

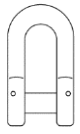
Operating Instructions

Original in compliance with 2006/42/EG

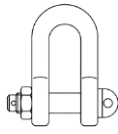


Shackles

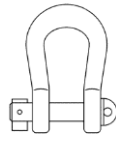
Grades 8 and 10/XL



TWN 0870



TWN 0871
TWN 1871



TWN 0898
TWN 0898/1

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1 Description and Intended Use

THIELE-shackles are intended as end fittings or suspensions to take pull forces transmitted between hoisting means or other components. Normally, shackles are not used as permanent connecting elements.

The shackle type shall suit the relevant application purpose.

Shackles of TWN 0870 are intended to be mounted once to be left on the load permanently.

Shackles must exclusively be used

- within the limits of their permissible Working Load Limit,
- within the temperature limits prescribed,
- with their original bolts and dowel pins of appropriate size.

THIELE-shackles meet EG Machinery Directive 2006/42/EG requirements and feature a safety factor of at least 4 based on Working Load Limit (WLL).

They are signed with the CE symbol. Mostly they are certified by the German Employers' Liability Insurance Association and signed by H4 symbol.

Generally they are signed with the associated chain size or Working Load Limit (WLL) in tons as well as grade, manufacturers mark and traceability code.

Shackles must only be used with a single loaded chain leg.

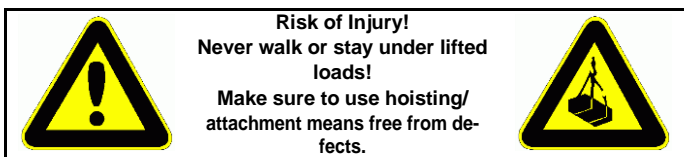
THIELE-shackles are designed to withstand 20,000 dynamic load changes under maximum load conditions. In the event of higher loads (e.g. multi-shift/automatic operation, magnetic spreaders) the WLL must be reduced.

Generally they are not intended to be used for passenger transportation.

An alternating use for lifting and lashing is not allowed.

If shackles are employed for lashing applications the maximum lashing capacity results from a doubling the Working Load Limit.

2 Safety Notes



- Operators, fitters, and maintenance personnel must in particular observe the Operating Instructions also from the used sling chain assemblies, documentations DGUV V 1, DGUV R 100-500 Chapter 2.8, DGUV I 209-013 and DGUV I 209-021 issued by the German Employers' Liability Insurance Association, as well as standard specifications DIN EN 818-6, and DIN EN 13889 Appendix A.
- 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.

- 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).
Never attempt to make the shackle opening smaller by bending or welding in intermediate elements.
- Visually inspect shackles and equipment prior to each use.
- Usage without safety devices (nuts, dowels pins) is not permitted.
- Never put to use worn-out, bent or damaged shackles.
- Never expose shackles to loads exceeding the specified Working Load Limits.
- Do not use force when mounting/positioning shackles.
- Make sure the load can take the forces to be applied without suffering deformation.
- Lateral loads bending the shackles are not permissible. Shackles must be capable of aligning themselves in loading direction.
- Do not start lifting before you have made sure the load has been correctly attached.
- Make sure no one including you (operator) is in the way of the moving load (hazard area).
- During lifting/hoisting make sure your hands or other body parts do 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 hoisting means in slack condition.
- Applications where the bolt may become threaded out, e.g. by a rope or load, shall be avoided. If such applications can not be avoided bolts with safety pins shall be used.
- If shackles are expected to perform under continuous service conditions (multi-shift, automatic operations or the like) contact the manufacturer first to reduce the WLL as necessary.
- 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.
- Avoid shackles to get caught under the load.

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

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

In the event of doubts about the use, inspection, maintenance or similar things contact your safety officer or the manufacturer.

Working under the influence of drugs or alcohol is strictly forbidden!

3 Commissioning

Prior to using the components for the first time make sure that

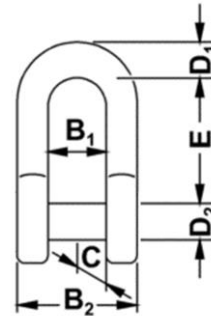
- the shackles comply with the order and have not been damaged,
- test certificate, statement of compliance, and Operating Instructions are at hand,
- markings correspond with what is specified in the documentation,
- the documentation is safely kept in an orderly manner.

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

4 Technical Data

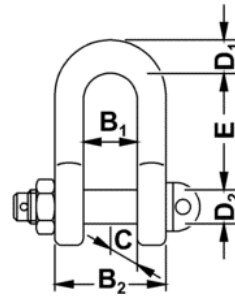
TWN 0870 Special Shackles, Grade 8

Size	Article-no.	Size acc. DIN 82191	Working Load Limit [t]	Weight [kg]	Spare sets	Dimensions [mm]					
					Bolt + Dowel pin	E	D ₁	D ₂	C	B ₁	B ₂
10-8	F30311	1	3,15	0,35	F48036	49	15	16	32	21	47
13-8	F30321	1,6	5,3	0,74	F48039	61	19	20	40	27	61
16-8	F30331	2,5	8,0	1,3	F48042	73	23	24	48	33	75
18/20-8	F30341	4	12,5	2,6	F48045	91	29	30	60	42	96
22-8	F30351	5	15	4,0	F48048	111	33	36	72	47	107
26-8	F30361	6	21,2	5,7	F48051	120	37	39	78	53	121
28-8	F30371	8	25	10,	F48054	140	41	45	90	60	136
32-8	F30381	10	31,5	10,5	F48057	147	45	48	96	66	150
36-8	F30391	12	40	13,9	F48060	158	50	52	104	73	167
40-8	F30401	16	50	20,5	F48063	185	55	60	120	81	185
45-8	F30411	20	63	26,6	F48066	211	61	68	136	90	206



TWN 0871 Bolt Shackles type C, Grade 8

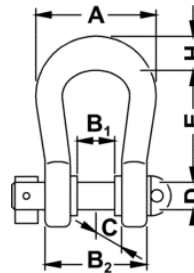
Size	Article-no.	Size acc. DIN 82191	Working Load Limit [t]	Weight [kg]	Spare sets	Dimensions [mm]					
					Bolt + Nut + Cotter pin	E	D ₁	D ₂	C	B ₁	B ₂
6-8	Z04147 ¹⁾	0,4	1,12	0,1	---	30	8	10	20	14	30
8-8	Z04145	0,6	2,0	0,2	---	36	10	12	24	17	37
10-8	F30310	1,0	3,15	0,45	F30451	49	15	16	32	21	47
13-8	F30320	1,6	5,3	0,84	F30461	61	19	20	40	27	61
16-8	F30330	2,5	8,0	1,4	F30471	73	23	24	48	33	75
18/20-8	F30340	4	12,5	3,1	F30481	91	29	30	60	42	96
22-8	F30350	5	15	4,5	F30491	111	33	36	72	47	107
26-8	F30360	6	21,2	6,3	F30501	120	37	39	78	53	121
28-8	F30370	8	25	10	F30511	140	41	45	90	60	136
32-8	F30380	10	31,5	12,3	F30521	147	45	48	96	66	150
36-8	F30390	12	40	15,6	F30531	158	50	52	104	73	167
40-8	F30400	16	50	22,2	F30541	185	55	60	120	81	185
45-8	F30410	20	63	26,3	F30551	211	61	68	136	90	206



1) galvanized, welded on nut.

TWN 0898 Cargo Shackles, Grade 8

Size acc. DIN 82016	Article-no.	Working Load Limit [t]	Weight [kg]	Spare parts	Dimensions [mm]						
				Bolt	E	D	H	C	B ₁	B ₂	A
10	F38355	35	11,9	F48035	166	48	60	96	66	150	186
20	F38370	70	31,5	F48038	231	68	85	136	90	206	256

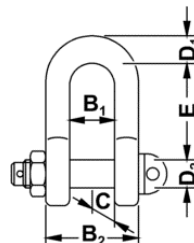


TWN 0898 Cargo Shackles with bush, Grade 8

Size acc. DIN 82016	Article-no.	Working Load Limit [t]	Weight [kg]	Spare parts	Dimensions [mm]						
				Bolt	E	D	H	C	B ₁	B ₂	A
10	F38357	35	11,6	F30527	171	38	60	96	48	150	186

TWN 1871 Bolt Shackles type C, Grade 10/XL

Size	Article-no.	Working Load Limit [t]	Weight [kg]	Spare parts	Dimensions [mm]					
				Bolt + Nut + Cotter pin	E	D ₁	D ₂	C	B ₁	B ₂
10-10/XL	F303100	4,0	0,45	F304510	49	15	16	32	21	47
13-10/XL	F303200	6,7	0,84	F304610	61	19	20	40	27	61
16-10/XL	F303300	10	1,41	F304710	73	23	24	48	33	75



5 Assembly and Removal

Allways assemble/remove shackles or parts in load-free condition.

To prevent unilateral loads and misalignment spacers may be arranged to center the load application point on the bolt.

Disassemble the parts in reverse order.

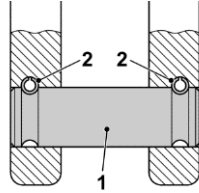
Use a suitable drift punch to drive the dowel pins out.

Suitable drift punches are available by Article No. Z03303.

Dowel pins and cotter pins must only be installed once.

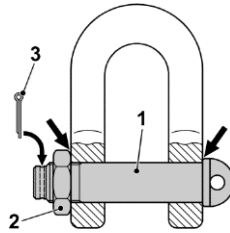
Assembly of TWN 0870

1. Move the bolt through both holes in the shackle ends and see to it that the two grooves in the bolt are positioned concentrically with the dowel pin holes in the shackle body.
2. Insert the dowel pins. Make sure the slot faces away from the bolt towards the shackle bow.



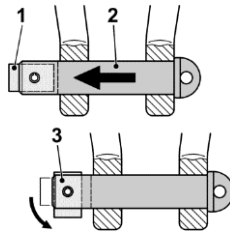
Assembly of TWN 0871 and TWN 1871

1. Fully insert the bolt through both shackle boreholes.
2. Retain the bolt with a suitable nut and tighten the nut so as to be hand-tight using an appropriate tool. Make sure bolt and nut are evenly seated against the shackle body.
3. Finally, insert the cotter pin in the respective hole in the bolt to secure the connection.



Assembly of TWN 0898 and TWN 0898/1

1. Unlock the hinged safety lock of the bolt.
2. Fully insert the bolt through both shackle boreholes.
3. Hinge down the safety lock to ensure the bolt.



6 Conditions of Use

6.1 Normal Use

Make sure forces are exerted in longitudinal direction when attaching loads.

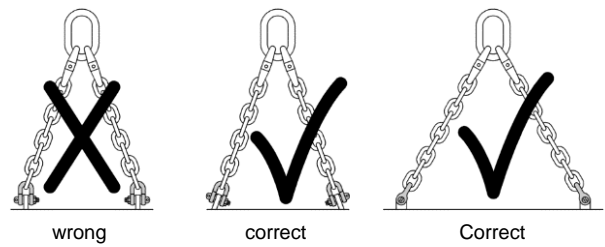
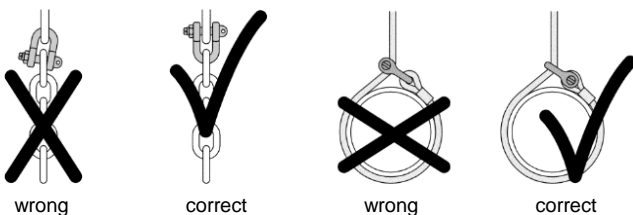
Shackles must not be exposed to bending loads; make sure excentric loads are avoided.

Shackles must be able to move freely. Supporting of shackles on other parts is not permitted.

Take care that

- incorrect arrangements are avoided, e.g. excentric loads,
- damage of lifting or lashing accessories, e.g. by sharp edges, is not possible,
- the shackles can be reached easily for fitting/unhinging lifting or lashing accessories.

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



6.2 Influence of Temperature

Using shackles at elevated temperatures will cause the Working Load Limit to be reduced as indicated below.

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

If shackles have been exposed to temperatures exceeding the maximum values specified they must no longer be used.

6.3 Environmental Influence

Shackles 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.

7 Spare Parts

Only use original spare parts. See chapter 4.

8 Inspections, Maintenance, Disposal

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 if the shackles are in 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 at first use. The register will show characteristic data as well as identity details.

Immediately stop using shackles that show the following defects:

- missing or illegible identification/markings,
- deformation, elongation or fractures of shackles or components,
- cuts, notches, cracks, incipient cracks, pinching,
- damaged threads,
- shackles heated beyond permissible limits,
- severe corrosion,
- impaired or missing safety systems,
- wear in excess of 10 %, e.g. in the receiving area of the pin diameter.

Inspection Service

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

Maintenance and Repair

Minor notches and cracks 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.

Disposal

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

9 Storage

Shackles should be stored in dry locations at temperatures ranging between 0 °C and +40 °C.

10 Impressum

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Changes to previous edition.

EU Declaration of Conformity

acc. to Machinery Directive 2006/42/EG, Annex II A for a machine

THIELE GmbH & Co. KG herewith declares as manufacturer that Shackles of following types

- **TWN 0870, TWN 0871, TWN 0898, TWN 0898/1 – Grade 8**
- **TWN 1871 - Grade 10/XL**

are placed on the market in the form of a complete machine by THIELE together with the relevant test certificate, and are in compliance with the applicable provisions of the EU Machinery Directive 2006/42/EG.

The following harmonized standards have been observed:

- DIN EN ISO 12100
- DIN EN 1677, Part 1

This declaration/statement is not meant to warrant any product properties. Safety notes and instructions pertinent to the products must be observed.

Responsible for the documentation:

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Iserlohn, 17 August 2016

Dr. Günther Philipp
(Managing Director)

