

User manual

DLS-Pump 2071





Translation

With deliveries into the member states of the EU, the operating manual has to be translated in the language of the user's country.

In case of any discrepancy in the translated text, the original operating manual (German) is the reference to be used for clarification or the manufacturer to be contacted.

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1. Important notes on this operating manual

This operation manual forms part of the machine and must be available to the operation and maintenance personnel at any time.

The safety notes contained herein need to be observed.

When reselling the machine, this operation manual must be handed over in any case as well.



In addition to this operation manual, always be careful to observe the laws and regulations being applicable in the country of use.

1.1 Users

This operation manual is intended for technically qualified users, who have been instructed or trained in the operation of the pump unit.

1.2 Obligation for reading

As an operator and user of the pump unit, you are obliged to read and understand this operation manual and, in particular, its section "Safety regulations". It is your safety that is at stake! Should you have any question or uncertainty, contact DLS Schmiersysteme GmbH, please.

1.3 In case of questions

In case of questions that you cannot solve by means of this operation manual, DLS Schmiersysteme GmbH will help you. In such situations it is indispensable that you provide us with a precise description of the problem at stake.

1.4 Operation manual

1.4.1 Applicability

This operation manual is applicable to the series versions of the DLS-Pump 2071 pump units. Should any part thereof be related to particular versions only, special reference will be made.

1.4.2 Content and purpose

This operation manual contains the relevant information for the commissioning, operation and maintenance of the pump unit. It is designed to help you in using the pump unit properly, efficiently and safely.

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1.4.3 Site

This operation manual must always be available to the users at their places of work.

1.4.4 Meaning of the safety instructions and signs

Safety instructions

The pictograms and signal words for safety instructions, precautions and notes have the following meaning in this operating manual:

K	
	y

Danger! Directly imminent danger, which may lead to severe body injuries.

Warning! Possibly imminent situation, which may lead to severe body injuries.



Caution! Possibly imminent situation, which may lead to light body injuries.

Caution! Warning of material damage.



Note! Possibly damaging situation, in which the product or an object in its environment

could be damaged.

Important! Notes on use as well as other useful information, which facilitate the use of the

product according to its intended technical purpose.



Danger! Directly imminent danger by electric power, which may lead to severe body injuries.



2. Identification

2.1 Product brand and type designation

Piston pump unit manufactured by DLS Schmiersysteme GmbH

Product type: DLS-Pump 2071

2.2 Product version

Version from year of construction 2021

2.3 Product designation

The type plate is mounted on the side of the pump body and contains the following details: Manufacturer

Type (z. B. DLS-Pump 2071) No. <order number> (e. g. 2022010101)

Year of construction

2.4 Manufacturer and contact address

Eugen WOERNER GmbH & Co. KG Hafenstrasse 2 DE-97877 Wertheim

Tel. +49 9342 803-0 Fax +49 9342 803-202 Net www.WOERNER.de E-Mail info@woerner.de

2.5 conformity

The pump unit meets the requirements of the EC Machinery Directive (2006/42/EC)

Declaration of Conformity see appendix (chapter 10).

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3. Product description

3.1 Purpose of use



The pump unit is designed for the delivery of lube oils as of 155 mm²/s and lube greases up to NLGI class 2 exclusively.

3.2 Limits of use

The application area of the pump unit's components is restricted as follows:

Temperature range: $-20 \dots +60 \,^{\circ}\text{C}$ Admissible delivery pressure: max. 70 bar

Depending on the version, these limits of use may be restricted further. Such further restrictions are dealth with in this operation manual later on.

Besides, the pump unit's area of application is determined by the medium to be delivered. Hence, when determining the area of application, you also need to refer to the technical data sheets for the medium to be used.

3.3 Environmental conditions



Operation of the pump unit in aggressive atmosphere (solvent vapours, acids, lyes, saltwater mist, etc.) may cause damage and/or corrosion of components and thus, failure of the installation as well as hazards by escaping lubricant!

Ambient temperature range

lower limit temperature: - 20 °C upper limit temperature: + 60 °C Relative humidity: max. 70%

Noise level: <70 dB(A)

Physical environment

Use of the installation above 1000 m sea level after consultation with the manufacturer only.

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3.4 Conventional usage

The pump unit is exclusively designed for the delivery of lubricating oils or lubricating greases in central lubrication systems. Conventional usage also includes:

- Considering the safety instructions as well as safety regulations in this operating manual, and
- complying with the service and maintenance instructions in this operating manual.



Any other use or use beyond the intended one may result in severe damages of persons and objects.



Any supply of gases, liquefied gases, gases liquefied under pressure, vapours and fluids, whose steam pressure exceeds the normal atmospheric one (1013 hPa) by more than 0,5 bar with the admissible maximum temperature, highly flammable or explosive media as well as the supply of food are interdi.!



Important!

Please consider the safety data sheets of the used substances!

3.5 Technical data

3.5.1 Assemblies

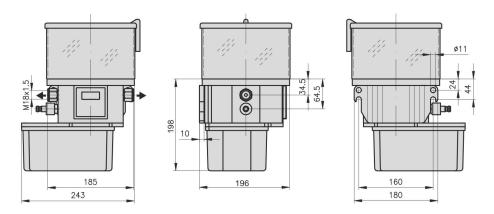
The GMB-B pump unit consists of up to four assemblies the different DLS-Pump 2071 versions of which may vary

- Pump body with monitoring and device motor
- Reservoir
- Control (option)
- Progressive distributor (option)

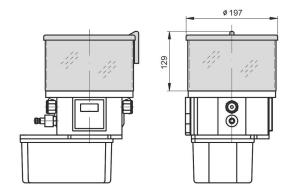
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3.5.2 Dimensions



Behälter "2":



dimension sheet DLS-Pump 2071

Weight:

with reservoir "2" max. 6,1 kg*

^{*} without progressive distributor, without lubricant



3.5.3 Basic unit

In its basic version, the DLS-Pump 2071 comprises the pump body with motor and a reservoir mounted on. The technical data of this unit is as follows:

Number of pump elements:

Delivery volume per stroke

• per pump element 04: 0,04 cm³

• Admissible delivery pressure: 70 bar

• Temperature range: -20 ... +60 °C

Motor connection voltage: 24 VDC
 Pump drive power input: 2,5 A

Overall power input, incl. control: 3 A

Output speed: approx. 30 min⁻¹
 Protection class: DIN EN 60529 IP55

Material Casing: Aluminium
Pump element: Steel

Motor: Aluminium / Steel / Copper

Reservoir types "2": Polyamide

(Lid polypropylene)

Gaskets: NBR





• Filling connection: Cone lubricator nipple DIN71412

Flat lubricator nipple DIN 3404

Closing nipple

Filling connection variants:

This part is located beneath the left-side pump element.:



1) not for oil suitably

3.5.4 Level monitoring (option)

The technical data of the (optional) level monitoring unit is as follows:

Switching voltage: max. 30 VDC
 Switching current: max. 0,25 A
 Switching power: max. 3 W
 Temperature range: 0 ... +60 °C
 Switching function: NC contact



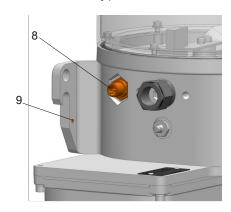
If inductive or capacitive loads are connected, suitable protection circuits are to be installed! (diode, RC-module, varistor)



3.5.6 Electric connection

The electric terminals of the pump unit are characterized by the following connec-tion data:

Connection type: Male M12x1, 5-pin (8)



Version with control: Siehe Kapitel 7.2.

Version without control:



Pin

- 1- \rightarrow +24 V (delivery function: 24 V to Pin 1)
- 2- \rightarrow +24 V (stirring function: 24 V to Pin 1 + 2)
- 3- → 0 V
- 4- → signal line 5-

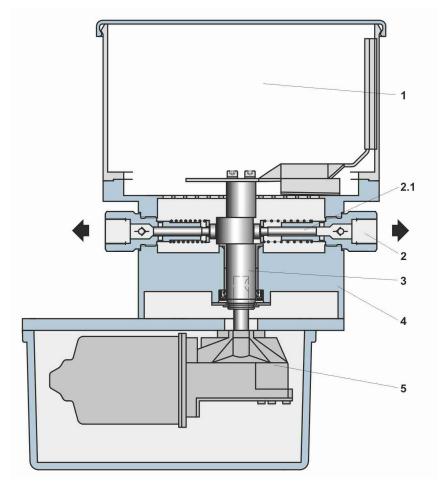
There is a threaded connection M4 (9) on the pump housing for attaching the equipotential bonding.



Skilled electricians are the only ones permitted installing the electric wiring according to DIN VDE 1000-10.



4. Description of function



4.1 Drive

The pump unit DLS-Pump 2071 is driven by a direct current gear motor **5** that is flanged to the pump casing **4** from below.

4.2 Delivery function

When the eccentric shaft **3** is rotating, the delivery piston **2.1** of every pump element performs a suction and delivery stroke per rotation each whilst delivering lubricant from the reservoir **1** to the lube points. Depending on the case of application (lubricant, lubricant need, etc.), the pump unit can be fitted with different pump elements and monitoring elements.



4.3 Function Lube care

In some modes of operation, improvement of lubricant quality and delivery behaviour require additional stirring of the lubricant.

In the DLS-Pump 2071 pump unit, such stirring is enabled by means of a specially designed eccentric drive.

When the eccentric shaft **3** rotates into the one direction of rotation, the pump elements are working whilst the stirrer supplies them with lubricant.

As soon as the eccentric shaft **3** rotates in counter direction, the lubricant will be stirred while the pump elements do not deliver.

The integrated control can be used to programme the operation and off-duty times for the delivery with stirring and the stirring without delivery independently from each other.



Danger! If the pump is not equipped with the "stirring with and without conveying" function, conveyance takes place every time it is switched on!



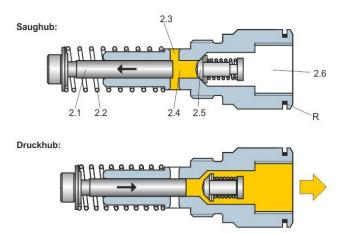
Attention! The motor must not continuously run!

4.4 Pump elements

During suction stroke, the pressure spring **2.2** moves the delivery piston **2.1** against the eccentric shaft **3**. In such motion, the lubricant being available in the reservoir **1** is drawn through the suction hole **2.3** into the metering chamber **2.4**

During delivery stroke, the eccentric shaft 3 displaces the delivery piston 2.1. Thereby, the suction hole 2.3 is closed and the lubricant volume being available in the metering chamber 2.4 delivered through the check valve 2.5 to the outlet 2.6

The 0,04 cm³ delivery volume pump element is marked by a white ring **R**.





4.5 Level control (option)

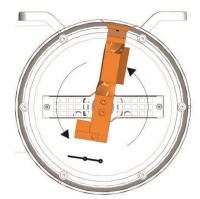
Level control "C": Minimum level monitoring for grease

When the reservoir is empty and the pump drive shaft rotating, the contact will be switched.

The empty signal is intermitting.

The switching mechanism may change itself, e. g. during reservoir filling. Therefore, in case of an external control, evaluation of the signal available during pump switch-on must be delayed (by approx. 5 s).

Lubricant avaible (permanent signal)



No lubricant avaible (intermittierendes Signal)



Level control "C"



5. Safety instructions

5.1 Fundamental rule

The pump unit leaves the factory in faultless state and ensures high technical safety.

The pump unit represents the state-of-the-art as well as fulfils all the current safety and health protection regulations. Nevertheless, there is danger in case of maloperation or misuse:

- for body and life of the user or third parties
- for the pump unit or other user's objects
- for efficient use of the pump unit

5.2 Required users' skills

Persons, who operate the pump unit have to be authorised and trained for that job by the user. They must be able recognising and avoiding possible dangers. This includes also knowledge on accident prevention rules, first aid measures and local rescue equipment.



Only skilled technicians, who have been specifically trained for the product, are allowed inspecting, maintaining and repairing.



Skilled electricians are the only ones permitted intervening in the electrical installation according to DIN VDE 1000-10.



5.3 Safety devices

The pump unit has been designed to be mechanically self-protecting.

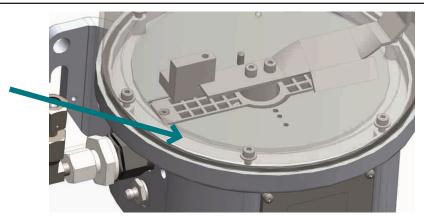


The pump unit may not be operated unless the reservoir lid is closed.



The strainer (see figure "Strainer in the reservoir") fitted into the reservoir bottom serves as an additional protection against reaching into the reservoir and for the avoidance of shear spots at the stirring wing. It may be removed for maintenance and repair purposes only.

Check the presence of the strainer every time when lubricant is refilled!



Strainer in the reservoir

5.4 Accident prevention

For accident prevention, take these measures:

- Prevent unauthorised persons from access to the pump unit.
- Keep foreign persons away from the areas and places of risk.
- Inform present foreign persons about residual risks repeatedly. Inform yourself about such risks in the "Residual risks" section.

5.5 Residual risks

When using the pump unit properly and adhering to the maintenance and repair cycles and measures prescribed, there are no residual risks to persons and objects within the pump unit's area.

If the pump unit is delivered in pre-filled condition, the product and safety data sheets related to the medium filled in need to be observed in addition to this operation manual.

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5.6 Incorrect applications



Any usage contrary hereto or going beyond the conventional one may cause serious personal and property damage.

As experience shows, possible incorrect applications include, for instance, the following:

- The delivery of highly inflammable or explosive media.
- The delivery of media being capable of reacting with the materials used for the pump unit.
- The delivery of foodstuff.

5.7 General safety regulations and duties

Basically, the following safety regulations and duties are applicable to the use of the pump unit:



- The generally accepted rules for work safety need to be observed. Besides, the basic regulations and rules on work safety and accident prevention being applicable to the place of use have to be followed.
- When using the pump unit inside vehicles, the generally accepted traffic law-related rules need to be observed.
- The user is obliged to observe the regulations pertaining to the use of working appliances.
- The pump unit must be operated in flawless and clean condition only.
- It is prohibited to remove, modify, bridge or bypass any and all protection, safety or monitoring facilities.
- It is prohibited to reconstruct or modify the pump unit.
- The operator should be notified of any fault or damage immedi-ately.
- For repair, no others than original spare parts may be used.
- The operator is required to regularly check and maintain all protection, safety, and monitoring facilities.
- After every repair, the flawless condition of the pump unit must be ensured by means of a test run.

5.8 Disclaimer

Should any damage be caused to persons, objects, the environment and/or property due to the non-observance of this operation manual, no matter whether intentionally or unintentionally, DLS Schmiersysteme GmbH shall be held harmless thereof. Besides, all warranty claims will be rejected. The same also applies to any and all consequential damage.

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6. Transportation, installation, commissioning and shutdown

6.1 Transportation

Transport the pump unit to its destination carefully and by using suitable aids (e. g. hand-carts or the like).

6.2 Unpacking

Lift the pump unit out of its packaging carefully and put it on a stable and plane base.

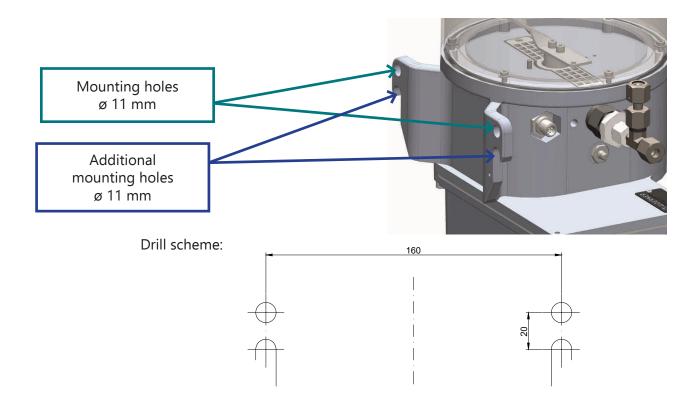


Note!

The pump unit and the components attached in accor-dance with the scope of delivery may still contain residues of blue-dyed test oil.

6.3 Installation

The pump unit is ready for wall-mounting. It is to be secured by means of two M10 screws. The mounting surface must be sufficiently stable in order to be capable of carrying the pump unit's weight including the filled reservoir. **Besides, it needs to be ensured that the mounting surface is vertical and plane.**



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6.4 Power supply and switch-on



Important! Compare the specification of the local voltage supply with the indicated technical

data. Operating voltage: 24 VDC ±10%.

Important! Lay the mains cable that it cannot be torn off accidentally.

Skilled electricians are the only ones permitted intervening in the electrical Important!

installation according to DIN VDE 1000-10.

Connect the pump unit to the voltage supply.

Ground the pump unit through the potential connection by means of a threaded M4 screw.

Check the electric connections for correct installation prior to commissioning.



Caution! Work on electric facilities implies danger to life!!

6.5 Commissioning

The pump unit's functionality has been checked in the factory. Hence, it is ready for operation and can be connected to a local voltage supply.



Important!

Note the safety instructions contained in the "Power supply and Switch-on" section. First fill lubricant and then start the pump unit, in every case (Minimum filling level, see Kap.8.4).

Commissioning procedure:

a) Filling the pump with lubricant



The pump units may be operated with clean oil or grease from original pack-ages only!



The initial filling with grease must be done through the filler nipple in order to fill the pump's suction chamber safely.

Hint:

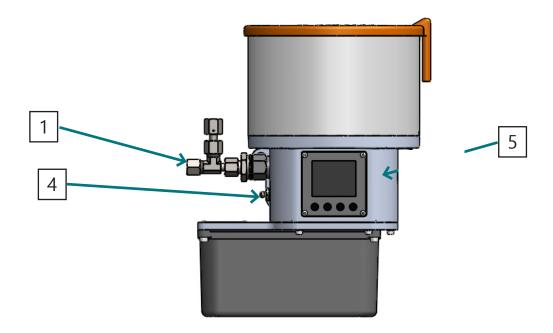
For the pump's initial filling with grease, we recommend to fill it with transmission oil up to the stirring wing in order to ensure a speedy and better bleeding. Then selecting the transmission oil, however, proper compatibility with the lubricant used needs to be ensured!

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b) Bleeding at the pump element



→ Bleeding at the pump element

If no progressive distributor is attached, the pump needs to be switched on until the lubricant leaves the pump elements' outlets free of air. Please note: Due to the bigger distance to the filling nipple 4, the bleeding of the right-side pump element takes a little bit longer.



b) Connecting lube lines



The lube point lines must be clean and free of any obstruction!

Connect the outlets of the pump elements or progressive distributors with the lube lines. These lines must be clean and free of any obstruction. You may not connect the lube lines to the lube points unless the lubricant comes out free of air. Check all connections of the lube lines for tightness and the lube points for air-free lubricant release.

Note that the pump unit, depending on the ambient conditions, is capable of building up maximum pressures of far more than 70 bar!



Warning!

If the pump unit is not already fitted with pressure control valves on delivery, the lube lines need to be retrofitted with suitable protective elements in order to pre vent the pump unit and lube lines from overloading.



Warning!

Any pump pressure above the admissible operating pressure of 70 bar may result in the destruction of the system and situations endangering health!

6.6 Shutdown

The unit is shut down when switched off and disconnected from the external Power supply.



Skilled electricians are the only ones permitted intervening into the electrical installation according to DIN VDE 1000-10.



7. Cleaning, servicing, fault remedy, and repair

Note! Servicing and repair work may only be performed by technically skilled personnel

with product-specific training, basic mechanical training, and professional

experience

Important! For cleaning, servicing or repair, always disconnect the unit from the power supply

and secure it against restarting.

Important! When working on the pump unit, and during your absence, secure the pump unit

such that no changes can be caused by other persons or situations..



All servicing and repair work on the electric facilities may only be done by skilled electricians in accordance with DIN VDE 1000-10.

7.1 Cleaning

Important! The pump unit must not be cleaned by means of high-pressure cleaners or

compressed air.

Important! The use of solvent containing cleaning agents may incur damage to the reservoir.

The pump unit can be cleaned with commercially available cleaning agents. Before using the cleaning agents, be sure that they will not attack the materials used for the pump unit.

7.2 Maintenance



Warning!

There is risk of injury, if the safety and protection elements have to be removed, modified, bridged or bypassed for maintenance or servicing. Please note, in particular, the special hazardous spots described in the "Safety regulations" section and take effective measures to avoid injuries.



Important!

Also note the maintenance instructions in the operation guide-lines for the various components as they are included in the appendix.



7.3 Inspection schedule

No	Description	Interval
1	Check the presence and functionality of the safety facilities.	daily
2	Check the lube lines and connections for mechanical integrity and leakage.	monthly
3	Check the pump units and components for mechanical integrity and leakage.	weekly
4	Check the filling level of the pump unit.	weekly

7.4 Refilling the reservoir

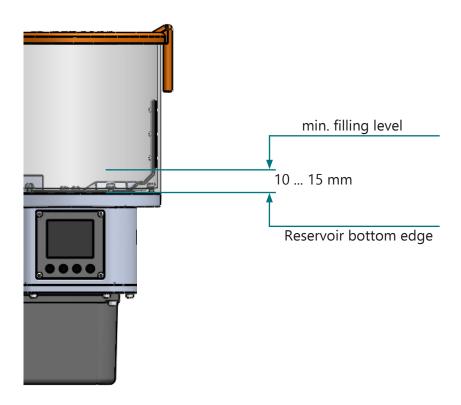
When operating the unit with oil, refill is to be made into the reservoir directly. For operation with grease, it is recommended to refill through the filler connection by using a filling pump, as such method ensures a refill that is widely free of air and contamination.



Important!

Versions without filling level monitoring require the checking of the reservoir's filling level in regular intervals (intervals depend-ing on consumption).

To ensure flawless functioning, the filling level must not be lower than 10 ... 15 mm above the reservoir's bottom edge.





7.5 Repair

Changing the pump element:

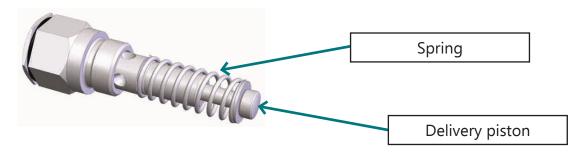


Note!

Prior to pump element removal, the reservoir must be emptied since otherwise lubricant may spill.

Note!

When removing the pump element, be careful to remove the pressure spring and the delivery piston from the reservoir as well. If these parts are left in the reservoir, the pump unit may be damaged and, thus, fail.



Unscrew the pump element cautiously. Replace the old pump element by an exchange part. When screwing down, be careful not to jam the connecting thread.

For other repairs, turn to DLS Schmiersysteme GmbH, please.



7.6 Accessories

Pressure control valves:

To limit the maximum operating pressure, pressure relieving valves 7 can be connected to the pump element 2 by means of the screwing sets 8 or, instead of the venting screw, to the progressive distributor.

Pos.	Designation	Order no.
	Pressure control valves at the pump	element
7	Pressure control valve 70 bar	on request
,	Pressure control valve set according to customer's specification 50 160 bar	on request
8	Screwing set for tube ø6	on request



Additional accessories:

Designation	Order no.
Lock coupling for filling connection "G" (pmax = 35 bar)	on request
Connecting cable for electric connection, cable length 5 m	on request
Connecting cable for electric connection, cable length 10 m	on request
Connecting cable for electric connection, cable length 15 m	on request
Power pack for connection to 230 VAC	on request

Should you need cables with different cable lengths, turn to DLS Schmiersysteme GmbH directly, please.

7.7 List of spare parts

See data sheet DLS-Pump 2071 Spare Parts.



8. Return to factory

The safety and health of our staff, the ordinance on hazardous materials (the ger-man GefStoffV), the regulations pertaining to the safety at the places of work, and the regulations governing the disposal of waste oils necessitate the completion of the "Returns form P0851" form for all products that are to be returned to us.

Without submission of the fully completed form, no return shipment can be ac-cepted and processed.

To ensure speedy handling, you are kindly requested to send a copy of the fully completed Returns form P0851 to us in advance. The original must be attached to the freight documents.

For damage assessment and in order to be able to perform the repair quickly and economically, we furthermore need a detailed description of the complaint and conditions of use.

Cost estimates will be made on explicit request and with charge only.

In case of repair order placement or acquisition of a new product instead of repair, the incurred costs will not be charged. Respectively charged costs will be settled.

If, due to the cost estimate, you do not want any repair, we will send the product back unfranked and in dismantled condition, if necessary.

For product shipment, the following should be ensured:

- The product must be discharged and clean.
- All openings must be closed.
- The product must be packed safely and marked completely.
- The returns form P0851 must be attached.

9. Disposal



When disposing the piston pump unit and its components, observe the actually current national laws and provisions of the user's country!



Clearance certificate

we,		
Company:		
Address:		
hereby confirm for the pro-	duct(s) returned by us	
Product Description:		
DLS-Order No.:		
1. That all components ha	ve been completely drained and cleaned	
_	dual impurities are free from substances	that are hazar-
dous to health and the	environment.	
	ed by us in the product(s) correspond to t	
	tended use given in the product docume	ntation. The corre
sponding safety data sh	reets are attached.	
Day of Return:		
Name, Position:		
Phone number:		
Date, Signature:		
Company stamp:		
Attachment:	Safety Data Sheet	



EG-Konformitätserklärung

nach 2006/42/EG, Anhang II, Nr.1 A

EC Declaration of Conformity

according to 2006/42/EC, Annex II, No.1 A Déclaration de conformité CE

selon la directive 2006/42/CE, annexe II, n° 1 A

Hiermit erklären wir, dass das Produkt / die Produkte

We hereby declare that the product / the products

Nous déclarons par la présente que le produit / les produits

GMG

Ab Baujahr

as of Model year

avec année de construction

à partir de

mit allen einschlägigen Bestimmungen der EG-Maschinenrichtlinie 2006/42/EG in Übereinstimmung ist.

Die Maschine ist auch in Übereinstimmung mit allen einschlägigen Bestimmungen der folgenden EG-Richtlinien:

fulfils all relevant provisions of Directive 2006/42/EC. The machinery is also in

2016

compliance with all relevant provisions of the following ECdirectives:

satisfait à l'ensemble des dispositions pertinentes de la directive 2006/42/CE relative aux machines.

Cette machine satisfait également à toutes les dispositions pertinentes des directives CE suivantes:

2014/30/EU

Angewandte Normen:

Standards applied:

Normes appliquées:

DIN EN ISO 12100: 2013 DIN EN 60204-1: 2014 **DIN EN ISO 4413: 2011**

Herr Stefan Tiederle Eugen Woerner GmbH & Co. KG Hafenstraße 2 DE-97877 Wertheim

ist bevollmächtigt, die technischen Unterlagen zusammenzustellen.

is authorised to compile the technical file.

est autorisé(e) à constituer la documentation technique.

Wertheim, den 20.04.2016

Dr. Sven Schultheis

- Geschäftsführer / managing Director / Directeur gérant