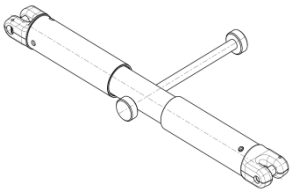
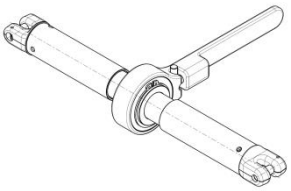
MOUNTING INSTRUCTIONS
CHAIN TENSIONERS
GRADES 8 AND 10

Original in compliance with machinery directive 2006/42/EC





1 DESCRIPTION AND INDENTED USE

THIELE-chain tensioners are exclusively intended for the use in chain slings according to EN 818-4 for lifting loads or in lashing chains according to EN 12195-3.

These mounting instructions describe the safe use of chain tensioners according to TWN 1450, TWN 1451 and TWN 1452 for grade 8 and TWN 1454 and TWN 1455 for grade 10. (TWN = THIELE factory standard)

THIELE chain tensioners are used to adjust the length of individual chain legs, e.g. as height adjustment for even loading of multi-leg chain slings or for length adjustment or applying of pre-tensioning forces in lashing chains.

The chain tensioners are marked with the nominal chain size, grade, manufacturer's mark and traceability code.

Parts of the chain leg to be adjusted are fastened by a clevis system on both sides.

The length is adjusted by turning the central sleeve by means of a lever or ratchet in relation to the clevis systems at both ends.

The internal trapezoidal threads, which are protected by tube sections, are equipped with anti-unscrewing devices. The chain tensioners are galvanised to protect them against corrosion. They are manufactured in the following types:

- with lever,
- with ratchet system.

THIELE chain tensioners comply with the EC Machinery Directive 2006/42/EC and have a safety factor of min. 4 related to the working load limit (WLL).

The chain tensioners 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) the working load limit must be reduced.

They are certified by the German Social Accident Insurance (DGUV) for use in chain slings and are marked with the H4 stamp.

The chain tensioners must exclusively be used

- within the limits of their permissible working load limits or lashing capacities,
- within the permissible slinging or lashing methods,
- within the temperature limits prescribed,
- with suitable sling or lashing chains,
- by trained and authorised persons.

An alternating use for lifting and lashing is not allowed!

Chain tensioners are not intended for the transport of persons!

2 SAFETY NOTES

Risk of injury!

Never walk or stay under lifted loads!

Make sure to use hoisting/lashing means free from defects.

- Operators, fitters and maintenance personnel must in particular observe the operating instructions of the chain slings in which the chain tensioners are installed, the documentation of the employers' liability insurance association DGUV V 1, DGUV R 109-017, DGUV I 209-013 and DGUV I 209-021 as well as the standards DIN 685-5 and EN 818 6 or EN 12195-3.
- In the Federal Republic of Germany, the Operational Safety Ordinance (BetrSichV) has to be implemented and the Technical Rule for Industrial Safety TRBS 1201, in particular annex 1, chapter 2 "Special regulations for the use of working equipment for lifting loads" must be observed.
- Outside the Federal Republic of Germany the specific provisions issued locally in the country where the items are used must also 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 the respective persons.
- Make sure these operating instructions are available in a place near the product during the time the equipment is used. Please contact the manufacturer if replacements are needed. See also chapter 9.
- When performing work make sure to wear your personal protective equipment!
- **Improper assembly and use may cause personal injury and/or damage to property.**
- Assembly and removal as well as inspection and maintenance must exclusively be carried out by skilled and authorized persons.
- 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 tensioners.
- Never expose chain tensioners to loads higher than the specified working load limit.
- Only chain legs and chain tensioners of the same nominal size and grade may be connected.
- Safety elements must not be excessively stressed or strained operationally.
- Do not twist or knot the chains together.
- In case of multi-leg chain slings never allow for inclination angles of less than 15 ° and in excess of 60 °.
- Avoid bending loads to act on chain tensioners.
- During lifting/hoisting make sure your hands or other body parts do not come into contact with hoisting means.
- Avoid impacts, e.g. due to abruptly lifting loads with chain in slack condition.
- Operation without properly functioning safety devices (cotter pins, wedges, pins) is not permitted.
- In the event of doubts about the use, inspection, maintenance or similar things contact your safety officer or the manufacturer!

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

As regards grade 10 THIELE does not give its general approval to the assembly of components stemming from different manufacturers!

Working under the influence of drugs, medications impairing the sense and/or alcohol is strictly forbidden!

3 COMMISSIONING

Prior to using the lifting points for the first time make sure that

- the lifting points comply with the order and have not been damaged,
- test certificate, statement of compliance, 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,
- documentations are safely kept in an orderly manner.

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

4 TECHNICAL DATA

4.1 General

When used in lashing chains, the maximum permissible lashing capacity (LC) is obtained by doubling the working load limit (WLL).

Use is only permitted in sling chains OR in lashing chains.

Tables include only article numbers of standard and not customized parts.

4.2 Chain tensioners TWN 1450 with lever

Nominal size	Working load limit WLL [t]	Lashing capacity LC [kN]	Stroke Max. [mm]	Article no.	Mass [kg]
8-8	2,0	40	75	F34179	2,1
10-8	3,15	63	100	F34199	2,7
13-8	5,3	100	120	F34189	4,0

4.3 Chain tensioners TWN 1451 with ratchet

Nominal size	Working load limit WLL [t]	Lashing capacity LC [kN]	Stroke Max. [mm]	Article no.	Mass [kg]
8-8	2,0	40	75	F34175	2,5
10-8	3,15	63	100	F34195	3,5
13-8	5,3	100	120	F34185	5,0

4.4 Chain tensioners TWN 1452 with lever

Nominal size	Working load limit WLL [t]	Lashing capacity LC [kN]	Stroke Max. [mm]	Article no.	Mass [kg]
13-8	5,3	100	230	F341871	7,2
16-8	8,0	160	280	F34197	11,8

4.5 Chain tensioners TWN 1454 with lever

Nominal size	Working load limit WLL [t]	Lashing capacity LC [kN]	Stroke Max. [mm]	Article no.	Mass [kg]
13-10	6,7	130	230	F341877	7,2
16-10	10	200	280	F341977	11,8

4.6 Chain tensioners TWN 1454 with ratchet

Nominal size	Working load limit WLL [t]	Lashing capacity LC [kN]	Stroke Max. [mm]	Article no.	Mass [kg]
13-10	6,7	130	230	F341878	8,4
16-10	10	200	280	F341978	13,5

5 ASSEMBLY AND REMOVAL

5.1 General

Always assemble and disassemble in an unloaded condition only.!

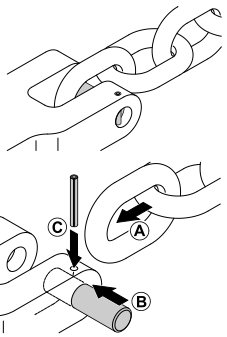
To dissassemble, remove the components in reverse order.

Only chain and component of same nominal size and grade belong together!

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

5.2 Assembly of clevis-type fastening system

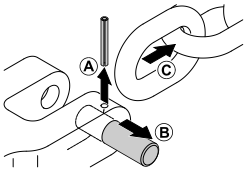
If necessary, remove dowel pin and pin.



- (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 the chain runs smoothly!

The dowel pins must only be installed once.

5.3 Disassembly of clevis-type fastening system



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

Suitable drift punches are available by article no. Z03303.

6 OPERATION

6.1 Normal use

The force must be applied in the longitudinal direction. The chain tensioner must remain freely suspended in the chain leg and must not come into contact with other components.

The chain tensioner is to be operated exclusively by hand movements on the lever or on the ratchet system.

By rotating the central sleeve, the clevis systems at both ends change their distances.

Make sure that the length is adjusted symmetrically starting from the inner or outer end position, as this is the only way to ensure that the entire stroke range is available.

Make sure that the chain legs on both sides are not twisted. Vibration can otherwise cause a significant reduction in the pre-tensioning force, especially when lashing.

When lashing, therefore, secure the chain tensioner directly after tensioning with an additional safety chain (article no. F341711), which prevents the chain tensioner from untwisting on its own.

Never use lever extensions (e.g. by means of an attached tube), as this causes an impermissible pre-tensioning of the chain tensioner and chain, which can lead to an overloading and even breakage if a load or lashing force is additionally applied!

The lengths of the levers are designed to ensure that the permissible forces are not exceeded.

The operating direction of the ratchet system is set by switching the small lever to one of the end positions. In the middle position, the ratchet system is inoperative and the lever can move freely according to gravity or centrifugal force and may strike unintentionally.

6.2 Influence of temperature

The permissible working load limit of the lifting points reduces at elevated temperatures.

Grade	Temperature range	Remaining WLL
8	-40 °C ≤ t ≤ 200 °C	100 %
	200 °C < t ≤ 300 °C	90 %
	300 °C < t ≤ 400 °C	75 %
10	-30 °C ≤ t ≤ 200 °C	100 %
	200 °C < t ≤ 300 °C	90 %
	300 °C < t ≤ 380 °C	60 %

If a tensioner has been exposed to temperatures exceeding the maximum values specified, it must no longer be used.

6.3 Environmental influence

Chain tensioners 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.

Chain tensioners are not suitable for abrasive use in blasting plants.

7 SPARE PARTS

Only use original spare parts.

7.1 Spare part sets for clevis fastening system

A set consists of pin and dowel pin.

Nominal size	Article no.	Nominal size	Article no.
8-8	F48352		
10-8	F48355	10-10	F48688
13-8	F48358	13-10	F48689
16-8	F48361	16-10	F48690

8 INSPECTIONS, MAINTENANCE, DISPOSAL

8.1 General

Inspections and maintenance must be arranged for by the owner!

Inspection intervals shall be determined by the owner!

Inspections must be carried out and documented by competent persons regularly but at least once a year, or more frequently in case of heavy-duty service. After three years at the latest they must additionally be examined for cracks. A load test shall never be considered a substitute for this examination.

The results of the inspection shall be entered into a register (DGUV I 209-062 or DGUV I 209-063) to be prepared when the chain sling is first used. The register will show characteristic data of the chains and components as well as identity details.

Immediately stop using chain tensioners that show the following defects:

- missing or illegible identification/marking,
- deformation, elongation or fractures,
- cuts, notches, cracks, incipient cracks, pinching,
- heating beyond permissible limits,
- severe corrosion,
- ratchet system not functioning properly,
- wear by more than 10 %, e.g. bolt diameters,
- missing or defective pin locking device.

8.2 Maintenance

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

Chain tensioners have only minimum maintenance needs. They should be cleaned if they are dirty.

Make sure their screw threads can be easily turned. Threads are lubricated in the factory.

For the rare case of relubrication, first dismantle the unscrewing locks in the form of dowel pins and then unscrew the outer end pieces from the central sleeve. Commercially available grease can be used as a lubricant. During assembly, make sure that the two anti-rotation devices are installed and use new dowel pins. Please contact the manufacturer for details. Recommendation: Have this work carried out by the manufacturer.

For the ratchet mechanism a lube nipple has been arranged.

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

All maintenance and repair activities are to be documented.

8.3 Inspection service

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

8.4 Disposal

All components and accessories of steel taken out of service are to be scrapped in line with local regulations and provisions.

8.5 Storage

Tensioners are stored in dry locations at temperatures ranging between 0 and +40 °C.

9 THIELE OPERATING AND MOUNTING INSTRUCTIONS

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

10 IMPRINT

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