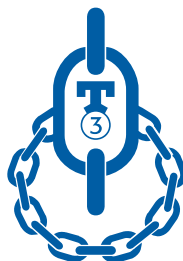




KWS
INC.



THIELE®



KWS CATALOG 6.0

Rev. 2

Made
in
Germany

> Lifting Technology

> Load Securing Technology

> Light Material Handling

> Application Technology



CONTACT US

Sales & Service

Our friendly sales team is available for quotes, receiving & processing orders, and technical service.

Address

KWS Inc.
P.O. Box 470487
Tulsa, OK 74147
USA

Business hours

Monday to Friday:
8:00 am – 5:00 pm Central Time

Toll Free: +1 (800) 872-9313
Phone: +1 (539) 367-2274
Fax: +1 (539) 367-2278
Email: sales@kwschain.com

WARNINGS:

Warning instructions are included in this catalog. Operating instructions for each product are either included with the products and / or are available at www.kwschain.com.

Manual instructions must always be reviewed before operation. Failure of the product can occur due to misapplication, abuse or improper maintenance, resulting in possible property damage, personal injury, or death.

Ratings shown are applicable to new products. Working Load Limits indicate the greatest force or load a product can take. Extraordinary conditions must be taken into account.

The Working Load Limit of a chain sling must not exceed the working load limit of the weakest component in the system. The proof load on all items in this catalog is 2 times the working load limit unless otherwise shown. Please also read the manual instructions and users guide on page 173-179 and download manuals using the QR-code below or from our website www.kwschain.com.



*QR-Code for downloading
operating and mounting
instructions*



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Company Profile



Our Parent Company

THIELE was established in Iserlohn-Kalthof, Germany more than 85 years ago and the company is now one of the world's leading manufacturers of chain systems. The forging of quality components has become our focus and our strength. Customers benefit from our established expertise in product design and manufacturing, with everything we supply being produced at our plant in Iserlohn, Germany.

In addition to supplying the traditional markets for conveying and lifting equipment, we also operate in new future-oriented sectors like mobility and renewable energies.

Our ultimate goal is customer satisfaction based on fulfillment of high quality products that exceed environmental and safety requirements. THIELE has a quality management system certified according to ISO 9001 and an environmental management system certified according to ISO 14001.

THIELE is also certified according to ISO 50001 energy management system and ISO 45001 occupational health and safety management system.

The longevity of our high-quality products saves resources and protects the environment.

Therefore, they enjoy an excellent reputation among our customers worldwide.

KWS Inc.

In 1995 the company THIELE GmbH & Co. KG established operations in the United States specifically focused on the sales of the THIELE brand of overhead lifting chain and components. Since then, Conveying Chain, Fishing Chain, Lifting Points, Manual Cranes, Hoist Chains as well as Magnet Chain Slings have been added to the product line. New products are continually being added, most recently various fittings and additional trade sizes to the Grade 100-Product range. Today, KWS Inc., with its main warehouse in Beckley, WV and regional warehouses in Chicago, IL and Los Angeles, CA, is able to supply German-made quality products to its valuable customers quickly. Our commitment is: "You need it,

we have it"! Our logistics system ensures stock availability of at least 6-month sales, unique in the industry! THIELE GmbH & Co. KG is an innovative manufacturer with a long tradition in the production of round steel chains and forged parts for the Lifting technology sector.

Still today the company is family-owned. In close cooperation with our customers we are always searching for better and more innovative solutions. We are also supported by renowned universities and leading research institutes. We are continuously researching new knowledge in material technique and shaping in order to develop lighter, more solid, and safer products.



In addition to aforementioned companies, the following also belong to the THIELE-group:

Schlieper GmbH & Co. KG (GER)
RH THIELE GmbH & Co. KG (GER)
Reilloc Chain Ltd. (UK)
THIELE Asia Pte. (SIN)
RM Wilson Comp. (USA)
T-Con Ltd. (CN)

KWS Inc. Conditions of Sale & Limited Warranty

Payment Terms:	1 % 10 days, net 30 days from date of invoice
Delivery Terms:	F.O.B. shipping point (within continental US only) Freight prepaid at lowest tariff rate on shipments of 2,000+ lbs.
Cut Chain:	A minimum charge of 20 % per foot will be applied to each length of chain cut from stock
Special Items:	All orders for non-stock items will be accepted based on the understanding that the delivered quantity can vary plus or minus 10 % from the original quantity and invoice will be issued accordingly.
Returns:	Return requests will only be honored on standard items in new condition and within 90 days from original invoice date. The customer is responsible for return freight. If returned item is part of original prepaid shipment, a portion of original freight will also be assessed against the returned item. Minimum standard restocking charge is 20 % or US\$ 50.00 whichever is greater. If item is not in new condition, credit will not be issued and item will be discarded.
WARNINGS:	Download and read operating instructions before usage! Please use the QR-code below to retrieve the files or go to www.kwschain.com . To prevent accidents, proper selection, application, and loading of chains and accessories is absolutely necessary.
	
	NEVER exceed the published working load limits of chains and accessories and NEVER use slings outside the specified temperature range. Accessories must always have equal or higher working load limits than the chain.
THIELE Plant Standard (TWN)	THIELE products acc. to THIELE Plant Standards (TWN) fulfill the requirements of the EC-Machinery Directive  for Machines, particularly for the safety relevant components.
Disclaimer:	KWS Inc. conditions of sale apply error and omissions excepted.
Liability and Copyright:	All information given is based on our current knowledge and expertise and is supplied without obligations or commitments. This also applies to the patent rights of third parties. We do not give any obligatory warranty in the legal sense as to the properties of the products described in this publication. We expressly reserve the right to change our specifications in accordance with technical progress and company developments. This does not release the buyer from his obligation to inspect all incoming products. The quality of all our products is of course guaranteed in accordance with our general terms and conditions of sale. The copyright for the published objects remains exclusively at the author of this document. Any duplication or utilization of such graphics or texts in other electronic or printed publications are not allowed without any agreement of the author.



**YOUR
ONE-STOP
PROVIDER**

Our range of services:

- Bending
- Forging
- Different welding processes
- Laser, plasma and flame cutting
- Multi-spindle milling machines
- CNC machining
- Assembly and end production
- Heat treatment
- Painting and surface finishing

General Information



Product development

Our in-house manufacturing base covers the entire process from raw material through to the final product.

High-level expertise leads to short developing times, especially when new products are designed.



Modern 5-spindle machining centre



Manufacture of dies, trim dies and calibration tools

FEM simulation

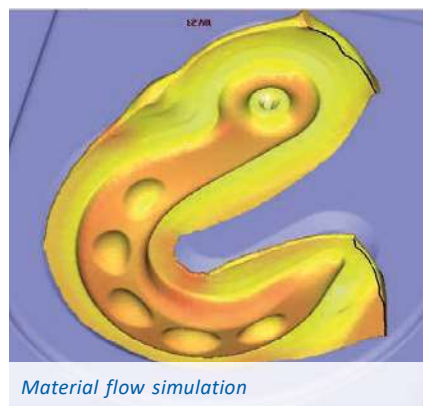
With precise calculations and the experience of our engineering team, we carry out stress analysis before production begins. This makes the product development process highly efficient and optimized to the maximum.



FEM simulation of a XKE-Point

Material flow simulation

3D simulations optimize the forging process, enable precise volume calculations, increase efficiency and have a positive impact on the product quality.



Material flow simulation



CNC machining



General Information



WHAT YOU CAN EXPECT FROM US

High added value and state-of-the-art forging aggregates

Our range services:

Forging machines (16 - 160 kJ) | forging presses (up to 1,600 t)
component weights from 100 g to 100 kgs | lengths up to 1,350 mm

Our forged products are based around a large selection of materials:

- Chain steels (DIN 17115)
- Non-alloy heat-treatable steels (DIN EN ISO 683-1)
- Alloy heat-treatable steels (DIN EN ISO 683-2)
- Case-hardened steels (DIN EN ISO 683-3)
- Non-alloy structural steels (DIN EN ISO 10025-2)

Special steels, e.g. high-alloy corrosion-resistant, heat-resistant and antimagnetic steels, are available on request.

Heat treatment:

A process-based heat treatment stage delivers the final product characteristics. Our state-of-the-art, fully automated heat treatment plant ensures that the end-products meet the highest mechanical requirements.



QR-Code to movie of Mr. Thiele making the first blow forge of the new forging hammer.



Square billets (edge length 50 to 120 mm) or round bar material (18.5 to 200 mm in diameter) can be used as raw material.



General Information

KWS SERVICE

KWS Catalog 6.0

You can download our KWS Catalog.



*KWS Catalog 6.0
Rev. 2*

3D CAD Data

All user information, geometry data and CAD download can be found on the respective product pages of our website www.kwschain.com. Our website provides an excellent resource for engineer-friendly files!



Website/ Products

Operating and Mounting Instructions

The operating and assembly instructions for all THIELE lifting products contain important information for a safe operation in the sense of the EC-Machinery Directive. They must be read before operation.



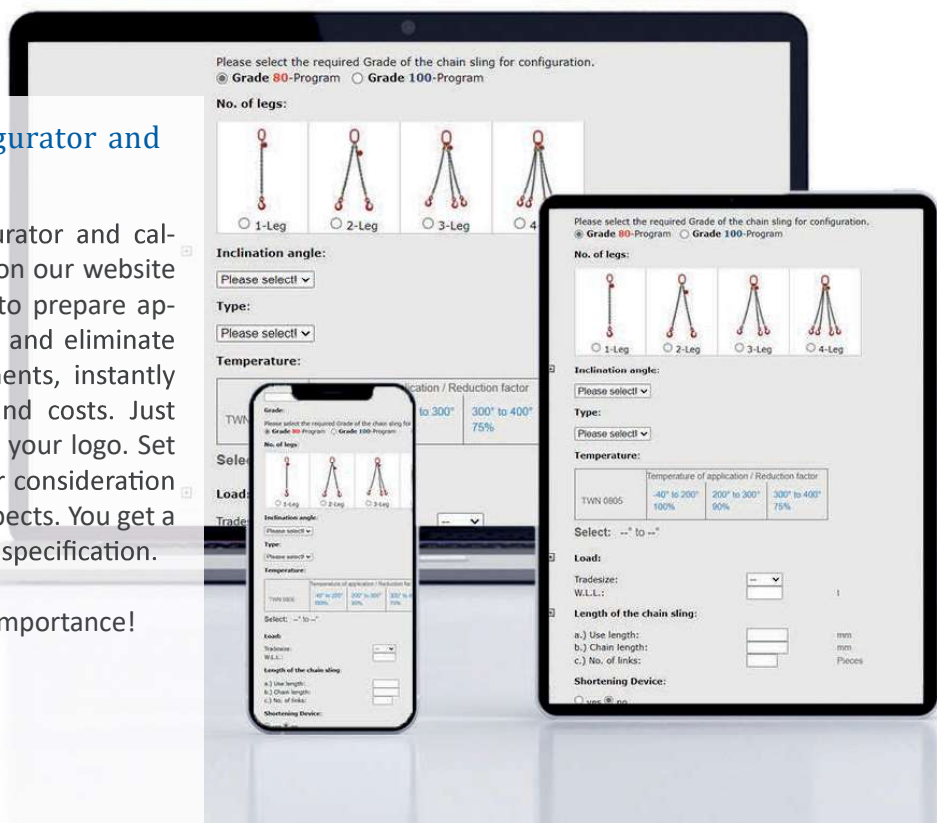
*Operating and mounting
instructions*

THIELE Chain Sling Configurator and Calculator (TKGK)

The THIELE chain sling configurator and calculator in the customer portal on our website makes it much easier for you to prepare appropriate offers. You save time and eliminate errors when selecting components, instantly calculating lengths, weights, and costs. Just upload your company data and your logo. Set up your customized offer under consideration of commercial and technical aspects. You get a structured offer with a detailed specification.

At THIELE, service is of utmost importance!

Please ask for your login data.



THIELE-LIFTING-EVOLUTION



is the brand feature of the THIELE Lifting components.



All new THIELE lifting components offered by KWS Inc. are developed with a new design.

The design ensures you can differentiate THIELE products from the other brands.

For more than 85 years, THIELE stands for world class quality with our rugged design.

The ellipses style design adds value by improving consumer confidence while using THIELE components for their lifting application needs.

Our in the field knowledge with lifting products have shown that the assured product properties are not always being upheld. Standards are often cited but not extensively fulfilled.

The requirements on safety for lifting products are more than a determination of a breaking force.

The intensity of intermediate quality controls within the production cycle creates a difference in the end result of the quality of the product. Our motto:

“At THIELE you always know, what you get!”

The ellipses style hooks will improve the orientation while in use. The enhanced design makes our product more modern, and dynamic compared to the competition.

“Lifting, moving and securing of loads in shape”. The improved design is a reflection of our consumers' expectations of THIELE for decades. We are committed to investing in our superior quality standards.

The result of years of experience with controlled and safer sophisticated processes in our production.

“MADE BY THIELE!”



Not available on Connectors, Master Links and Lifting Points.

Our Product Range



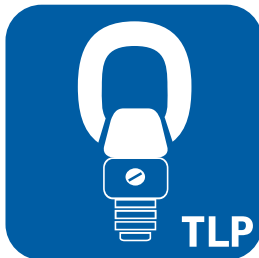
**Lifting Products
Grade 100**



**Lifting Products
Grade 80**



**Lifting Products
Offshore**



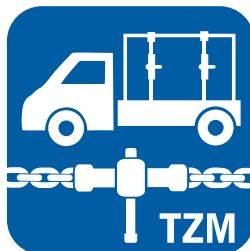
Lifting Points



Hoist Chains



Load Lifting Equipment



Lashing Products



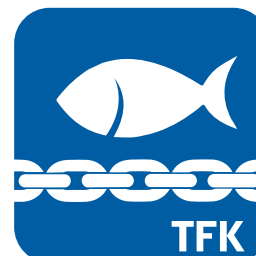
Poultry Chains



Farming Chains



Chain Sprockets



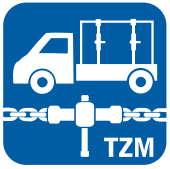
Fishing Chains



Inspection Service



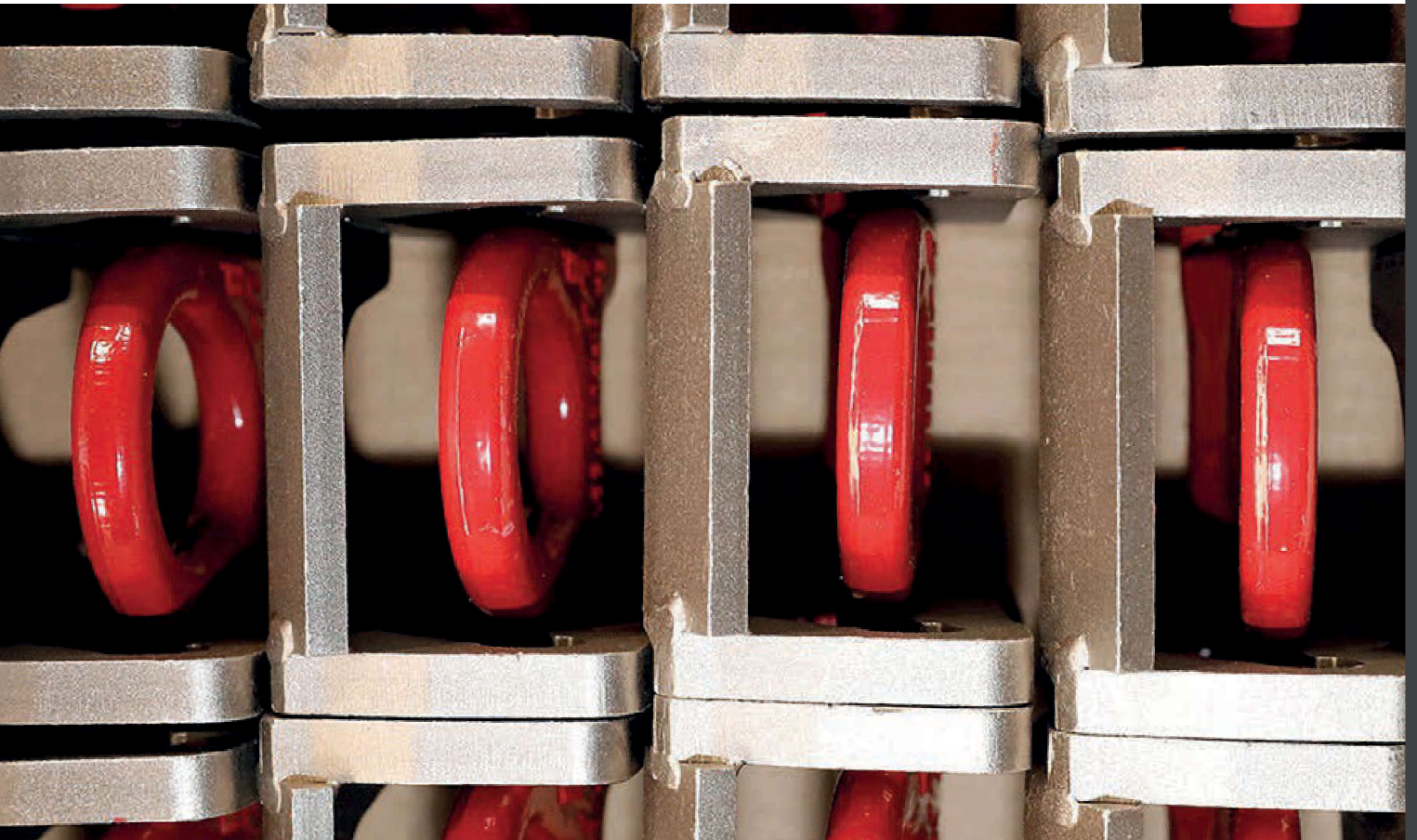
Engineering



KWS
INC.



THIELE[®]



TLA

THIELE LASHING PRODUCTS

Lashing Products, Lashing
Points and Lashing Chains



Product Overview of Lashing Products

Pages
146-152

Grade 100 Lashing Chains and Components

TWN 1410 / TWN 1411



TWN 0072



TWN 1454



TWN 1455



TWN 1460



TWN 1473



TWN 1474



TWN 1820



TWN 1827/1



TWN 1840/1



TWN 1851/1



TWN 1852



TWN 1869



TWN 1880



TWN 1890



TWN 1899



Pages
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Grade 80 Lashing Chains and Components

TWN 1400 / TWN 1401



TWN 0805



TWN 1479



TWN 1450



TWN 1451



TWN 1452



TWN 0119A



TWN 0124



TWN 1477



TWN 1471



TWN 1320



TWN 0827/1



TWN 0851/1



TWN 0869



TWN 1340/1



TWN 1399



Page
160

Tensioning Components

TWN 1001



General Information

General Information

Load securing protects the load against the physical forces of movement that occur during transport.

Vehicles that are carrying insufficiently secured loads are encountered in traffic every day. Changes in speed or direction produce forces causing the cargo to no longer stay in position and to move on the vehicle.

To avoid this risk, every load has to be secured properly on the carrier regardless of whether it is light or heavy and even when the vehicle runs at low speed. The conditions for load securing are derived from "normal" driving operations. At "normal" driving operation, however, is not only to be understood as a foresighted and quiet driving. Normal traffic conditions also include, e.g. emergency braking, uneven road surfaces, extreme evasive maneuvers, etc.

When securing loads, all these influences must be taken into consideration. If securing proves ineffective, insurance coverage may be lost partly or even entirely. In such a case, the responsible person and company must bear the costs which may then often lead to economic ruin.

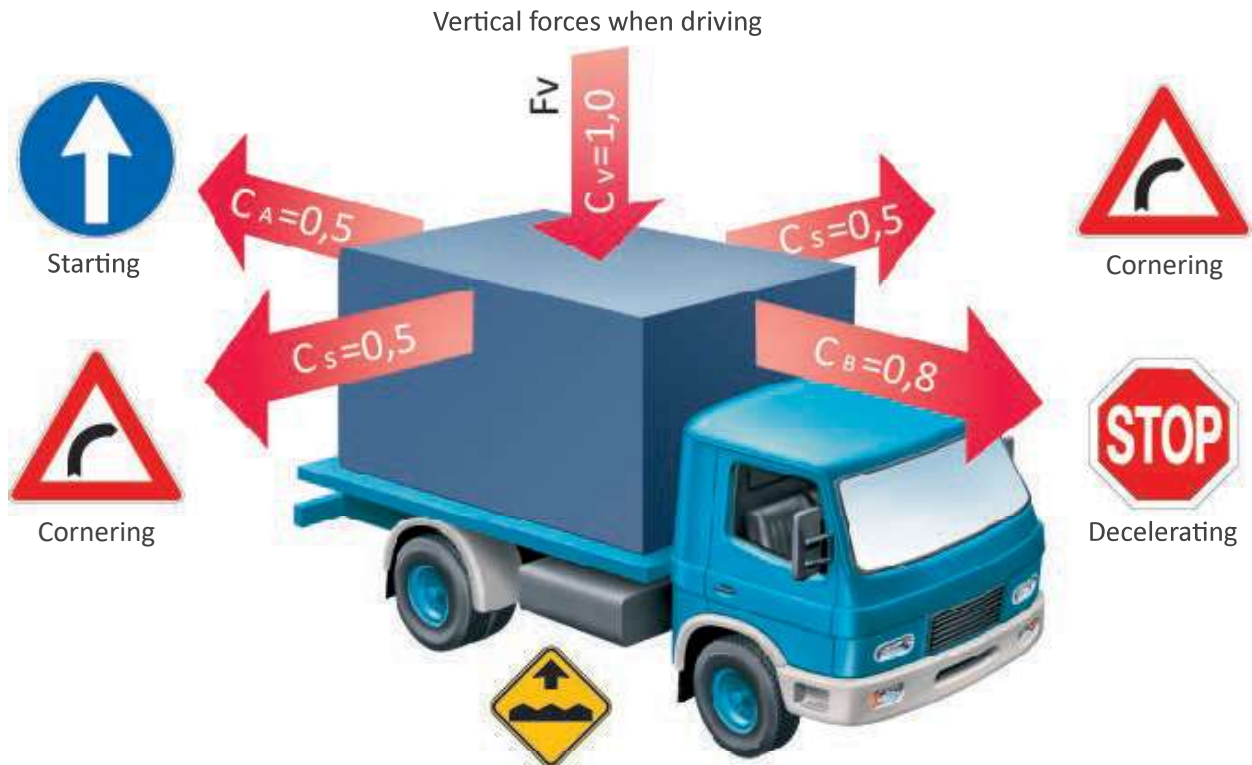
Many dedicated persons are not aware that the responsibility for load securing does not only lie on driver of a vehicle but also with all other parties involved (e.g. vehicle owner, sender, carrier, hauler, etc.).

Physical Basics

In the event of an emergency braking operation of the vehicle down to zero speed, deceleration rates of up to 8 m/s^2 may arise which means that 80 % of the weight of a given cargo component has to be absorbed by load securing to prevent the load from shifting.

The centrifugal forces acting transversely to the direction of travel must be taken into consideration. The design of commercial vehicles permits building acceleration rates up to 5 m/s^2 . This means that 50 % of the cargo weight has to be secured transversely to the direction of travel.

Arising Forces in Driving Operation



Starting

Weight forces (acceleration forces) to the rear
 $F_A = 0.5 \times F_v = 50\%$ of the cargo weight

Decelerating

Weight forces (deceleration forces / negative accelerations) to the front
 $F_B = 0.8 \times F_v = 80\%$ of the cargo weight

Cornering

Weight forces (centrifugal forces) acting sideways
 $F_s = 0.5 \times F_v = 50\%$ of the cargo weight

Forces of Cargo

Assuming a cargo weight of $m = 15,000$ kgs then the vertical force of cargo F_v is 15,000 daN.
 All these forces must be retained by means of load securing and lashing devices.

Cargo Weight	Forces of Cargo	Force
[%]		[daN] min.
100	Vertical force of cargo	$F_v = 15,000$
80	Longitudinal forward force	$F_B = 12,000$
50	Transverse force of cargo (right/left)	$F_s = 7,500$
50	Longitudinal rearward force	$F_A = 7,500$

General Information

Methods of Load Securing

In general a distinction between force- and form-closed cargo securing is to be made:



Tie-down Lashing

The most common type of load securing is the tie-down lashing (pictures 1 and 2 on pages 142 and 143). The load securing devices are put over the cargo, attached to lashing points and tightened by using maximum hand force.

The pre-tensioning force presses the cargo onto the load area and thereby applies frictional forces. The sum of the weight itself and the pressing forces take effect in all directions. This is the major advantage of the tie-down lashing method.

The vertical angle α primarily determines the effectiveness of the tie-down lashing method. When using a 90° angle, 100 % of the force is introduced into the lashing system. At 30° it is only 50 %.

Therefore the lashing angle β should not exceed 30°.

Following points should be considered for tie-down lashing operations:

- A high degree of friction must exist between the cargo and the loading surface as well as amongst the individual loading units.
- The sliding friction coefficient must be known or estimated.
- The cargo must be able to withstand the pre-tensioning force.
- The lashing points on the vehicle must be designed to take the arising loads.
- Due to the so called settling processes, the pre-tension of the load securing devices must be regularly checked during transit in order to rule out that pre-tensioning forces will decrease and no longer be adequate.

The magnitude of the frictional force depends on the characteristics of the materials that come into contact with each other. It is clearly evident that a piece of metal will easier slide on a metal surface than on a surface consisting of rubber.

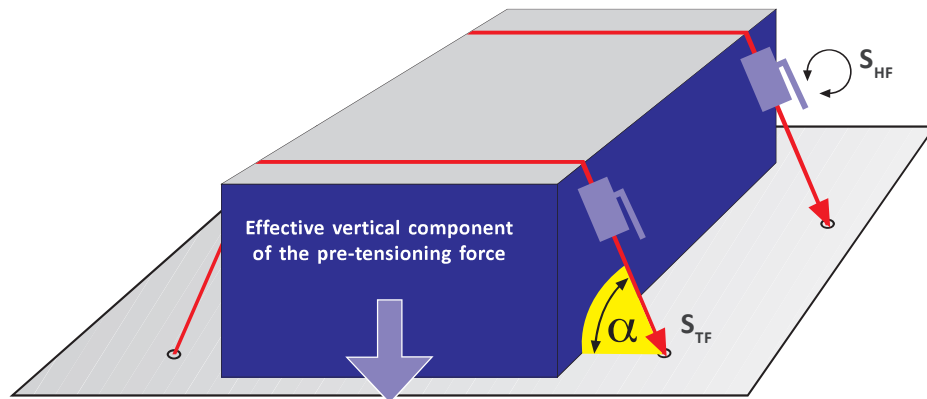
In practical tests on load surfaces as well as in laboratory tests a multitude of so called sliding friction coefficients have been determined which serve as calculation basis for cargo securing purposes.

These coefficients are identified by the symbol μ_p .

Dynamic friction coefficients of common cargo

Material pairing	Sliding friction coefficient (μ_p)
Steel on steel, oiled	0.10
Timber on steel plates	0.30
Steel on wood	0.40
Pre-cast concrete components with wood interlayer on wood (concrete/wood/wood)	0.40
Concrete on lattice beams	0.60

Force introduction via the tensioning element



Picture 1

When lashing down, different pre-tensioning forces are required depending on the lashing angle.

- S_{HF} = Standard Hand Force (max. 50 daN) applied to the lever of the ratchet or screw tensioner. Only if the tensioning element is tightened by hand (S_{HF}) at 50 daN, the pretensioning force (S_{TF}) indicated on the identification tag may be reached.
- S_{TF} = Standard Tension Force is the remaining force after the lever of the tensioning device has been released; i.e. the real remaining force exerted by the load securing device.

The pre-tensioning force F_T is determined according to the following formula:

$$F_T \geq \frac{C_{A,S} - \mu_D}{\mu_D \times \sin \alpha} \times \frac{F_V}{k \times n} \quad [\text{daN}]$$

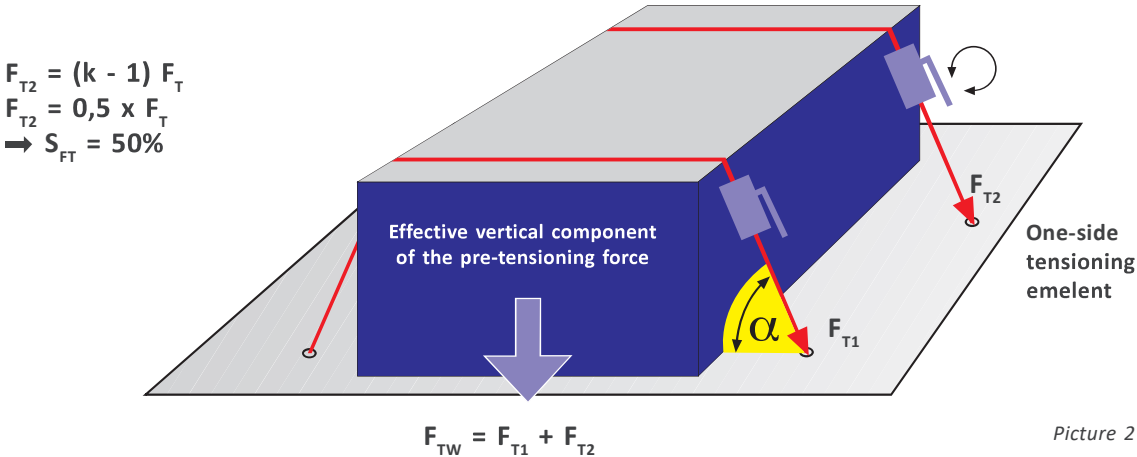
The meaning of formula symbols:

- $C_{A,S}^*$ = Acceleration coefficient (in travel direction $C_A = 0.8$; transversely and counter to the drive direction $C_S = 0.5$)
- C_V^* = Acceleration coefficient, vertical
- μ_D = Dynamic friction coefficient (sliding friction coefficient)
- $\sin \alpha$ = Sine function of the lashing angle
- F_V = Vertical force of the cargo (cargo weight); ($F_V = m \times g \times C_V$)
- k = Transfer coefficient (loss of pre-tensioning force due to friction between the cargo and the load securing device)
1,5 times if the load securing device is tightened by means of a tensioning device
- n = Number of lashing devices

*Assumption: Cargo on road trucks and trailers

General Information

Over-the-top lashing



Pretensioning forces

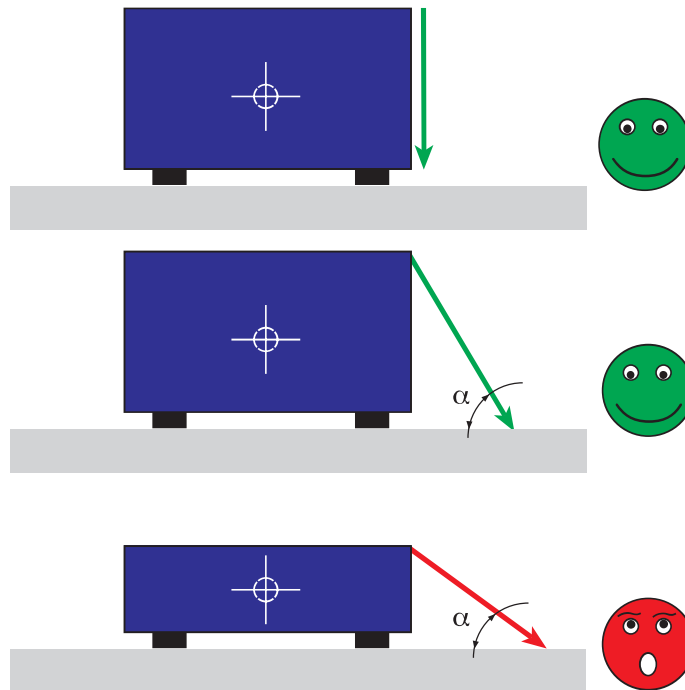
Table 3 provides estimated pre-tensioning forces that are required to safely secured cargos. The data shown is based on material pairings listed in table 2. As shown in table 3, the sliding friction coefficients and lashing angles are decisive!

Cargo-weight (F_v) [daN] max.	Sliding-friction coefficient (μ_D)	Lashing Angle (α)	Total pre-tensioning force (F_T) [daN] max.	Lashing Angle (α)	Total pre-tensioning force (F_T) [daN] max.
2.000	0.10	50°	12,185	80°	9,485
	0.40	50°	1,745	80°	1,355
	0.60	50°	580	80°	455
10.000	0.10	50°	60,925	80°	47,425
	0.40	50°	8,725	80°	6,775
	0.60	50°	2,900	80°	2,275
30.000	0.10	50°	182,775	80°	142,275
	0.40	50°	26,175	80°	20,325
	0.60	50°	8,700	80°	6,825

Table 3



Pretensioning forces



Significantly high pre-tensioning forces are sometimes needed and it is obvious that such forces may only be applied with appropriately sized load securing devices.

The most important parameters of load securing devices are as follows:

➡ **Lashing Capacity (LC)**

➡ **Standard Tension Force (S_{TF})**

$S_{TF\min.} = 0.25 \times LC$ for chains with diameter from 6 to 10 mm

min. = $0.15 \times LC$ for chains with diameter from 13 and 16 mm

$S_{TF\max.} = 0.50 \times LC$

Both characteristics may be found on the identification tags of the lashing chains. The Lashing Capacity (LC) is the largest force in straight pull, for which a lashing device is designed to use. The Standard Tension Force (S_{TF}) is the force that remains in the load securing device when the tensioning lever has been released, i.e. the actual remaining force exerted by the system.

To determine how many lashing elements are needed, the calculated total pre-tensioning force must be divided by the standard tension force of the selected load securing devices. When using belt systems, a double-digit number of belts may be necessary for common loads which is unsuitable for practical purposes.

However, by using THIELE-lashing chains, you may reduce the required number of tensioning devices by a factor eight. It is generally recommended to use anti-slip mats for tie-down lashing and direct lashing to increase the coefficient of friction.

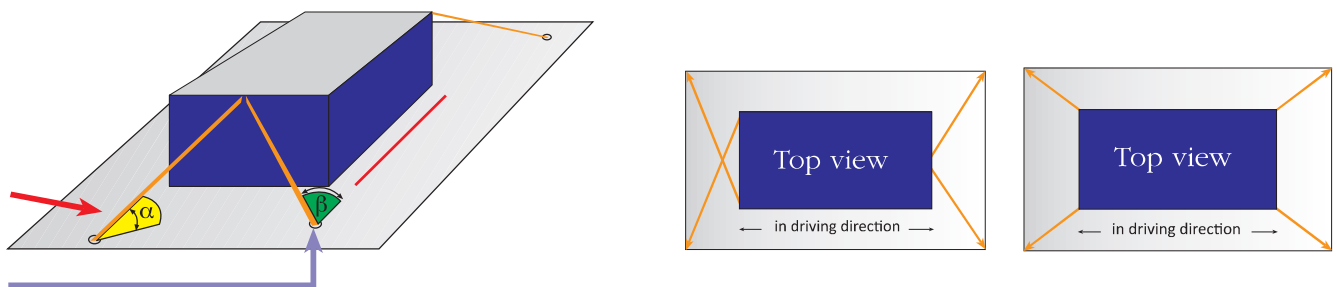
General Information

Direct Lashing

Direct lashing is a highly effective cargo securing method, as it makes use of the lashing capacity of the lashing device. Since the load securing device is not pretensioned, only little manual force is needed for tightening. The lashing device must be fixed to a lashing point at the load area and then at the cargo itself. It shall only be pretensioned by hand power in order to avoid sagging or swinging of the chain.

The force to be calculated for a chain to be used as a securing device must be smaller than the lashing capacity (LC). The lashing capacity is the decisive parameter for the chain size as well as for the related tensioning and connecting elements.

Diagonal Lashing



For diagonal lashing, physical laws prescribe the limits according to which the lashing angles should be selected. Calculations show that it is recommended to keep horizontal angles in line between 20° and 45°. If the angle is smaller than 20° and the friction coefficient is smaller than 0.5, an additional dimensioning of the average lashing force against slipping during vehicle cornering is required. If the angle is larger than 60°, then the lashing capacity will increase disproportionately. Theoretically, they would even be infinitely larger with a 90° angle. Based on these considerations, it can be stated that a diagonal/cross-wise lashing method is not favorable for securing of loads in driving direction, at least in an extreme configuration (horizontal angle). There are also recommendable limits at the vertical angles to avoid disproportional increase of the forces in the tensioning device. The best use of the average lashing capacities is at a vertical angle between 0° and 20°.

The force of a chain must be calculated according to the following formular, considering the described factors:

$$LC \geq \frac{F_v \text{ [daN]} \times (C_{A,S} - \mu_D)}{(\sin \alpha \times \mu_D + \cos \alpha \times \cos \beta) \times n}$$

Based on the equation a lashing device that has at least the same admissible lashing capacity must be selected.

Symbols used in the equation:

- LC = Lashing Capacity
- F_v = Vertical force of the cargo (cargo weight); ($F_v = m \times g \times C_v$)
- μ_D = Dynamic friction coefficient (sliding friction coefficient)
- $C_{A,S}^*$ = Acceleration coefficient (in driving direction $C_A = 0.8$; transversely and counter to driving direction $C_S = 0.5$)
- C_v^* = Acceleration coefficient, vertical
- α = Vertical angle of the lashing legs
- β = Horizontal angle of the lashing legs
- n = Number of lashing chains in the respective direction

*Assumption: Cargo on road trucks and trailers



General Information

Lashing chains are the best way to secure loads. They offer major advantages as their working capacity is known. This allows an exact calculation to secure the loads.

For standard lashing chains exclusively short link round steel chains acc. to DIN EN 818-2 or PAS 1061/ ASTM 973 must be used.

In your own interest as well as public safety, only shortening elements according to DIN EN 1677-1 that are approved by the manufacturer may be used. When using self-made shorteners, the capacity of the lashing devices can no longer be granted.

When using lashing hooks, all safety requirements of the DIN EN 1677-2 must be observed (hooks with safety latches) and taken into consideration.

Connecting and shortening components must have devices that are preventing the chain from unintentional release.

Screw tensioners must have a safety device (securing of screw removal) against unintentional release.

Multi purpose lever blocks must meet the DIN EN 13157 requirements.

A complete Lashing Chain according to the DIN EN 12195-3 consists of:

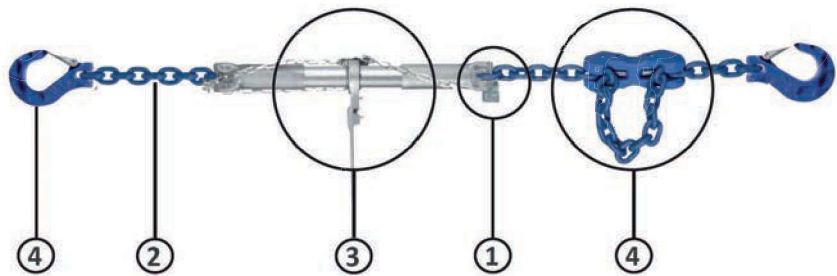
Load Securing Devices	Tensioning Elements	Connecting Elements	Identification Tags
Lashing chains	Tighteners, Tensioners, Multi purpose ratchet hoists	Hooks, Shackles, Chain shorteners, End-links	Metal tags



General Information

Inspection of Lashing Chains

Load securing devices are subject to wear and can be damaged by improper use. It is strictly required to inspect round steel chains and components by a qualified person in regular intervals in order to make sure that they are taken out of service or repaired without delay if damaged or worn out.



Criteria for rejection from operation:

Component	Indicators
1. Identification Tag - Tag conforming to standard	> Missing or illegible tags
2. Load Securing Device - Lashing Chain	> Elongation of a single link at the outer length of more than 3 % > Elongation of a single link in the pitch of more than 5 % > Wear exceeding 10 % of the nominal diameter > Deformation > Surface cracks
3. Tensioning Element - Tensioner - Tightener - Multi purpose ratchet hoist	> Deformation > Cracks > Severe signs of wear > Severe corrosion
4. Component - End link - Chain connector - Shackle - Shortening claw - Shortening hook - Lashing hook	> Deformation > Cracks > Severe signs of wear > Severe corrosion > Hook widening by more than 10 %



Inspection of Lashing Chains

Do NOT use...

... round steel chains:

- with working load limit or lashing capacity lower than specified standards DIN EN 818-2/ PAS 1061/ ASTM 973
- without manufacturer identification

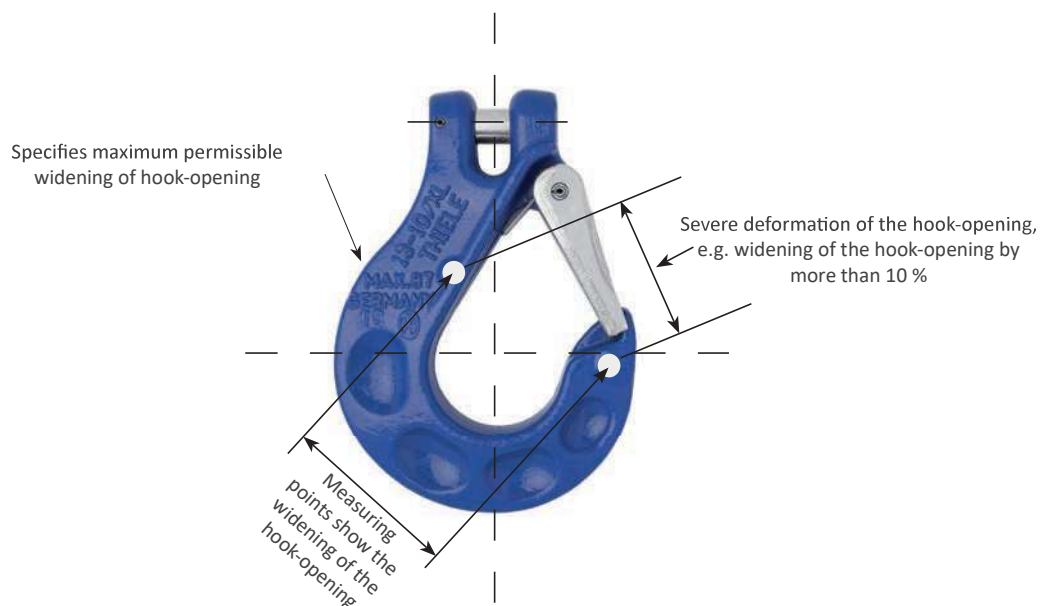
... tensioning elements:

- without screw removal mechanism
- without manufacturer identification
- with long extended handles that are capable of producing a pre-tensioning force over $0.5 \times LC$

... shortening components or lashing hooks:

- that may reduce the breaking force of the chain
- without safety latches or locking pins

Lashing Hooks / Sling Hooks with Safety Latch



The embossed maximum permissible limit with measuring points enables an easy check of the hook-opening.

Repair work must exclusively be performed by qualified personnel. Only clearly identifiable lashing chains are allowed to be repaired.

THIELE offers regular in-house and on-site competence trainings.

More detailed information about the inspection of lashing chains are provided in the THIELE operating instructions.



All operating and mounting instructions are available in the download-center on our website www.kwschain.com.

General Information

Identification Tags

THIELE lashing chains are equipped with an identification tag that specifies the characteristics of the chain. A clear identification of the chain is given and mix-ups are avoided. The information on the tags according to the DIN EN 12195-3 is required.

Identification Tag according to the DIN EN 12195-3:



Tags as per DIN EN 12195-3 show on their front the number of the standard specification, the name of the chain manufacturer, the inspection number, as well as a warning that the chain must not be used for lifting. On the back side of the tag the maximum permissible lashing capacity (LC) in kN and standard tensioning force (S_{TF}) in daN is hard-stamped.

How to use Lashing Chains

To ensure that lashing chains have a long service life, there are some aspects to be observed during operation:

- Do not overload lashing chains.
- The maximum hand force of 50 daN must only be applied manually.
The use of bars, levers or similar is prohibited.
- Make sure the lashing chain cannot damage the cargo and vice versa.
- Make use of e.g. edge protectors to prevent damage to the cargo and wear to the chain.
- Never use chains with knots or chains connected by screws, bolts or similar.
- To shorten chains, only use the shortening components offered and approved by the chain manufacturer, otherwise the safety of the chain cannot be granted.

TWN 1402



Identification Tags for Lashing Chains

The identification tags TWN 1402 are used to identify lashing chains and provide important information for safe operation. Lashing chains and chain slings may not be operated without identification tags.

Article-No.	Packaging Unit	Weight app. [lbs]
Z07264	1 piece	0.11



Grade 100 Lashing Chains and Components

TWN 1410



Lashing Chains with Tensioner

The Grade 100 lashing chains TWN 1410 with toggle and adjustable lashing chain have a standard length of 3,5 m and are used for heavy-duty lashing applications. The chain tensioners with toggle and trapezoidal thread achieve a high pretensioning force with little force impact. This property is of fundamental importance when lashing down, as the level of the pretensioning force contributes to load securing. The manufacturing and testing requirements are based on DIN EN 12195-3, under consideration of Grade 100 lashing capacities.

SAFETY
2 : 1

Trade Size	Article-No.	Normal straight load [daN] min.	Weight app. [lbs]
3/8"	F34183	13,000	62.59
5/8"	F34184	20,000	102.35

Other lengths available on request.

TWN 1411



Lashing Chains with Ratchet

The Grade 100 lashing chains TWN 1411 with ratchet and shortenable lashing chain have a standard length of 3,5 m and are used in the heavy-duty area for lashing loads in road traffic. The chain tensioners with ratchet and trapezoidal thread achieve a high pretensioning force with little force impact. This property is of fundamental importance when lashing down, as the level of the pretensioning force contributes to load securing. The manufacturing and testing requirements are based on DIN EN 12195-3, under consideration of Grade 100 lashing capacities.

SAFETY
2 : 1

Trade Size	Article-No.	Normal straight load [daN] min.	Weight app. [lbs]
1/2"	F34183R	13,000	46.30

Other lengths available on request.

**KWS****THIELE®**

Grade 100 Lashing Chains and Components

Lifting Chains XL200

Grade 100 lifting chains XL200 TWN0072 are made from CrNiMo alloyed steel and are used to assemble chain slings and lashing chains. The max. application temperature is 205°C (400 °F). The testing requirements for these high-quality lifting chains are based on DIN EN 818 and ASTM 973.

SAFETY
2 : 1

Trade Size	Article-No.	Lashing Capacity [lbs]	Nominal Size d_n [inch]	Pitch p_n [inch]	Inside Width w_2 [inch] min.	Outside Width w_3 [inch] max.	Weight app. [lbs/ft]
1/4"	F01616	3,100	0.24	0.71	0.33	0.87	0.54
9/32"	F01621	4,300	0.28	0.83	0.38	1.02	0.74
5/16"	F01617	5,700	0.31	0.94	0.44	1.17	1.01
3/8"	F01618	8,800	0.39	1.18	0.53	1.46	1.55
1/2"	F01619	15,000	0.51	1.54	0.71	1.89	2.62
5/8"	F01620	22,600	0.63	1.89	0.84	2.33	3.90

TWN 0072

Chain Tensioners with Toggle (Large Lift)

The Grade 100 chain tensioners TWN 1454 with toggle are used as tensioning elements in lashing chains. The chain tensioners can also be used in chain slings for stepless adjustment of strand lengths when lifting loads. These chain tensioners have a particularly large lift. The chain tensioners with toggle and trapezoidal thread achieve a high pretensioning force with little force impact. This property is of fundamental importance when lashing down, as the level of the pretensioning force contributes to load securing. The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677-1, under consideration of Grade 100 lashing capacities.

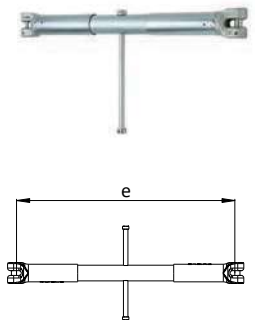
SAFETY
4 : 1
2 : 1

DGUV
ZERT

100 %

Trade Size	Article-No.	Working Load Limit [lbs]	Normal straight load [daN]	Lashing Capacity (LC) [daN]	Dimensions [inch]			Weight app. [lbs]
					e_{max}	e_{min}	lift	
1/2"	F341877	15,000	2,600	13,000	26.57	17.52	9.06	15.85
5/8"	F341977	22,600	3,100	20,000	32.68	21.65	11.02	26.01

If the products are initially used for lifting, e.g. internal transport, up to the load capacity, they can still be used as lashing products. If lifting products are used for lashing, they may no longer be used for lifting anymore!

TWN 1454

Chain Tensioners with Ratchet (Large Lift)

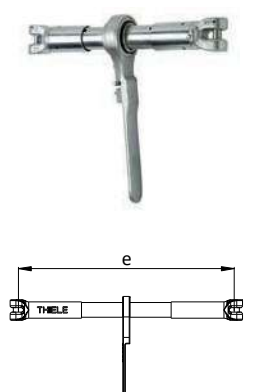
The Grade 100 chain tensioners TWN 1455 with ratchet are used as tensioning elements in lashing chains. The chain tensioners can also be used in chain slings for stepless adjustment of strand lengths when lifting loads. The chain tensioners have a particularly large lift. The chain tensioners with ratchet and trapezoidal thread achieve a high pretensioning force with little force impact. This property is of fundamental importance when lashing down, as the level of the pretensioning force contributes to load securing. The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677-1, under consideration of Grade 100 lashing capacities.

SAFETY
4 : 1
2 : 1

100 %

Trade Size	Article-No.	Working Load Limit [lbs]	Normal straight load [daN]	Lashing Capacity (LC) [daN]	Dimensions [inch]			Weight app. [lbs]
					e_{max}	e_{min}	lift	
1/2"	F341878	15,000	2,600	13,000	26.57	17.52	9.06	18.52

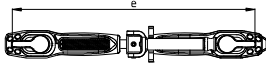
If the products are initially used for lifting, e.g. internal transport, up to the load capacity, they can still be used as lashing products. If lifting products are used for lashing, they may no longer be used for lifting anymore!

TWN 1455



Grade 100 Lashing Chains and Components

TWN 1460



Lashing Chain Tensioners **NEW**

The Grade 100 lashing chain tensioners TWN 1460 with shortening claws on both sides are used as tensioning elements in lashing chains. The chain tensioners can be positioned anywhere in the lashing chain and have a large clamping range. All functions (clamping, locking, unclamping) are carried out by the handy designed folding lever. Due to the folding lever, the chain tensioner is compact and requires little storage space. The chain tensioners enable a high pretensioning force with little effort due to the trapezoidal thread and comply with DIN EN 12195-3. The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677-1, under consideration of Grade 100 lashing capacities.

SAFETY
2 : 1

100 %

Trade Size	Article-No.	Normal straight load [daN]	Tensioner under straight load [daN]	Dimensions [inch]			Weight app. [lbs]
				e _{max}	e _{min}	lift	
5/16"*	F34209	2,000	5,000	-	-	-	-
3/8"	F34210	2,600	8,000	1508	1080	428	10.41
1/2"*	F34211	3,000	13,400	-	-	-	-
5/8"	F34212	3,000	20,000	-	-	-	-

*On request

Patented anti-rotation safety device



Compact due foldable handle (small storage room)



Grade 100 Lashing Chains and Components

Lashing Points with two weld-on Brackets

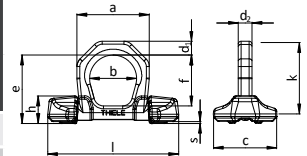
The weld-on lashing points TWN 1473 with two weld-on brackets are used for lashing of loads. The lashing points are predominantly welded to the vehicle frame (semi-trailers, trailers). The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677-1.



Trade Size	Article- No.	Article-No. (Ring only)	Lashing Capacity (LC) [daN]	Dimensions [inch]										Weight app.	
				d ₁	d ₂	b	a	l	e*	k	h	c	s	f	[lbs]
3/8"	F352001	F352002	8,000	0.55	0.55	1.89	2.91	5.28	2.91	2.91	1.10	2.56	0.08	2.24	1.74
1/2"	F352011	F352012	13,500	0.79	0.79	2.36	3.94	6.69	3.35	3.66	1.46	3.15	0.08	2.40	3.81

*Upright standing ring

TWN 1473



Pluggable Lashing Points

The pluggable lashing points TWN 1474 are used to secure loads on trucks. They are intended for temporary installation at the loading area. The lashing points consist of a forged pivot with welded B-link and a safety system consisting of a bolt and spring pin.

Installation for use is carried out by inserting the pin into the bearing bush from the loading area and securing it with the plug pin underneath the loading area.

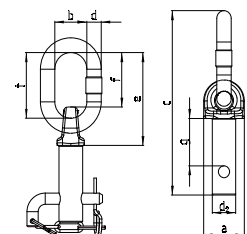
When not in use, the lashing points are installed from underneath at the loading area, with the loading area being closed flush. The pin is marked with information of the maximum lashing capacity LC in daN, manufacturers identification and traceability code.

The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677-1.



Article-No.	Lashing Capacity (LC) [daN]	Dimensions [inch]									Weight app. [lbs]
		d	f	t	b	e	d ₂	g	a	c	
F352255	8,000	0.63	2.28	2.76	1.38	3.90	1.02	2.01	1.77	7.76	2.18

TWN 1474



COMPACT Lashing Points with Spring

The weld-on COMPACT lashing points TWN 1880 with fixing springs are used for securing of loads. The lashing points are predominantly welded in recessed skip fittings and on vehicle frames (semi-trailers, trailers). The compact design allows a small installation space.

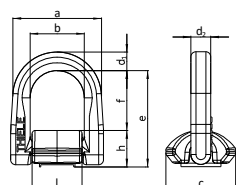
The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677-1.



Trade Size	Article-No.	Lashing Capacity (LC) [daN]	Dimensions [inch]									Weight app. [lbs]
			d ₁	d ₂	b	a	l	e*	h	c	f	
1/4"	F35204	3,000	0.51	0.55	1.50	2.56	1.38	2.68	1.02	1.97	1.65	0.90
5/16"	F35205	5,000	0.59	0.59	1.77	2.99	1.65	2.87	1.06	1.97	1.81	1.26
3/8"	F35206	8,000	0.67	0.67	1.97	3.35	1.81	3.43	1.22	2.17	2.20	1.85
1/2"	F35207	13,500	0.91	0.91	2.68	4.57	2.48	4.80	1.73	3.03	3.07	4.83
5/8"	F35208	20,000	1.06	1.06	2.72	5.12	2.48	4.96	2.13	3.62	2.83	7.39

*Upright standing ring

TWN 1880





Grade 100 Lashing Chains and Components

TWN 1890

XS-Points

The screw-type XS-Points TWN 1890 are predominantly used in mold making, tool making and vehicle construction. The extra large D-links enable an easy assembling to other lifting components. The bracket can be easily aligned in direction of force. The shape of the XS-Points allows the use of variable screw lengths. The manufacturing and testing requirements are based on the IOS 8539 and DIN EN 1677-1.



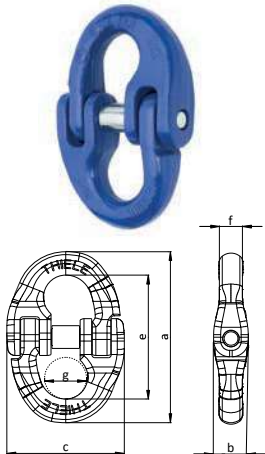
Screw Size d_g [inch]	Article- No.	Working Load Limit [lbs]	Thread Length l_g [inch]	Dimensions [inch]										Weight app. [lbs]
				e	f	c	l	t	b	h	d	SW	a	
M8 NEW	F352398	700	17	71	38	43	17	53	35	35	9	-	32	0.29
M10	F35243	1,400	17	71	37	43	17	53	35	35	9	16	32	0.29
M12	F35244	2,200	22	71	36	43	17	53	35	36	9	18	32	0.31
M16	F35245	3,700	28	98	46	64	25	70	50	52	13	24	48	0.96
M20	F35246	5,700	38	98	44	64	26	70	50	54	13	30	48	1.05
M24	F35247	8,800	40	135	70	71	28	102	58	65	16	36	50	1.69
M30	F35249	13,200	44	149	73	88	35	110	70	75	20	46	65	3.07
M36	F35250	18,100	64	149	70	88	35	110	70	79	20	55	67	3.55
M42	F35251	22,600	74	191	98	106	43	145	84	93	24	65	81	6.10
M48*	F35252	26,500	-	-	-	-	-	-	-	-	-	-	-	-

*On request

TWN 1820

XL-LOK Connecting Links

The Grade 100 XL-LOK connecting links TWN 1820 are used to connect lifting chains with sling components to assemble chain slings and lashing chains. The manufacturing and testing requirements are based on the ASTM A952/A952M, ISO 8539 and DIN EN 1677-1, under consideration of Grade 100 working load limits.

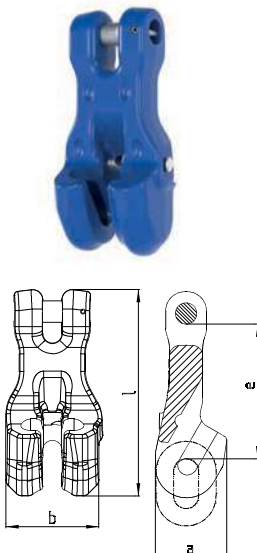


Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]						Weight app. [lbs]
			a	b	c	e	f	g	
1/4"	F30807	3,100	2.40	0.47	1.52	1.77	0.31	0.55	0.15
9/32"	F308090	4,300	2.80	0.55	1.85	1.99	0.35	0.63	0.31
5/16"	F30817	5,700	3.35	0.63	2.17	2.44	0.39	0.75	0.44
3/8"	F30827	8,800	3.82	0.71	2.62	2.83	0.51	0.94	0.77
1/2"	F30837	15,000	4.92	0.91	3.25	3.43	0.67	1.10	1.63
5/8"	F30847	22,600	5.75	1.24	4.29	4.13	0.83	1.34	2.65

TWN 1851/1

Clevis Shortening Claws with Safety Pin **NEW**

The Grade 100 clevis shortening claws TWN 1851/1 with safety pin are used to adjust the strand lengths of chain slings and lashing chains. The clevis design enables the direct attachment to the chain. The safety pin prevents the chain from accidental release. The shortening claws have been tested in interaction with the lifting chain. The chain pockets ensure a particularly tight fit for the inserted chain link. The safety bolt enables the use in lashing chains according to DIN EN 12195-3. The manufacturing and testing requirements correspond to the ASTM A952/A952M, ISO 8539, DIN EN 1677-1 and DIN 5692, under consideration of Grade 100 working load limits.



Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]				Weight app. [lbs]
			e	a	b	l	
1/4"	F349141	3,100	2.01	1.06	1.46	3.07	0.55
5/16"	F349241	5,700	2.56	1.34	1.81	3.94	1.10
3/8"	F349341	8,800	3.19	1.69	2.20	4.88	2.07
1/2"	F349441	15,000	4.17	2.20	2.87	6.38	4.48
5/8"	F349551	22,600	5.12	2.68	3.46	7.80	7.96

Grade 100 Lashing Chains and Components

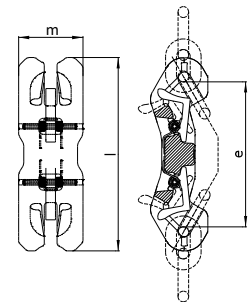
RAPID® Shortening Claws

The Grade 100 RAPID® shortening claws TWN 1852 are used to adjust the leg lengths of chain slings and lashing chains. Due to the double claws, the RAPID® shortening claws can be universally integrated to existing chain legs without permanently mounting them into the chain sling. The shortening claws have been tested in interaction with the chain slings. The chain pockets ensure a tight fit of the inserted chain link. The safety bolt enables the use in lashing chains according to DIN EN 12195-3. RAPID® shortening claws can be installed quickly and subsequently in chain slings and lashing chains without tools. The manufacturing and testing requirements correspond to the ASTM A952/A952M, ISO 8539, DIN EN 1677-1 and DIN 5692, under consideration of Grade 100 working load limits.



Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]			Weight app. [lbs]
			e	l	m	
5/16"	F34775	5,700	4.37	5.83	1.89	2.45
3/8"	F34780	8,800	5.28	7.09	2.36	4.61
1/2"	F34785	15,000	7.05	9.45	3.07	10.49
5/8"	F34790	22,600	8.82	11.65	3.78	20.00

TWN 1852



Clevis Shortening Hooks with Safety Pin

The Grade 100 clevis shortening hooks TWN 1827/1 with safety pin are used to adjust the leg lengths of chain slings and lashing chains. The clevis design enables the direct attachment to the chain. The safety pin prevents the chain strand from accidental release. The shortening hook has been tested in combination with the lifting chain. The extra wide chain support ensures a particularly firm fit for the inserted chain link. At the same time the link is protected from getting damaged. The safety bolt enables the use in lashing chains according to DIN EN 12195-3. The manufacturing and testing requirements correspond to the ASTM A952/A952M, ISO 8539, DIN EN 1677-1 and DIN 5692, under consideration of Grade 100 working load limits.

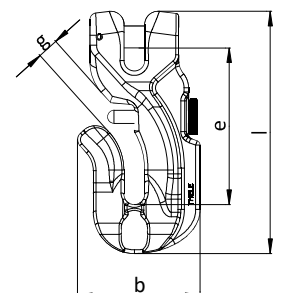


NEW:
Application and assembly video for the shortening hook with safety pin on YouTube!

Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]				Weight app. [lbs]
			e	g	l	b	
9/32" NEW	F332022	4,300	2.69	0.33	4.04	2.13	1.10
5/16"	F33205	5,700	2.80	0.37	4.33	2.20	1.19
3/8"	F33215	8,800	3.26	0.49	5.20	2.64	2.07
1/2"	F33225	15,000	4.29	0.61	6.61	3.27	4.41
5/8"	F33235	22,600	5.39	0.73	8.19	3.98	8.02

*on request

TWN 1827/1

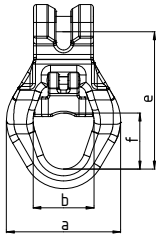


TZW



Grade 100 Lashing Chains and Components

TWN 1869



Clevis Skip Suspension Links for One-Hand Operation and Forged Safety Latch

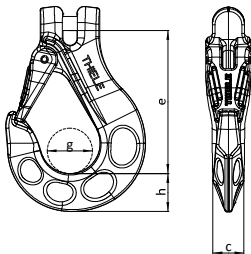
The Grade 100 skip suspension links TWN 1869 connect chain slings with the pivots on containers, e.g. containers according to DIN EN 30720. The shape of the eyelet is designed to fit container suspension pivots. The clevis design enables the direct attachment to the chain. The forged safety latch enables a one-hand operation. The manufacturing and testing requirements correspond to the ISO 8539 and DIN EN 1677-1, under consideration of Grade 100 working load limits.

SAFETY
4 : 1



Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]				Weight app. [lbs]
			e	f	b	a	
1/2"	F313805	15,000	5.59	2.26	2.56	4.80	4.28

TWN 1840/1



Clevis Sling Hooks with Forged Safety Latch

The Grade 100 clevis sling hooks TWN 1840/1 with latch are used to assemble standard chain slings and lashing chains. The clevis design enables the direct attachment to the lifting chain. Forged-in measuring points of the max. limit values of the hook opening enables easy control. The forged heavy duty safety latch prevents an unintentional detachment from the load. The sling hooks comply with the ASTM A952/A952M, ISO 7597 and DIN EN 1677-2, under consideration of Grade 100 working load limits.

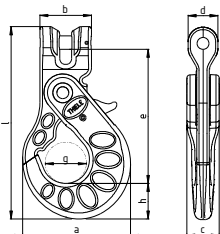
SAFETY
4 : 1

DGUV
ZERT



Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]				Weight app. [lbs]
			e	g	h	c	
1/4"	F336050	3,100	2.99	0.94	0.79	0.67	0.79
9/32"	NEW F336070	4,300	3.58	1.04	0.87	0.79	1.17
5/16"	F336150	5,700	3.70	1.18	0.98	0.87	1.68
3/8"	F336250	8,800	4.49	1.46	1.26	1.10	3.11
1/2"	F336350	15,000	5.28	1.65	1.61	1.38	5.47
5/8"	F336450	22,600	6.38	2.01	1.97	1.61	9.70

TWN 1899



Clevis Skip Suspension Hooks **NEW**

The Grade 100 skip suspension hooks TWN 1899 connect chain slings with the pivot of containers, e.g. containers according to DIN 30720. The shape of the hook opening is designed to fit container lifting pivots. The clevis design enables the direct attachment to the chain. The hooks lock automatically when load and may only be reopened manually if not under load anymore. The skip suspension hooks comply with DIN EN 1677-3, under consideration of Grade 100 working load limits.

SAFETY
4 : 1



Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]								Weight app. [lbs]
			e	c	g	h	d	b	a	l	
1/2"	F335100	15,000	6.54	1.57	2.01	1.65	1.46	2.52	5.31	9.41	7.36

Grade 80 Lashing Chains and Components

Lashing Chains with Tensioner

The Grade 80 lashing chains TWN 1400 with toggle and shortenable lashing chains have a standard length of 3,5 m and are used for heavy-duty lashing applications. The chain tensioners with toggle and trapezoidal thread achieve a high pretensioning force with little force impact. This property is of fundamental importance when lashing down, as the level of the pretensioning force contributes to load securing. The manufacturing and testing requirements are based on DIN EN 12195-3.

Trade Size	Article-No.	Lashing Capacity (LC) [daN]	Weight app. [lbs]
5/16"	F34171	4,000	18.74
3/8"	F34172	6,300	27.56
1/2"	F34173	10,000	46.30
5/8"	F34174	16,000	83.11

Other lengths available on request.

TWN 1400



Lashing Chains with Ratchet

The Grade 80 lashing chains TWN 1401 with ratchet and shortenable lashing chains have a standard length of 3,5 m and are used in the heavy-duty area for lashing loads in road traffic. The chain tensioners with ratchet and trapezoidal thread achieve a high pretensioning force with little force impact. This property is of fundamental importance when lashing down, as the level of the pretensioning force contributes to load securing. The manufacturing and testing requirements are based on DIN EN 12195-3.

Trade Size	Article-No.	Lashing Capacity (LC) [daN]	Weight app. [lbs]
5/16"	F34171R	4,000	18.74
3/8"	F34172R	6,300	27.56
1/2"	F34173R	10,000	46.30

Other lengths available on request.

TWN 1401



TWN 0805

Lifting Chains

The Grade 80 lifting chains TWN 0805 are made from CrNiMo alloy steel and are used to assemble chain slings and lashing chains. The max. application temperature is 752 °F (400 °C). The manufacturing and testing requirements of this lashing chains are based on the ASTM A973/A973M, ASTM A391/A391M, DIN EN 818-2 and also comply with the German Statutory Accident Insurance test principle GS-HM 37.

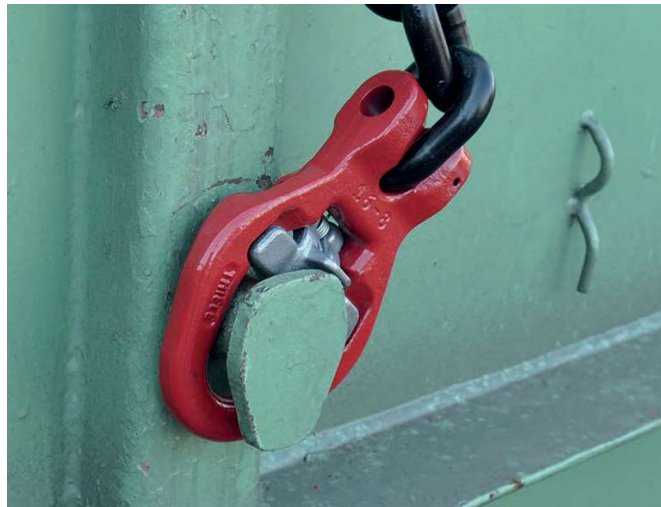
Trade Size	Article-No.				Working Load Limit [lbs]	Nominal Size d_n [inch]	Pitch p_n [inch]	Inside Width w_2 [inch] min.	Outside Width w_3 [inch] max.	Weight app. [lbs/ft]
	Self-coloured*	RAL 9005 (black)	Corrothiel*	Electro-galvanized*						
1/4"	F01452	F01453	F01454	F01448	2,500	0.24	0.71	0.31	0.87	0.55
9/32"	F01458	F01459	F01457	F014601	3,500	0.28	0.86	0.37	0.99	0.74
5/16"	F01464	F01465	F01429	F01433	4,500	0.31	0.94	0.43	1.17	0.98
3/8"	F01469	F01470	F01450	F01445	7,100	0.39	1.18	0.51	1.46	1.52
1/2"	F01474	F01475	F01476	F014781	12,000	0.51	1.54	0.69	1.89	2.53
5/8"	F01479	F01480	F01487	F014821	18,100	0.63	1.89	0.82	2.33	3.83

*Additional finishes: Electrogalvanized, hot dipped galvanized, corrotherm coated and mangan phosphated. Priced upon request.

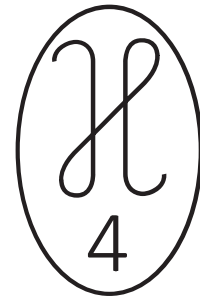
Lashing chains are identical in construction to sling chains of the same grade and trade size.

When using the sling chains as a lashing chain, the maximum lashing force LC (Lashing Capacity) results by doubling the load capacity WLL (Working Load Limit): $LC = 2 \times WLL$.

An alternative use of the chains as lashing and sling chains is not permitted!



THIELE manufacturer identification, also marked on THIELE-Chains



Approved Chain by the German Statutory Accident Insurance

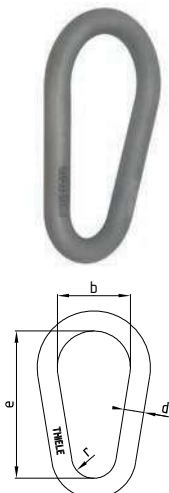
TWN 1479

Lashing Links

NEW

The Grade 80 lashing links TWN 1479 are mainly fitted in brackets of C-shaped side frames on heavy-duty trailers. The crack tested lashing links are used to secure loads in accordance with DIN EN 12640 and DIN EN 12195-1 and enable the tie down of heavy loads of diverse shapes, such as construction equipments. The manufacturing and testing requirements comply with the ISO 8539 and DIN EN 1677 parts 1 and 4.

SAFETY
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Trade Size	Article-No.	Lashing Capacity (LC) [daN]	Dimensions [inch]				Weight app. [lbs]
			d	t	b	b ₂	
10	F352354	10,000	0.67	4.92	2.44	1.50	1.30

Grade 80 Lashing Chains and Components

Chain Tensioners with Toggle

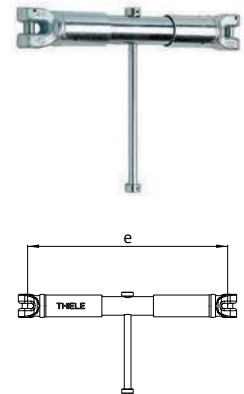
The Grade 80 chain tensioners TWN 1450 with toggle are used as tensioning elements in lashing chains. The chain tensioners can also be used in chain slings for stepless adjustment of the strand lengths when lifting loads. The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677-1.



Trade Size	Article-No.	Working Load Limit [lbs]	Normal straight load [daN]	Lashing Capacity (LC) [daN]	Dimensions [inch]			Weight app. [lbs]
					e _{max}	e _{min}	lift	
5/16"	F34179	4,500	1,800	4,000	13.58	10.63	2.95	4.63
3/8"	F34199	7,100	2,200	6,300	14.76	10.83	3.94	5.95
1/2"	F34189	12,000	2,600	10,000	18.11	12.99	5.12	8.82

If the products are initially used for lifting, e.g. internal transport, up to the load capacity, they can still be used as lashing products. If lifting products are used for lashing, they may no longer be used for lifting anymore!

TWN 1450



Chain Tensioners with Ratchet

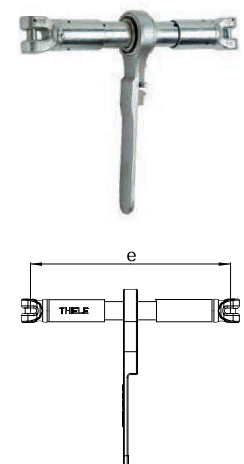
The Grade 80 chain tensioners TWN 1451 with ratchet are used as tensioning elements in lashing chains. The chain tensioners can also be used in chain slings for stepless adjustment of the strand lengths when lifting loads. The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677-1.



Trade Size	Article-No.	Working Load Limit [lbs]	Normal straight load [daN]	Lashing Capacity (LC) [daN]	Dimensions [inch]			Weight app. [lbs]
					e _{max}	e _{min}	lift	
5/16"	F34175	4,500	1,800	4,000	13.58	10.63	2.95	5.51
3/8"	F34195	7,100	2,200	6,300	14.76	10.83	3.94	7.72
1/2"	F34185	12,000	2,600	10,000	18.11	12.99	5.12	11.02

If the products are initially used for lifting, e.g. internal transport, up to the load capacity, they can still be used as lashing products. If lifting products are used for lashing, they may no longer be used for lifting anymore!

TWN 1451



Chain Tensioners with Toggle (Large Lift)

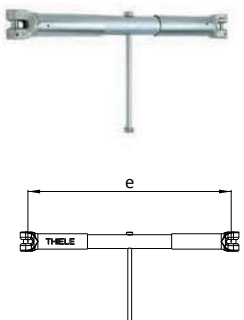
The Grade 80 chain tensioners TWN 1452 with toggle are used as tensioning elements in lashing chains. The chain tensioners can also be used in chain slings for stepless adjustment of the strand lengths when lifting loads. The chain tensioners have a particularly large lift. The chain tensioner with ratchet and trapezoidal thread achieve a high pretensioning force with little force impact. This property is of fundamental importance when lashing down, as the level of the pretensioning force contributes to load securing. The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677-1.



Trade Size	Article-No.	Working Load Limit [lbs]	Normal straight load [daN]	Lashing Capacity (LC) [daN]	Dimensions [inch]			Weight app. [lbs]
					e _{max}	e _{min}	lift	
1/2"	F341871	12,000	2,600	10,000	26.57	17.52	9.06	15.87
5/8"	F34197	18,100	3,100	16,000	32.68	21.65	11.02	26.01

If the products are initially used for lifting, e.g. internal transport, up to the load capacity, they can still be used as lashing products. If lifting products are used for lashing, they may no longer be used for lifting anymore!

TWN 1452



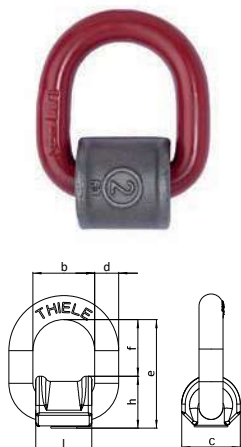


Grade 80 Lashing Chains and Components

TWN 0119A

Weld-on type Lifting Points

The weld-on lifting points TWN 0119A are used for universal lifting, moving and lashing of loads. The lifting points are often welded to machine frames, steel structures, lifting beams and housings. The manufacturing and testing requirements are based on DIN EN 1677-1 and ISO 8539.



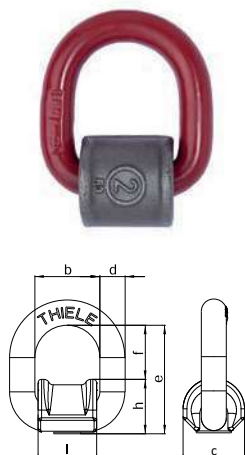
Trade Size	Article-No.	Working Load Limit [lbs]	Lashing Capacity (LC) [daN]	Dimensions [inch]							Weight app. [lbs]
				e*	f*	c	l	b	h	d	
1/4"	F35103A	2,500	2,200	2.32	1.22	1.26	1.26	1.42	1.10	0.47	0.53
5/16"	F35113A	4,500	4,000	2.72	1.42	1.50	1.50	1.65	1.30	0.55	1.01
3/8"	F35123A	7,100	6,300	3.35	1.81	1.77	1.73	1.89	1.50	0.71	1.59
1/2"	F35133A	12,000	10,600	4.72	2.72	2.36	2.36	2.60	2.01	0.94	4.25
5/8"	F35143A	18,100	16,000	5.00	2.60	2.68	2.56	2.83	2.40	1.10	5.89

*e- and f-Dimension vertical to the welding level.

TWN 0124

Weld-on type Lifting Points with Spring

The weld-on lifting points TWN 0124 with spring are used for general lifting, moving and lashing of loads. The lifting points are often welded onto machine frames, steel constructions, lifting beams and housings. The D-ring is being held in position by a spring. The manufacturing and testing requirements comply with DIN EN 1677-1 and ISO 8539.



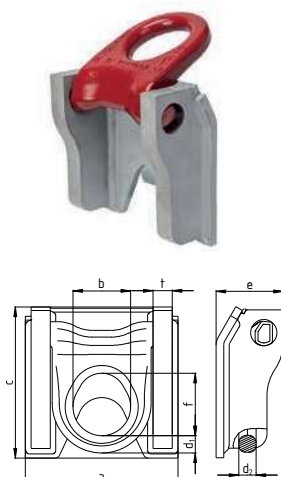
Trade Size	Article-No.	Working Load Limit [lbs]	Lashing Capacity (LC) [daN]	Dimensions [inch]							Weight app. [lbs]
				e*	f*	c	l	b	h	d	
6-8	F35107	2,500	2,200	2.24	1.14	1.26	1.26	1.42	1.10	0.47	0.53
8-8	F35110	4,500	4,000	2.64	1.34	1.50	1.50	1.65	1.30	0.55	1.01
10-8	F35124	7,100	6,300	3.19	1.69	1.77	1.73	1.89	1.50	0.71	1.59
13-8	F35139	12,000	10,600	4.61	2.60	2.36	2.36	2.60	2.13	0.94	3.55
16-8	F35144	18,100	16,000	4.80	2.40	2.68	2.56	2.83	2.40	1.10	5.89

*e- and f-Dimension vertical to the welding level.

TWN 1477

ZKS-Modules NEW

The weld-on ZKS-modules TWN 1477 are predominantly installed in C-shaped side frames of low-loaders and trailers. The large swivel range also allows the securing of overhanging loads. The pivotable large lashing eyelet built into the cassette enables a fixed mounting position for easy connection with the lashing equipment. The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677-1.



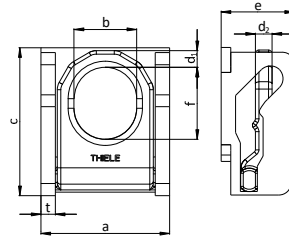
Trade Size	Article-No.	Lashing Capacity (LC) [daN]	Dimensions [inch]								Weight app. [lbs]
			d ₁	d ₂	b	a	t	e	c	f	
10	F352376	10,000	0.71	0.71	2.36	6.26	0.79	2.76	6.20	2.56	10.91

Lashing Points, Weld-on Type

TWN 1471 ZK-Modules with Stressless Lashing®

NEW

The weld-on ZK-modules TWN 1471 are predominantly installed in C-shaped side frames of low-loaders and trailers. The large swivel range also allows the securing of overhanging loads. A newly developed, patented cassette design enables a fixed mounting position for easy connection to the lashing equipment. Stressless Lashing® in perfection. The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677-1.



SAFETY
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Trade Size	Article-No.	Execution*	Lashing Capacity (LC) [daN] max.	Dimensions [inch]								Weight app. [lbs]
				d ₁	d ₂	b	a	t	e	c	f	
5	F352390	N	5,000	0.55	0.55	2.05	4.21	0.47	2.40	4.69	2.36	4.23
5	F352395	S	5,000	0.55	0.55	2.05	4.21	0.47	2.40	4.69	2.36	4.30
10	F352380	N	10,000	0.71	0.71	2.44	5.39	0.59	2.87	5.67	3.07	7.61
10	F352385	S	10,000	0.71	0.71	2.44	5.39	0.59	2.87	5.67	3.07	7.63

* The sheets of the lashing cassette in the execution „N“ (=Normal) are produced in micro-alloyed steel. The execution „S“ (=Special) are produced from special steel and are therefore capable to get hot dip galvanized (up to 500°C) with the vehicle frame.

General information

The standard DIN EN 12640 specifies the minimum testing requirements for lashing points on road trucks and trailers with flatbed bodies and a permissible total weight of more than 3,5 t for mixed cargo transportation. Lashing points are devices to attach lashing gear. A lashing point can be an oval link, hook, lug or lashing rail. These types of lashing points may lead to safety issues when in operation.

A non-appropriate dimensioning and use of non-suitable lashing points, as well as the damage of the lashing points and frames of the vehicle, shows a high potential danger in traffic. In operation, oval links are often exposed to unforeseen torque which may cause a damage to the body-work of the vehicles. Very often required inclination angles are not properly considered. Further, oval links can cause unnecessary noise exposure in traffic. The developed THIELE ZK-Modules (lashing ring with cassette) may be easily fitted and adopted at the side frames of trailers.

The ZK-Modules are marked with permissible lashing capacity (LC), manufacturer name (THIELE) and standard number (DIN EN 12640). Official agencies may easily check the correct installation. The ZK-Modules made by THIELE provides highest safety for load securing in the heavy-duty road traffic.



YouTube video of
the ZK-module

Positions:



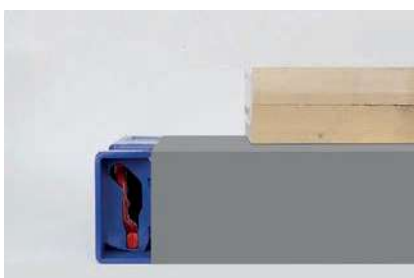
Rest Position



Hold Position



Position for oversized load



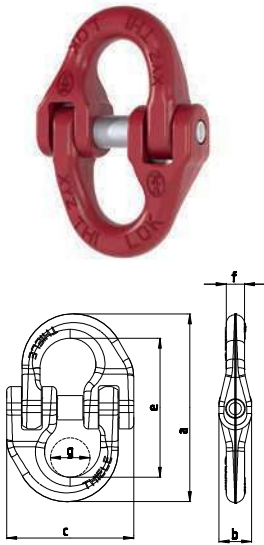


Grade 80 Lashing Chains and Components

TWN 1320

THI-LOK® Connecting Links

The Grade 80 THI-LOK® connecting links TWN 1320 are used to connect lifting chains with lifting components to assemble chain slings. The manufacturing and testing requirements correspond to the ASTM A952/A952M, ISO 8539 and DIN EN 1677-1.



Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]						Weight app. [lbs]
			e	g	a	c	b	f	
1/4"	F308061	2,500	1.54	0.51	2.09	1.50	0.43	0.28	0.18
9/32"	F308151	3,500	1.85	0.63	2.56	1.89	0.51	0.31	0.26
5/16"	F308161	4,500	2.13	0.71	2.91	2.09	0.55	0.35	0.37
3/8"	F308261	7,100	2.52	0.87	3.46	2.44	0.71	0.47	0.64
1/2"	F308361	12,000	3.39	1.02	4.65	3.03	0.91	0.59	1.37
5/8"	F308461	18,100	4.02	1.42	5.55	3.94	1.14	0.75	2.56

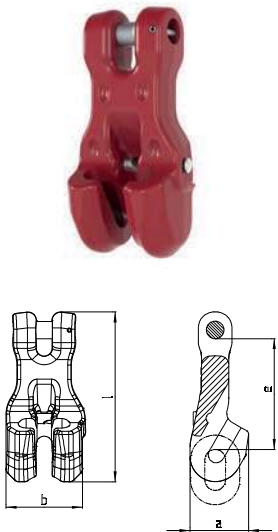
TWN 0851/1

Clevis Shortening Claws with Safety Pin

NEW

The Grade 80 clevis shortening claws TWN 0851/1 with safety pin are used to adjust the lengths of chain slings, lifting and lashing chains. The clevis design enables the direct attachment to the lifting chain.

The safety pin prevents unintentional detachment of the chain. The shortening claws have been tested in interaction with lifting chain. The chain pockets ensure a particularly tight fit for the inserted chain link. The safety bolt enables the use in lashing chains according to DIN EN 12195-3. The manufacturing and testing requirements correspond to the ASTM A952/A952M, ISO 8539, DIN EN 1677-1 and DIN 5692.

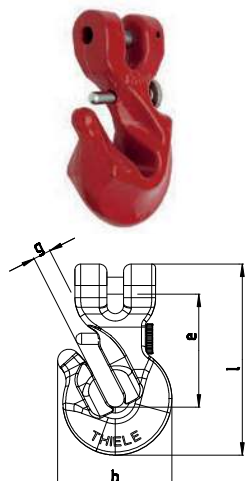


Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]				Weight app. [lbs]
			e	l	b	a	
1/4"	F349101	2,500	2.01	1.06	1.46	3.07	0.55
5/16"	F349201	4,500	2.56	1.34	1.79	3.94	1.10
3/8"	F349301	7,100	3.19	1.69	2.20	4.88	2.05
1/2"	F349401	12,000	4.17	2.20	2.87	6.38	4.48
5/8"	F349501	18,100	5.12	2.68	3.46	7.60	7.94

TWN 0827/1

Clevis Shortening Hooks with Safety Pin

The Grade 80 clevis shortening hooks with safety pin TWN 0827/1 are used to adjust the length of chain slings and lashing chains. The clevis design enables the direct attachment to the lifting chain. The safety pin prevents the chain from accidental release. The manufacturing and testing requirements correspond to the ASTM A952/A952M, ISO 8539, DIN EN 1677-1 and DIN 5692.



Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]				Weight app. [lbs]
			e	g	l	b	
5/16"	F33201	4,500	2.40	0.37	4.02	2.40	1.21
3/8"	F33211	7,100	2.87	0.47	4.92	2.95	2.22
1/2"	F33221	12,000	3.70	0.59	6.30	3.74	4.63
5/8"	F33231	18,100	4.41	0.71	7.40	4.72	7.75

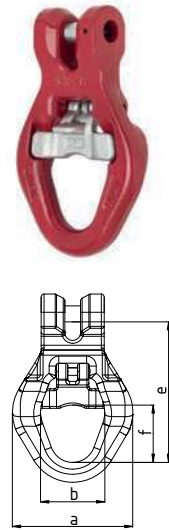
Grade 80 Lashing Chains and Components

Clevis Skip Suspension Links for One-Hand Operation and Forged Safety Latch

The Grade 80 skip suspension links TWN 0869 connect chain slings with the pivot of containers, e.g. containers according to DIN 30720. The shape of the eyelet is designed to fit container suspension pivots. The clevis design enables the direct attachment to the lifting chain. The forged safety latch allows a safe one-hand operation. The manufacturing and testing requirements are based on the ISO 8539 and DIN EN 1677 parts 1 and 4.

Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]				Weight app. [lbs]
			e	a	f	b	
1/2"	F313800	12,000	5.59	2.26	2.56	4.80	4.23
5/8"	F313850	18,100	5.55	2.26	2.56	4.80	4.23

TWN 0869

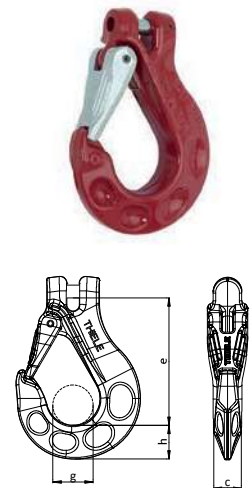


Clevis Sling Hooks with Forged Safety Latch

The Grade 80 clevis sling hooks TWN 1340/1 with latch are used to assemble universal chain slings and lashing chains. The clevis design enables the direct attachment to the lifting chain. The forged heavy duty safety latch prevents an unintentional detachment from the load. The sling hooks comply with the ASTM A952/A952M, ISO 7597 and DIN EN 1677-2.

Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]				Weight app. [lbs]
			e	g	h	c	
1/4"	F336010	2,500	2.95	0.94	0.79	0.67	0.79
5/16"	F336110	4,500	3.62	1.18	0.98	0.87	1.68
3/8"	F336210	7,100	4.45	1.46	1.26	1.10	3.11
1/2"	F336310	12,000	5.24	1.65	1.61	1.38	5.45
5/8"	F336410	18,100	6.38	2.01	1.97	1.61	13.23

TWN 1340/1

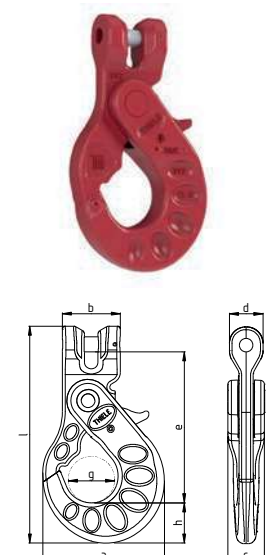


Clevis Skip Suspension Hooks NEW

The Grade 80 skip suspension hooks TWN 1399 connect chain slings with the pivot of containers, e.g. containers according to DIN 30720. The shape of the hooks is designed to fit container lifting pivots. The clevis design enables the direct attachment to the lifting chain. The hooks lock automatically under load and may only be reopened manually if not under load anymore. The skip suspension hooks comply with DIN EN 1677-3.

Trade Size	Article-No.	Working Load Limit [lbs]	Dimensions [inch]								Weight app. [lbs]
			e	c	g	h	d	b	a	l	
1/2"	F335000	12,000	65.75	15.75	20.08	16.54	14.57	25.20	53.15	94.09	7.36
5/8"	F335300	18,100	64.96	15.75	20.08	16.54	14.57	25.20	53.15	94.09	7.36

TWN 1399





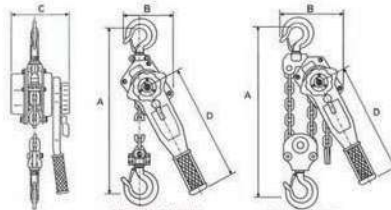
TM Lever Blocks TWN 1001

Properties:

- With overload protection
- Light weight robust steel construction
- THIELE alloy load chain according to the DIN EN 818-7-T
- Minimized headroom
- Minimum effort needed to raise maximum load
- Hooks with strong casted safety latches
- Approved for tensioning according to the DIN EN 12195-3
- Protected automatic weston brake with unique twin pawls
- Galvanized hand chains
- Corrosion protection of galvanized load chains
- Durable baked enamel paint protection
- Standard spare parts available
- TÜV-, GS-certified
- Supplied with THIELE test certificates
- Manuals available in 7 languages



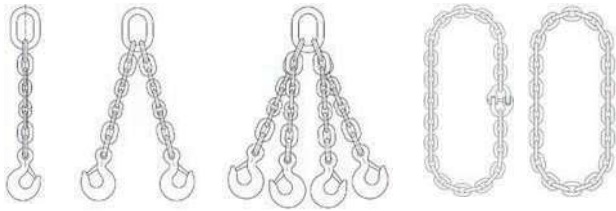


The TM Lever Blocks TWN 1001 are hand operated, portable devices for pulling, lifting and moving of loads. They can also be used as lashing devices in accordance to the DIN EN 12195-3. The integrated slipping clutch works as over-load protection. The galvanized THIELE-load chains TWN 0062 comply with the requirements of the DIN EN 818-7.



	Unit	TM-LB 025*	TM-LB-OP 075N	TM-LB-OP 150N	TM-LB-OP 300N	TM-LB-OP 600N
Working Load Limit / Lashing Capacity	[t]	0,25	0,75	1,5	3,0	6,0
Lift app. 5 ft. (1,50 m)	[Article-No.]	F061901	F062411	F062511	F062611	F062711
Lift app. 10 ft. (3,05 m)	[Article-No.]	F061902	F062412	F062512	F062612	F062712
Lift app. 15 ft. (4,60 m)	[Article-No.]	F061903	F062413	F062513	F062613	F062713
Lift app. 20 ft. (6,10 m)	[Article-No.]	F061904	F062414	F062514	F062614	F062714
Falls of chain	[pieces]	1	1	1	1	2
Effort to lift for max. Working Load	[lbs]	5.51	30.86	48.50	70.55	74.96
Load chain diameter	[inch]	0.16	0.24	0.31	0.39	0.39
Length of lever handle (D)	[inch]	6.30	11.02	16.14	16.14	16.14
Headroom (A)	[inch]	9.06	12.80	14.96	18.90	24.41
Width (B)	[inch]	3.35	5.35	6.30	7.09	9.25
Depth (C)	[inch]	3.62	5.83	6.77	7.87	7.87
Hook-opening (upper)	[inch]	0.98	1.65	1.81	2.13	2.44
Hook-opening (lower)	[inch]	0.98	1.65	1.81	2.13	2.44
Net weight (Lift app. 5ft.)	[lbs]	5.22	15.65	29.10	47.95	72.69
Lever block only	[Article-No.]	F06192	F06243	F06253	F06263	F06273

*TM-LB 025 without overload protection

Safety Instructions and Requirements (Vers. B11082-D US 07.23)

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

Do not use a chain sling before reading these operating instructions.



DEFINITIONS

Clevis

A U-shaped fitting with pin.

Working Load Limit (WLL)

The maximum load which a chain sling is designed to support in direct tension without shock loading at a designated sling angle of lift.

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

Read ASME B30.10 "Hooks".

Read ASME B30.26 "Rigging Hardware",

pChapters 26-0, 26-1, 26-4.

If chain slings are used with lifting magnets, read ASME B30.20 "Below-the Hook-Lifting-Devices", Chapter 20-4.

1. ABOUT THIS INSTRUCTION

These operating instructions describes in particular how sling chains according to TWN 0805A grade 80, TWN 0072 and TWN 1805 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 avoid hazards and increases the reliability and service life of the chain slings.



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 the 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" #.

The working load limits have now also been adjusted.

2. BASIC SAFETY REQUIREMENTS

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

The working load limit must not be exceeded!

Only use lifting and attachment means free from defects!

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



- 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), 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.

Safety Instructions and Requirements (Vers. B11082-D US 07.23)

SAFETY INSTRUCTIONS

- 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 sling chains.
- 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 13.
- During operation work, wear your personal protective equipment!
- **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 chain slings.
- Only lift loads that do not exceed the working load limit of the chain sling.
- Never expose chains to loads exceeding the specified working load limits.
- Position the load hook above the load's center of gravity.
- Do not use force when mounting/positioning the attachment components.
- The load must resist and tolerate the forces to be applied without suffering deformation.
- Do not tip-load a hook.
- Do not twist or knot the chains together.
- When using shortening elements without additional safety means (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.
- Avoid sharp edges. Use edge protectors or reduce the working load limit by 20 %.
- The working load limit must be reduced in the following cases
 - if the load is not balanced symmetrically,
 - if the chain is used in choke hitch applications,
 - when higher temperatures prevail,
 - when high dynamic and cyclic loads arise (automated or multi-shift operation),
 - when lifting magnets are employed.
- In case of multi-leg chain slings never allow sling angles of less than 30° and in excess of 75°.
- Hooks shall have well-functioning safety latches.
- Attach unused chain legs to the suspension link.

- Suspension links must be allowed to move freely in the crane hook.
- 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.
- Use only shortening/grab hooks or claws for chain shortening purposes.
- Shortening hooks must not be attached directly to loads, e.g. metal sheets.
- For shortening claws, only the chain coming out of the bottom of the claw pocket must be loaded.
- Only chain legs and shortening elements of the same nominal size and grade may be connected.
- Shortening elements must be allowed to move freely in all tensile directions.
- Safeguard chain slings to prevent slipping when using the basket hitch application method.
- 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 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.
- Never move a suspended load over persons.
- Never cause suspended loads to swing.
- Always monitor a suspended load.
- Put the load down only in flat places/sites where it can be safely deposited.
- Do not allow a chain sling getting caught under the load.
- Assume for sufficient space 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, chain slings are not permitted for the transportation of persons.

Safety Instructions and Requirements (Vers. B11082-D US 07.23)

3. DESCRIPTION AND INTENDED USE

THIELE sling chains and attachment components form part of chain slings and are intended for a safe transportation of loads.

These operating instructions describe in particular how sling chains according to TWN 0805A grade 80, TWN 0072 and TWN 1805 grade 100 (TWN = THIELE Shop Standard) are to be safely used for lifting purposes.

THIELE chain slings of the following design configurations are available:

- assembled with clevis fastening system,
- assembled with connecting links,
- assembled with clevis fastening system and connecting links,
- as welded chain sling,
- as welded endless chain,
- as endless chain with mounted connector.

THIELE sling chains and chain slings meet EC-Machinery Directive 2006/42/EC requirements and feature a safety factor of at least 4 based on working load limit.

Sling chains and pertinent components are marked with nominal chain size and grade data, manufacturer's symbol and traceability code.

THIELE chain slings and attachment 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, magnetic spreaders), the working load limit must be reduced.

Chain slings shall be composed of sling chains and components of identical nominal chain size and grade. In case of deviating configuration the pertinent documentation (operating instructions etc.) must be suitably modified.

Sling chains according to TWN 0805A, TWN 0072 and TWN 1805 as well as the related attachment components and connecting links are intended for use as chain slings according to ASTM A 906/A 906 M for lifting of loads.



Chain slings must only be used

- if mass and center of gravity of the load are known or have been professionally estimated,
- within the limits of their permissible working load limit,
- for permissible attachment methods and sling angles,
- within the temperature limits prescribed,
- with suitable connecting links, attachment components or shortening elements,
- by trained and authorized persons.

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



Chain slings must not be employed for binding, rigging, lashing or as hoist chains.

Shortening elements must not be connected directly to the load!

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 certificate 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.

Safety Instructions and Requirements (Vers. B11082-D US 07.23)

6. ASSEMBLY AND REMOVAL

6.1 Preparations

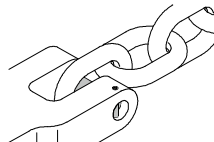
All components to be installed or used must be in perfect condition and the relevant working load limits of all parts must accommodate the respective load to be handled.

6.2 Chain assembly

When assembling or disassembling chain slings the relevant assembly and operating instructions issued for the components must be observed.

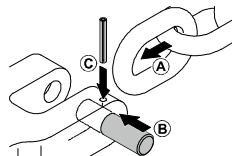
6.3 Clevis fastening system

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



6.3.1 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.



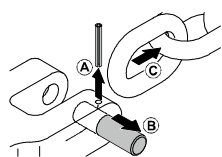
Check whether the chain runs smoothly.

The dowel pins must only be installed once.

Only connect pins and attachment components of identical grades. Starting with $\varnothing \frac{1}{2}$ " the pins are marked on the front end.

6.3.2 DISASSEMBLY

- Slacken the respective chain leg.
- (A) Drive dowel pin out using hammer and drift punch ¹⁾.
- (B) Push pin out using a drift punch.
- (C) Remove the chain.



1) Suitable drift punches are available by article no. Z03303.

7. CONDITIONS OF USE

7.1 Normal use



When 4-leg chain slings are used there is a risk that the load will act on two oppositely located chain legs only. In such a case, check the working load limit of the chain sling and use a chain sling with a higher working load limit. #

Shortening individual chain legs is indicative of a non-symmetrical load distribution. In this case, the working load limit must be reduced.

If choke hitch applications are involved the working load limit is to be additionally reduced by 20 %.

When using hooks without safety latch, e.g. due to operational necessities, special care is to be taken, and a separate risk analysis must be carried out before operation.



When attaching components, observe the correct position of the connecting links.

Relevant forces must act in longitudinal direction.



If two chain legs are assembled into one connecting link half for alternate use of the legs, only one chain leg must be subjected to loads!

If not all chain legs in a multi-leg chain sling are used, the working load limit is to be reduced according to the following table:

Total number of legs	Number of legs to be put to use	Use factor relevant to WLL specified
2	1	1/2
3 or 4	2	2/3
3 or 4	1	1/3

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7.2 Influence of temperature



The respective temperature range limits must be considered for all components used. Using chain slings in high temperatures will cause the working load limit to be reduced as indicated below.

Grade TWN	Temperature range	Remaining WLL
Grade 80 TWN 0805	-40 °C ≤ t ≤ 205 °C -40 °F ≤ t ≤ 400 °F	100 %
	205 °C < t ≤ 300 °C 400 °F < t ≤ 572 °F	90 %
	300 °C < t ≤ 400 °C 572 °F < t ≤ 752 °F	75 %
Grade 100 TWN 0072	-40 °C ≤ t ≤ 205 °C -40 °F ≤ t ≤ 400 °F	100 %
Grade 100 TWN 1805	-30 °C ≤ t ≤ 205 °C -22 °F ≤ t ≤ 400 °F	100 %



If the chain slings have been exposed to temperatures exceeding the maximum values specified they must not be used furthermore.

7.3 Environmental influence



Chain slings 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.

7.4 Special hazardous conditions



The degree of danger when used in offshore applications, the lifting of hazardous loads, such as for example liquid metal or similar, 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.

For applications in abrasive blasting environments short inspection intervals must be scheduled. Selecting a welded chain sling of the next bigger nominal size increases the permissible wear allowance.

7.5 Asymmetrical load balancing



In the case of multi-leg sling chains, if the individual legs have different sling angles, the greatest stress occurs in the single leg with the smallest sling angle. In the extreme case, a vertically hanging single leg will carry the entire load.

In case of an asymmetrical load, the lifting operation must be approved by an expert. Alternatively, the working load limit should be reduced to half of the marked working load limit.

8. GENERAL NOTES ON ATTACHMENT COMPONENTS

8.1 Connecting links



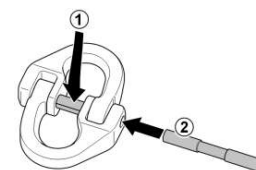
In mounted chain slings the chains are, for example, joined to other components by the use of connecting links. In this way, components can be mounted the nominal size of which deviates from that of the chain.

Sizes and grades of sling chains and connecting links must always coincide!

8.1.1 ASSEMBLY

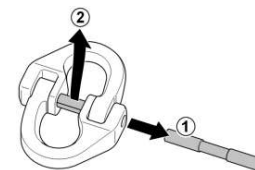
Install the connecting link halves in the components to be connected and join both halves.

1. Position split sleeve as shown.
2. Push pin up to the split sleeve, align pin bevels to suit split sleeve and drive the pin in using a hammer.
3. Check to make sure split sleeve safely embraces the pin centrally.



8.1.2 DISASSEMBLY

1. Use drift to drive pin out.
2. Remove the split sleeve.
3. Separate connecting link halves from the components they joined.



A set of drifts according to TWN 0945 is available by article no. Z03303.

The split sleeves must only be installed once.

The components to be connected must be able to move freely within the connecting link half they are placed in.

8.2 Shortening elements

A shortening element within a chain leg is intended only to shorten the effective length to optimize the balance of the whole system.

When using shortening elements, such as for example shortening hooks or claws, please read the respective separate operating and/or assembly instructions.

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9. IDENTIFICATION/ MARKING

An identification tag must be attached to the chain sling adjacent to the master link.

The identification tag must show

- name or trademark of manufacturer
- nominal chain size
- grade
- number of legs
- rated load and corresponding sling angle
- length/reach
- individual identification/serial number

10. INSPECTION, MAINTENANCE, DISPOSAL

10.1 General



Inspections and maintenance must be arranged by the owner!

Inspection intervals shall 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 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 inspections 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 chain slings that show the following defects:

- missing or illegible identification/markings,
- deformation, elongation or fractures of chain links or components,
- cuts, notches, cracks, incipient cracks, pinching,
- links heated beyond permissible limit,
- severe corrosion,
- pitch elongation of individual chain links by more than 5 % each,
- reduction of the average diameter of more than 10 % as mean value of measurements taken perpendicularly towards each other,
- impaired or missing safety systems, for example if the hooks' safety latch is defect,
- widening of the hook opening by more than 10 % or if the safe seating of the hook safety latch is no longer ensured
- limited hinging capability of connecting links (e.g. halves get stuck),
- wear in excess of 10 %, e.g. in the receiving area of the connecting link halves or of the pin diameter,
- missing or damaged pin locks or removal of preventing guards



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).

The following chain gauges are available to be used during chain inspections:

Nominal size		Article no.
Grade 80		F48856
1/4"	Grade 100	F01690
5/16	Grade 100	F01691
3/8	Grade 100	F01692
1/2	Grade 100	F01693
5/8	Grade 100	F01694

10.2 Inspection service

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

10.3 Maintenance and repair



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



Do not repair or replace individual chain links but replace complete chain legs only.

If the safety latch of hooks does not engage properly with the tip of the hook, probably not only the hook but also the corresponding chain leg has been overloaded. In all such cases, all items used in the respective leg must be replaced (chain, shortening element, ring shackle etc.).

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.

Welded chain slings must exclusively be repaired by the manufacturer.

All maintenance and repair activities must be documented properly.

10.4 Disposal

NOTICE

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

11. SPARE PARTS - ARTICLE NUMBERS FOR SLING CHAINS AND OTHER COMPONENTS



Use only original spare parts.

Detailed information on spare parts for other THIELE-components can be found in the respective component instructions that are available for download on www.thiele.de, www.kwschain.com or upon request.

12. STORAGE

NOTICE

Chain slings must be stored properly sorted, suspended and in dry conditions at temperatures between 32 °F and 104 °F.

Do not store in a manner that causes mechanical damage.

13. THIELE OPERATING AND MOUNTING INSTRUCTIONS

NOTICE

All current and updated operating and mounting instructions are available in the download-center on our website www.kwschain.com and www.thiele.de.



14. PUBLISHING INFORMATION

Distributor:

KWS Inc.
P.O. Box 470487 | Tulsa, OK 74147 | USA

Toll Free: +1 (800) 872-9313
Phone: +1 (539) 367-2274
Fax: +1 (539) 367-2278
Email: sales@kwschain.com
Web: www.kwschain.com

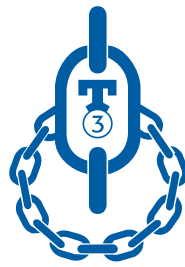
Manufacturer:

THIELE GmbH & Co. KG
Werkstraße 3 | 58640 Iserlohn | Germany

Phone: +49 2371 947-0
Fax: +49 2371 947-241
Email: info@thiele.de
Web: www.thiele.de



KWS
INC.



THIELE®

KWS Inc.

P.O. Box 470487
Tulsa, OK 74147
USA

Toll Free: +1 (800) 872-9313
Phone: +1 (539) 367-2274
Fax: +1 (539) 367-2278
Email: sales@kwschain.com
Website: www.kwschain.com

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