Piston Metering Pump REKOS KR

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 adjsuted 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									5
[bar]		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

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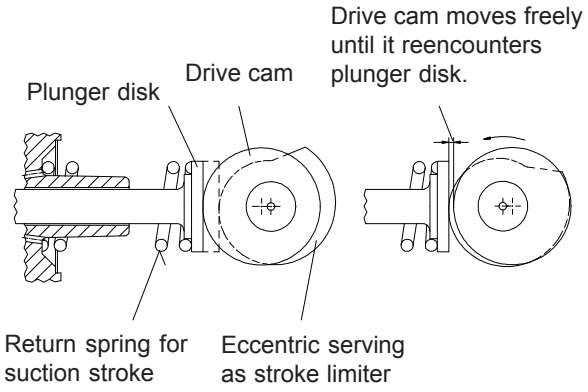
Abrasive media

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, dispite 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

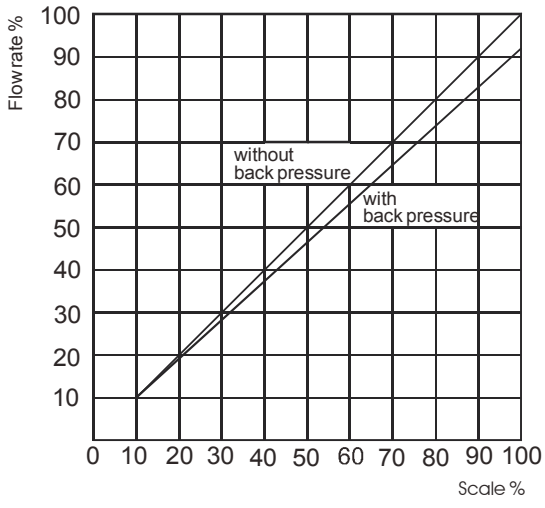
For fluids which are solid when cold the metering head can be fitted with warm water, steam or electrical heating.

Thyristor controller

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

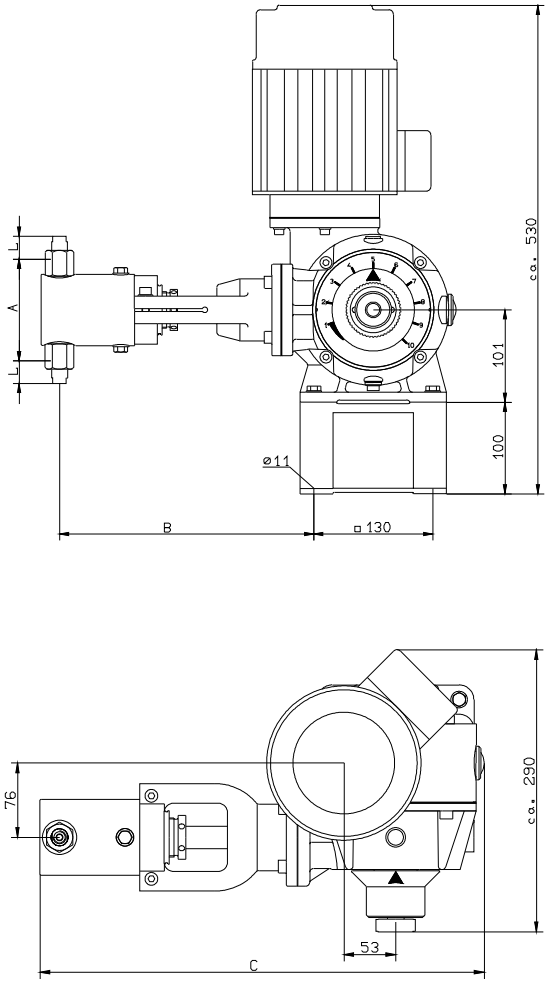
For other accessories - see "Installation example".

Performance curves



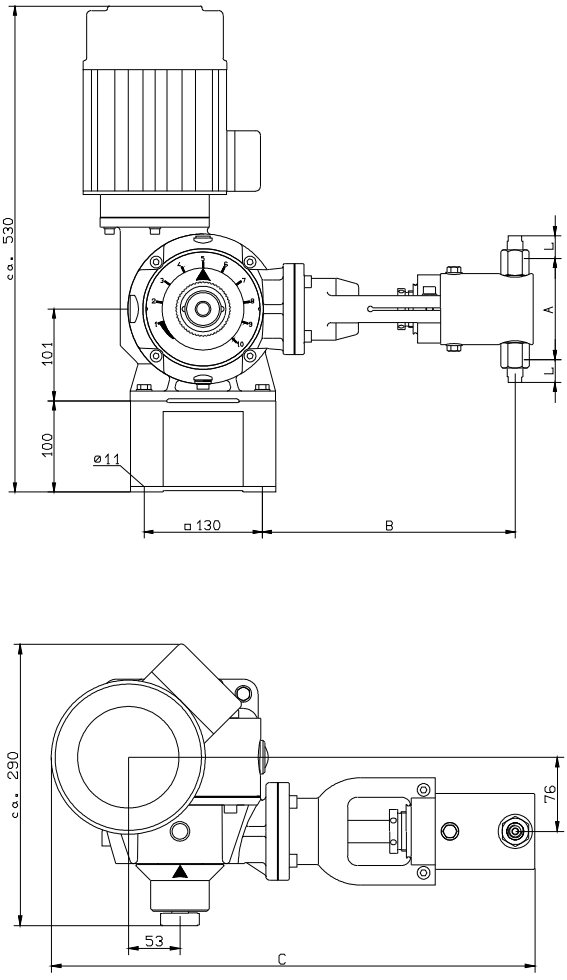
Simplex pumps

Left-hand version



KR 8 L . . . KR 725 L

Right-hand version



KR 8 R . . . KR 725 R

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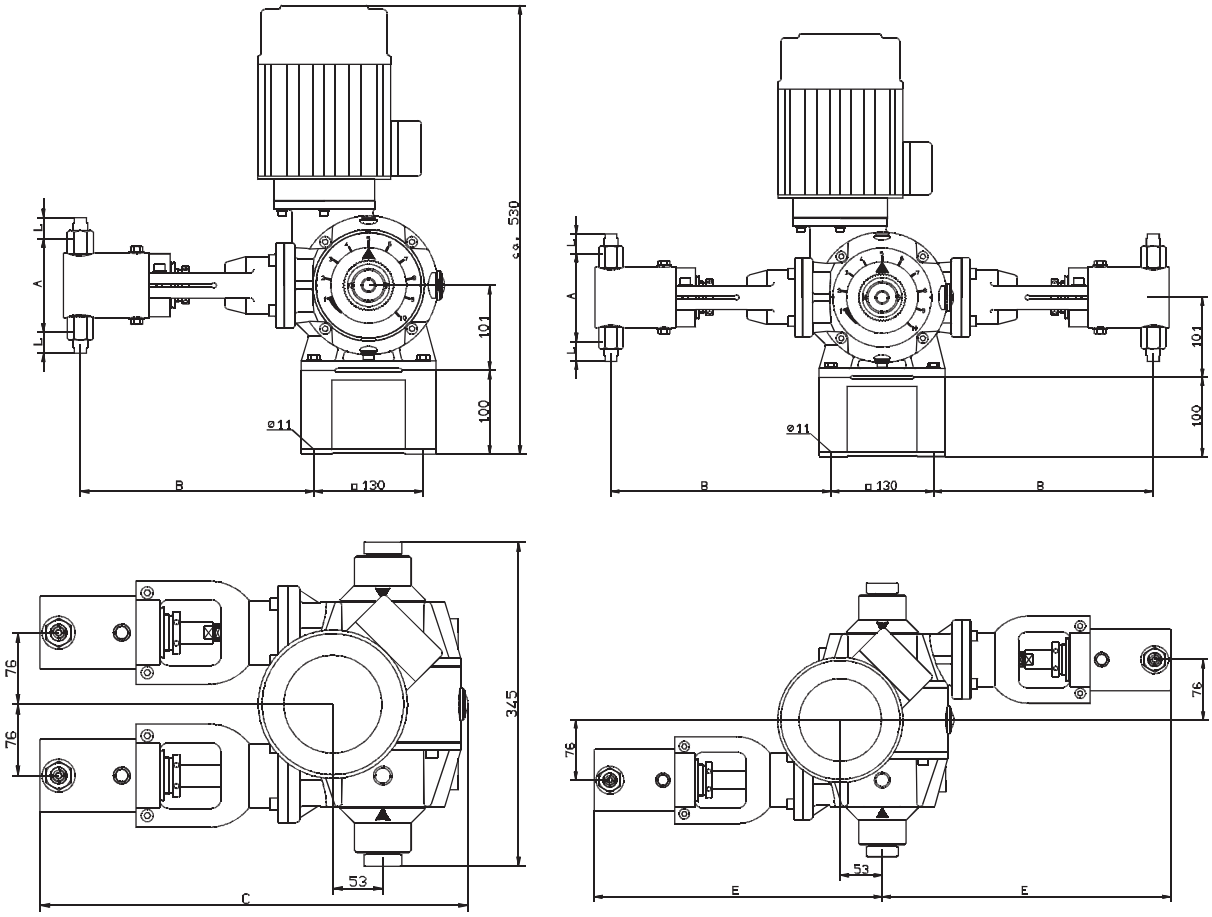
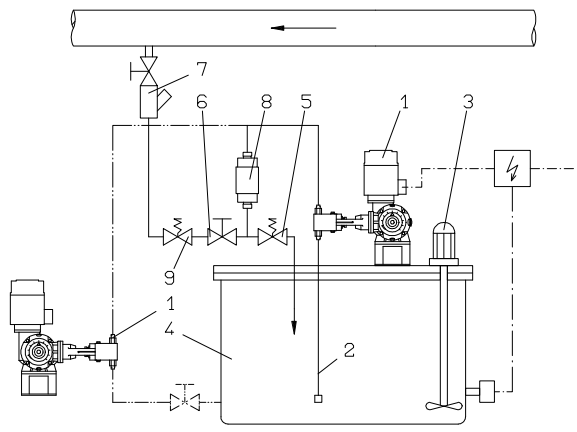
Duplex pumps



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).

Installation example



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		

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Selection tables

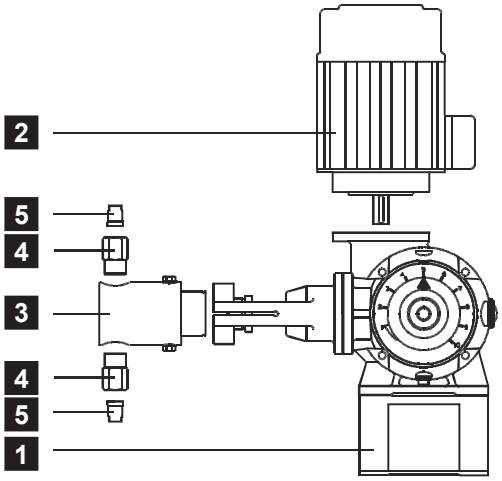
To offer the user a large variety of different versions, JESCO metering pumps have been divided into the main functional groups. They can thus be assembled according to the user's individual requirements.

The user can combine the pump from the following components:

1 Drive **2** Motor **3** Head

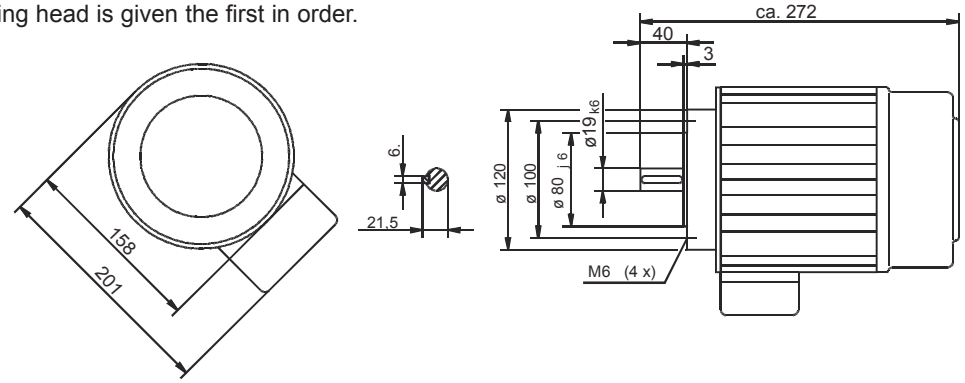
4 Valves **5** Connections

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 ISO Cl.	IP
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.

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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

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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	—	—

Piston Metering Pump REKOS KR

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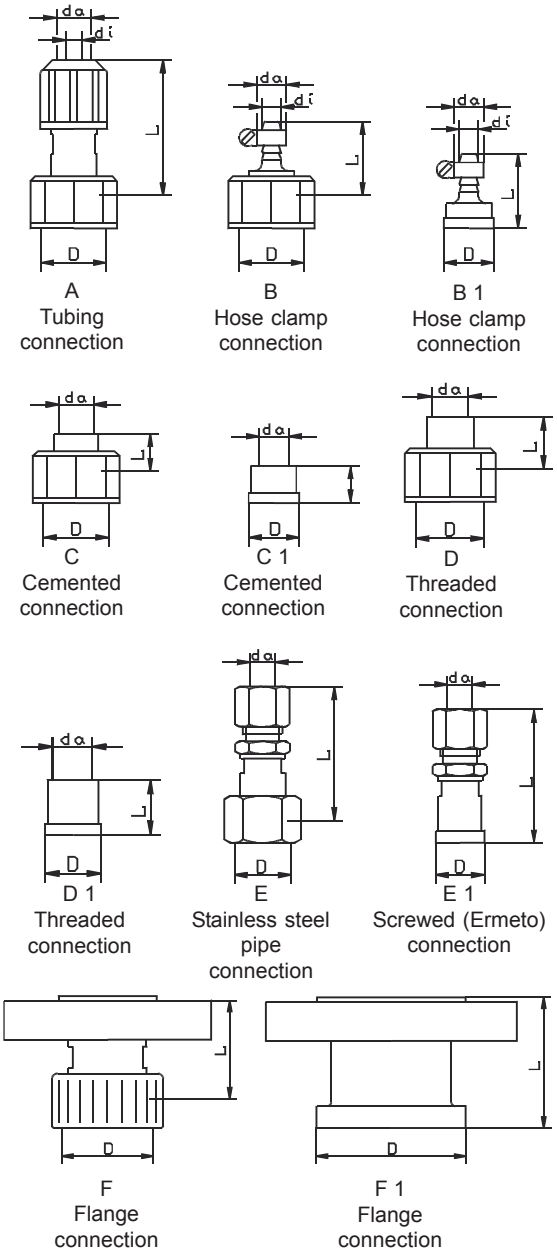
Pump type	Dimensions						Part No. Version	
	DN	Pict.	D	di	da	L	Plastic	SS
KR 8 . . . 75	6	A	G 3/4	6	12	55	19175	—
	4	A	G 3/4	4	6	35	19480	—
	6	A	G 3/4	6	8	30	28159	—
	6	B	G 3/4	6	12	30	23342	—
	6	B1	d 20	6	12	29	—	23426
	8	C	G 3/4	—	10	15	25167	—
	10	C	G 3/4	—	12	15	27518	—
	6	D	G 3/4	—	G 1/4	20	25165	—
	6	D 1	d 20	—	G 1/4	20	—	82105
	6	E 1	d 20	—	8	20	—	27519
	8	E 1	d 20	—	10	20	—	23427
	10	E 1	d 20	—	12	20	—	23428
KR 125 . . . 420	10	B	G 11/4	19	15	41	25921	25925
	15	B	G 11/4	16	24	50	25936	25935
	10	C	G 11/4	—	16	22	27672	—
	15	C	G 11/4	—	20	22	25937	—
	20	C	G 11/4	—	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
	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
KR 725	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 11/4	40	—	25252
	25	E1	68	—	28	60	—	27052
	25	F1	68	—	25	64	25622	25623



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 ajduster 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 20 bar; 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

JESCO

MB 1 08 02 / 8

Piston Metering Pump REKOS KR-ATE

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.

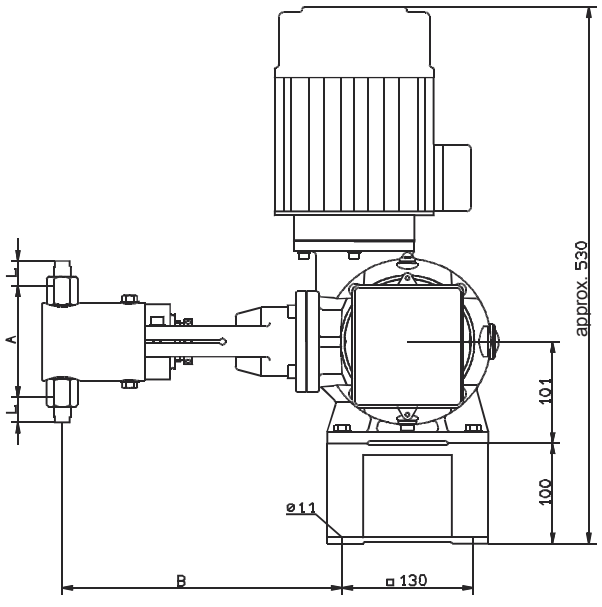
Two models with different technical data are available (see pages 10 and 11).

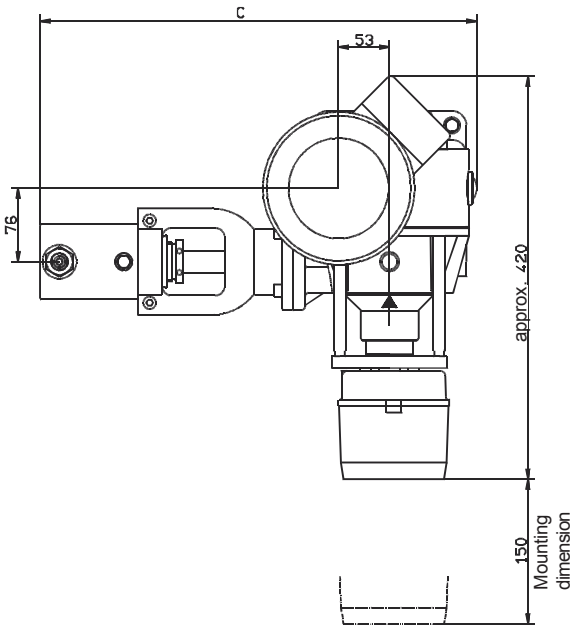
On request, "increased safety" and "air-tight" explosion-proof servomotors can be offered.

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





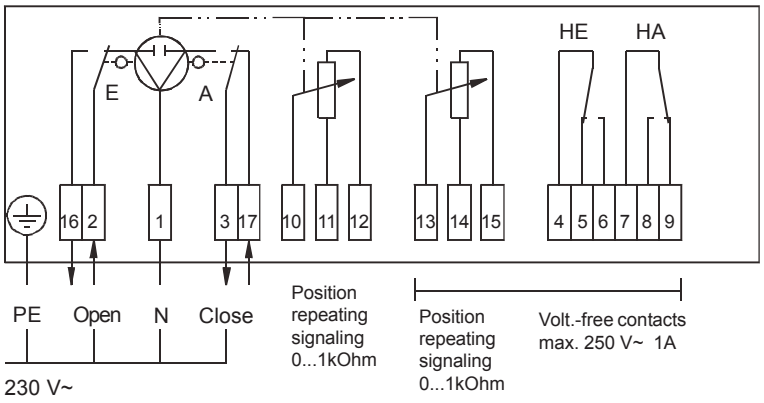
Piston Metering Pump REKOS KR-ATE

Technical data - types AR 30W23 and AR 30W23S

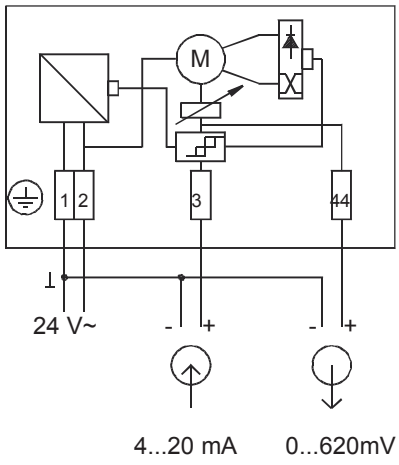
Type	AR 30W..	AR 30W..S
Design	Reversible a.c. motor with self-locking reduction gear.	
Use	For controllers with switching output (3-point control)	For controllers with continuous output (2...10V or 4...20mA)
Auxiliary voltage	230V~ ± 15% 50...60 Hz	24V ~ ± 20% 50...60 Hz
Control		2...10V or 4...20mA
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~

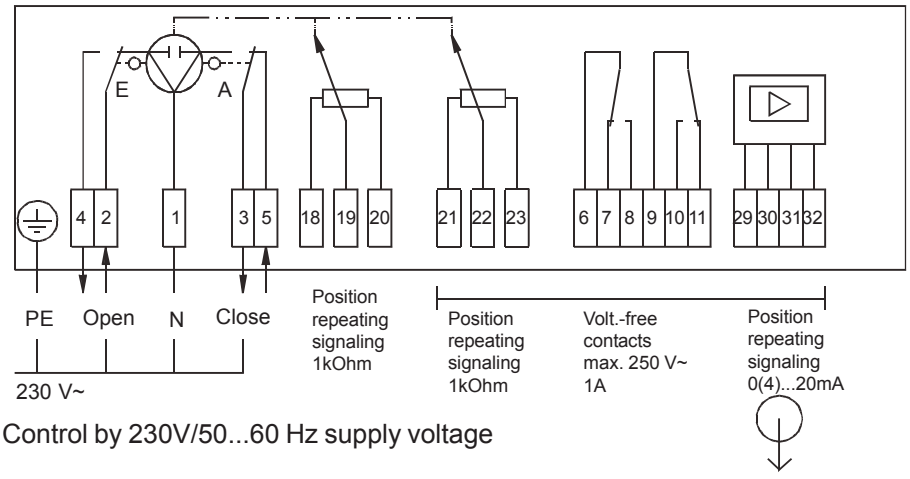


Technical data - types WAN 1 and WAN 1-S

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 request.	230V~ ± 10% 50...60Hz
Control		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	

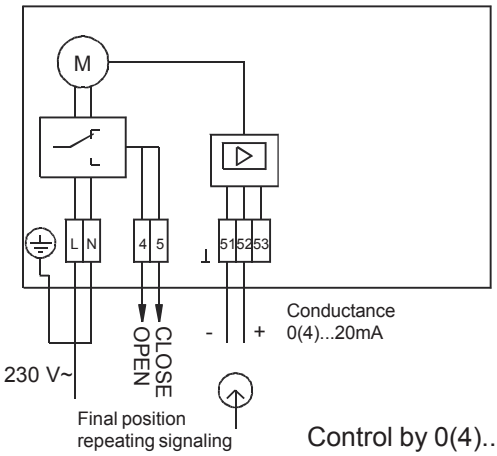
Electrical wiring diagrams

WAN 1



Control by 230V/50...60 Hz supply voltage

WAN 1-S



Control by 0(4)...20mA standard signal