# Operating Instructions
**for**
# Chain Slings

US

(Example)

**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.**

## 1. About this Instruction

These Operating Instructions describe in particular how sling chains according to TWN 0805 grade 80#, TWN 0072 and TWN 1805 grade 100# (TWN = THIELE Shop Standard) are to be safely used for hoisting purposes.
The instructions apply analogously to components of identical design.
Compliance 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.

**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.

**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.**

## 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 unless 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. #
- When performing 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 or TWN 0851), special care must be taken and the correct position of the chain in the shortening element is to be verified for each individual hoisting 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 case
  - 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 for inclination 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. #
- In case of shortening claws only put loads on the chain exiting the claw pocket bottom.
- 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/hoisting your hands or other body parts must not come into contact with hoisting means. Only remove hoisting 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 only down 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 place 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.

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

**As regards 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.**

**When used in applications as ENDLESS CHAIN duly observe the relevant separate operating manual!**

## 3. Description and intended use

THIELE sling chains and attachment components form part of chain slings and are conducive to the safe transportation of loads.

These Operating Instructions describe in particular how sling chains according to TWN 0805 grade 80#, TWN 0072 and TWN 1805 grade 100# (TWN = THIELE Shop Standard) are to be safely used for hoisting purposes. The instructions apply analogously to components of identical design.

THIELE chain slings of the following design configurations are available:

- assembled with clevis-type hook system,
- assembled with connecting links,
- assembled with clevis-type hook system and connecting links,
- as welded sling chain assembly.

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 (WLL).

Sling chains and pertinent components are marked with nominal chain size and grade data, manufacturer's symbol (e.g. BG stamp H4) 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 to TWN 0805, 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 inclination 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 testing are carried out and documented,
- the documentation is safely kept in an orderly manner.

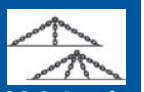
Dispose of the packing in an environmentally compatible way according to local rule.

## 5. Technical Data

### Working Load Limit Table - Grade 80# (lbs.)

| Nominal Chain Size | | 1-leg | 2-leg | | | 3-/4-leg | | |
|---|---|---|---|---|---|---|---|---|
| [mm] | [inch] |  90 ° Angle |  60 ° Angle |  45 ° Angle |  30 ° Angle |  60 ° Angle |  45 ° Angle |  30 ° Angle |
| 6-8 | 7/32 | 2,100 | 3,600 | 3,000 | 2,100 | 5,450 | 4,450 | 3,150 |
| 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) | 1.42 | 88,000 | 152,400 | 124,500 | 88,000 | 228,600 | 186,700 | 132,000 |
| 40-8) | 1.58 | 110,200 | 190,900 | 155,800 | 110,200 | 286,300 | 233,800 | 165,300 |
| 45-8) | 1.77 | 138,900 | 240,600 | 196,400 | 138,900 | 360,900 | 294,600 | 208,400 |
| 50-8) | 1.97 | 176,300 | 305,400 | 249,300 | 176,300 | 458,000 | 375,000 | 264,500 |
| 56-8) | 2.21 | 220,400 | 381,700 | 311,700 | 220,400 | 572,600 | 467,500 | 330,600 |
| 63-8 | 2.50 | 275,600 | 477,300 | 389,700 | 275,600 | 715,900 | 584,600 | 413,400 |

### Working Load Limit Table - Grade 100# (lbs.)

| Nominal Chain Size | | 1-leg | 2-leg | | | 3-/4-leg | | |
|---|---|---|---|---|---|---|---|---|
| [mm] | [inch] |  90 ° Angle |  60 ° Angle |  45 ° Angle |  30 ° Angle |  60 ° Angle |  45 ° Angle |  30 ° Angle |
| 6-10 | 7/32 | 3,100 | 5,300 | 4,300 | 3,100 | 8,000 | 6,500 | 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 | 3/4 | 35,300 | 61,100 | 49,900 | 35,300 | 91,700 | 74,900 | 53,000 |
| 22-10 | 7/8 | 42,700 | 74,000 | 60,400 | 42,700 | 110,900 | 90,600 | 64,000 |
| 26-10 | 1 | 59,700 | 103,400 | 84,400 | 59,700 | 155,100 | 126,600 | 89,500 |
| 32-10 | 1-1/4 | 88,200 | 152,700 | 124,700 | 88,200 | 229,100 | 187,100 | 132,300 |

**Article Numbers –**

**Sling chains – Grade 80[#] to TWN 1805**

| Nominal Chain Size [mm] | Nominal Chain Size [inch] | Working Load Limit WLL [lbs.] | Article No. Black Finish [2)] | Mass [lbs./ft.] |
|---|---|---|---|---|
| 6-8 | 7/32 | 2,100 | 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 | 1-1/4 | 72,300 | F01525A | 15.20 |
| 36-8 | 1.42 | 88,000 | F01530 | 19.49 |
| 40-8 | 1.58 | 110,200 | F01535 | 24.19 |
| 45-8 | 1.77 | 138,900 | F01540 | 30.57 |
| 50-8 | 1.97 | 176,300 | F01546 | 37.63 |
| 56-8 | 2.21 | 220,400 | F01556 | 48.72 |
| 63-8 | 2.50 | 275,600 | F01566 | 59.82 |

1) other finishes possible, please contact KWS

**Article Numbers –**

**Sling chains XL200 – Grade 100[#] to TWN 0072**

| Nominal Chain Size [mm] | Nominal Chain Size [inch] | Working Load Limit WLL [lbs.] | Article No. RAL 5002 | Mass [lbs./ft.] |
|---|---|---|---|---|
| 6-10 | 7/32 | 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 |

**Article Numbers –**

**Sling chains XL400 – Grade 100[#] to TWN 1805**

| Nominal Chain Size [mm] | Nominal Chain Size [inch] | Working Load Limit WLL [lbs.] | Article No. RAL 5002 | Mass [lbs./ft.] |
|---|---|---|---|---|
| 6-10 | 7/32 | 3,100 | on request | 0.54 |
| 8-10 | 5/16 | 5,700 | on request | 1.0 |
| 10-10 | 3/8 | 8,800 | on request | 1.6 |
| 13-10 | 1/2 | 15,000 | on request | 2.6 |
| 16-10 | 5/8 | 22,600 | on request | 3.9 |
| 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 | 1-1/4 | 88,200 | F01670A | 15.5 |

# 6. Assembly and Removal

## 6.1 Preparations

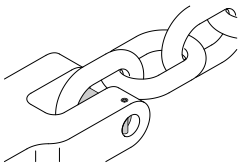
All components to be installed or used must be in perfect condition and the relevant Working Load Limits of all parts must accomodate the respective load to be handled.

## 6.2 Chain Assembly

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

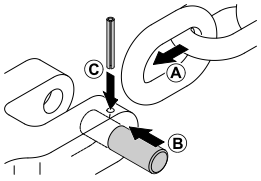
## 6.3 Clevis-type Hook System

The fixed-size clevis-type hook system only permits attachment of the nominal chain size that suits the attachment component.



### Assembly

If necessary, remove dowel pin and pin.




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

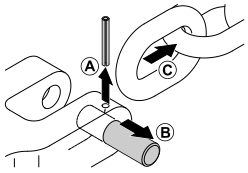
Check whether the chain runs smoothly.

Only connect pins and attachment components of identical grades (starting with Ø 13 mm the pins are marked on the front end).

The dowel pins must only be installed once.

### Disassembly

Slacken the respective chain leg.




- Drive dowel pin out using hammer and drift punch [2)].
- Push pin out using a drift punch.
- Remove the chain.

2) Suitable drift punchs are available by Article No. Z03303.

**Article Numbers for Spares Sets (Pins and Dowel Pins) Clevis-type Hook System – Grade 80[#]**

| Nominal size | Article No. Spares Set | e.g for clevis-type hook systems of the components according to: | |
|---|---|---|---|
| 7/32 [#] | F48694 | TWN 0810/1 -/2 -/4 | Master links |
| | | TWN 0811/1 -/2 -/4 | Master links |
| 5/16 [#] | F48352 | TWN 0812 | Ring shackles |
| 3/8 [#] | F48355 | TWN 0820 | Oblong master links |
| | | TWN 0827 -/1 | Shortening hooks |
| 1/2 [#] | F48358 | TWN 0835 -/1 | Sling hooks |
| 5/8 [#] | F48361 | TWN 0848/1 | Skip loader eyelets |
| | | TWN 0851 | Shortening claws |
| 3/4 [#] | F48369 | TWN 0859 | Foundry hooks |
| | | TWN 0861 | Special clevis shackles |
| 7/8 [#] | F48367 | TWN 0862 | Clevis shackles |
| 1 [#] | F48373 | TWN 0869 | Skip loader eyelets |
| 1-1/4 [#] | F48371 | TWN 0889 | Motor transporting hooks |
| | | TWN 0896 | Shortening units |
| | | TWN 1450 | Screw tensioners |
| | | TWN 1451 | Screw tensioners |
| | | TWN 1452 | Screw tensioners |

**Article Numbers for Spares Sets (Pins and Dowel Pins) Clevis-type Hook System of Grade 100#**

| Nominal size | Article No. Spares Set | e.g for clevis-type hook systems of the components according to: | |
|---|---|---|---|
| 7/32 # | 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 1835 -/1 | Sling hooks |
| 5/8 # | F48690 | TWN 1851 | Shortening claws |
| | | TWN 1896 | Shortening units |
| | | TWN 1454 | Screw tensioners |
| | | TWN 1455 | Screw tensioners |

**Article Numbers for Tags**

| Designation | Grade | | Article No. |
|---|---|---|---|
| TWN 0940 | 80# | without ring | F08040 |
| TWN 0940 | 80# | with ring | F08042 |
| TWN 1940 | 100# | without ring | F08052 |
| TWN 1940 | 100# | with ring | F08053 |

# 7. Conditions of Use

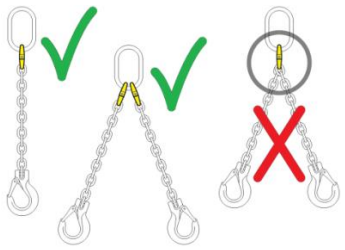
## 7.1 Normal Use

**WARNING**

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 prepared.

**DANGER**

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



**If two chain legs are arranged in 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

**WARNING**

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.

| Designation | Grade | Temperature range | Remaining WLL |
|---|---|---|---|
| TWN 0805 | 80 # | -40 °C ≤ t ≤ 200 °C<br>-40 °F ≤ t ≤ 392 °F | 100 % |
| | | 200 °C < t ≤ 300 °C<br>392 °F < t ≤ 572 °F | 90 % |
| | | 300 °C < t ≤ 400 °C<br>572 °F < t ≤ 752 °F | 75 % |
| TWN 0072 XL200 | 100 # | -20 °C ≤ t ≤ 205 °C<br>-4 °F ≤ t ≤ 400 °F | 100 % |
| TWN 1805 XL400 | 100 # | -30 °C ≤ t ≤ 200 °C<br>-22 °F ≤ t ≤ 392 °F | 100 % |
| | | 200 °C < t ≤ 300 °C<br>392 °F < t ≤ 572 °F | 90 % |
| | | 300 °C < t ≤ 380 °C<br>572 °F < t ≤ 716 °F | 60 % |

When the chains are used within other temperature ranges please contact the manufacturer.

**DANGER**

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

## 7.3 Environmental Influence

**WARNING**

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 as well.

## 7.4 Especially Hazardous Conditions

**WARNING**

The degree of danger when used in offshore applications, the lifting of persons or 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.

**WARNING**

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

## 8. General Notes on Attachment Components

### 8.1 Connecting Links

**WARNING**

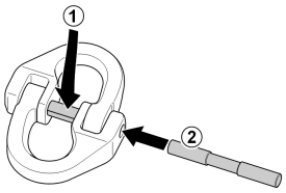
In mounted chain slings the chains are, for example, joined to other components by means of connecting links. In this way, components can be mounted the nominal size of which deviates from that of the chain.

Sizes and grades of sling chain and connecting link must always coincide!

**Assembly**

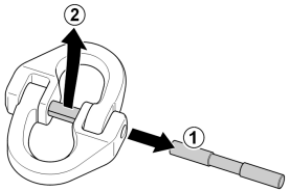
Install the connecting link halves in the components to be connected and join both halves.

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.




**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 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

**Shortening elements are intended only to shorten the effective length within a chain leg to optimize the balance of the whole system.**

**When using shortening elements, such as for example shortening hooks or claws as well as quick-action combination shorteners, please fr respective separate operating and/or assembly instructions.**

## 9. Identification/Marking

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

The identification tag contains of

- name or trademark of manufacturer
- nominal chain size
- grade
- number of legs
- rated load and angle upon which it is based
- length/reach
- individual identification/serial number

## 10. Inspection, Maintenance, Disposal

**WARNING**

Inspections and maintenance must be arranged by the Owner!

Inspection intervals shall be determined by the Owner!

Visual inspections must be carried out and documented by competent and trained persons regularly but 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 inspection shall be entered into a register to be prepared when the sling chain assembly is first used. The register will 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/marking,
- deformation, elongation or fractures of chains 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 averaged link thickness by more than 10 % as mean value of measurements taken perpendicularly towards each other,
- impaired or missing safety systems, for example if the hook safety latch is defect,
- widening of the hook by more than 10 % or if the safe seating of the hook safety latch is no longer ensured
- 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 locks or removal preventing guards

**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).

The following chain gauges are available for using during inspections:

| Nominal size | Article No. |
|---|---|
| Grade 80 # | F48856 |
| 7/32 Grade 100 # | F01690 |
| 5/16 Grade 100 # | F01691 |
| 3/8 Grade 100 # | F01692 |
| 1/2 Grade 100 # | F01693 |
| 5/8 Grade 100 # | F01694 |

### Inspection Service

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

### Maintenance and Repair

**DANGER**

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

**WARNING**

Do not repair individual links but instead replace complete chain legs only.
If the safety latch of hooks does not engage properly with the tip of the hook not only the hook but also the chain leg might have been overloaded. In all such cases replace all items used in the respective leg (chain, shortening element, ring shackle etc.).

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

Welded chain slings must exclusively repaired by the manufacturer.
All maintenance and repair activities must be documented properly.

### Disposal

**NOTICE**

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

## 11. Spare Parts

Also see Chapter 5, Technical Data.

**WARNING**

Use only original spare parts.

Detailed information on spare parts can be found in separate component assembly instructions available for THIELE products via www.thiele.de or upon request.

## 12. Storage

**NOTICE**

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

Possibility of corrosion increases for installations where salt air and high humidity are present. Make frequent and regular inspections of the sling chain's condition and operation.

Avoid exposure to chemically active environments and chemicals in the form of solids, liquids, gases, vapors or fumes.

Do not store in a manner that would allow mechanical damage or kinking.

## 13. THIELE Operating and Mounting Instructions

**NOTICE**

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

## 14. Publishing Information

KWS Inc.
P.O. Box 470487 , Tulsa , OK 74147
Toll Free 800-872-9313
Fax 918-665-4118
Email sales@kwschain.com

Manufacturer:
THIELE GmbH & Co. KG
Adress Werkstraße 3, 58640 Iserlohn, Germany
Telefon +49 2371/947-0
Email info@thiele.de



# indicates changes to previous edition