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User information for portable fire ladders EN 1147

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Contents

1 General

In fire service, ladders replace approach routes and rescue routes whenever structural traffic routes are not available or passable. Please always be sure to use "the correct ladder for the respective task".

- Portable fire ladders must only be used by persons who have been trained in accordance with German Fire Service Regulation (FwDV) 10.
- Only ladders that are suitable for the intended purpose and have no safety defects must be used.
- Prerequisite for handling in terms of safety is the knowledge of the safety notes and safety regulations.
- This information brochure and user manual, in particular the safety regulations, must be observed by all persons.
- For drills and use with portable ladders, the provisions of fire service regulation 10 (FwDV 10) "Portable Ladders" must be observed.
- Ladders must be visually inspected for wear and defects before and after each use.
- Ladders must be inspected regularly in accordance with the 'Testing principles for fire service equipment and devices' (DGVU Principle 305-002).
- When using the ladder, an even distribution of persons on the ladder is recommended. The minimum spacing between the persons must be 2 m.
- Access ladders must not be used to rescue persons by carrying them up or down the ladder.

Attention
The attention notice warns of the risk of fatal accidents or injuries if operating and working instructions are not followed precisely or are not followed at all.

Caution
The caution note is placed next to work and operational procedures that must be strictly adhered to in order to prevent the system from being damaged or destroyed.

Note
Notes indicate technical requirements and important information that must be given special attention.

2 Accident prevention when using portable ladders

The currently valid version of the accident prevention regulations (UVV) for fire services (DGUV Regulation 49) apply to training, practice and use.

Type-tested portable ladders for fire services comply with the standard DIN EN 1147 in its currently valid version in terms of their design and construction. Type testing also includes testing for load-carrying capacity and stability under usage conditions as per the accident prevention regulation for fire services (DGUV Regulation 49).

Stability is ensured once adequate measures have been taken against tipping over or rolling away.

To protect against the hazards of firefighting during training, drills and operations, the following personal protective equipment must be provided and used:

- Firefighter's protective suit
- Firefighter's helmet with neck guard
- Firefighter's gloves
- Firefighter's protective footwear
- Firefighter's safety belt for special orders

In the event of certain hazards, special personal protective equipment items must be available which correspond to these hazards in type and quantity.

When handling ladders during training, exercises and use, the following hazards may arise, among others:

Falling down: e.g. when using a defective ladder or one not suitable for the intended purpose; due to improper climbing.

Tipping over/falling: e.g. due to – unstable positioning; – improper release of water from the ladder; – lack of adequate safety measures in the case of crosswinds.

Rolling/sliding away: e.g. due to unsecured climbing to or on traffic routes.

Tipping over: e.g. when the ladder is placed against unsecured support points such as tension wires, rods, glass plates, unlocked doors and the like.

Electricity: e.g. by positioning the ladder in the immediate vicinity of contact wires or other live cables or by touching contact wires or other live cables with the ladder.

To prevent these hazards, we strongly recommend carefully reading and observing the following notes.

3 Safety provisions

When extending and retracting extension ladders, hold only the rails, not the rungs. Hold the ladder only on the outside of the rails; do not wrap your thumbs around the rails.

Caution
Risk of crushing!

Do not climb extension ladders that have been extended until the locking hooks are seated on the rungs and the upper ladder sections are secured against being pulled together by the pull rope.

At least four persons are required to adjust the extension ladder.

Never climb extension ladders with prescribed supports when they are free-standing.

3.1 Behaviour when working near electrical installations and overhead lines

When working with electrical devices, the regulations of the professional associations (e.g. DGUV Information 203-004) must be observed.

Work near or on unprotected electrical installations may only be carried out if:

- the system has been disconnected.
- the system has been secured against being switched back on.
- the system has been checked to ensure that it is de-energised.
- the system has been short-circuited using an earthing bar.
- adjacent live parts have been secured against contact.
- When working near overhead power lines, a sufficient safety distance must be maintained.

Nominal voltage (volts)	Safety distance (metres)
up to 1 kV	1 m
over 1 kV to 110 kV	3 m
over 110 kV to 220 kV	4 m
over 220 kV to 380 kV	5 m
if the mains voltage is unknown	5 m
Safety distances according to DIN 75 105/VDE 0105-1	

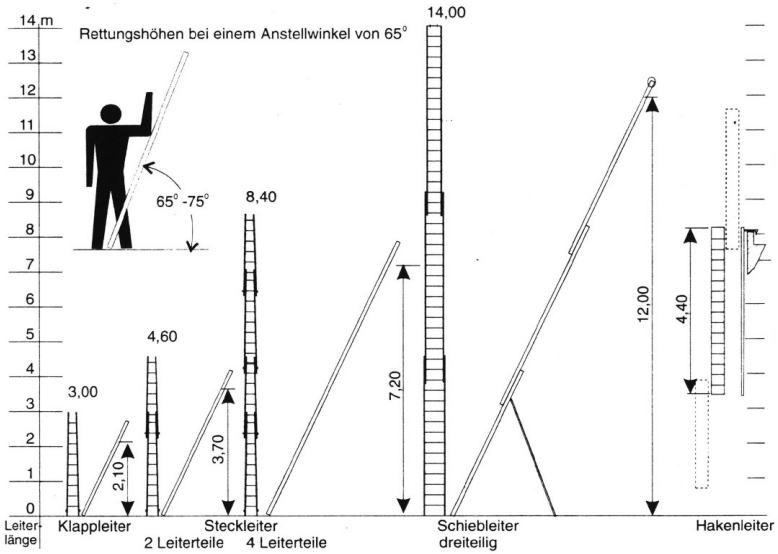
If safety distances cannot be maintained, the overhead lines must be disconnected in consultation with the operators and secured against reconnection (see above for further safety measures).

4 General use

- Ladders may only be used according to their intended application. Any application not in line with the intended use is impermissible.
- Portable fire ladders may only be used by persons who have been trained in accordance with fire service regulations (FwDV) 10 and are familiar with this information brochure and the user manual.
- Before using the ladders, all components must be checked to ensure that they are in proper condition and fully functional. If any defects are discovered, the ladders must not be used.
- Ladders must only be set up on ground that can adequately bear a load; this can be achieved by means of load-distributing bases.
- Ladders must be secured against sliding away.
- Ladders must be secured against sliding and overturning, e.g. by tethering the top of the ladder with a safety line or by holding on to the ladder.
- Ladders must be set up at an inclination angle of 65° – 75° with respect to the base.
- Ladders must only be placed against secure support points.

- At exit points, ladders must project by at least 3 rungs or 1 m unless other equivalent options are available for holding.
- At access openings, ladders must be placed flush to one side of the opening.
- If ladders are used outdoors, wind conditions must be observed in particular. For example, to prevent it from tipping over, tether the top of the ladder.
- If ladders are set up at or on traffic routes, sufficient safeguarding must be observed, for example by setting up safety guards, warning lights, warning signs etc.
- It must be ensured that the permissible use load is not exceeded.
- It is impermissible to jump on the ladder.
- Climb ladders evenly and without vibration to the extent possible.
- When climbing up, down or over, only hold the rungs with a clamping grip; do not hold on to the rails.
- When climbing, keep your body close to the ladder and only hold the rungs with both hands in a clamping grip.
- Parapets of wall openings must be straddled when entering and exiting the opening.
- Do not climb beyond the upper support point of a ladder. From portable ladders, water may only be discharged with branch pipes that can be isolated. The ladder must be fastened at the top, and the branch pipe operator must be secured with a safety belt. B-pipes must not be used from portable ladders.

- In order to prevent pressure surges, only open and close branch pipes slowly on ladders.
- Do not spray to the side on ladders
- When climbing ladders, carry the hose over your shoulder; do not tuck it into the safety belt.
- Carry hose lines via ladders only up to the first floor above ground. It is safer to hoist hoses using the firefighter's line.
- Do not let hose lines hang free, but rather secure them in the centre of the rung using a hose holder.
- Users must be instructed regularly on the proper use of the ladders.
- When setting up and using ladders, ensure that overhead power lines are not contacted. An adequate safety distance must be maintained between ladders, or persons on ladders, and live parts.
- An unoccupied ladder employed on the site must not be removed without further action.



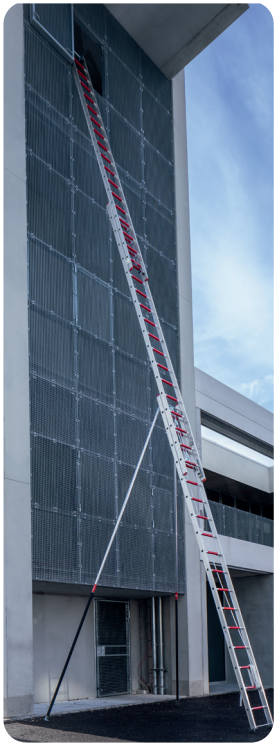
5 3-section extension ladder

Technical data

Permissible load, kg	3 persons or 324
Length, retracted, approx. mm	5600
Length, extended, approx. mm	14,000
Weight, approx. kg	78.5
Inside width of the lower ladder, mm	425
Inside width of the middle ladder, mm	425
Inside width of the upper ladder, mm	354
Rung spacing, mm	300

Equipment

Rope pull, locking hook and rope brake
Rungs with plastic sheathing
Two supports with non-slip coating
Upper ladder with 2 wall rollers
Slip-resistant ladder feet



Application

Setting up and taking down by two teams (four persons)

The machine operator assists the two teams during removal.

The ladder is carried to the place of use by four persons, held at the rungs with the arms extended and the foot of the ladder in front.

The extension ladder is placed down beneath the access opening. The distance between the lower end of the ladder and the object is determined by the working height. The supports are secured to the ladder.

Loosen the retaining straps on the support rods.

Two persons pick up the support rods and secure the foot of the ladder. Two other persons at the top of the ladder set the ladder up, with the two persons at the support rods assisting by pulling.

Position the ladder at a slight angle to the placement point.

The two persons at the support rods secure the ladder. One person stands in front of the ladder and ensures that the foot of the ladder is securely positioned. To do this, a foot is placed on the lower crossbar and the ladder is held on the outside of the rails. The person supervises the removal of the ladder at the same time.

The fourth person releases the pull rope and pulls the ladder to the required height. To fix the ladder at the desired height, the locking hooks must be pulled over the corresponding rung of the ladder. Retract the ladder slowly until the locking hooks audibly come to rest on the rungs.

Check that all locking hooks are properly engaged.
Especially in the dark, the staggered sound of the locking hooks makes it easy to check that they are in place.
However, this audible check should be practised repeatedly in daytime and then cross-checked visually.

After extending the ladder, release the pull rope and secure it to a rung, ideally using a clove hitch.

Place the top of the ladder against a firm support and align the support rods at the sides so that the ladder cannot bend excessively or shift sideways.

The two support rods and the foot of the ladder are secured by one person each.

The ladder is ready to climb.

To retract the ladder, place it in an almost vertical position, while two persons secure the ladder at the support rods.

Release the pull rope from the rung and pull out the ladder until the trailing hooks of the release mechanisms reach over the rungs.

Make sure that this is the case with both extendable ladder sections.

Caution
During retraction, keep your hands on the rails for safety, not on the rungs, as there is a risk of injury from being crushed. If the ladder retracts too quickly it can be damaged.

Allow the ladder to retract slowly. To prevent the rope brake from braking unintentionally, the pull rope must be held slightly diagonally inwards away from the ladder.

When moving the ladder, the persons at the support rods also secure the foot of the ladder by placing one foot each on the lower crossbar of the ladder; the other two persons stand in front of the ladder and slowly lower it forwards.

The two persons at the support rods assist by holding the ladder in place.

Once the ladder is on the ground, both support rods are placed in the brackets and secured with the retaining straps. The pull rope must be secured to the ladder.

The extension ladder can only be carried from the place of use by four persons. The ladder is carried with the outstretched arm against the rungs, with the foot of the ladder in front.

The machine operator supports the two teams during loading.

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Premium rescue and work platform

Design

Aluminium rails	
Platform size with non-slip coating (R 13) m	1.80 x 1.05
Width approx. m	0.93
Length approx. m	20.29
Height m	0.88 - 1.68
Total weight, approx. kg	49.0
Permissible load kg	500.0

Equipment

Stable design made of aluminium

Steel fittings

Steel spring bolts

Platform with non-slip covering (R 13)

Compensates for uneven ground up to 250 mm

6 2-section extension ladder

Technical data

Permissible load kg	3 persons or 324
Length, retracted, approx. mm	5600
Length, extended, approx. mm	9700
Weight, approx. kg	43.0
Inside width of the lower ladder, mm	425
Inside width of the upper ladder, mm	350
Rung spacing, mm	300

Equipment

Rope brake

Rungs with plastic sheathing

Upper ladder with 2 wall rollers

Slip-resistant ladder feet

Application

Setting up and taking down by two teams (four persons)

The machine operator assists the two teams during removal.

The ladder is carried to the place of use by four persons, held at the rungs with the arms extended and the foot of the ladder in front.

The extension ladder is placed down beneath the access opening. The distance between the lower end of the ladder and the object is determined by the working height.

For ladders with supports, the supports are fixed to the ladder. Loosen the retaining straps of the support rods.

Two persons pick up the support rods and secure the foot of the ladder. Two other persons at the top of the ladder set the ladder up, with the two persons at the support rods assisting by pulling.

For ladders without support rods, the two persons raise the ladder up at the top of the ladder. The two persons at the ladder feet secure the ladder. To do this, each person places a foot on the lower ladder rails.

The two persons at the ladder feet also secure the ladder to the side rails.

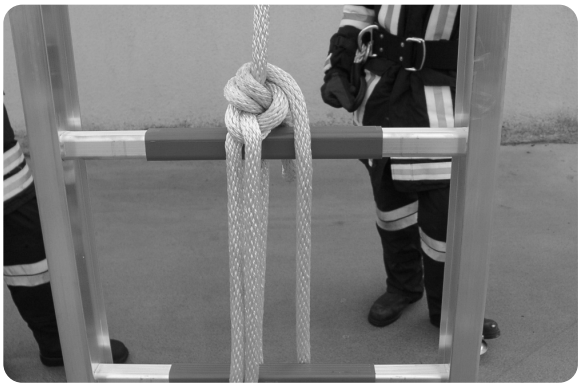
They help to set the ladder up by pulling.

The two persons at the support rods secure the ladder. One person stands in front of the ladder and ensures that the foot of the ladder is securely positioned. To do this, a foot is placed on the lower crossbar and the ladder is held on the outside of the rails. The person simultaneously supervises the extending of the ladder.

The fourth person releases the pull rope and pulls the ladder to the required height. To fix the ladder at the desired height, the locking hooks must be pulled over the corresponding rung of the ladder. Retract the ladder slowly until the locking hooks audibly come to rest on the rungs.

Check that all locking hooks are properly engaged.
Especially in the dark, the staggered sound of the locking hooks makes it easy to check that they are in place. However, this audible check should be practised repeatedly in daytime and then cross-checked visually

After extending the ladder, release the pull rope and secure it to a rung, ideally using a clove hitch.



Place the top of the ladder on a fixed support point.

For ladders with support rods, the rods are aligned laterally to avoid excessive bending or lateral movement of the ladders.

The ladder is ready to climb.

For ladders with support rods, the two support rods and the foot of the ladder are each secured by one person.

For ladders without support rods, two persons secure the rails, with one person securing the foot of the ladder.

To retract the ladder, place it in an almost vertical position, while two persons secure the ladder at the rails, or, if present, the support rods. Release the pull rope from the rung and pull out the ladder until the trailing hooks of the release mechanisms reach over the rungs.

You can slowly lower the ladder.

Caution
During retraction, keep your hands on the rails for safety, not on the rungs, as there is a risk of injury from being crushed. If the ladder retracts too quickly, it can be damaged.

For ladders without supports, two persons help by securing the foot of the ladder while holding the side rails. To do this, the foot is placed on the lower crossbar or the ground peak.

Two persons stand in front of the ladder and lower it forwards slowly; the two other persons at the ladder rails or ladder feet help by holding the ladder steady.

Once the ladder is on the ground, both support rods are placed in the holders and secured with the retaining straps.

The extension ladder can only be carried from the place of use by four persons. The ladder is carried with the outstretched arm against the rungs, with the foot of the ladder in front.

The machine operator supports the two teams during loading.

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7 Scaling ladders

Technical data

Permissible load, kg	2 persons or 216.0
Length section A approx. mm	2700
Length section B approx. mm	2700
Length max. mm (4 sections 1x A + 3x B)	8350
Weight section A approx. kg	10.0
Weight section B approx. kg	9.8
Max. weight (4 sections) approx. kg	29.4
Rung spacing mm	273

Equipment

Steel spring lock bolts

Rungs with plastic sheathing

Slip-resistant ladder feet

Due to its versatility, the scaling ladder in accordance with DIN EN 1147 must be regarded as the standard ladder of the German Fire Service. Consisting of four connectable ladder sections of 2700 mm each, the maximum rescue height is 7200 mm. The four ladder sections can be used individually or in pairs as a single-length ladder and are therefore also suitable for overcoming obstacles.

The ladder is able to bear the load of two persons in any length configuration.

As it can be extended by the movement of individual segments over/below one another (in the horizontal position), the ladder can also be used in confined spaces, such as shafts, or for ice rescue.

The scaling ladder can also be used as an aid, e.g. as a double ladder or hose bridge.

On larger fire engines, scaling ladders can usually be stored on the vehicle roof in pairs on top of each other. For smaller vehicles, it may also be necessary to store them in individual sections, e.g. for small fire engines with portable pumps (TSF) or small fire engines with portable pumps and water (TSF-W).

Although the scaling ladder consisting of four identical scaling ladder sections, also known as B-sections, is recognised as functionally operational, for safety reasons it is generally recommended that, instead of using one of these B-sections, a so-called A-section is used which has two additional rungs as a lower section, or a scaling ladder plugin section which converts a B-section into an A-section.

Application

The scaling ladders can be made by three or four persons. As a rule, two teams should be responsible for setting up and taking down the ladders. The scaling ladders are carried by four persons to the place of use. The ladders are carried with arms extended at the rungs, with the foot of the ladder in front.

The scaling ladders are placed down beneath the access opening. The distance between the lower end of the ladder and the object is determined by the working height. The upper ladder sections are then retracted to the top end of the ladder sections below.

Open and lock the spring bolts of the lower ladder.

To connect the ladder sections together, two persons hold the lower ladder sections up on the upper rung with one hand, and with the other hand actuate the spring bolt of the upper ladder. The other persons then push the ladder sections together.

Make sure that the spring bolts are engaged in the assembled ladder sections. If you only need three ladder sections, the fourth ladder section is now removed by loosening the spring bolts.

The two persons at the ladder feet secure the ladder.

To do this, they place one foot each on the bottom ladder rail, and the ladder is held firmly at the outside of the rails.

The two persons at the top of the ladder set the ladder up; the other two persons help by pulling.

The connected ladders can also be pushed onto the wall of the object. The two persons at the ladder feet secure the ladder.

To do this, they place a foot on the bottom ladder rail and the ladder is held firmly at the outside of the rails. The two persons at the top of the ladder set the ladder up; the other two persons help by pulling.

Once the ladder is aligned, it can be climbed with one person securing the bottom while the other person climbs the ladder.

To lower the ladder, place it in an almost vertical position, while two persons secure it at the ladder feet.

Two persons stand in front of the ladder and lower it forwards; the other two persons help by holding the ladder at the ladder rails.

Open the left and right spring bolts.

The two upper scaling ladders are taken back by the two teams and placed on the scaling ladders lying on the ground.

The scaling ladders can now be carried by the two teams from the place of use.
The scaling ladders are carried with an extended arm on the rungs, with the tips of the ladders in front.

The scaling ladders are stored in pairs on the truck.

If the scaling ladder has to be installed in a confined space, this can be done by placing supports underneath it. Two persons lift the ladder section up at the spring bolts and the rails and place it as diagonally as possible against the object.

Make sure that the rails are gripped for as long as possible to prevent the ladder from tilting sideways.

A third person then pushes another ladder section from below into the boxes of the raised ladder.

Make sure that the spring bolts engage.

You can place other ladder sections underneath in the same way.

8 Tests

Test intervals

Ladders must undergo a visual inspection and load test by a qualified person according to the following schedule:

- Visual and functional inspection at least every 12 months
- Load test at least every 24 months
- if the ladder appears non-operational
- if the ladder has been used in a way other than its usual intended purpose
- after major heat exposure
- after each repair, unless it is a replacement of the rung covers.

Ladders that are damaged or exhibit defects, or that no longer appear safe for use, must be withdrawn from use. These ladders may only be made available for use after proper repair, when the original strength has been restored and safe use is guaranteed.

Ladders that do not comply with the regulations must be withdrawn from use.

The test results must be entered in a test sheet or test book.

9 Visual inspection

The following points must be observed during the visual inspection and functional testing of ladders:

- After the load test, neither damage nor permanent changes in shape are discernible.
- Check ladder rails and rungs for cracks, chipping, severe deformation or wear.
- Check connection between rail and rung for stability.
- Check all threaded and riveted connections for stability.
- Check weld seams for cracks or noticeable defects.
- Check or remove corrosion on load-bearing components.
- Check integrity of alignment for distortions and deflections.
- Check rung covers for damage.
- Check ladder feet for heavy wear or other defects.
- Marking present.

Additionally for 2- and 3-section aluminium rope-pull ladders

- Check that the release mechanisms on the ladders function properly, that they are not damaged and that they are securely attached.
- Check the ropes for damage and correct fastening or adjustment.
- Check guides and covers for damage.
- The rope brake must be firmly connected to the rungs and function properly.
- Check the play between the ladder and the guides.
- Check that slide-out limiters are present and fit securely.
- The support rods and the non-slip coating are not damaged.
- Check the wall rollers for damage or wear.

Additionally for aluminium scaling ladders

- Check that the plugin boxes and spring lock bolts are securely attached.
- The spring lock bolts have a proper spring pressure and are functional.

Additionally for aluminium hook ladders

- The folding mechanism on the folding hook moves smoothly and is functional.

10 Load tests

3-section extension ladder load test

According to DGVU principle 305-002

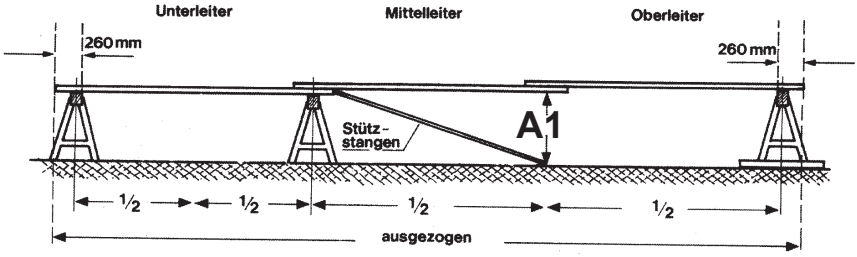
Inspection intervals

The ladders must undergo a visual inspection and functional test every 12 months and a load test every 24 months by a qualified person.

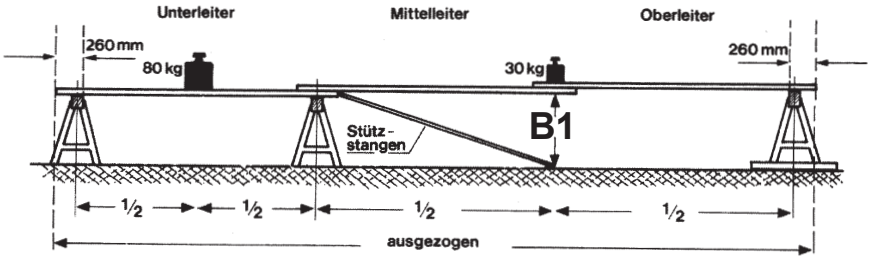
Caution
The qualified person must only perform non-destructive tests, as otherwise there is a risk of the ladder sustaining damage.

Test setup

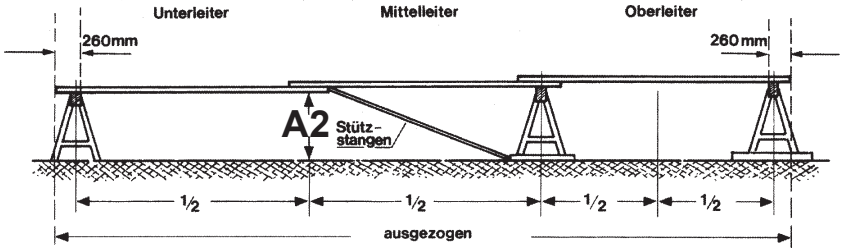
The ladder is laid horizontally at its maximum length with the climbing side facing upwards on three stands, two of which are positioned at a distance of 260 mm from the end of the rails. The third stand is placed at the upper overlap (see Fig. 1). Measure the distance between the base and the rail at the unsupported overlap (measured value A1).

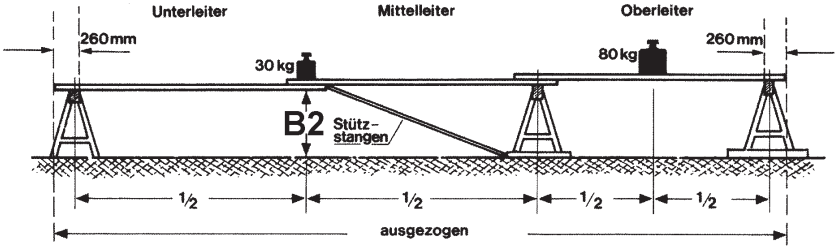


Where the ladder is not supported, it is loaded with 30 kg. The remaining ladder section is loaded with 80 kg. The distance between the ground and the rail at the unsupported overlap (see Fig. 2) is measured (measured value B1).



The other overlap point (see Figs. 3 and 4) is then checked in the same way (measured values A2 and B2).





The ladder is safe to operate if the deflection under load when testing the overlap of the lower and middle ladders or of the middle and upper ladders is a maximum of 100 mm and does not deviate from the previous test by more than ±10 mm.

2-section extension ladder load test

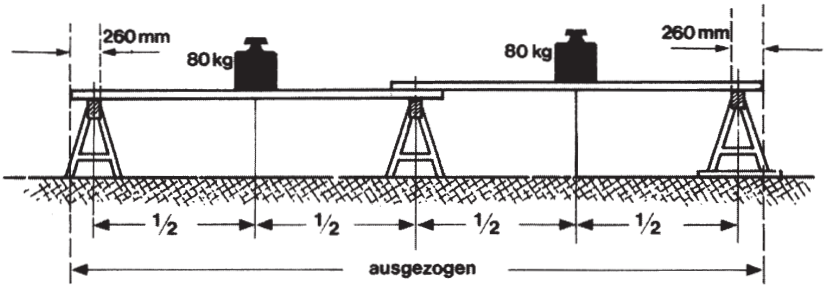
Inspection intervals

The ladders must undergo a visual inspection and functional test every 12 months and a load test every 24 months by a qualified person.

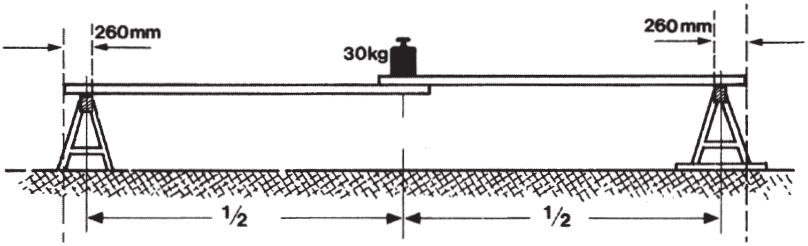
Caution
The qualified person must only perform non-destructive tests, as otherwise there is a risk of the ladder sustaining damage.

Test setup

The ladder is laid horizontally at its maximum length with the climbing side facing upwards on three stands, two of which are positioned at a distance of 260 mm from the end of the rails. Each ladder section is loaded with 80 kg at the same time (see Fig. 1). This test must be carried out on both sides of the ladder.



The extension ladder is loaded with 30 kg at the overlap.



The ladder is safe to operate if neither damage nor permanent changes in shape are discernible after the load test.

Scaling ladder load test

According to DGVU principle 305-002

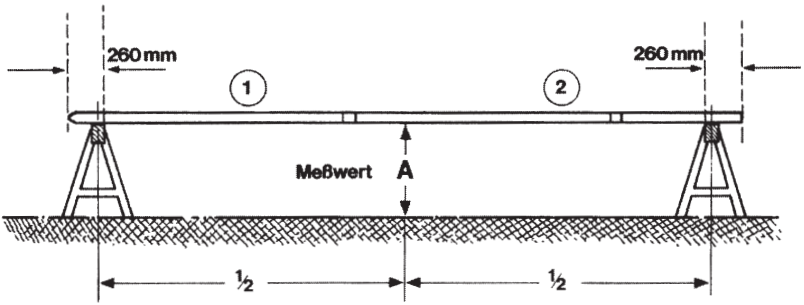
Inspection intervals

The ladders must undergo a visual inspection and functional test every 12 months and a load test every 24 months by a qualified person.

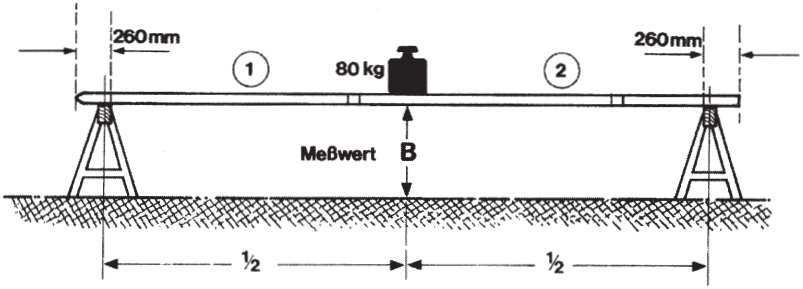
Caution
The qualified person must only perform non-destructive tests, as otherwise there is a risk of the ladder sustaining damage.

Test setup

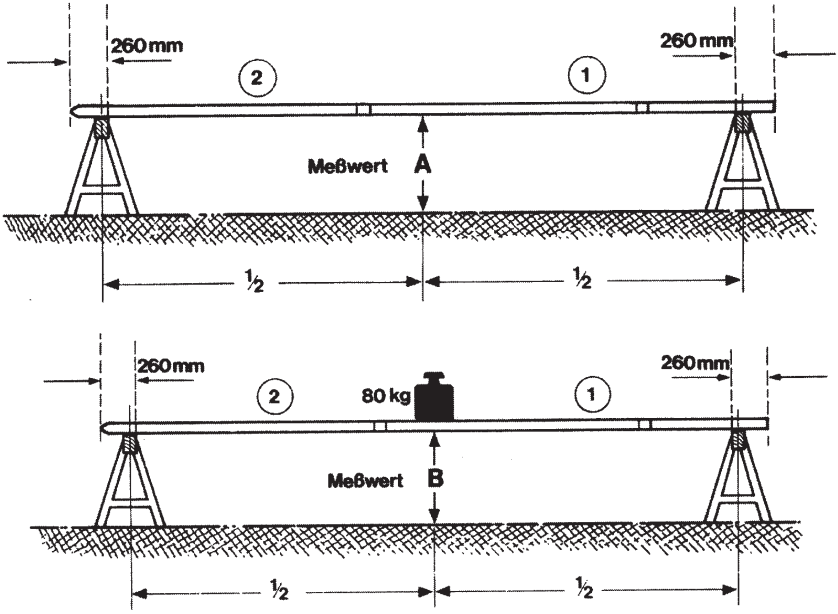
Two ladder sections (marked with 1 and 2) are connected together and placed horizontally on two stands (see Figure). Distance A is then measured from a point at the centre of the unsupported length to a point on the ground directly below (see Fig. 1).



A load of 80 kg is then placed on the ladder sections in the centre between the two stands. Distance B is then measured from a point at the centre of the unsupported length to a point on the ground directly below (see Fig. 2).



The two ladder sections must then be reconnected in reverse order and the test must be repeated.



The ladder is safe to operate if the difference between measured values A and B does not exceed 60 mm for aluminium and 75 mm for wood.

The values for the deflection do not deviate from the previous test by more than ±25 mm with the same combination of ladder sections (ladder sections marked).

Hook ladder load test

According to DGVU principle 305-002

Inspection intervals

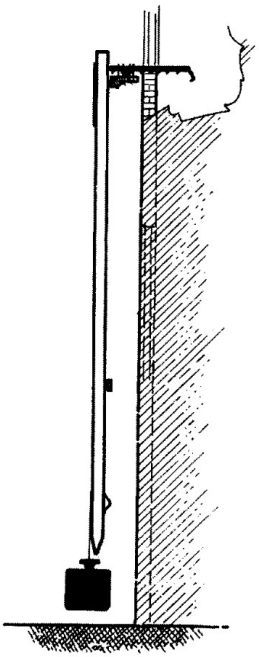
The ladders must undergo a visual inspection and functional test every 12 months and a load test every 24 months by a qualified person.

Caution
The qualified person must only perform non-destructive tests, as otherwise there is a risk of the ladder sustaining damage.

Test setup

To check the hook, mount the ladder vertically at the centre of the hook and apply a load of 150 kg at the centre of the lowest rung for a period of 60 s (see Figure).

To avoid damage to the rung, it must be protected by a support approx. 10 cm in length.



The ladder is safe to operate if neither damage nor permanent changes in shape are discernible after loading.

Multi-function ladder

Technical data

Permissible load, kg	2 persons or 216
Order no.	115093

Equipment

Rungs with plastic sheathing

DIN mount for floodlights on the extension ladder

Slip-resistant ladder feet

Accessories

Foot enlargements, foot extension for ladder section, foot extension for foot enlargement, connecting section, head holder, rescue platform.

Request our free information brochure for multifunction ladders.

11 Ladder test bench

This link refers to the assembly instructions and user manual for the ladder test bench 114020

12 Repairs and maintenance

Repairs must only be performed by qualified persons.

When replacing rungs, it must be ensured that defective rungs are replaced by flawless rungs of the same type. The strength of the rails must not be compromised.

Ladders that are beyond repair must be destroyed immediately.

Use the manufacturer's original spare parts for repairs.

All threaded connections must be secured against inadvertently coming loose.

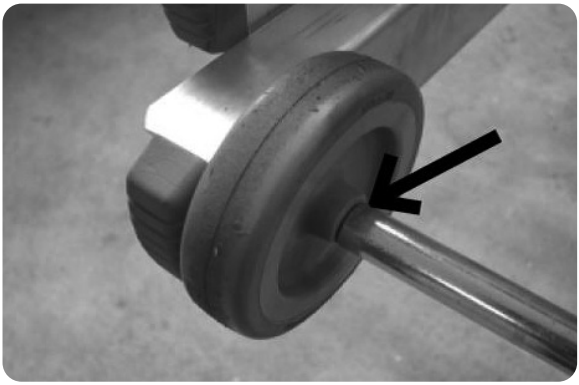
Do not repair deformed ladders; scrap them.

Take into account the cost effectiveness of repairing a ladder as well.

12.1 Lubrication points

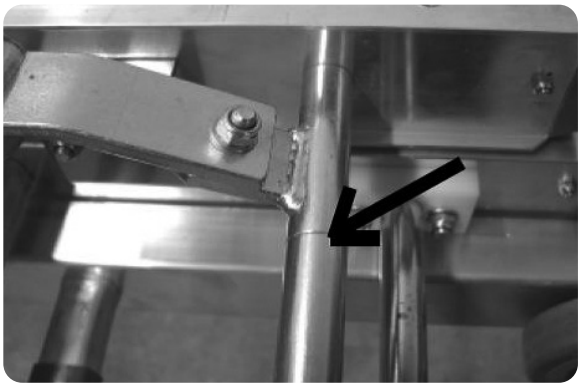
Make sure that rungs, rung covers and pull ropes are not soiled and do not become soiled by grease or oil. Should this be the case, clean the soiled points all around, e.g. with alcohol.

Use only common household cleaners for cleaning; cleaners containing solvents must not be used.



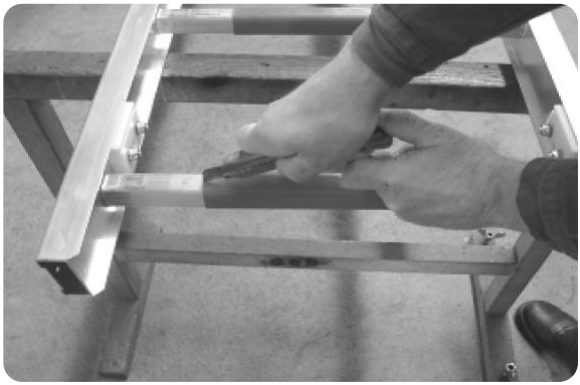
Use PTFE adhesive lubricant (e.g.: HHS Grease) for lubrication, no oil. The grease must be stable at temperatures of at least 100°C

Plastic guides, release mechanisms and rope rollers must not be lubricated.



12.2 Replacing the rung cover

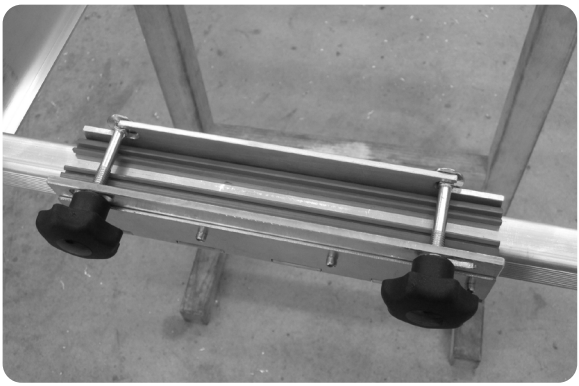
Remove the damaged rung cover as illustrated:



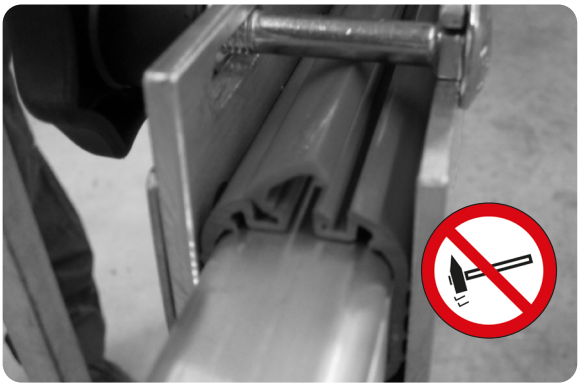
Push the new rung cover over the rung. Make sure that the corrugation is in the same direction as the rung. For extension ladders, make sure that the lock is mounted facing outwards (away from the other ladder section).

Clamp the rung cover to the rung using the assembly tool. Make sure that the rung guard rests against the base of the tool and is positioned centrally on the rung.

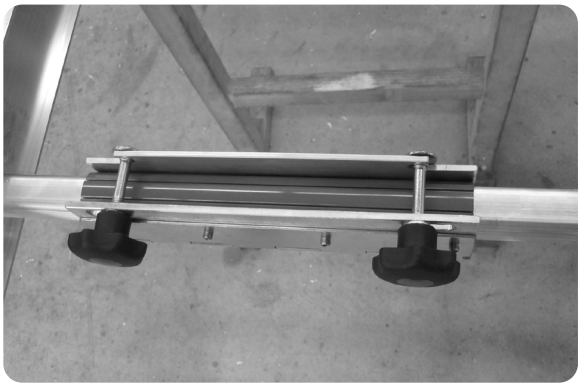
The rung guard can also be secured with two sturdy bars and screw clamps.



Clamp the tool together with the star handles. Now put on the locking bar and clip a hook in from left to right. Then the second hook in the same procedure.
You can use a wooden handle for pressing to clip in.

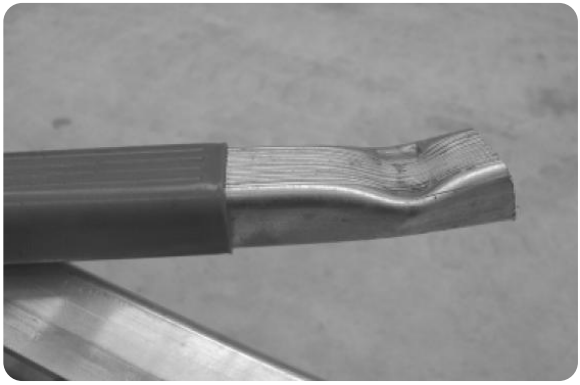


Now loosen the bolts of the assembly tool and remove the tool. Check that the rung guard is firmly seated.

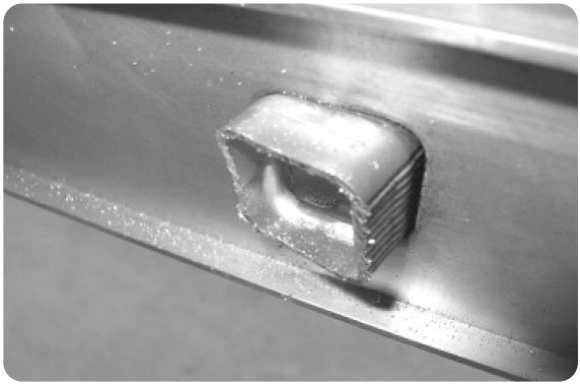


12.3 Replacing rungs

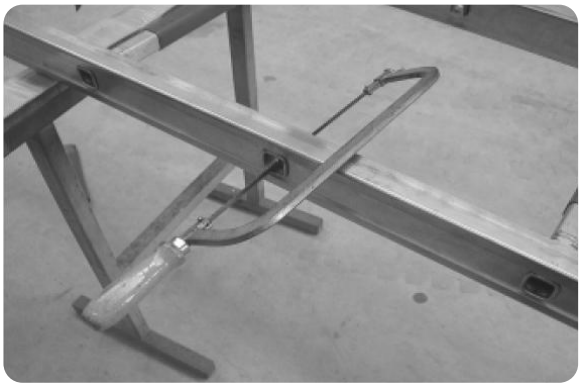
Rungs with small dents do not need to be replaced. However, if the rung is heavily deformed (see image) or has a crack, it must be replaced. You may replace a maximum of three rungs on one ladder section using this method. You will need some practice to do this.



Saw out the damaged rung at a distance of approx. 20 mm from the inside edge of the rail.



Saw into the crimped rung ends in two places. When sawing, take care not to damage the side rail of the ladder.



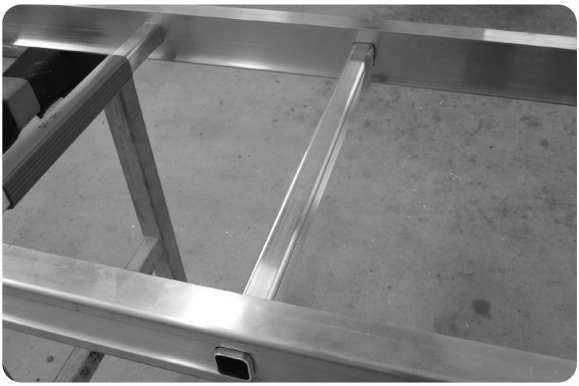
Press the rung end together with water pump pliers.

Remove the compressed rung part from the ladder.

Now cut the replacement rung to size. For an upper ladder you need a rung length of 403 mm, and for a middle
ladder or lower ladder a length of 494 mm.

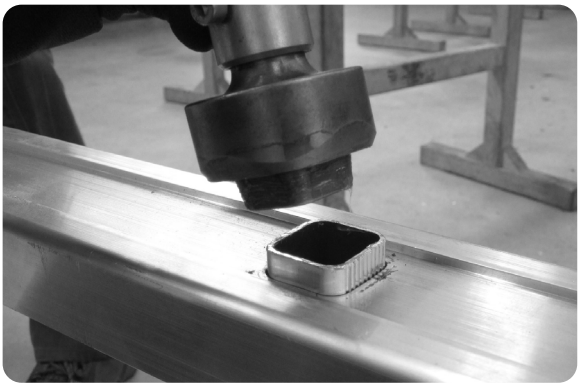
Insert the rung into the square opening of the ladder.

Make sure that the rung protrudes 6 mm on both sides for crimping.

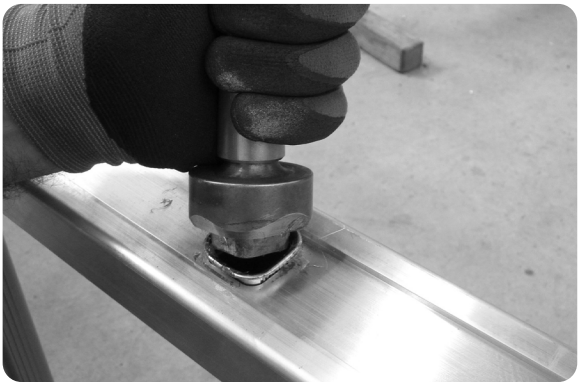


Place the ladder upright on a steel base.

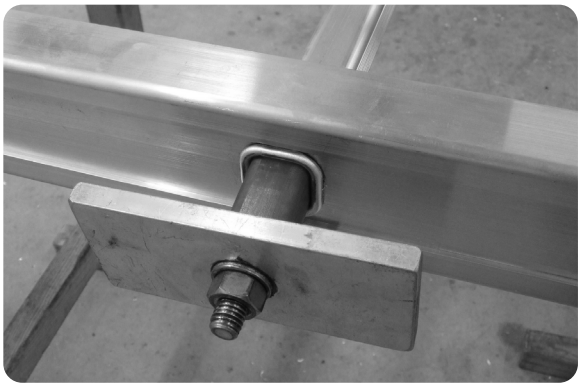
Coat the crimping head with grease. Crimp the rung with the crimping head vertically from above until the rung is reshaped outwards.



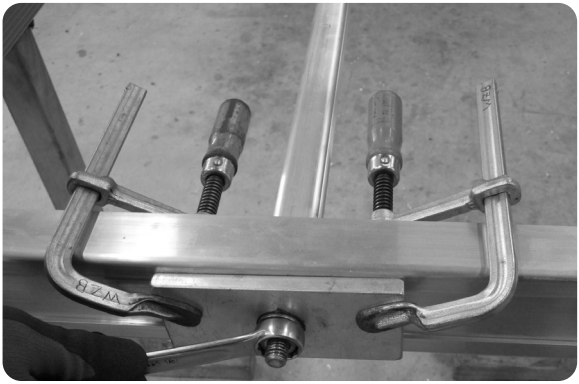
Now crimp the material further in diagonal circular movements until it fits neatly against the rail all the way round.
Repeat the process on the other side. The rung should then be crimped into the ladder rails without any play.



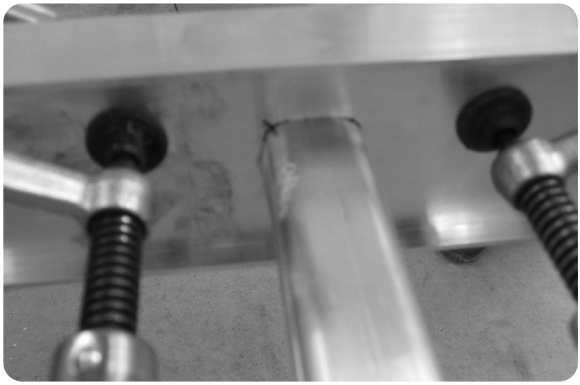
Now insert the expansion device (70363) into the rung.



Secure the expansion device to the ladder rail using screw clamps and tighten the nut until the rung is flush with the inside of the ladder rail. Repeat the process on the other side.



Loosen the nut and the screw clamps. The rung is now firmly crimped to the ladder rail.



MUNK
RETTUNGSTECHNIK

Rescue and work platform for truck and bus rescue, and as a work platform

Design

Aluminium rails	
Platform made of non-slip coating (R10) approx. m	1.86 x 0.75
Perm. Load kg	500.0
Total weight kg	30.0
Width approx. m	0.75
Length approx. m	1.86
Height approx. m	0.97

Equipment

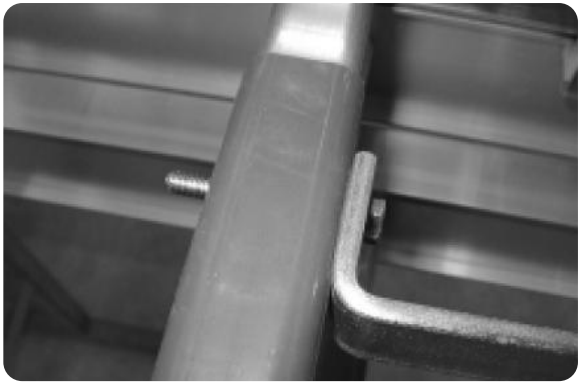
Steel fittings
Automatic steel locking hinges
Platform made of non-slip aluminium chequered plate (R 10)
Railing and rail extension optionally available

13 Attaching the rope brake

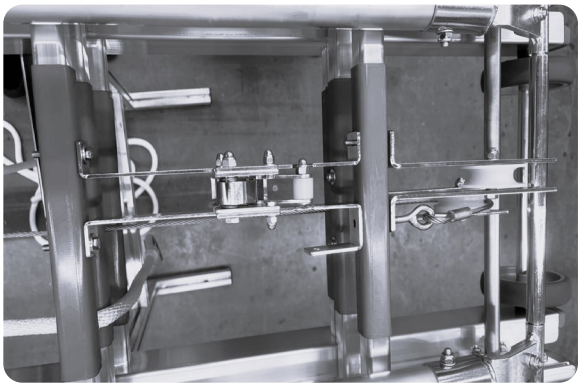
Remove the bolts from the deflection roller mounting on the first rung.

Replace them with the longer M6 x 50 bolts and M6 lock nuts supplied.

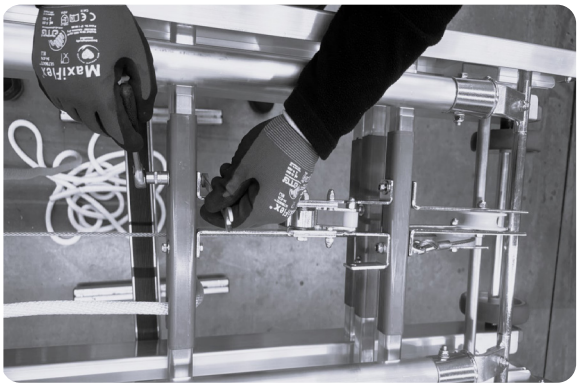
This ensures that the rope brake is fixed or secured on the first rung.



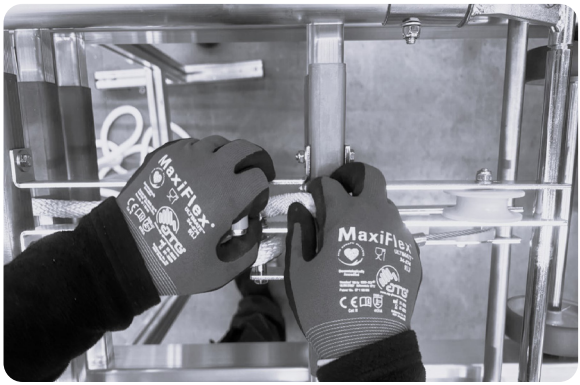
Align the rope brake with the centre of the rung. Drill the holes (diameter 6.5 mm) on the second rung using an angle drill machine.



Caution
Use only the new M6 lock nuts supplied.

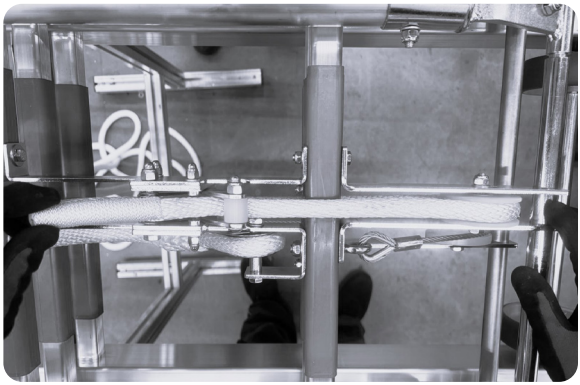


Pull the brake lever upwards and push the pull-out rope through under the brake shoe. Then guide the rope over the deflection roller.



It is essential that you guide the pull-out rope through the deflection lever, otherwise the brake cannot be released.

Caution
Before using the ladder, it is es sential that a func tional check is carried out.



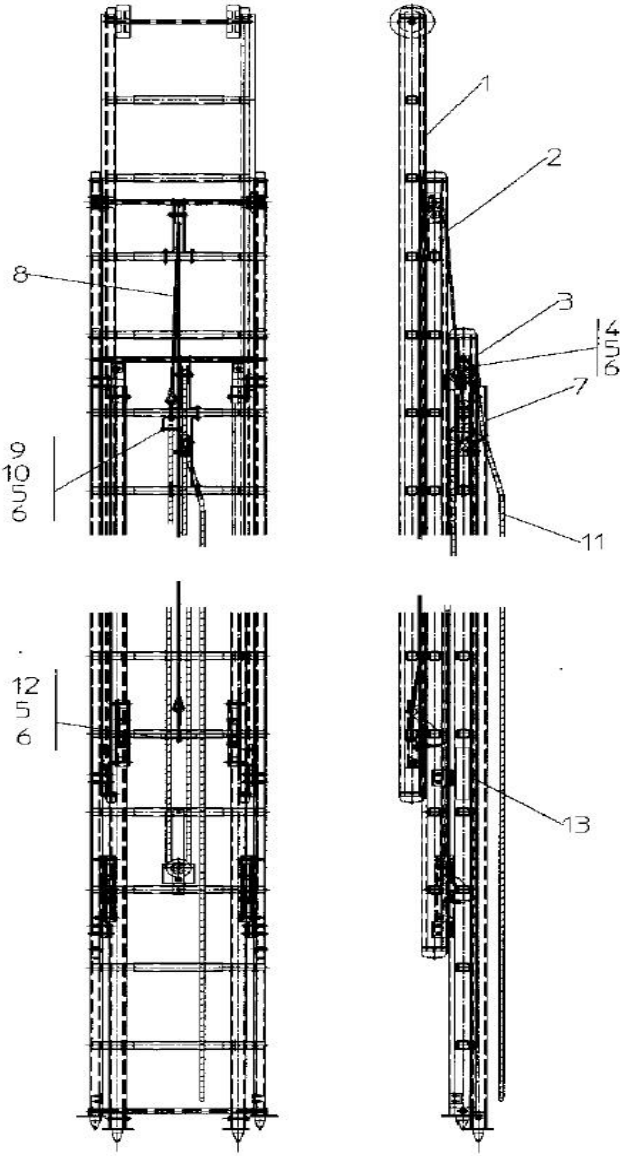
Set up the ladder as described on page 10. Extend the ladder approx. three and a half rungs. Release the pull rope; the rope brake must now brake the ladder. To release the rope brake again, pull it back up a little. You can now slowly lower the ladder.
To prevent the rope brake from braking unintentionally, the pull rope must be held slightly outwards away from the ladder..

14 Spare parts for 3-section fire ladder

3-section rope-pull ladder from year of manufacture 01.04.2001

Item no.	Name of the item	Order no.
1	Upper ladder, compl.	871.000
2	Middle ladder, compl.	872.000
3	Lower ladder, compl.	873.000
4	Hexagon head bolt DIN 933 M8 x 30	811.001
5	Washer, DIN 125, 8.3 mm	812.001
6	Locknut, DIN 985 M8	813.001
7	Support	832.001
8	Steel rope	841.001
9	Hexagon head bolt DIN 931 M8 x 55	811.002
10	Bush	851.001
11	Pull rope	114.005
12	Bracket	832.002
13	Label	00250.115.07.9

Name of the item	Order no.
Aluminium rung, 2000 mm	891.001
Repair kit for rung cover	115.072
Retrofit kit for rope brake	115.008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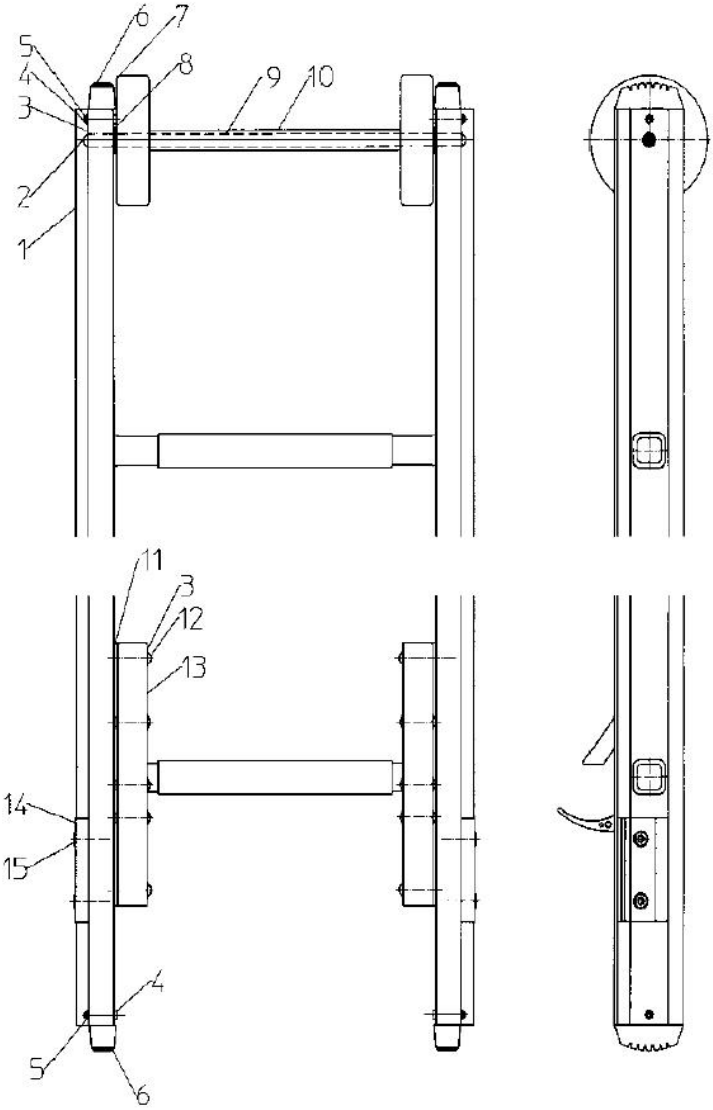
3-section rope-pull upper ladder from year of manufacture 01.04.2001

Item no.	Name of the item	Order no.
1	Upper ladder	871.100
2	Oval-head screw with interior ISO 7380 M8 x 16	811.003
3	Washer, DIN 125 8.3 mm	812.001
4	Locknut, DIN 985 M5	813.002
5	Cylinder bolt, M5 x 30	811.004
6	Ladder foot, red	820.001
7	Wall roller 125 mm	860.001
8	Spacer bush	851.005
9	Cross-tube	852.001
10	Cross-tube	852.002
11	Spacer plate	831.014
12	Oval-head screw with interior ISO 7380 M8 x 60	811.005
13	Release mechanism, compl.	832.003
14	Lateral guide	831.002
15	Cylinder bolt DIN 912 M8 x 25	811.006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MUNK
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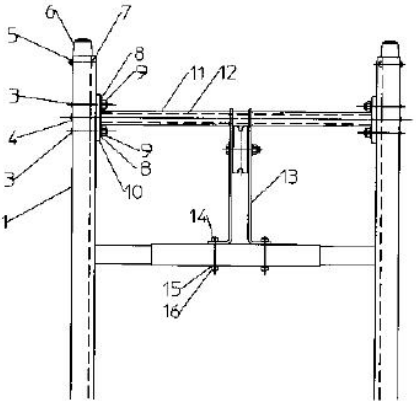
3-section rope-pull-middle ladder from year of manufacture 01.04.2001

Item no.	Name of the item	Order no.
1	Middle ladder	872.100
2	Spacer bush	851.002
3	Oval-head screw with interior ISO 7380 M8 x 50	811.007
4	Oval-head screw with interior ISO 7380 M10 x 16	811.008
5	Cylinder bolt, M5 x 30	811.004
6	Ladder foot, red	820.001
7	Locknut DIN 985 M 5	813.002
8	Washer, DIN 125 8.3 mm	812.001
9	Locknut, DIN 985 M8	813.001
10	Lateral guide	831.003
11	Cross-tube	852.003
12	Cross-tube	852.004
13	Rope roll holders	832.004
14	Hexagon head bolt DIN 931 M6 x 45	811.007
15	Washer, DIN 125 6.3 mm	812.002
16	Locknut, DIN 985 M6	813.003
17	Oval-head screw with interior Iso 7380 M8 x 60	811.005
18	Lateral guide	831.003
19	Metal sleeve for lateral guide	831.004
20	Spacer plate	831.005
21	Release mechanism	832.003
22	Deflection roller	832.005
23	Plastic slider	019.681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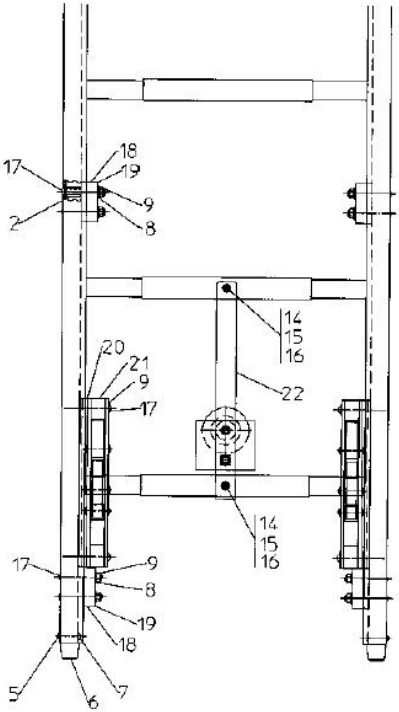
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MUNK
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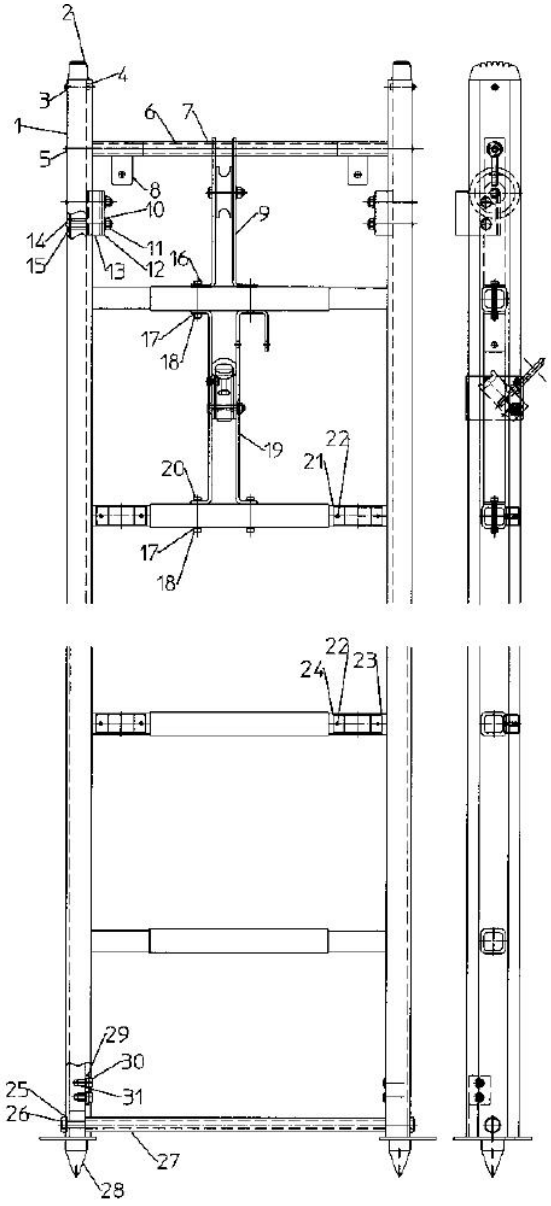
3-section rope-pull lower ladder from year of manufacture 01.04.2001

Item no.	Name of the item	Order no.
1	Lower ladder	873.100
2	Ladder foot, red	820.001
3	Locknut, DIN 985 M5	813.002
4	Cylinder bolt, M5 x 30	811.004
5	Oval-head screw with interior ISO 7380 M10 x 16	811.008
6	Cross-tube	852.004
7	Cross-tube	852.005
8	Holder for supports	832.006
9	Pulley	832.007
10	Washer, DIN 125, 8.3 mm	812.001
11	Locknut, DIN 985 M8	813.001
12	Metal sleeve for lateral guide	831.004
13	Lateral guide	831.003
14	Oval-head screw with interior ISO 7380 M8 x 60	811.005
15	Bush	851.002
16	Hexagon head bolt DIN 931 M6 x 50	811.011
17	Washer, DIN 125 6.3 mm	812.002
18	Locknut, DIN 985 M6	813.003
19	Rope brake	832.008
20	Hexagon head bolt DIN 931 M6 x 45	811.007
21	Support surface	831.006
22	Blind rivets	814.001

Item no.	Name of the item	Order no.
23	Tension strap	843.001
24	Support surface	831.007
25	Washer, DIN 125 13.0 mm	812.003
26	Hexagon head bolt DIN 931 M12 x 50	811.010
27	Cross-tube	852.006
28	Ladder foot for fire ladder	820.001
29	Stop	832.009
30	Cylinder bolt DIN 912 M8 x 25	811.006
31	Rivet nut M8	815.001
32	Plastic slider	019.681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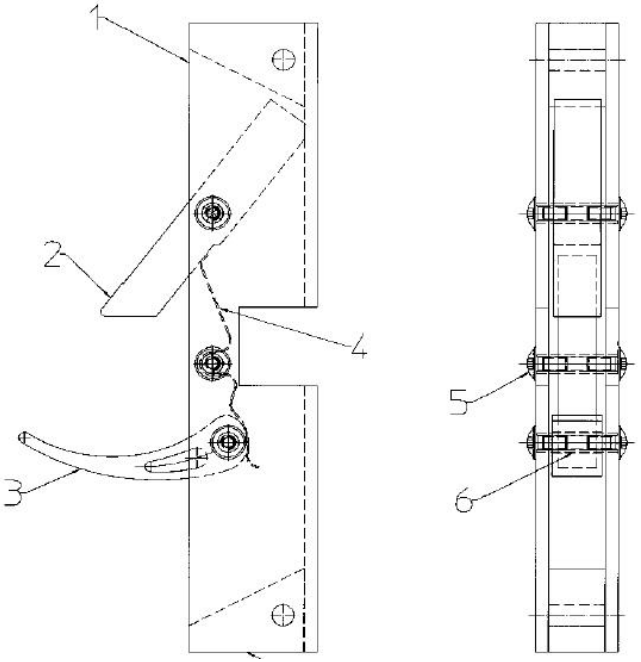
3-section rope-pull release mechanism from year of manufacture 01.04.2001

Item no.	Name of the item	Order no.
1	Housing for release mechanism	831.008
2	Locking hook for release mechanism	831.009
3	Trailing hook for release mechanism	831.010
4	Spring for release mechanism	816.001
5	Oval-head screw with interior ISO 7380 M6 x 12	811.012
6	Threaded bush for release mechanism	813.004
7	Distance piece for release mechanism	831.011



15 Warranty and liability

The scope, period and form of the warranty are recorded in the terms and conditions of sale and delivery of MUNK GmbH. For warranty claims that arise from inadequate documentation, the assembly and usage instructions applicable at the time of delivery are always decisive.

Beyond the terms and conditions of sale and delivery, the following applies:

No liability will be assumed for personal injury or damage to property that arose due to one or more of the following:

- Improper use of the firefighter's ladder
- Incorrectly performed repairs
- Use of spare parts other than original spare parts
- Use of the ladder with defective components
- Inadequately qualified or insufficient assembly and user personnel
- Structural changes to the firefighter's ladder
- Disaster situations due to the effect of foreign matter and excessive force.

It is the operator's responsibility to ensure that the safety provisions are adhered to. Furthermore, the intended use must be ensured.

16 Proof of tests

Date	Comments	Signature

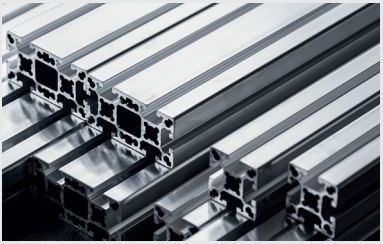
MUNK
RETTUNGSTECHNIK

Sicherheit. Made in Germany.

MUNK Günzburger Steigtechnik ist eine Marke der MUNK Group und steht für Leitern, Rollgerüste und Sonderkonstruktionen in Premium-Qualität.

MUNK Günzburger Steigtechnik

MUNK Rettungstechnik



MUNK Profiltechnik

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