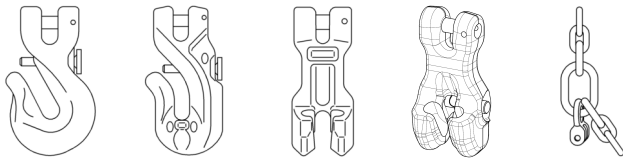


MOUNTING INSTRUCTIONS
SHORTENING ELEMENTS
GRADES 80 AND 100



SHORTENING HOOKS TWN 0827/1 TWN 0827	SHORTENING HOOKS TWN 1827/1 TWN 1827	SHORTENING CLAWS TWN 0851 TWN 1851	SHORTENING CLAWS TWN 0851/1 TWN 1851/1	SHORTENING DEVICES TWN 0896 TWN 1896
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DEFINITIONS

Clevis

A U-shaped fitting with pin.

Working Load Limit (WLL)

The maximum load which a shortening element is designed to support without shock-loading.

WARNING

The following mounting instructions must always be followed to avoid the risk of personal injury or property damage.

Do not use a shortening element before reading these mounting instructions.

NOTICE

Read ASME B30.10 „Hooks“.
Read ASME B30.26 “Rigging Hardware”,
Chapters 26-0, 26-1, 26-4.

1. ABOUT THIS INSTRUCTION

These mounting instructions describe in particular how shortening elements according to TWN 0827, TWN 0827/1, TWN 0851, TWN 0896 (all grade 80) and TWN 1827, TWN 1827/1, TWN 1851, TWN 1896 (all grade 100) (TWN = THIELE Shop 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 avoiding hazards and increases the reliability and service life of the shortening elements.

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.

Previous THIELE chains and accessories marked with the nominal size 7/32" were already produced to the metric nominal size 6 mm. Therefore, the previous nominal size 7/32" is now converted to the more applicable nominal size 1/4".

The corresponding working load limit has also been adjusted.

2. BASIC SAFETY REQUIREMENTS

WARNING

To prevent the risk of injury never walk or stay under lifted loads!

The working load limit (WLL) must not be exceeded!

Shortening elements as well as lifting and attachment means to be used must be free from defects!

THE CORRECT POSITION OF THE CHAIN IN THE SHORTENING HOOK IS TO BE VERIFIED FOR EACH INDIVIDUAL LIFTING OPERATION! #

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 mounting and 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.
- During operation work, wear your personal protective equipment!

MOUNTING INSTRUCTIONS

SHORTENING ELEMENTS

GRADES 80 AND 100

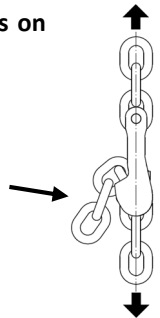


SAFETY INSTRUCTIONS

- The directions given in these mounting instructions and specified documentations relating to safety, assembly, operation, inspection, and maintenance must be made available to persons operating and using the shortening elements.
- These mounting 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.
- **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 shortening elements.
- Only lift loads that do not exceed the working load limit of the corresponding sling chain assembly.
- Never expose shortening elements to loads exceeding the specified working load limit.
- **When using shortening elements without additional safety elements (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.**
- **Shortening hooks must not be attached directly to loads, e.g. metal sheets.**
- **Only chain legs and shortening elements of the same nominal size and grade may be connected.**
- **No one including you (operator) must be in the way of the moving load (hazard area).**
- Safety elements must not be excessively stressed or strained operationally.
- Do not use force when mounting/positioning the shortening elements.
- Do not twist or knot the chains together.
- In case of multi-leg sling chain assemblies never allow for sling angles of less than 30 ° and in excess of 75 °.
- Avoid bending loads to act on chain links and shortening elements.
- Make sure to use shortening/grab hooks or claws for chain shortening purposes.
- 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.

- Usage without working safety elements (cotter pins, dowel pins) is not permissible.
- **In case of shortening claws only put loads on the chain exiting the claw pocket bottom.**

The shortened section of chain must not be loaded. #



- **Shortening elements must be allowed to move freely in all tensile directions. They must not rest on or against other parts or the load. #**
- 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 regards grade 100, THIELE does not give its approval to the assembly of components sourced from different manufacturers!

As a rule, shortening elements and chain slings are not permitted for the transportation of persons.

3. DESCRIPTION AND INTENDED USE

THIELE shortening elements (shortening hooks, shortening claws, shortening devices) are exclusively intended to shorten individual chain legs within several sling chain assemblies according to ASTM A 906/A 906M.

Shortening elements must only be used within a single loaded chain leg.



Shortening elements must exclusively be used

- 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.

THIELE shortening elements meet the EG Machinery Directive 2006/42/EG requirements and feature a safety factor of at least 4 based on working load limit.

The shortening 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), the working load limit must be reduced.

Shortening elements are marked with nominal chain size and quality grade, manufacturer's symbol and traceability code.

MOUNTING INSTRUCTIONS
SHORTENING ELEMENTS
GRADES 80 AND 100

Shortening hooks with safety device can also be used within lashing chain assemblies. When used within a lashing system, the maximum lashing capacity (LC) is obtained by doubling the working load limit.

Any alternating use for lifting and lashing purposes is impermissible!

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 certificates and mounting 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 testings are carried out and documented,
- documentation is safely kept in an orderly manner.

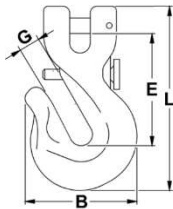
Dispose of the packing in an environmentally compatible way according to local rule.

5. TECHNICAL DATA

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

5.1 Shortening hooks TWN 0827/1, Grade 80

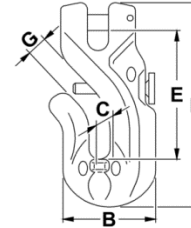
Execution TWN 0827 without safety pin



Nominal size	Article no.	WLL [lbs]	Dimensions [mm]				Mass [lbs]
			E	G	L	B	
5/16	F33201	4 500	61	9	101	61	1.19
3/8	F33211	7 100	73	12	125	75	2.18
1/2	F33221	12 000	95	15	160	95	4.80
5/8	F33231	18 100	112	18	188	120	7.60
3/4	F33246	28 300	148	22,5	242	141	16.20

5.2 Shortening hooks TWN 1827/1, Grade 100

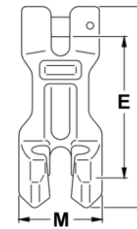
Execution TWN 1827 without safety pin



Nominal size	Article no.	WLL [lbs]	Dimensions [mm]				Mass [lbs]
			E	G	L	B	
1/4	F33195	3 100	-	-	-	-	-
5/16	F33205	5 700	71	9.5	110	55	1.12
3/8	F33215	8 800	83	12.5	132	67	2.09
1/2	F33225	15 000	109	15.5	168	79	3.80
5/8	F33235	22 600	137	18.5	208	91	8.05

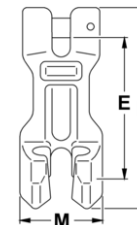
Nominal size without data is in process

5.3 Shortening claws TWN 0851, Grade 80



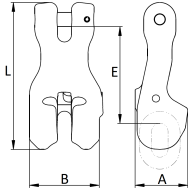
Nominal size	Article no.	WLL [lbs]	Dimensions [mm]			Mass [lbs]
			E	L	M	
1/4	F34910	2 500	54	81	32	0.46
9/32	F34920	3 500	74	108	43	0.93
5/16	F34925	4 500	80	115	46	1.23
3/8	F34930	7 100	90	134	56	2.07
1/2	F34940	12 000	117	175	72	4.63
5/8	F34950	18 100	144	214	86	7.94
3/4	F34970	28 300	158	241	98	11.90
7/8	F34980	34 200	198	295	118	19.84
1	F34985	47 700	195	309	130	26.45
1-1/4	F34990	72 300	240	381	160	41.88

5.4 Shortening claws TWN 1851, Grade 100



Nominal size	Article no.	WLL [lbs]	Dimensions [mm]			Mass [lbs]
			E	L	M	
1/4	F34904	3 100	54	81	32	0.46
5/16	F34924	5 700	80	115	46	1.32
3/8	F34934	8 800	90	134	56	2.12
1/2	F34944	15 000	117	175	72	4.63
5/8	F34954	22 600	144	214	86	7.94

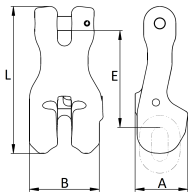
5.5 Shortening claws TWN 0851/1, Grade 8



Nominal size	Article no.	WLL [lbs]	Dimensions [mm]				Mass [lbs]
			E	A	B	L	
1/4	-	2 500	51	27	37	78	0.55
9/32	-	3 500	-	-	-	-	-
5/16	-	4 500	65	34	46	100	1.1
3/8	-	7 100	81	43	56	124	2.07
1/2	F349401	12 000	106	56	73	162	4.41
5/8	-	18 100	130	68	88	198	7.94
11/16	-	22 000	-	-	-	-	-
3/4	-	28 300	-	-	-	-	-
7/8	-	34 200	-	-	-	-	-
1	-	47 700	-	-	-	-	-
1-1/4	-	72 300	-	-	-	-	-

Types with safety devices
Nominal sizes without data are in process

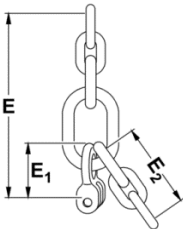
5.6 Shortening claws TWN 1851/1, Grade 10



Nominal size	Article no.	WLL [lbs]	Dimensions [mm]				Mass [lbs]
			E	A	B	L	
1/4	F34906	3 100	51	27	37	78	0.55
5/16	F349241	5 700	65	34	46	100	1.1
3/8	F349341	8 800	81	43	56	124	2.07
1/2	F349441	15 000	106	56	73	162	4.41
5/8	F349551	22 600	130	68	88	198	7.94

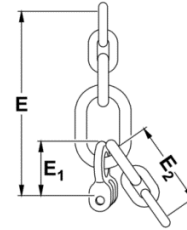
Types with safety devices

5.7 Shortening devices TWN 0896, Grade 80



Nominal size	Article no.	WLL [lbs]	Dimensions [mm]				Mass [lbs]
			E	E ₁	E ₂	Interm. Link	
1/4	F0896068	2 500	137	31	60	Ø10x46x23	0.71
5/16	F0896088	4 500	176	38	78	Ø13x60x30	1.54
3/8	F0896108	7 100	215	46	99	Ø16x70x35	3.09
1/2	F0896138	12 000	270	59	126	Ø18x85x40	5.73
5/8	F0896168	18 100	326	76	150	Ø22x100x50	9.92
7/8	F0896228	34 200	450	100	210	Ø32x140x70	26.46

5.8 Shortening devices TWN 1896, Grade 100



Nominal size	Article no.	WLL [lbs]	Dimensions [mm]				Mass [lbs]
			E	E ₁	E ₂	Interm. Link	
1/4	F189606	3 100	137	31	60	Ø10x46x23	0.71
5/16	F189608	5 700	175	38	78	Ø13x60x30	1.54
3/8	F189610	8 800	215	46	99	Ø16x70x35	3.09
1/2	F189613	15 000	270	59	126	Ø18x85x40	5.73
5/8	F189616	22 600	326	76	150	Ø22x100x50	11.02

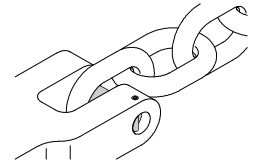
6. REMOVAL

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.

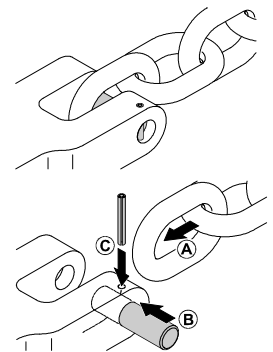
6.2 Clevis fastening system

The clevis fastening system only permits attachment of the nominal chain size that suits the attachment component.



6.2.1 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.



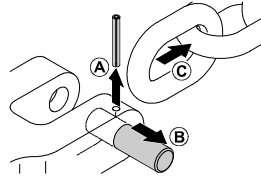
Check whether the chain runs smoothly!

The dowel pins must only be installed once.

Only connect pins and attachment components of identical grades. Starting with Ø 1/2" the pins are marked on the front end.

6.2.2 DISASSEMBLY

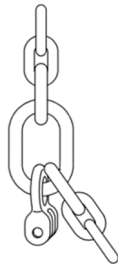
- Slacken the respective chain.
- (A) Drive dowel pin out using hammer and drift punch¹⁾.
- (B) Push pin out using a drift punch.
- (C) Remove the chain.



1) Suitable drift punches are available by Article No. Z03303.

6.3 Shortening device

One of the short chain legs has to be connected to the master link, may by a ring shackle as part of a fixed size master link assembly or by a connector.



The second short chain leg has to be connected to a shortening claw or shortening hook with clevis-type fastening system.

A longer chain leg with a hook or other device at its end to carry the load has to be mounted to the ringshackle. This chain leg can be shortened by the usage of the mounted shortening claw or shortening hook.

7. CONDITIONS OF USE

7.1 Normal use



A shortening element is only used to shorten a single chain leg and never to transfer the load to additional chain legs. The shortened part of the chain leg must remain unloaded.

Therefore, it is not allowed to create a 4-leg chain sling assembly made of a 2-leg chain sling assembly by adding shortening devices.

Shortening individual chain legs is indicative of a non-symmetrical load distribution. In this case, attention is to be paid to working load limit reductions.

7.2 Shortening hooks

Assembly and disassembly are only carried out in unloaded condition.

7.2.1 ASSEMBLY

Push the chain link of the chain leg to be shortened past the hook tip into the slot. If a safety bolt is present, push it back with the chain or pull it back by hand at the rear edge nut. Make sure that the lower leg of the chain link inserted into the slot is positioned near the bottom of the hook and, if present, that the safety pin above the upper leg of this chain link returns automatically to its extended safety position.

The chain leg to be loaded can be located either to the right or left of the central longitudinal plane of the hook.

7.2.2 DISASSEMBLY

If present, pull back the locking pin on the rear knurled nut and lift the shortened chain leg completely out of the slot of the shortening hook to remove it.

7.3 Shortening claws

Assembly and disassembly are only carried out in unloaded condition.

Familiarise yourself with the handling by trying out the insertion and removal of the chain several times and at your leisure before using it for the first time. #

7.3.1 ASSEMBLY

If present, press in the locking pin (TWN 0851/1 and TWN 1851/1) and push the piece of chain selected for shortening the chain leg to be shortened into the pocket of the shortening claw. # Make sure that the lower curve lies firmly in the bottom of the pocket. The chain leg area to be loaded with the component located thereon for attachment to the load (e.g. hook) extends downwards when the chain is correctly inserted. Check the correct positioning of the chain link in the pocket for each individual lifting operation!

7.3.2 DISASSEMBLY

If present, press in the locking pin (TWN 0851/1 and TWN 1851/1) and move the chain link in the claw completely out of the claw pocket by lifting the afore loaded chain leg and pulling it away from the shortening claw. # If necessary, carry out a supporting tilting movement of the shortening claw.

7.4 Influence of temperature



The respective temperature range limits must be considered for all components used.

Using shortening elements in high temperatures will cause the working load limit to be reduced as indicated below.

Grade	Temperature range	Remaining WLL
80	-40 °C ≤ t ≤ 205 °C	100 %
	-40 °F ≤ t ≤ 400 °F	
	205 °C < t ≤ 300 °C	90 %
	400 °F < t ≤ 572 °F	
	300 °C < t ≤ 400 °C	
572 °F < t ≤ 752 °F	75 %	
300 °C < t ≤ 400 °C		
100	-30 °C ≤ t ≤ 205 °C	100 %
	-22 °F ≤ t ≤ 400 °F	



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

7.5 Environmental influence



Sling chain assemblies must not be used in environments where acids, aggressive or corrosive chemicals or their fumes are present.

Hot-dip galvanizing or an electro galvanic treatment is prohibited as well.

Shortening elements are not intended to be used for abrasive blasting environments.

8. SPARE PARTS



Use only original spare parts.

8.1 Spares part sets for clevis fastening system

Sets consist of pin and dowel pin.

Grade 80		Grade 100	
Nominal size	Article no.	Nominal size	Article no.
1/4	F48694	1/4	F48686
9/32	F48352	5/16	F48687
5/16	F48352	3/8	F48688
3/8	F48355	1/2	F48689
1/2	F48358	5/8	F48690
5/8	F48361		
3/4	F48369		
7/8	F48367		
1	F48373		
1-¼	F48371		

8.2 Spare part sets for safety elements

TWN 0827/1 and TWN 1827/1

Sets consist of safety pin spring and knurled screw.

Shortening hooks	Nominal size	Article no.
TWN 0827/1 Grade 80	5/16	F48330
	3/8	F48328
	1/2	F48329
	5/8	F48339
	3/4	F48345
TWN 1827/1 Grade 100	1/4	F483310
	5/16	F48330
	3/8	F48328
	1/2	F483290
	5/8	F48339

8.2.1 DISASSEMBLY

Remove the safety parts by cutting of the knurled screw.

Afterwards remove spring and safety pin.

8.2.2 ASSEMBLY

Before working on new assembly please clean the hole and crease it slightly.

First put in the spring, afterwards take the safety pin with its thin end into the spring and push it until the thread is shown on the other side of the hook body.

Check pin and spring can move easily.



Then assemble knurled screw and secure it by three punch marks on the thread against unintended opening.

Check the system again.

8.3 Spare part sets for safety elements TWN 0971 for shortening claws TWN 0851/1 and TWN 1851/1

A set consists of safety pin, spring, ball and threaded pin.

Nominal size	Article no.
1/4	F483110 #
9/32	F483112
5/16	F483113
3/8	F483114
1/2	F483115
5/8	F483116
3/4	F483117
7/8	F483118
1	F483119
1-¼	F483120

8.3.1 DISASSEMBLY

Remove the threaded pin at the back. Then remove the ball, the safety pin and the spring.

8.3.2 ASSEMBLY

Before fitting the new safety system, clean the holes and grease the safety pin.

Insert the spring and then the safety pin in the correct position in the hole on the side.

Hold the safety pin so that the guide groove for the ball aligns with the threaded hole.

Now insert the ball followed by the threaded pin into the threaded hole.

Screw in the threaded pin only so far that the moving ability of the safety pin is not restricted.

Check the function of the safety pin by pressing it in several times. This must move smoothly and of its own accord into the locking position.

The threaded pin should be secured against unintentional unscrewing by a threadlocker or sealing wax.

9. INSPECTION, MAINTENANCE, DISPOSAL

9.1 General



Inspections and maintenance must be arranged by the owner!

Inspection intervals must 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 shortening elements 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 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 shortening elements that show the following defects:

- missing or illegible identification/markings
- deformation, elongation or fractures of chains or components
- cuts, notches, cracks, incipient cracks, pinching
- links heated beyond permissible limit
- severe corrosion
- reduction of the averaged pin diameter by more than 10 % as mean value of measurements taken perpendicularly towards each other
- impaired or missing safety systems
- missing or damaged dowel pins.



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).

9.2 Inspection service

THIELE offers inspection maintenance and repair services by trained and competent personnel. Please contact us for further information.

9.3 Maintenance and repair



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

The movable safety pins and bolts should be checked regularly for their function and lubricated with multi-purpose oil or grease when installed. Then operate the securing elements several times to spread the lubricant. #

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.

All maintenance and repair activities must be documented properly.

9.4 Disposal

NOTICE

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

10. STORAGE

NOTICE

Shortening elements must be stored properly sorted and in dry conditions at temperatures between 32 °F and 104 °F.

Do not store in a manner that causes mechanical damage.

11. INSTRUCTIONS DOWNLOAD

NOTICE

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



12. PUBLISHING INFORMATION

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