



THI-LOK
TWN 1320

XL-LOK
TWN 1820

KWS-Connectors



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

Do not use a connecting link before reading these Mounting Instructions.

1. ABOUT THIS INSTRUCTION

This Mounting Instructions describes in particular how connecting links type THI-LOK (TWN 1320), KWS-Connectors and XL-LOK (TWN 1820) are to be safely used for lifting purposes (TWN = THIELE Shop Standard).

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 connecting links.



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



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



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.

Chains and accessories marked with the American nominal size 7/32" already corresponded to European nominal size 6 mm. In order to achieve a better match, the previous nominal size 7/32" is now converted to the new nominal size 15/64". The Working Load Limits have now also been adjusted.

Definitions

Working Load Limit (WLL)

The maximum load which a connecting link is designed to support.



NOTICE

Read ASME B30.9 „Slings“, Chapters 9-0 and 9-1.

Read ASME B30.26 “Rigging Hardware”,

Chapters 26-0, 26-1, 26-4.

2. BASIC SAFETY REQUIREMENTS



To prevent the risk of injury never walk or stay under lifted loads!

The Working Load Limit must not be exceeded!

Connecting links as well as lifting and attachment means to be used must be free from defects!

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 as well as standards ASTM A 906/A 906 M (Standard Specification for Grade 80 and Grade 100 Alloy Steel Chain Slings for Overhead Lifting), ASTM A 952/A 952 M (Standard Specification for Forged Grade 80 and Grade 100 Steel Lifting Components and Welded Attachment Links), ISO 3056 (Non-calibrated round steel link lifting chain and chain slings; Use and maintenance), ISO 7593 (Chain slings assembled by methods other than welding; Grade T(8)) and ISO 4778 (Round steel short link chains for lifting purposes – Chains slings of welded construction – Grade 8).
- 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 connecting links.

**SAFETY
INSTRUCTIONS**

- 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. Also see 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 disassembly 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 connecting links.
- Do not use force when using the connecting links.
- Connecting links must be able to move freely in the components on which they are mounted.
- Only lift loads that are freely movable and not attached or fastened.
- Avoid bending loads to act on connecting links.
- Safety elements must not be stressed or strained operationally.
- Do not start lifting before you have made sure the load has been correctly attached and balanced.
- **No one including you (operator) must be in the way of the moving load (hazard area).**
- During lifting your hands or other body parts must not come into contact with lifting means. Only remove lifting means manually (use your hands).
- Never move a suspended load over persons.
- Always monitor a suspended load.
- Do not allow the sling chain assembly or connecting links getting caught under the load.
- Usage without appropriate locking sleeves is not allowed. Locking sleeves do not stay in contact to other parts.
- Avoid sharp edges.
- When used as locking links in endless chains of identical nominal size the Working Load Limit must be reduced by 20 %.
- Do not twist or knot the chains together.
- Put the load only down in flat places/sites where it can be safely deposited.

- 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 regard grade 100, THIELE does not give its approval to the assembly of components sourced from different manufacturers!

As a rule, connecting links are not permitted for the transportation of persons.

3. DESCRIPTION AND INTENDED USE

Connecting links are exclusively intended for use with chain sling assemblies according to ASTM A 906/A 906M.

They are exclusively meant to connect individual chain sections/legs to each other or to intermediate links or other attachment elements with eyelets and must only be arranged in one load-carrying chain section.

A connecting link consists of two symmetrical halves attached to each other by means of a secured pin. The link is marked with nominal chain size and quality grade, manufacturer's symbol and traceability code.

THIELE connecting links meet EG Machinery Directive 2006/42/EG requirements and feature a safety factor of at least 4 based on the Working Load Limit (WLL).

The connecting links are designed to withstand 20,000 dynamic load changes under maximum load conditions. In the event of higher loads (e.g. multi-shift/automatic operation, magnetic spreaders) the Working Load Limit must be reduced before the links are put to use.



Connecting links must exclusively be used

- within the limits of their permissible working load limit,
- for permissible attachment methods and sling angles,
- within the temperature limits prescribed,
- by trained and authorized persons.

Failure to do so may cause serious injury or property damage.

Connecting links can also be used within lashing chain assemblies. When used within a lashing system the maximum lashing capacity is obtained by doubling the Working Load Limit.

Any alternating use for lifting and lashing purposes is impermissible!

4. COMMISSIONING

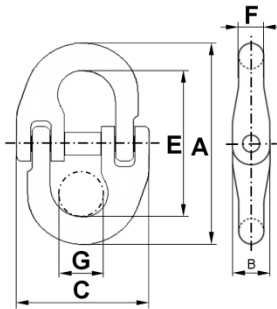
Prior to using the components for the first time assure that

- the components comply with the order and have not been damaged,
- test certificates and 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 testings are carried out and documented,
- 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 THI-LOK, TWN 1320, Grade 80

Size	Article No.	WLL [lbs.]	Dimensions [mm]					Mass [lbs.]
			E	G	A	C	F	
15/64	F30806	2,500	46	15	62	42	6	0.15
9/32 5/16	F30816	4,500	56	20	78	55	9	0.35
3/8	F30826	7,100	69	25	93	68	12	0.66
1/2	F30836	12,000	84	30	116	75	15	1.32
5/8	F30846	18,100	102	35	146	97	19	2.65
3/4	F30855	28,300	122	36	165	110	22	5.20
7/8	F30860A	34,200	134	45	185	122	26	7.00
1	F30870A	47,700	145	46	198	132	26	11.00
1 ¼	F30880	72,300	164	55	225	156	30	20.60
1 27/64	Z03176	88,200	192	65	268	192	37	32.85

5.2 KWS-Connectors, Grade 80

Size	Article No.	WLL [lbs.]	Dimensions [mm]					Mass [lbs.]
			E	G	A	C	F	
15/64	Z07400	2,500	44	14	60	41	8	0.15
9/32 5/16	Z07401	4,500	56	19	76	52	10	0.35
3/8	Z07402	7,100	68	24	93	68	12	0.71
1/2	Z07403	12,000	86	26	118	77	16	1.45
5/8	Z07404	18,100	113	36	156	98	22	2.91

5.3 XL-LOK TWN 1820, Grade 100

Size	Article No.	WLL [lbs.]	Dimensions [mm]					Mass [lbs.]
			E	G	A	C	F	
15/64	F30807	3,100	45	14	61	39	8	0.15
9/32	Z09789	4,300	51	18	71	-	-	0.31
5/16	F30817	5,700	62	19	85	55	10	0.44
3/8	F30827	8,800	72	24	97	66	13	0.77
1/2	F30837	15,000	87	28	125	83	17	1.63
5/8	F30847	22,600	105	34	146	109	21	2.56
7/8	F30861	42,700	140	47	193	133	26	7.76

6. ASSEMBLY AND REMOVAL

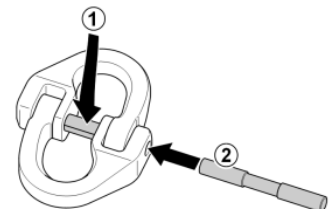
6.1 Preparations

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

6.2 Assembly

Install the connecting link halves in the components to be connected and join both halves.

1. Position locking sleeve (1) as shown.
2. Push pin (2) up to the locking sleeve, align pin bevels to suit locking sleeve and drive the pin in using a hammer.
3. Check to make sure locking sleeve safely embraces the pin centrally.

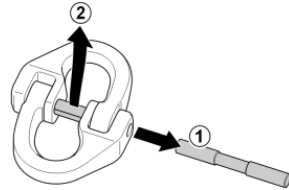


The split sleeves must only be installed once.

The components to be connected must be able to move freely within the connecting link half they are placed in.

6.3 Disassembly

1. Use drift to drive the pin out.
2. Remove the locking sleeve.
3. Separate connecting link halves from the components they joined.



A set of drifts according to TWN 0945 is available by Article No. Z03303.

7. CONDITIONS OF USE

7.1 Normal Use

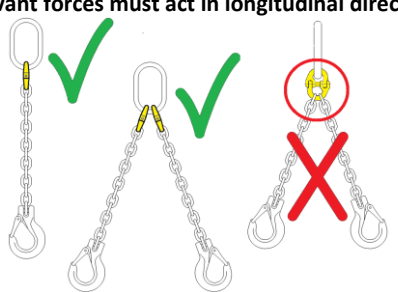
In mounted sling/suspension, chain assemblies the chains are for example joined to other components by means of connecting links. This way components can be mounted the nominal size of which deviates from that of the chain.



Trade sizes and quality grades of chain and connecting link must always coincide!

! DANGER

When attaching components, observe the correct position of the connecting link.
Relevant forces must act in longitudinal direction.



If two chain legs are assembled into one connecting link half for alternate use of the legs, only one chain leg must be subjected to loads!

7.2 Influence of Temperature



Using connecting links at elevated temperatures will cause the Working Load Limit to be reduced as indicated below.

	Temperature range	Remaining WLL
Grade 80	-40 °C ≤ t ≤ 205 °C -40 °F ≤ t ≤ 400 °F	100 %
	205 °C < t ≤ 300 °C 400 °F < t ≤ 572 °F	90 %
	300 °C < t ≤ 400 °C 572 °F < t ≤ 752 °F	75 %
Grade 100	-40 °C ≤ t ≤ 205 °C -40 °F ≤ t ≤ 400 °F	100 %



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

7.3 Environmental Influence



Connecting links must not be used in environments where acids, aggressive or corrosive chemicals or their fumes are present. Hot-dip galvanizing or a galvanic treatment is prohibited as well.

Connecting links are not intended to be used for abrasive blasting environments.

7.4 Especially Hazardous Conditions



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



Inspections and maintenance must be arranged by the Owner!

Inspection intervals must 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 connecting links 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 sling chain before first use. The register shall show characteristic data of the sling chains and components as well as identity details.

Immediately stop using connecting links that show the following defects:

- missing or illegible identification/markings,
- deformation, elongation or fractures,
- cuts, notches, cracks, incipient cracks, pinching,
- heating beyond permissible limit,
- severe corrosion,
- limited hinging capability (halves get stuck),
- wear in excess of 10 %, e.g. in the receiving area of the connecting link halves or of the pin diameter,
- missing or damaged pin or locking sleeve.



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).

8.1 Inspection Service

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

8.2 Maintenance



DANGER

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

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

All maintenance and repair activities must be documented properly.

8.3 Disposal



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

9. SPARE PARTS



Use only original spare parts.

Sets consist of pin and locking sleeve.

Size	Grade 80	Grade 100
	THI-LOK, TWN 1320	XL-LOK, TWN 1820
	Article No.	Article No.
15/64	F486012	F486013
9/32	F486042	---
5/16		F486043
3/8	F486072	F486073
1/2	F486102	F486103
5/8	F486132	F486133
3/4	F48617	---
7/8	F48619	F486191
1	F48622	---
1 ¼	F48625	---

10. STORAGE



Connecting links must be stored properly sorted and 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



Current mounting and operating instructions are available as a PDF download on the THIELE-website www.thiele.de.



12. PUBLISHING INFORMATION

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