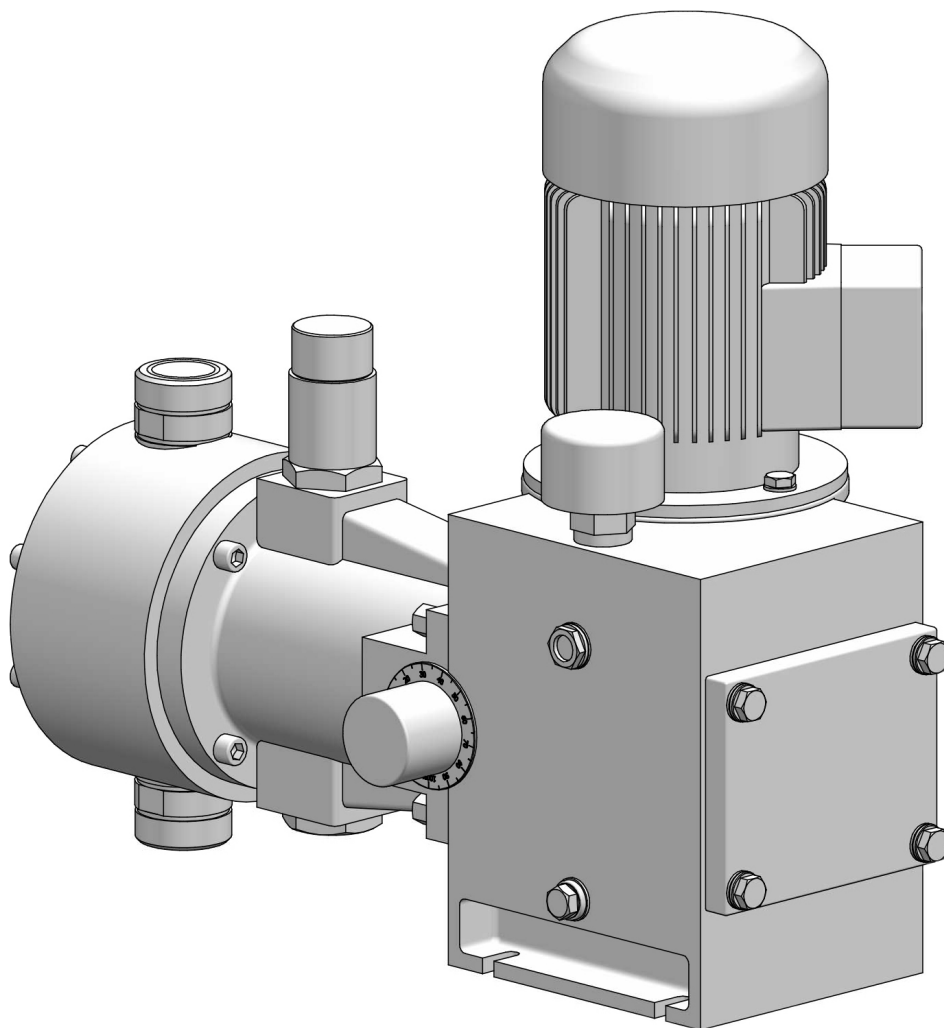


Motor piston diaphragm dosing pump **MEMDOS KMS** Operating instructions



Read the operating manual!

The user is responsible for installation and operation related mistakes!

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1 Notes for the Reader

This operating manual contains information and behaviour rules to ensure safe and intended operation of the dosing pump.

Observe the following principles:

- Read the entire operating manual prior to starting-up the device.
- Ensure that everyone who works with or on the dosing pump has read the operating instructions and follows them.
- Keep the operating instructions for the entire service life of the dosing pump.
- Pass on the operating instructions to any subsequent owner of the dosing pump.

1.1 General non-discrimination

In this operating manual, only the male gender is used where grammar allows gender allocation. The purpose of this is to make the text easy to read. Men and women are always referred to equally. We would like to ask female readers for understanding of this text simplification.

1.2 Explanation of the signal words







Different signal words in combination with warning signs are used in this operating manual. Signal words illustrate the gravity of possible injuries if the risk is ignored:

Signal word	Meaning
DANGER!	Refers to imminent danger. Ignoring this sign may lead to death or the most serious injuries.
WARNING	Refers to a potentially hazardous situation. Failure to follow this instruction may lead to death or severe injuries.
CAUTION!	Refers to a potentially hazardous situation. Failure to follow this instruction may lead to minor injury or damage to property.
<i>PLEASE NOTE</i>	Refers to a danger which, if ignored, may lead to risk to the machine and its function.

Tab. 1: Explanation of the signal words

1.3 Explanation of the warning signs

Warning signs represent the type and source of a danger:

Warning sign	Type of danger
	Danger point
	Danger from electrical voltage
	Danger from corrosive substances
	Danger from potentially-explosive substances
	Danger from automatic startup
	Danger of damage to machine or functional influences

Tab. 2: Explanation of the warning signs

1.4 Identification of warnings

Warnings are intended to help you recognise risks and avoid negative consequences.

This is how warnings are identified:

Warning sign	SIGNAL WORD
Description of danger. Consequences if ignored. ⇒ The arrow signals a safety precaution to be taken to eliminate the danger.	

1.5 Identification of action instructions

This is how pre-conditions for action are identified:

- ✓ Pre-condition for action which must be met before taking action.
- ✘ A resource such as a tool or auxiliary materials required to perform the operating instructions.

This is how instructions for action are identified:

➔ Separate step with no follow-up action.

1. First step in a series of steps.
2. Second step in a series of steps.
 - ▶ Result of the above action.


✓ **Action completed, aim achieved.**


2 Safety


2.1 General warnings


The following warnings are intended to help you to eliminate the dangers that can arise while handling the dosing pump. Risk prevention measures always apply regardless of any specific action.


Safety instructions warning against risks arising from specific activities or situations can be found in the respective sub-chapters.


	DANGER!
<p>Mortal danger from electric shock!</p> <p>Wrongly connected or located cables or damaged ones can injure you.</p> <ul style="list-style-type: none"> ⇒ Connect the device only to a SCHUKO socket outlet protected by a ground fault circuit interrupter (GFCI). ⇒ Replace damaged cables without delay. ⇒ Do not use extension cables. ⇒ Do not bury cables. ⇒ Secure cables to avoid being damaged by other equipment. 	


	DANGER!
<p>Danger to life through explosions!</p> <p>The use of dosing pumps without ATEX certification in a potentially explosive atmospheres can result in potentially-fatal explosions.</p> <ul style="list-style-type: none"> ⇒ Never use the dosing pump in potentially explosive areas. 	

	WARNING
<p>Danger from unsuitable materials</p> <p>The materials of the dosing pump and hydraulic parts of the system must be suitable for the dosing medium that is used. Should this not be the case, the dosing media may leak.</p> <ul style="list-style-type: none"> ⇒ Make sure that the materials you are using are suitable for the dosing medium. ⇒ Make sure that the lubricants, adhesives, sealants, etc. that you use are suitable for the dosing medium. 	

	WARNING
<p>Caustic burns or other burns through dosing media!</p> <p>While working on the dosing head, valves and connections, you may come into contact with dosing media.</p> <ul style="list-style-type: none"> ⇒ Use sufficient personal protective equipment. ⇒ Rinse the dosing pump with a liquid (e.g. water) which does not pose any risk. Ensure that the liquid is compatible with the dosing medium. ⇒ Release pressure in hydraulic parts. ⇒ Never look into open ends of plugged pipelines and valves. 	

	WARNING
<p>Danger of automatic start up!</p> <p>After connecting the mains supply, residual dosing media in the dosing head can spray out.</p> <ul style="list-style-type: none"> ⇒ Stop the dosing pump before disconnecting it from the mains supply. ⇒ Before connecting the mains supply, connect the dosing lines. ⇒ Check that all the screw connections have been tightened correctly and are leak-proof. 	

	CAUTION!
<p>Danger when changing the dosing medium!</p> <p>Changing the dosing media can provoke unexpected reactions, damage to property and injury.</p> <ul style="list-style-type: none"> ⇒ Clean the dosing pump and the system parts in contact with the media thoroughly before changing the dosing medium. 	

	CAUTION!
<p>Increased risk of accidents due to insufficient qualification of personnel!</p> <p>Dosing pumps and their accessories may only be installed, operated and maintained by personnel with sufficient qualifications. Insufficient qualification will increase the risk of accidents.</p> <ul style="list-style-type: none"> ⇒ Ensure that all action is taken only by personnel with sufficient and corresponding qualifications. ⇒ Prevent access to the system for unauthorised persons. 	

2.2 Hazards due to non-compliance with the safety instructions

Failure to follow the safety instructions may endanger not only persons, but also the environment and the device.

The specific consequences can be:

- Failure of vital functions of the dosing pump and the system
- Failure of required maintenance and repair methods
- Danger for individuals through dangerous dosing media
- Danger to the environment caused by substances leaking from the system

2.3 Working in a safety-conscious manner




Besides the safety instructions specified in this operating manual, further safety rules apply and must be followed:

- Accident prevention regulations
- Safety and operating provisions
- Safety provisions for handling dangerous substances (mostly the safety data sheets to dosing media)
- Environmental protection provisions
- Applicable standards and legislation

2.4 Personal protective equipment

Based on the degree of risk posed by the dosing medium and the type of work you are carrying out, you must use corresponding protective equipment. Read the Accident Prevention Regulations and the Safety Data Sheets to the dosing media find out what protective equipment you need.

You will require the minimum of the following personal protective equipment:

Personal protective equipment required	
	Protective goggles
	Protective clothing
	Protective gloves

Tab. 3: Personal protective equipment required

Wear the following personal protective equipment when performing the following tasks:

- Commissioning
- Working on the dosing pump while running
- Shut-down
- Maintenance work
- Disposal

2.5 Personnel qualification

Any personnel who work on the dosing pump must have appropriate special knowledge and skills.

Anybody who works on the dosing pump must meet the conditions below:

- Attendance at all the training courses offered by the owner
- Personal suitability for the respective activity
- Sufficient qualification for the respective activity
- Training in handling of the dosing pump
- Knowledge of safety equipment and the way this equipment functions
- Knowledge of this operating manual, particularly of safety instructions and sections relevant for the activity
- Knowledge of fundamental regulations regarding health and safety and accident prevention

All persons must generally have the following minimum qualification:

- Training as specialists to carry out work on the dosing pump unsupervised
- Sufficient training that they can work on the dosing pump under the supervision and guidance of a trained specialist.

These operating instructions differentiate between these user groups:

2.5.1 Specialist staff

Thanks to their professional training, knowledge, experience and knowledge of the relevant specifications, specialist staff are able to perform the job allocated to them and recognise and/or eliminate any possible dangers by themselves.

2.5.2 Trained persons

Trained persons have received training from the operator about the tasks they are to perform and about the dangers stemming from improper behaviour.

In the table below you can check what qualifications are the pre-condition for the respective tasks. Only people with appropriate qualifications are allowed to perform these tasks!

Qualification	Activities
Specialist staff	<ul style="list-style-type: none"> ■ Assembly ■ Hydraulic installations ■ Electrical installation ■ Maintenance ■ Repairs ■ Commissioning ■ Taking out of operation ■ Disposal ■ Fault rectification
Trained persons	<ul style="list-style-type: none"> ■ Storage ■ Transportation ■ Control ■ Fault rectification

Tab. 4: Personnel qualification

3 Intended use

3.1 Notes on product warranty

Any non-designated use of the product can compromise its function or intended protection. This leads to invalidation of any warranty claims!

Please note that liability is on the side of the user in the following cases:

- The dosing pump is operated in a manner which is not consistent with these operating instructions, particularly safety instructions, handling instructions and the section "Intended Use".
- If people operate the product who are not adequately qualified to carry out their respective activities.
- No original spare parts or accessories are used.
- Unauthorised changes are made to the device.
- The user uses different dosing media than those indicated in the order.
- The user does not use dosing media under the conditions agreed with the manufacturer such as modified concentration, density, temperature, contamination, etc.

3.2 Intended purpose

The dosing pump MEMDOS KMS is intended for the following purpose:

- The conveying and dosing of liquids

Piston diaphragm dosing pumps serve the dosing of liquids in a process in an exactly-defined time period. The dosing can be performed in a continuous or discontinuous fashion. The dosing time and dosing quantity per time unit can be selected freely in their area. It is imperative that you comply with the specifications of the installation, operation and maintenance instructions to ensure a faultless function.

3.3 Principles

- Before delivery, the manufacturer inspected the dosing pump and operated it under specific conditions (with a specific dosing medium with a specific density and temperature, with specific pipe dimensions, etc.) As operating conditions vary, the operating company must calibrate or readjust the dosing pump after delivery.
- Comply with the information pertaining to the operation and ambient conditions.
- Any restrictions regarding the viscosity, temperature and density of dosing media must be followed. You must only use dosing media at temperatures above freezing point or below the boiling point of the respective medium.
- The materials of the dosing pump and hydraulic parts of the system must be suitable for the dosing medium that is used. In this connection, note that the resistance of these components can change in dependence on the temperature of the media and the operating pressure.



Information on the suitability of materials combined with different dosing media can be found in the Compatibility Chart of the manufacturer.

The information in this resistance list is based on information from the material manufacturers and on expertise obtained from handling the materials.

As the durability of the materials depends on many factors, this list only constitutes initial guidance on selecting material. In all cases, test the equipment with the chemicals you use under operating conditions.

- The dosing pump is not intended for outdoor use unless appropriate protective measures have been taken.
- Avoid leaks of liquids and dust into the casing and avoid direct exposure to sunlight.
- You must never operate dosing pumps in a potentially explosive atmosphere if they do not have corresponding nameplates or an appropriate EC Declaration of Conformity for potentially explosive atmospheres.

3.4 Prohibited dosing media

The dosing pump must not be used for these media and substances:

- Gaseous media
- Radioactive media
- Solid substances
- Combustible media
- All other media that are not suitable for delivery using this dosing pump

3.5 Foreseeable misuse

Below, there is information about the applications of the dosing pump or associated equipment that are not considered to be intended use. This section is intended to allow you to detect possible misuse in advance and to avoid it.

Foreseeable misuse is assigned to the individual stages of the product lifetime:

3.5.1 Incorrect assembly

- Unstable or unsuitable bracket
- Dosing pump bolted wrongly or loosely

3.5.2 Incorrect hydraulic installation

- Suction and pressure lines dimensioned incorrectly
- Unsuitable connection of the pipes due to wrong material or unsuitable connections.
- Suction and pressure lines mixed-up
- Damage to threads due to them being tightened too much
- Bending of pipelines
- No free return flow of the pressure relief valve
- Excessive demand due to the pressure differences between the suction and pressure valves
- Through-suction at installation without back-pressure valves
- Damage due to undamped acceleration mass forces
- Exceeding the admissible pressure on the suction and discharge sides
- Using damaged parts
- Plastic union nuts may only be tightened by hand in order to avoid damage.

3.5.3 Incorrect electrical installation

- Connecting the mains voltage without a protective earth
- Unsecured mains or one that does not conform to standards
- Not possible to immediately or easily disconnect the power supply
- Wrong connecting cables for mains voltage
- Dosing pump accessories connected to wrong sockets
- Diaphragm monitoring not connected or defective
- Protective earth removed

3.5.4 Incorrect start-up

- No gear oil filled before commissioning
- Start-up with damaged system
- Shut-off valves closed at commissioning
- Closed suction or pressure line, e.g. due to blockages
- Personnel was not informed before the start-up
- System was recommissioned after maintenance without all the protective equipment and fixtures, etc. being reconnected.
- Inadequate protective clothing or none at all

3.5.5 Incorrect operation

- Protective equipment not functioning correctly or dismantled
- Modification of the dosing pump without authority
- Ignoring operational disturbances
- Elimination of operational disturbances by personnel without adequate qualifications
- Deposits in the dosing head due to inadequate purging, particularly with suspensions
- Bridging the external fuse
- Operation made more difficult due to inadequate lighting or machines

that are difficult to access

- Operation not possible due to dirty or illegible display of the dosing pump
- Delivery of dosing media for which the system is not designed
- Delivery of particulate or contaminated dosing media
- Inadequate protective clothing or none at all

3.5.6 Incorrect maintenance

- Carrying out maintenance during ongoing operation
- Carrying out work that is not described in the operating manual
- No adequate or regular inspection of correct functioning
- No replacement of damaged parts or cables with inadequate insulation
- No securing against reactivation during maintenance work
- Using cleaning materials that can cause reactions with the dosing media
- Inadequate cleaning of the system
- Unsuitable purging medium
- Unsuitable cleaning materials
- Detergents left in system parts
- Using unsuitable cleaning equipment
- Using the wrong spares or lubricants
- Contaminating the dosing medium with lubricant
- Installing spare parts without following the instructions in the operating manual
- Blocking venting orifices
- Pulling off sections of the plant
- Contamination at installation without a dirt trap
- Mixing up the valves
- Mixing up the sensor lines
- Not reconnecting all the lines
- Damaging or not installing all the seals
- Not renewing seals
- Not paying attention to safety data sheets
- Inadequate protective clothing or none at all

3.5.7 Incorrect decommissioning

- Not completely removing the dosing medium
- Dismantling lines while the dosing pump is running
- Device not disconnected from the power supply
- Using the wrong dismantling tools
- Inadequate protective clothing or none at all

3.5.8 Incorrect disposal

- Incorrect disposal of dosing media, operating resources and other materials
- No labelling of hazardous substances

4 Product description

4.1 Properties

During the development of the **MEMDOS KMS**, a focus was placed on ensuring the following advantages for the user.

Ease of installation

- Quick diaphragm change possible.
- No zero-point correction with dismantling of the piston flange required.

High flexibility

- The rational structure requires only a minimum of spare parts storage.
- The addition of a second dosing unit to the drive with an identical or different capacity range produces a double head pump, the **MEMDOS ZKMS**.
- Thanks to its symmetrical form, the piston flange can be installed on the left-hand or right-hand side of the simple pump. This ensures an economical and compact system design.
- The dosing pump can be converted or retrofitted from manual stroke adjustment to electrical stroke adjustment.
- TÜV-checked pressure relief valves are integrated in all pumps; these prevent damage to the pump and the periphery. The pressure relief valves have been selected to match the pump capacity and the desired maximum.

4.2 Scope of delivery

Please compare the delivery note with the scope of delivery. The following items are part of the scope of delivery:

- Dosing pump **MEMDOS KMS**
- Operating instructions
- Package gear oil
- Inspection report and test certificate (optional)

4.3 Structure of the dosing pump

4.3.1 General Overview

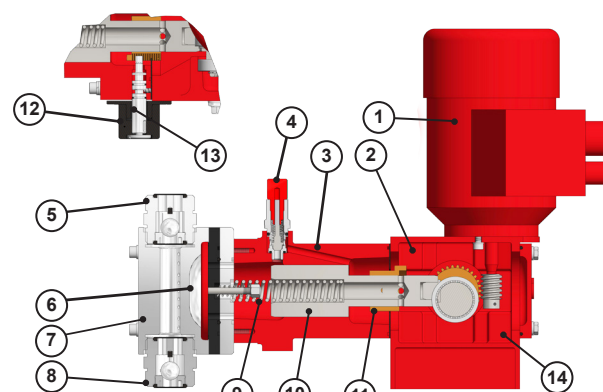


Fig. 1: Dosing pump overview MEMDOS KMS

No.	Description
1	Drive motor
2	Drive unit
3	Hydraulic unit
4	Pressure-relief valve
5	Pressure valve
6	Diaphragms
7	Dosing head
8	Suction valve
9	Piston spring
10	Piston
11	Slide valve
12	Adjusting knob
13	Adjusting spindle
14	Hydraulic fluid

Tab. 5: General Overview

4.3.2 Control elements

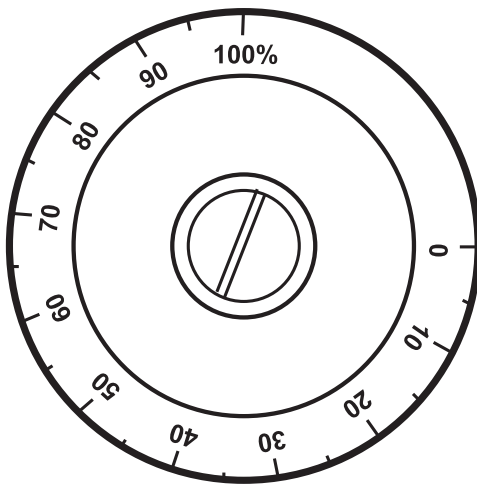


Fig. 2: Controller of dosing pump MEMDOS KMS

The control is performed via a control dial. The control dial has a scale of 0 % – 100 %. The setting of the control dial determines the dosing capacity.

4.4 Function description

All position numbers within this text refer to Fig. 9 “Section drawing of the pump” on page 22.

The functioning of the pump can be taken from the section drawing. The drive (3) and piston flange (6) are filled with a hydraulic fluid (19). A hydraulic connection has been made over the hollow-bored piston (9) which is fitted with a number of spill ports. The slide valve encloses the piston (7).

The hydraulic fluid (19) displaced by the pressure stroke from the piston flange (6) flows through the piston (9) into the drive (3) until the spill ports of the piston are closed by the fixed slide valve (7). Only now is dosing performed via the elastic membrane (10).

The slide valve (7) is position-adjustable via the spindle (20), through which the dosing capacity can be changed sensitively and entirely linear in the range 0 % – 100 %.

If the eccentric cam (4) is rotated from its highest point to its lowest point, the suction stroke will be triggered. The piston spring (8) returns the piston (9) to its zero position; dosing medium is sucked in as long as the slide valve (7) closes the spill ports.

During the suction stroke, the suction valve (16) opens and pressure valve (17) closes. During the pressure stroke, suction valve (16) closes and pressure valve (17) opens. This function alternates with the revolutions of the eccentric cam.

4.5 Pressure-relief valve

The pressure relief valve is installed on the piston flange as a matter of routine to prevent damage from exceedance of the permissible operating pressure. It is set and fixed to the operating pressure of the pump on the works-side. The pressure relief valve is actuated if the valves installed on the suction or pressure side are closed or the suction or pressure line is blocked. The pressure relief valve is only to be viewed as a short-term safety feature. Faults that lead to the actuation of the pressure relief valve require immediate remedy.

- The pressure relief valve is designed to protect certain pump parts against impermissible positive pressure.
- A further advantage is that all further system parts such as lines from fittings are protected in accordance with the positive pressure control.
- Installation in the pump hydraulics provides the valve with almost complete protection from the type of soiling which could develop in the piping system.
- Independent of this, the operating company of dosing pumps is also permitted to install further pressure relief valves set to a level above or below the opening pressure of the dosing pump pressure relief valve.
- Installation in other pumps or machines is not permissible.
- The pressure relief valve may not be used to bridge the dosing stop with a running pump. It is a safety component.

5 Technical data

5.1 MEMDOS KMS standard pumps and KMS-HP high pressure pumps

MEMDOS KMS, KMS-HP			1-HP	2-HP	6	9-HP	12	24	26-HP	46	80	100	140
Delivery capacity at max. backpressure	l/h	50 Hz	1	2.8	6.3	9	12	24	26	46	80	100	140
		60 Hz	1.2	3.2	7.5	10.6	14	28.8	—	55.2	96	—	168
	ml/stroke		0.56	1.6	1.8	1.7		3.3	3.1	6.4	11	12	19
max. delivery pressure		bar	70	25	10	25	10		25	10	8		
Max. stroke frequency	rpm	50 Hz	30		60	90	120		140	120		140	120
		60 Hz	36		72	108	144		—	144		—	144
Suction lift for non-gassing media		mWS	2										
Piston diameter		mm	10	14	14			20		27	37		45
Nominal valve width			DN8							DN20			
Weight	PVC	≈ kg	-	-	11	-	11		-	11	15		31
	PVDF		-	-	11	-	11		-	11	15		31
	Stainless steel (1.4571)		13		12				13	12	18		40
Approved ambient temperature		°C	-5 to +45										
Approved media temperature		°C	-5 to +45										
Dosing accuracy			1 %										

Tab. 6: Technical data MEMDOS KMS

MEMDOS KMS, KMS-HP			137	272	350	490	582	582-HP	882	1058	1280	1536	
Delivery capacity at max. backpressure		l/h	50 Hz	137	272	350	490	582		882	1058	1280	1536
			60 Hz	164	326	420	576	698		1058	—	1536	—
		ml/stroke		20	41	52	73	87		131	126	190	183
max. delivery pressure		bar		16	10	10	6	4	10			4	
Max. stroke frequency		rpm	50 Hz	112						140		112	140
			60 Hz	134.4						—		134.4	—
Suction lift for non-gassing media		mWS		2									
Piston diameter		mm		32	45	52	58	65		80		95	
Nominal valve width				DN20			DN32						
Weight	PVC	≈ kg	31	33	40	42	60	85	90		100		
	PVDF		31	33	40	42	60	85	90		100		
	Stainless steel (1.4571)		40	42	45	47	65	90	100		120		
Approved ambient temperature		°C		-5 to +45									
Approved media temperature		°C		-5 to +45									
Dosing accuracy				1 %									

Tab. 7: Technical data MEMDOS KMS

5.2 MEMDOS KMS-V for high viscosity media

MEMDOS KMS-V			12-V	20-V	50-V	137-V	175-V	235-V	291-V	440-V	640-V	
Delivery capacity at max. backpressure		l/h	50 Hz	12	20	50	137	175	235	291	440	640
			60 Hz	14	24	60	—	210	282	349	528	768
		ml/stroke		6.7	11.1	18.5	40.8	52.1	69.9	86.6	131	190.5
max. delivery pressure		bar		10	6		10					4
Max. stroke frequency		rpm	50 Hz	30		45	56					
			60 Hz	36		54	—	67.2				
Suction lift for non-gassing media		mWS		2								
Piston diameter		mm		27	37	45		52	58	65	80	95
Nominal valve width				DN20		DN32						
Weight	PVC	≈ kg		13	15	15		68	68	74	80	100
Approved ambient temperature		°C		-5 to +45								
Approved media temperature		°C		-5 to +45								
Dosing accuracy				1 %								

Tab. 8: Technical data MEMDOS KMS-V for high viscosity media

5.3 Motor data

Rated output P = 0.09 kW		
Frequency	50 Hz	60 Hz
Nominal voltage	Y 380 – 420 V, Δ 220 – 242 V	Y 440 – 480 V, Δ 254 – 280 V
Nominal current	Y 0.39 A Δ 0.67 A	Y 0.34 A Δ 0.59 A
Speed min ⁻¹	1350	1650
Power factor	cos φ 0.69	cos φ 0.72

Tab. 9: MEMDOS KMS motor data rated output 0.09 kW

Protection class: IP55

ISO class: F

Design: IM V18

Weight: 3 kg

Rated output P = 0.18 kW		
Frequency	50 Hz	60 Hz
Nominal voltage	Y 380 – 420 V, Δ 220 – 242 V	Y 440 – 480 V, Δ 254 – 280 V
Nominal current	Y 0.7 A Δ 1.2 A	Y 0.64 A Δ 1.1 A
Speed min ⁻¹	1370	1690
Power factor	cos φ 0.68	cos φ 0.67

Tab. 10: MEMDOS KMS motor data rated output 0.18 kW

Protection class: IP55

ISO class: F

Design: IM V18

Weight: 4.1 kg

Rated output P = 0.18 kW		
Frequency	50 Hz	60 Hz
Nominal voltage	220 – 240 V	220 – 240 V
Nominal current	1.8 A	1.6 A
Speed min ⁻¹	1400	1700
Power factor	cos φ 0.8	cos φ 0.9

Tab. 11: MEMDOS KMS motor data rated output 0.18 kW

Protection class: IP55

ISO class: F

Design: IM V18

Weight: 4.5 kg

Rated output P = 0.55 kW		
Frequency	50 Hz	60 Hz
Nominal voltage	Y 380 – 420 V, Δ 220 – 240 V	Y 440 – 480 V, Δ 254 – 280 V
Nominal current	Y 1,70 A Δ 2.95 A	Y 1,50 A Δ 2.60 A
Speed min ⁻¹	1370	1690
Power factor	cos φ 0.75	cos φ 0.71

Tab. 12: MEMDOS KMS motor data rated output 0.55 kW

Protection class: IP55

ISO class: F

Design: IM V1

Weight: 7 kg

Rated output P = 1.1 kW		
Frequency	50 Hz	60 Hz
Nominal voltage	Y 400 V ± 10 %, Δ 230 V ± 10 %	Y 460 V ± 10 %, Δ 265 V ± 10 %
Nominal current	Y 2.5 A Δ 4.33 A	Y 2.22 A Δ 3.84 A
Speed min ⁻¹	1435	1740
Power factor	cos φ 0.78	cos φ 0.74

Tab. 13: MEMDOS KMS motor data rated output 1.1 kW

Protection class: IP55

ISO class: F

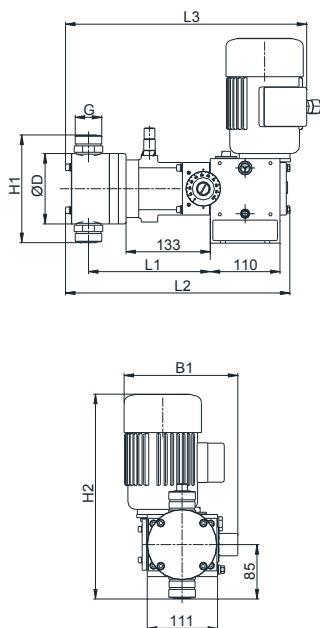
Design: IM V1

Weight: 12 kg

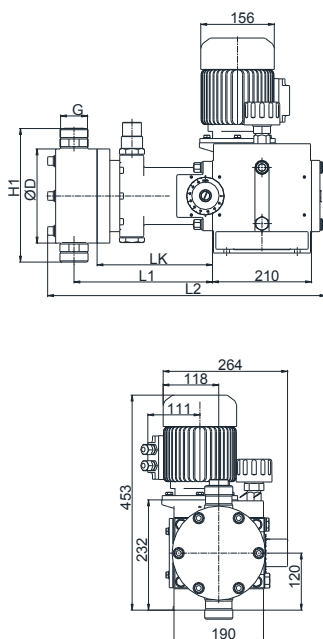
6 Dimensions

MEMDOS KMS 1-HP, 2-HP, 6 – 100, 140
MEMDOS KMS-V 12, 20, 50

All dimensions in mm


MEMDOS KMS 137, 272 – 582
MEMDOS KMS-V 137, 175

All dimensions in mm


MEMDOS KMS 582-HP – 1536
MEMDOS KMS-V 235, 291, 440, 640

All dimensions in mm

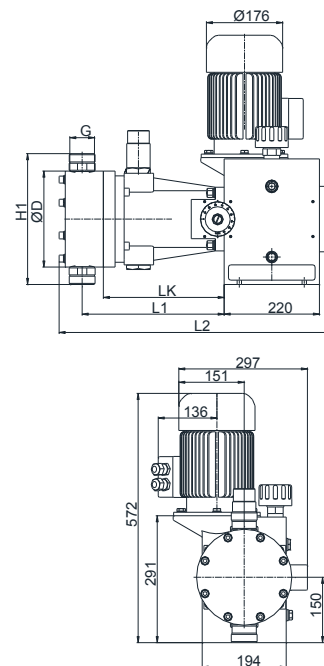


Fig. 3: Dimensions MEMDOS KMS

KMS	Piston-Ø	L1	L2	L3	H1	H2	B1	ØD	G
1-HP, 6, 12, 24	10 – 20	170	≈320	≈339	148	≈300	≈172	90	G5/8
46	27	183	≈333	≈352	168	≈300	≈172	110	G5/8
80, 100, 140	37-45	192	≈354	≈381	166	≈320	≈180	110	G1 1/4
KMS-V	Piston-Ø	L1	L2	L3	H1	H2	B1	ØD	G
12	27	191	≈353	≈372	166	≈300	≈172	110	G1 1/4
20	37	199	≈374	≈401	198	≈300	≈172	120	G2
50	45	199	≈374	≈401	208	≈320	≈180	130	G2
KMS	Piston-Ø	L1	L2	LK	H1	ØD	G		
137	32	272	≈553 (559*)	240	204	150	G1 1/4		
272	45	277	≈558 (564*)	245	204	150	G1 1/4		
350	52	280	≈565	245	232	178	G1 1/4		
490, 582	58 – 65	294	≈591	245	281	198	G2		
KMS-V	Piston-Ø	L1	L2	LK	H1	ØD	G		
137	45	290	≈584	240	228	150	G2		
175	52	290	≈584	245	256	178	G2		
KMS	Piston-Ø	L1	L2	LK	H1	ØD	G		
582-HP	65	294	607	245	281	198	G2		
882, 1058	80	328	632 (626**)	279	300	220	G2		
1280, 1536	95	336	646	281	331	250	G2		
KMS-V	Piston-Ø	L1	L2	LK	H1	ØD	G		
235, 291	58 – 65	294	607	245	278	198	G2		
440	80	328	632	279	298	220	G2		
640	95	336	646	281	330	250	G2		

Tab. 14: Dimensions

*) p > 10 bar, PVC/PVDF

**) with stainless steel head

7 Installing the Dosing Pump



DANGER!

Mortal danger from electric shock!

Electrically conductive liquid can enter pump housings, cable screw connections and mains connectors.

- ⇒ Make sure that all protective measures comply at least with the requirements of protection class IP55.
- ⇒ Always set up the dosing pump such that water cannot enter the housing.



DANGER!

Mortal danger from electric shock!

Only work on electrical systems while the device is disconnected from the power supply.

- ⇒ Switch the system voltage-free.
- ⇒ Secure the system to prevent it from being switched on again.
- ⇒ Measure the absence of voltage in the system with a measuring instrument.
- ⇒ Earth the system and then short-circuit it.
- ⇒ Cover adjacent live parts.

Before installing a piston diaphragm dosing pump, it must first be cleaned from all packaging residue. Check the specifications on the rating plate of the dosing pump and the motor. Secure the dosing pump to a stand or a mounting bracket with the fastening slots on the drive (3).

7.1 Set up information

When installing, follow the basic principles below:

- The valves must be vertical: Pressure valve at top, suction valve at bottom. In this connection, pay attention to the arrow on the valve body. The dosing head must be aligned such that the arrow points vertically upwards.
- You should install the dosing pump at a convenient height for operation.
- It must not be installed under the ceiling.
- The frame of foundation for fixing the dosing pump must not be subjected to jolts. The pump must be vibration-free and stable.
- There must be enough free space in the area of the dosing head and the suction and pressure valves for these parts to be easily dismantled if required. The entire space requirement for installation and maintenance is approximately 1 m².
- The distance from the sides of the dosing pump to the wall or other dosing pumps or equipment must be at least 3 cm. There must be a guaranteed flow of circulating air.
- The maximum ambient temperature must be complied with, see chapter 5 "Technical data" on page 11. If necessary, radiant heat from surrounding equipment must be screened.
- Avoid exposure to direct sunlight.

- The dosing pump is not intended for use out of doors unless appropriate protective measures have been taken to prevent dust and water from entering the housing.
- For the dimensions of the fastening holes, refer to chapter 6 "Dimensions" on page 13.
- The tightening torque for tightening the fastening bolts.

7.2 Rating plate

There is information on the equipment about safety or the product's way of functioning. The information must stay legible for the duration of the service life of the product.

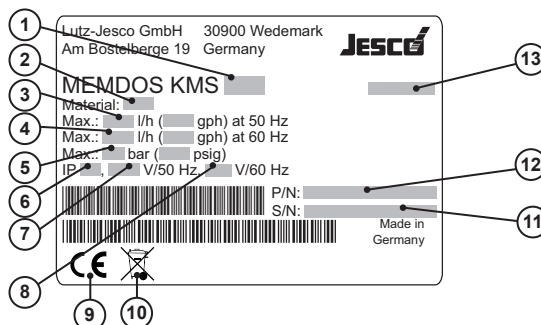


Fig. 4: Rating plate MEMDOS KMS

No.	Description
1	Product, type, nominal size
2	Material
3	Maximum delivery capacity in l/h and gph at 50 Hz and maximum back pressure
4	Maximum delivery capacity in l/h and gph at 60 Hz and maximum back pressure
5	Maximum pressure in bar and psig
6	Protection class
7	Voltage supply at 50 Hz
8	Voltage supply at 60 Hz
9	Label showing conformity with applicable European directives
10	WEEE label
11	Serial number
12	Part number
13	Month/year of manufacture

Tab. 15: Rating plate

8 Hydraulic installations

All position numbers within this text refer to Fig. 9 "Section drawing of the pump" on page 22.

Taking into account their specific weight, all non-outgassing media can be drawn in up to max. 2 mWS. Connect the dosing pump to sufficiently-dimensioned lines. When installing fittings, ensure a free interior diameter which corresponds to the requisite line cross-section.

When performing the hose connection, ensure that the hose nozzles are sufficiently dimensioned. Plastic union nuts may only be tightened by hand in order to avoid damage.

A positive pressure difference of min. 10 mWS must exist between pressure valve (17) and suction valve (16) of the dosing pump. This especially requires compliance if the dosing pump is to be connected to a pressurised line on the suction side. If the pressure difference amounts to less than 10 mWS, install a back-pressure valve in the dosing line.

The flow speed in the suction line should not exceed 0.3 m/s and 2.5 m/s in the pressure line. Comply with special requirements when dealing with suspensions. Do not permit the flow speed to fall below 0.2 m/s so as to prevent sedimentation.

Oscillating displacement pumps generate a pulsing supply stream. The conveyed medium in the pipe line must be accelerated from shut down to the top speed with every stroke. The top speed with single head pumps 3.2 is so large as the speed of a pump of the same size with an equal supply stream (e.g. a centrifugal pump), which must be taken into account in the dimensioning of pipe lines and fittings.

In many cases, we recommend installing pulsation dampers in the suction and pressure line. The dimensions of pulsation dampers are specified in the special instructions.

9 Electrical installation

Taking into account local regulations, the motor is connected in accordance with the terminal connection plan and the motor type plate. The direction of rotation is to the right, viewed from the fan wheel. Protection of the motor requires installation of a motor protection which corresponds with the nominal motor current.



DANGER!

Mortal danger from electric shock!

Electrically conductive liquid can enter pump housings, cable screw connections and mains connectors.

- ⇒ Make sure that all protective measures comply at least with the requirements of protection class IP55.
- ⇒ Always set up the dosing pump such that water cannot enter the housing.



DANGER!

Mortal danger from electric shock!

Only work on electrical systems while the device is disconnected from the power supply.

- ⇒ Switch the system voltage-free.
- ⇒ Secure the system to prevent it from being switched on again.
- ⇒ Measure the absence of voltage in the system with a measuring instrument.
- ⇒ Earth the system and then short-circuit it.
- ⇒ Cover adjacent live parts.



DANGER!

Danger to life from missing Emergency-Off switch!

You must be able to disconnect the dosing pump from the power supply quickly following an electrical accident.

- ⇒ Install an emergency stop switch or integrate the dosing pump into the plant safety concept.



PLEASE NOTE

Damage due to incorrect mains voltage

The dosing pump can be damaged if you connect it to the wrong mains voltage.

- ⇒ Observe the information on the mains supply that is given on the rating plate.



PLEASE NOTE

Insufficient electromagnetic compatibility

When you connect the dosing pump to a socket without an attached protective earth, it is not possible to guarantee the interference radiation and interference immunity according to EMC regulations.

- ⇒ Only connect the dosing pump to sockets with an attached protective earth.

9.1 Principles

- The electrical connection comply with local regulations.
- The dosing pump must be plugged into a grounded power outlet.
- To avoid dosing errors at the end of the process, the dosing pump must be locked electrically.
- The dosing pump must not be operated by switching the mains voltage on or off.
- Signal cables must not be laid parallel to high-voltage current lines or mains cables. You must route supply and signal lines in separate channels. An angle of 90° is required at line crossings.

9.2 Motor data

Comply with the data on the rating plate when connecting the electric motors to the mains supply and compare with the circuit diagram included in the scope of delivery. The terminal box of motors with a speed are usually equipped with a terminal strip with six terminals.

Example three-phase motor for Y-connection

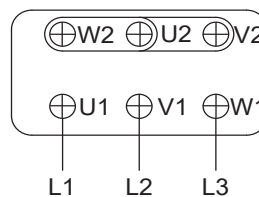


Fig. 5: Y-connection

Example three-phase motor for delta connection:

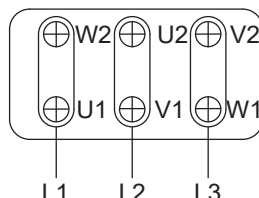


Fig. 6: Delta connection

Example AC motor

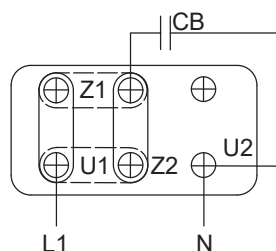



Fig. 7: AC motor

Every motor contains a circuit diagram in the terminal box.

The mains supply must be connected by a specialist working with due care and attention. Adapt the supply lead cross-sections to the nominal current strength. Provide strain-relief for the connection cables.

It is imperative that the protective earthing conductor be connected to the marked earthing screw in accordance with VDE 0100. Use the original seal when sealing the terminal box. Seal non-required introduction apertures dust- and water-tight.

9.3 Motor connection

	DANGER!
<p>Mortal danger from electric shock!</p> <p>The mains supply must be connected by a specialist working with due care and attention.</p> <p>⇒ Adapt the supply lead cross-sections to the nominal current strength.</p> <p>⇒ Provide strain-relief and connection cable.</p> <p>It is imperative that the protective earthing conductor be connected to the marked earthing screw in accordance with VDE 0100.</p> <p>⇒ Use the original seal when sealing the terminal box.</p> <p>⇒ Seal non-required introduction apertures dust- and water-tight.</p>	

Comply with the data on the rating plate when connecting the electric motors to the mains supply and compare with the circuit diagram included in the scope of delivery. The terminal box of motors with a speed are usually equipped with a terminal strip with six terminals.


9.4 Direction of rotation

The motors are usually suitable for operation in both directions. Motors with only a single direction of rotation have this direction marked by an arrow.

9.5 Three-phase motors

Place bridges horizontally to change the direction of rotation.

9.6 Motor protection

	DANGER!
<p>Protect the coils against thermal overload from blocking, overload and two-phase run!</p> <p>Incorrect connections to the mains supply without a motor protection result in damage.</p> <p>⇒ It is imperative that the available protective equipment be connected before commissioning the motor.</p>	


Protect the coils against thermal overload from blocking, overload and two-phase run using (optional):

Pos. 1: PTC thermistor temperature sensor in the stator winding in connection with a trigger device. A number of motors are not protected upon short circuit from a blocked rotor (inquiry required). Provide an additional motor protection switch if required.

Pos. 2: Coil protection contact as an opener or closer in the stator winding. These provide no protection if the rotor is blocked. Provide an additional motor protection switch if required.

Pos. 3: Motor protection switch with bi-metal trigger.

9.7 Motor maintenance

	DANGER!
<p>Mortal danger from electric shock!</p> <p>Only perform work on motors when they have been switched off and are voltage-free.</p> <p>⇒ Secure the motors against reactivation.</p>	

9.8 Roller bearing

The roller bearings are lubricated for life. The grooved ball bearing in motors in a series design up to the size 200 are covered on both sides. Given conventional coupling operation, c. 20,000 operating hours are achieved in the 4-pole version or c. 10,000 operating hours in the 2-pole version.

Given difficult operating conditions, varying and/or raised bearing loads, coolant temperatures over 40°C, vibrations etc. the grease change times are correspondingly shorter. The same applies to high levels of humidity and excessive soiling. We generally recommend changing the grease and bearing after c. 5 years.

9.9 Lubricants

Lithium saponified grease K3K in accordance with DIN 51502 is generally used.

- Service temperature range -20 °C to +120 °C.
- Dripping point c. +185 °C. e.g. Shell, Alvania Grease R3, Calypsol H443GF.

Replace the bearing given conspicuous noise from the bearing or an unusually high grease outage. Grease sliding seals – axial or radial – within an appropriate period.

Key figures		Alternative oils	
Viscosity 15 °C	0.870 g/cm ³ (DIN ISO 12185)	Total	EQUIVUS ZS 68
Viscosity 40 °C	68 mm ² /s (ASTM D 7042)	Shell	Tellus T68
Flash point	>200 °C (DIN ISO 2592)	OMV	HLP-M68
Change of state	≤-24 °C (DIN ISO 3016)	TEXACO	Rando HDZ 68

Coils in delta circuits are to be protected so that the trigger or relay are switched in series with the coil phase windings. When selecting and setting up the trigger, work on the basis of the rated phase current i.e. 58 x the nominal motor current. If the triggers are located in the mains supply lines, take protective measures which ensure sufficient motor protection even following a phase outage.

With pole-changing motors, current-dependent delayed triggers or relays are to be provided for every speed step. These should be locked against each other. Should the motor protection only be performed by a temperature monitoring unit using temperature sensors, the fact that the motor has been designed for this purpose should be certified separately.

The motors may only be used for continuous operation and for normal, not recurring activation, for which no significant starting temperature rise occurs.

9.10 Information for explosion-proof motors EEx II.

DANGER!

Explosion protection of electrical systems!

When using the dosing pumps in explosion risk areas, you must observe the minimum requirements concerning zoning.

- ⇒ The installation and operation of these motors are subject to the provisions of DIN 57 165/VDE 0165/9.83.
- ⇒ The ascertainment of the degree of explosion hazard is the responsibility of the pertinent authority with regulatory responsibility for the site of operation.

9.11 mounting

EEx II motors with a IM V1, IM V5, IM V18 (shaft end points downwards) are provided with a protective roof, providing protection against the penetration of small, hard foreign bodies >1 mm Ø in the fan cowl.

Motors with a IM V3, IM V6, IM V19 (shaft end points upwards) structure must be installed in such a way that prevents vertical penetration of foreign bodies in the fan cowl by a corresponding cover or assembly with the working machine. The motor ventilation may not be impaired. The user is responsible for ensuring correct installation. Authorisation from the local technical monitoring agency is required.

9.12 Repairs

DANGER!

Protecting the motor against impermissible warming!

Continuous overload of a motor will result in ever-stronger warming which results in gradual destruction of the insulation. This reduces the insulation so that a puncture occurs at the weakest position; this usually results in comprehensive destruction of the motor.

- ⇒ Over-current device against impermissible warming of the motor in accordance with DIN VDE 0165.
- ⇒ Should the motor be monitored by an over-current device with a current-dependent delayed trigger in accordance with VDE 0660 (e.g. protective switch), all-pole protection is required.

CAUTION!

Repair damage from non-authorized workshops!

Repairs or changes to explosion-proof motors may only be performed by workshops accredited by the responsible national authority as experts. Only general repair work which does not influence the explosion protection can be performed without the involvement of an expert.

- ⇒ Repairs may only be performed by workshops accredited by the responsible national authority as experts.
- ⇒ This does not apply to repair work which does not influence the explosion protection such as: replacing bearings, fan cowls, fans, seals and terminal strips.

The current-delayed triggers or relays are to be set to the nominal current of the motor. They are to be selected so that the motor is also afforded thermal protection following a short circuit (i.e. following a braked rotor). This requirement is taken to be completed if the tripping time – to be taken from the tripping characteristic curve (starting temperature 20 °C) for the ratio I_A/I_N – is not greater than the warming time t_E specified for the temperature class affected.

9.13 Shutting down in an emergency

- In an emergency, you must immediately disconnect the dosing pump from the mains supply or activate the Emergency Stop switch installed in the system.
- Depending on the type of incident, you must depressurized the hydraulic connections or locked to prevent dosing medium from escaping.
- You must follow the safety data sheet of the dosing medium.

10 Operation

All position numbers within this text refer to Fig. 9 "Section drawing of the pump" on page 22.

The gear oil included in the scope of delivery must be filled before commissioning. Unscrew the ventilation screw (1) on the drive.

Furthermore, the pressure relief valve (5) and the valve seat (18) must also be removed first. The valve insert (27) on the pressure relief valve (5) must be removed completely. The adjusting knob (22) is set to "0" so that the hydraulic fluid can enter the piston flange (6) during filling via the spill ports in the piston (9).

Now fill the gear oil in the drive slowly until the oil level glass is 3/4 covered. Do not add any more oil. After a few minutes waiting time, the gear oil on the valve seat of the pressure relief valve (5) must be visible.

Check the level on the oil level glass. Re-fill gear oil as required (oil level glass 3/4 covered).

Now the valve seat and the pressure relief valve are turned back into the piston flange. The ventilation screw must be screwed back in.

The pump is flooded with dosing medium during initial commissioning. If the pump does not have any inflow pressure, to support the first suction procedure, the pressure valve (17) can be removed and the dosing head (14) filled with medium.

Then the pressure valve (17) is screwed back on (note the direction of flow), the pressure line is connected, the motor switched on and the dosing capacity on the adjusting knob (22) is set to 100 %. After 1-2 minutes operating time, the desired dosing capacity can be set on the adjusting knob (22). We recommend venting the hydraulics again via the pressure relief valve (5) after a number of operating hours.

The hydraulic is vented by unscrewing the setting screw and lifting the sealing piece (18) of the pressure relief valve (5) and lifting the valve seat. After ventilation, screw in the setting screw to its fullest extent.

Dosing accuracy of the motor piston diaphragm dosing pump Deviations of up to 1 % are possible.

10.1 Readjusting the stroke adjustment

All position numbers refer to section 12 "Section drawing of the pump" on page 22.

The zero point (zero dosing) of the pump is set in the works and corresponds to the pressure relief valve. If the actual operating pressure is significantly above or below this value, readjusting the zero point produces more exact dosing capacity values. To do so, a measuring tube is connected to the suction side (see sketch).

To perform the readjustment, the dosing capacity is set to c. 15 % and the measuring tube is filled with dosing medium. The dosing pump is activated and the adjusting knob (22) is turned slowly clockwise until the observed dosing in the measuring tube stops. The zero point is set exactly to the present operating pressure.

The set screw (21) is now loosened and only the dosing scale (23) is turned until the zero level of the scale matches the coloured marking of the drive. Then the set screw (21) is tightened slightly.

The adjustment has been completed and the suction line can be reconnected to the system and operated.

The readjustment of the pump must be completed with the pressure line connected and with a normal system pressure.

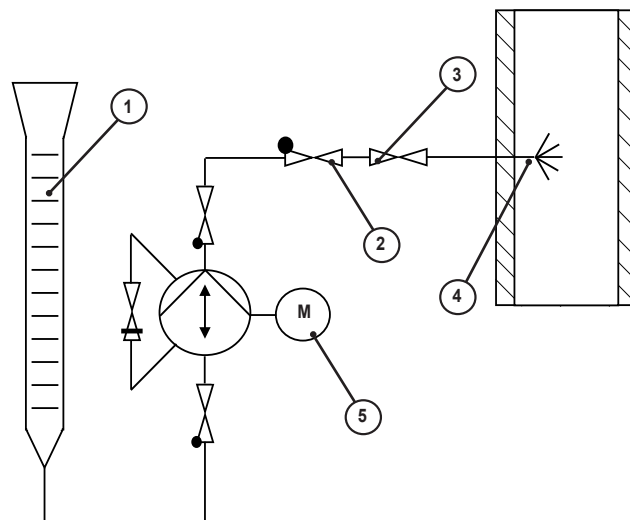


Fig. 8: Readjusting the stroke adjustment

No.	Description
1	Measuring tube
2	Non-return valve
3	Ball Valve
4	Injection nozzle
5	Dosing pump


Tab. 16: Itemization of the position numbers

10.2 Storage

Storing the dosing pump correctly extends its service life. You should avoid negative influences such as extreme temperatures, high humidity, dust, chemicals, etc.

- Ensure ideal storage conditions where possible
- The storage place must be cold, dry, dust-free and moderately ventilated
- Temperature between -15 °C and +70 °C.
- Relative air humidity must not exceed 90 %

10.3 Transportation

	CAUTION!
<p>Damage caused by leaking oil!</p> <p>The oil inlet at the dosing pump cannot be closed completely tightly. Oil may leak if the device is not transported in an upright position. This might cause damage to the control unit or the motor.</p> <p>⇒ Drain the oil completely through the oil outlet before you transport the dosing pump.</p>	

Perform the following steps:

- The unit should be thoroughly cleaned. Any dangerous dosing media must be additionally neutralised and decontaminated.
- If the device is sent back to the manufacturer, please follow sections 17 "Declaration of no objection" on page 27 and section 18 "Warranty claim" on page 28.

The complete component must be protected against breakage, humidity, cold and heat during transport. The transport and storage temperature must not exceed +70 °C and not fall below -15 °C.

10.4 Disposal of old equipment

When disposing the old equipment, follow the basic principles below:

- The waste unit must be thoroughly cleaned. In case of dangerous dosing media, the unit must also be neutralised and decontaminated.
- Any residual dosing media must be removed in a professional manner.
- The dosing pump must be disposed of in accordance with applicable local laws and regulations. The device must not be disposed of in the domestic waste.
- As the disposal regulations may differ from country to country in the European Union, please consult your supplier if necessary. In Germany, the manufacturer must provide free-of-charge disposal provided the unit has been sent in a safe manner.

11 Maintenance

Dosing pumps by Lutz-Jesco are manufactured to the highest quality standards and have a long service life. Nevertheless, some of their parts are subject to wear due to operation (e.g. diaphragms, valve seats, valve balls). This means that regular visual inspections are necessary to ensure a long operating life. Regular maintenance will protect the dosing pump from operation interruptions.

11.1 Changing the oil

Precondition for action:

✓ The oil collection pan is ready.


✗ Gear oil of viscosity class ISO-VG-68:

Oil container 1 litres: MEMDOS KMS 1-HP – 140,

Oil container 6 litres: MEMDOS KMS 137 – 1536

Key figures		Alternative oils	
Viscosity 15°C	0,870 g/cm ³ (DIN ISO 12185)	Total	EQUIVUS ZS 68
Viscosity 40°C	68 mm ² /s (ASTM D 7042)	Shell	Tellus T68
Flash point	>200 °C (DIN ISO 2592)	OMV	HLP-M68
Change of state	≤-24 °C (DIN ISO 3016)	TEXACO	Rando HDZ 68

Tab. 17: Oil change



CAUTION!

Danger from use of the incorrect oil!

If the pump must be operated with food-grade gear oil, then only food-grade gear oil may be refilled.

⇒ Use only the oil intended for the dosing pump.

All position numbers within this text refer to Fig. 9 “Section drawing of the pump” on page 22.

The gear oil of the dosing pump must be changed every 8000 operating hours. Use only the oil prescribed by the works. The diaphragm (10) should be replaced at the same time. The gear oil must be drained to ensure this. To do so, unscrew the closing screw (24) and catch the oil in a container. Screw in the closing screw (24) and tighten well. Attention: Replace the seal!

If the pump must be operated with food-grade gear oil, then only food-grade gear oil may be refilled.

The dosing head (14) must be unscrewed to change the diaphragm (10). To this end, the suction and pressure side of the dosing pipe system must be blocked and disconnected. As soon as the dosing head (14) with the screws (15) has been removed, the diaphragm (10) is removed, complete with the diaphragm holder plate (11). The piston flange (6) with piston (9) and piston return spring (8) are not affected.

Loosening the cap nut (13) and the diaphragm spring (12) enables removal and replacement of the diaphragm (10). Then the membrane is returned onto the diaphragm holder plate (11) and is fixed with the diaphragm spring and the cap nut.

Insert a diaphragm with a diaphragm holder plate in the dosing head. The dosing head (14) is screwed back on with screws; the arrows of the valves (16 and 17) must point upwards. To avoid damage to the dosing head, the screws (15) of plastic dosing heads must be tightened carefully.

When this work has been completed, the hydraulic oil is to be filled as described in chapter 10 “Operation” on page 19 and the pump is to be commissioned.

If the dosing capacity of the pump falls, valves (16 and 17) are soiled or worn and must be replaced. Unscrew and remove the valves to clean them. The valves can be dismantled by unscrewing the valve parts with long nose pliers. Now you can remove the ball and seat. After cleaning, the parts are returned in reverse order. Damaged parts are to be replaced with new parts.

Comply with the direction of flow (arrow) when screwing in the valves. The O-rings must also be placed cleanly in the intended groove. The valves may only be tightened by hand.

12 Section drawing of the pump

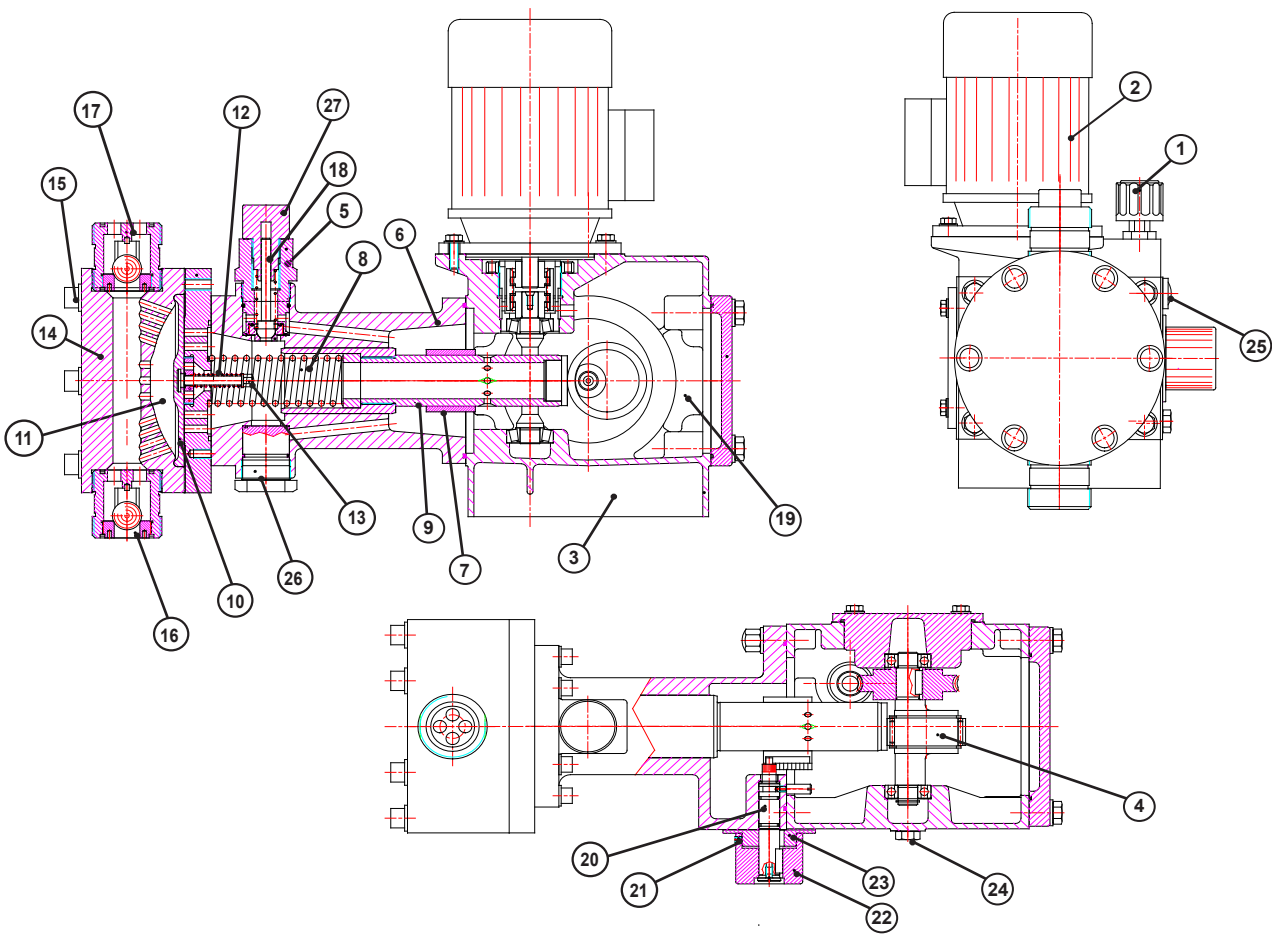


Fig. 9: Section drawing of the pump

No.	Description
1	Ventilation screw
2	Motor
3	Drive unit
4	Eccentric
5	Pressure-relief valve
6	Piston flange
7	Slide valve
8	Piston spring
9	Piston
10	Diaphragms
11	Diaphragm mount
12	Diaphragm spring
13	Cap nut M6 DIN 917
14	Dosing head
15	Dosing head screw
16	Suction valve
17	Pressure valve
18	Valve seat

Tab. 18: Position numbers of the section drawing of the pump

No.	Description
19	Hydraulic fluid
20	Adjusting spindle
21	Set screw
22	Adjusting knob
23	Scale
24	Closing screw
25	Oil level gauge
26	Oil drain plug
27	Valve insert

Tab. 18: Position numbers of the section drawing of the pump

13 Troubleshooting

Troubleshooting for the KMS piston membrane dosing pump

Fault	Possible cause	Remedy
No or insufficient dosing capacity	Air in pipe system	Vent the lines
	Non-return valves do not close	Remove and clean the non-return valves on the suction and pressure side and replace them if necessary
	Non-return valves installed incorrectly	Check arrow on non-return valve, install valves correctly
	Pressure relief valve strikes	Check suction and pressure piping for shut-off valves or blockages and remove them
	Air in hydraulic system of pump	Bleed the pump hydraulics as described in the documentation
	Back pressure too low	<ul style="list-style-type: none"> ■ Install the back-pressure valve. ■ Check the back-pressure valve and set in accordance with the documentation.
	Piston spring broken	Replace piston spring
Pressure relief valve strikes	Suction and discharge piping blocked or shut-off fittings System pressure too high	Check suction and pressure piping for shut-off valves or blockages and remove them <ul style="list-style-type: none"> ■ If possible, replace the pressure relief valve with a suitable replacement (consult Lutz-Jesco) ■ Replace the pump with a different type (consult Lutz-Jesco)
Oil level too low	Leaks in the housing	Check the relevant seals and replace if necessary
	Diaphragm rupture	Replace diaphragm

Tab. 19: Troubleshooting

14 Delivery characteristic curves

This Chapter is intended to give you an idea of the delivery capacity that the dosing pump can achieve at specific back pressures. These delivery capacities were determined on the manufacturer's test stands. They apply at 20 °C (68 °F) for water, at 100 % stroke frequency. The delivery capacity depends on the medium (density and viscosity) and temperature. Since these conditions vary at every installation location, you should calibrate the dosing pump.

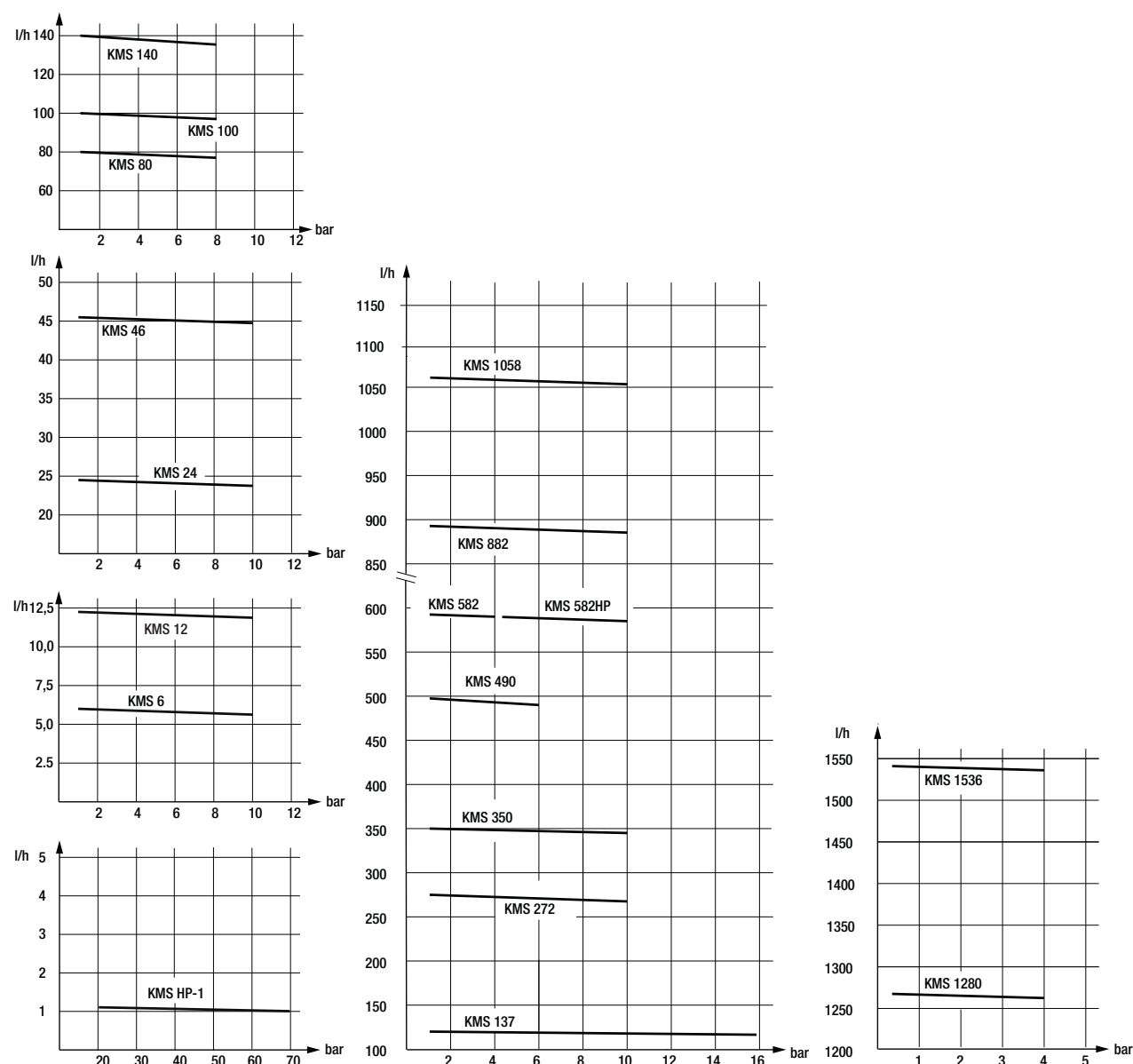


Fig. 10: Delivery characteristic curves MEMDOS KMS

15 Dosing head versions

15.1 Standard dosing head

Dosing head with standard suction and pressure valve: The material and type of the dosing head with suction and pressure valve has been adapted to the corresponding media and operating states. The following materials are available: PVC, PVDF and 1.4571

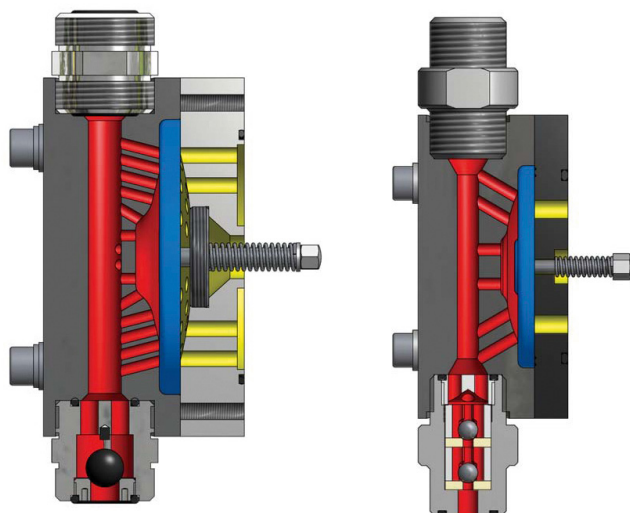


Fig. 11: Standard dosing head

15.2 Dosing head for viscous and abrasive media

Special design of dosing head with suction and pressure valve for abrasive media.

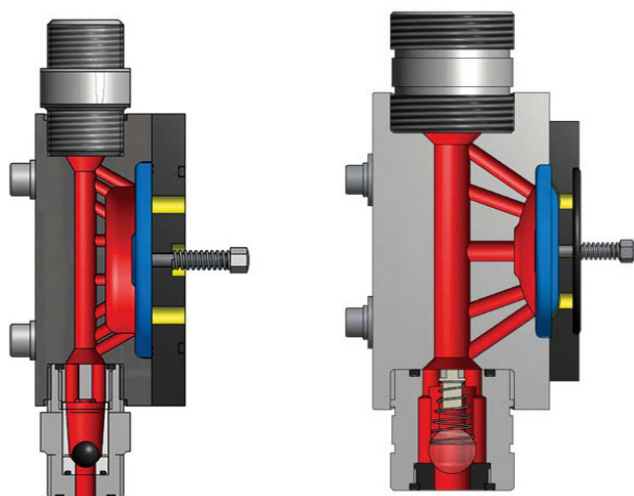


Fig. 12: Dosing head for abrasive and viscous media

16 EU Declaration of Conformity



EG-KONFORMITÄTSERKLÄRUNG

EC DECLARATION OF CONFORMITY
DECLARATION DE CONFORMITE C.E.

im Sinne der EG-Richtlinie Maschinen 2006/42/EG, Anhang II 1.A
according to the Directive on Machinery 2006/42/EC, Annex II 1.A
suivant la Directive relative aux Machines 2006/42/CE, Annex II 1.A

Der Hersteller
The Manufacturer
Le Fabricant

Lutz-Jesco GmbH
Am Bostelberge 19
D-30900 Wedemark

erklärt hiermit, dass folgendes Pumpenaggregat
declares hereby that the following pump aggregate
déclare par la présente que la pompe suivante

Produktbezeichnung:	Motor-Kolbenmembrandosierpumpe
Product name:	Motor driven piston diaphragm dosing pump
Désignation du produit:	Pompe doseuse à piston et membrane par moteur
Typ / Type / Type:	MEMDOS KMS / MEMDOS ZKMS
Serien-Nr. / Serial-No. / N° de série:	s. Typenschild / Identification plate / Plaque signalétique

in der gelieferten Ausführung allen einschlägigen Bestimmungen der oben genannten Richtlinie sowie den weiteren angewandten, nachfolgend aufgeführten Richtlinien und Normen entspricht.

complies in it's supplied version with all valid requirements of the above mentioned directive as well as the following additional directives and standards.
est construit, dans sa version fournie, en conformité avec toutes les spécifications en vigueur de la directive mentionné ci-dessus ainsi qu'avec les directives et normes suivantes.

Angewandte weitere EU-Richtlinien:
Applied additional EC-Directives :
Directives CE complémentaires appliquées :

EMV-Richtlinie (EMC) 2014/30/EU, Niederspannungsrichtlinie 2014/35/EU, Richtlinie RoHS 2011/65/EU

Electromagnetic Compatibility Directive 2014/30/EU, Low Voltage Directive 2014/35/EU Directive concernant la compatibilité électromagnétique 2014/30/EU,
Directive concernant la basse tension 2014/35/EU
Directive RoHS II 2011/65/EU

Angewandte harmonisierte Normen:
Applied harmonized standards:
Normes harmonisées appliquées: **EN 809:2012-10 EN ISO 12100:2011-03**

Die speziellen technischen Unterlagen gemäß Anhang VII Teil B können auf begründetes Verlangen einer einzelstaatlichen Stelle per Post übermittelt werden.
Special technical documents according to annex VII Part B can be sent by mail upon well-founded requests from national authorities.
Des réglementations au niveau national peuvent justifier l'envoi par voie postale des documents techniques spéciaux selon annexe VII Partie B.

Bevollmächtigte Person für die Zusammenstellung der technischen Unterlagen:
Authorized person for the composition of the technical documentation:
Personne autorisée pour la composition de la documentation technique:

Lutz-Jesco GmbH

Heinz Lutz, Geschäftsleitung /
Management / Direction

Wedemark, 01.02.2019

Datum / Date / Date

01.02.2019

N90 0182 01 500 / 04 DE_EN_FR

17 Declaration of no objection

Declaration of no objection

Please fill out a separate form for each appliance!

We forward the following device for repairs:

Device and device type: Part-no.:

Order No.: Date of delivery:

Reason for repair:

.....

.....

Dosing medium

Description: Irritating: ☐ Yes ☐ No

Properties: Corrosive: ☐ Yes ☐ No

We hereby certify, that the product has been cleaned thoroughly inside and outside before returning, that it is free from hazardous material (i.e. chemical, biological, toxic, flammable, and radioactive material) and that the lubricant has been drained.

If the manufacturer finds it necessary to carry out further cleaning work, we accept the charge will be made to us.

We assure that the aforementioned information is correct and complete and that the unit is dispatched according to the legal requirements.

Company / address: Phone:

..... Fax:

..... Email:

Customer No.: Contact person:

Date, Signature:

18 Warranty claim

Warranty claim

Please copy and send it back with the unit!

If the device breaks down within the period of warranty, please return it in a cleaned condition with the complete warranty claim.

Sender

Company: Phone: Date:

Address:

Contact person:

Manufacturer order no.: Date of delivery:

Device type: Serial number:

Nominal capacity / nominal pressure:

Description of fault:.....

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

Service conditions of the device

Point of use / system designation:.....

.....
.....

Accessories used (suction line etc.):.....

.....
.....
.....
.....

Commissioning (date):

Duty period (approx. operating hours):

Please describe the specific installation and enclose a simple drawing or picture of the chemical feed system, showing materials of construction, diameters, lengths and heights of suction and discharge lines.

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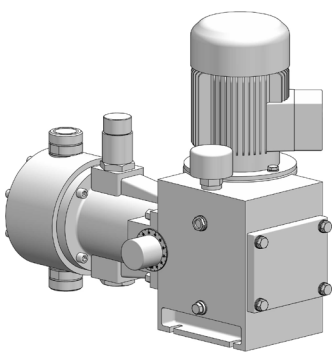
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Operating instructions
MEMDOS KMS