

LUKAS

Because you never get a second chance

Operating instructions for rescue equipment

CE



H1 and H2 Lifting Sets (DIN 14800)



Lifting Set H1



Lifting Set H2

84150012085 EN

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(Translation of the original operating instructions)

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1. Danger classifications

We differentiate between various different categories of safety instructions. The table shown below provides an overview of the assignment of symbols (pictograms) and signal words to the specific danger and the possible consequences.

Pictogram	Damage / injury to	Key word	Definition	Consequences
	Persons	DANGER!	Immediate danger	Death or severe injury
		WARNING!	Potentially dangerous situation	Potential death or serious injury
		CAUTION!	Less dangerous situation	Minor or slight injury
	Property	ATTENTION!	Risk of damage to property/ environment	Damage to the equipment, damage to the environment, damage to surroundings
	-	NOTE	Handling tips and other important/ useful information and advice	No injury/damage to persons/ environment/ device



Wear a helmet with a face guard



Wear protective gloves



Wear safety shoes



Proper recycling



Protect the environment



Read and follow the operating instructions

2. Product safety

LUKAS products are developed and manufactured to ensure the best performance and quality when used as intended.

The safety of the operator is the most important consideration in product design. Furthermore, the operating instructions are intended to help in using LUKAS products safely.

The generally applicable legal and other binding regulations pertaining to the prevention of accidents and protection of the environment apply and are to be complied with in addition to the operating instructions.

The equipment must only be operated by persons with appropriate training in the safety aspects of such equipment – otherwise, there is a danger of injury.

We would like to point out to all users that they should read carefully the operating instructions and the instructions contained therein before they use the equipment, and that they should be carefully followed.

We also recommend that you have a qualified trainer show you how to use the product.



WARNING / CAUTION!

The operating instructions for accessories must also be taken into account!
























Even if you have already received instruction on how to use the equipment, you should still read through the following safety instructions again.



















WARNING / CAUTION!

Please ensure that the accessories you use are appropriate for the maximum operating pressure and the performance of the rescue device!

	<p>Please ensure that no body parts or clothing get stuck between the visibly moving parts.</p>	<p>Working under suspended loads is not permitted where such loads are being lifted solely by means of hydraulic or electro-hydraulic devices. If this work is unavoidable, suitable mechanical supports are also required.</p>	
	<p>Wear protective clothing, safety helmet with visor, safety shoes and protective gloves.</p>	<p>Check the equipment for visible flaws or damage before and after use.</p>	

 	<p>Immediately report any changes that occur (including changes in operating behaviour) to the appropriate persons/departments! If necessary, the equipment is to be shut down immediately and secured!</p>	<p>All bolted connections must be checked for leaks and externally visible damage, which must be repaired immediately! Escaping hydraulic fluid can cause injuries and fires.</p>	
 	<p>In the event of malfunctions, immediately deactivate the equipment and secure it. Repair the fault immediately.</p>	<p>Do not carry out any changes (additions or conversions) to the equipment without obtaining the approval of LUKAS beforehand.</p>	
 	<p>Observe all safety and danger information on the device and in the operating instructions.</p>	<p>All safety and danger information on the device must always be complete and in a legible condition.</p>	 
 	<p>Any mode of operation which compromises the safety and/or stability of the device is forbidden!</p>	<p>Repairs to the equipment may only be carried out by a trained service technician with specific knowledge of the device.</p>	 
 	<p>Safety devices must never be disabled!</p>	<p>Only genuine LUKAS accessories and spare parts are to be used for repairs.</p>	 
	<p>Make sure before switching on/starting up the device and during its operation that this will put no one in danger.</p>	<p>Observe all intervals for recurring tests and/or inspections that are prescribed or stated in the operating instructions.</p>	
 	<p>When working close to live components and cables, suitable measures must be taken to avoid current transfers or high-voltage transfers to the equipment.</p>	<p>Please note that materials can fall off during lifting or lowering or be slung away if a load is suddenly released. Also take suitable precautions of your own.</p>	
	<p>Please ensure that you do not become entangled in cables and trip when working with or transporting the device.</p>	<p>Please ensure that dust protection caps are provided for the couplings.</p>	

  	<p>The build-up of static charge and therefore possible sparking must be avoided when handling the device.</p>	<p>Always wear protective gloves to prevent injury when touching torn or sharp-edged parts.</p>	  
 	<p>Protect all of the lifting set components against humidity and moisture</p>	<p>The hand pump is not suitable for underwater applications.</p>	
	<p>The equipment is filled with hydraulic fluid. This hydraulic fluid can be detrimental to health if it is swallowed or its vapour is inhaled. Direct contact with the skin must be avoided for the same reason. Also, when handling hydraulic fluid, note that it can negatively affect biological systems.</p>	<p>When working with or storing the equipment, ensure that the function and the safety of the equipment are not impaired by the effects of severe external temperatures or that the equipment is damaged in any way. Please note that the equipment can also heat up over a long period of use.</p>	  
	<p>Make sure there is adequate lighting while working.</p>	<p>Before transporting the equipment, always ensure that the accessories are positioned in such a way that they cannot cause an accident.</p>	
 	<p>Always keep these operating instructions easily accessible at the place of operation.</p>	<p>Ensure the proper disposal of all removed parts, left-over oil and hydraulic fluid as well as packaging materials!</p>	 

The generally applicable, legal and other binding national and international regulations pertaining to the prevention of accidents and protection of the environment apply and are to be implemented in addition to the operating instructions.

WARNING / CAUTION / ATTENTION!

The system is **exclusively** intended for **the purpose stated in the operating instructions (see section "Appropriate Use")**. Any other use is **not considered appropriate**. The manufacturer/supplier is not liable for any damage resulting from inappropriate use. The user bears sole responsibility for such use.

Appropriate use includes observance of the operating instructions and compliance with the inspection and maintenance conditions.



Never work in a fatigued or intoxicated state!



3. Appropriate use

The LUKAS lifting sets are specially designed for the lifting or stabilising of heavy or movable loads requiring lifting in order to free persons, vehicles or other objects from operations in dangerous or catastrophic situations.

The lifting cylinders can also be used in all types of dangerous situations for the shifting or lifting of objects to rescue buried or trapped persons or to recover any type of heavy object (vehicles, devices, etc.).

Buildings in danger of collapsing or heavy vehicles in danger of crashing can be temporarily secured and stabilised.

Thanks to the cylinder's low design, the lifting sets can be particularly well used for initial lifting at low clearance heights between the object and the floor. The cylinder extensions can additionally be used to increase the initial height of the stroke.

The cylinder unit of the lifting set is suitable for underwater applications. The hand pump requires an air exchange through the tank cover of the hydraulic fluid container.

Additional safety instructions:

- Never use hydraulic cylinders without a base plate (stability). Use hard wood spacers if possible to provide additional stability of the load.
- Never use more than one extension per cylinder (risk of buckling with multiple arrangements).
- Always load the hydraulic cylinder in the centre (in the direction of the cylinder axis)! Exception: Use of the foot lifter according to instructions.
- Work with a support bar when using the foot lifter (see Accessories section). Screw the foot lifter on in reverse for loads with low internal strength and use it without the support bar. Use suitable underlays or support bars to provide additional support if necessary.
- Always lay the hoses to be free of twists and kinks!
- Pay extremely close attention to the moving load during the lifting and lowering processes!
- Always provide additional mechanical support to raised loads!
- No bystanders are allowed in the hazard zone!

**WARNING / CAUTION!**

Always ensure that the surroundings of the object to be lifted remain stable and are secured against accidental shifting by sustainable supports or substructures.

**WARNING / CAUTION / ATTENTION!**

The following may not be pressurised or squeezed:



- **electric** cables
- **prestressed and hardened** parts such as springs, spring steels, steering columns and rollers
- tubes or containers under gas or liquid pressure
- explosive bodies such as airbag cartridges

The internally set operating pressure may only be directly changed after consultation with LUKAS. A change in settings may result in damage to property and/or injuries.

The H1 and H2 lifting sets are **not** explosion protected!

When using the equipment in explosive areas you **must** rule out any chance of the equipment causing an explosion.

The responsibility for explosion prevention or for prohibiting work with a lifting set rests with the operator of the device or with the person responsible at the place of use.

When working in explosive areas, all applicable legal, national and international regulations, standards and safety rules for avoiding explosions must be observed without restriction!

The lifting set should not come into contact with acids or alkalis. If this is unavoidable, clean the equipment immediately afterwards with a suitable cleaning agent.

You can obtain other accessories and replacement parts for the lifting sets from your authorised LUKAS dealer!

4. System description and overview

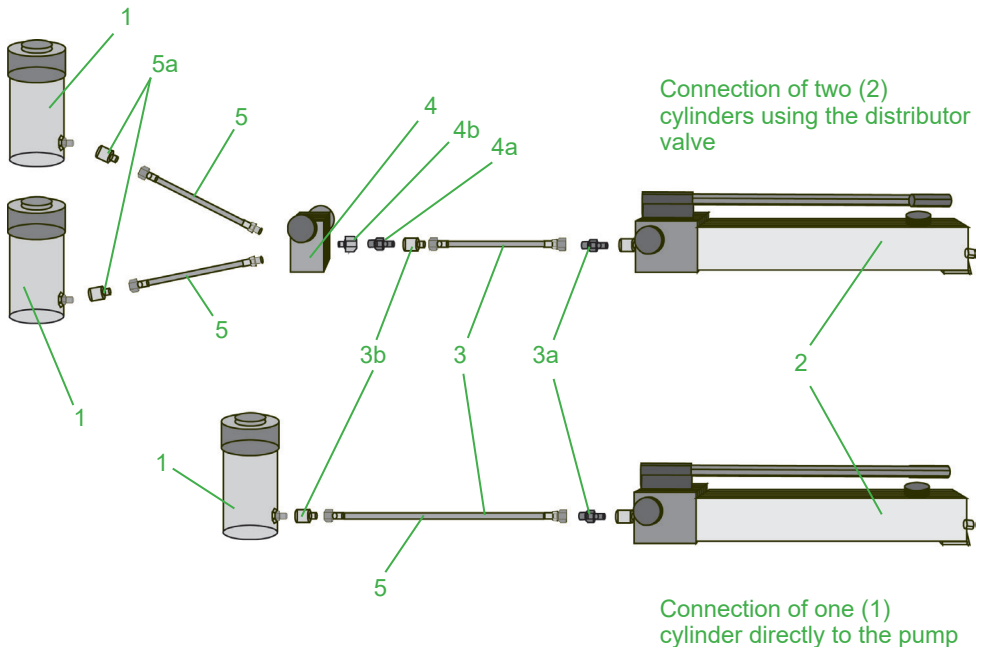
A LUKAS lifting set generally includes a hydraulic hand pump which serves as a drive for one or two single-acting hydraulic cylinders. Operating the hand pump presses hydraulic fluid into the cylinder or cylinders, causing the cylinder piston to extend and lift an attached load. The reset spring in the cylinder causes the cylinder to retract in the idle stroke or it is retracted under loading by the force exerted by the attached load.

The components are joined together by connection hoses and couplings.

The accessories make it possible to optimally use the cylinders in any position desired at the site.

The cylinders are controlled by the pump movement on the hand pump. The drain valve must be closed to build up pressure. The hand wheels (distributor stop valves) must be open when two cylinders are operated with 2-way distributors. A hydraulic load holding function is provided when the isolating valves (distributors) are closed. You should also secure the system mechanically when the cylinders are continuously loaded (under load).

4.1 Design of the system and connection of the components



Pos.	Item no.	Components H1 (Item No. 81-82-10) H2 (Item No. 81-82-20)	H1 quantity	H2 quantity	Group
1	841500121	Cylinder LKZ 15/150 PN 700 with male quick-disconnect coupling	2	2	Cylinder
	841500122	Cylinder LKZ 15/50 PN 700 with male quick-disconnect coupling	2	0	
2	179112000	LH2/0 hand pump, 0.9-70 MPa, with female quick-disconnect coupling	2	1	Pump
3	8407126020	Hose assembly DN 6PN700-2000RT	2	1	Hose
3a	HR149539213	Coupling nipple STNI 06	2	1	
3b	HR149539212	Coupling sleeve STMU61-M	2	1	
4	841489903	2-way distributor valve N2W	1	1	Distributor
4a	HR149539210	Nipple STNI 06	1	1	
4b	8407172	Connector M18x1.5 / R1/4	1	1	
5	KT149536275	Hose assembly DN6 PN 700/5000 RT	2	2	
5a	HR149539212	Coupling sleeve STMU61-M	2	2	
	841280606	Base plate for LKZ 15	2	2	Accessories
	841280502	Foot lifter 100 - 150 kN	2	2	
	8403182	Extension 200 mm	2	2	
	8403178	Wedge attachment SL 9	2	2	
	HR148418965	Transport crate	2	1	
	8411720001	1 Litre hydraulic oil HM 10 ISO 6743-4	1	1	
	84150012085	Operating instructions for lifting set H1 / H2	2	1	
	83145000085	Operating instructions for cylinder	2	1	
	179101085	Operating instructions for hand pump	2	1	
	116500085	Operating instructions for hose assemblies			

4.2 Commissioning and control

Remove the components from the transport crate (H2 has two crates), set them up in accordance with the operating situation and connect the components according to the diagram as shown under the heading "Design of the system and connection of the components".

Please also follow the relevant *operating instructions for the hydraulic cylinders, the hand pump and the hose assemblies* included in the scope of supply for the commissioning of all components. All of the components are pre-filled with hydraulic fluid and vented before shipment. The components are thus immediately operational and can be connected together.

Cylinder

The standard cylinders in the rescue set are equipped with male quick-disconnect couplings. This has the advantage that the "quick stop" installed in the coupling system provides a highly effective safeguard. The quick-disconnect couplings have the additional advantage of preventing the oil (hydraulic fluid) from leaking when the unit is not connected. If no attachment pieces are used, then a suitable padding must be laid between the piston and the load to protect the piston flange.

In applications using the foot lift, the cylinders are equipped with an external thread which is protected by a thread protection ring. This should remain on the cylinder as a safeguard during all work not requiring the thread.

The cylinders can be used in any position desired. **Care must always be taken here to ensure that the force is applied vertically to the load and in the centre of the piston to prevent damage to the top of the piston and to prevent it from tilting.**

Connection of the cylinder

Remove the dust protection cap and any possible dirt particles before connecting the female coupling to its male counterpart.

The male coupling can be inserted when the sleeve on the female coupling has been pulled back. It locks in place when the sleeve is released (verify accurate locking).

Venting the cylinder- pump system, only when the piston moves jerkily

Jerky movements by the unloaded cylinder during extension and retraction is an indication that air is located in the system.

The system is vented by activating the pump to extend the cylinder piston without loading. The cylinder is then positioned downwards by the piston. The cylinder must not be located at the same height as the pump, but must be lower. This allows the air to escape which is forced into the pump's oil tank by the retracting piston. The tank closure cap on the pump must remain loosened here to allow excess air escape to the outside.

Pressure release and the return flow of oil for retracting the hydraulic cylinders

Open the drain valve on the hand pump by turning it slowly to the left. The corresponding hand wheel on the distributor valve must be open at the same time to allow oil from the cylinder to flow back.

Decoupling the pump and cylinder

The pump's drain valve must be opened to prevent any pressure from remaining in the system and to ensure that the piston is fully retracted before the cylinder is disconnected from the pump. The dust protection caps must be reattached or screwed back on after decoupling to prevent soiling of the coupling halves. When commissioning the system, please also follow the *separate operating instructions for the hand pump, the cylinders and the hose assemblies*.

Distributor valve

Controlling the oil flow during cylinder extension:

When both hand wheels are open, each cylinder receives a part of the pump's oil flow proportional to its load. The piston rod of the right-hand cylinder extends when the left-hand wheel is closed. The piston rod of the left-hand cylinder extends when the right-hand wheel is closed.

Controlling the oil flow during cylinder retraction:

The oil flows freely back to the pump when both hand wheels are opened and a communicating pressure compensation occurs between the hydraulic cylinders. Each cylinder can be drained separately. The corresponding hand wheel on the pump must be opened for this.



NOTE:

The female quick-disconnect coupling with quick-stop (Type StMu) between the cylinder and the hydraulic hose is equipped with a "rapid halt function" which will block the oil reflow from the cylinder if, for example, a hose breaks, and thus prevent the load from being dropped. The cylinder then locks and can no longer be retracted. First apply a few pump strokes (compression load) to extend the cylinder a few millimetres. This unlocks the safety device. You can now initiate the lowering process by slowly opening the drain valve on the pump.

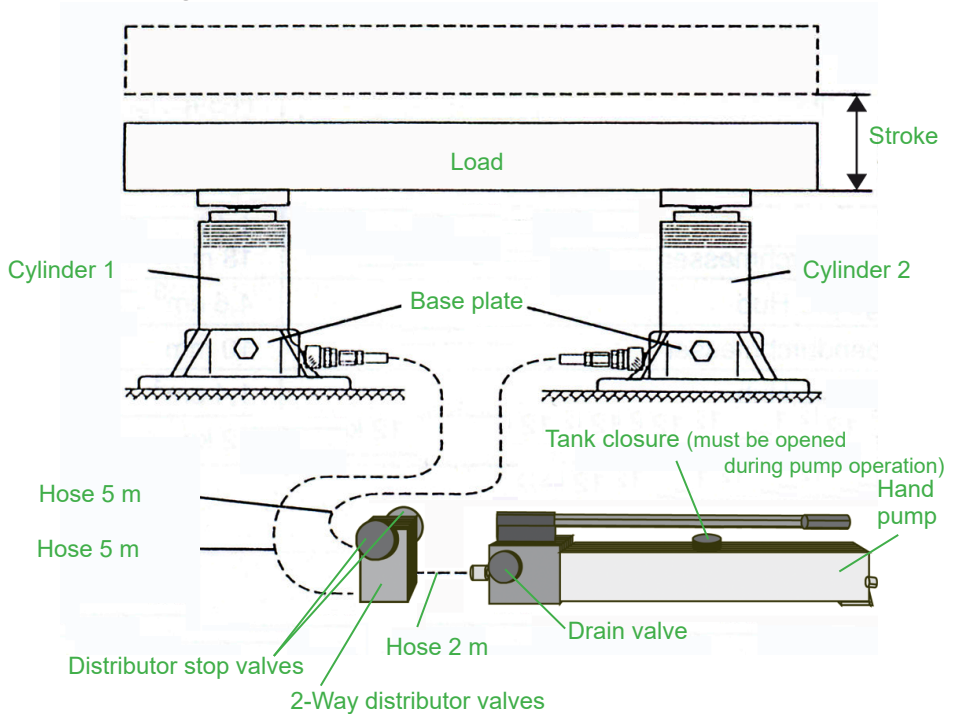


NOTE:

Always follow the separately delivered operating instructions for the cylinders, hand pumps and hose assemblies.

5. Lifting and lowering of loads

Application diagram



5.1 Lifting a load

Create the connection between pump and unloaded cylinder.

Proceed as follows:

- Lay the connecting hoses in a way that they are free of twists and kinks!
- Remove the protective caps from the male and female couplings, while ensuring extreme cleanliness of both coupling components!
- Pull back the coupling sleeve on the female coupling, insert the male counterpart, allow the sleeve to catch and lock.
- Check whether the coupling is locked precisely.
- Slightly **open** the tank closure (cap) on the hand pump so that air can circulate.

Three different operating conditions can occur during lifting:

1. The piston travels a part of its stroke with no loading (idle stroke) and then hits the load. The pump operates here in the low pressure range during the idle stroke. The pressure increases when the piston hits the load and the pump switches automatically from its low to high pressure level. The load begins to rise. The same applies when the load is so small that the change-over pressure is not reached.
2. The piston is loaded from the very beginning, i.e. it extends under load. The pump then switches immediately to high pressure after a few pump strokes and the load is lifted.

3. The load is above the maximum compression force of the cylinder, i.e. the cylinder does not extend. When the maximum pressure of 700 bar is exceeded, the pressure limiting valve routes the hydraulic fluid (hydraulic oil) back into the container. The escape of the hydraulic fluid from the pressure limiting valve can be noticed by a pronounced hissing noise in the hydraulic fluid container.

Initially ensure that both pistons are completely retracted when lifting one load with two cylinders at the same time. Both distributor stop valves are opened, the drain valve on the pump is closed. The cylinder with the smaller load always leads when the load is unevenly distributed. This can be corrected by locking the corresponding side of the distributor. Uniform lifting of the load can be achieved by alternating between sensitive closing and opening of the distributor stop valves.



WARNING / CAUTION / ATTENTION!

Pay extremely close attention to the lifting process and load reaction to prevent the load from slipping off!

The same applies for the **lowering process**, during which both of the distributor stop valves are initially closed and the drain valve opened.

5.2 Lowering a load

The drain plug on the pump body must be slowly opened (turned to the left) to retract the cylinder piston. The tank closure on the hand pump must first be opened so that excess air can escape. The draining process is interrupted when the drain plug is closed (turned to the right). Fine adjustment with the drain plug can be used to retract the cylinder piston with millimetre precision.

Decoupling the pump and cylinder

The system must be completely depressurised and the piston completely retracted before you disconnect the pump from the cylinder.

The protective caps for the male and female quick-disconnect couplings must be reattached after decoupling to prevent soiling of the coupling components.

The tank closure cap on the pump's oil tank must be closed if it is not being used for a prolonged period of time. This prevents leakage of hydraulic fluid during transport.

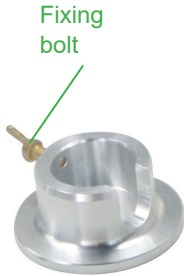


NOTE:

Always follow the separately delivered operating instructions for the *cylinders*, *hand pumps* and *hose assemblies*.

6. Accessories

6.1 Base plate



Base plates enlarge the surface area of the cylinders and increase their stability. The cylinder is placed in the base plate and attached and secured by the wing bolt.



NOTE:

- Always insert the cylinder together with the base plate
- Use additional suitable padding whenever possible

6.2 Extension



The extension makes it possible to increase the stroke or bridge a distance which the piston cannot reach for placement on the load. The extension is attached to the piston.

Neither the front surface of the cylinder's piston nor the extension should ever be placed directly on the load but always together with a suitable padding. This prevents entrenchment in the load or damage to the front surface. One extension (200 mm long) per cylinder is included in the scope of supply.



WARNING / CAUTION!



Extensions may only be used with central power transmission! The usage of more than one extension is prohibited. A multiple configuration poses a risk of buckling.

6.3 Wedge block (Expansion wedge)



The wedge blocks or expansion wedges enable the cylinder to be attached to the edges of a load or attached in a slanted position. This also enables specially shaped loads to be better lifted. The wedge block is attached to the piston.

6.4 Foot lifter



1. The foot lifter can be screwed onto the cylinder to facilitate better load lifting from the side.

Screw the foot lifter on in such a way that the step points upwards. Place the load to be lifted on the step and position the support bar.

2. Sunken loads can be better lifted if the foot lifter is screwed in with the full surface facing upwards and the cylinder reversed (see application diagram).

For this purpose, screw the foot pedal on in a way that its smooth side points to the piston rod (See illustration below). Set up the cylinder with the piston side facing downwards and place a suitable padding between the piston front and the floor.



NOTE:

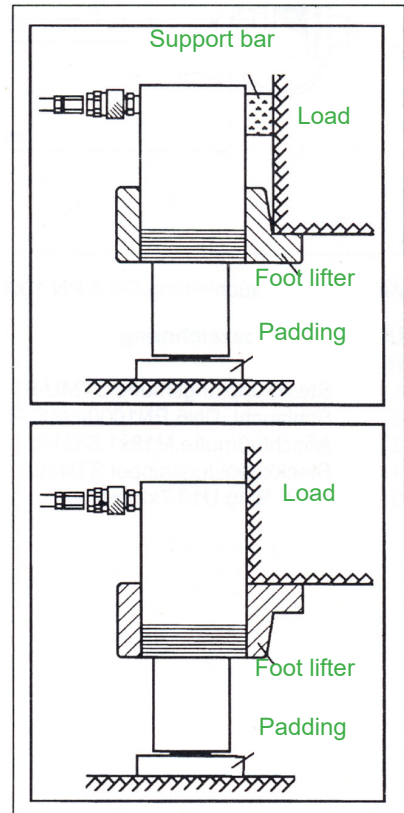
- Always **screw** in the threads **up to the stop**
- Always use the foot lifter together with a suitable support bar (not in the accessories)
- Apply additional mechanical support to raised loads



Additional instructions for using the accessories:

- Never use hydraulic cylinders without a base plate (stability). Use spacers (padding) if possible to provide additional stability of the load.
- Never use more than one extension per cylinder (risk of buckling with multiple arrangements).
- Always load the hydraulic cylinder in the centre (in the direction of the cylinder axis)! Exception: Use of the foot lifter according to instructions.
- Work with a support bar when using the foot lifter. Screw the foot lifter on in reverse for loads with low internal strength and use it without the support bar.

Application diagram: Foot lifter



7. Maintenance and repair

7.1 General information

Service work may only be performed by the device manufacturer or by personnel trained by the device manufacturer and authorised LUKAS dealers.

Only LUKAS spare parts may be used to replace all components (see spare parts list), as special tools and compliance with assembly instructions, safety aspects and inspections are required (see also chapter "Maintenance and Servicing").

During assembly work, pay particular attention to the cleanliness of all components since dirt can damage the lifting sets and components and cause functional disturbances!



WARNING / CAUTION / ATTENTION!

Protective clothes must be worn when repairs are being carried out, as the devices may also be pressurised when not in operation.



ATTENTION!

Because LUKAS devices are designed for the highest performance, only components may be replaced that are listed in the spare parts lists of the corresponding device.

Other components in the device may only be replaced if:

- You have participated in an appropriate LUKAS service training course.
- You have the express permission of LUKAS Customer Service (valid LUKAS certificate required!)



ATTENTION!

When cleaning units and equipment, note that no cleaning agent may be used that has a pH value outside the range 5 - 8!

The cylinders and all of the individual components require only minimum care and maintenance. Care should be taken however to ensure that the piston rods of the cylinder and the quick-connect coupling halves and valve coupling halves remain free of dirt. Be aware of leakage during every usage.

Even the hand pumps require only minimum care and maintenance. Always make sure that no dirt gets into the oil tank or the pump itself because functional disturbances can otherwise occur.

The oil (hydraulic fluid) should be replaced at least once a year. The oil should be changed every six months in cases of frequent operation or operation in particularly dusty surroundings. When performing maintenance and repair, please also follow the *separate operating instructions* for the hand pump, the cylinders and the hose assemblies.

7.2 Function and load test

A visual inspection must be carried out after every use, but at least once a year.

Every 3 years or when there might be doubts regarding the safety or reliability of the unit, an additional function check is to be carried out (in this connection, comply with the applicable national and international regulations with regard to the maintenance intervals of rescue equipment). Operating time per day In the Federal Republic of Germany, regular safety inspections according to the regulations of the Gesetzlichen Unfallversicherung (GUV; connoted 'Legal accident insurance') are mandatory.

A function and load test must also be performed whenever there is any doubt regarding the safety or reliability of a device,

(In case of doubt, contact your authorised LUKAS dealer, LUKAS service centre or LUKAS directly!)



NOTE:

Always follow the separately delivered operating instructions for the cylinders, hand pumps and hose assemblies with respect to maintenance and repair.

7.3 Signs

All damaged and/or illegible labels (safety notices, type plate, etc.) must be replaced.

Procedure:

1. Remove damaged and/or illegible decals.
2. Clean surfaces with industrial alcohol.
3. Affix new decals.

Take care to affix the labels in the correct positions. If this is no longer known, you should ask your authorised LUKAS dealer or contact LUKAS directly.

8. Troubleshooting

Fault	Cause	Solution
Connected device does not move, moves only slowly or moves intermittently.	Insufficient fluid in the hydraulic reservoir.	Top up hydraulic fluid to the maximum fill level
	Discharge valve open	Close discharge valve
	Hose assembly not connected properly or damaged	Check hose connection and reconnect if necessary
	Air in hydraulic system	Bleed the system as described in the "Bleeding the hand pump" section of the separate operating instructions
	Valve block defective	Replace the valve block
		Have repaired by authorised dealer or directly by LUKAS
	Defect on the device	<i>Heed the specifications of the separate operating instructions of the device.</i>
Connected device moves, but does not hold pressure or does not render the specified performance.	Hose assembly not connected properly or damaged	Check hose connection and reconnect if necessary
	Leaking seal	Locate the leak and have the hand pump serviced by an authorised dealer, by personnel specially trained by LUKAS or by LUKAS directly.
	Internal leakage of the pump	Have the hand pump serviced by an authorised dealer, by personnel specially trained by LUKAS or by LUKAS directly.

Fault	Cause	Solution
Device either does not move back into the starting position, moves incompletely back toward the starting position or moves more slowly into the starting position than normal.	Discharge valve closed	Open discharge valve
	Excess fluid level in the hydraulic fluid tank of the pump	Reduce hydraulic fluid down to max. fill level
	Loose hydraulic coupling	Check all couplings and retighten them
	Enclosed air in the system	Bleed pump as described in the chapter "Bleeding the pump"
	Defect on the device	Heed the specifications of the separate operating instructions of the device.
Connected device not reaching its limit position	Insufficient fluid in the hydraulic reservoir.	Top up hydraulic fluid to the maximum fill level Attention: move the device back into the base position before adding fluid!
Connected rescue device does not achieve its power-related performance data	Maximum permitted operating pressure of the pump is not reached	Replace pressure control valve or have it recalibrated by an authorised dealer or directly by LUKAS
Fluid escaping from hydraulic fluid tank (especially from the filling screw)	Due to return flow of the hydraulic fluid from the device, the maximum fill quantity of the tank is exceeded	Reduce hydraulic fluid down to max. fill level
	Defective seals	Replace seal
Hydraulic fluid milky and cloudy	Water / condensation in the system	Replace the hydraulic fluid immediately
<u>For the quick-connect system:</u> Hoses cannot be coupled	System is under pressure	Open discharge valve and bleed device
	Coupling defective	Coupling must be replaced immediately

Fault	Cause	Solution
<u><i>For the quick-connect system:</i></u> Leak in the coupling nipple	The coupling's valve tappet is dirty or damaged	After pressure release there is no more leakage.
	Male coupling defective	Male coupling needs to be replaced immediately
<u><i>For the quick-connect system:</i></u> Leakage in the female coupling	Female coupling defective	Female coupling must be replaced immediately
Hydraulic fluid leak on the hoses or fittings	Leak, possible damage	Replace hoses
Damages on the surface of the hydraulic hoses	Mechanical damage or contact with aggressive agents	Replace hoses

Contact an authorised LUKAS dealer or the LUKAS Customer Service Department directly if the malfunctions cannot be rectified.

The address for the LUKAS Customer Service department is:

LUKAS Hydraulik GmbH

Weinstrasse 39, D-91058 Erlangen, Germany

Tel.: (+49) 09131 / 698 - 348

Fax.: (+49) 09131 / 698 - 353

<http://www.lukas.com>

9. Technical data

Since all values are subject to tolerances, minor differences may occur between the data on your equipment and the data in the following tables.

The values may also differ slightly because of reading inaccuracies and/or tolerances in the measuring equipment used.



NOTE:

The following tables contain only the technical data necessary for operation and storage.

Additional technical data can be obtained directly from LUKAS on request.

9.1 Technical data of the hydraulic cylinder

Device type Item number		LKZ 15/150 841500121	LKZ 15/50 841500122
Dimensions (retracted)	mm	255 x 140 x 150	155 x 140 x 68
	<i>in.</i>	<i>10.0 x 5.5 x 5.9</i>	<i>10.0 x 5.5 x 5.9</i>
Length, extended	mm	305	205
	<i>in.</i>	<i>12.0</i>	<i>8.07</i>
Force / Pushing	kN	137	
	<i>lbf.</i>	<i>30799</i>	
Stroke	mm	150	50
	<i>in.</i>	<i>5.91</i>	<i>1.97</i>
Max. operating pressure	MPa*	70	
	<i>psi</i>	<i>10000</i>	
Volume of hydraulic fluid	cm ³	295	98
	<i>cu.in.</i>	<i>18.0</i>	<i>6.0</i>
Ambient temperature	°C	-20 ... +55	
	°F	<i>-4 ... +131</i>	
Weight (incl. hydraulic fluid)	kg	3.6	2.4
	<i>lbs.</i>	<i>7.9</i>	<i>5.3</i>

* 1 MPa = 10 bar

9.2 Technical data of the Hand pump

Device type		LH2/0,9-70 PN700
Item number		179112000
Dimensions (retracted) l x w x h	mm <i>in.</i>	607 x 100 x 164 <i>23.9 x 3.9 x 6.5</i>
Feed rate/stroke	cm ³	17
Low pressure	<i>cu.in.</i>	<i>1.0</i>
Feed rate/stroke	cm ³	1.7
High-pressure	<i>cu.in.</i>	<i>0.1</i>
Max. operating pressure	MPa* <i>psi</i>	70 <i>10000</i>
Change-over pressure	MPa*	2
Low pressure -> high pressure	<i>psi</i>	<i>290</i>
Volume of hydraulic fluid usable	cm ³ <i>cu.in.</i>	900 <i>54.9</i>
Ambient temperature	°C <i>°F</i>	-20 ... +55 <i>-4 ... +131</i>
Weight (incl. hydraulic fluid)	kg <i>lbs.</i>	6 <i>13.2</i>
Specification of hydraulic fluid		HM 10 ISO 6743-4

* 1 MPa = 10 bar

9.3 Technical data of lifting set H1/H2

Device type		H1	H2
Item number		81-82-10	81-82-20
Maximum possible stroke extension	[mm]	200	200
	<i>[in.]</i>	<i>7.87</i>	<i>7.87</i>
Total weight	[kg]	53.4	35.5
	<i>[lbs.]</i>	<i>118</i>	<i>78.3</i>
Operating pressure	[MPa]	70	70
	<i>[psi.]</i>	<i>10000</i>	<i>10000</i>

9.4 Dimensions of the transport crate



Component		Transport crate
Item number		HR148418965
Dimensions (closed) L x W x H	mm	600 x 400 x 220
	<i>in.</i>	<i>23.6 x 15.8 x 8.66</i>

9.5 Operating and storage temperature ranges

Operating temperature	[°C] / <i>[°F]</i>	-20 ... +55	<i>-4 ... +131</i>
Environmental temperature (device in operation)	[°C] / <i>[°F]</i>	-25 ... +45	<i>-13 ... +113</i>
Storage temperature (device not in operation)	[°C] / <i>[°F]</i>	-30 ... +60	<i>-22 ... +140</i>

10. Declaration of conformity



LUKAS Hydraulik GmbH
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Deutschland



Dinglee, LUKAS, Hurst, Vetter

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Germany

EG-Konformitätserklärung / EC Declaration of Conformity

Im Sinne der EG-Maschinenrichtlinie 2006/42/EG, Anhang II A

In accordance with the EC Machinery Directive 2006/42/EC, Appendix II A

Hiermit erklären wir, dass die nachfolgend bezeichneten Hebesätze
We hereby declare that the following I

Artikelnr. / Item no.	Modell und Typ / Model and type
81-82-10; 841500127	Hebesatz H1 / lifting set H1
81-82-20; 841500128	Hebesatz H2 / lifting set H2

- in der von uns gelieferten Ausführung den Bestimmungen der Maschinenrichtlinie 2006/42/EG und den sie umsetzenden nationalen Rechtsvorschriften entsprechen.
Berücksichtigt wurden insbesondere die Normen:
 - DIN EN ISO 12100, Ausgabe: 2011-03 - Sicherheit von Maschinen – Allgemeine Gestaltungsgrundsätze – Risikobeurteilung und Risikominderung.
- *in the versions supplied by us conform to the EC Machinery Directive 2006/42/EC and the national statutory provisions that implement them.*
The following standards have particularly been taken into consideration:
 - *DIN EN ISO 12100, publication date: 2011-03 – Safety of machinery - General principles for design - Risk assessment and risk reduction.*

Bei einer nicht mit uns abgestimmten Änderung oder Verwendung der Maschine/Ausrüstung verliert diese Erklärung ihre Gültigkeit.
This declaration loses its validity in the case of alterations or usage of the machinery/equipment not approved by LUKAS.

Erlangen, 30.03.2015

i. V.


Carsten Sauerbier
Bevollmächtigter / Authorized Representative
Director of Technical Innovation and Development
IDEX Europe GmbH

i. A.


Thomas Littwin
Konstrukteur / Engineering Designer




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de UK-Konformitätserklärung Hebesatz		Artikelnummer	Hiermit erklären wir, dass die bezeichneten Geräte in der von uns gelieferten Ausführung den aufgeführten Bestimmungen und den sie umsetzenden nationalen Rechtsvorschriften entsprechen.
en UK Declaration of Conformity Lifting set		Item number	We hereby declare that the described devices in the format supplied by us conform to the specified conditions and the implementing national regulations.
H1 H2	81-82-10 81-82-20	Supply of Machinery (Safety) Regulations 2008 BS EN ISO 12100: 2010-12-31	
		 LUKAS Hydraulik GmbH Weinstraße 39, 91058 Erlangen Deutschland	
		LUKAS Hydraulik GmbH, 91058 Erlangen, Germany Erlangen, 01.09.2022	

11. Notes



Please duly dispose of all packaging materials and removed items.

LUKAS Hydraulik GmbH

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