

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.



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

These operating instructions describes in particular how sling chains according to TWN 0805 (former TWN 0805A) grade 80, TWN 0072 grade 100 (TWN = THIELE Factory 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! 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! Is used to address practices not related to physical injury.



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 1/4".

The working load limits have now also been adjusted.

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!

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).
- The specific safety and operating regulations and standards issued locally in the country where the items are used must be observed.

**SAFETY
INSTRUCTIONS**

- 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 chain sling.
 - 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 a chain sling 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.
- 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.

These operating instructions describe in particular how sling chains according to TWN 0805 grade 80 and TWN 0072 grade 100 (TWN = THIELE factory 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 chain sling,
- as welded endless chain,
- as endless chain with mounted connector.

THIELE sling chains and chain slings meet EC Machinery Directive 2006/42/EC 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 configuration, the pertinent documentation (operating instructions etc.) must be suitably modified.

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



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.



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

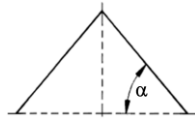
- the components comply with the order and have not been damaged,
- test certificate and operating instructions are at hand,
- markings correspond with what is specified in the documentation,
- inspection deadlines and the qualified persons for examinations are determined,
- visibility and functional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

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

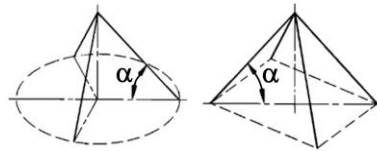
5. TECHNICAL DATA

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





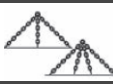


2-leg chain slings:



3- and 4-leg chain slings:



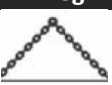

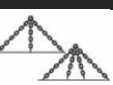
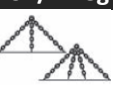
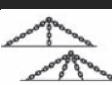


5.1 Working load limit table – Direct attachment, Grade 80 (lb)

Nominal chain size		1-leg	2-leg				3- / 4-leg		
									
		$\alpha = 90^\circ$	$60^\circ \leq \alpha \leq 75^\circ$	$45^\circ \leq \alpha < 60^\circ$	$30^\circ \leq \alpha < 45^\circ$	$60^\circ \leq \alpha \leq 75^\circ$	$45^\circ \leq \alpha < 60^\circ$	$30^\circ \leq \alpha < 45^\circ$	
6-8	1/4	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	6 700 [#]	
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	
18-8	11/16	22 000	38 100	31 100	22 000	57 200 [#]	46 700 [#]	33 000	
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	88 800 [#]	72 500	51 300	
26-8	1	47 700	82 600	67 500 [#]	47 700	123 900	101 200	71 500	
28-8 ¹⁾	1 ⁻¹ / ₈	55 100	95 400	77 900	55 100	143 100	116 900 [#]	82 600	
32-8	1 ⁻¹ / ₄	72 300	125 200	102 200	72 300	187 800	153 400	108 400	
36-8	1 ⁻⁷ / ₁₆	88 200	152 800	124 700	88 200	229 100	187 100	132 300	
40-8	1 ⁻⁹ / ₁₆	110 200	190 900	155 800	110 200	286 300	233 800	165 300	
45-8 ¹⁾	1 ⁻³ / ₄	138 900	240 600	196 400	138 900	360 900	294 600	208 300	
50-8 ¹⁾	2	176 400	305 500	249 500	176 400	458 300	374 200	264 600	
56-8 ¹⁾	2 ⁻³ / ₁₆	220 500	381 900	311 800	220 500	572 900	467 700	330 700	
63-8 ¹⁾	2 ⁻¹ / ₂	275 600	477 300	389 800	275 600	716 000	584 600	413 400	
71-8 ¹⁾	2 ⁻¹³ / ₁₆	352 700	610 900	498 800	352 700	916 300	748 200	529 000	


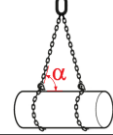
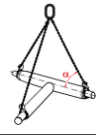
¹⁾ welded chain sling

5.2 Working load limit table - Direct attachment, Grade 100 (lb)

Nominal chain size [mm] [inch]		1-leg	2-leg				3- / 4-leg		
									
		$\alpha = 90^\circ$	$60^\circ \leq \alpha \leq 75^\circ$	$45^\circ \leq \alpha < 60^\circ$	$30^\circ \leq \alpha < 45^\circ$	$60^\circ \leq \alpha \leq 75^\circ$	$45^\circ \leq \alpha < 60^\circ$	$30^\circ \leq \alpha < 45^\circ$	
6-10	1/4	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	
18-10	11/16	27 600	47 800	39 000	27 600	71 700	58 500	41 400	
20-10	3/4	35 300	61 100	49 900	35 300	91 700	74 900	52 900 #	
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	90 400	156 600	127 800	90 400	234 900 #	191 800 #	135 600	

5.3 Working load limit table – Choke hitch, Grade 80 (lb)


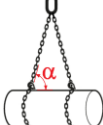
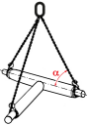
In general, the WLL of the chain sling has to be reduced to 80 % if used as choke hitch assembly.

Nominal chain size		1-leg	2-leg				3- / 4-leg		
									
		$\alpha = 90^\circ$	$60^\circ \leq \alpha < 75^\circ$	$45^\circ \leq \alpha < 60^\circ$	$30^\circ \leq \alpha < 45^\circ$	$60^\circ \leq \alpha < 75^\circ$	$45^\circ \leq \alpha < 60^\circ$	$30^\circ \leq \alpha < 45^\circ$	
[mm]	[inch]								
6-8	1/4	2 000	3 500	2 800	2 000	5 200	4 200	3 000	
7-8	9/32	2 800	4 800	4 000	2 800	7 300	5 900	4 200	
8-8	5/16	3 600	6 200	5 100	3 600	9 300	7 600	5 400	
10-8	3/8	5 700	9 800	8 000	5 700	14 800	12 000	8 500	
13-8	1/2	9 600	16 600	13 600	9 600	24 900	20 400	14 400	
16-8	5/8	14 500	25 100	20 500	14 500	37 600	30 700	21 700	
18-8	11/16	17 600	30 500 [#]	24 900 [#]	17 600	45 700	37 300	26 400	
20-8	3/4	22 600	39 200	32 000	22 600	58 800	48 000	34 000 [#]	
22-8	7/8	27 400	47 400	38 700	27 400	71 100	58 000	41 000	
26-8	1	38 200	66 100	54 000	38 200	99 100	80 900	57 200	
28-8 ¹⁾	1- ¹ / ₈	44 100	76 300	62 300	44 100	114 500	93 500	66 100	
32-8	1- ¹ / ₄	57 800	100 200	81 800	57 800	150 300	122 700	86 800 [#]	
36-8	1- ⁷ / ₁₆	70 600	122 200	99 800	70 600	183 300	149 700	105 800	
40-8	1- ⁹ / ₁₆	88 200	152 700	124 700	88 200	229 000	187 000	132 200	
45-8 ¹⁾	1- ³ / ₄	111 100	192 500	157 100	111 100	288 700	235 700	166 700 [#]	
50-8 ¹⁾	2	141 100	244 400	199 600	141 100	366 600	299 400	211 700 [#]	
56-8 ¹⁾	2- ³ / ₁₆	176 400	305 500	249 500	176 400	458 300	374 200	264 600	
63-8 ¹⁾	2- ¹ / ₂	220 500	381 900	311 800	220 500	572 800	467 700	330 700	
71-8 ¹⁾	2- ¹³ / ₁₆	282 200	488 700	399 000	282 200	733 100	598 500	423 200	

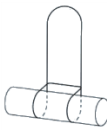
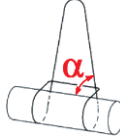
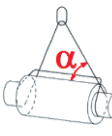
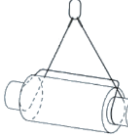
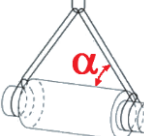
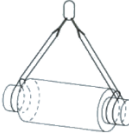
¹⁾ welded chain sling

5.4 Working load limit table – Choke hitch, Grade 100 (lb)

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

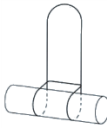
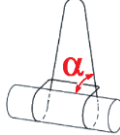
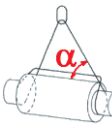
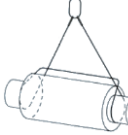
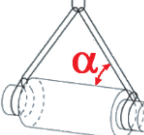
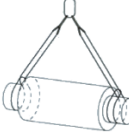
Nominal chain size [mm] [inch]		1-leg	2-leg				3- / 4-leg		
									
		$\alpha = 90^\circ$	$60^\circ \leq \alpha < 75^\circ$	$45^\circ \leq \alpha < 60^\circ$	$30^\circ \leq \alpha < 45^\circ$	$60^\circ \leq \alpha < 75^\circ$	$45^\circ \leq \alpha < 60^\circ$	$30^\circ \leq \alpha < 45^\circ$	
6-10	1/4	2 500	4 300	3 500	2 500	6 400	5 300	3 700	
7-10	9/32	3 400	6 000	4 900	3 400	8 900	7 300	5 200 #	
8-10	5/16	4 600	7 900	6 400	4 600	11 800	9 700	6 800	
10-10	3/8	7 000	12 200	10 000	7 000	18 300	14 900	10 600 #	
13-10	1/2	12 000	20 800	17 000	12 000	31 200	25 500	18 000	
16-10	5/8	18 100	31 300	25 600	18 100	47 000	38 300	27 100	
18-10	11/16	22 100	38 200	31 200	22 100	57 400	46 800	33 100	
20-10	3/4	28 200	48 900	39 900	28 200	73 400	59 900	42 400 #	
22-10	7/8	34 200	59 200	48 300	34 200	88 700	72 500	51 200	
26-10	1	47 800	82 700	67 500	47 800	124 100	101 300	71 600	
32-10	1-1/4	72 300	125 300	102 300	72 300	187 900	153 400	108 500 #	

5.5 Working load limit table – Endless chain slings, Grade 80 (lb)

Nominal chain size [mm] [inch]		Load situations / Sling angle					
		K11		K12	K13	K22	K23
							
		$\alpha = 90^\circ$	$65^\circ \leq \alpha \leq 90^\circ$	$45^\circ \leq \alpha \leq 90^\circ$	$30^\circ \leq \alpha < 45^\circ$	$45^\circ \leq \alpha \leq 90^\circ$	$30^\circ \leq \alpha < 45^\circ$
6-8	1/4	4 000	3 600	2 800	2 000	4 200	3 000
7-8	9/32	5 600	5 100	4 000	2 800	5 900	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
18-8	11/16	35 200	31 900	24 900 [#]	17 600	37 300	26 400
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	80 900	57 200
28-8 ¹⁾	1-1/8	88 200	79 900	62 300	44 100	93 500	66 100
32-8	1-1/4	115 700 [#]	104 800	81 800	57 800	122 700	86 800
36-8	1-7/16	141 100 [#]	127 900	99 800	70 600	149 700	105 800
40-8	1-9/16	176 300 [#]	159 800	124 700	88 200	187 000	132 200
45-8 ¹⁾	1-3/4	222 200	201 400	157 100	111 100	235 700	166 700
50-8 ¹⁾	2	282 200	255 800	199 600	141 100	299 400	211 700
56-8 ¹⁾	2-3/16	352 800	319 700	249 500	176 400	374 200	264 600
63-8 ¹⁾	2-1/2	441 000	399 600	311 800	220 500	467 700	330 700
71-8 ¹⁾	2-13/16	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 (lb)

Nominal chain size [mm] [inch]		Load situations / Sling angle					
		K11		K12	K13	K22	K23
							
		$\alpha = 90^\circ$	$65^\circ \leq \alpha \leq 90^\circ$	$45^\circ \leq \alpha \leq 90^\circ$	$30^\circ \leq \alpha < 45^\circ$	$45^\circ \leq \alpha \leq 90^\circ$	$30^\circ \leq \alpha < 45^\circ$
6-10	1/4	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
18-10	11/16	44 200	40 000	31 200	22 100	46 800	33 100
20-10	3/4	56 500 [#]	51 200	39 900	28 200	59 900	42 400
22-10	7/8	68 300 [#]	61 900	48 300	34 200	72 500	51 200
26-10	1	95 500 [#]	86 600	67 500	47 800	101 300	71 600
32-10	1-1/4	144 600	131 100 [#]	102 300 [#]	72 300	153 400	108 500 [#]

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

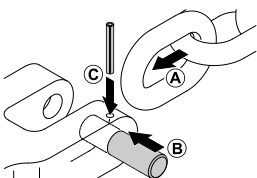
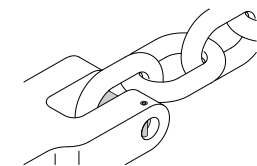
When assembling or disassembling chain slings the relevant assembly and operating instructions issued for the components must be observed.

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.



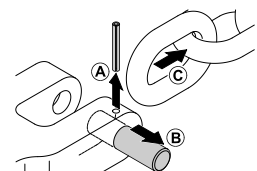
Check whether the chain runs smoothly.

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 chain sling and use a chain sling with a higher working load limit.

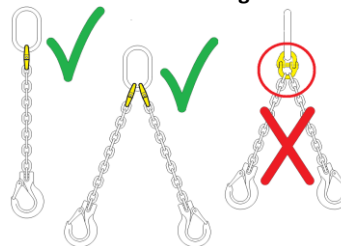
Shortening individual chain legs is indicative of a non-symmetrical load distribution. In this case, the working load limit must be reduced.

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 chain sling 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.

The reduced working load limits shown in the table shall only apply for short-term use at the temperatures indicated.

Grade TWN	Temperature range	Remaining WLL
Grade 80 TWN 0805	-40 °C ≤ t ≤ 205 °C	100 %
	-40 °F ≤ t ≤ 400 °F	
	205 °C < t ≤ 300 °C	90 %
	400 °F < t ≤ 572 °F	
Grade 100 TWN 0072	300 °C < t ≤ 400 °C	75 %
	572 °F < t ≤ 752 °F	
Grade 100 TWN 0072	-40 °C ≤ t ≤ 205 °C	100 %
	-40 °F ≤ t ≤ 400 °F	



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 chain sling of the next bigger nominal size increases the permissible wear allowance.

7.5 Asymmetrical load balancing



In the case of multi-leg sling chains, if the individual legs have different sling angles, the greatest stress occurs in the single leg with the smallest sling angle. In the extreme case, a vertically hanging single leg will carry the entire load.

In case of an asymmetrical load, the lifting operation must be approved by an expert. Alternatively, the working load limit should be reduced to half of the marked working load limit.

8. GENERAL NOTES ON ATTACHMENT COMPONENTS

8.1 Connecting links



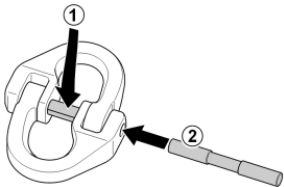
In mounted chain slings the chains are, for example, joined to other components by the use of connecting links. In this way, components can be mounted the nominal size of which deviates from that of the chain.

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

8.1.1 ASSEMBLY

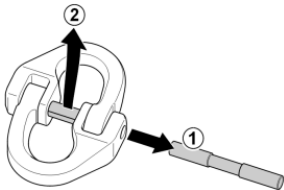
Install the connecting link halves in the components to be connected and join both halves.

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
1/4	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



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



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 0805

Nominal chain size		WLL [lb]	Article no.				Mass [lb/ft]
[mm]	[inch]		self-coloured	RAL 9005 (black)	Corrothiel ¹⁾	Electro-galvanized	
6-8	1/4	2 500	F01452	F01453	F01454	F01448	0.55
7-8	9/32	3 500	F01458	F01459	F01457	F014601	0.74 #
8-8	5/16	4 500	F01464	F01465	F01429	F01433	0.98
10-8	3/8	7 100	F01469	F01470	F01450	F01445	1.52
13-8	1/2	12 000	F01474	F01475	F01476	F014781	2.53
16-8	5/8	18 100	F01479	F01480	F01487	F014821	3.83
18-8	11/16	22 000	F01484	F01485	F04582	F01484G	4.77
20-8	3/4	28 300	F01494	F01495	F04606	F014944	6.05
22-8	7/8	34 200	F01499	F01500	F04629	F015111	7.32
26-8	1	47 700	F01514	F01515	F04695	---	10.21
28-8	1-1/8	55 100	F01519	F01520	F01521	---	11.83
32-8	1-1/4	72 300	F01524	F01525	F01526	F01527	15.46
36-8	1-7/16	88 200	F01529	F01530	F04814	---	19.49
40-8	1-9/16	110 200	F01534	F01535	F04838	---	24.19
45-8	1-3/4	138 900	F01539	F01540	F04889	---	30.57
50-8	2	176 400	F01545	F01546	F04900	---	37.63
56-8	2-3/16	220 500	F01555	F01556	F04908	---	48.72
63-8	2-1/2	275 600	---	F01566	---	---	59.81
71-8	2-13/16	352 700	---	F01598	---	---	75.93

¹⁾ Zinc lamellar coating

Chains must be ordered in feet, so that the working load limit is indicated in pounds on the test certificate.

11.2 Sling chains XL200, Grade 100, TWN 0072

Nominal chain size		WLL [lb]	Article no. RAL 7011 (iron grey)	Mass [lb/ft]
[mm]	[inch]			
6-10	1/4	3 100	F01616	0.60
7-10	9/32	4 300	F01621	0.78
8-10	5/16	5 700	F01617	1.08
10-10	3/8	8 800	F01618	1.52
13-10	1/2	15 000	F01619	2.73
16-10	5/8	22 600	F01620	4.17
18-10	11/16	27 600	F01642	5.17
20-10	3/4	35 300	F01638B ¹⁾	6.52
22-10	7/8	42 700	F01650B ¹⁾	7.59
26-10	1	59 700	F01660B ¹⁾	11.96
32-10	1-1/4	90 400	F01670B ¹⁾	16.87 #

¹⁾ Deviating colour RAL 5002 ultramarine blue

Chains must be ordered in feet, so that the working load limit is indicated in pounds on the test certificate.

11.3 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:	
1/4	F48694	TWN 0810/1 -/2 -/4	Master links
5/16	F48352	TWN 0811/1 -/2 -/4	Master links
		TWN 0812	Ring shackles
3/8	F48355	TWN 0820	Oblong master links
1/2	F48358	TWN 0827 -/1	Shortening hooks
5/8	F48361	TWN 0835 -/1	Sling hooks
3/4	F48369	TWN 0848/1	Skip loader eyelets
7/8	F48367	TWN 0851	Shortening claws
1	F48373	TWN 0859	Foundry hooks
		TWN 0861	Special clevis shackles
		TWN 0862	Clevis shackles
1-1/4	F48371	TWN 0869	Skip loader eyelets
		TWN 0889	Motor transporting hooks
		TWN 0896	Shortening units
		TWN 1340 -/1	Sling hooks
		TWN 1450	Screw tensioners
		TWN 1451	Screw tensioners
		TWN 1452	Screw tensioners

11.4 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:	
1/4	F48686	TWN 1810/1 -/2 -/4	Master links
5/16	F48687	TWN 1811/1 -/2 -/4	Master links
		TWN 1812	Ring shackles
3/8	F48688	TWN 1840 -/1	Sling hooks
1/2	F48689	TWN 1851	Shortening claws
5/8	F48690	TWN 1896	Shortening units
		TWN 1454	Screw tensioners
		TWN 1455	Screw tensioners

11.5 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 41 °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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