



TWN 1353 Grade 80
 TWN 1853 Grade 100

DEFINITIONS


Working Load Limit (WLL)

The maximum load, which a combination shortening clutch is designed to support.



NOTICE

Read ASME B30.9 „Slings“, Chapters 9-0 and 9-1.




! WARNING

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

Do not use a combination shortening clutch before reading these operating instructions.

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!

Combination shortening clutches as well as hoisting and attachment means to be used must be free from defects!


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


1. ABOUT THIS INSTRUCTION


These operating instructions describe in particular how combination shortening clutches according to TWN 1353 grade 80 and TWN 1853 grade 100 (TWN = THIELE works standard) are to be safely used for hoisting purposes.


The instructions apply analogously to components of identical design.


To comply with these instructions is essential to help avoid hazards and increases the reliability and service life of the combination shortening clutches.

 **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 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". #

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) and ISO 7593 (Chain slings assembled by methods other than welding; Grade T(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 combination shortening clutch.
- 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 12.
- During operation work, wear your personal protective equipment!

**SAFETY
INSTRUCTIONS**

- **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, detachment of parts).
- **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 combination shortening clutches.
- Only lift loads that do not exceed the working load limit of the combination shortening clutch.
- Do not twist or knot the chains together.
- Avoid sharp edges. Use edge protectors or reduce the working load limit by 20 %.
- Never attempt to reduce the size of the opening on the combination shortening clutch by bending or welding in a spacer piece.
- The shortening section of chain must not carry the load and must not be used as a ring chain.
- The section of chain resting in the lower part of the combination shortening clutch must never be loaded on both sides.
- Combination shortening clutches must be free to orient themselves in the direction of loading.
- 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.
- 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/hoisting your hands or other body parts must not come into contact with hoisting means. Only remove hoisting 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 only down in flat places/sites where it can be safely deposited.
- Take care for sufficient place 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, combination shortening clutches are not permitted for the transportation of persons.

3. DESCRIPTION AND INTENDED USE

THIELE combination shortening clutches are exclusively intended for shortening individual chain legs of sling chain assemblies according to ASTM A 906/A 906 M.

They can be used to create a non-permanent connection at any point along the chain leg. They are symmetrical in construction.

Combination shortening clutches must only be employed with a loaded sling. Combination shortening clutches of type TWN 1353 and TWN 1853 must only be used with chains in accordance with the nominal size and grade stamped on the clutch body.



The combination shortening clutch must exclusively be used:

- within the limits if their permissible working load limit,
- for permissible attachment methods and sling angles,
- within the permissible temperature limits,
- by trained and authorised persons.

Failure to do so may cause serious injury or property damage.

When using combination shortening clutches within sling chain assemblies observe their operating instructions. In particular, the working load limits as a function of the number of chain legs and angle of inclination are documented here.

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

They are signed with the corresponding chain size, grade, manufacturer's symbol and traceability code.

THIELE combination shortening clutches are designed to withstand 20 000 dynamic load changes under maximum load conditions. In the event of higher loads (e.g. multi-shift operation), the working load limit must be reduced.

THIELE combination shortening clutches 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

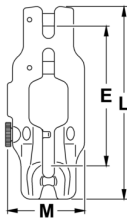
- the components comply with the order and have not been damaged,
- test certificates and operating instructions are at hand,
- markings correspond with what is specified in the documentation,
- inspection deadlines and the qualified persons for examinations are determined,
- visibility and functional 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

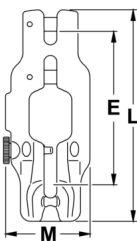
Tables include only article numbers of standard and not customized parts.

5.1 TWN 1353, Grade 80



Nominal size	Article no.	WLL [lbs]	Dimensions [mm]			Mass [lbs]
			E	L	M	
1/4 #	F349145	2 500	107	118	47	0.88
5/16	F349245	4 500	143	158	63	1.87
3/8	F349345	7 100	177	194	78	3.53
1/2	F349445	12 000	231	252	100	7.50
5/8	F349545	18 100	248	291	157	11.46
7/8	F349805	34 200	365	396	162	30.00

5.2 TWN 1853, Grade 100



Nominal size	Article no.	WLL [lbs]	Dimensions [mm]			Mass [lbs]
			E	L	M	
1/4 #	F349155	3 100	107	118	47	0.88
5/16	F349255	5 700	143	158	63	1.87
3/8	F349355	8 800	177	194	78	3.53
1/2	F349455	15 000	231	252	100	7.50
5/8	F349555	22 600	248	291	157	11.46
7/8	F349845	42 700	365	396	162	30.00

6. ASSEMBLY AND REMOVAL

6.1 General

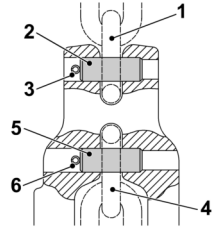
All components to be installed or used must be in perfect condition and the relevant working load limits of all parts must accommodate the respective load to be handled.



Allways assemble/remove components in load-free condition.

6.2 General

1. Insert the end of the chain (1) between the upper clevis sides.
2. Slide clevis pin (2) into the clevis and pass it through the final link of the chain until it reaches the stop.
3. Drive home the spring pin (3) into its seat. Ensure that it does not protrude and that the slot faces away from the clevis pin.



4. Take the end (4) of the chain that is to be shortened and pass it between the middle clevis sides.
5. Slide pin (5) into the clevis and pass it through the final link of the chain until it reaches the stop.
6. Drive home the spring pin (6) into the retainers. Ensure that the spring pin sits flush and that the slot faces away from the clevis pin.
7. Check that the chain is free to move.

6.3 Removal

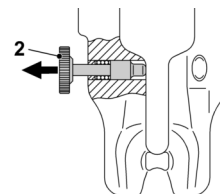
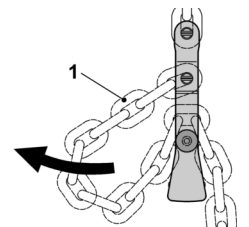
Removal is carried out in the reverse order to fitting. If necessary, use a mandrel to drive out the spring pins.



Clevis pin and spring pins are intended for one-time assembly only.

7. OPERATION

1. Pull the required length of chain (1) through the opening in the combination shortening clutch and towards the side facing away from the strand of chain leading to the load.

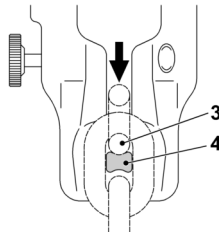


2. Release the combination shortening clutch by pulling out on the latch (2).

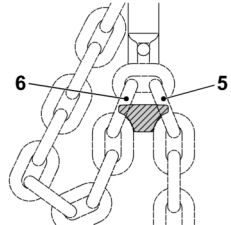
OPERATING INSTRUCTIONS
COMBINATION SHORTENING CLUTCHES
GRADES 80 AND 100



3. Hold the latch open and insert the vertical link (3) selected for the shortening process into the clutch.

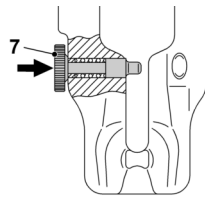


4. The chain link following the selected link (3) is supported in the chain bed and is centred by the pin (4).



5. Lay the chain strand (5) on one side of the combination shortening clutch and place the shortened length of chain (6) into the holder on the other side.

6. Lock the combination shortening clutch by releasing the latch (7).



7. Check that the chain links are correctly seated in the combination shortening clutch and that the latch is locking properly.

8. CONDITIONS OF USE

8.1 Normal use

The shortening of individual chain legs in a multi-leg sling chain assembly indicates a non-symmetrical load distribution. In this case, pay attention to the necessary reduction of the working load limit.



Note that safety elements must not be loaded during operation.

8.2 Influence of temperature



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

Using combination shortening clutches at elevated temperatures will cause the working load limit to be reduced as indicated below.

	Temperature range	Remaining WLL
Grade 80	-40 °C ≤ t ≤ 205 °C	100 %
	-40 °F ≤ t ≤ 400 °F	
Grade 100	-30 °C ≤ t ≤ 205 °C	100 %
	-22 °F ≤ t ≤ 400 °F	



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

8.3 Environmental influence



Combination shortening clutches 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.

8.4 Especially hazardous conditions



The degree of danger when used in hazardous conditions, 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.



Combination shortening clutches must not be used for applications in abrasive blasting environments.

Combination shortening clutches should not be used on construction sites because pockets and safety systems may be contaminated by beton.

9. INSPECTION, MAINTENANCE, DISPOSAL

9.1 General



Inspections and maintenance must be arranged by the owner!

Inspection intervals shall be determined by the owner!

Inspections must be regularly carried out and documented by competent and trained persons, but 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 inspection shall be kept in a file that has to be set up for each combination shortening before first use. The register will show characteristic data as well as identity details.

Immediately stop using combination shortening clutches that show the following defects:

- illegible or missing markings,
- deformation, cuts, gouges, splits or cracks,
- wear, e.g. if more than 10 % of the pin diameter,
- locking latch defective,
- heating beyond permissible limits,
- severe corrosion.



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 Maintenance



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

All maintenance and repair activities must be documented properly.



Small indentations and cracks can be carefully removed by grinding, bearing in mind the maximum permitted 10% reduction in cross section and the need to avoid any gouges or notches.

9.3 Inspection service

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

9.4 Disposal

NOTICE

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

10. SPARE PARTS



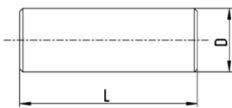
Use only original spare parts.

Spare sets consist of two clevis pins and two spring pins.

If the spring pins are of different size always use the longer for the clevis.

The locking system is a press fit and can only be replaced by the manufacturer.

10.1 Spare part sets for TWN 1353, Grade 80



Nominal size	Spare set complete ¹⁾		Clevis pin (TWN 0904/1)		Spring pin (ISO 8752)	
	Article no.	Mass [lbs]	Article no.	D x L [mm]	Article no.	D x L [mm]
1/4"	F483495	0.04	F48655	7.5 x 21	Z08921	3 x 16
5/16	F483525	0.07	F48007	9 x 26	Z00081 ¹⁾	3 x 20
					Z03606	3 x 16
3/8	F483555	0.13	F48010	12 x 33	Z00082 ¹⁾	4 x 26
					Z03506	4 x 22
1/2	F483585	0.31	F48013	16 x 42	Z00081 ¹⁾	4 x 32
					Z03606	4 x 30
5/8	F483615	0.53	F48016	19 x 50	Z00083	6 x 40
7/8	F483675	1.43	F48022	26.5 x 69.5	Z00094	8 x 55

1) for fitting to clevis

10.2 Spare part sets for TWN 1853, Grade 100



Nominal size	Spare set complete		Clevis pin (TWN 0904/1)		Spring pin (ISO 8752)	
	Article no.	Mass [lbs]	Article no.	D x L [mm]	Article no.	D x L [mm]
1/4"	F486865	0.04	F48671	7.5 x 21	Z08921	3 x 16
5/16	F486575	0.09	F48672	10 x 31	Z00081 ¹⁾	3 x 20
3/8	F486885	0.18	F48673	12.7 x 38	Z03606	3 x 18
1/2	F486895	0.37	F48674	16.7 x 48	Z00082 ¹⁾	4 x 26
5/8	F486905	0.64	F48675	20 x 56	Z00506	4 x 22
7/8	F486935	1.57	F48678	28.2 x 70	Z00094	4 x 32

1) for fitting to clevis

11. STORAGE

NOTICE

Combination shortening clutches must be stored in dry locations at temperatures ranging between 32 °F and 104 °F. Do not store in a manner that would allow mechanical damage.

12. THIELE OPERATING AND MOUNTING INSTRUCTIONS

NOTICE

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



13. PUBLISHING INFORMATION

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