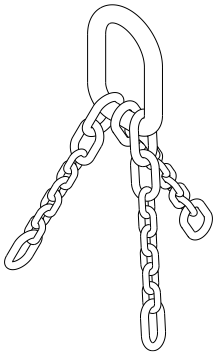
CHAIN SLINGS FOR MAGNETS, TWN 0601 GRADE 80



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 describes in particular how chain slings according to TWN 0601 of grade 80, (TWN = THIELE Factory Standard) are to be safely used for lifting purposes.
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.

DEFINITIONS

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 B30.26 “Rigging Hardware”,

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

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 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 Alloy Steel Chain Slings for Overhead Lifting), ASTM A 952/A 952 M (Standard Specification for Forged Grade 80 Steel Lifting Components and Welded Attachment Links), ISO 3056 (Non-calibrated round steel link lifting chain and chain slings; Use and maintenance) and ISO 4778 (Round steel short link chains for lifting purposes – Chains slings of welded construction – Grade 8).
- The specific safety and operating regulations and standards issued locally in the country where the items are used must be observed.
- The directions given in these 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 11.
- During operation work, wear your personal protective equipment!
- **Improper assembly and use may cause personal injury and/or damage to property.**
- Assembly and removal as well as inspections and maintenance must exclusively be carried out by skilled, qualified, trained and authorized persons only.

SAFETY INSTRUCTIONS

- 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 twist or knot the chains together.
- The working load limit must be reduced in the following cases
  - when higher temperatures prevail,
  - when high dynamic and cyclic loads arise (automated or multi-shift operation),
  - when lifting magnets are employed.
- Multi-leg chain slings shall never be used for sling angles of less than 30° and in excess of 75°.
- **The use of shortening elements, such as shortening hooks or claws, is not permitted.**
- Master 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.
- 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.
- Safety elements must not be stressed or strained operationally.
- 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 a rule, the chain slings are not permitted for the transportation of persons.

3. DESCRIPTION AND INTENDED USE

THIELE chain slings according to TWN 0601 are intended to be fixed to magnets for a safe transportation of loads.

THIELE chain slings for magnets are manufactured in a welded design with short-link round steel chains for lifting purposes in accordance with TWN 0805 and have a D-shaped master link into which three short chain legs are welded by means of intermediate and/or connecting links. The rounded area of the master link is used to hold the crane hook, the opposite straight area is used to hold the intermediate links of the three chain legs.

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.

⚠ 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,
- 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.

4. COMMISSIONING

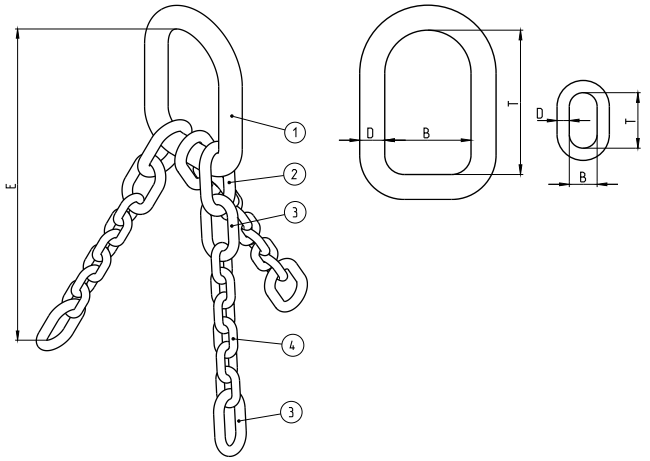
Prior to using the components for the first time assure that

- 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

ITEM	DESIGNATION	DRAWING	DIMENSIONS
1	Master link, form D		
2	Intermediate link, form B		
3	Connecting link, form B		
4	Sling chain, TWN 0805		
	All parts colored deep black.		



Nominal chain size [inch]	Article no.	Working load limit WLL 1) [t]	[lbs]	Weight [lbs]	Item	Quantity	Dimensions D [inch]	T [inch]	B [inch]	Manufacturing proof force MPF 2) [kN]	Breaking force BF 2) [kN]
5/8 3) #	F08945	21,3	47 000	52.3	1	1	1-3/4	1.024	6.102	483	966
					2	3	7/8	3.937	1.969	161	322
					3	6	3/4	3.543	1.772		
					4	3 x 7 links	5/8	1.890	-		
3/4 3)	F08946	33,4	73 500	78.3	1	1	2	10.236	6.102	755	1 510
					2	3	1	4.724	2.362	252	504
					3	6	7/8	3.937	1.969		
					4	3 x 6 links	3/4	2.362	-		
7/8	F08947	40,25	88 900	102	1	1	2-3/16	11.811	6.496	913	1 826
					3	6	1	4.724	2.362	305	608
					4	3 x 7 links	7/8	2.362	-		
1	F08948	56,25	123 900	141	1	1	2-3/16	11.811	6.496	1 273	2 546
					3	6	1-1/4	5.512	2.756	425	850
					4	3 x 7 links	1	3.071	-		
1-1/4	F08961	85,2	187 800	240	1	1	2-1/2	12.992	6.496	1 930	3 860
					3	6	1-9/4	7.087	3.543	644	1 288
					4	3 x 7 links	1-1/4	3.780	-		

1) for inclination angle α = 60°
2) for item 1 with adapted test jaws with max. 60 % # of the inner width on the lower straight leg
3) additional intermediate link item 2 per each leg towards the master link #

6. CONDITIONS OF USE

6.1 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.

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

Temperature range	Remaining WLL
-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 %

DANGER

If a chain sling has been exposed to temperatures exceeding the maximum values specified, it must not be used furthermore.

6.2 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.

6.3 Special hazardous conditions

WARNING

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

7. 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

8. INSPECTION, MAINTENANCE, DISPOSAL

8.1 General

WARNING

Inspections and maintenance must be arranged by the owner!

Inspection intervals shall be determined by the owner!

Visual inspections must be regularly carried out and documented by competent and trained persons, at least once a year or more frequently if the 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/marking,
- 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.

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 gauge is available to be used during chain inspections:

Nominal size	Article no.
Grade 80	F48856

8.2 Inspection service

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

8.3 Disposal

NOTICE

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

8.4 Maintenance and repair

DANGER

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

WARNING

No individual damaged chain links are to be replaced, but only complete chain legs.
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.

9. SPARE PARTS

Because of the design as welded chain slings, no individual parts are to be replaced by the user.

10. 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.

11. THIELE OPERATING AND MOUNTING INSTRUCTIONS

NOTICE

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

12. PUBLISHING INFORMATION

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