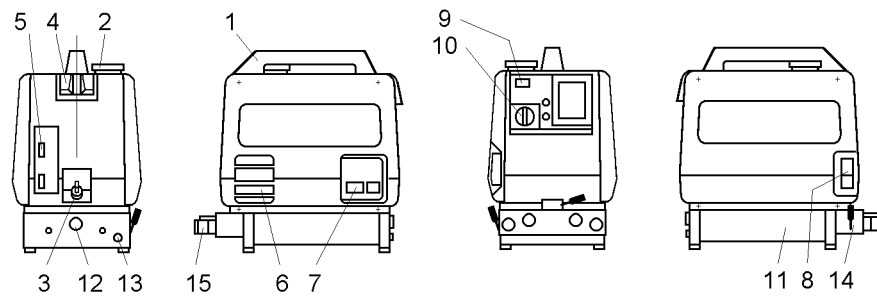


Operating Instruction Rescue Tools

LUKAS

Super Silent Power Pack GW - 4TB

84150/7765-85 GB
Issue 7.98



- 1 Carrying handle
- 2 Fuel tank cap with fuel level indicator
- 3 Engine oil filler/drain plug with gauge stick
- 4 Spark plug cover
- 5 Fuel drain plug
- 6 Exhaust pipe
- 7 Air filter cover
- 8 Reversing starter
- 9 Engine oil warning light
- 10 Engine switch
- 11 Hydraulic oil tank
- 12 Oil gauge showglass
- 13 Drain plug for hydraulic oil
- 14 Control valve
- 15 Coupling counterparts

1 Basic operation and designated use of the machine

1.1 The machine has been built in accordance with state-of-the-art standards and the recognized safety rules. Nevertheless, its use may constitute a risk to life and limb of the user or of third parties, or cause damage to the machine and to other material property.

1.2 The machine must only be used in technically perfect condition in accordance with its designated use and the instructions set out in the operating manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the machine. Any functional disorders, especially those affecting the safety of the machine/plant, should therefore be rectified immediately.

1.3 The machine is exclusively designed for the application mentioned in the operating instructions. Using the machine for purposes other than those mentioned above is considered contrary to its designated use. The manufacturer/supplier cannot be held liable for any damage resulting from such use. The risk of such misuse lies entirely with the user. Operating the machine within the limits of its designated use also involves observing the instructions set out in the operating manual and complying with the inspection and maintenance directives.

2 Organizational measures

2.1 The operating instructions must always be at hand at the place of use of the machine, e. g. by stowing them in the tool compartment or tool-box provided for such purpose.

2.2 In addition to the operating instructions, observe and instruct the user in all other generally applicable legal and other mandatory regulations relevant to accident prevention and environmental protection. This also applies for wearing protective clothing, helmet with visor or goggles and protective gloves.

2.3 In order to avoid injuries, the machine must only be operated by a specially trained operator who has undergone a safety training.

2.4 Observe all safety instructions and warnings attached to the machine. Make sure that safety instructions and warnings attached to the machine are always complete and perfectly legible.

2.5 Never make any modifications, additions or conversions which might affect safety without the supplier's approval. This also applies to the installation and adjustment of safety devices and valves as well as to welding work on load-bearing elements.

2.6 Spare parts must comply with the technical requirements specified by the manufacturer. Spare parts from original equipment manufacturers can be relied to do so. It is only allowed to use original LUKAS spare parts or LUKAS system components.

2.7 Replace hydraulic hoses within stipulated and appropriate intervals even if no safety-relevant defects have been detected. This has to be done after 10 years at the latest.

2.8 Adhere to prescribed intervals or those specified in the operating instructions for routine checks and inspections.

2.9 Make sure to dispose properly of packing material and dismantled parts.

3 General safety instructions

3.1 In the event of malfunctions, stop the machine immediately and lock it. Have any defects rectified immediately.

3.2 Before starting up or setting the machine in motion and during operation of the machine make sure that nobody is at risk.

3.3 Before setting the machine in motion always check that the accessories have been safely stowed away.

3.4 Make sure that there is enough lighting during work.

3.5 Avoid any operation that might be a risk to machine stability.

3.6 Check the machine at least after every operation for obvious damage and defects. Report any changes (incl. changes in the machine's working behaviour) to the competent organization/person immediately. If necessary, stop the machine immediately and lock it. All lines, hoses and screwed connections have to be checked for leaks and obvious damage. Repair damage immediately. Splashed oil may cause injury and fire.

3.7 All safety equipments have to be checked for completeness and flawless condition:
- instruction markings and warning signs (safety instructions)
- check safety cover (e.g. motor-safety covers, heat protection etc.) if they are available and if they are in a good condition

3.8 Working under loads is not allowed if they are only lifted by hydraulic cylinders. If the work is indispensable sufficient mechanical supports are needed additionally.

3.9 Make sure that hoses are not mechanically stressed (pulling, bending etc.)

3.10 Further Safety Information for Internal Combustion Engines

Do not run the engine on enclosed premises. The exhaust fumes contain carbon monoxide which is an odourless, deadly gas.

Do not run the engine if you can smell petrol or if there is danger of explosion. Never top up the fuel tank while the engine is running.

If you spill fuel, it must be wiped up before starting the motor. You may not start the engine until the petrol fumes have cleared.

To avoid the danger of fire and to ensure sufficient ventilation, set up the engine at least 1 metre away from walls or other machinery.

When filling the fuel tank or in places where petrol is stored, **never smoke and keep away naked flames or sparks.**

Operate the engine on a level surface. If the engine tilts, fuel may leak out.

At regular intervals, clear the area round the silencer of dirt and flammable deposits. Never operate the engine in badly ventilated locations on enclosed premises, for example. If this cannot be avoided, ensure that ventilation is adequate such that there is no danger of poisoning for human beings or animals.

4 Instructions for maintenance and service

4.1 For the execution of maintenance and service work, tools and workshop equipment adapted to the task on hand are absolutely indispensable.

Work on the hydraulic system must be carried out only by personnel having special knowledge and experience with hydraulic equipment.

4.2 Before putting into operation clean the machine, especially connections and threaded unions, of any traces of oil, fuel or preservatives before carrying out maintenance/repair. Never

use aggressive detergents. Use lint-free cleaning rags and pay attention that the components are meticulously clean during reassembling after repair.

4.3 During dismantling of machines it is necessary to collect the outrunning hydraulic liquids completely, so that they cannot reach the ground. They have to be disposed properly according to the instructions.

4.4 Always tighten any screwed and thread connections that have been loosened during maintenance and repair. Observe the stipulated torques.

4.5 Work on the electrical system or equipment may only be carried out by a skilled electrician himself or by specially instructed personnel under the control and supervision of such electrician and in accordance with the applicable electrical engineering rules.

4.6 The electrical equipment of machines is to be inspected and checked at regular intervals. Defects such as loose connections or scorched cables must be rectified immediately.

4.7 Aggressive material (acid, lye, solvent, vapour) can damage the machine. It is necessary to clean the whole machine if it must be exceptionally operated under such conditions or gets into touch with these materials.

4.8 Make sure that no oil or fuel can reach the ground during operation or service works. Oil and fuel must be disposed of in accordance with the existing regulations.

Attention:

With power packages having the automatic selector valve it is possible that **both** connected devices **start moving when operated at a time without load.**

5 Function description

5.1 Function and application of the Super Silent Power Pack

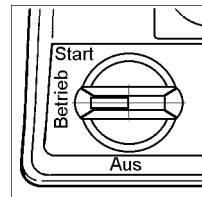
The **Super Silent Power Pack** is exclusively designed for the operation of LUKAS rescue tools. The power pack is compactly built and consists of a combustion engine with special noise dampening features, a hydraulic high pressure pump including all the necessary valves and a valve control unit which makes it possible to alternately operate **two LUKAS rescue tools**. To provide for sufficient hydraulic oil volume an oil tank of the appropriate size is required *below* the unit.

5.2 Function description of the combustion engine's main elements

5.2.1 Engine switch

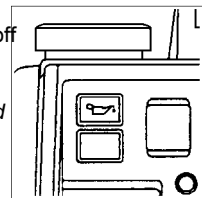
The power pack is equipped with a three-position switch:

- START: To start the *cold* engine
- BETRIEB (OPERATION): To start the *hot* engine and *operating position*
- AUS (OFF): To switch the engine *off*, fuel supply is interrupted



5.2.2 Oil warning system

If the oil level is too low, the oil warning system automatically switches off the engine: The *oil warning light* lights up. If you try to start the engine despite the oil level being too low, the light starts to blink on pulling the starter T-handle and it *fails to start*. If this is the case, *oil* must be *refilled* immediately (see point 8.3).



5.2.3 Air filter

The air filter protects the carburettor from pollutants like dust and dirt; it has a reusable insert. Make sure that the air filter is always clean and in perfect condition, and clean or replace it if necessary.

5.2.4 Spark plug

The spark plug is protected by the spark plug cover which can be removed to check/replace the spark plug. Lift the cover slightly and fold it down.

5.2.5 Oil filler/drain plug

The oil filler plug has a gauge stick which shows the exact oil level. The filling opening is also used for draining the oil.

5.2.6 Fuel drain plug

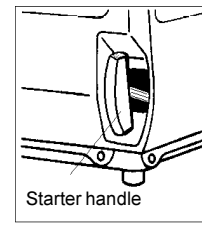
It serves to let off the fuel before service works or if the device is put out of operation for a longer period of time.

5.2.7 Fuel tank cap with fuel level indicator

The fuel level is indicated on the fuel tank cap.

5.2.8 Reversing starter

The engine is started by a cable reversing starter which is situated in a recess on the long side of the power pack trim panel.



5.2.9 Silencer

The silencer is completely integrated in the **Super Silent Power Pack** and it is air-cooled. The combustion gases can escape through a protective grid.

5.2.10 Carrying handle

The carrying handle serves to transport the **Super Silent Power Pack**. If machines are required to lift it, do not use steel cables or chains, but broad straps. The carrying handle, which is hollow, also contains a ventilation hole for ventilation of the fuel tank.

5.3 Description of the Super Silent Power Pack's main elements

5.3.1 Control valve

Two rescue tools for *alternate operation* can be connected to the valve block on the front (below) of the **Super Silent Power Pack** (see point 6.3) via hose pairs.

5.3.2 Rapid action hose couplings

The hose pairs are connected to the rescue tools via rapid action hose couplings. The valve is equipped with non-interchangeable plugs and sockets. Color markings clearly indicate the rescue tool to be connected.

5.3.3 Hydraulic oil gauge

An oil gauge showglass is situated at the back of the **Super Silent Power Pack** on the oil tank. The maximum oil level is reached when the oil reaches the upper edge of the showglass.

5.3.4 Hydraulic oil drain plug

A drain plug on the oil tank is used to drain the hydraulic fluid.

6 Commissioning the Super Silent Power Pack

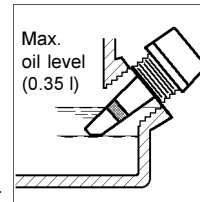
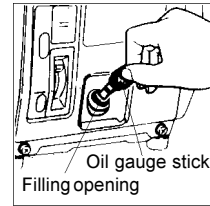
6.1 Initial commissioning

6.1.1 Filling in engine oil

IMPORTANT! On delivery the engine does not contain oil. Engine oil must be filled in before the first start. To do this, it is essential that the Super Silent Power Pack be placed on an *even* surface and the engine is not running:

- Remove oil gauge stick (= oil filler plug)
- Fill in engine oil according to specification (see 8.2) and check oil level:

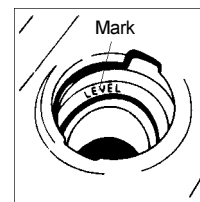
Remove the oil from the oil gauge stick with a clean cloth and insert the gauge stick without screwing it in. Then check and if necessary adjust the oil level. The oil level must be between the two marks on the dipstick.



6.1.2 Filling in fuel

Open fuel tank cap and fill up fuel up to the "LEVEL" mark; close cap tight.

Important! Do not let fuel overflow. Unleaded fuel is recommended.



6.1.3 Checking hydraulic oil

Before the first start, the hydraulic oil level must be checked (see 8.4). If necessary it must be increased (see 8.1) or if the operating conditions have changed the oil must be completely replaced in accordance with point 8.4. On delivery the power pack is filled with hydraulic oil with HLP 22 viscosity rating.

6.2 After/before each commissioning procedure

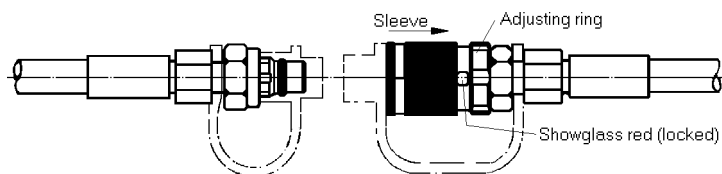
6.2.1 Check fuel level and fill up fuel if necessary (6.1.2).

6.2.2 Check engine oil level and fill up engine oil if necessary (6.1.1) or find out cause of oil loss.

6.2.3 Check hydraulic oil level and fill up hydraulic oil if necessary (8.1) or find out cause of oil loss.

6.3 Connecting the rescue devices

The rescue device is connected to the connection hose pairs via non-interchangeable coupling counterparts (plug and socket) (see figure).



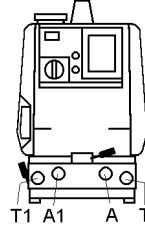
Unlock prior to coupling/uncoupling and before removing the dust protection covers (red not visible). Retract sleeve and connect plug and socket, then release sleeve and set showglass to red using the adjusting ring. Now the connection has been made and locked.

In order to avoid oil pollution, the dust protection covers have to be connected to each other when the coupling is connected.

Note: Coupling of the rescue devices is possible only if the pressure hoses have been **depressurized**.

Connect the hose pairs with the coupling counterparts to the respective connections on the control valve:

Connect hose pair red/blue: - red to connection A - blue to connection T.
Connect hose pair yellow/blue: - yellow to connection A1
 - blue to connection T1.



7 Operation

7.1 Starting the engine

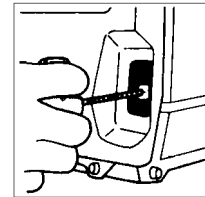
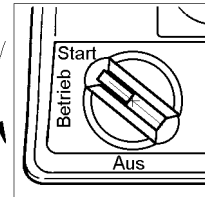
Before starting the engine carry out the checks according to 6.2 and make sure that the rescue tool(s) is (are) connected.

7.1.1 Cold engine: Turn engine switch to "START"

7.1.2 Hot engine: Turn engine switch to "BETRIEB" (OPERATION)

7.1.3 Slowly pull out **starter T-handle** until a resistance can be felt, then firmly pull out the handle. Do not let the handle spring back, but slowly guide it back by hand.

If the engine was started in the "START" position, turn the engine switch to the "BETRIEB" (OPERATION) position as soon as the engine is hot.



7.2 Operation of rescue tools (general)

The **Super Silent Power Pack** can alternately operate two rescue tools.

With this **patented LUKAS valve** two rescue devices can be operated alternately without any manual switch-over. The valve leads the oil flow to the rescue device just being operated whilst the other one becomes switched off **automatically** (requirements as per DIN 14 751 are therefore fulfilled).

Remark:

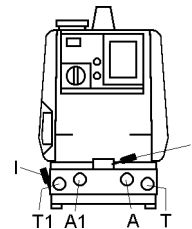
Below a minimum working pressure, i. e. when rescue devices are operated without load, it might be possible that both connected rescue devices are moving. This double movement will be interrupted in any case as soon as the first device starts actually working.

7.3 Connection possibilities

7.3.1 Case 1: Two rescue tools connected

Normally two hose pairs are connected with the valve block. Switch-over between the two connected rescue tools is made automatically.

- Switch lever I to position "2" (see marking on the valve block = „two-tool operation“).
- Switch lever II to position "A" (see marking on the valve block) to build up pressure.
- For pressure release switch lever II to position "T" (see marking on the valve block).



7.3.2 Case 2: One rescue tool connected

Should only one hose pair (with tool) be connected, observe the following:

- make sure that the hose pair is connected with port **A and T**,
- switch lever I to position "1" (see marking on the valve block = "one-tool operation"),
- pressure build-up and pressure release are made by switching lever II as described under 7.3.1.

7.3.3 Case 3: Two hose pairs coupled with the power pack, but only one rescue tool connected

- Switch lever II to position "2" (see marking on the valve block = "two-tool operation"),
- connect the plug of the super flous red or yellow hose with the socket of the super flous blue hose so that the oil can circulate.

7.4 Switching off the engine

Set the operating lever at the control valve to "0". Turn the engine switch to the "engine off" position.

8 Maintenance

The aim of the maintenance schedule is to keep the **Super Silent Power Pack** in perfect operating condition.

IMPORTANT!

Switch off the engine before carrying out any maintenance work.

Check and service the power pack as specified in the following table.

Regulas service interval	Daily or before every use	Every 20 operating hours	Every 50 operating hours	Every 100 operating hours
Subject				
Check hydraulic oil	x			
Replace				x
Check engine oil	x			
Replace				x
Check air filter insert	x			
Clean			x (1)	
Spark plug maintenance			x	
Spark arrester			x	

(1) Must be serviced more often if used in dusty environment.

Every 3 years or if there is any doubt as to the safety or reliability of the equipment, carry out an additional functional and load test.

The functional and load test must only be carried out by an expert using the LUKAS test set while adhering to the relevant test instructions.

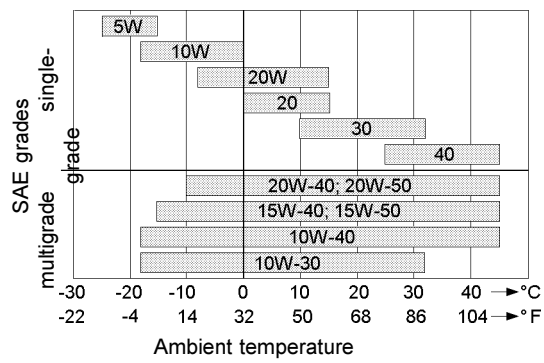
8.1 Hydraulic oil recommendation

Oil for LUKAS hydraulic devices: Mineral oil in accordance with DIN 51524 and others

	Range of oil temperature	Viscosity rating	Remarks
A	- 24 ... + 30°C	HL 5	
B	- 18 ... + 50°C	HLP 10	
C	- 8 ... + 75°C	HLP 22	
D	+ 5 ... + 80°C	HLP 32	
E	- 8 ... + 70°C	HF - E15	biodegradable

Recommended range of viscosity: 10...200 mm²/s (cSt)

8.2 Engine oil recommendation



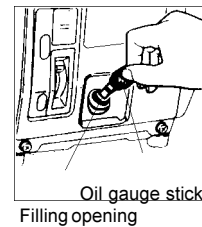
8.3 Engine oil change

Switch off the engine. Drain the oil while the engine is still hot in order to ensure quick and complete draining.

Remove the oil filler cap. Tilt the **Super Silent Power Pack** in order to drain all the oil. Put the power pack on an even surface and fill in the recommended engine oil. (see 6.1.1)

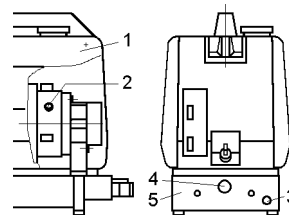
Oil capacity 350 ccm

Check the oil level and screw the oil filler cap in again.



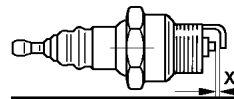
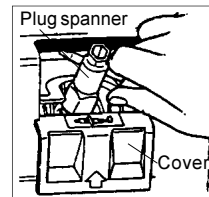
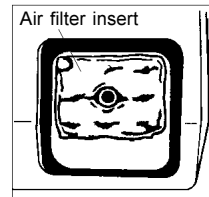
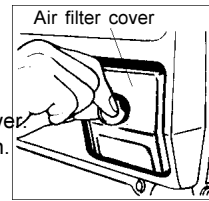
8.4 Hydraulic oil change and cleaning of hydraulic oil tank

- Place the power pack above an oilpan.
- Screw off side part 1 on starter side of power pack.
- Unscrew oil filler screw 2.
- Remove drain plug 3 - oil drains off.
- Remove oil gauge showglass 4.
- Clean oil tank 5 with hydraulic oil (by flushing several times).
- Install drain plug 3 with new sealing ring.
- Install oil gauge showglass 4 with new seal.
- Slowly fill hydraulic oil into the oil filler screw opening 2 (use funnel).
- The correct oil level is reached when the oil reaches the upper edge of the oil gauge showglass.
- Screw in oil filler screw 2 with new sealing ring.



8.5 Cleaning of air filter

A dirty air filter impedes air flow to the carburettor.
To avoid problems with the carburettor, clean the air filter regularly.
Loosen the screw of the air filter cover with a coin and remove the cover.
Take out the filter insert and clean it in non-inflammable cleaning solution.
Dry it thoroughly.
Soak the insert in clean engine oil, squeeze out the excessive oil and re-install the filter insert.

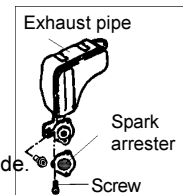


8.6 Spark plug maintenance

Recommended spark plug: BMR4A (NGK) RCJ8 (CHAMPION)
To guarantee trouble-free engine operation, the spark plug gap must be correct and the spark plug must be free of residues of combustion.
Take off the spark plug cover and remove the spark plug socket connector. Remove all dirt from the spark plug base.
Unscrew the spark plug with the help of a plug spanner.
Visually inspect the spark plug. Replace the spark plug if it is visibly worn or the insulator is cracked or splintered.
If you want to insert the spark plug again it must be cleaned with a wire brush.
Measure the spark plug gap with a feeler gauge. The gap X should be 0.6 to 0.7 mm. If necessary, adjust the gap by carefully bending the outer electrode.
To avoid destroying the thread, screw the spark plug in by hand until it rests on its base. Then tighten the spark plug with the plug spanner.

8.7 Maintenance of spark arrester (if available)

To ensure efficiency of the spark arrester, it must be serviced every 50 operating hours.
Before the start of the maintenance works, the exhaust silencer must cool down.
Remove the **Super Silent Power Pack's** side part on the exhaust pipe side.
Screw off and carefully remove the spark arrester from the exhaust pipe.
Check the exhaust pipe opening and the spark arrester for carbon deposits and clean them with a brush.
The spark arrester must be free of cracks and holes, otherwise it must be replaced.
To reinstall the spark arrester, reverse the steps.



8.8 Cleaning of fuel filter

When refilling fuel, clean the fuel filter if necessary.

8.9 Tool kit

For maintenance works a tool kit is supplied which should always be at hand.

8.10 Storing the Super Silent Power Pack

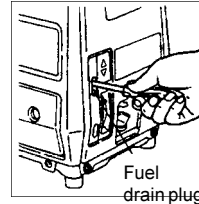
When storing the **Super Silent Power Pack** for a longer period of time the following must be observed:

The storeroom must be free of dust and the air humidity must be low. To empty the fuel tank and the carburettor, the engine switch must be set to "OPERATION" and the fuel drain plug turned to the left.

Do not remove drain plug, just loosen it.

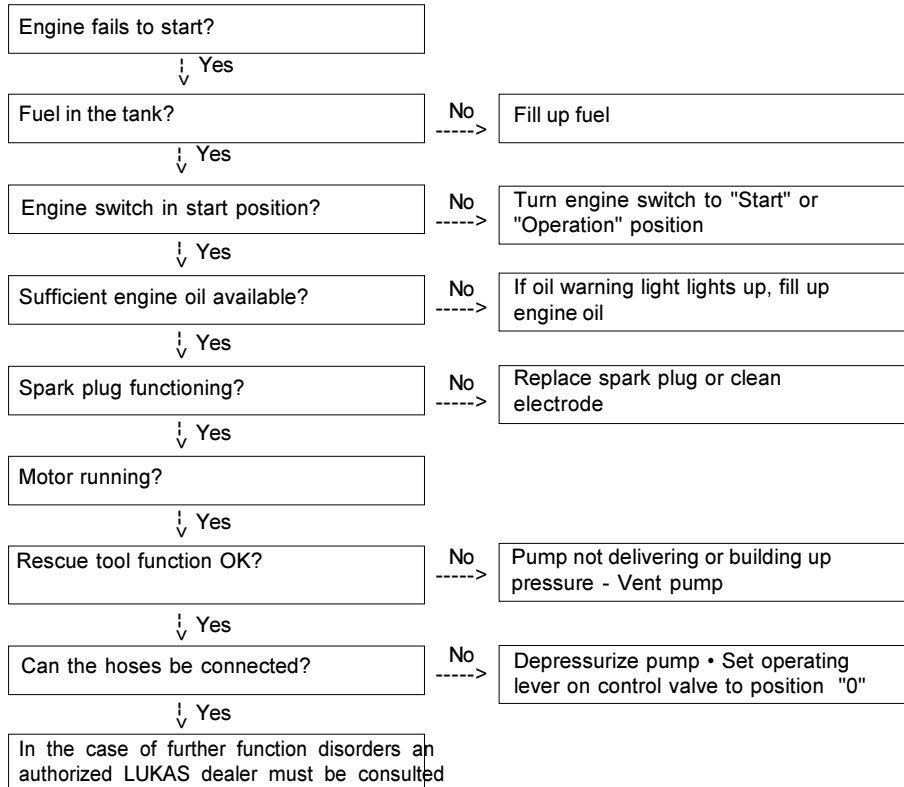
Empty the fuel into an appropriate container. Tighten the drain plug again and turn the engine switch to the "engine off" position.

Pull the starter cable until a resistance can be felt. At this stage, the piston carries out the compression stroke, the inlet and outlet valves are closed which protects the engine from corrosion.



Thoroughly clean air filter with cleaning solution.

9 Troubleshooting



If the defects cannot be repaired, contact an authorized LUKAS dealer or the LUKAS service department. The address:

LUKAS Hydraulik GmbH & Co. KG, Weinstraße 39, D-91058 Erlangen, Germany;
 P.O.B. 2560, D-91013 Erlangen, Germany; service phone + 49 (0) 91 31/69 83 48;
 fax + 49 (0) 91 31/69 83 53.

10 Service

Service may be carried out exclusively by the manufacturer of the device or by staff trained by the manufacturer and the authorized rescue device dealer.

Only **genuine LUKAS spare parts** may be used for repair works.

When carrying out maintenance or service works be sure to wear protective clothing (see safety regulations), since rescue devices may be under pressure even in unoperated state.

11 Technical data

11.1 Engine

Type	mech. air cooling; four-stroke; side valve; gasoline engine
Fuel tank / Oil tank	2000 cm ³ / 350 cm ³
Cubic capacity	78 cm ³
Ignition system / Starter	electronic spark timing / reversing starter
Fuel consumption per hour	500 cm ³
Speed	3000 rpm

11.2 Hydraulic pump

Type / Ref. No.	GW-4TB / 84150/7765 GW-4T / 84150/7756
Oil delivery LP / HP	1,7 l/min. / 0,4 l/min.
Pressure LP / HP	160 bar / 630 bar
Oil capacity / usable oil capacity	3,2 l / 2,3 l
Dimensions / Weight	460 x 260 x 460 mm / 29 kg ¹⁾

¹⁾ Weight including oil filling (fuel not included), Volumetric efficiency: > 80%
LP = Low pressure; HP = High pressure

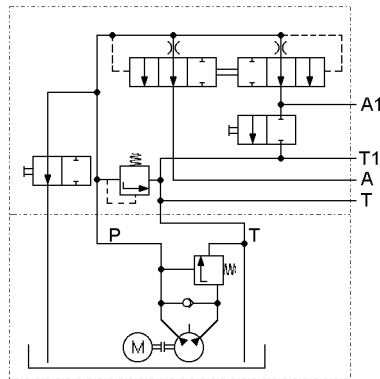
11.3 Noise emission at no/full load dB(A)	72 / 78	58 / 70	
following the regulations of DIN 45635 part 41:	horizontal measuring distance	1.0 [m]	5.0 [m]
	measuring distance above the upper edge of the power pack	1.0 [m]	1.0 [m]

11.4 Others:

Temperature ranges:

Ambient temperature (power pack in operation)	-24..+45 [°C]
Storage temperature (power pack not in operation)	-30..+60 [°C]

11.5 Switching scheme:



LUKAS Hydraulik GmbH & Co. KG

A Unit of IDEX Corporation

Weinstraße 39, D-91058 Erlangen

Postfach 2560, D-91013 Erlangen • Germany

Telefon + 49 (0) 91 31 / 6 98-0 • Telefax + 49 (0) 91 31 / 69 83 94

e-mail: info@lukas.de

LUKAS

IDEX
IDEX CORPORATION