OPERATING INSTRUCTIONS AND SAFETY NOTES

Silverback

230 V-1~AC · 115 l/min



FMT Swiss AG

91 463 932 A802 GB

FMT Swiss AG

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

Without our written consent, the content of this documentation (textes, figures, drawings, charts, diagrams etc.), must not be duplicated or distributed, neither in full or in part, utilized for the purpose of competition or passed on/made availabe to third parties.

FMT Swiss AG
Fluid Management Technologies Swiss AG
Gewerbestraße 6
6330 Cham / Switzerland
Tel. +41 41 712 05 37
Fax +41 41 720 26 21
Email: info@fmtag.com
Internet: www.fmtag.com

Operating instructions translation

Date of issue: 02/2025

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

Table of Contents

1. Introduction 4
1.1. Preface 4
1.2. Obligations of the personnel 4
1.3. Symbols in this manual 4
1.3.1. Structure of the safety notes 4
1.3.2. Hazard symbols 5
1.3.3. General symbols 5
2. Safety notes 5
2.1. Authorized personnel 6
2.2. Notes on maintenance, cleaning and repair 6
2.3. Intended conditions of use 6
2.4. Risks when handling the Silverback 7
2.5. Risks when handling diesel fuels and heating oils 7
3. Transport and temporary storage 7
4. Design and functional description 8
4.1. Area of application 8
4.2. Requirements for the installation location 8
5. Technical data 9
6. Assembly 9
6.1. Installing the siphon protection 11
6.2. Setting the bypass valve 11
7. Commissioning and operation 12
8. Preventive maintenance 13
9. Maintenance 14
10. Replacement of worn vanes 14
11. Troubleshooting 15
12. Repair/Service 15
13. Disposal 15
14. Exploded view 16
15. EC Declaration of Conformity 18

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.

Yours sincerely, FMT Swiss AG

1.2. Obligations of the personnel

Before they start to work, all persons who are entrusted with work with the diesel 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 warning 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 diesel 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 diesel 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.**
- During cleaning work, wear gloves as a protection against skin-contact with diesel fuel.
- Keep to the specified inspection and maintenance intervals. (⇨**Chapter Maintenance**)
- Should unusual noises occur, immediately stop the diesel pump. Immediately identify and eliminate the cause in order to avoid consequential damages.

2.3. Intended conditions of use

The diesel pump is to be used only for the delivery of diesel fuels and heating oil.



DANGER

Risk of injury and material damage from explosive vapors

- **Never use the pump to deliver explosive fluids such as petrol or other fluids with similar flashpoints!**
- Since the motor and the switch are not explosion-protected, the pump must not be operated in an explosion risk area.

The diesel pump may only be connected to a suitable voltage source (see type plate).

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

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

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. Risks when handling the Silverback

Any application beyond the intended use can lead to hazardous situations and shall be regarded as non-intended use.



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 fuel hoses!

- Lay the supply cable so that it will not cause any risk of stumbling.
- Provide fuel 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.

2.5. Risks when handling diesel fuels and heating oils

Diesel fuels and heating oils are flammable liquids, which must be taken into consideration for their storage. If improperly handled, they can cause risks to human health or to the environment.

Escaping liquids 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 fuel storage must be obeyed.



DANGER

Use of diesel fuels

- May be fatal if swallowed and enters airways.
- Do not smoke, do not use open fire and do not weld when handling fuel.

Use of heating oil

- Heating oil may cause lung damage if swallowed.



NOTE

- Observe the safety sheet for diesel fuels and heating oils!

3. Transport and temporary storage

Prior to transport, ensure that there are no liquids in the pump (diesel fuel or heating oil residues) any more. 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 -10 °C to + 40 °C.

4. Design and functional description

The diesel pump can be used as portable or fixed unit.

It can be fitted with a variety of FMT accessories.

To avoid environmental damage, the diesel pump is equipped with a siphon protection system.

This means that if the discharge hose is damaged while the pump is stopped, siphon action will prevent the tank from being emptied.

4.1. Area of application

The diesel pump is only suitable for the delivery of diesel and heating oil provided that they are not heated above their flash points.

The use in the food industry is forbidden.

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

The pump is not intended for use in ATEX areas.

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.



DANGER

Risk of injury and material damage from explosive vapors

The motor and the switch of the pump are not explosion-protected

- **Do not operate the pump in an explosion-risk area! There is a risk of explosion!**
- **Smoking and nakes flames are prohibited in the vicinity of the pump.**
- Do **NOT** use the pump to deliver fuels of danger classification AI, AII and B.



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

Heating oil and diesel fuel are water polluting substances. Therefore comply with all country-specific statutory water pollution control stipulations.

Filling facilities must be designed, 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.

5. Technical data

Description		Silverback 230 V-1~AC 23 437
Pump design		Vane pump, selfpriming
Pumping media		Fuel oil and diesel
Delivery rate under free discharge up to	l/min	115
Discharge pressure up to	bar	2,2
Suction height up to	m	5
Connection suction side	G	1“ female
Connection discharge side	G	1“ female
Motor data		
Insulation class		F
Power consumption	A	5,7
Power	kW	1,2
Voltage	V	230
Frequency	Hz	50
Thermal protection		self resetting
Rotation speed	rpm	1400
Duty cycle	min	Continuous operation
Torque	Nm	4,1
Safety class		IP 66
Type of construction		IMB 3
Materials of parts in contact with liquid		
Seals		FKM (Viton®) / NBR
Pump housing		Gray cast iron
Rotor		Gray cast iron 25
Vane		POM
Connecting cable, length	m	2
Weight	kg	13,4
Dimensions LxWxH	mm	340 x 135 x 180

Tab. 5.-1: Technical data

6. Assembly

If the diesel pump is to be locally mounted, four M6 screws (not included in the delivery volume) are required.

The pump unit can be installed in 4 different positions (refer to fig. 6.-1).

- When installing the pump, ensure that it is mounted on a stable surface. Select a secure location (protected from splash water, damage and theft).
- If the pump is not secured with bolts, it must be operated on a firm, level and dry base.
- First, remove the plastic plugs from the suction and discharge junctions.
- Connect the hoses to the suction and delivery connectors. Attach a strainer to the end of the suction hose.
- Attach the nozzle valve to the delivery hose.



ATTENTION

- Before connecting the pump to the voltage source, check to ensure that the pump is switched off!

The pump is now ready for operation.

NOTE

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

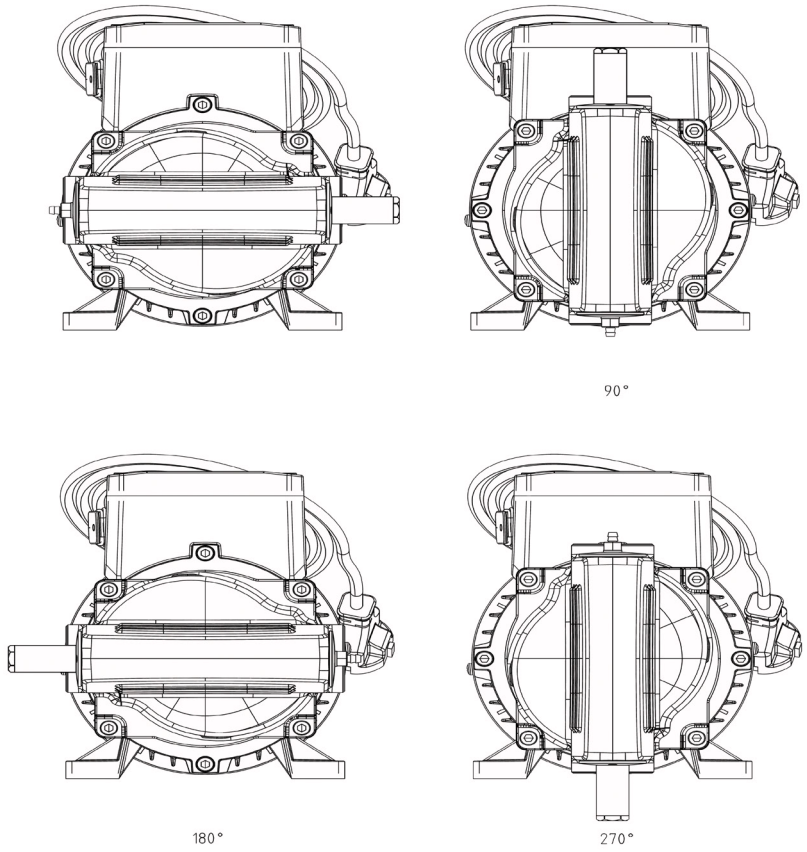
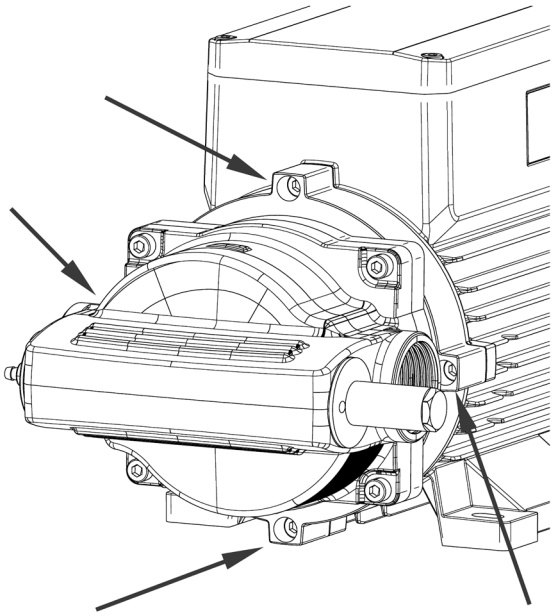


Fig. 6.-1: Possible assembly of the pump unit



For changing the pump unit's position (⇨ see fig. 6.-1):

- At first, remove the 4 screws (⇨ see fig. 6.-2).
- Turn the pump unit 90° into the desired position.
- Insert the screws again.

ATTENTION

Risk of product damage

- Do not pull off the pump unit, turn it only.

Fig. 6.-2: Position of the screws for changing the assembly of the pump unit

6.1. Installing the siphon protection

Remove the screw and the seal situated into the pump housing (see fig. 6.1.-1).

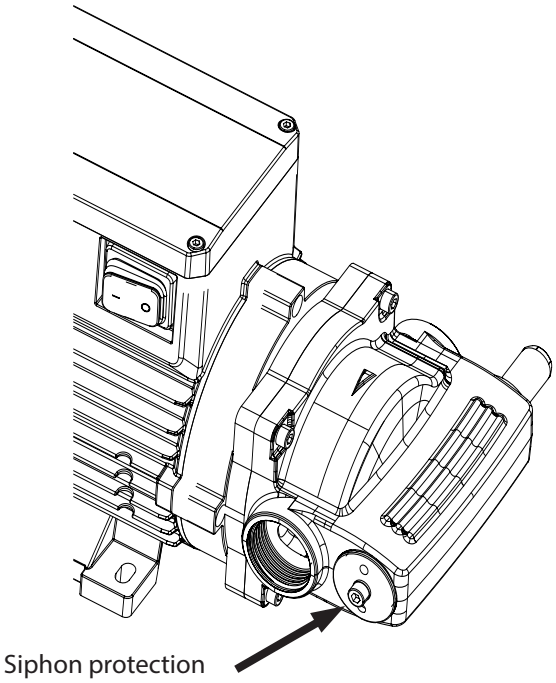


Fig. 6.1.-1: Boring for siphon protection closed by screw (delivery state)

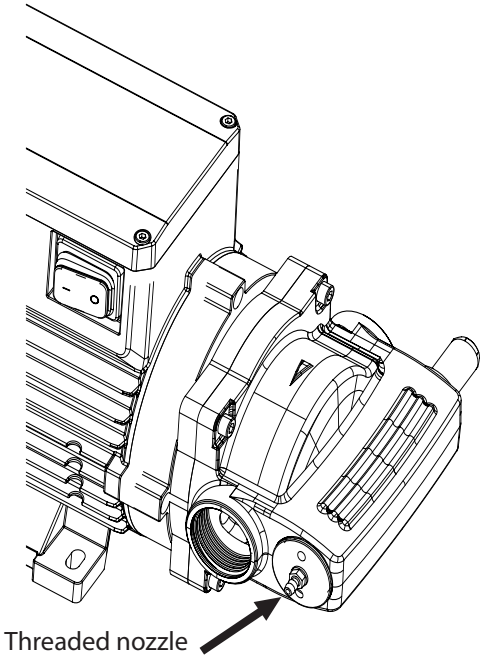


Fig. 6.1.-2: Threaded nozzle for siphon protection screwed in place

Screw into the same thread the threaded nozzle with the new seal (see fig. 6.1.-2).

Connect the hose to the threaded nozzle and feed it into the tank.

ATTENTION

When installing the siphon protection, ensure that the end of the hose is not immersed in the fluid. Otherwise the siphon protection will not work!

6.2. Setting the bypass valve

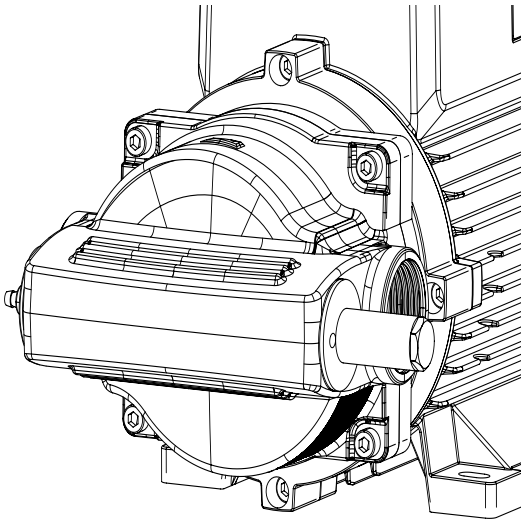


Fig. 6.2.-1: Setting the bypass valve

The pump is equipped with a screw for adjusting the bypass valve. The screw is preset by the manufacturer. This allows to slightly modify the opening pressure if needed.

- Clockwise rotation → pressure increase
- Counterclockwise rotation → pressure decrease

Unscrew the protective cap (⇨ chapter 14, pos. 22) and loosen the nut M6 underneath (⇨ chapter 14, pos. 18) to adjust the bypass valve. Turn the adjusting screw M6 (⇨ chapter 14, pos. 17) to the left or to the right in order to modify the opening pressure.

Then, retighten the nut M6 (⇨ chapter 14, pos. 18) and the protective cap (⇨ chapter 14, pos. 22) again.

7. Commissioning and operation



CAUTION

Risk of injury because of uncontrolled pump movement

- The pump may only be operated when 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.

Put the pump only in operation after it has been securely fixed at its place of installation.

Check the diesel pump and the installed accessories for completeness and damage. Replace any damaged components immediately. Never use the pump if damaged.



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 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.

- Check the suction strainer for damage each time the tank is filled/emptied and replace it if damaged. Never operate the pump without the suction strainer because otherwise the pump will not be protected against contamination by foreign bodies.



NOTE

To ensure that the tank can be completely emptied, the suction hose must reach to the bottom of the tank!

- Before switching on the pump, check to ensure that the nozzle valve is closed.
- Operate the rocker switch to switch on the pump.



CAUTION

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

Press the nozzle valve lever up according to the delivery rate required, or lock it in position for constant flow (only applicable to automatic nozzle valve, not included in standard volume of delivery).



CAUTION

- The diesel pump does not switch off automatically, therefore never let the pump running without supervision during filling operations. Check to ensure that the pump does not work against the closed nozzle.
- After having finished the filling of a tank, check to ensure that the inlet and outlet hoses are empty before removing them.
- Wipe up immediately any spilled diesel fuel.

- For finishing the filling operation, release the nozzle valve control lever. Never operate the pump for longer than 2 min with closed nozzle valve.
- Operate the rocker switch to switch off the pump.
- Position the nozzle valve so that no diesel fuel can pollute the environment.



CAUTION

Danger of product damage

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

8. Preventive maintenance

In general, the diesel pump only requires very little care or maintenance.

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 hose
- Nozzle valve

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 diesel 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 lower than 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. Replacement of worn vanes

Repair work may only be performed by qualified personnel.

- Loosen the screws item 10 (⇨ chapter 14).
- Remove the complete pump housing from the motor, item 9 (⇨ chapter 14) and the gaskets.
- Replace the worn vanes, item 4, by new genuine FMT spare parts. Observe the installation direction.
- Put the pump housing, item 9, back in position and fasten it with the screws.
  Ensure the correct seat of the sealing rings.
- Replacing the vanes is only necessary in exceptional cases.

11. Troubleshooting

Malfunction	Cause	Solution
Delivered volume too low or no delivery	▸ Discharge hose kinked or clogged ▸ Resistance in the suction line too high ▸ Too many bends or fittings in the suction line ▸ Filter resistance too high ▸ Voltage too low ▸ Nozzle valve not completely open ▸ Suction line not tight ▸ Worn vanes	▸ Check the discharge hose ▸ Suction line too long or kinked, excessive suction height ▸ Use for example 45° bends, avoid use of bends ▸ Check, clean suction filter ▸ Check the voltage ▸ Completely open the nozzle valve ▸ Check and seal the suction line ▸ Replace worn vanes (⇨chapter 10)
Delivery pressure too low	▸ Wrong direction of rotation ▸ Voltage too low ▸ Impurities ▸ Defective or clogged bypass in the pump	▸ Check the direction of rotation (connection to voltage supply) ▸ Check the voltage ▸ Clean the suction filter ▸ Check the bypass
Pump makes too much noise	▸ Air in the suction line ▸ Supply rate too low	▸ Check the suction line for tightness ▸ Clean the suction filter
Leakage at the pump	▸ Defective O-ring	▸ Replace the O-ring ⇨ chapter 14; Exploded view
Difficulties with pump rotation	▸ Deposits or impurities in the pump housing ▸ Pump out of use for a long time	▸ Clean the pump ▸ Add some oil into the suction side of the pump

Tab. 11.-1: Troubleshooting

12. Repair/Service

The diesel pump has 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

13. 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 diesel pump.

14. Exploded view

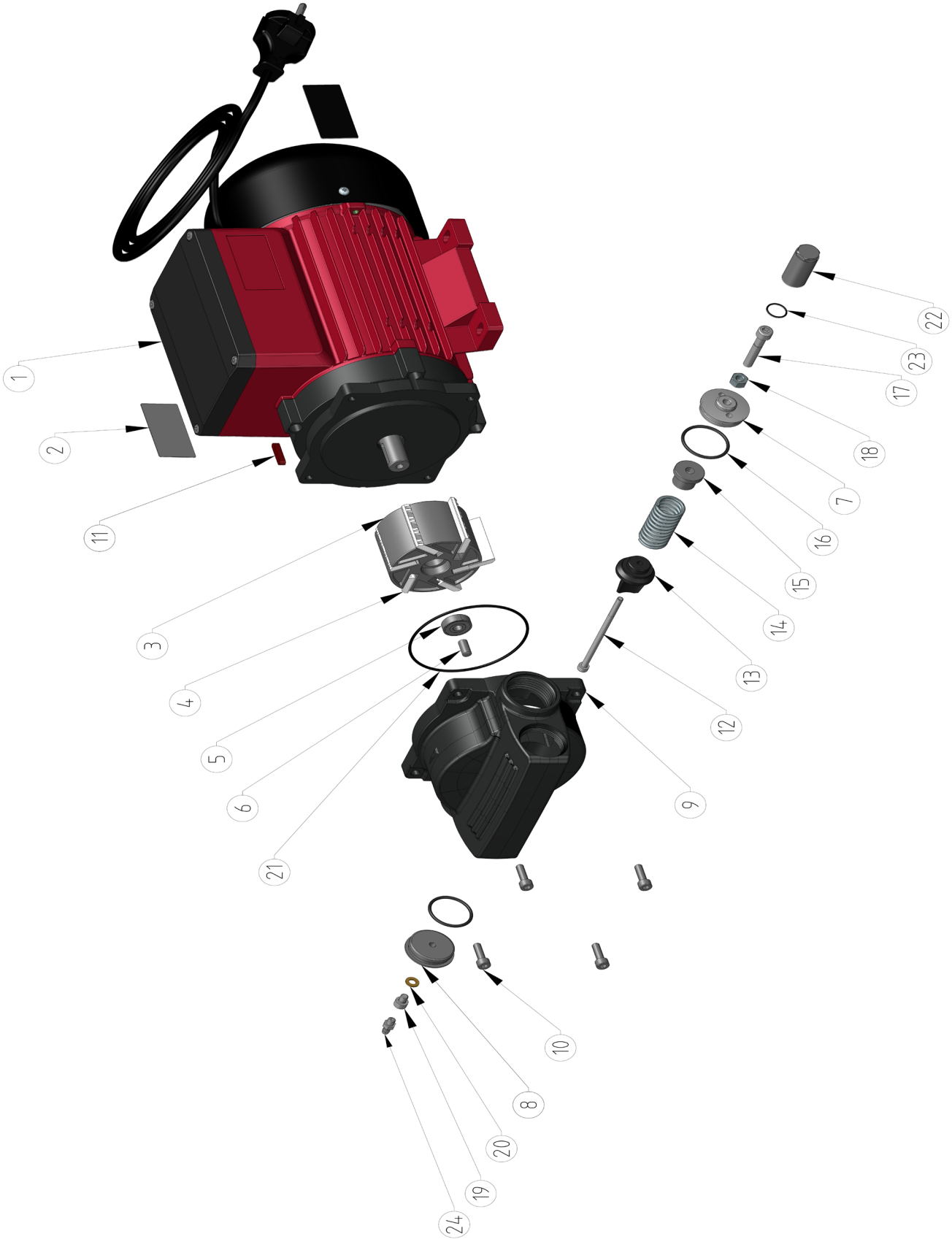


Fig. 14.-1: Exploded view

Item	Quantity	Designation	Item number
1	1	Electric motor 230 V-50 Hz	83 706 110
2	2	Decal	89 882
3	1	Rotor chamfered slots	86 845
4	6	Vane	89 304
5	1	Groove ball bearing 19x6x6	00 253
6	1	Cylinder bolt	91466
7	1	Plug	89 321
8	1	Plug	89 311
9	1	Pump housing	89 307
10	4	Cylinder screw M 5x16	91166
11	1	Cap Feather key DIN 6885 A	00 604
12	1	Cylinder screw M 4x80	89 710
13	1	Valve tappet	89 716
14	1	Pressure spring	89 713
15	1	Pressure piece	89 715
16	2	O-ring-FKM 80-26x2	87 223 860
17	1	Cylinder screw M 6x35	83 932
18	1	Nut DIN 985	00 808
19	1	Cylinder screw M 5x6	89 445
20	1	Sealing ring	89 659
21	1	O-ring-NBR 70-75,92x1,78	80 517
22	1	Protection cap	89 708
23	1	O-ring-FKM 70-12x1	91 335
24	1	Threaded fitting	89 278

Tab. 14.-1: Overview of components for fig. 14.-1

15. 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	**Silverback 115 l/min 23 437**
Motor voltage	230 V
Function	pumping diesel fuels and heating oil
complies with all relevant provisions of the following directive:	
EC directives	2006/42/EC Machinery Directive 2014/30/EC EMC Directive
Applicable standards	EN 809; EN ISO 4144; EN 60204-1; EN 12100 : 2010; EN 55011

Authorized representative for the compilation of the technical documentation:

Name: Manuel Bredenbruch
Address: Fluid Management Technologies Swiss AG
Gewerbestraße 6
6330 Cham / Switzerland
Phone: +49 09462/ 17 - 218

FMT Swiss AG

Cham, 07.05.2021

Dipl.-Ing. Rudolf Schlenker

(Managing Director)

FMT Swiss AG
Fluid Management Technologies Swiss AG
Gewerbestraße 6
6330 Cham / Schweiz
Tel. +41 41 712 05 37
Fax +41 41 720 26 21
info@fmtag.com
www.fmtag.com

FMT Swiss AG