

Lashing equipment

Secure your load – and yourself!

Whether for professionals or for private persons: securing loads is a topic that nobody should take lightly. The consequences are just too serious if transported goods have not been secured, or secured incorrectly, and therefore slip or even fall over. The fact that the load and the vehicle can be damaged is the least serious of the risks. Even small unsecured objects can, perhaps when the brakes are applied hard, turn into dangerous missiles that endanger your life and that of others. Vehicles with inadequately secured loads are also therefore regularly taken off the road by the police and the trade associations. For this reason we would like to present here a few simply formulated basic principles about correct load securing. Take this chance of getting informed! Regardless of whether you simply transport a bicycle or a new fridge once in a while, whether you put tools and building materials into your delivery van every day, or even if you load entire trucks. We want you to drive safely!

Everybody is responsible. You too!

It is not just the driver or the person who loads the vehicle who is responsible for seeing that loads are properly secured. Superiors such as the loading foreman, the vehicle owner or even the company owner bear some of the liability.

And what is more, a driver is obliged to refuse to undertake a journey if the load is not adequately secured!

Laws and guidelines that you should know.

In Germany, the statutory regulations on securing loads are laid down in the Strassenverkehrs-zulassungsordnung (Road Traffic Approval Regulations, StVZO), the Straßenverkehrsordnung (Road Traffic Regulations, StVO), the associated administrative regulations and the Unfallverhütungsvorschrift (Accident Prevention Regulation, BGV D 29). The technical guidelines are specified in DIN EN 12 195 and DIN 75410 and in guidelines 2700 and following, from the VDI (Verein Deutscher Ingenieure, German Engineers Association).

We can train and advise you!

We would be happy to provide you with a summary of these statutory regulations, standards and guidelines. In addition to this we offer you regular training that will show you how best to implement these in practice.

Talk to us! We do not just want to be your supplier, but your partner, and to help you at any time with both words and deeds.

Well lashed is well protected!

Professional load securing is a science in itself. It is applied

wherever goods are transported: in road, rail, air and marine transport. We will use the example of loading a truck to show you the factors involved.

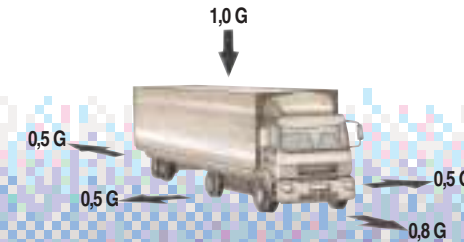
Better reliable than negligent

To begin with, it is obvious that loads must only be transported using suitable vehicles. Permissible total weight and axle loadings must be observed, just as much as the dimensions. It is also necessary for the weight of the loads to be distributed in such a way that the vehicle

remains both steerable and fully fit for road use. The centre of gravity, for instance, should be as low as possible, and be located near the middle between the front and back. You can find more information about this in the load distribution plan (VDI 2700 Sheet 4). Bear in mind that emergency braking or sudden evasive manoeuvres can be necessary on any journey, and be prepared for these!

Security through lashing systems

The load must then be secured, above all to prevent it from slipping. This is usually done with the aid of lashes, preferably with professional lashing systems that carry the GS mark. They make it possible for you to secure the load in accordance with regulations. It is, however, a precondition that the lashing is carried out correctly, and that you only use appropriate lashing materials of the same type.



Lashing equipment

Correct lashing: the 6 golden rules

To be quite safe, you should always obey the following rules when lashing:

1. Even heavy loads must also be lashed!

As unlikely as it might sound, the likelihood that your load will slip



does not depend on its weight or on the area of the surface on which it lies. A steel beam weighing a ton slips just as easily as a little paperclip.

2. Always secure a load in all directions!

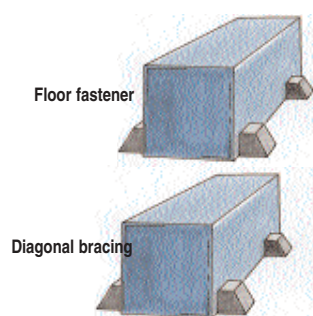
When driving, any object in or on the vehicle is subjected to a variety of forces. These "push" the load backwards when accelerating, forwards when braking, and to the right or left when turning corners. We'll show you how large these forces are on this truck:

3. Only lash objects that are already capable of resting without tipping up!

Steady "wobbly" loads with supporting angles and wooden blocks.

Observe the instructions in VDI 2700 here.

Always also ensure that the load is standing against the front



wall, or that it is butted solidly against it with the aid of blocks. Finally, fix the load in place by lashing.

4. Make sure that edges are properly protected!

Sharp edges can damage the lashing materials. Edge protection is therefore specified for sharp edges. An edge is considered to be sharp if the radius of the edge is smaller than the thickness of the lashing materials.

You should also use a PVC edge protector or a PVC protective



sleeve for rough surfaces. On pages 16 and 17 we offer you the appropriate edge protection for every lashing material.

5. Watch out for temperatures and chemicals!

Extreme temperatures and chemicals can attack and damage lashing materials. Not every lashing material is therefore usable in every application. Make sure that lashing material is suitable before you use it. If in doubt, ask the manufacturer – we are happy to answer your questions!

6. Always use lashing material properly!

Never exceed the permitted lashing capacity quoted on the label (LC), and make sure that the lashing material is always lying entirely flat. Never twist, knot or extend the lashing materials!

Information:

What does "LC" stand for?
Lashing Capacity = Permitted tractive effort.
What does "daN" stand for?

Putting it simply, daN (deka-Newton) refers to the force that a specific lashing material can provide for securing loads. The Newton (named after the physicist Isaac Newton) is the unit with which force is measured. The prefix "deka" refers to 10 of a given unit (e.g. 1 dekagram=10 grams). In the study of load securing, deka-Newton are used because 10 Newton (1 deka-Newton) correspond approximately to the weight of a 1 kg mass.

Lashing methods: How to thoroughly secure your load

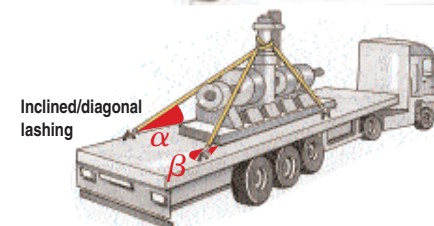
There are a number of ways of lashing your load. Which of these lashing methods is suitable depends on whether you have suitable lashing points and where they are.

First check how strongly the corners are (cardboard boxes, for instance, can suffer indentations) and reinforce the edges if necessary!

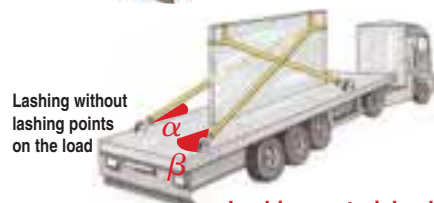
In inclined or diagonal lashing, the load is directly tied to the vehicle. In this case it is the lashing materials that take up the tension caused by acceleration, braking, and turning corners.



Lashing down



Inclined/diagonal lashing



Lashing without lashing points on the load

Lashing material calculation: you can count on it!

How many lashes you need, and how strong they have to be to securely fasten the load depends on three factors:

In lashing down, the load is "pressed" onto the carrying surface. The aim is to increase the friction between the load and the floor to a level such that it will no longer slip.

1. The material of the load and the material of which the carrying surface is made. Metal slides on metal, for instance, more easily than concrete on wood, because the sliding friction coefficient is smaller. The VDI table shows you the figures for individual cases. Guidelines valid across Europe for different pairs of materials are specified there.

Important: The journey is significantly safer if anti-slip mats are used. The use of suitable mats is in fact the only way to achieve the value of 0.6, and we offer you these mats as an indispensable accessory (see page 16).

2. The weight of the load. A steel beam may indeed slip as easily as a cardboard box – but much more force is needed to hold it in place.

3. The angle of the lashes that hold the load. In lashing down, you must here consider the angle α (alpha). For inclined and diagonal lashing, you must measure two angles: angle α (alpha) and β (beta).

You can find the angle with the aid of an angle gauge. Or you can place our lashing calculator against it. When you know these three values, you can calculate how much force is needed to secure the load by means of a mathematical formula. This tells you how many lashes with what lashing capacity (daN) you need to use. Or you can simply make use of our service department!

Threefold simplicity: our service for you!

As a practical aid, we offer you three ways of avoiding these tiresome calculations!

1. You can look in our lashing capacity tables. There you will see what you need without needing to do much calculation.

2. You can look in the internet. Enter your values at www.zurmittelberechnung.de, and learn with one click what lashing materials, and how many, are needed in an individual case.

3. You ask us for our new lashing material slide rule, the ZMR. It shows you with a few movements what you need, and when! You will find it on page 16.

Important: All lashing materials must be equally tensioned when lashing down, otherwise the load can be too strong on one side! When performing inclined lashing, the load can be lashed both longitudinally and cross-wise, but the lashing materials must again here be evenly tightened. We recommend the use of a tension measuring unit to check this. This allows you to see how far a lash has been tightened.

You'll find the tension measuring unit on page 16.



Bundling

Step-by-step safety: use our checklist

This checklist shows you once again how you best proceed with lashing:

1. Where are the lashing (fastening) points?

2. What sliding friction coefficient applies to the load and the supporting surface?

3. What does the load weigh?

4. How large is the lashing angle?

5. Is the load's centre of gravity correctly located? In other words, is it as low as possible and halfway between the front and back?

6. Has sufficient edge protection been provided?

7. Can the lashing material withstand the temperatures and chemical exposure?

8. Are the lashes evenly tensioned?

Tip:

If the vehicle does not have any lashing points it is also possible to pass a one-piece strap under the vehicle. The same method can also be used to bundle loose items such as pipes or slaps. But do not forget that such bundles also need to be fixed by lashing!

Coefficient of sliding friction for various pairs of materials

| | dry | wet | greasy |
|---------------|-----------|------------|----------|
| Anti-slip mat | 0.60 | 0.60 | |
| Wood/wood | 0.20-0.50 | 0.20-0.250 | 0.5-0.15 |
| Metal/wood | 0.20-0.50 | 0.20-0.250 | 0.2-0.10 |
| Metal/metal | 0.10-0.25 | 0.10-0.200 | 0.1-0.10 |
| Concrete/wood | 0.30-0.60 | 0.30-0.500 | 10-0.20 |

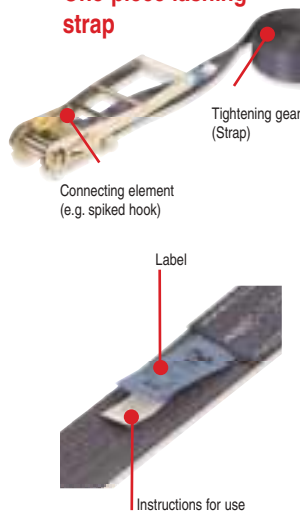
Lashing systems

Lashing straps

We offer you a wide range of lashing straps and lashing chains, along with a full range of accessories. Together with competent consultation and assistance by trained staff who are happy to take the time to help you. Normally we deliver rush orders that reach us by 10.00 am within 24 hours. We also handle repair requests immediately and skilfully. Talk to us!

We manufacture all our lashing straps ourselves, and are responsible for the tip-top quality of our products. That includes after the sale. We are available to answer your question at any time, inspect the lashing straps when you want, and repair them if possible.

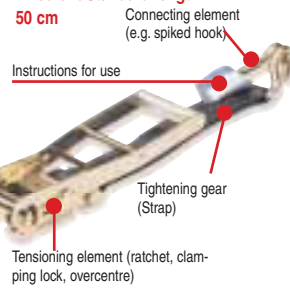
One-piece lashing strap



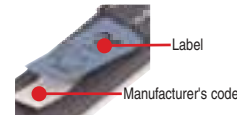
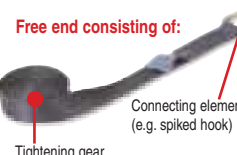
One-piece lashing straps are used to wrap around the load, and therefore do not need any connecting elements.

Two-piece lashing strap

Fixed end/Standard length 50 cm



Free end consisting of:

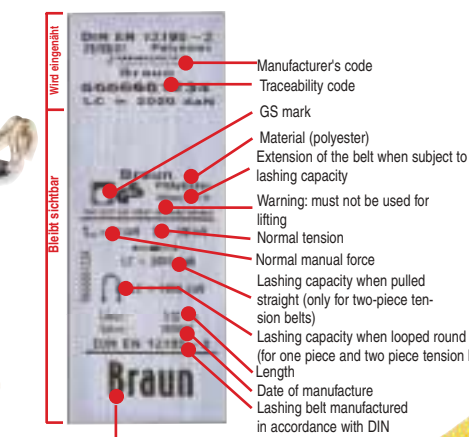


Two-piece lashing straps are handy and fast to fit and simply irreplaceable in present day load securing.

The labelling:

To meet the relevant standards, every lashing strap has labels on the seams; for polyester straps, the label must be blue. It is used for identification and tracing, and includes important information on correct usage.

For your own safety, never use no-name lashing straps without labels and without manufacturer's or GS mark! Our labels are made of PVC-coated woven polyester, to ensure a long service life. They are almost impossible to tear off, and the special overprint remains readable throughout their lifetime.



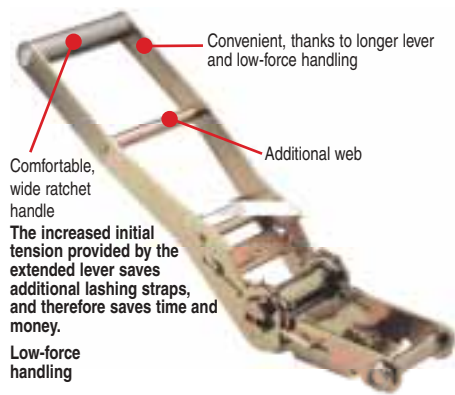
Your private label: If requested, we can print your name on all the labels!

The strap

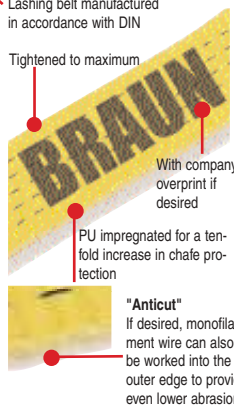
We manufacture our lashing straps exclusively from polyester, since this material offers a large number of advantages:

- Outstanding stretching behaviour under full tension (no loss of strength)
- The soft material is gentle on the surface of your load
- Resistant to rotting for high service life
- High maximum tension in comparison with the lashings strap's own weight
- Good resistance to acids (but always ask the manufacturer before you use lashing straps in chemical environments!)
- Low water absorption, without loss of strength
- High-temperature (usable from -40°C to +120°C)

SPANNRATSCHEN GIGANT



Niro ratchet



The tensioning element

The ratchet allows manually applied force generate the tension that acts on the load. We only employ high quality ratchets that are easy and reliable in use. Our special Gigant and Niro products have proven themselves particularly well.

Ideal for marine applications and animal husbandry, where the effects of salt water or contact with aggressive ammonia cannot be avoided.

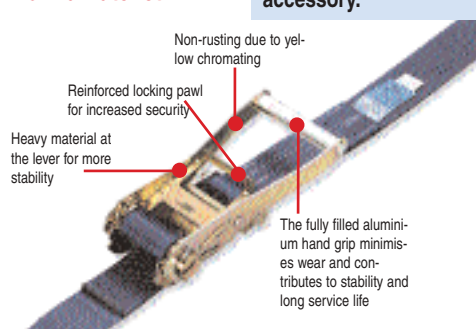
Important: the tensioning elements have been designed in such a way that it is impossible to over-tighten the straps. In order to check whether lashing materials have been sufficiently tightened, you can use a tension measuring unit that we offer as a helpful accessory.

You will find the tension measuring unit on page 16

The connecting element

We offer a wide range of different hooks, so that you can find the right one for any application. All our hooks are stamped with the lashing capacity (LC).

Normal ratchet



Important and correct: usage, servicing and repair

- Check lashing straps before and after use for visible faults
- Stop using straps if you notice splits, cuts, notches or breaks in load-bearing threads and seams, or deformation caused by heat

- End fittings and tensioning elements must no longer be used if deformations, splits or heavy signs of corrosion appear

- Never tie knots in the strap, do not twist it, and ensure that it is lying entirely flat

- When straps are being laid on rough surfaces, use PVC protective sleeves (chafe protection) and use PU protective sleeves at sharp edges (cut protection). Corner protection in particular ensures that the force transfers smoothly when lashing loads down!

- Only tighten the strap up to the lashing capacity quoted on the label
- Never locate the ratchet over edges, so that it is not exposed to bending stress
- Always make sure that there are at least 1.5, but not

more than 3 windings on the ratchet's winding shaft. This allows you to reach and keep the necessary tensioning and holding forces.

- Do not use any additional extensions in order to reach a higher tension

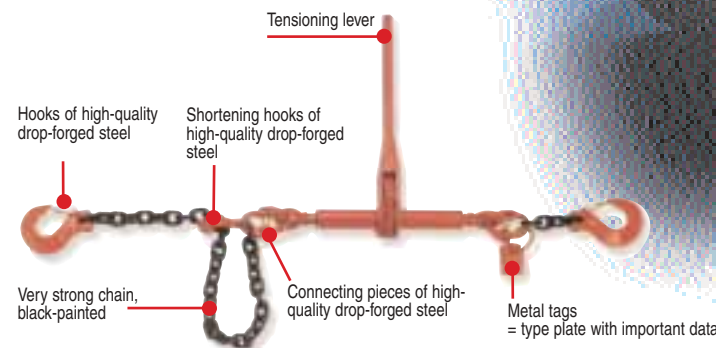
For a long life: storage

- Store lashing straps in a dry place with a little heating
- Protect the straps from direct sunshine
- Never store the straps close to fire

- Only clean the straps with water, never use soap
- Please also observe DIN EN 12 195!

Lashing chains

Lashing chains are particularly suitable for lashing heavy and extremely heavy loads. Here again we offer a wide range, competent consultation, and 24-hour service for urgent cases.



The key points: usage, servicing, storage

- Only use lashing chains for inclined and diagonal lashing (both load and chains can be damaged if used for lashing down!)
- Never tie knots in chains
- Check lashing chains before and after use for visible faults
- If possible, store chains hanging up, but in any event under dry conditions, protected from the weather and from aggressive materials.

Please note: The end of the useful life

- Discard chains if
- You notice mechanical damage caused by crushing, notching or the development of cracks on at least one component
- The chain or individual links are bent, twisted or squashed

- You notice corrosion pittings
- A chain link has broken, has stretched by more than 3%, or if the thickness at any location has been reduced by more than 10%. Chain end fittings should be withdrawn from use if

- The hook mouth has opened by more than 10%, or if the catch no longer closes
- The body of the hook has worn by more than 5%, or if it shows heavy notches
- The diameter of the bolt must no be worn by more than 10%.

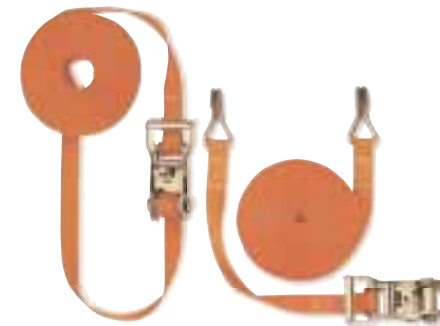
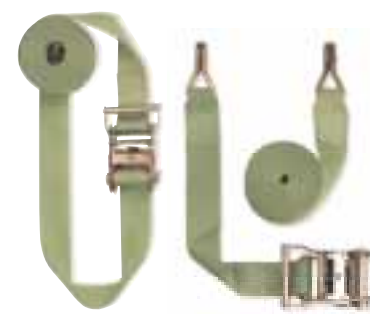
Repairs must only be carried out by the manufacturer. The manufacturer's code is marked on every tenth chain link.

Storage: Do not bring chains or components of Quality Class 8 into association with aggressive chemicals or acids.



Lashing systems

EN 12195



System 200 25 mm wide

Lashing capacity when pulled directly 200 daN
Lashing capacity when looped around 400 daN

One-piece lashing strap

200-1- . . .

Two-piece lashing strap

200-2- . . . + . . .

With the appropriate hook, item no.:
1020, 1021, 1050, 1060, 1070, 1090, 2060, 2070,
80459, 80461, alternatively large clamping lock no. 81

System 200 / 35 35 mm wide

Lashing capacity when pulled directly 200 daN
Lashing capacity when looped around 400 daN

One-piece lashing strap

200/35-1- . . .

Two-piece lashing strap

200/35-2- . . .

Matching hooks as for System 200/50

System 200 / 50 50 mm wide

Lashing capacity when pulled directly 200 daN
Lashing capacity when looped around 400 daN

One-piece lashing strap

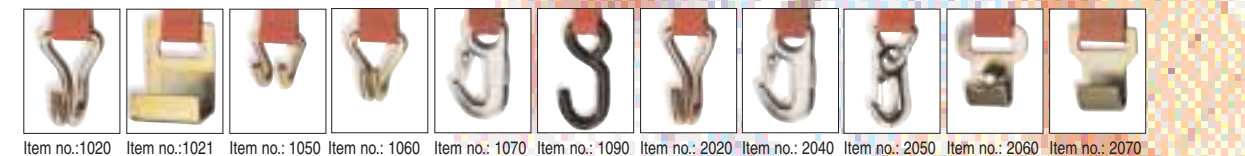
200/50-1- . . .

Two-piece lashing strap

200/50-2- . . . + . . .

With the appropriate hook, item no.:
1020, 1021, 1070, 1090, 4071

Hooks:



Item no.: 1020 Item no.: 1021 Item no.: 1050 Item no.: 1060 Item no.: 1070 Item no.: 1090 Item no.: 2020 Item no.: 2040 Item no.: 2050 Item no.: 2060 Item no.: 2070



Item no.: 3010 Item no.: 3020 Item no.: 3030 Item no.: 3040 Item no.: 4071 Item no.: 80459 25 mm Item no.: 80460 50 mm Item no.: 80461 Klemmschloß Item no.: 2065 Item no.: 81 Item no.: 92

System 400 25 mm wide

Lashing capacity when pulled directly 400 daN
Lashing capacity when looped around 800 daN

One-piece lashing strap

400-1- . . .

Two-piece lashing strap

400-2- . . . + . . .

Manual force 50 daN · tension achieved 200 daN

With the appropriate hook, item no.:
1020, 1021, 1050, 1060, 1070, 1090, 2060, 80459

System 500 25 mm wide

Lashing capacity when pulled directly 500 daN
Lashing capacity when looped around 1000 daN

One-piece lashing strap

500-1- . . .

Two-piece lashing strap

500-2- . . . + . . .

Manual force 50 daN · tension achieved 250 daN

With the appropriate hook, item no.:
1050, 2020, 2040, 2050, 2060, 2070

System 500/50 50 mm wide

Lashing capacity when pulled directly 500 daN
Lashing capacity when looped around 1000 daN

One-piece lashing strap

500/50-1- . . .

Two-piece lashing strap

500/50-2- . . . + . . .

Manual force 50 daN · tension achieved 250 daN

With the appropriate hook, item no.:
2020, 2040, 2050, 2065, 2070, 4071, 80459, 92

System 750 25 mm wide

Lashing capacity when pulled directly 750 daN
Lashing capacity when looped around 1500 daN

One-piece lashing strap

750-1- . . .

Two-piece lashing strap

750-2- . . . + . . .

Manual force 50 daN · tension achieved 375 daN

With the appropriate hook, item no.:
2020, 2040, 2050, 2060, 2070

System 1000 35 mm wide

Lashing capacity when pulled directly 1000 daN
Lashing capacity when looped around 2000 daN

One-piece lashing strap

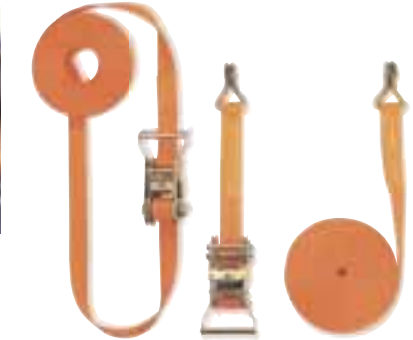
1000-1- . . .

Two-piece lashing strap

1000-2- . . . + . . .

Manual force 50 kN · tension achieved 400 daN

With the appropriate hook, item no.:
3010, 3020, 3030, 3040



System 1500 / 35 35 mm wide

Lashing capacity when pulled directly 1500 daN
Lashing capacity when looped around 3000 daN

One-piece lashing strap

1500/35-1- . . .

Two-piece lashing strap

1500/35-2- . . . + . . .

Manual force 50 daN · tension achieved 300 daN

With the appropriate hook, item no.:
3010, 3020, 3030, 3040

Ordering example

2000 - 2 - 600 + 4010
 ↓ ↓ ↓ ↓
 Strength (LC) Two-piece Your desired length in cm Item no.
 simple tension

Important:
 You only need to complete the ordering numbers where printed red.

Solution:
 2-piece lashing strap with a lashing capacity (LC) in simple tension up to 2000 daN and a total length of 600 cm with hook no. 4010.

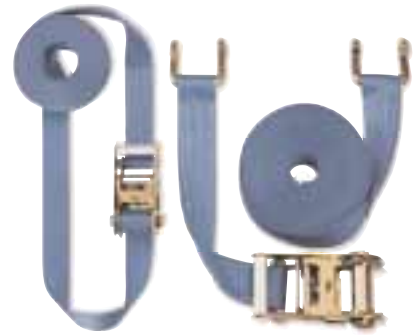
If you want the Ergo ratchet, please place an "E" in front of the item number:
 If you would like our GIGANT ratchet, simply place a "G" in front of the order number
Example: G 2000-2-600+4010

All straps can be supplied at any desired length.
 It is only necessary for you to insert the length (in cm).

Please note:
 In the 2-piece strap, the fixed end is usually 0.50 m in length, where this figure includes the length of the ratchet. Exception: System 5000, where the fixed end is 0.75 m long. If you require a fixed end with another length, please always state this explicitly!

Lashing systems

EN 12195



System 1500 50 mm wide

Lashing capacity when pulled directly 1500 daN
Lashing capacity when looped around 3000 daN

One-piece lashing strap

1 5 0 0 - 1 - . . .

Two-piece lashing strap

1 5 0 0 - 2 - . . . + . . .

Manual force 50 daN · tension achieved 360 daN

With the appropriate hook, item no.:

4010, 4020, 4030, 4040, 4050, 4060, 4070, 4080, 4090, 4071, 4065, nur bis 750 daN: 92



System 2000 50 mm wide

Lashing capacity when pulled directly 2000 daN
Lashing capacity when looped around 4000 daN

One-piece lashing strap

2 0 0 0 - 1 - . . .

Two-piece lashing strap

2 0 0 0 - 2 - . . . + . . .

Manual force 50 daN · tension achieved 400 daN

With the appropriate hook, item no.:

4010, 4020, 4030, 4040, 4050, 4060, 4080, 4090, 4080 R, 4065, 4070



System 2500 50 mm wide

Lashing capacity when pulled directly 2500 daN
Lashing capacity when looped around 5000 daN

One-piece lashing strap

2 5 0 0 - 1 - . . .

Two-piece lashing strap

2 5 0 0 - 2 - . . . + . . .

Manual force 50 daN · tension achieved 400 daN

With the appropriate hook, item no.:

4010, 4020, 4030, 4040, 4050, 4060, 4080, 4090, 4080 R, 4065, 4070



System 5000 75 mm wide

Lashing capacity when pulled directly 5000 daN
Lashing capacity when looped around 10000 daN

One-piece lashing strap

5 0 0 0 - 1 - . . .

Two-piece lashing strap

5 0 0 0 - 2 - . . . + . . .

Manual force 50 daN · tension achieved 600 daN

With the appropriate hook, item no.:

5010, 5020, 5030



Single lashing chain

Consisting of: ratchet tensioner, chain, 2 hooks,

| Item No. | Chain size mm | Lashing capacity daN | Minimum breaking strain daN | Standard-length mm |
|----------|---------------|----------------------|-----------------------------|--------------------|
| ZKR 6 | 6 | 2200 | 4520 | 3000 |
| ZKR 8 | 8 | 4000 | 8040 | 3000 |
| ZKR 10 | 10 | 6300 | 12600 | 3000 |
| ZKR 13 | 13 | 10000 | 21200 | 3000 |

Double ratchet tensioner

Consisting of: Chain with two hooks, loose, ratchet

| Artikel Nr. | Chain size mm | Lashing capacity daN | Minimum breaking strain daN | Standard-length mm |
|-------------|---------------|----------------------|-----------------------------|--------------------|
| ZKR 6-2 | 6 | 2200 | 4520 | 3000 |
| ZKR 8-2 | 8 | 4000 | 8040 | 3000 |
| ZKR 10-2 | 10 | 6300 | 12600 | 3000 |
| ZKR 13-2 | 13 | 10000 | 21200 | 3000 |



Air-Cargo strap 45 mm wide

Lashing system with Overcenter lock, 6 meter standard length, breaking strain 2250 daN (5000 lbs), ready threaded and secured with a strap stopper.

7 2 7 0 0 - 6 0 0 + . . .

These lashes are mostly used for air freight.

With the appropriate hook, item no.:

3091, 3092; bis 1800 daN breaking strain: 3093

Air-Cargo strap 45 mm wide

With additional snap hooks, item no. 4071 for hanging back. The distance between the additional hook and the end hook is variable. Please quote the desired distance.

7 2 7 0 0 - 6 0 0 + . . . + 4 0 7 1

These lashes are mostly used for air freight.

With the appropriate hook, item no.:

3091, 3092, bis 1800 daN breaking strain: 3093

Hooks:



Item no. 4010 Item no. 4020 Item no. 4030 Item no. 4040 Item no. 4050 Item no. 4060 Item no. 4070 Item no. 4071



Item no. 4080 Item no. 4080R Item no. 4090 Item no. 5010 Item no. 5020 Item no. 5030 Item no. 4065 Item no. 3091 Item no. 3092 Item no. 3093

TIP
Make your lashing calculations easy!
Use our tables, our lashing calculation slide, or our online service under www.zurmittelberechnung.de



Lashing systems Accessories



SPANNRATSCHEN
GIGANT

Item no. 80057-L (G)
Extra long lever, high strap tension, suitable for systems 2000 and 2500.



Long lever reversing ratchet
Item no. 80450-D (E)
DoMulti reversing ratchet. Tension generated during "downward pulling". Suitable for systems 2000 and 2500.



Tension measuring unit
Item no. 72526
DoMess 3 tension measuring unit. The ideal accessory for finding the tension in the lashing strap, in association with our lashing calculator.



Lashing calculator
Item no. 72510
For accurate calculations when lashing down and diagonal lashing. **Your indispensable aid for secure loading.**



Anti-slip mat
Item no. 72500 10 mm thick
Item no. 72501 8 mm thick
An indispensable accessory for securing loads, raises the sliding friction to 0.6.



Auto transporter set
Item no. 72504
3-point automobile lashing, protects the tyres of the lashed vehicles and holds the vehicle securely.



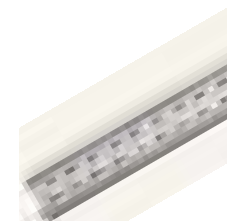
Protective rubber
Item no. 81337
Pull-on sleeve for automobile lashing. 50 mm wide, 750 mm long.



Tyre claw
Item no. 72001 35 mm wide straps
Item no. 72002 50 mm wide straps
For automobile lashing, as a tyre protector. Alternative to protective rubber no. 81337



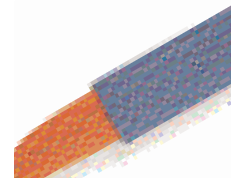
Fixing bar
Item no. 72503
Fixing bar, adjustable between 2350 mm – 2720 mm. To "block" the load in all aluminium box superstructures.



Aluminium bar for fittings
Item no. 72505
Aluminium rail for Air-Cargo strap, suitable for fittings, item no. 3091, 3092, 3093.



Velcro strap
Item no. 72507 20 cm without ring
Item no. 72508 20 cm with ring
Velcro strap for securing the remaining loose ends after tensioning.



Polyester chafe protection
Item no. 87-25 for 25 mm
Item no. 87-35 for 35 mm
Item no. 87-50 for 50 mm
Polyester fabric, the ideal chafe protection at rough edges and surfaces, please quote the desired length.



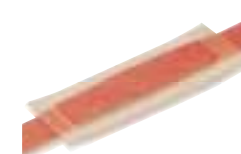
PVC chafe protection
Item no. 72512 for 25 mm
Item no. 72513 für 35 mm
Item no. 72514 für 50 mm
Rubber hose with fabric inlay, the robust chafe protection for rough edges and surfaces, please quote the desired length.



Light edge protection
Item no. 72509
Suitable for strap widths up to 50 mm, as a light protection against rough surfaces.



PVC edge protection
Item no. 89
Reinforced version with slots, offering stable protection against rough surfaces, suitable for strap widths up to 75 mm.



PU protective plate
Item no. 88-25 for 25 mm strap
Item no. 88-35 for 35 mm strap
Item no. 88-50 for 50 mm strap
PU protective plate, size 300 x 100 mm, unexcelled cut protection for sharp edges.

Hook dimensions

Hh = hook height
Mt = material thickness
Hw = hook width
Mw = mouth width

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| Item no. 1020 | Item no. 1021 | Item no. 1050 | Item no. 1070 | Item no. 1060 | Item no. 1090 | Item no. 2020 | Item no. 2040 | Item no. 2050 | Item no. 2065 |
| Hh: 50 mm Ms: 7 mm Hb: 15 mm Mw: 22 mm | Hh: 46 mm Ms: 2 mm | Hh: 26 mm Ms: 6 mm Mw: 17 mm | Hh: 65 mm Ms: 10 mm Mw: 13 mm | Hh: 36 mm Ms: 6 mm Hb: 13 mm Mw: 13 mm | Hh: 92 mm Ms: 9 mm Mw: 28 mm | Hh: 65 mm Ms: 8 mm Hb: 16 mm Mw: 23 mm | Hh: 65 mm Ms: 10 mm Mw: 13 mm | Hh: 93 mm Ms: 8 mm Mw: 16 mm | Hh: 40 mm Ms: 4 mm |
| | | | | | | | | | |
| Item no. 2060 | Item no. 2070 | Item no. 3010 | Item no. 3020 | Item no. 3030 | Item no. 3040 | Item no. 3091 | Item no. 3092 | Item no. 3093 | Item no. 4010 |
| Hh: 44 mm Mt: 3 mm Hw: 25 mm Mw: 12 mm | Hh: 44 mm Mt: 3 mm Hw: 25 mm Mw: 12 mm | Hh: 40 mm Mt: 9.5 mm Mw: 19 mm | Hh: 72 mm Mt: 12 mm Hw: 29 mm Mw: 29 mm | Hh: 65 mm Mt: 10 mm Mw: 13 mm | Hh: 68 mm Mt: 10 mm Hw: 19 mm Mw: 26 mm | Hh: 14 mm | Hh: 55 mm | Hh: 65 mm Ms: 8 mm | Hh: 115 mm Mt: 6 mm Mw: 25 mm |
| | | | | | | | | | |
| Item no. 4020 | Item no. 4030 | Item no. 4040 | Item no. 4050 | Item no. 4060 | Item no. 4070 | Item no. 4080 | Item no. 4080R | Item no. 4090 | Item no. 4065 |
| Hh: 40 mm Mt: 12 mm Mw: 19 mm | Hh: 62 mm Mt: 11 mm Mw: 22 mm | Hh: 140 mm Mt: 14 mm Mw: 22 mm | Hh: 84 mm Mt: 11 mm Hw: 30.5 mm Mw: 37 mm | Hh: 47 mm Mt: 11 mm | Hh: 115 mm Mt: 6 mm Mw: 27 mm | Hh: 105 mm Mt: 16 mm Mw: 36 mm | Hh: 139 mm Mt: 16 mm Mw: 36 mm | Hh: 110 mm Mt: 12 mm Hw: 24 mm Mw: 28 mm | Hh: 54 mm Mt: 8 mm |
| | | | | | | | | | |
| Item no. 4071 | Item no. 80459 | Item no. 80460 | Item no. 80461 | Item no. 5010 | Item no. 5020 | Item no. 5030 | | | |
| Hh: 84 mm Mt: 4.4 mm Mw: 12 mm | Hh: 17 mm Mt: 12 mm Hw: 50 mm | Hh: 17 mm Mt: 12 mm Hw: 25 mm | Hh: 20 mm Mt: 2 mm Hw: 9 mm Mw: 9 mm | Hh: 116 mm Mt: 17 mm Hw: 34 mm Mw: 36 mm | Hh: 192 mm Mt: 18 mm Mw: 21 mm | Hh: 54 mm Mt: 16 mm Mw: 28 mm | | | |