


DEFINITIONS

Clevis

A U-shaped fitting with pin.

Working Load Limit (WLL)


The maximum load which a chain sling is designed to support in direct tension without shock loading at a designated sling angle of lift.



WARNING

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

Do not use a chain sling before reading these Operating Instructions.



NOTICE

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

Read ASME B30.10 "Hooks".

Read ASME B30.26 "Rigging Hardware", Chapters 26-0, 26-1, 26-4.

If chain slings are used with lifting magnets, read ASME B30.20 "Below-the Hook-Lifting-Devices", Chapter 20-4.

1. ABOUT THIS INSTRUCTION

This Operating Instruction describes in particular how sling chains according to TWN 0805A grade 80, TWN 0072 and TWN 1805 grade 100 (TWN = THIELE Shop Standard) are to be safely used for lifting purposes.

The instruction applies analogously to components of the identical design.

To comply with these instructions is essential to help avoid hazards and increases the reliability and service life of the chain slings.

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.

Chains and accessories marked with the American nominal size 7/32" already corresponded to the 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. #

2. BASIC SAFETY REQUIREMENTS



WARNING

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

The Working Load Limit must not be exceeded!

Only use lifting and attachment means 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).

**SAFETY
INSTRUCTIONS**

- 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 Operating Instructions and specified documentations relating to safety, assembly, operation, inspection, and maintenance must be made available to persons operating and using the sling chains.
- These Operating 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 13.
- 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 chain slings.
- Only lift loads that do not exceed the Working Load Limit of the sling chain assembly.
- Never expose chains to loads exceeding the specified Working Load Limits.
- Position the load hook above the load's center of gravity.
- Do not use force when mounting/positioning the attachment components.
- The load must resist and tolerate the forces to be applied without suffering deformation.
- Do not tip-load a hook.
- Do not twist or knot the chains together.
- When using shortening elements without additional safety means (e.g. TWN 0827, TWN 1827, TWN 0851 or TWN 1851), special care must be taken and the correct position of the chain in the shortening element is to be verified for each individual lifting operation.
- Avoid sharp edges. Use edge protectors or reduce the Working Load Limit by 20 %.
- The Working Load Limit must be reduced in the following cases
 - if the load is not balanced symmetrically,
 - if the chain is used in choke hitch applications,
 - when higher temperatures prevail,
 - when high dynamic and cyclic loads arise (automated or multi-shift operation),
 - when lifting magnets are employed.
- In case of multi-leg chain slings never allow sling angles of less than 30° and in excess of 75°. #
- Hooks shall have well-functioning safety latches.
- Attach unused chain legs to the suspension link.
- Suspension links must be allowed to move freely in the crane hook.
- Only lift loads that are freely movable and not attached or fastened.
- Do not bend loads to act on chain links and components.
- Safety elements must not be stressed or strained operationally.
- Use only shortening/grab hooks or claws for chain shortening purposes.
- Shortening hooks must not be attached directly to loads, e.g. metal sheets.
- For shortening claws, only the chain coming out of the bottom of the claw pocket must be loaded.
- Only chain legs and shortening elements of the same nominal size and grade may be connected.
- Shortening elements must be allowed to move freely in all tensile directions.
- Safeguard chain slings to prevent slipping when using the basket hitch application method.
- 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).
- Avoid impacts, e.g. due to abruptly lifting loads with chain in slack condition.
- Never move a suspended load over persons.
- Never cause suspended loads to swing.
- Always monitor a suspended load.
- Put the load down only in flat places/sites where it can be safely deposited.
- Do not allow the sling chain assembly getting caught under the load.
- Assume for sufficient space for the personnel to move when choosing the route of transportation and storage location. Danger to life and risk of injury by crushing hazards!
- 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.

**SAFETY
INSTRUCTIONS**

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, chain slings are not permitted for the transportation of persons.

3. DESCRIPTION AND INTENDED USE

THIELE sling chains and attachment components form part of chain slings and are intended for a safe transportation of loads.

This Operating Instructions describe in particular how sling chains according to TWN 0805A grade 80, TWN 0072 and TWN 1805 grade 100 (TWN = THIELE Shop Standard) are to be safely used for lifting purposes.

THIELE chain slings of the following design configurations are available:

- assembled with clevis fastening system,
- assembled with connecting links,
- assembled with clevis fastening system and connecting links,
- as welded sling chain assembly,
- as welded endless chain, #
- as endless chain with mounted connector. #

THIELE sling chains and chain slings meet EG Machinery Directive 2006/42/EG requirements and feature a safety factor of at least 4 based on Working Load Limit.

Sling chains and pertinent components are marked with nominal chain size and grade data, manufacturer's symbol and traceability code.

THIELE chain slings and attachment elements 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.

Chain slings shall be composed of sling chains and components of identical nominal chain size and grade. In case of deviating configurations the pertinent documentation (Operating Instructions etc.) must be suitably modified.

Sling chains according to TWN 0805A, TWN 0072 and TWN 1805 as well as the related attachment components and connecting links are intended for use as chain slings according to ASTM A 906/A 906M for lifting of loads.

! WARNING

Chain slings must only be used

- if mass and center of gravity of the load are known or have been professionally estimated,
- within the limits of their permissible Working Load Limit,
- for permissible attachment methods and sling angles, #
- within the temperature limits prescribed,
- with suitable connecting links, attachment components or shortening elements,
- by trained and authorized persons.

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

! DANGER

Chain slings must not be employed for binding, rigging, lashing or as hoist chains.

Shortening elements must not be connected directly to the load!

4. COMMISSIONING

Prior to using the components for the first time assure that

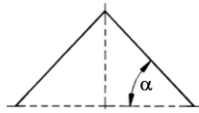
- the components comply with the order and have not been damaged,
- test certificate and Operating Instructions are at hand,
- markings correspond with what is specified in the documentation,
- inspection deadlines and the qualified persons for examinations are determined,
- visibility and functional 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.

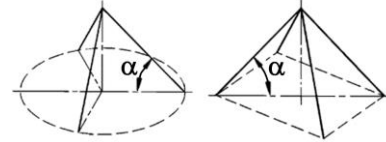
5. TECHNICAL DATA

For chain slings the data for WLL are depending on the sling angle α :






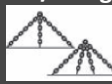

2-leg chain slings:



3- and 4-leg chain slings:




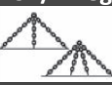



5.1 Working Load Limit Table – Direct Attachment, Grade 80 (lbs.)

| Nominal Chain Size | | 1-leg | 2-leg | | 3- / 4-leg | | | |
|--------------------|-----------------------|--|---|--|--|--|--|--|
| [mm] | [inch] |  $\alpha = 90^\circ$ |  $60^\circ \leq \alpha \leq 75^\circ$ |  $45^\circ \leq \alpha < 60^\circ$ |  $30^\circ \leq \alpha < 45^\circ$ |  $60^\circ \leq \alpha \leq 75^\circ$ |  $45^\circ \leq \alpha < 60^\circ$ |  $30^\circ \leq \alpha < 45^\circ$ |
| 6-8 | 15/64# | 2,500 | 4,300 | 3,500 | 2,500 | 6,500 | 5,300 | 3,700 |
| 7-8 | 9/32 | 3,500 | 6,100 | 4,900 | 3,500 | 9,100 | 7,400 | 5,200 |
| 8-8 | 5/16 | 4,500 | 7,800 | 6,400 | 4,500 | 11,700 | 9,500 | 6,800 |
| 10-8 | 3/8 | 7,100 | 12,300 | 10,000 | 7,100 | 18,400 | 15,100 | 10,600 |
| 13-8 | 1/2 | 12,000 | 20,800 | 17,000 | 12,000 | 31,200 | 25,500 | 18,000 |
| 16-8 | 5/8 | 18,100 | 31,300 | 25,600 | 18,100 | 47,000 | 38,400 | 27,100 |
| 20-8 | 3/4 | 28,300 | 49,000 | 40,000 | 28,300 | 73,500 | 60,000 | 42,400 |
| 22-8 | 7/8 | 34,200 | 59,200 | 48,400 | 34,200 | 88,900 | 72,500 | 51,300 |
| 26-8 | 1 | 47,700 | 82,600 | 67,400 | 47,700 | 123,900 | 101,200 | 71,500 |
| 32-8 | 1 1/4 | 72,300 | 125,200 | 102,200 | 72,300 | 187,800 | 153,400 | 108,400 |
| 36-8 ¹⁾ | 1 27/64 ¹⁾ | 88,200 | 152,800 | 124,700 | 88,200 | 229,100 | 187,100 | 132,300 |
| 40-8 ¹⁾ | 1 37/64 ¹⁾ | 110,200 | 190,900 | 155,800 | 110,200 | 286,300 | 233,800 | 165,300 |
| 45-8 ¹⁾ | 1 25/32 ¹⁾ | 138,900 | 240,600 | 196,400 | 138,900 | 360,900 | 294,600 | 208,300 |
| 50-8 ¹⁾ | 1 31/32 ¹⁾ | 176,400 | 305,500 | 249,500 | 176,400 | 458,300 | 374,200 | 264,600 |
| 56-8 ¹⁾ | 2 7/32 ¹⁾ | 220,500 | 381,900 | 311,800 | 220,500 | 572,900 | 467,700 | 330,700 |
| 63-8 ¹⁾ | 2 1/64 ¹⁾ | 275,600 | 477,300 | 389,800 | 275,600 | 716,000 | 584,600 | 413,400 |
| 71-8 ¹⁾ | 2 51/64 ¹⁾ | 352,700 | 610,900 | 498,800 | 352,700 | 916,300 | 748,200 | 529,000 |

1) welded chain sling


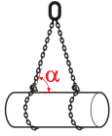
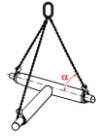
5.2 Working Load Limit Table - Direct Attachment, Grade 100 (lbs.)

| Nominal Chain Size | | 1-leg | 2-leg | | 3- / 4-leg | | | |
|---------------------|---------------------|--|---|--|--|--|--|--|
| [mm] | [inch] |  $\alpha = 90^\circ$ |  $60^\circ \leq \alpha \leq 75^\circ$ |  $45^\circ \leq \alpha < 60^\circ$ |  $30^\circ \leq \alpha < 45^\circ$ |  $60^\circ \leq \alpha \leq 75^\circ$ |  $45^\circ \leq \alpha < 60^\circ$ |  $30^\circ \leq \alpha < 45^\circ$ |
| 6-10 | 15/64# | 3,100 | 5,400 | 4,400 | 3,100 | 8,000 | 6,600 | 4,600 |
| 7-10 | 9/32 | 4,300 | 7,400 | 6,100 | 4,300 | 11,200 | 9,100 | 6,400 |
| 8-10 | 5/16 | 5,700 | 9,900 | 8,100 | 5,700 | 14,800 | 12,100 | 8,500 |
| 10-10 | 3/8 | 8,800 | 15,200 | 12,400 | 8,800 | 22,900 | 18,700 | 13,200 |
| 13-10 | 1/2 | 15,000 | 26,000 | 21,200 | 15,000 | 39,000 | 31,800 | 22,500 |
| 16-10 | 5/8 | 22,600 | 39,100 | 32,000 | 22,600 | 58,700 | 47,900 | 33,900 |
| 20-10 ¹⁾ | 3/4 ¹⁾ | 35,300 | 61,100 | 49,900 | 35,300 | 91,700 | 74,900 | 53,000 |
| 22-10 ¹⁾ | 7/8 ¹⁾ | 42,700 | 74,000 | 60,400 | 42,700 | 110,900 | 90,600 | 64,000 |
| 26-10 ¹⁾ | 1 ¹⁾ | 59,700 | 103,400 | 84,400 | 59,700 | 155,100 | 126,600 | 89,500 |
| 32-10 ¹⁾ | 1 1/4 ¹⁾ | 88,200 | 152,800 | 124,700 | 88,200 | 229,100 | 187,100 | 132,300 |

1) welded chain sling


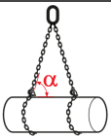
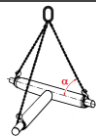
5.3 Working Load Limit Table – Choke Hitch, Grade 80 (lbs.)

In general, the WLL of the sling chain has to be reduced to 80 % if used as choke hitch assembly.

| Nominal Chain Size | | 1-leg | 2-leg | | 3- / 4-leg | |
|--------------------|-----------------------|---|---|-----------------------------------|---|-----------------------------------|
| | |  |  | |  | |
| [mm] | [inch] | $\alpha = 90^\circ$ | $60^\circ \leq \alpha < 90^\circ$ | $45^\circ \leq \alpha < 60^\circ$ | $60^\circ \leq \alpha < 90^\circ$ | $45^\circ \leq \alpha < 60^\circ$ |
| 6-8 | 15/64 # | 2,000 | 3,500 | 2,800 | 5,200 | 4,200 |
| 7-8 | 9/32 | 2,800 | 4,800 | 4,000 | 7,300 | 6,000 |
| 8-8 | 5/16 | 3,600 | 6,200 | 5,100 | 9,300 | 7,600 |
| 10-8 | 3/8 | 5,700 | 9,800 | 8,000 | 14,800 | 12,000 |
| 13-8 | 1/2 | 9,600 | 16,600 | 13,600 | 24,900 | 20,400 |
| 16-8 | 5/8 | 14,500 | 25,100 | 20,500 | 37,600 | 30,700 |
| 20-8 | 3/4 | 22,600 | 39,200 | 32,000 | 58,800 | 48,000 |
| 22-8 | 7/8 | 27,400 | 47,400 | 38,700 | 71,100 | 58,000 |
| 26-8 | 1 | 38,200 | 66,100 | 54,000 | 99,100 | 80,900 |
| 32-8 | 1 ¼ | 57,800 | 100,200 | 81,800 | 150,300 | 122,700 |
| 36-8 ¹⁾ | 1 27/64 ¹⁾ | 70,600 | 122,200 | 99,800 | 183,300 | 149,700 |
| 40-8 ¹⁾ | 1 37/64 ¹⁾ | 88,200 | 152,700 | 124,700 | 229,000 | 187,000 |
| 45-8 ¹⁾ | 1 25/32 ¹⁾ | 111,100 | 192,500 | 157,100 | 288,700 | 235,700 |
| 50-8 ¹⁾ | 1 31/32 ¹⁾ | 141,100 | 244,400 | 199,600 | 366,600 | 299,400 |
| 56-8 ¹⁾ | 2 7/32 ¹⁾ | 176,400 | 305,500 | 249,500 | 458,300 | 374,200 |
| 63-8 ¹⁾ | 2 1/64 ¹⁾ | 220,500 | 381,900 | 311,800 | 572,800 | 467,700 |
| 71-8 ¹⁾ | 2 51/64 ¹⁾ | 282,200 | 488,700 | 399,000 | 733,000 | 598,500 |

1) welded chain sling

5.4 Working Load Limit Table – Choke Hitch, Grade 100 (lbs.)

| Nominal Chain Size | | 1-leg | 2-leg | | 3- / 4-leg | |
|---------------------|-------------------|---|---|-----------------------------------|---|-----------------------------------|
| | |  |  | |  | |
| [mm] | [inch] | $\alpha = 90^\circ$ | $60^\circ \leq \alpha < 90^\circ$ | $45^\circ \leq \alpha < 60^\circ$ | $60^\circ \leq \alpha < 90^\circ$ | $45^\circ \leq \alpha < 60^\circ$ |
| 6-10 | 15/64 # | 2,500 | 4,300 | 3,500 | 6,400 | 5,300 |
| 7-10 | 9/32 | 3,400 | 6,000 | 4,900 | 8,900 | 7,300 |
| 8-10 | 5/16 | 4,600 | 7,900 | 6,400 | 11,800 | 9,700 |
| 10-10 | 3/8 | 7,000 | 12,200 | 10,000 | 18,300 | 14,900 |
| 13-10 | 1/2 | 12,000 | 20,800 | 17,000 | 31,200 | 25,500 |
| 16-10 | 5/8 | 18,100 | 31,300 | 25,600 | 47,000 | 38,300 |
| 20-10 ¹⁾ | 3/4 ¹⁾ | 28,200 | 48,900 | 39,900 | 73,400 | 59,900 |
| 22-10 ¹⁾ | 7/8 ¹⁾ | 34,200 | 59,200 | 48,300 | 88,700 | 72,500 |
| 26-10 ¹⁾ | 1 ¹⁾ | 47,800 | 82,700 | 67,500 | 124,100 | 101,300 |
| 32-10 ¹⁾ | 1 ¼ ¹⁾ | 70,600 | 122,200 | 99,800 | 183,300 | 149,700 |

1) welded chain sling

5.5 Working Load Limit Table – Endless Chain Slings, Grade 80 (lbs.)

| Nominal size | | Load situations / Sling angle | | | | | |
|--------------------|-----------------------|-------------------------------|--------------------------------------|--------------------------------------|-----------------------------------|--------------------------------------|-----------------------------------|
| | | K11 | | K12 | K13 | K22 | K23 |
| [mm] | [lbs.] | $\alpha = 90^\circ$ | $65^\circ \leq \alpha \leq 90^\circ$ | $45^\circ \leq \alpha \leq 90^\circ$ | $30^\circ \leq \alpha < 45^\circ$ | $45^\circ \leq \alpha \leq 90^\circ$ | $30^\circ \leq \alpha < 45^\circ$ |
| 6-8 | 15/64 # | 4,000 | 3,600 | 2,800 | 2,000 | 4,200 | 3,000 |
| 7-8 | 9/32 | 5,600 | 5,100 | 4,000 | 2,800 | 6,000 | 4,200 |
| 8-8 | 5/16 | 7,200 | 6,500 | 5,100 | 3,600 | 7,600 | 5,400 |
| 10-8 | 3/8 | 11,400 | 10,300 | 8,000 | 5,700 | 12,000 | 8,500 |
| 13-8 | 1/2 | 19,200 | 17,400 | 13,600 | 9,600 | 20,400 | 14,400 |
| 16-8 | 5/8 | 29,000 | 26,200 | 20,500 | 14,500 | 30,700 | 21,700 |
| 20-8 | 3/4 | 45,300 | 41,000 | 32,000 | 22,600 | 48,000 | 34,000 |
| 22-8 | 7/8 | 54,700 | 49,600 | 38,700 | 27,400 | 58,000 | 41,000 |
| 26-8 | 1 | 76,300 | 69,200 | 54,000 | 38,200 | 81,000 | 57,200 |
| 32-8 | 1 1/4 | 115,700 | 104,800 | 81,800 | 57,800 | 122,700 | 86,800 |
| 36-8 ¹⁾ | 1 27/64 ¹⁾ | 141,100 | 127,900 | 99,800 | 70,600 | 149,700 | 105,800 |
| 40-8 ¹⁾ | 1 37/64 ¹⁾ | 176,300 | 159,800 | 124,700 | 88,200 | 187,000 | 132,200 |
| 45-8 ¹⁾ | 1 25/32 ¹⁾ | 222,200 | 201,400 | 157,100 | 111,100 | 235,700 | 166,700 |
| 50-8 ¹⁾ | 1 31/32 ¹⁾ | 282,200 | 255,800 | 199,600 | 141,100 | 299,400 | 211,700 |
| 56-8 ¹⁾ | 2 7/32 ¹⁾ | 352,800 | 319,700 | 249,500 | 176,400 | 374,200 | 264,600 |
| 63-8 ¹⁾ | 2 1/64 ¹⁾ | 441,000 | 399,600 | 311,800 | 220,500 | 467,700 | 330,700 |
| 71-8 ¹⁾ | 2 51/64 ¹⁾ | 564,300 | 511,400 | 399,000 | 282,200 | 598,500 | 423,200 |

1) welded chain sling

5.6 Working Load Limit Table – Endless Chain Slings, Grade 100 (lbs.)

| Nominal size | | Load situations / Sling angle | | | | | |
|---------------------|---------------------|-------------------------------|--------------------------------------|--------------------------------------|-----------------------------------|--------------------------------------|-----------------------------------|
| | | K11 | | K12 | K13 | K22 | K23 |
| [mm] | [lbs.] | $\alpha = 90^\circ$ | $65^\circ \leq \alpha \leq 90^\circ$ | $45^\circ \leq \alpha \leq 90^\circ$ | $30^\circ \leq \alpha < 45^\circ$ | $45^\circ \leq \alpha \leq 90^\circ$ | $30^\circ \leq \alpha < 45^\circ$ |
| 6-10 | 15/64 # | 5,000 | 4,500 | 3,500 | 2,500 | 5,300 | 3,700 |
| 7-10 | 9/32 | 6,900 | 6,200 | 4,900 | 3,400 | 7,300 | 5,200 |
| 8-10 | 5/16 | 9,100 | 8,300 | 6,400 | 4,600 | 9,700 | 6,800 |
| 10-10 | 3/8 | 14,100 | 12,800 | 10,000 | 7,000 | 14,900 | 10,600 |
| 13-10 | 1/2 | 24,000 | 21,700 | 17,000 | 12,000 | 25,500 | 18,000 |
| 16-10 | 5/8 | 36,200 | 32,800 | 25,600 | 18,100 | 38,300 | 27,100 |
| 20-10 ¹⁾ | 3/4 ¹⁾ | 56,500 | 51,200 | 39,900 | 28,200 | 59,900 | 42,400 |
| 22-10 ¹⁾ | 7/8 ¹⁾ | 68,300 | 61,900 | 48,300 | 34,200 | 72,500 | 51,200 |
| 26-10 ¹⁾ | 1 ¹⁾ | 95,500 | 86,600 | 67,500 | 47,800 | 101,300 | 71,600 |
| 32-10 ¹⁾ | 1 1/4 ¹⁾ | 141,100 | 127,900 | 99,800 | 70,600 | 149,700 | 105,800 |

1) welded chain sling

6. ASSEMBLY AND REMOVAL

6.1 Preparations

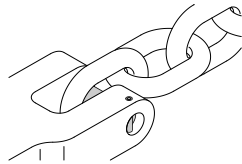
All components to be installed or used must be in perfect condition and the relevant Working Load Limits of all parts must accommodate the respective load to be handled.

6.2 Chain Assembly

When assembling or disassembling chain slings the relevant assembly and Operating Instructions issued for the components must be observed.

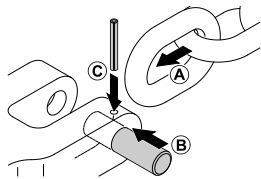
6.3 Clevis Fastening System

The clevis fastening system only permits attachment of the nominal chain size that suits the attachment component.



6.3.1 ASSEMBLY

- If necessary, remove dowel pin and pin.
- (A) Place end of chain leg between the lateral clevis elements.
- (B) Push pin from the side fully into the clevis and through the last chain link of the leg.
- (C) Drive dowel pin fully in (must not project) to secure the pin. The slot must face away from the pin.



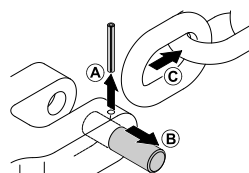
Check whether the chain runs smoothly.

The dowel pins must only be installed once.

Only connect pins and attachment components of identical grades. Starting with $\varnothing \frac{1}{2}$ " the pins are marked on the front end.

6.3.2 DISASSEMBLY

- Slacken the respective chain leg.
- (A) Drive dowel pin out using hammer and drift punch ¹⁾.
- (B) Push pin out using a drift punch.
- (C) Remove the chain.



1) Suitable drift punches are available by Article No. Z03303.

7. CONDITIONS OF USE

7.1 Normal Use



When 4-leg chain slings are used there is a risk that the load will act on two oppositely located chain legs only. In such a case, check the Working Load Limit of the sling chain assembly and use an assembly that has a higher Working Load Limit. Shortening individual chain legs is indicative of a non-symmetrical load distribution. In this case, the Working Load Limit must be reduced.

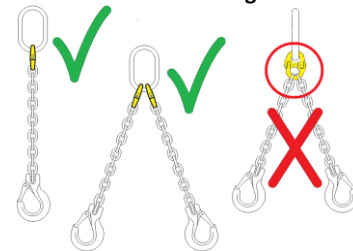
If choke hitch applications are involved the Working Load Limit is to be additionally reduced by 20 %.

When using hooks without safety latch, e.g. due to operational necessities, special care is to be taken, and a separate risk analysis must be carried out before operation.



When attaching components, observe the correct position of the connecting links.

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!

If not all chain legs in a multi-leg sling chain assembly are used, the Working Load Limit is to be reduced according to the following table:

| Total number of legs | Number of legs to be put to use | Use factor relevant to WLL specified |
|----------------------|---------------------------------|--------------------------------------|
| 2 | 1 | 1/2 |
| 3 or 4 | 2 | 2/3 |
| 3 or 4 | 1 | 1/3 |

7.2 Influence of Temperature



The respective temperature range limits must be considered for all components used. Using chain slings in high temperatures will cause the Working Load Limit to be reduced as indicated below.

| | Temperature range | Remaining WLL |
|-----------------------|---|---------------|
| Grade 80 TWN 0805A | -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 TWN 0072 | -40 °C ≤ t ≤ 205 °C# -40 °F ≤ t ≤ 400 °F | 100 % |
| Grade 100 TWN 1805 | -30 °C ≤ t ≤ 205 °C# -22 °F ≤ t ≤ 400 °F | 100 % |



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

7.3 Environmental Influence



Chain slings 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.

7.4 Special 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.

For applications in abrasive blasting environments short inspection intervals must be scheduled. Selecting a welded sling chain assembly of the next bigger nominal size increases the permissible wear allowance.

8. GENERAL NOTES ON ATTACHMENT COMPONENTS

8.1 Connecting Links



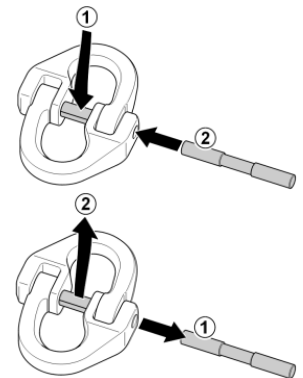
In mounted chain slings the chains are, for example, joined to other components by the use of connecting links. In this way, components can be mounted the nominal size of which deviates from that of the chain.

Sizes and grades of sling chains and connecting links must always coincide!

8.1.1 ASSEMBLY

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

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



8.1.2 DISASSEMBLY

1. Use drift to drive pin out.
2. Remove the split 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.

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.

8.2 Shortening Elements

A shortening element within a chain leg is intended only to shorten the effective length to optimize the balance of the whole system.

When using shortening elements, such as for example shortening hooks or claws, please read the respective separate operating and/or assembly instructions.

9. IDENTIFICATION/MARKING

An identification tag must be attached to the chain sling adjacent to the master link.

The identification tag must show

- name or trademark of manufacturer
- nominal chain size
- grade
- number of legs
- rated load and corresponding sling angle
- length/reach
- individual identification/serial number

10. INSPECTION, MAINTENANCE, DISPOSAL

10.1 General



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 chain slings 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 inspections 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 chains and components as well as identity details.

Immediately stop using chain slings that show the following defects:

- missing or illegible identification/markings,
- deformation, elongation or fractures of chain links or components,
- cuts, notches, cracks, incipient cracks, pinching,
- links heated beyond permissible limit,
- severe corrosion,
- pitch elongation of individual chain links by more than 5 % each,
- reduction of the average diameter of more than 10 % as mean value of measurements taken perpendicularly towards each other,
- impaired or missing safety systems, for example if the hooks' safety latch is defect,
- widening of the hook opening by more than 10 % or if the safe seating of the hook safety latch is no longer ensured

- limited hinging capability of connecting links (e.g. 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 locks or removal of preventing guards



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).

The following chain gauges are available to be used during chain inspections:

| Nominal size | | Article No. |
|--------------|-----------|-------------|
| Grade 80 | | F48856 |
| 15/64" | Grade 100 | F01690 |
| 5/16 | Grade 100 | F01691 |
| 3/8 | Grade 100 | F01692 |
| 1/2 | Grade 100 | F01693 |
| 5/8 | Grade 100 | F01694 |

10.2 Inspection Service

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

10.3 Maintenance and Repair



Do not repair or replace individual chain links but replace complete chain legs only.

If the safety latch of hooks does not engage properly with the tip of the hook, probably not only the hook but also the corresponding chain leg has been overloaded. In all such cases, all items used in the respective leg must be replaced (chain, shortening element, ring shackle etc.).

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.

Welded chain slings must exclusively be repaired by the manufacturer.

All maintenance and repair activities must be documented properly.

10.4 Disposal

NOTICE

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

11. SPARE PARTS



Use only original spare parts.

11.1 Sling chains, Grade 80, TWN 0805A

| Nominal Chain Size | | WLL [lbs.] | Article No. Black Finish ²⁾ | Mass [lbs./ft.] |
|--------------------|---------|---------------|---|--------------------|
| [mm] | [inch] | | | |
| 6-8 | 15/64 # | 2,500 | F01453A | 0.53 |
| 7-8 | 9/32 | 3,500 | F01459A | 0.73 |
| 8-8 | 5/16 | 4,500 | F01465A | 0.94 |
| 10-8 | 3/8 | 7,100 | F01470A | 1.46 |
| 13-8 | 1/2 | 12,000 | F01475A | 2.52 |
| 16-8 | 5/8 | 18,100 | F01480A | 3.71 |
| 20-8 | 3/4 | 28,300 | F01495A | 5.95 |
| 22-8 | 7/8 | 34,200 | F01500A | 7.21 |
| 26-8 | 1 | 47,700 | F01515A | 10.06 |
| 32-8 | 1 ¼ | 72,300 | F01525A | 15.20 |
| 36-8 | 1 27/64 | 88,200 | F01530A | 19.49 |
| 40-8 | 1 37/64 | 110,200 | F01535A | 24.19 |
| 45-8 | 1 25/32 | 138,900 | F01540A | 30.57 |
| 50-8 | 1 31/32 | 176,400 | F01546A | 37.63 |
| 56-8 | 2 7/32 | 220,500 | F01556A | 48.72 |
| 63-8 | 2 1/64 | 275,600 | F01566A | 59.82 |
| 71-8 | 2 51/64 | 352,700 | F01598A | 73.92 |

2) other finishes available on request, please contact KWS

11.2 Sling chains XL200, Grade 100, TWN 0072

| Nominal Chain Size | | WLL [lbs.] | Article No. RAL 5002 | Mass [lbs./ft.] |
|--------------------|---------|---------------|-------------------------|--------------------|
| [mm] | [inch] | | | |
| 6-10 | 15/64 # | 3,100 | F01616A | 0.54 |
| 7-10 | 9/32 | 4,300 | F01621A | 0.74 |
| 8-10 | 5/16 | 5,700 | F01617A | 1.0 |
| 10-10 | 3/8 | 8,800 | F01618A | 1.6 |
| 13-10 | 1/2 | 15,000 | F01619A | 2.6 |
| 16-10 | 5/8 | 22,600 | F01620A | 3.9 |

11.3 Sling chains XL400, Grade 100, TWN 1805

| Nominal Chain Size | | WLL [lbs.] | Article No. RAL 5002 | Mass [lbs./ft.] |
|--------------------|--------|---------------|-------------------------|--------------------|
| [mm] | [inch] | | | |
| 20-10 | 3/4 | 35,300 | F01638A | 6.1 |
| 22-10 | 7/8 | 42,700 | F01650A | 7.4 |
| 26-10 | 1 | 59,700 | F01660A | 10.1 |
| 32-10 | 1 ¼ | 88,200 | F01670A | 15.5 |

11.4 Spares Sets for Clevis Fastening System, Grade 80

Sets consist of pin and dowel pin.

| Nominal Size | Article No. | e.g for clevis fastening systems of the components according to: |
|--------------|-------------|--|
| 15/64 # | F48694 | TWN 0810/1 -/2 -/4 Master links |
| 5/16 | F48352 | TWN 0811/1 -/2 -/4 Master links |
| 3/8 | F48355 | TWN 0812 Ring shackles |
| 1/2 | F48358 | TWN 0820 Oblong master links |
| 5/8 | F48361 | TWN 0827 -/1 Shortening hooks |
| 3/4 | F48369 | TWN 0835 -/1 Sling hooks |
| 1 | F48373 | TWN 0848/1 Skip loader eyelets |
| 1 ¼ | F48371 | TWN 0851 Shortening claws |
| | | TWN 0859 Shortening units |
| | | TWN 0861 Sling hooks |
| | | TWN 0862 Special clevis shackles |
| | | TWN 0869 Clevis shackles |
| | | TWN 0889 Skip loader eyelets |
| | | TWN 0896 Motor transporting hooks |
| | | TWN 1340 -/1 Shortening units |
| | | TWN 1450 Sling hooks |
| | | TWN 1451 Screw tensioners |
| | | TWN 1452 Screw tensioners |

11.5 Spares Sets for Clevis Fastening System, Grade 100

Sets consist of pin and dowel pin.

| Nominal Size | Article No. | e.g for clevis fastening systems of the components according to: |
|--------------|-------------|--|
| 15/64 # | F48686 | TWN 1810/1 -/2 -/4 Master links |
| 5/16 | F48687 | TWN 1811/1 -/2 -/4 Master links |
| 3/8 | F48688 | TWN 1812 Ring shackles |
| 1/2 | F48689 | TWN 1840 -/1 Sling hooks |
| 5/8 | F48690 | TWN 1851 Shortening claws |
| | | TWN 1896 Shortening units |
| | | TWN 1454 Screw tensioners |
| | | TWN 1455 Screw tensioners |

11.6 Article Numbers for Other Components

Detailed information on spare parts for other THIELE-components can be found in the respective component instructions that are available for download on www.thiele.de or upon request. #

12. STORAGE

NOTICE

Chain slings must be stored properly sorted, suspended and in dry conditions at temperatures between 32 °F and 104 °F.

Do not store in a manner that causes mechanical damage.

13. THIELE OPERATING AND MOUNTING INSTRUCTIONS

NOTICE

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



14. PUBLISHING INFORMATION

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