trailers, with the open side of these sections pointing to the middle of the vehicle.

When not in use the lashing eyelet is positioned in the bottom area of the cassette and does not protrude beyond the carrier section.

In use position (eyelet side pegs in top bearing positions) the lashing eyelets can be pivoted through 60° towards the vehicle center and through 90° towards the outer side of the vehicle (with respect to vertical) as necessary to securely attach the relevant fixing means of the load to be lashed (see adjacent figures).

In this manner even loads can be secured that protrude beyond the vehicle contour.

Since lashing elements do not form part of the Machinery Directive no documentation will be issued in the form of a declaration of incorporation or statement of compliance nor will a CE marking be provided.



### 3 INTENDED USE

ZK modules are exclusively intended for attachment by means of welding to road truck bodywork and they are designed to secure lashing means.

Lashing forces must exclusively be applied in the upper area of the lashing eyelet using commercially available mountable lashing means and their relevant accessories.

ZK modules must only be used

- in the framework of permissible loads,
- for the permissible lashing methods and inclination angles,
- at application temperatures ranging between -30 °C and +80 °C,
- by trained and authorized persons,
- if the vehicle frame which is weakened due to the cutouts is capable of safely and permanently absorbing not only the maximum specified lashing forces multiplied by a safety factor of 1,25 (test forces) but also any other forces exerted by the load, vehicle momentum and the like.

### 4 SAFETY NOTES

- **Working under the influence of drugs and alcohol (including residual alcohol) as well as medicines that impair the senses is strictly prohibited!**
- **When performing work make sure to wear your personal protective equipment!**
- **Improper installation or use may cause personal injury and/or damage to property.**
- Fitters and operators must in particular follow these assembly instructions, any truck-specific regulations as well as standard specifications EN 12640 and EN 12195-3.
- Make sure to observe any additional instructions for use of the lashing means.
- Visually inspect the equipment prior to use.
- Mounting and removal as well as inspection and maintenance must exclusively be carried out by authorized persons.
- Welding work must be performed only by persons qualified as prescribed by EN ISO 9606-1.
- Outside the Federal Republic of Germany the specific provisions issued locally in the country where the items are used must also be observed.
- Never use worn-out, bent or damaged ZK modules/lashing elements.
- Do not make structural modifications to ZK modules.
- Any information given herein that relate to safety and use must be relayed to fitters and operators. Make sure this information is available in a place near the product during the time the equipment is used.
- Never expose lashing elements to loads exceeding the specified maximum lashing capacity.
- When not in use, bring the lashing eyelet into the bottom resting position.
- Do not allow bending stresses to be exerted on the lashing eyelet.
- ZK modules must not be used for lifting service or the transportation of persons.
- Lashing elements must not be used in environments where acids, aggressive or corrosive chemicals or their fumes are present.
- Only type „S“ lashing elements may be subjected to hot-dip galvanizing.
- In the event of doubts about use, inspection, maintenance or similar things contact your safety officer or the manufacturer.

### 5 COMMISSIONING

Prior to using the components for the first time make sure that

- The components are in conformity with the order,
- these assembly instructions are available,
- markings correspond with what is specified in the documentation,
- all necessary data have been documented (e.g. in a register).

## 6 USE

To make use of the lashing eyelet pull it upward from its lower resting point thus moving both eyelet side pegs into the top bearing position of the lateral slide plates. In this position the lashing eyelet can be pivoted around its peg axis so that depending on the respective lashing means attached an alignment towards the load to be lashed is brought about.

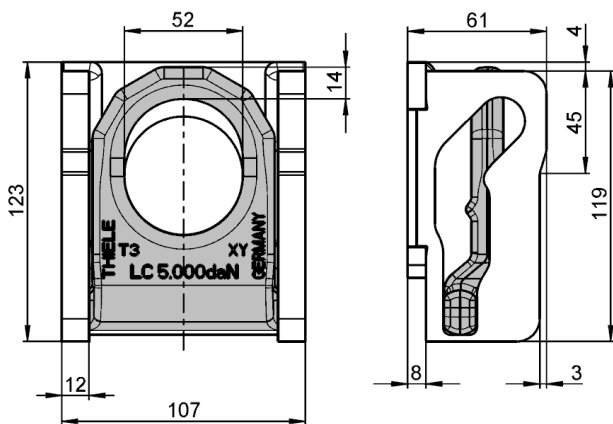
To all sides within the admissible pivot range the maximum lashing force may be exerted on the lashing eyelet.

A ZK module should possibly be used with one lashing means only.

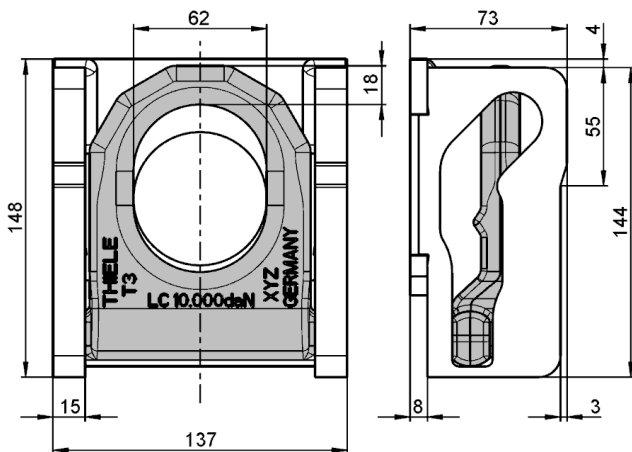
In case a ZK module carries two lashing means the resulting forces must not exceed the maximum permissible lashing capacity of the eyelet. In such a case, the two lashing means must not interfere with or touch each other within the lashing eyelet.

## 7 DIMENSIONS

Type LC 5 000 daN:



Type LC 10 000 daN:



## 8 ASSEMBLY/WELDING INSTRUCTIONS

### 8.1 General

Convince yourself that all components to be assembled are in perfect condition. Check whether the lashing capacity is adequate to safely secure the expected loads.

The eyelet can be removed from the cassette until the module is mounted in the vehicle frame.

**Therefore, make sure the eyelet is correctly positioned inside the cassette when the module is finally mounted.**

The lashing eyelet is correctly positioned if its lettering faces away from the back plate and is oriented towards the outside of the vehicle.

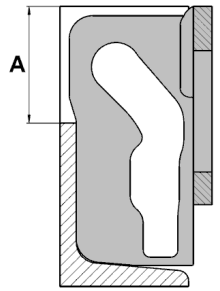
The cutout in the longitudinal section must suit the width of the cassette (107 or 137 mm) such that the cassette fits into the frame and a proper root bead can be laid to attach the slide plates.

The profile of the cassette open at the front must be closed off by the vehicle frame to an extent ruling out the lashing eyelet can be removed after installation. This is achieved by providing an opening that does not exceed dimension A as shown in the adjacent sketch.

Type LC 5 000 daN:  $A_{max.} = 50 \text{ mm}$

Type LC 10 000 daN:  $A_{max.} = 60 \text{ mm}$

The sketches of chapter 9.2 show the minimum required fillet welds (shown yellow).



### 8.2 Welding instructions

Materials of the lashing cassette for type „N“: S700MC

Materials of the lashing cassette for type „S“: S690QL

Material of the welding point: S235, S355, fine-grained sheet or similar

The following general welding instructions must be observed:

- EN ISO 2560 Welding consumables – Covered electrodes for manual arc welding of non-alloy and fine grain steel
- EN ISO 14341 Welding consumables – Wire electrodes and weld deposits for gas shield metal arc welding of non-alloy and fine grain steel
- ISO 3834-2 Quality requirements for fusion welding of metallic materials
- EN 1011-1, 2 Welding – recommendations for welding of metallic materials
- EN ISO 9606-1 Qualification testing of welders – fusion welding
- DVS 0702-1 / 0711 Factsheet - Requirements for operation and personnel
- SEW 088 Weldable unalloyed and low-alloyed steels – Recommendations for processing

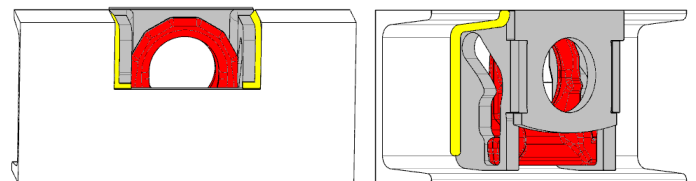
Welding is only permitted by trained and authorised personnel in accordance with the qualification according to EN ISO 9606-01.

Make sure that the welding surfaces are even, dry, free of rust, paint and impurities and suitable for welding (C-content  $\leq 0,30 \%$ ).

Recommended weld thickness:

Outside:  $a=3,5$

Inside:  $a=5$



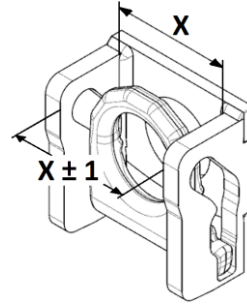
The filler metals used and welding energy applied must suit the frame material and are to be selected to prevent softening of the slide plates and make sure the notch-bar impact strength is min. 40 J at  $-20 \text{ }^{\circ}\text{C}$ .

The responsible welding supervisor on site must make sure the welding current is correctly adjusted to suit the given welding position.

A procedure check is recommended to confirm the selected settings.

The fitter of the modules must ensure

- the selected mounting configuration and frame design are adequately and safely sized and meet the specified requirements so that the lashing capacity forces indicated on the eyelet can be safely absorbed on a permanent basis,
- the welding seams are expertly laid as per the requirements given in EN ISO 15607, EN ISO 15609, EN ISO 15614,
- other criteria specified in EN 12640 are satisfied with respect to the structural design and test records.
- an inclination of the lateral guide plates remains within the tolerances shown in the adjacent sketch:



### 8.3 Welding process MAG

Welding process	Metal active gas welding (MAG) EN ISO 9606-1; No. 135		
Welding groove	See sketch, taking into account EN ISO 9692-1		
Quality grade	For all layers according to EN ISO 5817 - C		
Wire electrode	EN ISO 14341-A:2011: ISO 14341-A-G 46 4 M21 3Si1 Possible alternatives must be selected and checked by the welding supervisor on site.		
Welding position	EN ISO 9606-1: PA, PB, PC, PF		
Preheating of parent metal	Type „N“: 100 – 150 °C; Type „S“: 150 – 200 °C		
Interpass temperature	Type „N“: max. 250 °C; Type „S“: max. 300 °C		
Postweld heat treatment	Type „N“: max. 400 °C <sup>1)</sup> ; Type „S“: max. 250 °C, alternatively apply quenching and tempering layer technology		
Pass	Root run	Final run	Temper pass
Wire electrode diameter	1 mm	1,2 mm	1 or 1,2 mm
Welding current (=)	130 – 200 A	135 – 290 A	See root run or stringer pass
Electrode polarity	(= +)	(= +)	
Voltage	19 – 25 V	19 – 32 V	Note: The quench and temper layer must only be applied to the weld metal. Contact with the base metal must be avoided.
Shield gas ISO 14175; M21	10 – 12 l/min	12 – 14 l/min	
Kind of pass	Stringer pass	Stringer pass	

<sup>1)</sup> but not more than 20 °C below the tempering temperature

### 8.4 Manual welding process MMA

Welding process	Manual metal arc welding (MMA) EN ISO 9606-1; No. 111			
Welding groove	See sketch, taking into account EN ISO 9692-1			
Quality grade	For all layers according to EN ISO 5817 - C			
Wire electrode	EN ISO 2560 A:2010: min. ISO 2560-A-E 38 4 B 42 H5 <sup>2)</sup> Possible alternatives must be selected and checked by the welding supervisor on site.			
Welding position	EN ISO 9606-1: PA, PB, PC, PF			
Preheating of parent metal	Type „N“: 100 – 150 °C; Type „S“: 150 – 200 °C			
Interpass temperature	Type „N“: max. 250 °C; Type „S“: max. 300 °C			
Postweld heat treatment	Type „N“: max. 400 °C <sup>3)</sup> ; Type „S“: max. 250 °C, alternatively apply quenching and tempering layer technology			
Pass	Root run	Final run	Alternative final run	Temper pass
Wire electrode diameter	2,5 mm	3,2 mm	4,0 mm	2,5 or 3,2 or 4,0 mm
Welding current (=)	80 – 110 A	100 – 140 A	130 – 180 A	See root run or stringer pass
Electrode polarity	(= +)	(= +)	(= +)	
Voltage	-	-	-	Note: The quench and temper layer must only be applied to the weld metal. Contact with the base metal must be avoided.
Shield gas ISO 14175; M21	-	-	-	
Kind of pass	Stringer pass	Stringer pass	Stringer pass	

<sup>2)</sup> Re-drying according to manufacturer's instructions

<sup>3)</sup> but not more than 20 °C below the tempering temperature

### 9 DISCLAIMER

THIELE GmbH & Co. KG will not assume any liability for damage resulting from a mounting situation other than described in this document or the use of the lashing eyelets in cassettes furnished by other manufacturers.

### 10 CONDITIONS OF USE

**Inclination angles less than 30° in relation to the vehicle floor will give rise to detrimental bending loads acting on the lashing eyelet and for this reason are impermissible.**

Never use the modules if adverse chemical conditions exist.

As regards type „S“: The contracted galvanizing shop must be alerted in writing to make sure that when cleaning the material as preparation for hot-dip galvanizing no methods are to be used that may result in hydrogen embrittlement (e.g. pickling or submersion in acidic solutions)!

### 11 INSPECTION AND MAINTENANCE

#### 11.1 General information

Inspections and maintenance and inspection intervals must be determined by the Owner!

Check the ZK modules visually at regular intervals. The results of the inspection should be entered into a register to be prepared when the vehicle is initially taken into service. The register will show characteristic data of the components as well as details as to their origin and identity.

An inspection must be carried out at least once a year or more frequently if the modules are in heavy-duty service. After three years at the latest the modules should additionally be examined for cracks.

The condition of the components must be documented in the register during these inspections. If items require repair the respective cause of damage and remedial steps should be documented.

Immediately stop using ZK modules that show the following defects:

- Deformation, expansion,
- local material wear/removal (max. 10 %),
- cuts, notches, cracks, incipient cracks, pinching,
- severe corrosion,
- jamming components,
- identification marks are unreadable.

#### 11.2 Maintenance

Repairs must only be carried out by authorized competent persons. Only use THIELE spare parts.

#### 11.3 Inspection service

THIELE offers inspection, maintenance and repair services performed by trained and competent personnel.

### 12 STORAGE, PACKING AND DISPOSAL

Store the ZK modules in clean and dry spaces at temperatures between 0 °C and +40 °C.

Dispose of the packing material in an environmentally compatible way according to local rules.

All components and accessories of steel are to be scrapped in line with local regulations and provisions.

### 13 THIELE OPERATING AND ASSEMBLY INSTRUCTIONS

Current operating and assembly instructions are available on the THIELE-Homepage as a PDF-Download.



### 14 IMPRINT

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