

General

Rekos pumps can be supplied as simplex piston metering pumps type KR and duplex piston metering pumps type ZKR.

Advantages of piston metering pumps are: minor dependency on back pressure and linear flow variation as a function of the stroke length.

The metering pumps are therefore very suitable for proportional metering where the stroke length is adjusted by means of a remote control signal.

Standard versions have the metering head on the left-hand side.

Type KR...L (Symbol )

Upon request metering pumps are available with the metering head on the right-hand side.

Type KR...R (Symbol )

For duplex metering pumps, the heads may be combined as listed in the below tables. Depending on the head size they are arranged in parallel

(Symbol )

or diagonally (Symbol )

Type code ZKR.../...

Metering head

Metering heads are supplied in plastic for max. 10 bar and in stainless steel for up to 200 bar.

The correct choice of the metering heads depends on the aggressivity of the chemical, its temperature and viscosity, and on the system pressure. Environmental factors (harsh operating conditions, radiant heat) must also be considered.

Suction and discharge valves

Suction and discharge valves can be supplied as double-ball valves, spring-loaded single-ball valves or disk valves, depending on the size. Spring-loaded valves are recommended if the viscosity of the chemical exceeds 400 mPas.



Flushing attachment

Metering heads are generally fitted with a flushing attachment.

Flushing water should be applied if the chemical being used is very **aggressive**, to prevent damage by corrosion from leakage that is bound to occur.

If the medium used is **abrasive**, the flushing water is intended to prevent the piston and packing from failing after only a short time of operation as a result of intensified leakage. The flushing water pressure should, in this case, be greater than that of the medium.

Technical data

REKOS KR		8	20	30	40	75	125	180	295	420	725
Max. pressure	Plastic	10									
	SS	200	190	130	95	50	30	20	12	10	5
Output at	[l/h]	9	20	31	40	75	125	180	295	420	725
max. pressure	[ml/stroke]	1.5	3.4	5.3	6.8	12.5	21.2	30.5	50	71.3	122
Piston ø	[mm]	8	12	15	17	23	30	36	46	55	72
Stroke frequency	[1/min]	100									
Suction lift	[mbar]	120									
Motor output	[kW]	0.55 kW (0.75 kw with frequency converter)									
Weight [kg]	Metering head	Plastic	2					3			4
		SS	7					10			15
	Simplex gear	manual	25					26			27
		ATE/ATP	37					38			39
	Duplex gear	manual	32					34			36
		ATE/ATP	49					51			53

Max. supply pressure (Σ static + dynamic): 500 mbar

Abrasive media

Piston packings can be supplied as PTFE net packings or Aramid-kevlar packings. PTFE packings with the edges reinforced with Aramid are also available.

The standard PTFE packing can be used with practically all chemicals at a pressure of up to 40 bar. Higher pressures may increase leakage.

As far as abrasive media are concerned, and in the case of pressures much higher than 40 bar, it may be advisable to use Aramid-kevlar packings, if the chemical allows it. Aramid-kevlar is **not** resistant to concentrated acids or alkalis. If these substances are to be metered at higher pressures, the user should revert to the edge-reinforced PTFE packing, despite the intensified leakage that will occur, and apply flushing.

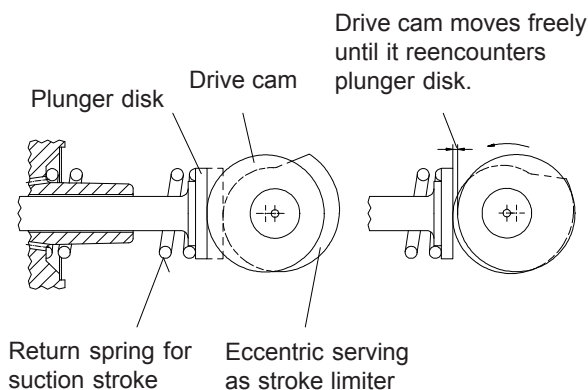
Piston-diaphragm system KMS

Three sizes of piston-diaphragm metering heads are also available. Their use is recommended where, despite higher pressures, it is important to avoid leakage due to a toxic, aggressive or abrasive chemical being used.

Piston-diaphragm metering heads are separated from the transmission lubricant, and have their own hydraulic system (glycerine).

Piston-diaphragm metering heads can also be retrofitted to piston metering pumps already installed (see MB 1 40 01).

Functional diagram



Drive

The drive is an oil-filled worm gear with a single-state down mechanism. The stroke is created by means of a drive cam moving back and forth a spring-loaded plunger to which the piston is fixed. The metering stroke is induced by the thrust of the drive cam, the suction stroke by the return spring. Length of stroke is determined by means of a plunger return stop, with a manually adjustable eccentric serving as a stroke limiter.

The stroke length, which determines the flow rate, can be adjusted manually during operation in a range of between 0 and 100%.

The standard version is equipped with a manual adjustment. Electrical (ATE) remote control adjustment equipment can be supplied on request.

The drive motor is normally a three-phase motor. Controllable a.c. motors and explosion-proof motors can also be supplied.

Through the combination of a controllable drive motor and a remotely controllable stroke length adjuster, the metering pump is provided with two independent means of adjustment control so that disturbance-variable feed-forwarding is possible in automatic control systems.

Optional components

Stroke counting

The metering pump can, on request, be equipped with an inductive scanning head for the eccentric shaft in order to count the number of strokes for batch processes.

Metering head heating

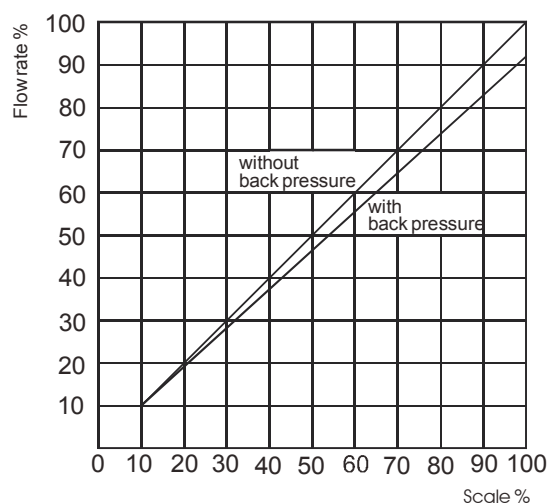
For fluids which are solid when cold the metering head can be fitted with warm water, steam or electrical heating.

Thyristor controller

For controlling the direct current drive.
(See MB 4 20 01)

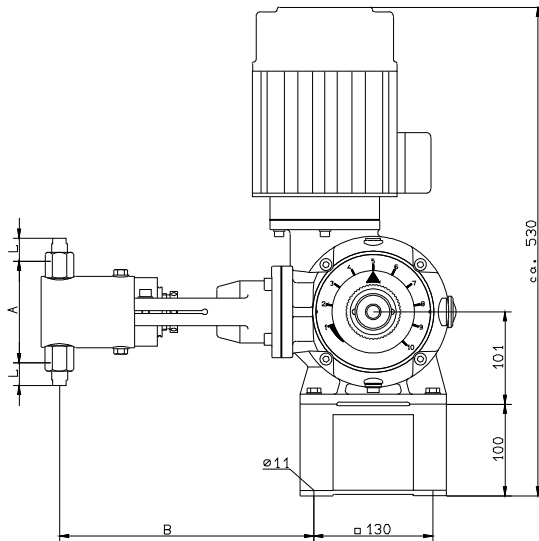
For other accessories - see "Installation example".

Performance curves



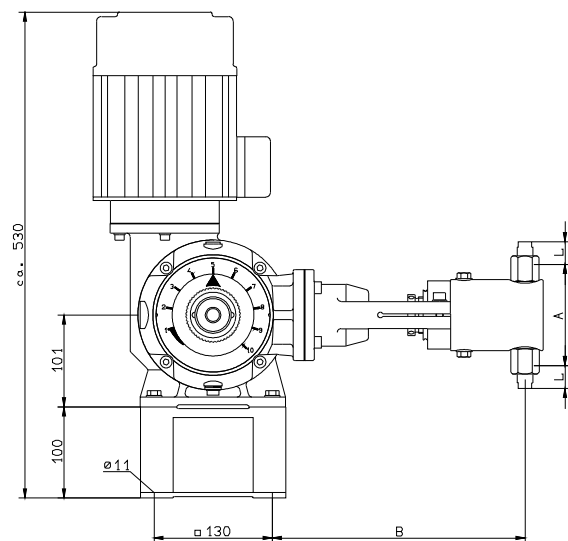
Simplex pumps

Left-hand version



KR 8 L . . . KR 725 L

Right-hand version

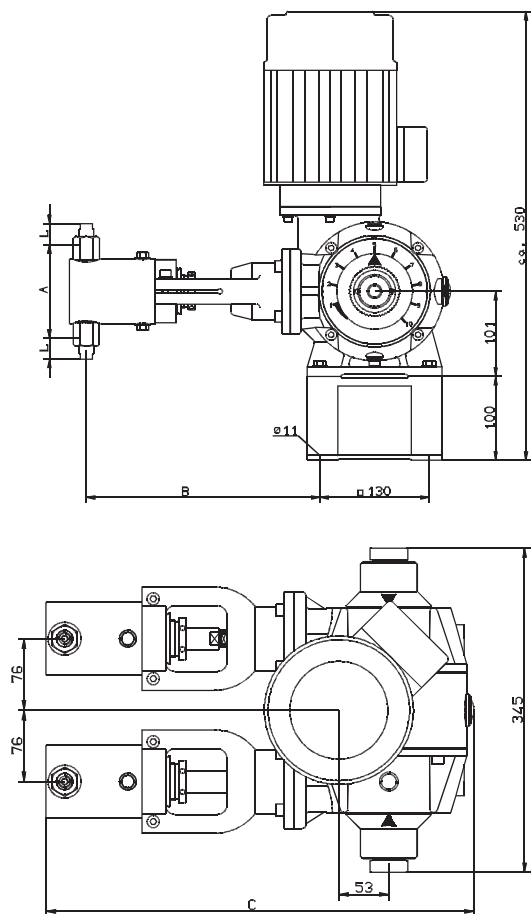


KR 8 R . . . KR 725 R

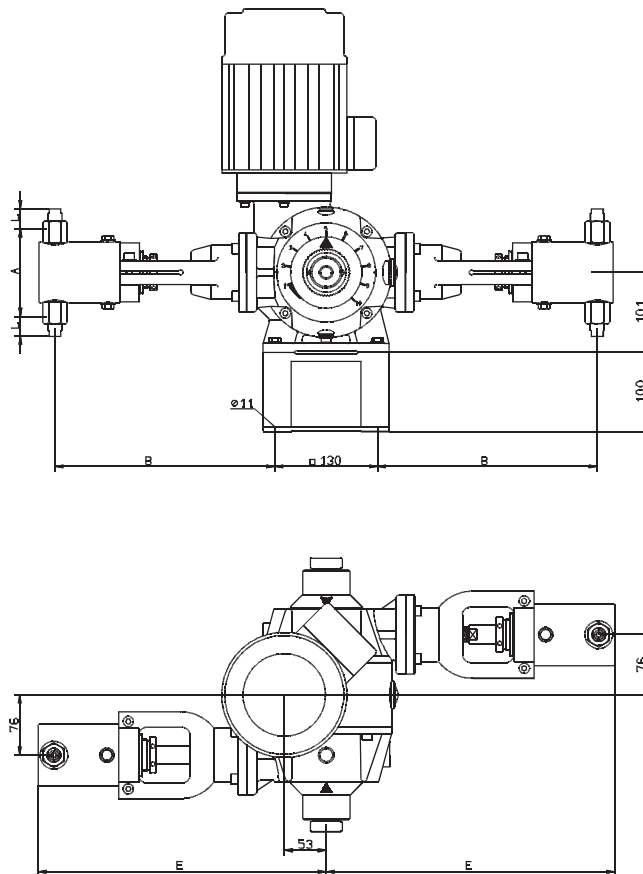
Piston Metering Pump REKOS KR

Piston Metering Pump REKOS KR

Duplex pumps



ZKR 8 - 75 / 8 - 75
 ZKR 125 - 420 / 8 - 75
 ZKR 420 - 725 / 8 - 75
 ZKR 125 - 420 / 125 - 420



ZKR 420 - 725 / 125 - 420
 ZKR 420 - 420 / 420 - 725

With duplex pumps that have differently sized metering heads, the larger metering head is always positioned on the left (L) (other versions on request).

Dimensions

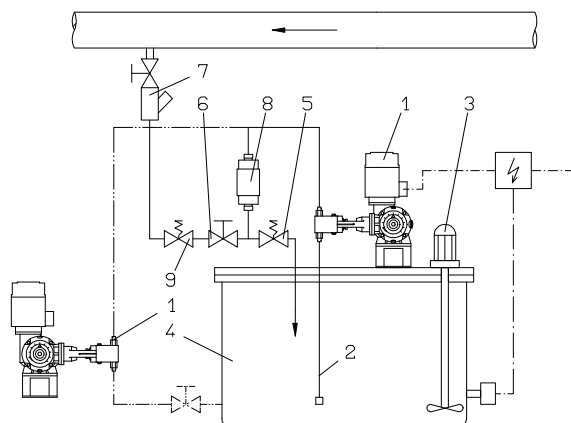
Pump	A		B		C		D	
Type	Plastic	SS	Plastic	SS	Plastic	SS	Plastic	SS
8-40	132	100	278	278	455	455	343	343
75	142	110	278	278	455	455	343	343
125-420	242	209	296	306	495	485	361	371
725	198	258	319	311	518	548	429	459

For dimension (L) see Table 5

Legend

1	Metering pump	MB 1 08 02
2	Suction line	MB 1 22 01
3	Electric agitator	MB 1 36 03
4	Tank	MB 1 20 01
5	Relief valve	MB 1 25 01
6	Diaphragm shutoff valve	MB 1 24 01
7	Injection nozzle	MB 1 23 01
8	Pulsation dampener	MB 1 27 01
9	Control unit	

Installation example



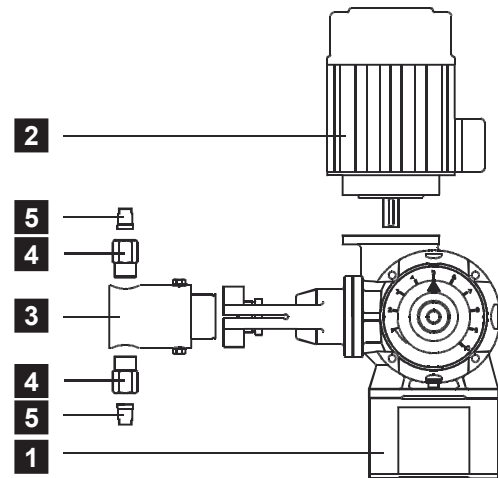
Selection tables

To offer the user a large variety of different versions, JESCO metering pumps have been divided into the main functional groups. They can thus be assembled according to the user's individual requirements.

The user can combine the pump from the following components:

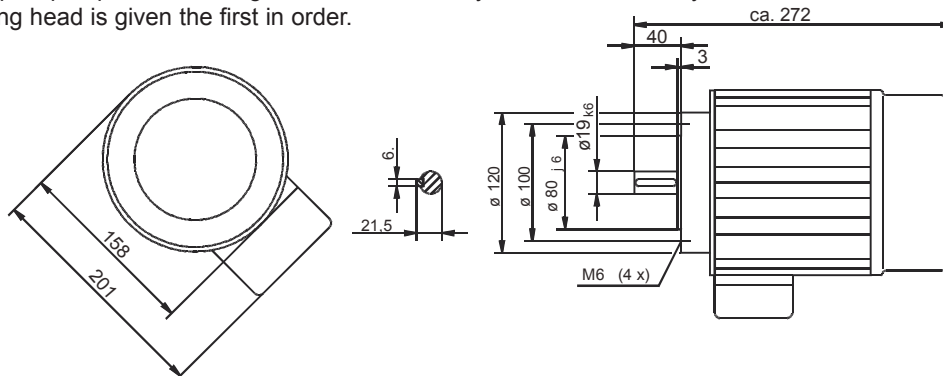
- | | | |
|-----------------|----------------------|---------------|
| 1 Drive | 2 Motor | 3 Head |
| 4 Valves | 5 Connections | |

The numbers shown on the pump drawing refer to the relevant selection tables.



Pump type	Gear with capacity adjustment		1 Combination of heads **			
	manual	ATE	8...75	125...420 or KMS I	725 or KMS II	KMS III
KR...L 	31273	31274				
	31275	31276				
	31277	31278				
	31279	31280				
KR...R 	31623	31624				
	31625	31626				
	31627	31628				
	31629	31630				
	31341	31342				
	31343	31344				
	31345	31346				
	31347	31348				
	31349	31350				
	31351	31352				
	31355	31356				
	31359	31360				
	31361	31362				

** For duplex pumps the metering heads can be of any combination. If they are of different sizes, the larger metering head is given the first in order.



2									
E- Motor Type	Part No.	Conn. mode	Voltage V	Curr.consumption A	Output kW	Speed 1/min	Frequency Hz	Classes	
AF 80 / 4A-11	78629	D Y	230/400	2,6 / 1,55	0, 55	1390	50	F	55
AF 80 / 4B-11	78903	D Y	230/400	3,5 / 2,0	0, 75	1400	50	F	55
AF 80 / 4B-11	78926	D Y	230/400	3,5 / 2,0	0, 75	1400	50	F*	55

* Motor fitted with cold-conductor thermometer probe.

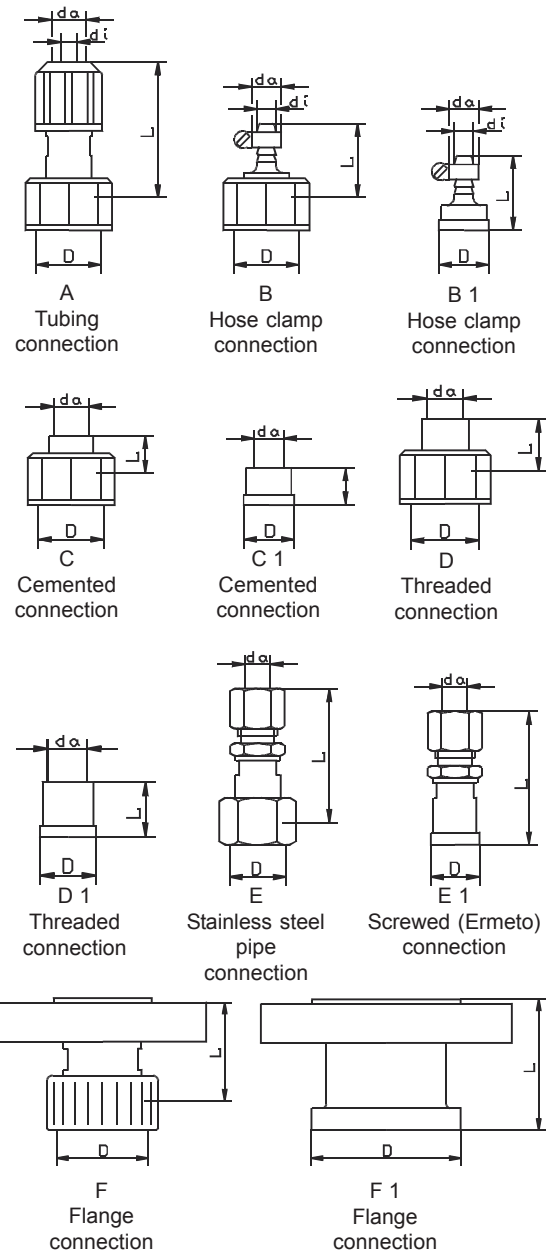
Piston Metering Pump REKOS KR

Piston Metering Pump REKOS KR

3			
Pump-type KR	Piston d	Metering head material	
		Plastic	1.4571
		Piston material	
		Ceramic	1.4571
8	8	25983	26005
20	12	25984	26009
30	15	25985	26013
40	17	25986	26017
75	23	29631	26025
125	30	29632	26036
180	36	29633	26042
295	46	29635	26063
420	55	29870	26070
725	72	29638	26088

4											
Pump type KR	Standard valves										
	KR 8...420 Double-ball KR 725 Spring-loaded with hastelloy spring										
	Suction valve assembly					Discharge valve assembly					
	PVC		1.4571			PVC		1.4571			
	Seals of:										
	Hypalon	Viton	AF	Hypalon	Viton	Hypalon	Viton	AF	Hypalon	Viton	
8 ... 75	18187	18185	26967	—	—	18188	18186	26968	—	—	
125 ... 420	26841	26842	29694	—	—	27356	27357	29695	—	—	
725	23703	23704	—	23705	25681	23703	23704	—	23705	25681	
Pump type KR	Spring-loaded valves with hastelloy spring										
	Suction valve complete					Discharge valve complete					
	PVC		1.4571			PVC		1.4571			
	Seals of:										
		Hypalon	Viton	AF	Hypalon	Viton	Hypalon	Viton	AF	Hypalon	Viton
8 ... 75	25161	25162	28775	—	—	27516	27517	28776	—	—	
125 ... 420	26845	25707	29696	—	—	27353	27354	29697	—	—	

5								
Pump type	Dimensions						Part No. Version	
	DN	Pict.	D	di	da	L	Plastic	SS
KR 8 ... 75	6	A	G 3/4	6	12	55	19175	—
	4	A	G 3/4	4	6	35	19480	—
	6	A	G 3/4	6	8	30	28159	—
	6	B	G 3/4	6	12	30	23342	—
	6	B1	d 20	6	12	29	—	23426
	8	C	G 3/4	—	10	15	25167	—
	10	C	G 3/4	—	12	15	27518	—
	6	D	G 3/4	—	G 1/4	20	25165	—
	6	D 1	d 20	—	G 1/4	20	—	82105
	6	E 1	d 20	—	8	20	—	27519
KR 125 ... 420	8	E 1	d 20	—	10	20	—	23427
	10	E 1	d 20	—	12	20	—	23428
	10	B	G 1 1/4	19	15	41	25921	25925
	15	B	G 1 1/4	16	24	50	25936	25935
	10	C	G 1 1/4	—	16	22	27672	—
	15	C	G 1 1/4	—	20	22	25937	—
	20	C	G 1 1/4	—	25	22	33318	—
	10	D	G 1 1/4	—	G 3/8	22	25930	27037
	15	D	G 1 1/4	—	G 1/2	22	25943	25944
	20	D	G 1 1/4	—	G 3/4	22	—	27689
KR 725	10	E	G 1 1/4	—	10	41	—	25926
	15	E	G 1 1/4	—	18	44	—	25939
	15	F	G 1 1/4	—	15	53	25956	25957
	25	B1	68	25	34	95	24034	24063
	25	C1	68	—	32	40	21488	—
	32	C1	68	—	40	40	21491	—
	20	D1	68	—	G 3/4	40	24076	24065
	25	D1	68	—	G 1	40	28458	27040
	32	D1	68	—	G 1 1/4	40	—	25252
	25	E1	68	—	28	60	—	27052
	25	F1	68	—	25	64	25622	25623



Piston Metering Pump REKOS KR

Order example

Lime slurry is to be metered at a rate of 30 litres per hour against 20 bar. It is required that the metering pump is controlled via pH value so that an electrical stroke adjustment must be provided. The metering head is to be in the standard version, with left hand arrangement. Drive by 400 V 3 phase motor. According to the corrosion resistance list, asbestos-free fiber (AF) is to be selected as the sealing material.

Determination of type of metering pump

Lime slurry, because of its suspended constituents, can have an abrasive effect and thus cause damage to standard piston metering pumps. Standard diaphragm pumps are not suitable here due to the operating pressure of 20 bar. Therefore a piston diaphragm metering pump must be chosen in this case.

- 1 The electrically operated stroke length adjuster ATE is selected from table 1:
According to MB 1 40 01, KMS size I is used for achieving the required flow rate. The appropriate drive system has Part No. 31276.
- 2 The motor required is the 3 phase motor listed in table 2 under Part No. 78629.
- 3 The metering head is to be ordered under the clear text as described in MB 1 40 01:
KMS metering head size I for 40 l/h lime slurry at 20bar; stainless steel, Part No. 14029432
- 4 Valves are to be selected from Table 4.
Suction valve: Part No. 26967
Discharge valve: Part No. 26968
- 5 The connections to be selected from Table 5 are type D with G 1/4.
Part No. 2x 82105

Piston Metering Pump REKOS KR-ATE

General

Metering pumps for use as a correcting element in control lines or automatic control systems are equipped with a servomotor. The stroke length can thus be adjusted by sensor contacts or controllers with a relay output. In the case of duplex pumps, each metering head may have a separate servomotor and can be adjusted independently.

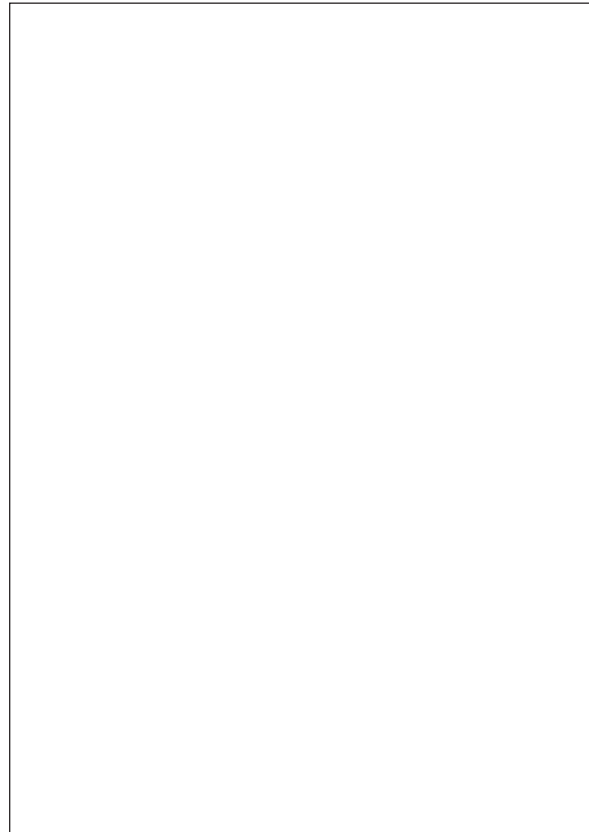
These pumps are described by the letters ATE used as a suffix after the type:

e.g.: KR 50 L - ATE

Mechanical manual adjustment of the pump with ATE drive is possible using a separate hand crank.

Two models with different technical data are available (see pages 10 and 11).

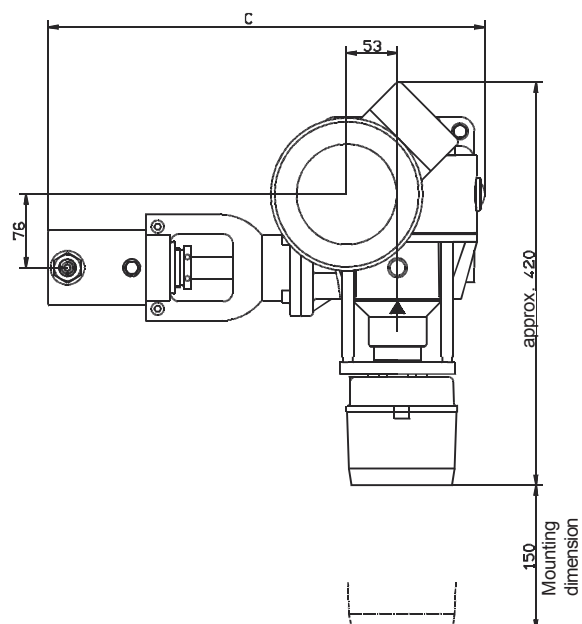
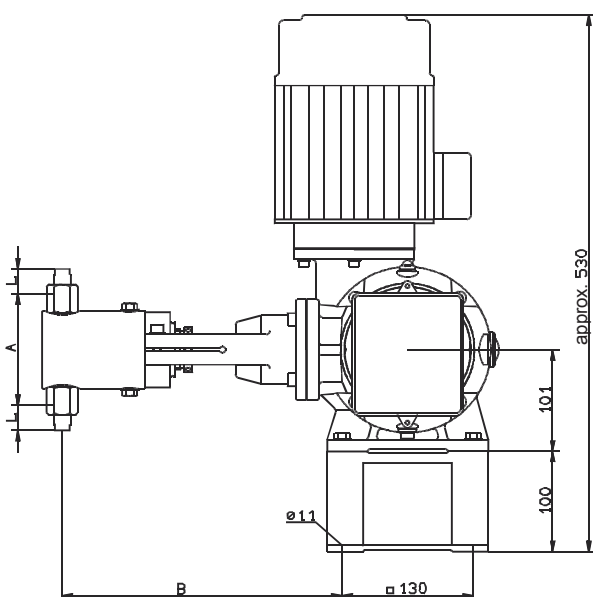
On request, "increased safety" and "air-tight" explosion-proof servomotors can be offered.



Pump type KR	A	B	C	D	E
8-75	150	294	470	92	380
125-420	200	302	500	110	410
725	210	307	530	115	440

For dimension L see table 5 (MB 1 08 02 / 7)

Dimensions



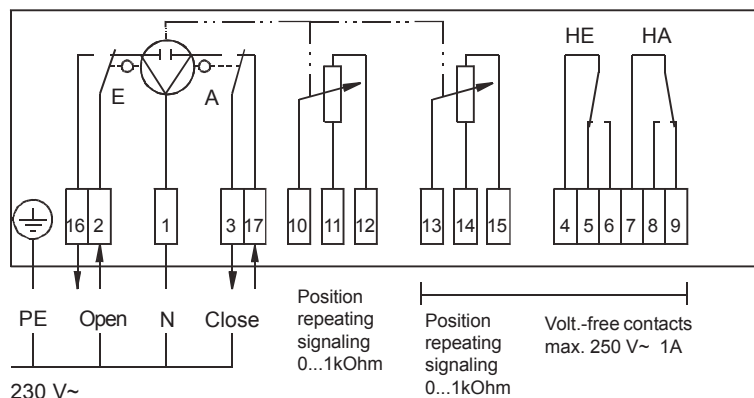
Piston Metering Pump REKOS KR-ATE

Technical data - types AR 30W23 and AR 30W23S

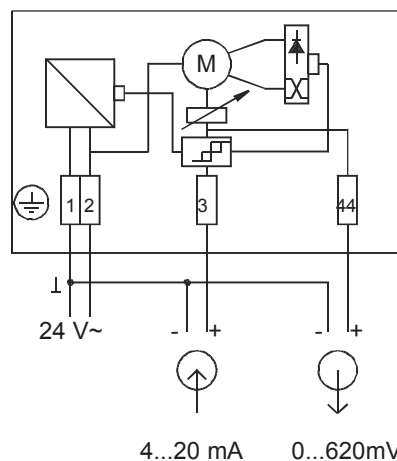
Type	AR 30W..	AR 30W..S
Design	Reversible a.c. motor with self-locking reduction gear.	
Use	For controllers with switching output (3-point control)	For controllers with continuous output (2...10V or 4...20mA)
Auxiliary voltage	230V~ ± 15% 50...60 Hz	24V ~ ± 20% 50...60 Hz
Control		2...10V or 4...20mA
Power consumption	2 W	7 W
Regulating time/bevel	360s / 270° = 0...100%	
Position repeating signaling for remote display	Potentiometer 0.5 W 0...1000 Ω = 0...100%	0...620mV = 0...100%
Limit switch	Internal limit switch for limiting the angle of rotation. Signaling of final position via terminals 16 and 17	Internal limit switch for limiting the angle of rotation.
Protection class	IP 55 (EN 60529)	
Ambient temperature	-20 ... 60°C	
Option		
2nd potentiometer	0...1000 Ω 0.5 W	
Limit switches (2 off)	max. 250V 1A	

Wiring diagrams

Type AR 30W23 F001 230V~
and AR 30W23 F020 24V ~



Type AR 30W23S F020 24V~

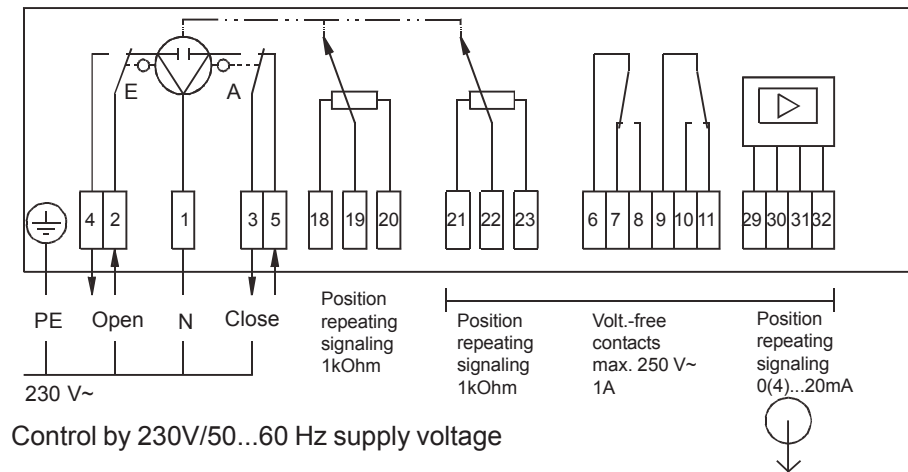


Technical data - types WAN 1 and WAN 1-S

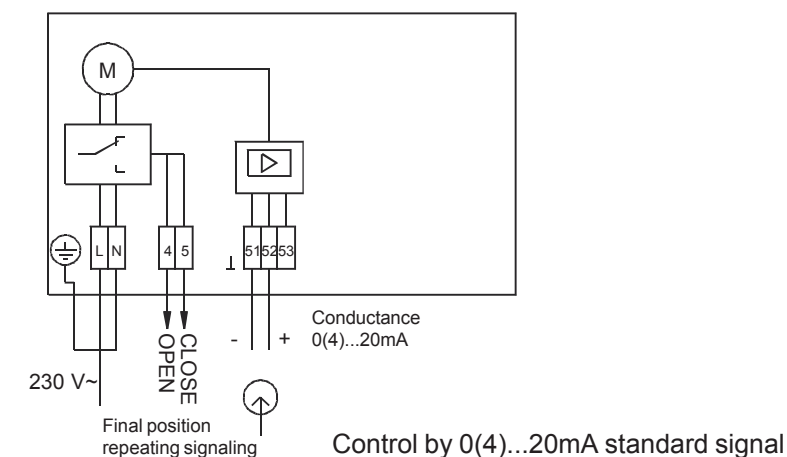
Type	WAN 1	WAN 1-S
Design	Reversible a.c. motor with self-locking reduction gear.	
Use	For controllers with switching output (3-point control)	For controllers with continuous output 0(4)...20mA
Auxiliary voltage	230V~ ± 10% 50...60 Hz Other voltage on	230V~ ± 10% 50...60Hz
Control	request.	0(4)...20mA
Power consumption	approx. 11.5 W	
Regulating time/bevel	360s / 270° = 0...100%	
Position repeating signaling for remote display	Potentiometer 0.5 W 0...1000 Ω = 0...100%	0(4)...20mA (only as an option)
Limit switch	Internal limit switch for limiting the angle of rotation. Signaling of final positions via terminals 4 and 5	
Protection class	IP 54 according to DIN 40050	
Ambient temperature	max. 60°C	
Option		
2nd potentiometer	0...1000 Ω 0.5 W	
Limit switches (2 off)	max. 250V 1A	

Electrical wiring diagrams

WAN 1



WAN 1-S



Contents

1. Technical data
2. Scope of delivery
3. Installation
4. Electrical connection of the pump
5. Safety instructions
6. Installation of the injection nozzle
7. Start-up
8. Maintenance
9. Troubleshooting

The operating instructions for the metering pump and accessories must be kept within easy reach.

2. Scope of delivery

The metering pump and any enclosed accessories must be unpacked with care so that small parts do not remain unnoticed in the packaging. The parts delivered must be checked immediately against the delivery note and any discrepancies investigated without delay.

1. Technical data

REKOSKR			2	5	8	20	30	40	60	75	125	180	220	295	420	570	725	
max. pressure [bar]		Plastic	10													7	5	
		Stainless steel	200			190	130	95	70	50	30	20	16	12	10	7	5	
Flow rate at		[l/h]	2,2	5	9	20	31	40	56	75	125	180	220	295	420	570	725	
max. pressure		[ml/stroke]	0.38	0.85	1.5	3.4	5.3	6.8	9.4	12.5	21.2	30.5	37.7	50	71.3	96.5	122	
Piston dia.		[mm]	4	6	8	12	15	17	20	23	30	36	40	46	55	64	72	
Stroke freq.		1/min	100															
Suction head		[mbar]	120															
Motor rating		[kW]	0.55 kW															
Weight [kg]	Metering head	Plastic	2									3				4		
		Stainless steel	7									10				15		
	Single gear	manual	25									26				27		
		ATE/ATP	37									38				39		
	Duplex gear	manual	32									34				36		
		ATE/ATP	49									51				53		

3. Installation

When planning, installing and operating a system, the metering pump must be selected with due regard to the local regulations. This applies to the choice of suitable pump materials, the handling of the chemicals and the electrical installation. The technical data of the pump listed above must also be taken into account and the system dimensioned accordingly (e.g. loss of pressure when dimensioning the line with regard to nominal width and length). The planning engineer and user are responsible for ensuring that the entire system with integrated metering pump is designed in such a way that leaking chemicals due to a failure of wear parts (e.g. worn packing) or ruptured tubing do not cause any permanent damage to system parts and buildings. If there is a large danger potential of the chemical plant the installation must be designed in such a way as to prevent unnecessarily high consequential damage even if the metering pump fails. We therefore recommend to install leakage monitors and containment tanks.

Note: Due to their design piston pumps are not leakage-free. This must be taken into account when planning the process and the system.

Metering pumps are designed according to the highest quality standards and have a long service life. Despite this, some parts are subject to wear caused by operation (e.g. piston, packing, valve

seats, valve balls). Regular visual inspection is therefore necessary to ensure reliable longterm operation. The metering pump must be installed so that it is readily accessible to operating and maintenance personnel. It should be serviced regularly to avoid downtimes.

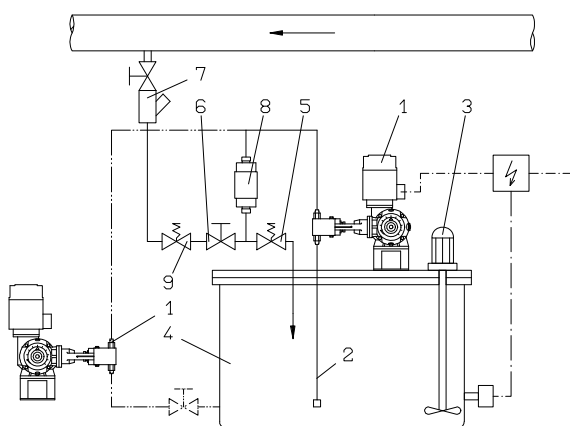
Supplementary fittings are recommended to increase the metering accuracy and functional reliability. Such fittings include backpressure valves, relief valves, leakage monitors and low-level warning devices as shown in the following installation example.

Suitable tools must always be used to work on plastic connecting parts. Undue force must never be applied as otherwise the parts may be damaged or destroyed. Plastic parts (particularly those made of PVC) can be screwed and unscrewed more easily if the thread has been lubricated with Vaseline or silicone grease.

Note: The compatibility of the Vaseline or grease with the metered chemical must always be checked first. The ambient temperature of the pump must not exceed 40 °C. Radiated heat from devices and heat exchangers must be shielded so that the metering pump can still dissipate its own heat. Direct sunlight must be avoided. A canopy roof must be provided to protect the pump against the weather when installed outdoors.

The metering pump must be installed with suction and discharge valves in an upright position. It must be bolted onto suitable ground to ensure stability. The system piping must not apply any forces to the connections and valves of the metering pump. The pump must be interlocked electrically and hydraulically to prevent accidental metering after the process has ended.

Installation example



Legend

1 REKOS KR	MB 1 08 02
2 Suction line	MB 1 22 01
3 Electric agitator	MB 1 36 03
4 Tank	MB 1 20 01
5 Relief valve	MB 1 25 01
6 Diaphragm shutoff valve	MB 1 24 01
7 Injection nozzle	MB 1 23 01
8 Pulsation dampener	MB 1 27 01
9 Backpressure valve	MB 1 25 01

4. Electrical connection of the pump

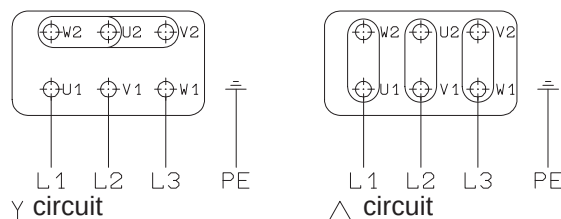
- The electrical connection of the metering pump must be in accordance with the local regulations and may only be carried out by qualified personnel.
- The cable type and cross-section of the power supply cables must be selected according to the motor data.
- The cable bushing to the motor terminal box must be made correctly. We recommend the use of compression glands with strain relief.
- The required protection class must be ensured by correct installation of the electrical connections.

Electrical connection data

Pump size	Voltage [Volt]	Power [kW]	Current [A]
...KR 725	400/230 50 Hz	0.55	1.50/2.60
...KR 725	400/230 60 Hz	0.55	1.25/2.20
...KR 725	440/254 60 Hz	0.55	1.25/2.20
...KR 725	400/230 50 Hz	0.75	2.00/3.50
...KR 725	400/230 60 Hz	0.75	1.75/3.05
...KR 725	440/254 60 Hz	0.75	1.70/3.10

Wiring diagram of the drive motor

- 3-phase supply



- Special version

Other electrical versions can be found in the separate circuit diagrams.

- Electric servomotor ATE

The technical data and connection diagrams can be found on page BW 1 08 02 / 7-10.

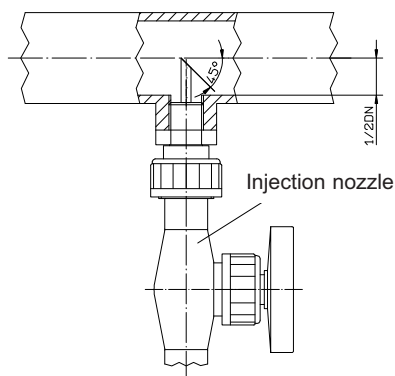
5. Safety instructions

- ⇒ The safety rules applicable on site must be observed when working on metering plants (e.g. use of personal protective equipment).
- ⇒ Before starting any work on the metering pump and system, all mains lines must be disconnected and secured against reconnection. The metering lines must be connected before reconnecting the power supply in order to prevent any chemical still in the metering head from being expelled.
- ⇒ Important: The piston area must remain open for checking, which may be dangerous if accessed directly. Maintenance work in the piston area may only be carried out if the pump is switched off.

- ⇒ The metering head of the pump and the system connections and lines may be under pressure. Working on the metering pump requires special safety precautions and may only be carried out by instructed, qualified personnel.
- ⇒ Before startup, all screwed connections must be checked for correct tightness and, if necessary, must be tightened up using appropriate tools.
- ⇒ If connections at the metering head are unscrewed during operation for venting or other reasons, leaking chemical must be removed correctly and completely. This is the only way to avoid the danger of physical injury and corrosion at the metering pump. Leaking chemical may also affect the pump housing.
- ⇒ When changing the chemical, check whether the materials used for the metering pump and the other plant parts are chemically resistant. If there is the danger of a chemical reaction between different media, thorough cleaning first is mandatory.
- ⇒ To operate the pump mount the fan shell in order to ensure sufficient cooling of the motor.

6. Installation of injection nozzle

Injection nozzles are fitted with either spring-loaded ball valve or tube valve to prevent any return flow. Injection from bottom to top is recommended to allow air bubbles to escape and to be carried away so that precipitations are avoided. The experience with the chemical to be metered and its properties must be taken into account.



7. Startup

1. All the work described in the section "Installation" must be carried out before starting the metering pump. The safety instructions must also be observed.
2. The metering pump is switched on via a control system to be installed externally.
3. The manual or electrical capacity adjustment must be set to maximum stroke to improve priming. During first priming no backpressure should be applied. For this purpose we recommend to install a relief valve on the discharge side of the metering pump.
4. A previously installed priming aid must be filled with chemical first. If the pump is not priming, remove the discharge valve and fill water or chemical (if not dangerous!) into the metering head. Remount valve and start priming.
5. If a venting facility is available as separate unit, open it and wait until liquid flows out. Then close it again. In the case of effervescent liquids allow the liquid to flow out permanently (approx. 1 drop for 1...3 strokes).
6. When correct operation is achieved, set to required output by means of the adjusting knob or remote adjustment. For first approximation refer to the values shown in the "Technical data" table. Depending on the installation and the chemicals used, these values may differ and must be checked under operating conditions.
7. The manufacturer of the metering equipment is not responsible for damages due to excessive or low flow rates resulting from faulty pump settings or incorrect and insufficient installation of peripheral fittings.

8. Maintenance

Lubrication

The piston metering pump REKOS KR is designed for easy maintenance. The gear of the pump is lubricated with gear oil of viscosity class ISO-VG460 according to DIN 51519 (corresponds to SAE 140 as defined by DIN 51512). The initial filling provided should be replaced after approx. 5000 hours of operation or 1 year, whichever comes first. The oil should then be changed every 10,000 hours of operation or 2 years, whichever comes first. The capacity equals 0.7 liters for the single gear and approx. 0.9 litres for the duplex gear. The amount of gear oil actually required can be read off from the oil gauge: the oil is filled up to the middle of the viewglass.

Replacing the piston

Proceed as follows to replace a defective metering piston or worn packing:

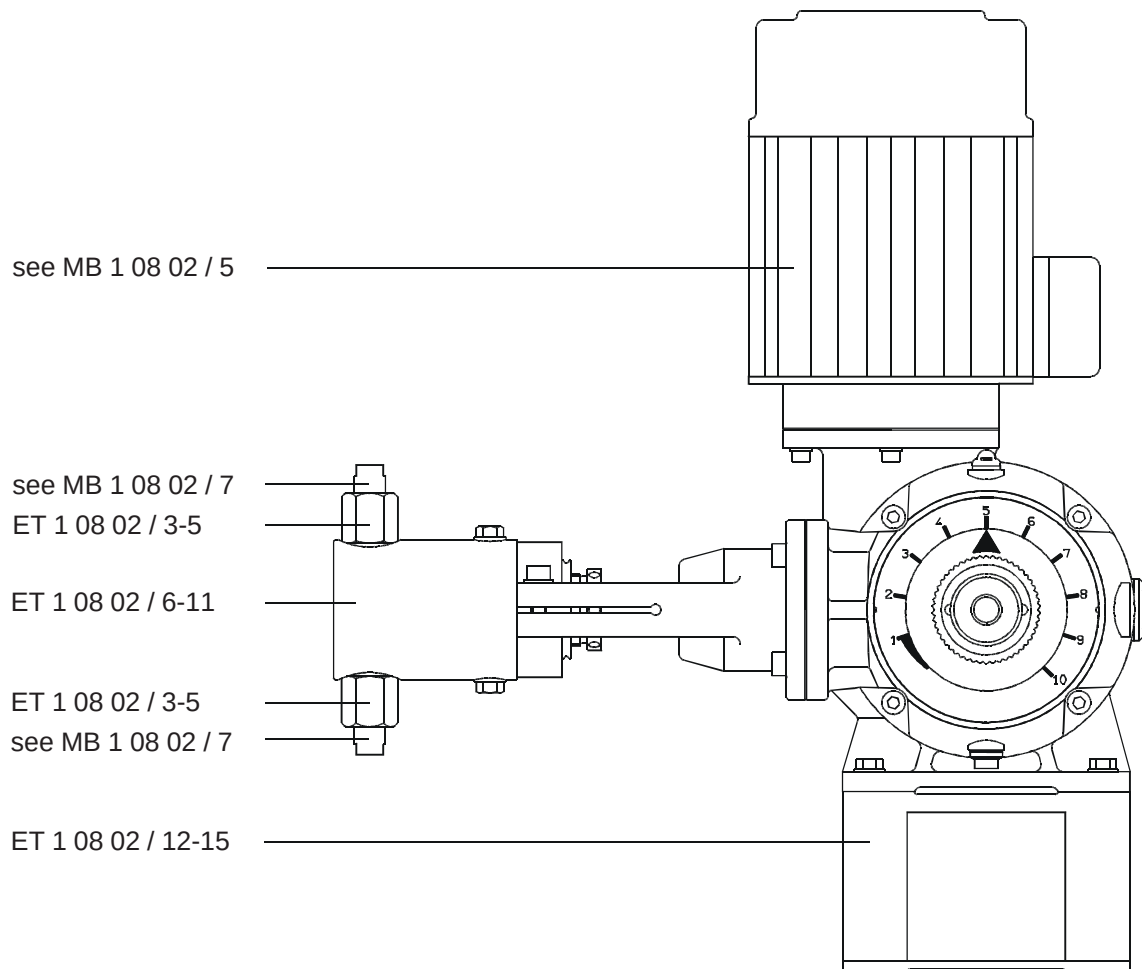
1. The chemical contained in the metering line must be drained to depressurize the metering line. Please observe the aforementioned safety instructions for this purpose.
2. The head is removed using an appropriate tool: Unscrew the attachment screws of the metering head, loosen the gland stud. The metering head is then removed in axial direction from the holder. Slight rotations of the head make dismantling easier.
3. The piston can now be unscrewed from the piston rod and replaced by a new one, if necessary.
4. To change the packing, the gland stud must be unscrewed. The defective packing is removed using a packing worm. Alternatively, a hook can be used to remove the old packing.
5. After cleaning the packing area, the new packing rings are fitted with offset joints and the gland studs fastened sturdily.
Caution: The seal material must be compatible with the application and with the chemical.
6. The metering head is now pushed in alignment with the piston and the holding flange and fixed with the attachment screws after it has reached its final position. Make sure that the valves are positioned vertically.

7. The gland stud is tightened carefully to start the bedding-in process of the new packing. For this purpose the pump is run dry first without connection to the medium. After some strokes the gland is retightened.
8. After connecting the metering lines the pumps is started as described in the 'Startup' section. Continue to prestress the gland stud until a minimum leakage occurs. If prestressing is too strong, the return movement of the piston might be restrained. In this case slightly loosen the gland stud again.

9. Troubleshooting

TYPE OF FAULT	POSSIBLE CAUSE	RECOMMENDED ACTION
Metering not delivering.	Valves leaking.	Clean and remove air from valves (see also startup of pump). Tighten screw connections.
	Valves installed incorrectly.	Reassemble valves. Ensure that the valve balls of suction and discharge valves are located above the valve seats.
	Suction filter, foot valve or suction line leaking or blocked.	Clean and seal suction line.
	No stroke movement.	Return spring broken. Replace spring – Consider density of medium! Suction lift too high.
Pump delivering too little or irregularly.	Valves blocked or leaking.	Clean and reseal valves.
Pump delivering too much.	Pressure on suction side too high (pump siphoning).	Install backpressure valve in discharge line.
Major leakage at piston.	Packing not tightened sufficiently.	Tighten gland stud carefully.
	Piston has longitudinal grooves due to normal wear.	Replace piston and packing. See also section 8, maintenance.
	Excessive wear due to abrasive medium.	Use aramid seal instead of PTFE seal.
Pump very noisy.	Defective rolling bearing.	Replace roller bearing.
	No oil or too little oil in gearing.	Refill oil, as described in section "maintenance".
Motor hums but and does not start.	Wrong connection.	Check electrical wiring.
	Pressure too high.	Check process.

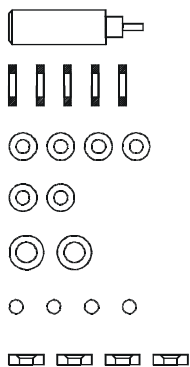
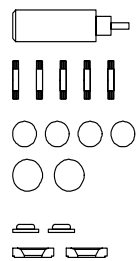
If the problem cannot be corrected on the basis of the above data, return the pump to the factory or contact our Technical Sales Service for further measures. Repairs will be carried out immediately.



Piston Metering Pump REKOS KR

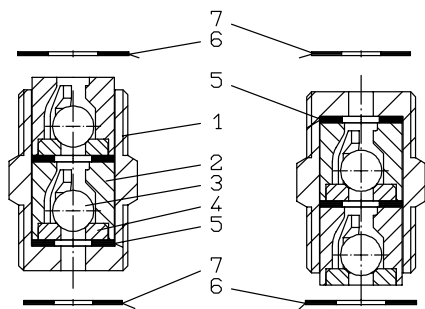
Spare parts kits see ET 1 08 02 / 2

Piston Metering Pump REKOS KR

Include:		Pump type	Head/ seal-/ materials	Part No.
	Piston Packing rings Positioning rings* Gaskets Valve balls Valve seats	KR 8	PVC / Hypalon PVC / Viton 1.4571 / AF	29818 31728 29994
		KR 20	PVC / Hypalon PVC / Viton 1.4571 / AF	29819 31729 29995
		KR 30	PVC / Hypalon PVC / Viton 1.4571 / AF	29820 31730 29996
		KR 40	PVC / Hypalon PVC / Viton 1.4571 / AF	29821 31731 29997
		KR 75	PVC / Hypalon PVC / Viton 1.4571 / AF	29984 31733 28404
		KR 125	PE / Hypalon PE / Viton 1.4571 / AF	29985 31734 28397
		KR 180	PE / Hypalon PE / Viton 1.4571 / AF	29986 31735 28398
		KR 295	PE / Hypalon PE / Viton 1.4571 / AF	29988 31737 28400
		KR 420	PE / Hypalon PE / Viton 1.4571 / AF	29989 31738 28401
	Piston Packing rings O-rings Valve springs Valve seats Valve disks	KR 725	PE / Hypalon PE / Viton 1.4571 / Hypalon 1.4571 / Viton	

* only in the case of stainless steel models KR 8 ... KR 75

uPVC version

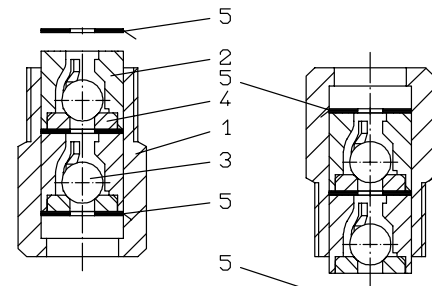


Double-ball valves

Suction valve

Discharge valve

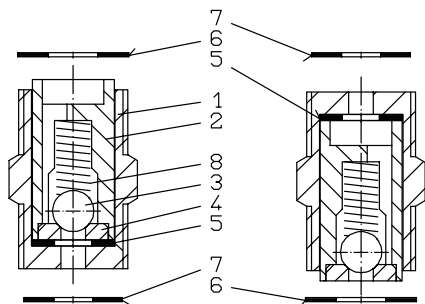
Stainless steel version



Suction valve

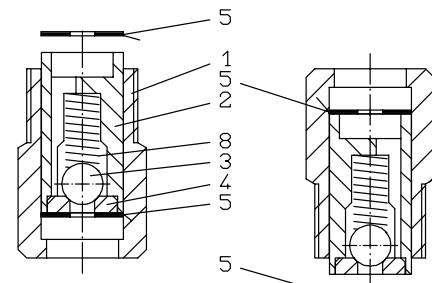
Discharge valve

Spring-loaded valves



Suction valve

Discharge valve



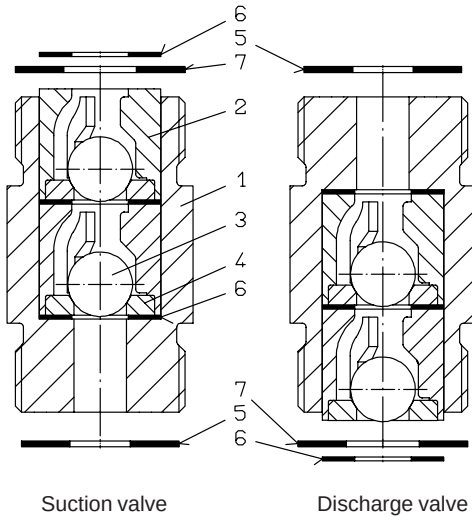
Suction valve

Discharge valve

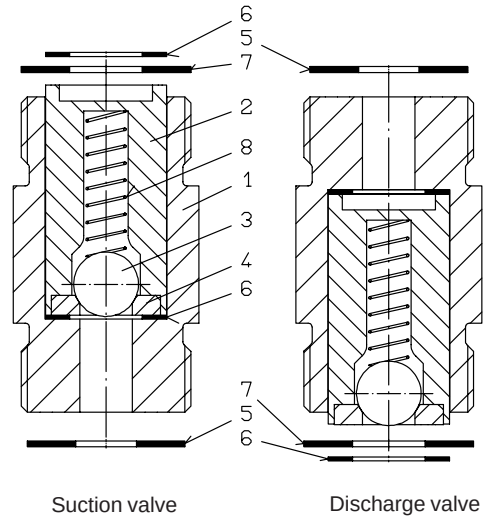
Item	Description	Material	Part No.	Double-ball valve						Spring-loaded valve					
				Suction valve			Discharge valve			Suction valve			Discharge valve		
				PVC	1.4571		PVC	1.4571		PVC	1.4571		PVC	1.4571	
				Seal material: H=Hypalon, V=Viton, AF=asbestos free											
				H	V	AF	H	V	AF	H	V	AF	H	V	AF
				18187	18185	26967	18188	18186	26968	25161	25162	28775	27516	27517	28776
1	Valve housing	PVC	18189	1	1	—	1	1	—	1	1	—	1	1	—
		1.4571	19601	—	—	1	—	—	1	—	—	1	—	—	1
2	Ball guide	PVC	82405	2	2	—	2	2	—	—	—	—	—	—	—
		1.4581	82102	—	—	2	—	—	2	—	—	—	—	—	—
		PVC	23412	—	—	—	—	—	—	1	1	—	1	1	—
		1.4571	25169	—	—	—	—	—	—	—	—	1	—	—	1
3	Valve ball	Ceramic	10017	2	2	—	2	2	—	1	1	—	1	1	—
		1.4401	10136	—	—	2	—	—	2	—	—	1	—	—	1
4	Valve seat	PVC	82406	2	2	—	2	2	—	1	1	—	1	1	—
		1.4571	82103	—	—	2	—	—	2	—	—	1	—	—	1
5	Gasket	Hypalon	81037	2	—	—	2	—	—	1	—	—	1	—	—
		Viton	81138	—	2	—	—	2	—	—	1	—	—	1	—
		AF	81625	—	—	3	—	—	3	—	—	2	—	—	2
6	Gasket	Hypalon	81033	1	—	—	1	—	—	1	—	—	1	—	—
		Viton	81285	—	1	—	—	1	—	—	1	—	—	1	—
7	Gasket	Hypalon	81041	1	—	—	1	—	—	1	—	—	1	—	—
		Viton	81141	—	1	—	—	1	—	—	1	—	—	1	—
8	Valve spring	Hastelloy	25082	—	—	—	—	—	—	1	1	1	1	1	1

DN 10 Valves for Rekos 125 ... 420 ET 1 08 02 / 4

PP version

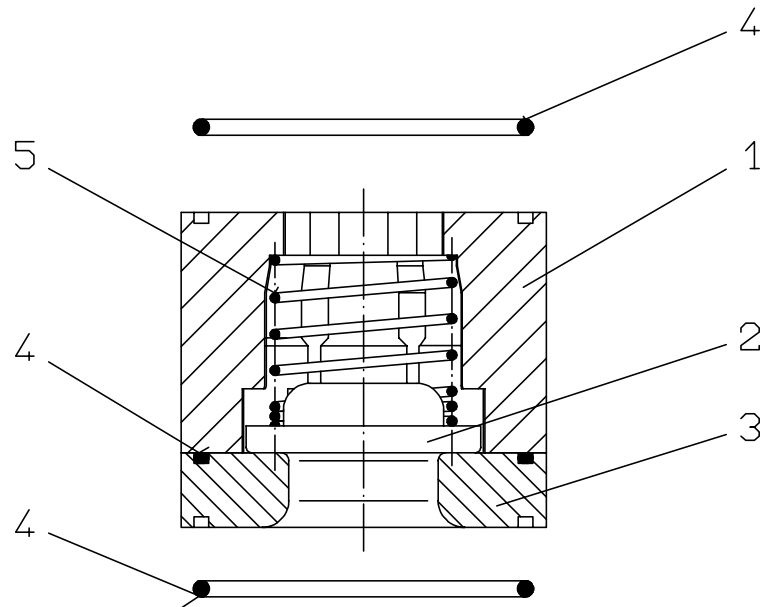


Stainless steel version



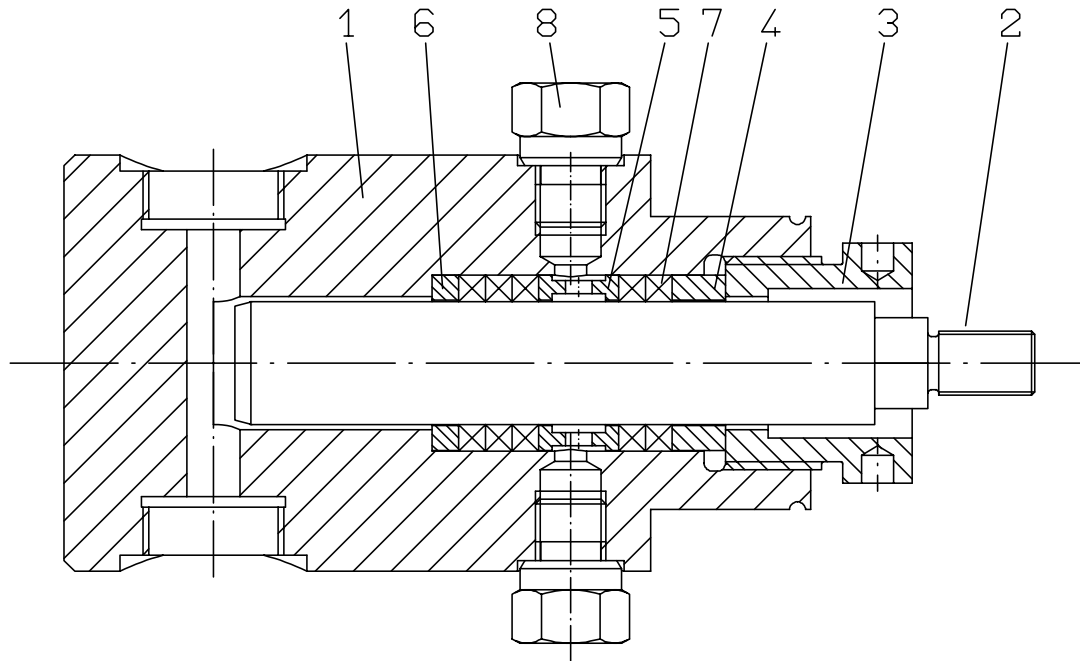
Piston Metering Pump REKOS KR

Item	Description	Material	Part No.	Double-ball valve						Spring-loaded valve					
				Suction valve			Discharge valve			Suction valve			Discharge valve		
				PP	1.4571	PP	1.4571	PP	1.4571	PP	1.4571	PP	1.4571	PP	1.4571
				Sealing Material: H=Hypalon, V=Viton, AF=asbestos free fibrous seal											
				H	V	AF	H	V	AF	H	V	AF	H	V	AF
				26841	26842	29694	27356	27357	29695	26845	25707	29696	27353	27354	29697
1	Valve housing	PP	32453	1	1	—	1	1	—	1	1	—	1	1	—
		1.4571	32449	—	—	1	—	—	1	—	—	1	—	—	1
2	Ball guide	PP	34142	2	2	—	2	2	—	—	—	—	—	—	—
		1.4581	82112	—	—	2	—	—	2	—	—	—	—	—	—
		PP	22882	—	—	—	—	—	—	1	1	—	1	1	—
		1.4581	22881	—	—	—	—	—	—	—	—	1	—	—	1
3	Valve ball d 16	KER 221	82457	2	2	—	2	2	—	1	1	—	1	1	—
		1.4401	82114	—	—	2	—	—	2	—	—	1	—	—	1
4	Valve seat	PP	82456	2	2	—	2	2	—	1	1	—	1	1	—
		1.4571	82113	—	—	2	—	—	2	—	—	1	—	—	1
5	Gasket	Hypalon	81035	1	—	—	1	—	—	1	—	—	1	—	—
		Viton	81198	—	1	—	—	1	—	—	1	—	—	1	—
		AF	81629	—	—	1	—	—	1	—	—	1	—	—	1
6	Gasket	Hypalon	81238	2	—	—	2	—	—	1	—	—	1	—	—
		Viton	81276	—	2	—	—	2	—	—	1	—	—	1	—
		AF	81627	—	—	3	—	—	3	—	—	2	—	—	2
7	Gasket	Hypalon	81239	1	—	—	1	—	—	1	—	—	1	—	—
		Viton	81277	—	1	—	—	1	—	—	1	—	—	1	—
8	Valve spring	Hastelloy	32577	—	—	—	—	—	—	1	1	1	1	1	1



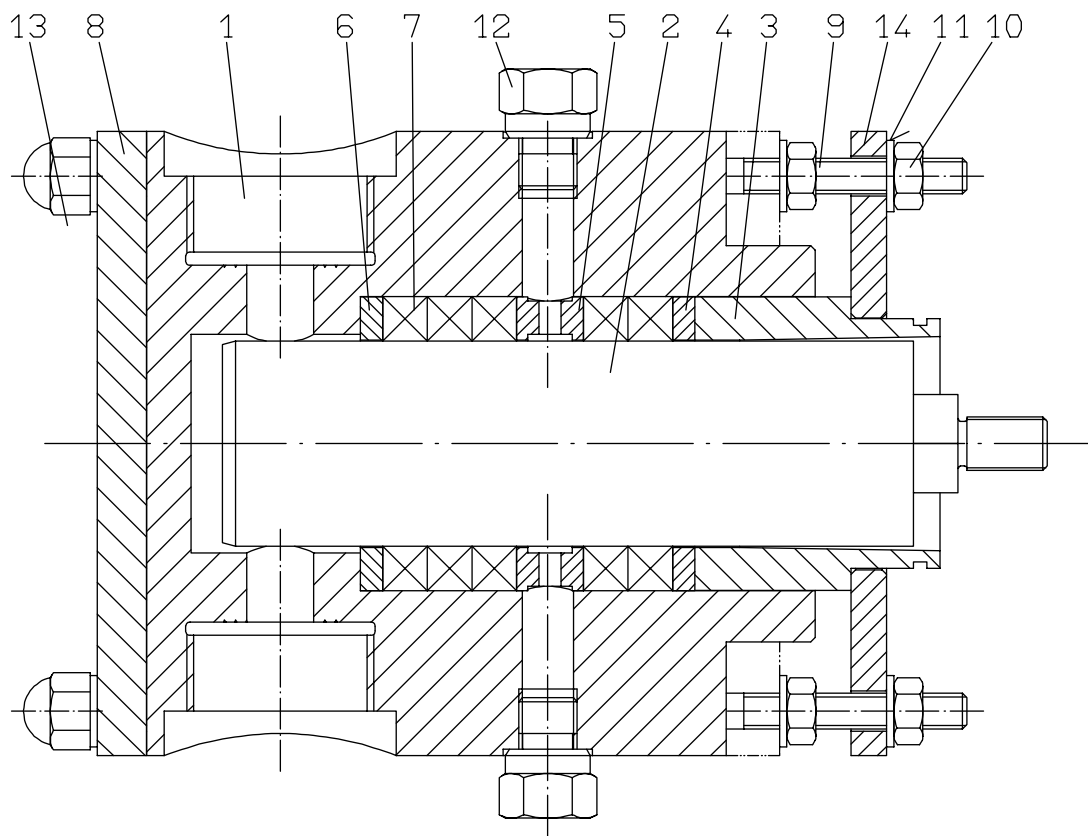
Item	Description	Material	Part No.	Suction and discharge valve			
				PP		1.4571	
				EPDM	Viton	EPDM	Viton
				Valve assembly			
				23703	23704	23705	25681
1	Valve guide	PP	34463	1	1	—	—
		1.4581	34466	—	—	1	1
2	Valve disk	PVDF	34464	1	1	—	—
		1.4571	34467	—	—	1	1
3	Flat valve seat	PP	34465	1	1	—	—
		1.4571	34468	—	—	1	1
4	O-ring	Hypalon	80626	3	—	3	—
		Viton	80092	—	3	—	3
5	Valve spring	Hastelloy	25217	1	1	1	1

Piston Metering Pump REKOS KR



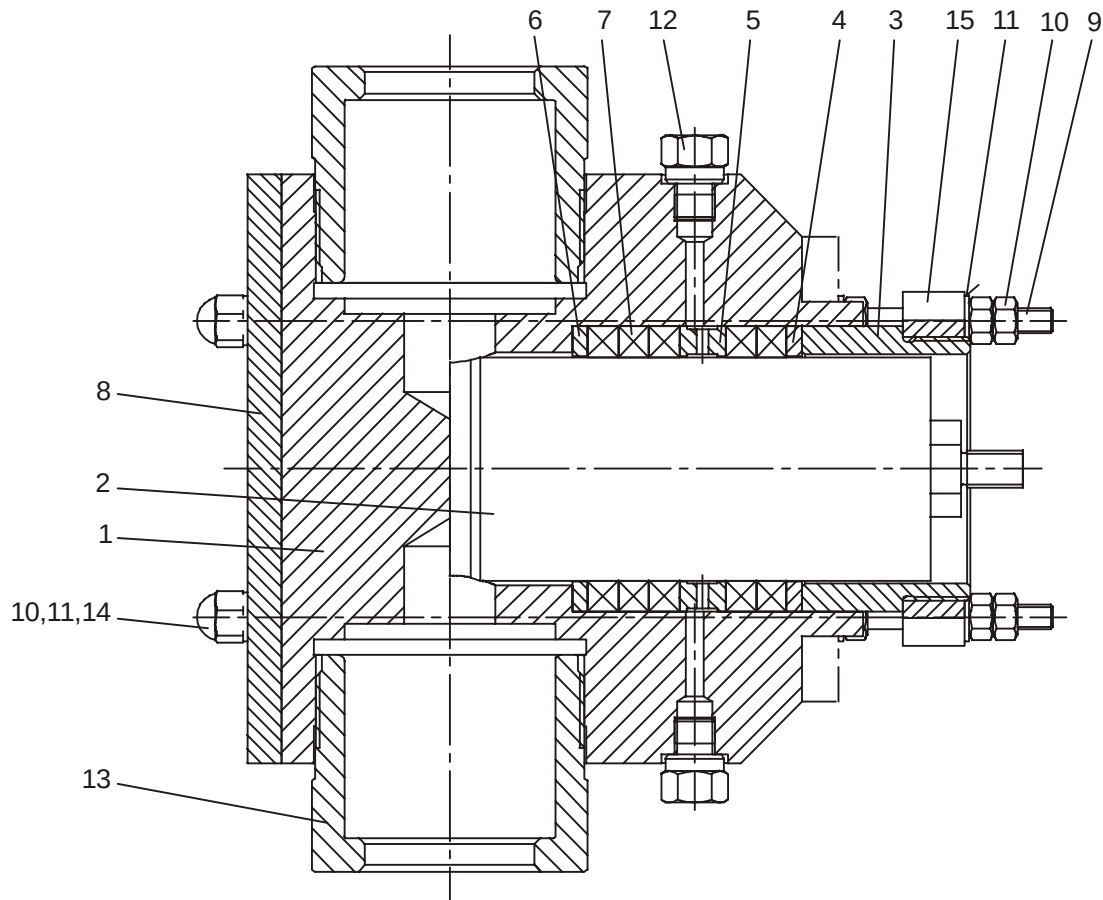
Piston Metering Pump REKOS KR

Item	Qty	Description	Material	Piston material				
				Ceramic				
				Pump type				
				KR 8	KR 20	KR 30	KR 40	KR 75
				25983	25984	25985	25986	29631
1	1	Piston housing	PVC	19002	19003	19004	19005	19007
2	1	Piston	Ceramic	18425	18426	18427	18428	18430
3	1	Gland	PVC	11013	11023	11033	11043	11063
4	1	Thrust collar	PVC	11014	11024	11034	11044	11064
5	1	Flushing bush	PVC	11015	11025	11035	11045	11065
6	1	Prop ring	PVC	10675	10685	11036	10695	10715
7	5	Packing ring	PTFE-silk packing	81022	81023	81024	81025	81027
8	2	Locking screw	PVC	19869	19869	19869	19869	19869

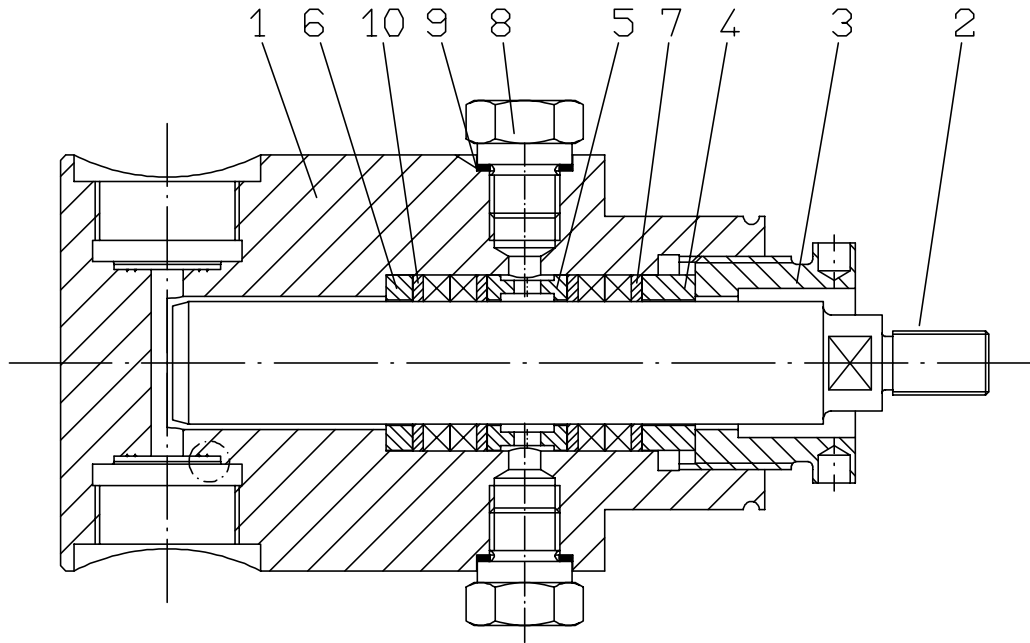


Item	Qty	Description	Material	Piston material = Ceramic			
				Pump type			
				KR 125	KR 180	KR 295	KR 420
				29632	29633	29635	29870
1	1	Piston housing	PE	18391	18392	18394	18395
2	1	Piston	Ceramic	18396	18397	18399	18400
3	1	Gland	PVC	18408	18409	18411	18412
4	1	Thrust collar	PVC	11076	11086	11106	11116
5	1	Flushing bush	PVC	11075	11085	11105	11115
6	1	Prop ring	PVC	11076	11086	11106	11116
7	5	Packing ring	PTFE-silk packing	81028	81029	81031	81032
8	1	Spacer	Al	18413	18413	18413	18413
9	4	Seperator bolt	1.4571	18414	18414	18422	18422
10	**8	Hexagonal nut	A2	83130	83130	83130	83130
11	**8	Washer	A2	84024	84024	84024	84024
12	2	Locking screw	PVC	19869	19869	19869	19869
13	4	Cap	PE	83507	83507	83507	83507
14	1	Stuffing-box flange	St	—	—	18421	18420

** with stuffing-box flange 12 off required

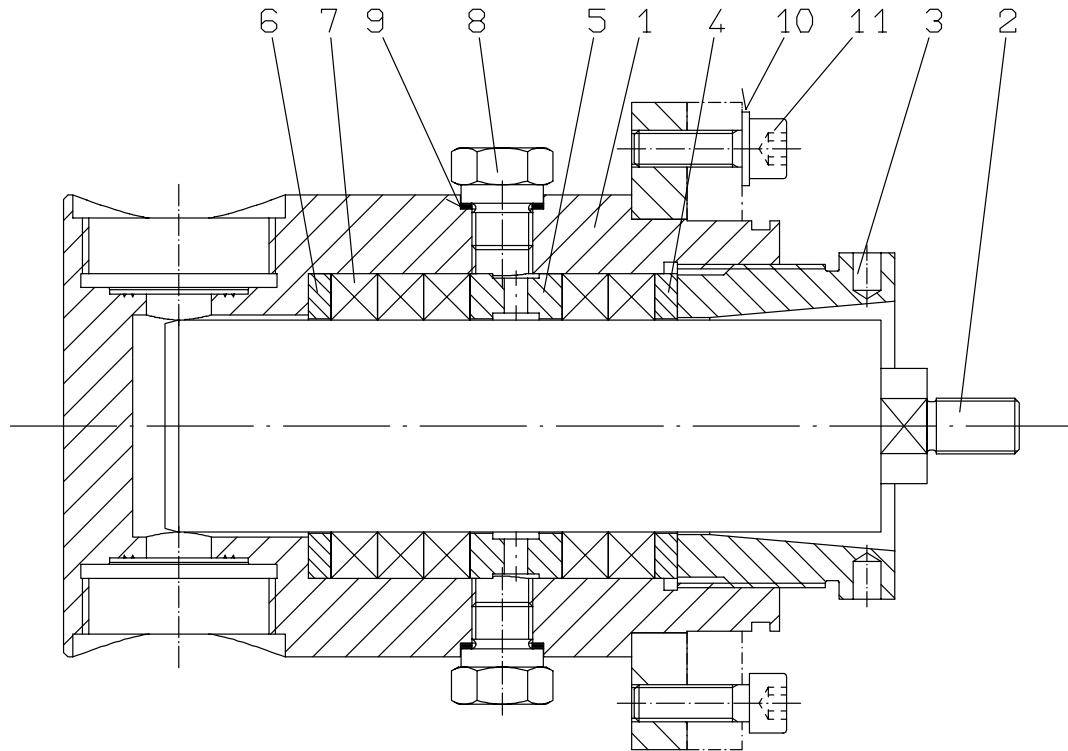


Item	Qty.	Description	Material	Piston material
				Ceramic
				KR 725
				29638
1	1	Piston housing	PP	20893
2	1	Piston	Keramik/Ms	19677
3	1	Gland packing	PVC	11449
4	1	Support ring	PVC	11446
5	1	Flushing bush	PVC	11445
6	1	Support ring	PVC	11446
7	5	Packing ring	PTFE-Seidenpackung	81049
8	1	Pressure plate	Al	33451
9	4	Separator bolt	1.4571	19868
10	16	Hex nut	A2	83130
11	12	Washer	A2	84131
12	2	Sealing screw	PVC	19869
13	2	Valve cap	PP	34712
14	4	Protective cap	PE	83507
15	1	Gland flange	1.4305	19678



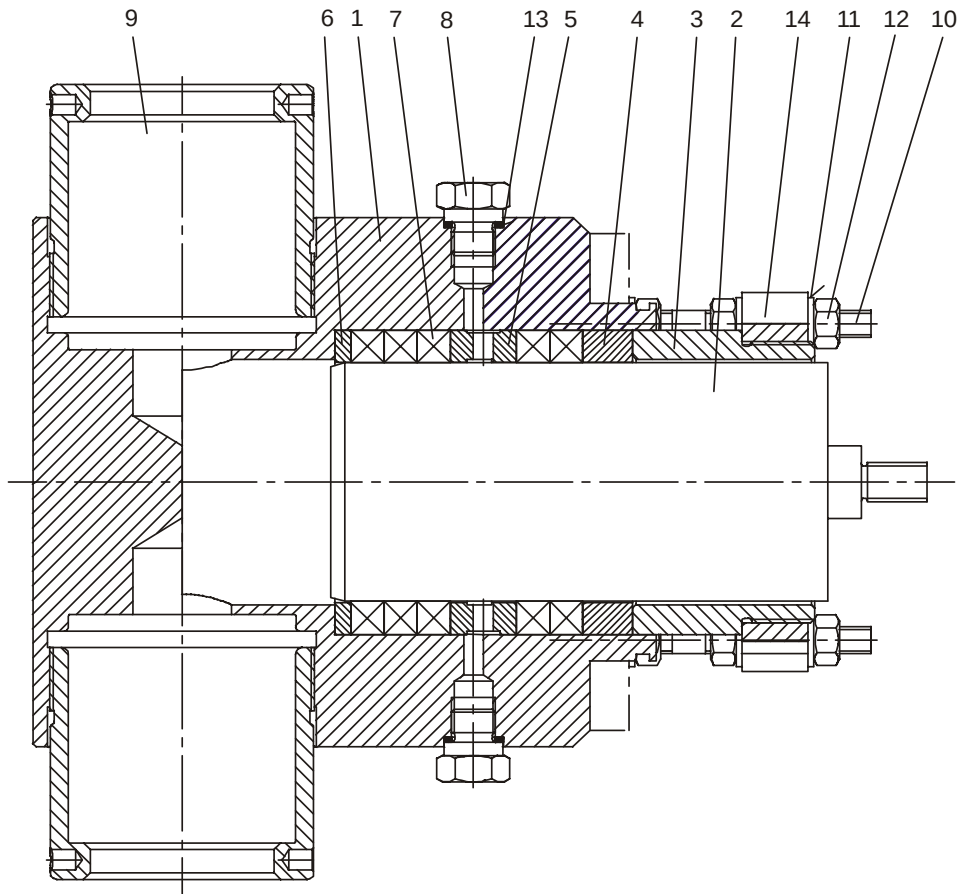
Item	Qty	Description	Material	Piston material				
				1.4571				
				Pump type				
				KR 8	KR 20	KR 30	KR 40	KR 75
				26005	26009	26013	26017	26025
1	1	Piston housing	1.4571	10878	10885	10892	10899	19017
2	1	Piston	1.4571	18380	18381	18382	18383	18385
3	1	Gland	1.4571	10880	10887	10894	10901	10915
4	1	Thrust collar	1.4571	10881	10888	10895	10902	10916
5	1	Flushing bush	1.4571	10882	10889	10896	10903	10917
6	1	Prop ring	1.4571	10615	10625	10897	10635	10655
7	4	Packing ring	PTFE-silk packing	81022	81023	81024	81025	81027
8	2	Locking screw	1.4571	82018	82018	82018	82018	82018
9	2	Gasket	AF	81042	81042	81042	81042	81042
10	4	Supporting ring	PVDF	31714	31715	31716	31717	31719

Piston Metering Pump REKOS KR

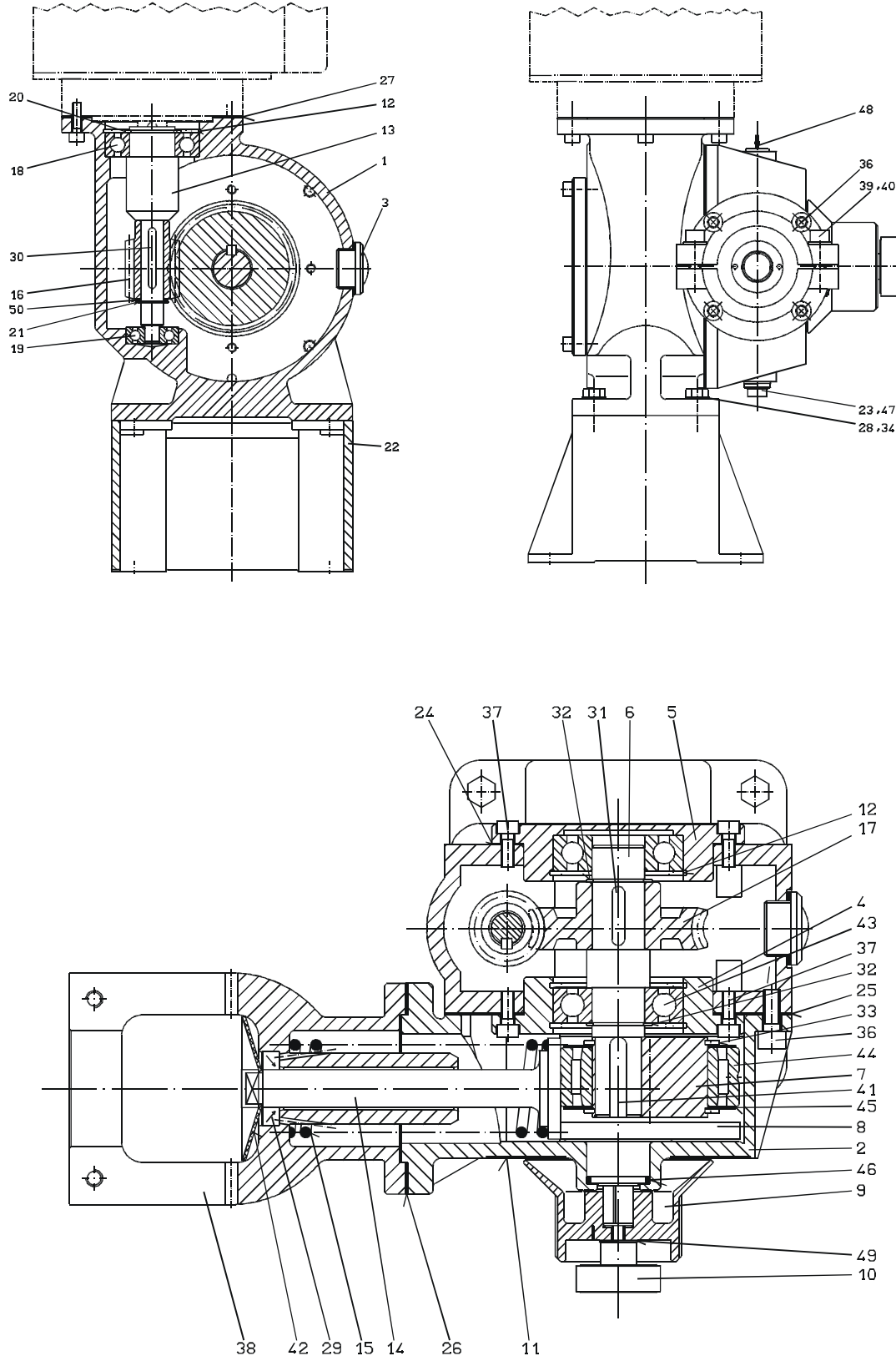


Piston Metering Pump REKOS KR

Item	Qty	Description	Material	Piston material = 1.4571			
				Pump type			
				KR 125	KR 180	KR 295	KR 420
				26036	26042	26063	26070
1	1	Piston housing	1.4571	18344	18345	18347	18348
2	1	Piston	1.4571	18350	18351	18353	18354
3	1	Gland	1.4571	18356	18357	18359	18360
4	1	Thrust collar	1.4571	10925	10932	10946	10953
5	1	Flushing bush	1.4571	10924	10931	10945	10952
6	1	Prop ring	1.4571	10925	10932	10946	10953
7	5	Packing ring	PTFE-silk packing	81028	81029	81031	81032
8	2	Locking screw	1.4571	82018	82018	82018	82018
9	2	Gasket	Klingerit	81042	81042	81042	81042
10	4	Disk	A2	84131	84131	84131	84131
11	4	Socket screw	A2	83664	83664	83664	83664

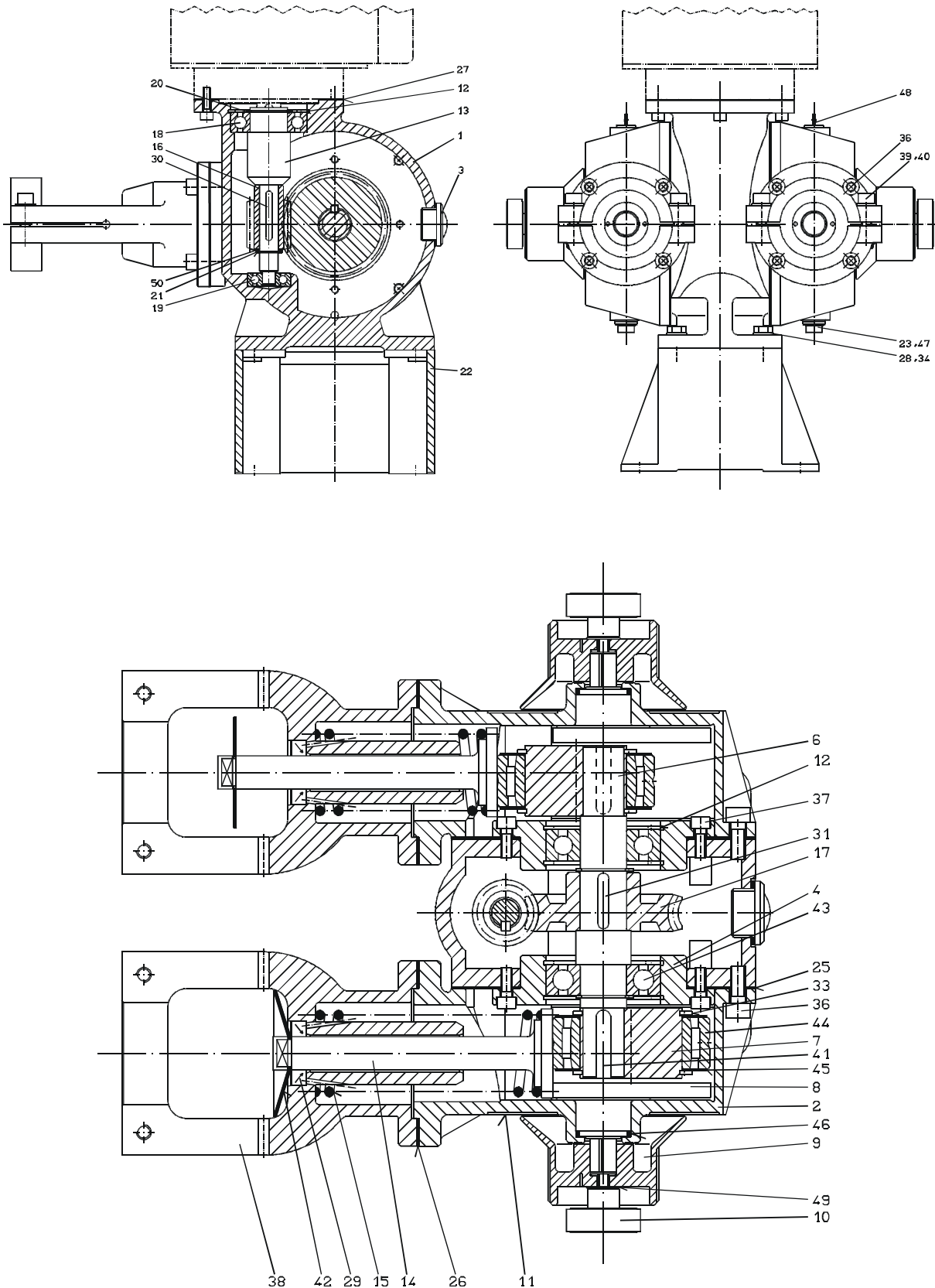


Item	Qty	Description	Material	Piston material
				1.4571
				KR 725
				26088
1	1	Piston housing	1.4571	20958
2	1	Piston	1.4571	19665
3	1	Stuffing-box	1.4571	11254
4	1	Thrust collar	1.4571	11249
5	1	Flushing bush	1.4571	11250
6	1	Prop ring	1.4571	11251
7	5	Packing ring	PTFE-silk packing	81049
8	2	Threaded plug	1.4571	82018
9	2	Valve cap	1.4571	32983
10	4	Separator bolt	1.4571	20825
11	12	Washer	A2	84131
12	12	Hexagonal nut	A2	83130
13	2	Gasket	AF	81042
14	1	Stuffing-box flange	1.4305	19678



Piston Metering Pump REKOS KR

Piston Metering Pump REKOS KR

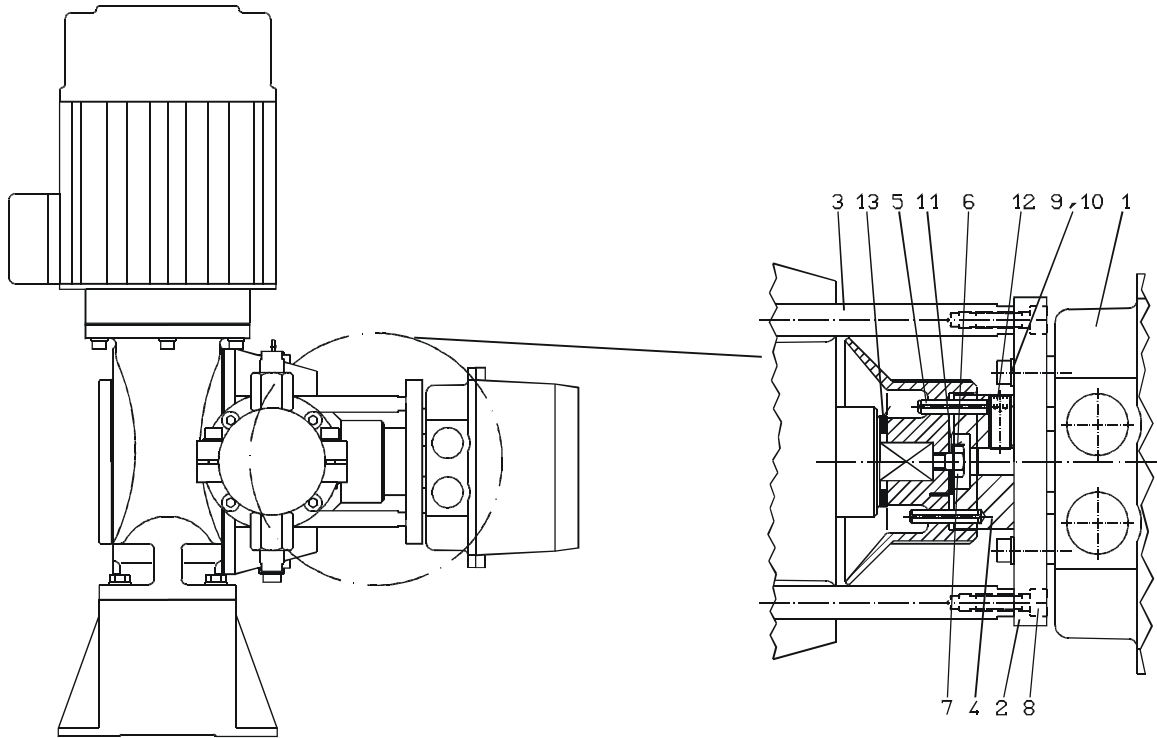


Item	Description	Material	Part No.	Single drive	Duplex drive
1	Gear housing, single	Cast iron	18317	1	—
	Gear housing, duplex	Cast iron	23781	—	1
2	Eccentric housing	Al	31216	1	2
3	Oil gauge G 3/4	Plexi	82181	1	1
4	Bearing flange	Al	18308	1	2
5	Bearing flange	Al	18318	1	—
6	Driving shaft single	St	18324	1	—
	Driving shaft ZKR parallel	St	18337	—	1
	Driving shaft ZKR diagonal	St	18299	—	1
7	Driving eccentric	St	18325	1	2
8	Adjusting eccentric	Plastic	31220	1	2
	Adjusting eccentric	Steel	34216	1	2
9	Adjusting knob	Plastic	31217	1	2
10	Thumbscrew d 50 - M8 x 30	Plastic	35798	1	2
11	Scale	Plastic	87416	1	2
12	Retaining ring 62 x 2	Spring steel	84004	4	5
13	Pinion shaft	St	18323	1	1
14	Piston rod	1.4305	18327	1	2
15	Return spring	Spring steel	18335	1	2
16	Worm shaft 13.5	St	18332	1	1
17	Worm wheel 13.5	Bronze	18331	1	1
18	Ball bearing 30/62/16	St	86105	1	1
19	Ball bearing 10/35/11	St	86071	1	1
20	Retaining ring A 30 x 1.5	Spring steel	84086	1	1
21	Retaining ring A 15 x 1	Spring steel	84010	1	1
22	Housing base	Al	18461	1	1
23	Plug G 1/4	Brass	82022	1	2
24	Seal 120/90/1	AF	81245	1	—
25	Seal 165/90/1	AF	81249	1	2
26	Seal 100/70/1	AF	81246	1	2
27	Seal 120/80/1	AF	81247	1	1
28	Disk 8.4	A2	84131	4	4
29	Locking ring 18/35/8	Simrit	80502	1	2
30	Adjusting spring A 5 x 5 x 40	St	83419	1	1
31	Adjusting spring A 6 x 6 x 28	St	83569	1	1
32	Retaining ring A 25 x 1.2	Spring steel	84003	2	2
33	Retaining ring A 55 x 2	Spring steel	84109	2	4
34	Hex. head screw M8 x 20	A2	83701	4	4
35	Cylinder head screw M6 x 20	8.8 galv.	83041	3	3
36	Cylinder head screw M8 x 25	8.8 galv.	83043	4	8
37	Cylinder head screw M6 x 16	8.8 galv.	83040	8	8
38	Clamping flange for KR 2 ... 75	Cast iron	18321	(1)	(2)
	Screw flange for KMS I	Cast iron	18343	(1)	(1)
	Screw flange for KR 125...420	Cast iron	18343	(1)	(2)
	Screw flange for KMS II	Cast iron	20809	(1)	(2)
	Screw flange for KR 725	Cast iron	20809	(1)	(2)
	Screw flange for KMS III	Cast iron/St	28713	(1)	(2)
39	Cylinder head screw M8 x 30	A2	83198	2	4
40	Disk 8.4	A2	84174	2	4
41	Adjusting spring A 8 x 7 x 36	St	83428	1	2
42	Deflector disk 60/17/1.5	Hypalon	22057	1	2
43	Ball bearing 25/62/17	St	86003	2	2
44	Needle bearing 55/85/28	St	86070	1	2
45	Buffer disk	St	18330	2	4
46	O-ring 25 x 2.5	Perbunan	80036	1	2
47	Gasket 18/13/1.2	AF	81042	1	2
48	Plug 13.1	PE	83019	1	2
49	Spring ø20/8.2 x 1	1.4310	84221	1	2
50	Supporting plate 15/21/1.5	Spring steel	83733	1	1
58	Cylinder head screw M8 x 20	A2	¹⁾ 83632	4	8

1) For screw flange 28713 the Part No. of the screw is 83055.

Lutz-Jesco GmbH

Improved changes are always reserved without notice.



Item	Description	Material	Part No.	KR 8-725 31226	ZKR 8-725 2 x 31226
1	Servomotor 220V~	misc.	78747	1	2
2	Support	Al	31223	1	2
3	Threaded rod M8/M6	1.4571	31224	4	8
4	Coupling d10	1.4571	31225	1	2
5	Clamping pin 5 x 26	St	83102	2	4
6	Locking plate 8.4	A2	84222	1	2
7	Hex. head screw M8x35	A2	83748	1	2
8	Cyl. head screw M6 x 20	A2	83619	4	8
9	Washer 5.3	A2	84164	4	8
10	Cyl. head screw M5 x 20	A2	83268	4	8
11	Spring washer 20/8.2x1	A2	84221	1	2
12	Setscrew M8 x 20	A2	34221	1	2
13	Washer	Brass	32132	1	2

EU-Konformitätserklärung

Der Unterzeichnete Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark, bestätigt, dass die nachfolgend bezeichneten Geräte in der von uns in Verkehr gebrachten Ausführung die Anforderungen der harmonisierten EU-Richtlinien, EU-Sicherheitsstandards und produktspezifischen Standards erfüllen. Bei einer nicht mit uns abgestimmten Änderung der Geräte verliert diese Erklärung ihre Gültigkeit.

(EN) EU Certificate of Conformity

The undersigned Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark, hereby certifies that, when leaving our factory, the units indicated below are in accordance with the harmonised EU guidelines, EU standards of safety and product specific standards. This certificate becomes void if the units are modified without our approval.

(FR) Certificat de conformité aux directives européennes

Le constructeur, soussigné: Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark, déclare qu'à la sortie de ses usines le matériel neuf désigné ci-dessous était conforme aux prescriptions des directives européennes énoncées ci-après et conforme aux règles de sécurité et autres règles qui lui sont applicables dans le cadre de l'Union européenne. Toute modification portée sur ce produit sans l'accord express de Jesco supprime la validité de ce certificat.

(ES) Declaración de conformidad de la UE

El que subscribe Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark, declara que la presente mercancía, objeto de la presente declaración, cumple con todas las normas de la UE, en lo que a normas técnicas, de homologación y de seguridad se refiere, En caso de realizar cualquier modificación en la presente mercancía sin nuestra previa autorización, esta declaración pierde su validez.

(NL) EU-overeenstemmingsverklaring

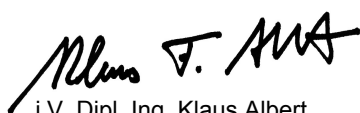
Ondergetekende Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark, bevestigt, dat het volgende genoemde apparaat in de door ons in de handel gebrachte uitvoering voldoet aan de eis van, en in overeenstemming is met de EU-richtlijnen, de EU-veiligheidsstandaard en de voor het product specifieke standaard. Bij een niet met ons afgestemde verandering aan het apparaat verliest deze verklaring haar geldigheid.

(HU) EG (EK)– Egyezőségi nyilatkozat

A Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark ezúton kijelenti, hogy a szóban forgó termék annak tervezése és szerkezeti módja, valamint forgalomba hozott kivitele alapján a vonatkozó alapvető biztonság technikai és egészségügyi követelményeknek és az alábbi felsorolt EG –irányelveknek minden szempontból megfelel. A terméken engedélyünk nélkül végrehajtott módosítások következtében jelen nyilatkozat érvényét veszíti.

Bezeichnung des Gerätes:	Kolben-Dosierpumpe
Description of the unit:	Piston Metering Pump
Désignation du matériel:	Pompes doseuses à piston
Descripción de la mercancía:	Bombas dosificadoras de piston
Omschrijving van het apparaat:	Plunjerdoseerpomp
A termék megnevezése:	Dugattyús adagolószivattyúk

Typ / Type / Tipo / Típusjelölés:	EU-Richtlinie / EU directives/ Directives européennes / Normativa UE / EU-richtlijnen / Vonatkozó EG-irányelvek	Harmonisierte Normen / harmonized standards / Normes harmonisées / Estándares acordemente / Toegepaste normeringen / Hatályos normák
FEDOS TK		
FEDOS K		
FEDOS E	2006/95/EG	EN ISO 12100-1 : 2003
REKOS KR	2006/42/EG	EN ISO 12100-2 : 2003
KARDOS KN		EN 809 : 1998
KARDOS N		



i.V. Dipl. Ing. Klaus Albert
Lutz-Jesco, Wedemark, 01.02.2008

Technische Leitung / Technical Departement Manager / Direction technique /
Dirección Técnica / Hoofd technische dienst / Műszaki irodavezető

Declaration of Harmlessness

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:

Warranty Application

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 application, filled out.

Sender

Company: Phone: Date:

Address:

Contact person:

Manufacturer order no.: Date of delivery:

Device type: Serial number:

Nominal capacity / nominal pressure:

Description of fault:.....

.....

.....

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.....

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.....

.....

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 of the chemical feed system, showing materials of construction, diameters, lengths and heights of suction and discharge lines.