OPERATING MANUAL

for

Tractor Gear Pump

FAMOS III 50, III 60, III 80
IV 80, V 100, VI 1000
### Product Details

<table>
<thead>
<tr>
<th>Type designation:</th>
<th>BAUER tractor gear pump</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type number:</td>
<td></td>
</tr>
<tr>
<td>Serial numbers¹:</td>
<td></td>
</tr>
<tr>
<td>Dealer:</td>
<td>Name:</td>
</tr>
<tr>
<td></td>
<td>Address:</td>
</tr>
<tr>
<td></td>
<td>Tel./Fax:</td>
</tr>
<tr>
<td>Date of delivery:</td>
<td></td>
</tr>
<tr>
<td>Manufacturer:</td>
<td>Röhren- und Pumpenwerk BAUER Ges.m.b.H.</td>
</tr>
<tr>
<td></td>
<td>Kowaldstr. 2</td>
</tr>
<tr>
<td></td>
<td>A - 8570 Voitsberg</td>
</tr>
<tr>
<td></td>
<td>Tel.: +43 / 3142 / 200 - 0</td>
</tr>
<tr>
<td></td>
<td>Fax: +43 / 3142 / 23 0 95</td>
</tr>
<tr>
<td>Owner or operator:</td>
<td>Name:</td>
</tr>
<tr>
<td></td>
<td>Address:</td>
</tr>
<tr>
<td></td>
<td>Tel. / Fax:</td>
</tr>
</tbody>
</table>

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

**Printing date / Version:** May 1999 / 0.1

¹ In all warranty claims and correspondence relating to this machine as well as its relevant components, it is essential that you specify the full serial number group including all letters.
² You find these details on the nameplate of the pump.
Introduction

Thank you very much for purchasing a BAUER tractor gear pump!

Our team has done its best to present to you a **BAUER tractor gear pump** that combines state-of-art technology and top quality. Whether you run a large or small farm, a co-operative or a commercial service company – we offer the right type of tractor gear pump for every need.

This manual describes how to operate and maintain your **BAUER tractor gear pump**. For reasons of clearness and due to the many possible equipment configurations, this manual does not cover everything down into detail. In particular, this manual 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 during office hours.

We should also like to emphasise that the contents of the current manual neither form part of nor alter in any way, any previous or existing agreement, promise or legal relationship. BAUER’S commitment is based solely on the respective purchase agreement which also contains the complete and only valid warranty arrangement. The current manual neither extends nor limits in any way the terms and conditions of said contractual warranty.

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

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

The **BAUER tractor gear pump** is designed for safe and reliable operation provided it is operated and handled in accordance with the operating instructions contained in this manual. Therefore we request that you read this manual carefully before putting your **BAUER tractor gear pump** into operation! All instructions given herein for handling, operating, and servicing the pump must be strictly observed! On condition that these instructions are followed your tractor gear pump will operate trouble-free to your full satisfaction for many years.

Non-observance of these instruction may cause personal injury or damage of equipment!

Please make this manual available to your staff. You are kindly requested to state the pump type and serial number of the pedestal 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 tractor gear pump!**
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!

Terms and definitions
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 prevailing operating conditions, have been authorised by the person in charge of plant safety to perform the respective 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.

The term operation includes installation, putting into operation (making ready for use) and handling (operation, switching ON/OFF, etc.)

The term maintenance includes check-up and service (inspection, auditing), maintenance and repair (fault finding and repair). However, in order to avoid defects or breakdown it is equally important and essential to observe all other instructions relating to transportation, mounting, operation and maintenance as well as technical data (in the manuals, product documentation or on the device itself) which are not particularly marked, but may directly or indirectly cause severe personal injury or equipment damage.

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 outside suppliers.

Duty to furnish information
If the customer passes on the machine to a new owner 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
• The BAUER tractor gear pump is built exclusively for pumping water in normal agricultural applications (intended use) – other media may damage the tractor gear pump.
• Any use beyond this normal use is considered non-conforming. The manufacturer is not liable for damage resulting from such non-conforming use, the sole liability for damage from non-conforming use is with the user.
• Intended use also includes compliance with the manufacturer’s operating, maintenance and service instructions.
• BAUER tractor gear pump may be used and operated only by persons who are familiar with the device and aware of the hazards involved.
• All rules for accident prevention as well as any other generally accepted 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.
# Index

1. **GENERAL INSTRUCTIONS FOR SAFETY AND ACCIDENT PREVENTION** ......................................................... 1
2. **GENERAL FUNCTIONAL DESCRIPTION** ........................................................................................................ 4
   - 2.1 GEAR PUMP............................................................................................................................................. 4
   - 2.1.1 Suction line ...................................................................................................................................... 4
   - 2.1.2 Delivery line ..................................................................................................................................... 4
3. **PUTTING INTO OPERATION** ......................................................................................................................... 5
4. **OPERATION** ............................................................................................................................................... 7
5. **FAULT FINDING** .......................................................................................................................................... 8
6. **SERVICE AND MAINTENANCE** .................................................................................................................. 9
7. **TECHNICAL DATA** ....................................................................................................................................... 10
   - 7.1 NAMEPLATES ....................................................................................................................................... 10
   - 7.2 INDICATION PLATES ......................................................................................................................... 10
8. **CONFORMITY CERTIFICATE** ..................................................................................................................... 11
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 indication 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!

Tractor-driven machines

1. Before starting inspect the area around the machine (Children)! Make sure your view is unrestricted!
2. Riding on the device 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 before 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 complete transporting equipment 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!

Attached 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 a 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 make sure that the tractor’s links are always properly secured on the sides.
6. When driving on the road with the machine lifted the control lever must be locked against lowering!

Trailer 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 permitted to use other types of PTO drive shafts except the ones 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 the 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!
1. 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 functional description
Safe yields and improved quality can only be guaranteed if the crops are supplied with exactly the amounts of water they need.

2.1 Gear pump
The main components of the pump are the spur gearing and the volute housing with the impeller. Power is transmitted directly from the tractor over a PTO drive shaft onto the pump's gearbox. The pump is preferably mounted on a pump trolley and hooked up to the tractor's toolbar. While operating, the PTO shaft should be articulated as little as possible in order to ensure smoother running and longer service life of pump and gearbox as well as the drive shaft. The volute housing is sealed to the gearbox with a mechanical seal.

2.1.1 Suction line
The suction line must be fitted with a foot valve. Suction line and pump must be filled up with water before starting to operate the system.

2.1.2 Delivery line
We recommend to mount a stop valve in the delivery line as well as a non-return flap. This will have a favourable effect when the run is interrupted for a short while. The non-return flap saves renewed filling of pump and suction line when operation is continued.
3 Putting into operation

- For length adjustment, overlap of telescopic sections and maintenance of the PTO drive shaft – refer to separate manual.
- Check the oil level in the gearbox before every start of the pump. With the pump in horizontal position, the oil level must not drop below the minimum marking on the oil measuring stick.

CAUTION!

Check the oil level with an oil level stick and top up, if necessary. (Shell Spirax 80EP).
See separate chart for filling volume.

Mount the pump on a mounting frame and hook it up to the tractor’s three-point linkage or put it on a pump trolley and hook it up to the tractor’s toolbar.

All coupling points of the suction line must be completely tight. To avoid air bags it must be laid sloping from the pump to the water source. It must not hang loosely on the pump but rather be properly supported at a suitable position in order that its weight does not burden the pump.

The strainer with the foot valve should be suspended vertically, not less than 0.5 m below the operating water level and 0.3 m above the ground, in order that neither air nor sand and sludge can be sucked in. Floating objects can be kept off by means of a suitably dimensioned wicker or wire basket in which the strainer is placed.

Always couple a step bow (S 18) and a stop valve to the delivery line with the non-return valve to protect the pipeline from impacts and vibrations.

Fill up the pump and the suction line with water. This is done through the funnel valve when the lines are small or short, or through the delivery socket from above:
Larger and longer lines are filled up by evacuating the suction line with a diaphragm hand pump.

---

**CAUTION!**

- When you connect the PTO drive shaft to the pump and to the tractor, make sure it is articulated as little as possible. This will ensure smoother running and longer service life of pump, gearbox, and drive shaft!
- Check lubrication of PTO drive shaft!
- Check if coupling pins are fully engaged.
- Check if the protective tube is fixed with the chain.

---

Finally, connect tractor and mixer by means of the PTO drive shaft:

- For coupling the drive shaft, press in the sliding pin and at the same time slip the drive shaft over the PTO until the sliding pin locks.
- Hook up the securing chain of the PTO guard on the tractor and on the pump side in such a manner that the guard cannot rotate with the shaft and sufficient swivel range is provided for the drive shaft.
4 Operation

CAUTION!

Never exceed the maximum permissible PTO speed of 540 rpm (IV 80 with impeller dia. 260mm: max. 510 rpm, VI 1000: max. 1000 rpm)

To start up the pump, engage the PTO shaft at low tractor speed and speed up for filling – but avoid overloading the engine. Open the stop valve on the delivery side! As soon as the pipeline is filled up and water is distributed at the sprinkler, the engine speed must be adjusted to the operating pressure required by the pump.

NOTE!

- During the run, compare the manometric head with the table below from time to time.
- The normal gearbox temperature may rise up to 80 °C under load.

Maximum permissible delivery head:

<table>
<thead>
<tr>
<th>Tractor gear pump</th>
<th>Max. head [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Famos III 50</td>
<td>64</td>
</tr>
<tr>
<td>Famos III 60</td>
<td>85</td>
</tr>
<tr>
<td>Famos III 80</td>
<td>86</td>
</tr>
<tr>
<td>Famos IV 80</td>
<td>120</td>
</tr>
<tr>
<td>Famos V 100</td>
<td>85</td>
</tr>
<tr>
<td>Famos VI 1000</td>
<td>140</td>
</tr>
</tbody>
</table>
## 5 Fault finding

<table>
<thead>
<tr>
<th>Discharge drops gradually</th>
<th>Suction head too high due to falling water level.</th>
<th>Position the pump at a lower elevation.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Impeller channels blocked.</td>
<td>Clean the impeller.</td>
</tr>
<tr>
<td></td>
<td>Strainer blocked.</td>
<td>Clean the strainer.</td>
</tr>
<tr>
<td>The pump does not deliver</td>
<td>Air sucked in.</td>
<td>Check all flanges and coupling points on the suction side as well as tightness of suction line.</td>
</tr>
<tr>
<td></td>
<td>Mechanical seal defective.</td>
<td>Fit a new mechanical seal and stationary seal ring.</td>
</tr>
<tr>
<td>Pump pressure is too low.</td>
<td>The speed too low.</td>
<td>Increase the speed.</td>
</tr>
<tr>
<td></td>
<td>Discharge too high because too many sprinklers are connected.</td>
<td>Adjust the discharge to the pump output - either turn off some sprinklers or use smaller nozzles.</td>
</tr>
<tr>
<td>Pump not running smoothly</td>
<td>Excessive articulation of PTO drive shaft.</td>
<td>Adjust pump in a better position to the PTO on the tractor.</td>
</tr>
</tbody>
</table>
6 Service and maintenance

CAUTION!

- Service and repair the gear pump only when the pump is not running, never step on the running machine!
- Repairs may be made only by qualified service technicians!

NOTE!
Check proper fitting and tightness of all screws and nuts at regular intervals and tighten them, if necessary!

It cannot be emphasised often enough how much proper service and maintenance influence performance reliability and service life of a machine.

After cleaning and emptying, the pump should always be stored in a weather-protected place, preferably in a shelter. In areas where frost is likely during the winter season the pump housing must be drained completely by turning out the drain plug located at the lowest point of the pump housing.

The PTO stub shaft on the gearbox should be greased at all times. Exchange the gearbox oil after the first 50 hours of operation and then every 500 hours, but at least one a year. Depending on the size of the gearbox, one filling requires about 0.5 l and 1.2 l Shell Spiral 80 EP or oil of equal quality of another brand.

The mechanical seal is maintenance-free. If water leaks out behind the sealing during the run, the seal is worn and must be replaced. Always replace the stationary seal ring together with the mechanical seal. The built-in shaft sealing should be greased about every 200 hours of operation through the grease nipple located behind the mechanical seal (except for III 50). Never let the mechanical seal run dry – not even on a trial basis – because this would damage it right away.
7 Technical data

<table>
<thead>
<tr>
<th>Model</th>
<th>FAMOS</th>
<th>III 50</th>
<th>III 60</th>
<th>III 80</th>
<th>IV 80</th>
<th>V 100</th>
<th>VI 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTO speed</td>
<td>up to rpm</td>
<td>540</td>
<td>540</td>
<td>540</td>
<td>540</td>
<td>540</td>
<td>1000</td>
</tr>
<tr>
<td>Discharge capacity</td>
<td>up to m³/h</td>
<td>60</td>
<td>80</td>
<td>90</td>
<td>90</td>
<td>150</td>
<td>120</td>
</tr>
<tr>
<td>Manometric head</td>
<td>up to m</td>
<td>64</td>
<td>85</td>
<td>86</td>
<td>120</td>
<td>85</td>
<td>140</td>
</tr>
<tr>
<td>Suction connection</td>
<td>DN</td>
<td>65</td>
<td>65</td>
<td>80</td>
<td>80</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Delivery connection</td>
<td>DN</td>
<td>50</td>
<td>50</td>
<td>65</td>
<td>65</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
<td>30</td>
<td>48</td>
<td>60</td>
<td>73</td>
<td>63</td>
<td>75</td>
</tr>
<tr>
<td>Driving power</td>
<td>KW</td>
<td>16</td>
<td>25</td>
<td>28</td>
<td>40</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Gearbox oil filling</td>
<td>l</td>
<td>0,5</td>
<td>1,2</td>
<td>1,2</td>
<td>1,2</td>
<td>1,2</td>
<td>1,0</td>
</tr>
</tbody>
</table>

7.1 Nameplates

7.2 Indication plates

Never remove the indication plates on the gearbox and on the frame. They serve for safe handling of the BAUER gear pump. If indication plates are damaged or removed they must be re-ordered. Please take their respective part numbers from the spare parts list.
8 Conformity certificate

EU Conformity Certificate
according to the EU Directive for Machines 89/392/EWG, Annex II A

We,

Röhren- und Pumpenwerk BAUER Gesellschaft m.b.H.
Kowaldstraße 2, A - 8570 Voitsberg - Austria
Tel. +43 / 3142 / 200 - 0, Telefax: +43 / 3142 / 23 0 95

herewith declare that in respect of its conception and construction and in the types and styles marketed by our company, the machine mentioned below fully complies with the relevant fundamental provisions for safety and health as stipulated in the EU directives. Any modification of this machine without our prior express consent render this certificate invalid.

Designation of the machine: BAUER tractor gear pump
Basic models: III 50, III 60, III 80, IV 80, V 100, VI 1000

This range of machines has been designed and built in compliance with the standard:

EN 809


Voitsberg, 1st January 1996

Johann Langmann
Technical Director