



# BAUER

*FOR A GREEN WORLD*

## OPERATING MANUAL

for

### Long Shaft Pump

Magnum LP / LE



Version IX-2008

Long shaft pump  
LP / LE  
E

## Introduction

**Thank you very much for purchasing a BAUER Long Shaft Pump!**

We have pleasure to present to you a **BAUER long shaft pump** that features state-of-art technology and top quality. This manual describes how to operate and maintain your **BAUER long shaft pump**. For reasons of clearness and due to the many possibilities, this manual does not contain everything down into detail. In particular, it cannot possibly deal with every conceivable aspect of operation and maintenance. If you need further information or if you are faced with any special problem for which this manual does not give sufficient details, please do not hesitate to contact **BAUER company** at Kowaldstraße 2, A-8570 Voitsberg for the information you need.

We should also like to emphasise that the contents of this operating manual do neither form part of nor alter in any way any previous or existing agreement, promise or legal relationship. Commitments on the part of **BAUER** are based solely on the respective purchase contract, which also contains the complete and only valid warranty arrangement. Said contractual terms of warranty are neither extended nor limited by the contents of the present operating manual.

All information contained in the present manual is based on the latest product details available at the time of printing.

**BAUER** reserves the right to change without notice, without assuming any liability!

**BAUER long shaft pumps** are designed for safe and reliable performance provided they are operated in compliance with the present instruction manual. In spite of the simplicity of the pump we therefore request that you read this manual carefully before putting your **BAUER long shaft pump** into operation! All instructions given for handling, operating and servicing the pump must be strictly observed. On condition that these instructions are followed the pump will operate trouble-free to your full satisfaction for many years!

Non-observance of our instructions may cause personal injury or damage to the equipment!

This operating manual is considered an integral part of the long shaft pump. Suppliers of new and used submersible motor pumps are advised to put down in writing that this manual was handed over together with the pump.
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Please make this manual available to your operating personnel. You are kindly requested to state the pump type and serial number of the submersible motor pump in all inquiries, correspondence, warranty problems or parts orders. These details are specified on the nameplate.

**We hope you will enjoy working with your BAUER long shaft pump!**



## Product details

**Type designation:** Long shaft pump

**Type number:** Magnum LP / LE

**Serial number<sup>1</sup>:** \_\_\_\_\_

**Dealer:**

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

ph./fax: \_\_\_\_\_

**Date of delivery:** \_\_\_\_\_

**Manufacturer:**

Röhren- und Pumpenwerk **BAUER** Ges.m.b.H.  
Kowaldstr. 2  
A - 8570 Voitsberg  
Tel.: +43 3142 200 - 0  
Fax: +43 3142 200 -320 /-340  
www.bauer-at.com

**Owner or operator:**

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

ph. / Fax: \_\_\_\_\_

Note: Please make a note of the type and serial number of your long shaft pump and its accessories! Be sure to specify these details every time you contact your dealer.

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<sup>1</sup> In all warranty claims and correspondence relating to this machine it is essential to specify the complete serial number group including all letters. This applies to the machine itself and to any components involved. We cannot emphasise this point often enough.

## General safety instructions

### Symbols and terms



The CE symbol that has to be affixed on the machine by the manufacturer outwardly demonstrates compliance of the machine with the directives for machines and other relevant EU directives.

**WARNING!**

This "Warning" symbol refers to important safety instructions in this manual. Whenever you see this symbol be aware of possible injury hazards. Read the note following the symbol very carefully and inform the other operators accordingly..

**CAUTION!**

Non-observance of this instruction may cause damage to or destroy the machine or individual components..

**NOTE!**

It is important to observe this note or condition!

**Qualified operators** are persons who on account of their training, experience and instruction as well as their knowledge of relevant standards, rules, precautions to be taken for accident prevention and operating conditions, have been authorised by the person in charge of plant safety to perform the individual tasks required, and in doing so are able to recognise and avoid potential hazards. Among other things, knowledge of first-aid procedures is also required.

### Product liability

As defined by the product liability law every farmer is also an entrepreneur! According to §9 PHG (Product Liability Law), liability for damage to corporeal things caused by defective products is expressly excluded. This exclusion of liability also applies to parts not manufactured by BAUER itself but purchased from external suppliers.

**Duty to furnish information** Even if the customer passes on the machine later-on he is obliged to hand the operating manual on to the new receiver too. The receiver of the machine must be instructed with reference to the mentioned regulations.

### Intended use

- BAUER long shaft pumps are built exclusively for normal use in agricultural applications (intended use).
- Any use beyond such normal use is considered non-conforming. Manufacturer is not liable for damage resulting from such non-conforming use, the sole liability for damage from non-conforming use lies with the user.
- Intended use also includes compliance with the manufacturer's operating, maintenance and service instructions.
- The BAUER long shaft pump may be used and operated only by persons who are familiar with the device and aware of the hazards involved.
- All rules relevant for accident prevention as well as any other generally valid specifications and regulations relating to safety, work medicine and traffic law must be strictly observed.
- Unauthorised modification of the machine releases the manufacturer from liability for damage resulting therefrom.

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# 1 General instructions for safety and accident prevention

## Check the machine for operational safety before every start-up.

1. In addition to the instructions contained in this manual, all specifications generally valid for safety and accident prevention must be observed!
2. The warning and instruction signs affixed to the machine give very important instructions for safe operation. Observing them serves your own personal safety!
3. Never put the machine into operation unless all guards and safety devices are completely mounted and in their proper working position!
4. Acquaint yourself with all equipment components and controls as well as their respective functions before starting to work. It is too late when the device is already running!
5. The operator's clothes should fit tightly. Avoid wearing loose clothes!
6. When handling slurry always keep in mind that the gasses produced are highly toxic and extremely explosive in combination with oxygen. Therefore, open fires, light tests, sparking and smoking are strictly forbidden!
7. Utmost care is required with regard to gasses in slurry and dung channels at open valves to the preliminary pit, before the main pit, or at cross channels. The same applies to mixing and withdrawal points when mixers or pumps are running!
8. When handling slurry always ensure sufficient ventilation!
9. Keep the machine clean to avoid fire hazards!

## Tractor-driven machines

1. Before starting inspect the area around the machine (Children) ! Make sure your view is unrestricted!
2. Riding on the machine during transport is forbidden!
3. Couple the machine according to instructions and fasten it only at the specified points!
4. Be especially careful when coupling the machine to the tractor or uncoupling it!
5. Always adjust the supports in the proper position when coupling or uncoupling the machine (stability)!
6. Always mount balancing weights properly at the points provided!
7. Observe restrictions pertaining to axle load, total weight, and transport dimensions!
8. Inspect and mount all items required for transport such as lighting, warning signals and possible safety devices!
9. Mounted or trailed machines as well as balancing weights influence road behaviour, steering and braking capacity. Therefore make sure that proper steering and braking are possible!
10. Consider the projection and/or centrifugal mass of the machine when driving in curves!
11. It is forbidden to stay in the working range of the machine while it is operating !
12. Keep out of the turning and swivelling range of the machine!
13. Only operate hinged hydraulic frames when nobody is in the swivel range!
14. Externally powered machines (e.g. hydraulic) bear a crushing and shearing hazard!
15. Nobody is allowed between the tractor and the implement unless the tractor is secured by the parking brake and /or wedges under the wheels!
16. Hinged supports must always be folded up and secured before driving away!
17. Secure the machine and the tractor against rolling!

## Tractor-mounted machines:

1. Before a machine is linked to or detached from the three-point linkage, the control device must be shifted to a position in which unintentional lifting or lowering is impossible!
2. When using the three-point linkage the linkage parameters of both tractor and attached machine must correspond, if not, they have to be matched accordingly!
3. The three-point linkage bears crushing and shearing hazards!
4. When operating the external control of the three-point linkage never step in-between tractor and the machine!
5. When the machine is in the transport position always make sure that the tractor's links are always properly secured on the sides.

When driving on the road with the machine lifted the control lever must be locked against lowering!

### **Trailed machines**

1. When a machine is coupled to the drawbar make sure that the coupling point provides sufficient flexibility!

### **Power take-off (applies only to PTO driven machines)**

1. It is not allowed to use any other types of PTO drive shafts except those prescribed by the manufacturer!
2. Drive shaft guard tube and guard cone as well as the PTO guard – also on the machine side - must be mounted and in good working order!
3. When using a PTO drive shaft always observe the specified overlap in transport and working position!
4. Never connect or disconnect the PTO drive shaft unless the PTO is stopped, the engine turned off, and the ignition key pulled out!
5. Make sure the drive shaft is always connected and secured properly!
6. Attach safety chain to keep the drive shaft guard from rotating with the shaft!
7. Before you turn on the PTO make sure that the selected tractor PTO speed corresponds with the permissible implement speed!
8. Before starting the PTO make sure that nobody is standing in the danger zone of the machine!
9. Never turn on the PTO when the engine is turned off or during a transport drive!
10. When working with the PTO nobody is allowed near the turning PTO or drive shaft!
11. Warning! The PTO shaft may continue turning due to its centrifugal mass after the PTO has been turned off! Keep clear of the machine during this time and do not touch until the PTO shaft stands absolutely still!
12. For cleaning, greasing, or adjusting the PTO driven implement or drive shaft, PTO and engine must be switched off and the ignition key pulled out!
13. Place the disconnected drive shaft on the provided support!
14. When drive shaft has been removed put the guard on the PTO shaft!
15. If a defect occurs repair it immediately before starting to work with the machine!

### **Hydraulic system**

1. Hydraulic system is under high pressure!
2. When connecting hydraulic cylinders and motors, make sure the hydraulic hoses are connected as specified!
3. Before coupling the hydraulic hoses with the tractor's hydraulic system make sure that the entire hydraulic system is pressureless both on the tractor and implement side !
4. Inspect the hydraulic lines at regular intervals and replace them immediately in case of defects or ageing. Replaced hoses must comply with the technical specifications of the implement manufacturer!
5. When looking for leaks use only suitable equipment because of the injury hazard involved!
6. Liquids emerging under high pressure (hydraulic oil) may penetrate the skin and cause serious injuries! An injured person must see a doctor immediately! Danger of infection!
7. Before working on the hydraulic system the machine must be lowered, the system depressurised and the engine turned off!

### **Electric-driven implements**

1. All work beyond normal maintenance of the implement should be performed only by a professional electrician!
2. Defective or broken plugs and sockets must be replaced by a professional electrician!
3. Never pull a plug out of the socket at the flexible electric cord!
4. Extension cables for power supply should be used only temporarily! Never use such lines permanently as a substitute for the required fixed installations!
5. Flexible lines laid across traffic areas on the farm must have at least 5 m ground clearance!
6. Always turn off the power supply before you do any work on the machine!
7. Check all electric lines for visible defects before you put the machine into operation! Replace defective cables and do not start the machine before that!
8. Never use electric-driven implements in damp situations or locations exposed to fire hazard unless they are adequately protected against moisture and dust!
9. Covering electric motors may cause heat concentration with high temperatures which could destroy the operating equipment and cause fires!

**Hand-operated devices (valves)**

1. Because of the slurry gasses produced in the lines, no slurry is allowed to remain in closed pipelines – bursting hazard!
2. Lay the pipelines with sufficient inclination and make sure that the selected closing order of valves allows all lines to be drained completely!
3. Protect the valves against unauthorised handling!
4. If a valve gets jammed do not apply force! Use only the operating levers supplied with the implement!
5. Observe the permissible maximum operating pressure of valves and pipelines when pumps are operated!
6. Service only when the tanks are empty!

**Maintenance**

1. Never perform any maintenance, service or cleaning work or fault elimination steps unless the drive is turned off and the engine is standing still!
2. Check proper fit of all nuts and bolts regularly and tighten them, if necessary.
3. If maintenance work is required on the lifted machine always secure it by means of appropriate supports!
4. When exchanging tools with cutting edges always use proper tools and wear safe protective gloves.
5. Dispose of oil, grease and filters according to local laws and regulations!
6. Always turn off power before working on the electric system!
7. Before electric welding on the tractor and mounted machines the generator and battery cables must be disconnected!
8. Spare parts must meet manufacturer's minimum technical specifications! This is the case for instance with original spare parts for instance!



## 2 GENERAL

BAUER products are designed and manufactured carefully and subject to a system of continuous quality control. MAGNUM slurry pumps fully meet the requirements of the agricultural practice. They are best suited for delivering all kinds of slurries from thin liquid manure to viscous mixtures containing solids such as straw, fibres or clots. A special chopper guarantees trouble-free performance without blockages. Short set-up times, easy handling and maximum performance reliability are further advantages of this pump series. Pump drive is electric by means of a three-phase submersible motor.

In order to be able to work efficiently with the maintenance-friendly long shaft pump it is helpful to operate it in connection with a lift pole or transport trolley. Depending on the respective type of application, you can use either the lift pole alone, or the lift pole with coupling foot and rising main.

Although the pump is simple in design you should study this manual carefully and strictly observe all operating and service instructions contained. On this condition your slurry pump will operate to your full satisfaction for many years!

Make this manual available to all operators handling the equipment. Serial number and pump type are stamped in on the nameplate. Please specify these data in your inquiries, correspondence, warranty matters and parts orders. We warrant for this pump according to our General Terms of Sale.

### 3 DESCRIPTION

The long shaft pump MAGNUM LE consists of a pump with a robust cutter and a top draw-in, the drive pipe running in oil bath and a drive shaft with multiple bearings.

The riser pipe can be equipped with one or two stirring nozzles and is also available without a stirring nozzle. The stirring nozzle is mounted on a pivot together with the three-way cock and has the function to destroy the floating layer and to homogenise the slurry. It can be vertically and horizontally turned via rods with a lever.

Changing from mixing to pumping is also done via a lever with rods with a rotary valve. This is also possible during the operation.

The pump can be inserted into open and closed pits with a minimum opening of 0,6 m x 0,8 m.

The pump can be transported, inserted and operated by one person. For the transport mount a lift pole with two wheels and a link it into the trailer hitch of the tractor with a detachable drawbar.

For the operation the drawbar is detached and the lift pole hung into the tractor hydraulic system.

A cable winch mounted to the lift pole helps to lift, lower and swivel the pump.

The pump is driven from the tractor via a PTO shaft, the bevel gear system, the drive shaft (LP) onto the impeller or an electric motor flanged onto the drive shaft (LE) with a motor capacity of 11, 15 or 18,5.

The motors are equipped with a star-delta switch.

**NOTE!**

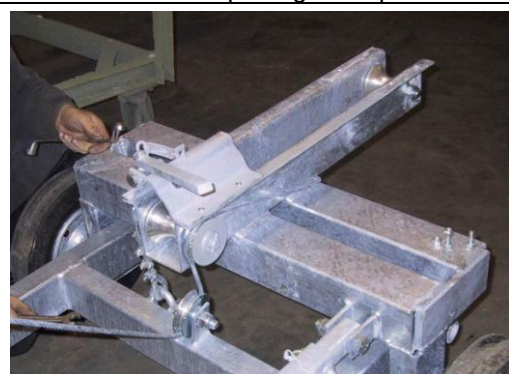
The motor cable should be connected to the switch only by a qualified technician. Perform a check-up according to the wiring diagram !

**ATTENTION!**

When connecting to the power supply, make sure that the connecting cable is amply dimensioned and the motor's direction of rotation is correct.

### 4 Assembly on lift pole

For transport reasons the pump and the lift pole are delivered separately. Both components therefore have to be assembled before putting into operation for the first time.



Detach the guiding clamps from the pump support.

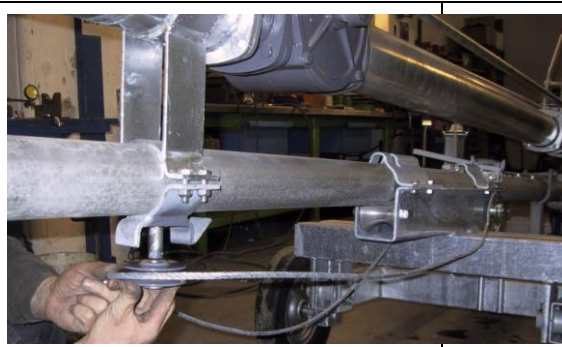


Insert the pump with the drive pipe showing downward into the support of the lift pole..

Fold up the support fork and lock with the stop pin.



Mount the guiding clamp(s) again with the locking lever.



Take off the cable pulley from the drive pipe of the pump (by detaching the split pin).  
Slightly unwind the cable on the cable winch and insert into the cable pulley and push it back onto the bolt, then secure with disc and split pin.

If the locking lever is lifted or not engaged, move the pump with the cable winch until it rests in the gap ...

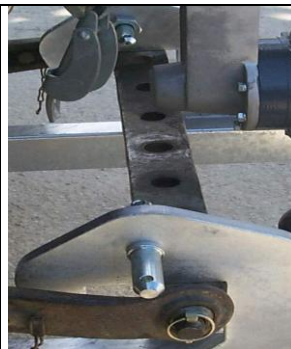
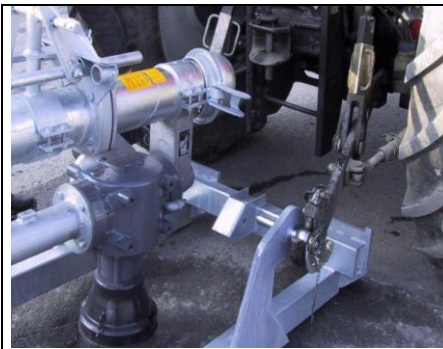
The pump is now ready for operation.

## 5 Transport

For transport the lift pole with pump is linked to the trailer hitch of the tractor through a push-on drawbar .  
or hung into the tractor hydraulic system.



For this purpose, detach the drawbar.



Connect the bolts of the lifting pole to the lower hinged arms of the tractor hydraulic system (secure with the split pin)  
or

hook in the tool bar directly below the two hooks.

## 6 Setting up with the lift pole



Approach the pit/ pit opening with the pump at the rear.





Take out the stop pins of the support fork and of the swivel device.

...



Swing out the pump now slowly with the help of the cable winch and lower it by lifting the locking lever.

For small pit openings alternately operate the cable winch and reverse the tractor to swing it into the pit.



When the pump is in its vertical position, re-insert the stop pin into the swivel device and lock.

Set the pump on the lift pole.

By lifting the locking lever of the drive shaft, the height of the pump can be adjusted.

## 7 Setting up with the support for pit edge



Put the pump down to the ground of the pit, adjust it into a vertical position and fix it with a clamp around the drive shaft to the traverse. The girder and a if necessary, a working platform, is fixed to the pit/container.

## 8 PUTTING INTO OPERATION

- When putting an **electric pump (LE)** into operation for the first time, check that the nominal voltage coincides with the voltage given on the nameplate.
- Before connecting the motor, check the phase sequence for the direction of rotation of the motor.
- When connecting the motor, observe the regulations in force for electric resources and the instructions of the manufacturer of the drive (e.g. protectiv motor switch, main switch maybe lockable).



**WARNING!**

Before putting into operation check the oil level at the control screw drive shaft and bevel gear system (LP)! (quality and quantity see technical data)

## 9 STIRRING WITH STIRRING NOZZLE

From the top via the cutter the slurry gets into the pump and via the stirring nozzle it is pumped back into the pit. If you have a slurry with a floating layer, lower the pump until the stirring nozzle dives into the floating layer. In this position you reach the best stirring capacity.

If you have slurry with a strong bottom layer or sediment (e.g. pig slurry) the pump has to be lowered further. The stirring procedure should be conducted until the slurry is completely homogenized.



**WARNING!**

We recommend to operate rods connected to stirring nozzle and three-way cock once a month to prevent blockage.



If tractor-driven

Connect with the PTO shaft. The overload protection has to be on the tractor side.

**Warning:** Cutting to length, section pipe over-lapping, and maintenance see separate instructions for PTO shaft. The bending of the PTO shaft shall not be more than 30 ° .



The stirring device has three levers.

The function of the lever in the middle is to horizontally swivel the pressure line including the stirring nozzle.

The lever to the left of it has the function to vertically swivel the stirring nozzle.

The lever to the right of it has the function to switch the three-way cock from **mixing** (lever up) to **pumping** (lever down) or both.

The position of the levers can be set with the clamping bolts.



Lower the pump until the stirring nozzle dives into the floating layer.

By repeatedly swivelling the stirring nozzle hence and forth, the time to homogenize the pit content can be reduced essentially.

## 10 Pumps

When the pit content is stirred evenly, the delivery can start. To do this, the delivery/pressure line has to be connected.

**Warning:** The pump can only be lifted or lowered with the cable winch while the PTO shaft is at a standstill.

To pump, press the lever for the rotating valve down and fix with the tommy screw.

**Warning:** After coupling the tractor PTO shaft, only gradually increase the speed of rotation so that the pressure line does not pressure hammer because of the sudden pressure.

While distributing the slurry, under normal conditions, it is only necessary to briefly mix every 3 hours.



## 11 Service and Maintenance

It cannot be stressed often enough that maintenance essentially increases the lifetime of any equipment.



### WARNING!

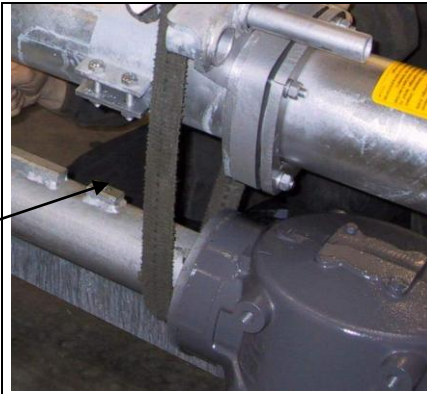
Clean the pump with all its accessories immediately after finishing the work. The slurry has not dried yet and can therefore be rinsed off easily.



Inspect the cutting edges of the knives. They are constructed in a way that they can be used four times before they have to be sharpened again.

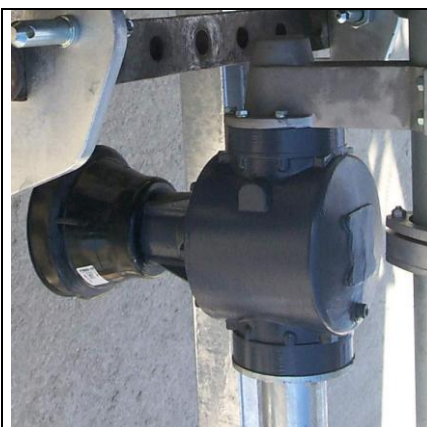
If you take off a knife and then put it on again, take care that the spacing between 2 cutting edges is between 0,1 mm to max. 0,3 mm.

This gap allows an optimal chopping up of the solid components in the slurry. It can be adjusted with the knife supports on the spiral housing.



To lubricate the bearings of the drive shaft, the drive pipe is filled with gear oil type SAE 20W-20 (15 W-40) (quantity see technical data) up to the screw plug at the side of the pipe.

Change the oil for the first time after approx. 50 operating hours, every further change only has to be conducted on the occasion of a repair. An oil level check should be conducted every 200 operating hours and can be done at the upper upper screw plug. Fill up, if there is a minor oil loss. If there is a major oil loss, find out what the reason is and repair the damage. Check particularly the sealing of the lower shaft bearings.



The gear box is filled with 2 liter gear oil type Spirax 90 EP up to the Kontrollschraube. Change the oil for the first time after 50 operating hours, every further change has to be conducted after 800 to 1000 operating hours.

All other bearings and sliding parts also at the lifting pole should be lubricated on a regular basis.



If possible, store the pump under a roof to protect it against the weather. In areas, where it gets frosty during the winter, empty the pump housing by removing the plugs at the lowest part of the pump housing.

**Important to observe:**

Keep stones, iron and wooden pieces, binder twine, plastic bags etc. away from the slurry pit.

**ATTENTION!**

Before doing work around the cutting knives, it is important to stop the tractor (LP) and disconnect the PTO shaft and the power supply (LE).

Oil leaking during the standstill of the pump between the bearing body and the knife hub shows that the sealing of the drive shaft at the lower bearing is worn-out and must be replaced immediately. Otherwise there will be severe and costly damages to the pump.

Observe the local laws and regulations when disposing of pumps and pump parts as a result of repair and maintenance works or putting out of operation. This is especially valid for the treatment of medium remains in the pump body.

## 12 TECHNICAL DATA

Model		LP 55	LE 11	LE 15	LE 18,5
Input speed	1/min	Max 640	1450		
Motor power output	KW	40	11	15	18,5
Discharge capacity	m <sup>3</sup> /h	40 – 360	40 – 240	40 – 270	40 – 300
Manometric head	m	28,5 – 9	17 – 4	20 – 6	22 - 7
Required minimum pit opening	m	0,6 x 0,8			
Gear oil Shell Spirax S 2 G 80W-90	Liter	2	N/A		
Engine oil SAE 20 W-20	Liter	7 L at 2m/ 9 L at 3m/ 13 L at 4m/ 15 L at 5m			

Engine Oil; Viscosity Grade SAE20W20 or SAE20; SAE HK30; Quality Level API CF/SF

Gear oil; conforming DIN 51517 Part3, ISO 12925-1 Type CKC, AGMA 9005-D94EP-5EP; ISO Viscosity Grade: 220

The technical data, pictures and measurements are not binding. They cannot be the basis for claims. We reserve the right to modify the equipment without making corrections to the present instruction manual

## 13 FAULT DESCRIPTION

<b>Fault</b>	<b>Cause</b>	<b>Remedy</b>
The pump does not deliver	Impeller blocked	Remove foreign object
	Cutter bell blocked	Remove foreign object
	Excessive difference in elevation between pump and distributing device	Reduce difference in elevation.
	Wrong direction of rotation (LE)	Reverse direction of rotation.
	Shear pin at the PTO shaft broken (LP)	Replace shear pin
	Excessive solids content.	Add water
The discharge capacity drops.	Excessive counter pressure.	Remove foreign object.
	Excessive solids content.	Add water

## 14 EU CONFORMITY CERTIFICATE

### EC Declaration of Conformity according to EC Directive 2006/42/EC

The manufacturer

Röhren- und Pumpenwerk BAUER Gesellschaft m.b.H.  
Kowaldstraße 2, 8570 Voitsberg, Austria  
phone +43 3142 200-0; fax: +43 3142 200-320/-340

herewith confirms that the machine mentioned below

Designation of machine	<b>Long-Shaft Pump LE / Long-Shaft Pump LP</b>
Machine type / basic units	<b>LE 11; LE 15; LE 18,5 / LP 55</b>
Consists of	<b>Long-Shaft Pump and lifting frame</b>

corresponds analogously to the requirements of the Machinery Directive 2006/42/EC.  
In case of a modification of the machine not accorded with FAN GmbH, this declaration will cease to be valid.

The following standards as amended have been applied analogously:

DIN EN 12100-1 Safety of machines – Basic concepts, general principles for design, Part 1: Basic terminology, methodology  
DIN EN 12100-2 Safety of machines – Basic concepts, general principles for design, Part 2: Technical principles and specifications  
DIN EN 60204-1 Safety of machines - Electrical equipment of machines, Part 1: General requirements  
EN ISO 14121-1 Safety of machines – Risk assessment

Norms related to products

EN ISO 13857 Safety of machines, safety clearance to secure no touching hazard area with upper extremities.  
DIN EN 349 Safety of machine, minimum clearance to avoid crushing body parts  
DIN EN 809 Pumps and pump units for liquids - Common safety requirements

The documents belonging to the machine according to annex VII, part B have been attached.

Person in charge of documentation: Thomas Theissl, Kowaldstraße 2, 8570 Voitsberg, Austria,



Technical Designer in Charge



**BAUER**  
Gesellschaft m.b.H.  
Kowaldstraße 2, 8570 Voitsberg, Austria

Commercial Manager

Voitsberg, 17.02.2010