Vane oil pump 30 l/min

Part No. **23 301** 230 V-1~AC-50 Hz-1,2 kW

Operating Instructions and Safety Notes 94 880 932 A801 GB

FMT Swiss AG

This documentation is exclusively intended for the operating company and their staff.

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Operating instructions translation

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We reserve the right to make design and product modifications, which serve to improve the product.

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1. Introduction

1.1. Preface

Please carefully read these operating instructions and observe in particular all safety notes!

Our staff will be pleased to provide support if you have any questions about the product.

Your FMT Swiss AG

1.2. Obligations of the personnel

Before they start to work, all persons who are entrusted to work on the oil pump, are obliged:
- to follow all applicable regulations on occupational safety and accident prevention.
- to read and to comply with all safety instructions and warning notes contained in these operating instructions.

Please observe the following instructions in the interest of all concerned:

- Refrain from any unsafe working methods!
- Adhere to all hazard and warning notes contained in this manual!
- In addition to this documentation, keep to all generally accepted safety rules, legal provisions as well as all other binding rules regarding occupational safety, accident prevention and environmental protection!
- Wear appropriate protective clothing in accordance with the work to be done!
- Perform only work for which you have been sufficiently trained and instructed!
- Only genuine spare parts as well as original tools and auxiliaries of the manufacturer are allowed to be used in order to ensure the functional safety and maintain the warranty coverage.

1.3. Symbols in this manual

1.3.1. Structure of the safety notes

The safety notes have the following structure:

SIGNAL WORD

Type and source of the hazard
- Consquences of non-compliance with the notes.
- Measures to avoid that risk.

Depending on the danger level, different signal words are used:

Signal word	Danger level	Consequences of non-compliance
DANGER	Imminent threat of danger	Death or serious bodily injury
WARNING	Possible threat of danger	Death or serious bodily injury
CAUTION	Possibly dangerous situation	Minor bodily injury
ATTENTION	Possibly dangerous situation	Damage to material property

NOTE

Indicates further information or tips which facilitate work.

1.3.2. Hazard symbols

Symbol	Meaning
	General hazard symbol. The warning note marked in this way contains supplementary information on the type of hazard.
	This symbol warns of dangerous electrical voltages.
	This symbol warns of a hazardous explosive atmosphere.

1.3.3. General symbols

Symbol	Meaning
■	A small black square indicates the work you have to perform.
–	The dash denotes lists.
⇨	The arrow identifies cross-references. If cross-references to other chapters are required within the text, the expression is shortened for reasons of clarity. Example: ⇨Chapter 2 Safety notes. This means: please refer to chapter 2 for the safety instructions.

2. Safety notes

Various dangers may occur if the oil pump is improperly handled during installation, commissioning and daily operation.

WARNING

Risk of injury and damage to material property because of improper handling!

- Hold the manual at the disposal of the operating staff at the usage site of the unit.
- Country-specific safety measures and accident prevention regulations must be observed.

2.1. Authorized personnel

Only qualified and authorized persons are allowed to operate and to work on the oil pump.

Persons are qualified if they are, due to their training, experience, instruction and knowledge of the relevant standards, able to assess assigned tasks and to identify potentially hazardous situations.

These persons must have been authorized by the person responsible for the safety of the unit and must be able to identify and to avoid potential dangers.

All persons charged with installation, operation, maintenance and repair work, must have read and understood this operation manual.

A copy of this operating manual must be stored permanently and ready at hand at the place of usage of the unit.

2.2 Notes on maintenance, cleaning and repair

Only qualified technical personnel is allowed to carry out repair work on the electrical system.

WARNING

Risk of injury and damage to material property because of improper maintenance and repair.

- **Maintenance work is only allowed when the pump is currentless.**
- **Only qualified personnel is allowed to perform maintenance work.**
- **Allow the pump to cool down prior to maintenance and service work.**
- Should unusual noises occur, immediately stop the oil pump. Immediately identify and eliminate the cause in order to avoid consequential damages. Maintenance work is only allowed when the pump is currentless.

2.3 Intended conditions of use

The oil pumps may only be used for the delivery of lubricating oils up to SAE 80 and may only be connected to a suitable power source (see nameplate).

Proper use also includes compliance with the operating instructions, which must be read in full before commissioning.

During repairs to any electrical components, the appropriate safety and test requirements are to be observed.

Only genuine replacement parts are to be used for any repairs, because otherwise the warranty will be invalidated.

2.4 Reasonably foreseeable misuse

DANGER

Risk of injury and material damage from explosive vapors

- **Never use the pump to deliver oily or explosive fluids such as petrol or other fluids with similar flashpoints!**

DANGER

Risk of explosions

- Since the motor and the switch of the gear pump are not explosion-protected, the pump must **not** be operated in an explosion risk area.
- Smoking and naked flames are prohibited in the vicinity of the pump.
- Do **NOT** use the pump to deliver fuels of danger classification AI, AII and B!

Any departure from the usage stipulations (other fluid media, use of force) or user modifications (changes, use of non-original parts) can be dangerous and are considered as non-intended usage.

The use in the food industry is forbidden.

Pumping caustic or other hazardous chemical or biological substances is forbidden.

The user is liable for any damage resulting from non-intended use.

2.5 Dangers when handling the oil pump

DANGER

Risk of injury and material damage because of improper installation, electric current or contaminated media.

Never work on a pump that is running!

- Mount or remove attachments and accessories only when the pump is switched off.
- For your own safety, disconnect the pump in addition from the power supply.

Do not pump contaminated fluids!

- Take special care to ensure that there are no contaminants in the fluid to be pumped.
- Install a strainer on the suction pipe.

Risk of stumbling because of power cable and hoses!

- Lay the supply cable so that it will not cause any risk of stumbling.
- Provide oil hoses of sufficient length and lay them so that they will not cause any risk of stumbling.

Damaged attachments and accessories can lead to personal injury and material damage.

- Attachments and accessories must be checked for wear, splits or other damage throughout their period of use.
- Damaged accessories and attachments must be replaced immediately.
- Only use genuine switches and power cables as replacement parts.
- With reference to the period of use, please note the details in ZH 1/A45.4.2 or DIN 20066 Part 5.3.2.

2.6 Risks when handling lubricating oils

If improperly handled, lubricating oils can cause risks to human health or to the environment.

Escaping lubricating oils can cause environmental harm. Do not allow to enter sewage or ground water. Local and country rules and regulations relating to domestic water supplies and oil storage must be obeyed.

DANGER

Use of lubricating oils

- Lubricating oils may cause lung damage if swallowed.

NOTE

- Observe the safety information for lubricating oils!

3. Transport and temporary storage

Prior to any transport, check to ensure that there are no liquids (residues of lubricating oils) left in the pump. All additional attachments must be removed from the pump.

Do not use the cable to transport the pump!

Storage and transport conditions:

– Weather-protected storage with temperature control, protection against frost, moisture and rain. Maximum relative humidity: 80 %.

– Storage temperature range from 0 °C to +40 °C.

4. Design and functional description

The vane pump is used in a fixed location.

The pump can be equipped with various FMT accessories.

The pump is a self-priming vane pump with an integrated bypass.

4.1 Area of application

The oil pump is only suitable for lubricating oils up to SAE 80.

The temperature of the delivery fluids must be between 10 °C and 40 °C.

The temperatures must not be above or below these limit values.

NOTE

- In addition to this documentation, all generally accepted safety rules, legal provisions as well as all other binding rules regarding occupational safety, accident prevention and environmental protection must be observed.

4.2 Requirements for the installation location

Facilities for filling and transferring must be constructed, installed, positioned, maintained and operated in such a way so as to ensure that no water pollution or other undesirable alterations of water properties occur.

According to the national laws, the operator of such an installation is responsible for continuously monitoring the compliance with the above stated requirements at the place of installation.

The oil pump has been designed for indoor operation. Choose a mounting location where proper operation is possible.

5. Technical data

Indication		**Vane oil pump 30 l/min 230 V-1~AC**
Part No		**23 301**
Connection suction side	G	G 1“ female
Connection discharge side	G	G 1“ female
Hydraulic data		
Pump design		vane pump
Nominal operating point	bar	1
Maximum operating point	bar	6
Delivery rate under free discharge	l/min	30
Max. suction height (depending on the temperature and the viscosity of the oil)	m	2,5
Direction of rotation		right
Pumping media		oils up to SAE 80
Operating temperature area (°C)	°C	+10 / +50
Motor data		
Voltage	V	230
Frequency	Hz	50
Power consumption	A	5,5
Power	kW	1,2
Nominal speed	U/min.	1450
Torque	Nm	5,5
Safety class		IP 66
Type of construction		IMB 3
Materials of parts in contact with liquid		
Pump housing		EN AC 42100
Rotor		sintered metal
Vanes		POM
Seal		FKM
Raceway		GG 25

6. Assembly

Four M6 bolts (not included in the scope of delivery) are required for the stationary installation ofthe oil pump at its operating location.

When installing the pump, ensure that it is mounted on a stable surface. Select a secure location (protected from splash water, damage and theft).

No stress or torque shall be exerted on the pump from the suction and pressure pipes, possibly it may be necessary to support the pipes in front of and behind the pump.

The pipes must be sufficiently dimensioned. They shall not be smaller than the nominal size of the pump connections.

In order to prevent foreign particles from being sucked in, a suction strainer must be used in order to protect the pump from damage. Due to its inner resistance, the suction strainer must be sufficiently dimensioned, because it affects the suction capability of the pump.

Elbows and bends which may be necessary in the pipe system should be chosen as large as possible. The suction line should have a continuous rise to the pump.

When fitting the pipes, check to ensure that the pipes are free from swarfs or similar impurities.

DANGER

Danger of contact with energized components

- Before connecting the pump to the voltage source, check to ensure that the pump is switched off!
- Only authorized persons are allowed to work on the electric system of the pump.

ATTENTION

Risk of product damage

- The power source must be of the correct voltage for the pump type.

ATTENTION

Risk of product damage

In order to prevent dirt from entering the pump chamber, it is absolutely necessary to install a strainer with a pre-cleaner in the suction line, because otherwise the warranty may be invalidated.

NOTE

- Ensure cleanliness during installation, and that all accessories/attachments are correctly connected and sealed.

6.1 Before commissioning

After the complete assembly, the pump and the pipe system must be checked once again on the basis of the following questions:

- Is it possible to turn the pump by hand?
- Are the connections correctly fitted at the suction side and at the delivery side?
- Does the motor‘s direction of rotation correspond to the pump‘s direction of rotation?
- Has the system been checked for leaks in the pipe system?
- Is there enough fluid/oil in the tank?

7. Commissioning and operation

CAUTION

Risk of injury because of uncontrolled pump movement

- The pump may only be operated if it is fixed at the intended position close to the storage container.
- The pump is only allowed to be operated if it is firmly screwed down, so that it cannot carry out any uncontrolled movements.
- The pump may only be operated if the storage container, to which the pump is connected, stands on a firm and level surface.
- Prior to work, check to ensure that the oil pump and the fitted accessories are complete and free from any damage. Replace any damaged components immediately. Never use the pump if damaged.

Adjusting the bypass

The bypass is factory-tested during the pump's trial run to ensure proper function. The bypass is adjusted while the pump is running. Make sure that the correct conditions (later operating conditions) are in place during adjustment:

– Delivery medium

– Temperature

– System pressure

CAUTION

Risk of minor personal injury

- The pump may only be operated if the formation of electrostatic charges is avoided by a suitable potential equalization (grounding cable)!
- After initial start-up, check the pump and the connections for tightness.

NOTE

In order to completely empty the container, the suction hose must reach down to the bottom of the container!

ATTENTION

Risk of product damage

- Never operate the pump for longer than 2 minutes without a fluid.The pump may be damaged by running dry.

CAUTION

- The oil pump does not switch off automatically, therefore never leave the pump unattended during tank filling. Make sure that the pump does not pump against a closed dispensing nozzle.
- After completing the filling of a tank, ensure that the supply and return hoses are emptied before removal.
- Wipe up any spilled oil immediately.
- To end the dispensing process, release the nozzle lever. Never operate the pump for more than 2 minutes with the nozzle closed.
- Use the rocker switch to switch off the pump.
- Place the dispensing nozzle in such a way that no oil can escape into the environment.

CAUTION

Danger of product damage

- The power source must have the correct voltage for the pump type.

8. Preventive Maintenance

The oil pump is very easy to maintain and to service.

Maintenance work has always to be done by qualified technical personal.

DANGER

Danger of contact with energized components

- When working on the electrical system of the pump, disconnect the pump also from the power supply and protect it against restarting!

CAUTION

- Regularly check the hoses and their seals. Replace any damaged parts immediately.

In order to avoid environmental or equipment damage or personal injury, the following parts must be regularly checked and replaced if necessary:

- Pump housing
- Delivery valve
  - Hoses
  - Pipes

9. Maintenance

Maintenance must be done by qualified technical personnel. External impact may cause a loss of performance, constitute a risk of damage to persons and/or property and void the guarantee.

Observe the following recommendations for operating the pump:

DANGER

Danger of contact with energized components

- When working on the electrical system of the pump, disconnect the pump in addition from the power supply and protect it against restarting!
- Before performing any maintenance work, disconnect the oil pump from all electric and hydraulic supply sources.

- Wear personal protective equipment when carrying out maintenance.
- If there is danger of freezing, the pump and the circuit must be emptied and stored at a location with a temperature not dropping below 0° C.
- Check to ensure that the labels and decals have not become illegible and have not come loose in the course of time.
- Check at regular intervals that the line connections have not worked loose in order to avoid that liquid escapes.
- Regularly check and clean the suction line filter.
- From time to time, check the pump housing and remove any dirt.
- Check to ensure that the power cables are in perfect working order.

10. Troubleshooting

Malfunction	Cause	Solution
The pump is running, but does not deliver oil	The oil container is empty	Change the barrel or fill up the tank
The oil pump does not suck in	There is air in the suction line	Check the suction line for tightness.
The delivery rate is too low	The fluid temperature is too low	Store the barrel in a heated room
	The bypass is dirty	Check/clean the bypass
	The bypass is set too low	Adjust the bypass correctly
	Suction line too long or Suction line resistance too high	Suction line resistance too high
	Voltage too low	Check the voltage
The oil pump does not run	The power supply is interrupted	Check the connection cable and the fuses

11. Repair / Service

The oil pumps have been developed and produced according to the highest quality standards.

Should a problem develop, despite of all quality controls, please contact our customer service:

FMT Swiss AG
Tel. +49 9462 17-246 | Fax +49 9462 1063 | service@fmtag.ch

12. Disposal

The operating company is responsible for the proper disposal of the pump.
Hereby, the industry-specific and local regulations must be observed when disposing the different materials.
Only qualified personnel is authorized to disassemble and dispose of the oil pump.

13. EC Declaration of Conformity

CE

Manufacturer:

FMT Swiss AG
Fluid Management Technologies Swiss AG
Gewerbestraße 6 | 6330 Cham / Switzerland

declares under his sole responsibility that the machine:

Model Part No. **23 301** 230 V 1~AC · 30 l/min

Motor voltage	230 V
Function	Vane oil pump
complies with all relevant provisions of the following directive:	
EC directives	2006/42/EC Machinery Directive 2014/35/EU Low Voltage Directive
Applicable standards	EN 809; EN ISO 4144; EN 60204-1; EN 12100 : 2010; EN 55011

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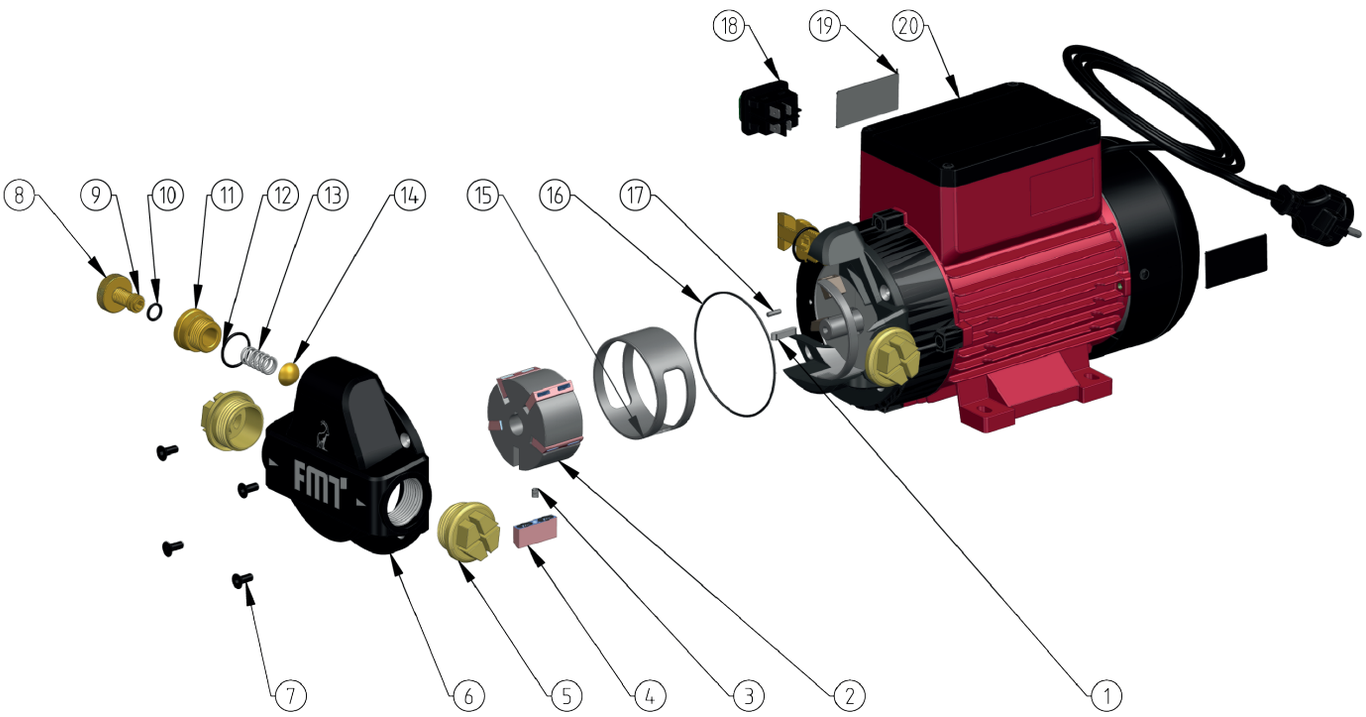
FMT Swiss AG
Cham, 28.01.2022

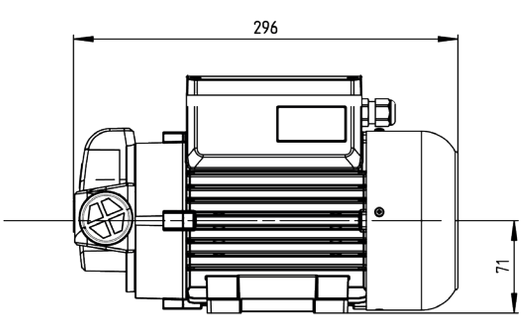
Dipl.-Ing. Rudolf Schlenker
(Managing Director)

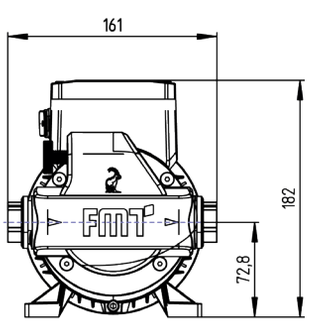
14. Exploded view / Sectional drawing with dimensions:

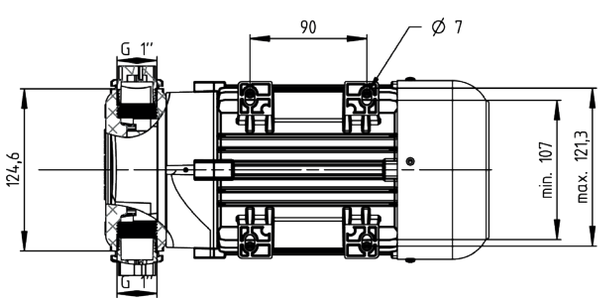
Vane oil pump 30 l/min

Part No. **23 301**









15. Overview of components with part numbers

Vane oil pump 30 l/min

Pos.	Quantity	Part No.	Designation
1	1	00604	Parallel key DIN 6885 A
2	1	92224	Rotor
3	5	92227	Pressure spring
4	5	92225	Vane
5	2	86055	Screw plug PP 710GPN
6	1	92226	Pump housing oil vane pump 30 l/min
7	4	83968	Countersunk screw M 5 x 12
8	1	92229	Adjusting wheel
9	1	92234	Threaded piston
10	1	81522	O-ring-NBR 70-9 x 1,8
11	1	92232	Valve body
12	2	85263	O-ring-NBR 70-20,35 x 1,78
13	1	92228	Valve spring
14	2	92233	Closure part
15	1	92397	Raceway oil vane pump 30 l/min
16	1	03316	O-ring-NBR 70-81 x 1,5
17	1	85637	Dowel pin ISO 2338-3 m 6 x 10-St
18	1	85637	Black switch for 230 V pumps
19	2	85637	Plate
20	1	92231	Electric motor for oil vane pump

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