



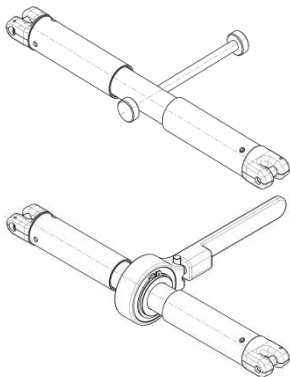
## **Operating Instructions**

### **Chain Tensioners**

Grades 8 and 10/XL

## **Assembly Instructions**

### **Clevis-type Hook System**



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## **1 Introduction**

THIELE chain tensioners form part of sling chain assemblies or lashing chains and contribute to the safe transportation of loads.

These operating instructions describe in particular how chain tensioners are safely used in accordance with TWN 1450, TWN 1451 and TWN 1452 for quality grade 8 and TWN 1454 and TWN 1455 for grade 10/XL.

TWN = means THIELE Shop Standard Specification

These Operating Instructions are a translation of the German language original document.

## 2 Intended Use

Chain tensioners TWN mentioned before are intended for use with chain sling assemblies as per EN 818-4 for the attachment and hoisting of loads or in lashing chain assemblies as per EN 12195.

Chain tensioners must exclusively be used

- within the limits of the permissible working loads or lashing capacity,
- within the limits of the permissible attachment and lashing methods,
- within the temperature limits prescribed,
- as part of suitable sling chain or lashing chain assemblies as per EN 818-2 (grade 8) or as per PAS 1061 (grade 10),
- by trained and authorized persons.

## 3 Storage

Chain tensioners have to be stored in dry spaces at temperatures ranging between 0 and +40 °C.

## 4 Notes on Safety

### Personnel

- Operators must in particular observe the instructions for use, the German Employers' Liability Insurance Association's regulations BGR 500, chapter 2.8, BGR 150, BGI 556, BGI 622, BGV-D6, regulation PAS 1061 as well as standard specifications DIN EN 818-1, DIN EN 818-2, DIN EN 818-4, DIN EN 818-6, DIN EN 1677, and EN 12195.
- Assembly and removal as well as inspection and maintenance must exclusively be carried out by authorized persons.

Outside the Federal Republic of Germany the specific provisions issued locally in the country where the items are used must also be observed.

## Product Safety



### Risk of Injury

Make sure to use chain tensioners free from defects.

- Handling chain tensioners improperly will endanger life and assets.
- Never use worn-out, bent or damaged chain tensioners (see Pt. 10.1).
- Never make structural changes to chain tensioners (e.g. by welding, bending).

## Operation



### Risk of Injury

Never walk or stay under lifted loads!

Make sure to observe the operating manual and the safety notes stipulated therein pertinent to the use of the sling chain and lashing chain assemblies.

THIELE operating instructions for chain sling assemblies are available under reference number B08181 and can be downloaded from THIELE's website.

## 5 Product Description

THIELE chain tensioners serve to set the length of individual round steel chain strands, for example to adjust the height of multi-strand chain slings to achieve uniform load balancing or adjust the length of or introduce pre-tensioning forces into lashing chains.

Parts of the chain strand to be adjusted are secured by means of a two-sided clevis-type hook system.

Length adjustment with respect to the clevises at the end is achieved by rotating the central sleeve either via a locking handle or a ratchet.

The trapezoidal screw threads arranged inside and protected by tubular sections have been provided with screw removal safeguards. The chain tensioners are electrogalvanized as a protection against corrosion.

Chain tensioners of the following design configurations are available:

- with locking handle,
- with ratchet.

THIELE chain tensioners are in conformity with EG Machinery Directive 2006/42/EG and have a safety factor of at least 4 based on relevant WLL.

They have been certified by the German Employers' Insurance Association and provided with the H4 stamp.

## 6 Technical Data

### Chain Tensioner TWN 1450 with Locking Handle

Nominal Size	Working load limit WLL [t]	max. lashing capacity LC [kN]	max. stroke [mm]	Item number	Weight [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

### Chain Tensioner TWN 1451 with Ratchet

Nominal Size	Working load limit WLL [t]	max. lashing capacity LC [kN]	max. stroke [mm]	Item number	Weight [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

## Chain Tensioner TWN 1452 with Locking Handle

Nominal Size	Working load limit WLL [t]	max. lashing capacity LC [kN]	max. stroke [mm]	Item number	Weight [kg]
13-8	5.3	100	230	F341871	7.2
16-8	8.0	160	280	F34197	11.8

## Chain Tensioner TWN 1454 with Locking Handle

Nominal Size	Working load limit WLL [t]	max. lashing capacity LC [kN]	max. stroke [mm]	Item number	Weight [kg]
13-10/XL	6.7	130	230	F341877	7.2
16-10/XL	10	200	280	F341977	11.8

## Chain Tensioner TWN 1454 with Ratchet

Nominal Size	Working load limit WLL [t]	max. lashing capacity LC [kN]	max. stroke [mm]	Item number	Weight [kg]
13-10/XL	6.7	130	230	F341878	8.4
16-10/XL	10	200	280	F341978	13.5

## 7 Assembly / Removal

### 7.1 Preparations

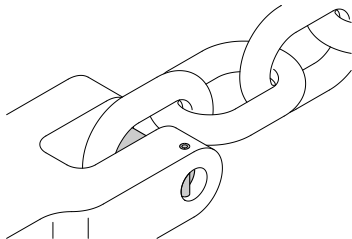
Convince yourself that chain tensioners and chain strands to be assembled are in perfect condition. Check whether the load carrying capacity of the components is adequate to sustain the weight of the load or required lashing forces. For first-time assembly of components check the documentations for completeness.

## 7.2 Chain Mounting/Removal

When assembling or disassembling chain tensioners the relevant instructions issued for the components are to be observed, especially if different manufacturers are involved.

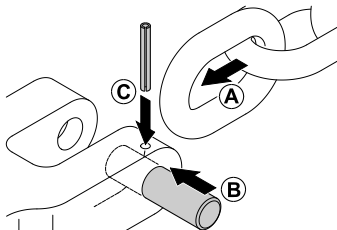
## 7.3 Assembly/Disassembly of Clevis Type Hook System

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



### Assembly

1. If necessary, remove dowel pin and pin.
2. (A) Place end of chain strand between the lateral clevis elements.
3. (B) Push pin from the side fully into the clevis and through the last chain link of the strand.
4. (C) To secure the assembly drive dowel pin into the clevis element such that it does not project; the slot in dowel should face away from pin.
5. Check whether the chain can move freely.

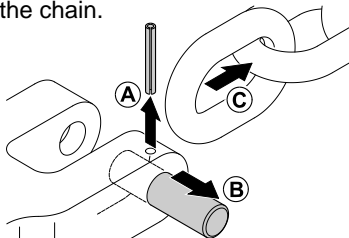


Only connect pins and attachment components of the same quality grade (starting with Ø13 mm the pins are marked on front end).

The dowel pins must only be used once.

### Disassembly

1. Slacken the respective chain strand.
2. (A) Drive dowel pin out using hammer and drift.
3. (B) Push pin out using a drift punch.
4. (C) Remove the chain.



### Article Numbers of Spares Sets

(Pins and dowel pins) for clevis type hook systems:

Nom. size Grade	Article No. Spares set
8-8	F48352
10-8	F48355
13-8	F48358
16-8	F48361
13-10/XL	F48689
16-10/XL	F48690

Suitable drifts are available under article No. Z03303.

The dowel pins must only be used once.

## 8 Conditions of Use/Operation

### 8.1 Use under Normal Conditions

Relevant forces must be introduced longitudinally.

The chain tensioner must be freely suspended in the chain strand and not have contact with other components.

Make sure to operate the chain tensioner only manually via locking handle or ratchet lever.

Rotating the central sleeve in relation to the outer end pieces enables the position of the clevis sections at the end to be varied.

Starting out from the inner or outer end position make sure length adjustment is done symmetrically, otherwise the stroke length will not be fully available.

Make sure the chains at both sides are not twisted too much. Vibrations/impacts may otherwise significantly reduce the pretensioning force, in particular when lashing loads.

Therefore, secure the chain tensioner immediately when lashing work is completed by an additional safety chain (article No. F341711) that rules out the tensioner loosens by itself.

**It is not allowable to use locking handle or lever extensions (for example by means of a tube) because this will result in chain tensioner and chain to be impermissibly pretensioned causing chain overload or even failure when the relevant loads or lashing forces are additionally imposed!**

The locking handle or lever length provided is intended to prevent permissible forces introduced into the chain system to be exceeded.

The ratchet mechanism operating direction can be changed over by bringing the small lever into the respective end positions.

In center position the ratchet mechanism is inoperative and the lever by gravity or centrifugal force may freely move or possibly strike against something.



## 8.2 Use at Elevated Temperatures

At elevated temperatures the WLL is to be reduced as listed in the following tables.

Grade 8	Temperature range	Remaining WLL
	-40 °C to 200 °C	100 %
	200 °C to 300 °C	90 %
	300 °C to 400 °C	75 %

Grade 10/XL	Temperature range	Remaining WLL
	-30 °C to 200 °C	100 %
	200 °C to 300 °C	90 %
	300 °C to 380 °C	60 %

Should the chain tensioners be exposed to temperatures exceeding the maximum values specified they must no longer be used.

## 8.3 Use under Adverse Environmental Conditions

Never use the chains if adverse chemical conditions exist.

## 9 Marking

Chain tensioners are marked with nominal chain size and quality grade data, manufacturer's symbol, certification mark (e.g. BG stamp (H4) and identification number.

## 10 Maintenance

### 10.1 Inspections

Check the tensioners visually at regular intervals. The results of the inspection shall be entered into a register (BGI 879) to be prepared when the chain sling or chain tensioner is first used. The register will show characteristic data of the chains and components as well as identity details.

An inspection must be carried out at least once a year or more frequently if tensioners are in heavy-duty service.

After three years at the latest the chain must additionally be examined for cracks.

Every inspection is to be documented (chain register).

Immediately stop using chain tensioners that show the following defects:

- Deformation, elongation, cuts, notches, cracks, incipient cracks
- Tensioners heated beyond permissible limits
- Severe corrosion
- Jamming screw threads or those difficult to turn
- Wear exceeding 10% (e.g. average chain link thickness, pin diameter)
- Identification marks are unreadable
- Ratchet system not functioning properly

## **10.2 Maintenance and Repairs**

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

Make sure their screw threads can be easily turned. Threads are lubricated in the Factory. If they need to be relubricated which is rarely the case have this work carried out by the manufacturer.

For the ratchet mechanism a lube nipple has been arranged.

Only use THIELE spare parts. Exclusively use original THIELE pins, dowel pins etc. because these are made to meet special requirements. Replace without delay any components that show signs of damage.

### **10.3 Inspection Service**

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

Please do not hesitate to contact us at:

Phone: +49 (0) 2371 / 947 – 0

E-mail: info@thiele.de

The information included in this manual has been carefully checked with respect to correctness and completeness.

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