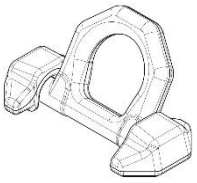


TWN 1473

TWN 1880

WARNING

The following Mounting Instructions must always be followed to avoid the risk of personal injury or property damage.

Do not use a lashing point before reading these Mounting Instructions.

1. ABOUT THIS INSTRUCTION

This Mounting Instructions describes in particular how lashing points according to TWN 1473 and TWN 1880 (TWN = THIELE Shop Standard) are to be safely used for lashing purposes.
The instructions apply analogously to components of identical design.
To comply with these instructions is essential to help avoid hazards and increases the reliability and service life of the lashing points.

DANGER **DANGER!** Indicates a hazardous situation, which, if not avoided, will result in death or serious injury.

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

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

NOTICE **NOTICE!** Is used to address practices not related to physical injury.

SAFETY INSTRUCTIONS **Safety Instructions** signs indicate specific safety-related instructions or procedures.

Definitions

Lashing Capacity (LC)

The maximum load which a lashing point is designed to support.

2. BASIC SAFETY REQUIREMENTS

WARNING

The Lashing Capacity must not be exceeded!

Lashing points weld type as well as lashing means to be used must be free from defects!

Lashing points must not be used for lifting.

Working under the influence of drugs, medications impairing the sense and/or alcohol is strictly forbidden!

SAFETY INSTRUCTIONS

- Operators, fitters and maintenance personnel must in particular observe the Operating Instructions of the used vehicle and lashing means.
- The specific safety and operating regulations and standards issued locally in the country where the items are used must be observed.
- The directions given in these Mounting Instructions and specified documentations relating to safety, assembly, operation, inspection, and maintenance must be made available to persons operating and using the lashing points.
- These Mounting Instructions must be available in a place near the product during the time the equipment is used. Please contact the manufacturer if replacements are needed. See also chapter 11.
- During operation work, wear your personal protective equipment!
- **Improper assembly and use may cause personal injury and/or damage to property.**
- Assembly and removal as well as inspections and maintenance must exclusively be carried out by skilled, qualified, trained and authorized persons only.
- Structural changes are impermissible (e.g. welding, bending).
- **Operators must carry out a visual inspection and, if necessary, a functional test of the safety equipment before each use.**
- Never use worn-out, bent or damaged lashing points.
- Do not use force when mounting/positioning the lashing components.

SAFETY INSTRUCTIONS

- Do not bend the ring.
- The areas of the vehicle on which the lashing points are to be attached must be able to withstand the loads of the lashing points without deformation.
- Attached lashing means must be allowed to move freely in the rings of the lashing points.
- Only remove lashing means manually (use your hands).
- In the event of doubts or concerns about the proper and safe use, inspection, maintenance or similar things contact your safety officer or the manufacturer.

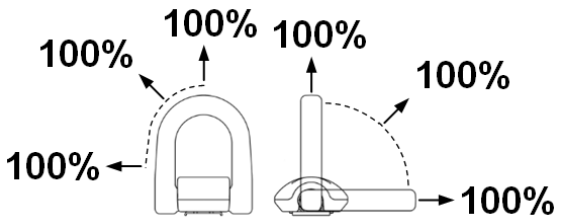
THIELE is not responsible for damage caused by non-observance of the instructions, rules, standards and notes indicated!

As a rule, lashing points are not permitted for the transportation of persons.

3. DESCRIPTION AND INTENDED USE

THIELE lashing points weld type are exclusively intended for attachment to steel structures to enable connections with lashing means.

Weld type lashing points mainly consist of one or two forged weld-on supports and a forged ring. Lashing points can be loaded to 100 % in all tensile directions.



The rings are marked with the Lashing Capacity LC in daN (Deka-Newton).

The rings are blue powder coated. The weld-on supports are not coated.

The lashing loints feature a safety factor of at least 2 based on the Lashing Capacity.

WARNING

Lashing points must exclusively be used

- within the limits of their permissible Lashing Capacity,
- within the temperature limits prescribed,
- with properly laid welding seams,
- by trained and authorized persons.

4. COMMISSIONING

Prior to using the components for the first time assure that

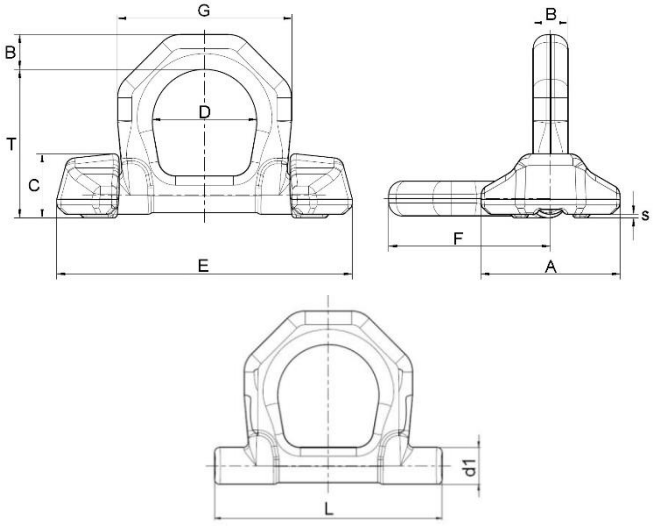
- the components comply with the order and have not been damaged,
- test certificates and Mounting and Operating Instructions are at hand,
- markings correspond with what is specified in the documentation,
- inspection deadlines and the qualified persons for examinations are determined,
- visibility and functional testing are carried out and documented,
- the documentation is safely kept in an orderly manner.

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

5. TECHNICAL DATA

Tables include only article numbers of standard and not customized parts.

5.1 TWN 1473, Dimensions



Size	Dimensions [mm]										
	A	B	d_1	C	D	E	F	G	L	T	s
8.000 daN	65	14	16	28	48	134	74	74	105	70	2
13.500 daN	80	20	22	37	60	170	93	100	135	85	2

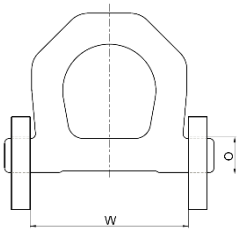
5.2 TWN 1473, Article Numbers

Size	Selection	Article No.	Mass [lbs.]
8.000 daN	COMPLETE	F352001	1,74
	only ring	F352002	0.86
13.500 daN	COMPLETE	F352011	3.81
	only ring	F352012	2.12

5.3 TWN 1473, Assembly within steel constructions

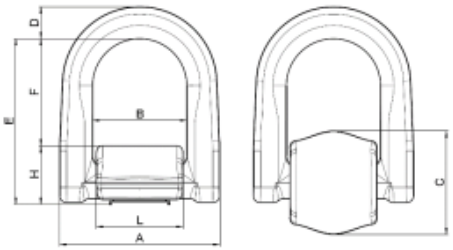
Rings can be used separately in steel structures.
Please note the following items:

Size	Dimensions [mm]	
	W	Ø O
8.000 daN	77^{+1}	$19^{+0.5}$
13.500 daN	101^{+1}	$25^{+0.5}$



THIELE is not responsible for the selection of the material or further dimensions of the steel construction.

5.4 TWN 1880, Dimensions



Marking (LC)	Dimensions [mm]								Mass
	A	B	C	D	E 1)	F	H	L	[lbs.]
3000 daN	65	38	50	13	68	42	26	35	0.93
5000 daN	76	45	50	15	73	46	27	42	1.26
8000 daN	85	50	56	17	87	56	31	46	1.87
13500 daN	116	68	78	23	122	78	44	63	4.85
20000 daN	130	69	92	27	126	72	54	63	7.39

1) for vertical orientation

5.5 TWN 1880, Article Numbers

Marking (LC)	LC [lbs.]	Article No.	Mass [lbs.]
3000 daN	6,600	F35204A	0.93
5000 daN	11,000	F35205A	1.26
8000 daN	17,600	F35206A	1.87
13500 daN	29,800	F35207A	4.85
20000 daN	44,100	F35208A	7.39

6. MOUNTING

6.1 Preparation

All components to be installed or used must be in perfect condition and the relevant Lashing Capacity of all parts must accommodate the respective load to be handled.

The mounting location for each lashing point has to ensure that

- no areas of danger are created (crushing point, shearing point),
- transportation is not restrained by overhang,
- used lashing means (e.g. hooks) are freely movable and will not be bended,
- incorrect use is avoided,
- the vehicle can take the forces including safety factors safely to be applied without suffering deformation,
- lashing points cannot be damaged,
- lashing points can be used easily.

Make sure the welding surfaces are grinded down, flat, dry, free of impurity, flawless and weldable (material see ISO/TR 15608 table 1, group 1).

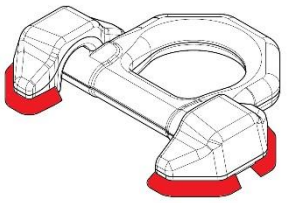
6.2 Welding Instructions

The following general Welding Instructions shall be duly followed:

Personnel, Quality	ISO 3834 ISO 14731 ISO 9606
Welding Process	In accordance with American Welding Society and/or American Society of Mechanical Engineers requirements.
Further	ISO/TR 15608 SEW 088

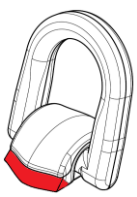
The positions of the welds are marked red in the sketches:

TWN 1473



Take care to intermit the weld seam in the center on the out-side to enable water to flow out.

TWN 1880



(both sides)

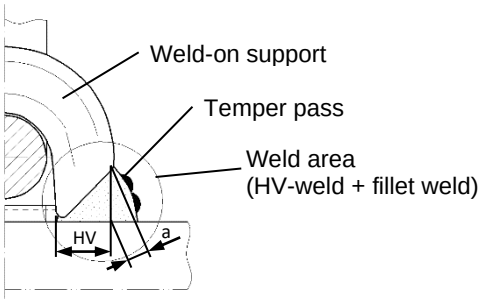
⚠ WARNING

Don't weld on the movable rings!

Take care not to widen the gap for the root run during tack-welding.

Take care to avoid end crater.

Continue the welding within one heat.



TWN 1473	Length of weld per support 1) [mm]	HV-weld [mm]	Fillet weld a min. [mm]	Volume appr. [cm³]
8000 daN	2 x 55	5	4	4.5
13500 daN	2 x 75	6	4.5	7

1) Following the outer contour of a weld-on support

TWN 1880	Length of weld 1) [mm]	HV-weld [mm]	Fillet weld a min. [mm]	Volume appr. [cm³]
3000 daN	2 x 35	7,5	3	2,5
5000 daN	2 x 42	7,5	3	3,0
8000 daN	2 x 46	9	3	3,8
13500 daN	2 x 63	12	4	8,1
20000 daN	2 x 63	15	4	9,8

1) Following the outer contour of a weld-on support

6.3 Welding Sequence for TWN 1473

1. Position the lashing point and mark the position of the first weld-on support.
2. Fix the first support and make the root run.
3. Clean the root run and make the final runs.
4. Position the ring with one end into the first support and then the second support atop the free end of the ring. Consider and check dimension E.
   Fix the second support by tack-welding.
5. Check dimension E and that the ring can move to 180 °.
   Readjust the second support if necessary.
6. Weld the second support as the first one.
7. Check a smooth movement of the ring at last.

Do it analogously the same way for an assembly of single rings within a steel construction.

6.4 Miscellaneous

1. Minimum notched-bar impact strength values of ISO-V specimens KV=27J at -40 °F (e.g. S355J4G3 or S355NL).
2. When selecting material grades other than those listed above please contact the base material and filler metal manufacturers for information.
3. The responsible welding supervisor must make sure the welding current is correctly adjusted to suit the given welding position.

⚠ WARNING

Perform a thorough inspection after welding.

No cracks, notches, inclusions, pitting or undercuts are allowed.

6.5 Welding Processes

Welding Process	Manual Metal Arc Welding (MMA) ISO 9606-1; No. 111					Metal Active Gas welding (MAG) ISO 9606-1; No. 135		
Welding Groove	ISO 9692-1: chapter 1.9.1 (see sketch)					ISO 9692-1: chapter 1.9.1 (see sketch)		
Quality Grade	Root run: SO 5817 - D Final run: ISO 5817 - C					Root run: ISO 5817 - D Final run: ISO 5817 - C		
Wire Electrode	For example: ISO 2560-A-E42-4-"-"-B (2011) AWS A5.1-04: E7018-1H4R AWS A5.1M-04: E4918-1H4R					ISO 14341-A-G 42- 4- M21- 3Si1 ISO 14341-A-G 46- 4- M21- 3Si2 AWS A5.18-05: ER70S-6 AWS A5.18M-05: ER48S-6		
Welding Position	ISO 6947: PA, PB, PC, PE, PF					ISO 6947: PA, PB, PC, PE, PF		
Preheating of Parent Metal	Thickness ≥ 20 mm: 302 - 392 °F Rebaking (filler metal): appr. 572 - 662 °F for 2 hours					Thickness ≥ 20 mm: 302 - 392 °F		
Interpass Temperature	≤ 752 °F for all heat treatable materials or temperable fine grain materials ≤ 482 °F for thermomechanical fine-grained steels, e.g. S700MC							
Postweld Heat Treatment	Thickness ≥ 30 mm: ≤ 1022 °F for all heat treatable materials or temperable fine grain materials, ≤ 482 °F for thermomechanical fine-grained steels, e.g. S700MC, Tempering for 1 minute per mm of wall thickness or using the 'temper pass' technique							
Pass	Root Run	Final Run	Final Run	Final Run	Temper Pass	Root Run	Final Run	Temper Pass
Wire or Electrode Diameter	2.5 mm	3.2 mm	4.0 mm	5.0 mm	3.25 mm / 4.00 mm / 5.00 mm	1.0 mm	1.2 mm	1 or 1.2 mm
Welding Current (=)	80 - 100 A	100 - 140 A	130 - 180 A	180 - 230 A	as final run	130 - 260 A	190 - 325 A	190 - 325 A
Electrode Polatrity	(= +)	(= +)	(= +)	(= +)	(= +)	(= +)	(= +)	(= +)
Voltage	-	-	-	-	-	22 - 33 V	19 - 31 V	19 - 31 V
Shield Gas ISO 14175; M2 1	-	-	-	-	-	10 - 12 l/min	12 - 14 l/min	12 - 14 l/min
Kind of Passes	Stringer Pass	Stringer Pass	Stringer Pass	Stringer Pass	Stringer Pass	Stringer Pass	Stringer Pass	Stringer Pass

7. CONDITIONS OF USE

7.1 Normal Use

WARNING

The ring of the lashing point must always be freely movable.

It must not rest on or be supported by other structural parts.

7.2 Influence of Temperature

The temperature range for use is -4 °F to +400 °F.

DANGER

If the lashing points have been exposed to temperatures exceeding the maximum values specified they must not be used furthermore.

7.3 Environmental Influence

WARNING

Lashing points must not be used in environments where acids, aggressive or corrosive chemicals or their fumes are present. Single hot-dip galvanizing or a galvanic treatment is prohibited as well. If an entire vehicle base with the welded lashing points is to be galvanized, you must clarify with the manufacturer, which influence on the lashing points may occur. There is an increased risk of hydrogen embrittlement during cleaning (pickling).

7.4 Especially Hazardous Conditions

WARNING

The degree of danger when used in offshore applications, the lifting of hazardous loads, such as for example liquid metal or similar, risk potentials must be assessed by a competent person in the form of a risk analysis. Any additional rules and directives must be followed in this case.

8. INSPECTION, MAINTENANCE, DISPOSAL

8.1 General

WARNING

Inspections and maintenance must be arranged by the Owner!

Inspection intervals shall be determined by the Owner!

Visual inspections must be regularly carried out and documented by competent and trained persons, at least once a year or more frequently if the lashing points are in heavy duty service. After three years at the latest they must additionally be examined for cracks. A load test is not a substitute for this examination.

The results of the inspection shall be kept in a file that has to be set up for each lashing point before first use. The register will show characteristic data as well as identity details.

Immediately stop using lashing points that show the following defects:

- missing or illegible identification/marking,
- deformation, elongation or fractures,
- cuts, notches, cracks, incipient cracks, pinching,
- heating beyond permissible limit,
- restricted hingeability of the ring,
- severe corrosion,
- wear exceeding 10 %, for example in the ring diameter area,
- weld failures.

WARNING

Cleaning (e.g. prior to inspections) must not take place by using flames or methods that might cause hydrogen embrittlement (e.g. pickling or immersion in acidic solutions).

8.2 Inspection Service

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

Please contact us for further information.

8.3 Maintenance

DANGER

Maintenance and repair work must only be performed by competent and trained persons.

Minor notches and cracks at the rings may be eliminated by careful grinding observing the maximum cross section reduction requirement of 10 % and avoid making more severe cuts or scores.

All maintenance and repair activities are to be documented.

8.4 Disposal

NOTICE

All components and accessories of steel taken out of service must be scrapped in accordance with local regulations and provisions.

9. SPARE PARTS

There are no spare parts available.

For replacements see chapter 5 for article numbers.

10. STORAGE

NOTICE

Lashing points must be stored in dry conditions at temperatures between 32 °F and 104 °F.

Do not store in a manner that cause mechanical damage.

11. THIELE OPERATING AND MOUNTING INSTRUCTIONS

NOTICE

Current mounting and operating instructions are available as a PDF download on the homepage.

12. PUBLISHING INFORMATION

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