Product Information Piston Dosing Pump FEDOS E/DX

Reliable dosing of chemicals

Piston dosing pumps play an important role in the reliable and accurate dosing of liquids in the process cycles. They are appropriate for high-pressure applications and small dosing quantities.

Dosing pumps are used in many branches of industry that work with liquid chemicals - not excluding toxic and aggressive media.

Precision at high pressure

FEDOS E/DX pumps combine the advantages of piston metering pumps, e.g. the minor dependence of the back pressure and the linear change in flow rate on adjustment of the stroke length, with the advantages of an intelligent, microprocessor-controlled metering pump.

The FEDOS can be used for capacities from 0.17 to 31.5 l/h, with or without microprocessor control. Depending on the size of the pump, pressures between 25 and 100 bar are admissible by using aramid-reinforced packings. The standard version uses PTFE packings for the pressure range of up to 40 bar.

Versatile and flexible

FEDOS E pumps can be integrated in controls or automatic control systems.

If no control is required for constant dosing, the motor is connected directly to the terminal box. FEDOS E is applied in this case. Three-phase and a.c. motors are available for FEDOS E pumps.

To change the metering capacity, either the stroke length can be adjusted mechanically or the speed of the three-phase motor can be controlled by means of a separate frequency converter.

The intelligence of the FEDOS DX is derived from the well-proved series of MEMDOS E/DX diaphragm metering pumps.

It allows the adaption to a large number of different control signals and system monitoring equipment. For the chemical supply, for example, two controls are available: tank level control with alarm signal and low level indication. The signals required for external activation of the pump can be simple voltage-free closing contacts from water meters or controllers or analog 0(4)..20 mA signals. For internal control, the FEDOS DX can be adjusted continuously between 0 and max. 142 strokes/min, depending on the version. A single stroke follows each contact.

In short

- Suitable for accurate mixing tasks
- Capacity range 0.17 to 31.5 l/h, at up to 100 bar
- Minor dependence of the back pressure
- Linear development of the dosing quantity according to the stroke length
- Tappet drive with easy-to-operate capacity adjustment
- Also suitable for frequency converter operation
- Flushing bush optional

Model variants

FEDOS	Material	Connections	Order no.	
			E	DX
E/DX 01	1.4571/PTFE	G 1/4	10703005	10703012
E/DX 03	1.4571/PTFE	G 1/4	10703006	10703013
E/DX 06	1.4571/PTFE	G 1/4	10703003	10703001
E/DX 1	1.4571/PTFE	G 1/4	10703059	10703061
E/DX 2*	1.4571/PTFE	G 1/4	10703060	10703062
E/DX 5*	1.4571/AF	G 1/4	10703009	10703016
E/DX 8*	1.4571/AF	G 1/4	10703010	10703017
E/DX 17*	1.4571/AF	G 1/4	10703011	10703018
E/DX 30*	1.4571/AF	G 1/4	10703004	10703002

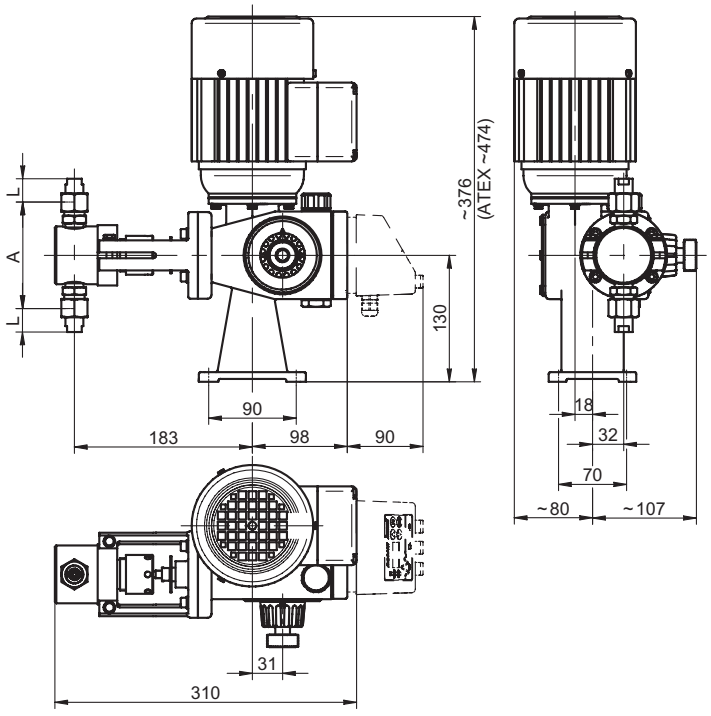
*) Only applicable for 50 Hz, 60 Hz version available on demand.

Technical data

FEDOS E/DX	01	03	06	1	2*	5*	8*	17*	30*
Capacity at max. pressure (50 Hz)	0.17 l/hr	0.31 l/hr	0.63 l/hr	1.42 l/hr	2.13 l/hr	4.8 l/hr	8.5 l/hr	17.0 l/hr	31.5 l/hr
Stroke volume	0,11 ml/stroke			0.25 ml/stroke		0.56 ml/stroke	1.0 ml/stroke	2.0 ml/stroke	3.7 ml/stroke
Max. pressure	40 bar								25 bar
Max. pressure**	100 bar						80 bar	40 bar	25 bar
Stroke frequency	26 min^{-1}	48 min^{-1}	95 min^{-1}		142 min^{-1}				
Piston-Ø	4 mm			6 mm		9 mm	12 mm	17 mm	23 mm
Stroke length	9 mm								
Suction lift	800 mbar								
Max. ambient temperature***	40 °C								
Capacity E (3~)	50 W					250 W			
Power DX (1~)	120 W								
Insulation class	F								
Protective class	IP 55								
Voltage at pulse input	5V DC (must be voltage-free for contact making)								
Voltage at level connection	5V DC (level probe with break contact for alarm/empty)								
Alarm relay, voltage-free change-over contact	250 V AC, 2,5 A or 30 V DC, 2.5 A								
Weight	approx. 11 kg			approx. 16 kg					

*) Flow rate and stroke frequency data refer to 60 Hz operation also.
**) High-pressure version
***) Ambient temperature 60 °C, for a short time 80 °C

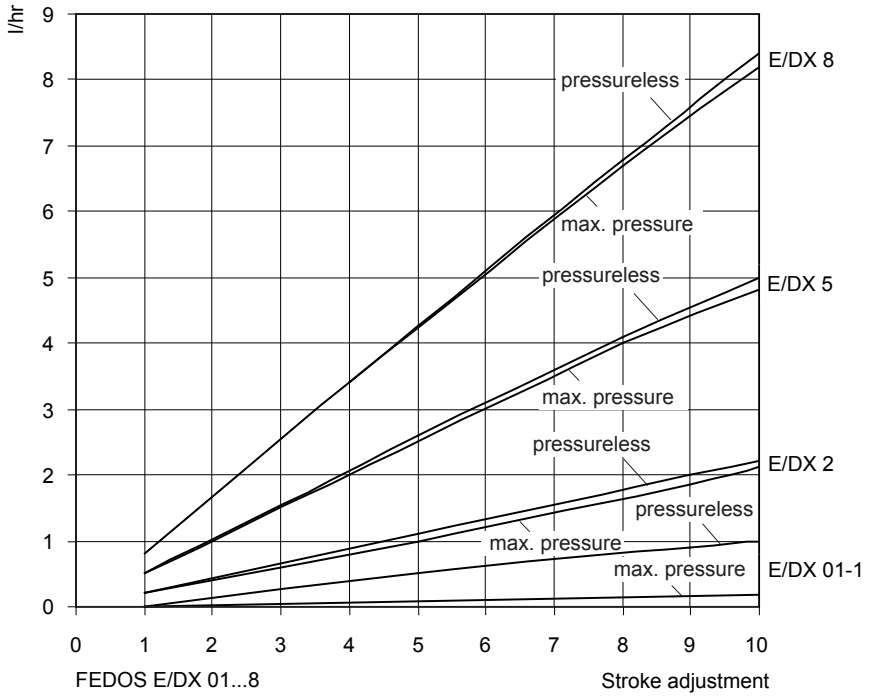
Dimensions

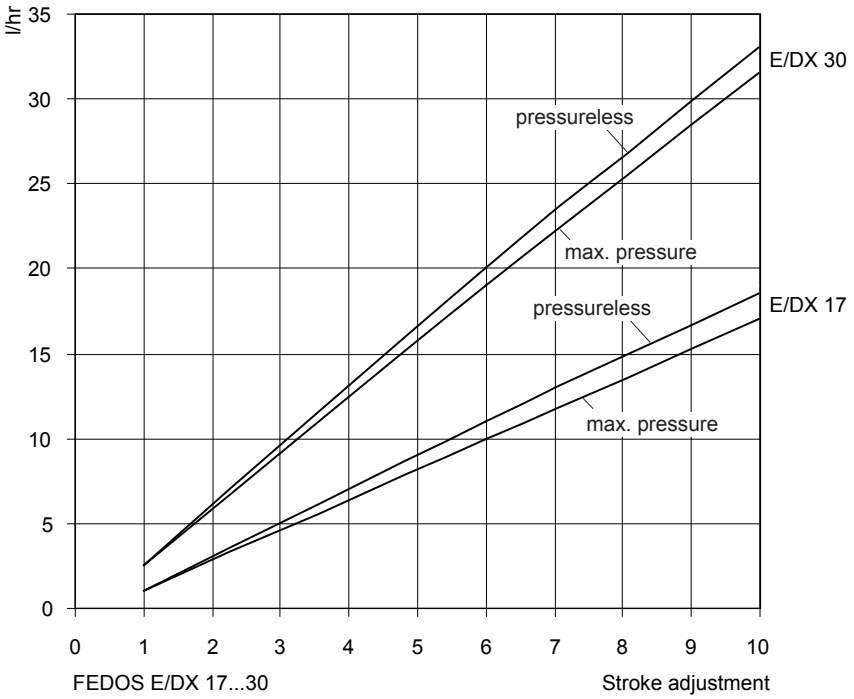


All dimensions in mm.

Performance curves

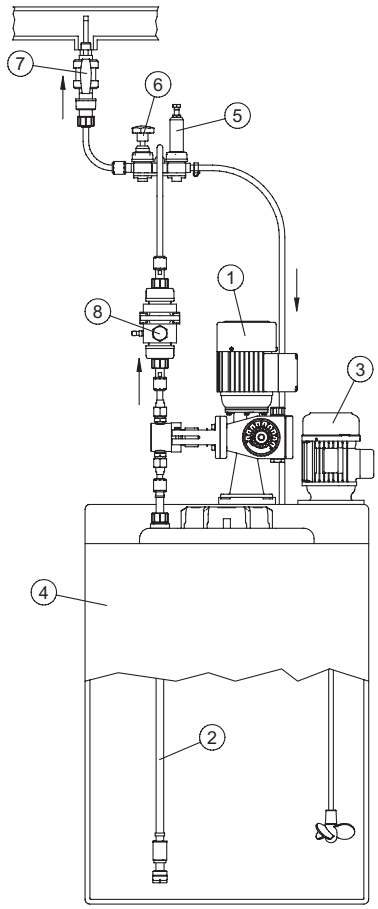
The performance curves refer to water at 20 °C (68 °F). The performance of the dosing pump depends on the viscosity of the process fluid and hydraulic installation conditions.
Dosing pumps must therefore be gauged in litres during application.





Product Information Piston Dosing Pump FEDOS E/DX

Installation examples



Legend

① FEDOS E/DX
② Suction line
③ Electric agitator
④ Chemical tank
⑤ Pressure relief valve
⑥ Diaphragm shutoff valve
⑦ Injection nozzle
⑧ Pulsation dampener

Accessories

Even the best dosing pump is capable of improvement - by means of appropriate technical surroundings. That is why a particularly comprehensive accessories programme is available which turns your dosing pump into an efficient dosing system.

As an option, the multifunctional valve PENTABLOC is available, which offers the functionalities of a back-pressure valve as well as those of a safety blowdown valve. Such functions as anti-siphon, pressure relief and flow indication and monitoring are also integrated.

For further accessories for your dosing pump, please refer to our dosing pump brochure.

To optimise the dosing process, we recommend back-pressure and pressure-relief valves. They are used

- to increase the dosing accuracy in the presence of fluctuating back pressures.
- for long dosing lines in order to prevent excess delivery. (The accelerated medium continues moving on account of its own inertia even when the delivery stroke has already ended.)
- to prevent siphoning through the dosing pump if the suction pressure is higher than the system pressure.
- to prevent the system pressure from rising to an impermissibly high level on the discharge side of the dosing pump; this may for example be caused by the accidental closing of valves while the pump is in operation or a clogged injector.

Lutz-Jesco GmbH
P.O. Box 10 01 64
30891 Wedemark
Phone: +49 5130 5802-0
Fax: +49 5130 580268
E-mail: info@lutz-jesco.com
Internet: www.lutz-jesco.de
24h-Hotline:
+49 5130 580280

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

Piston Metering Pump REKOS KR

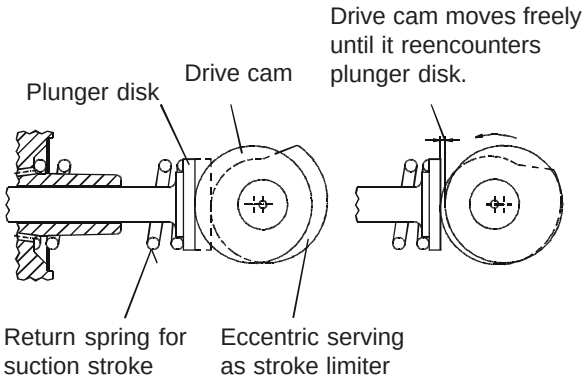
Abrasive media

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

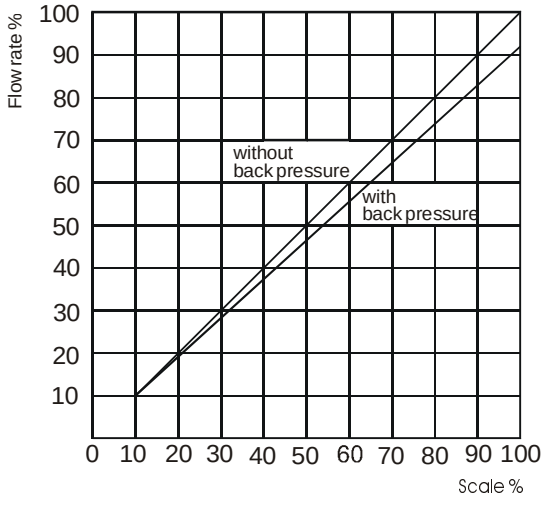
For fluids which are solid when cold the metering head can be fitted with warm water, steam or electrical heating.

Thyristor controller

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

For other accessories - see "Installation example".

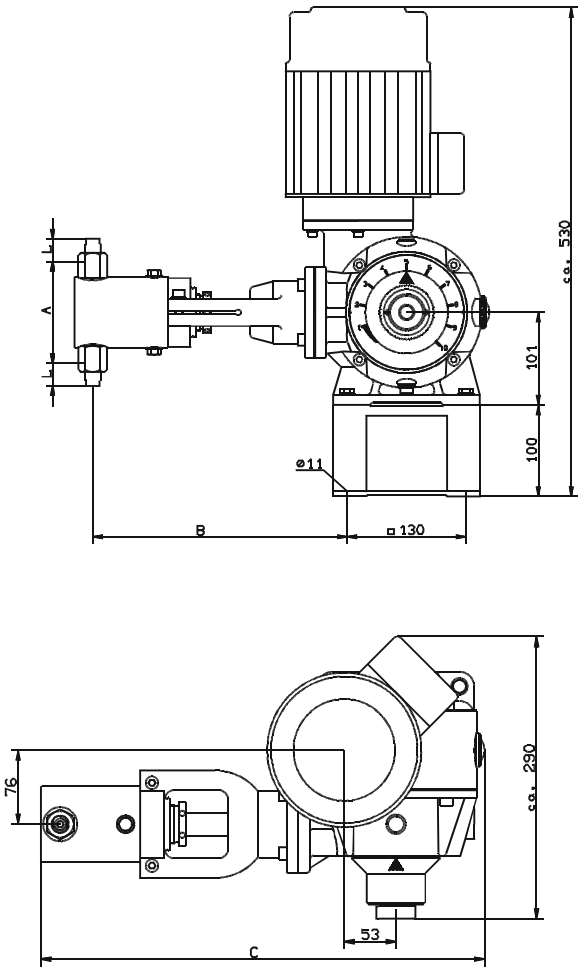
Performance curves



Piston Metering Pump REKOS KR

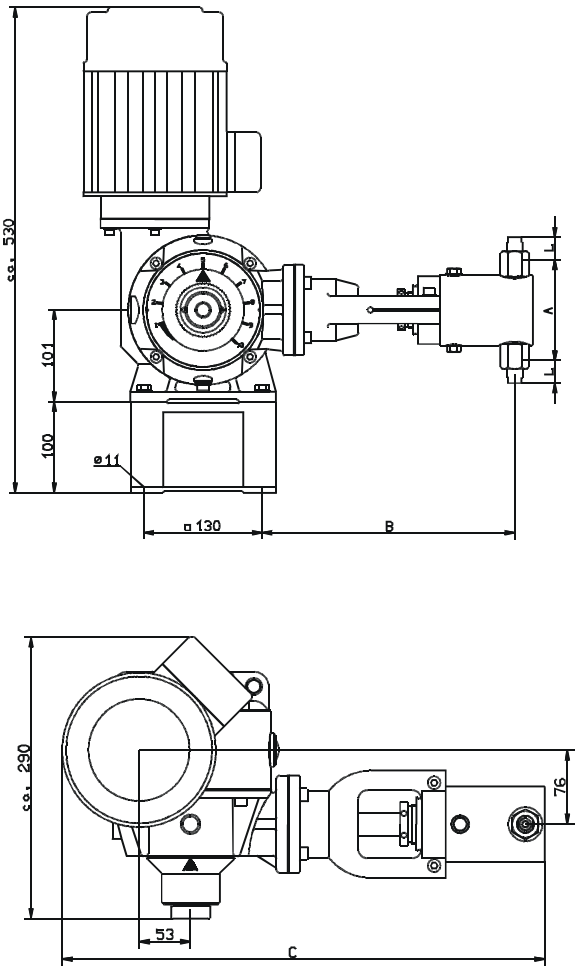
Simplex pumps

Left-hand version



KR 8 L . . . KR 725 L

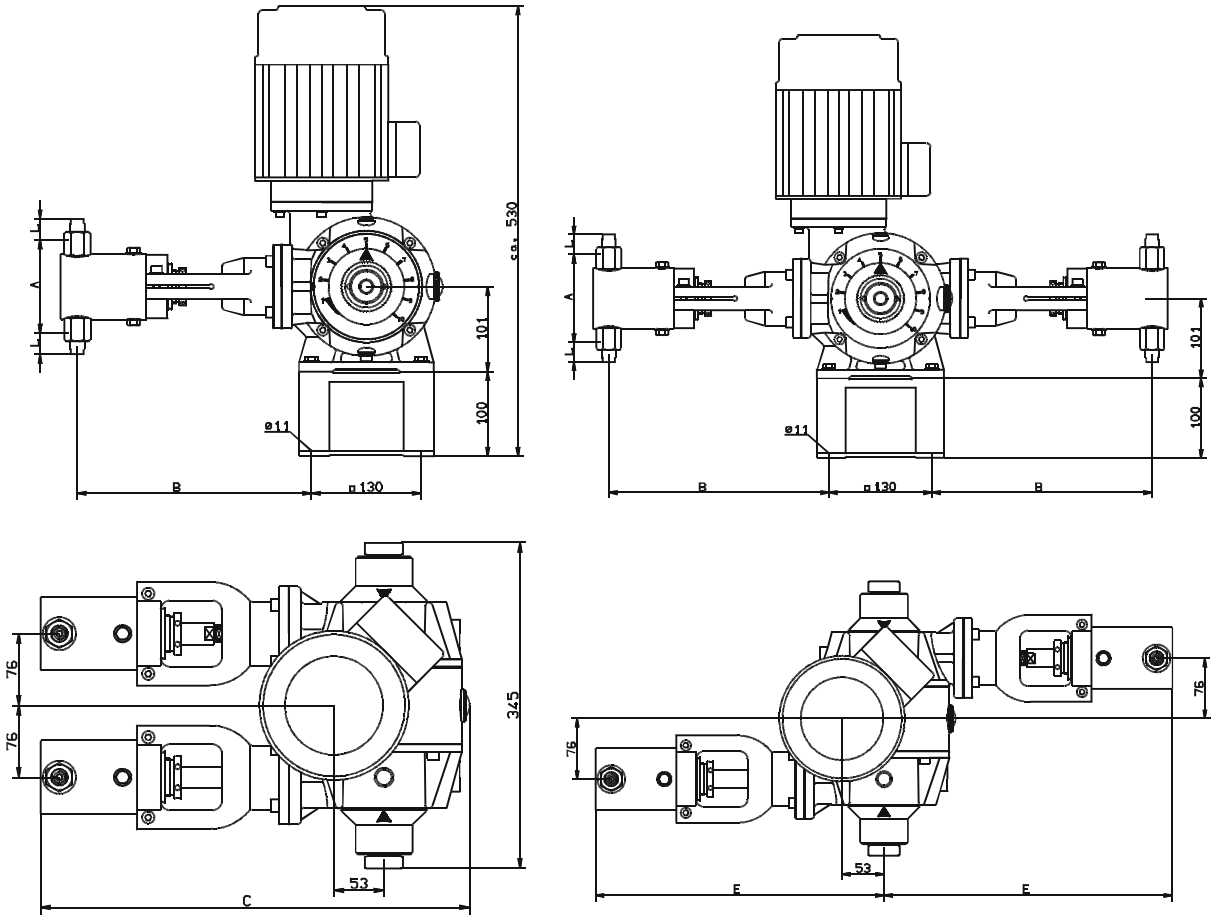
Right-hand version



KR 8 R . . . KR 725 R

Piston Metering Pump REKOS KR

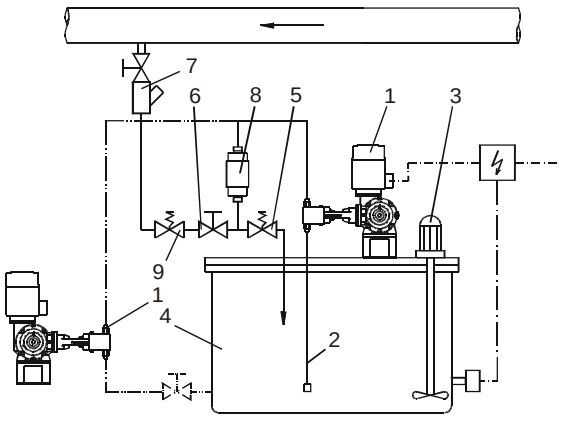
Duplex pumps



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		

Piston Metering Pump REKOS KR

Selection tables

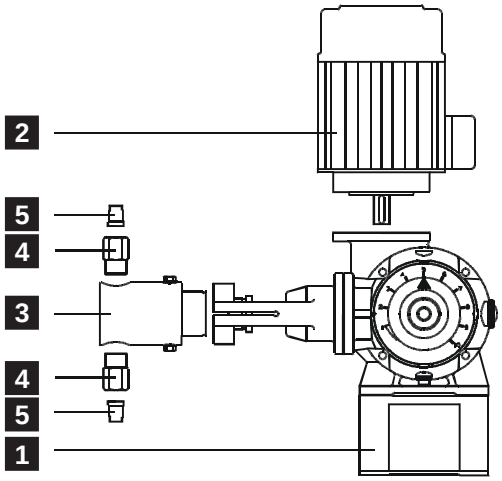
To offer the user a large variety of different versions, JESCO metering pumps have been divided into the main functional groups. They can thus be assembled according to the user's individual requirements.

The user can combine the pump from the following components:

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

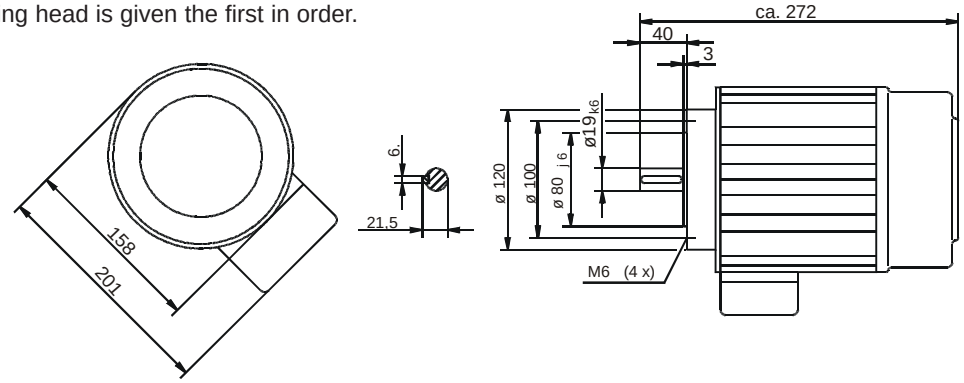
4 Valves **5** Connections

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.	Classes 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.

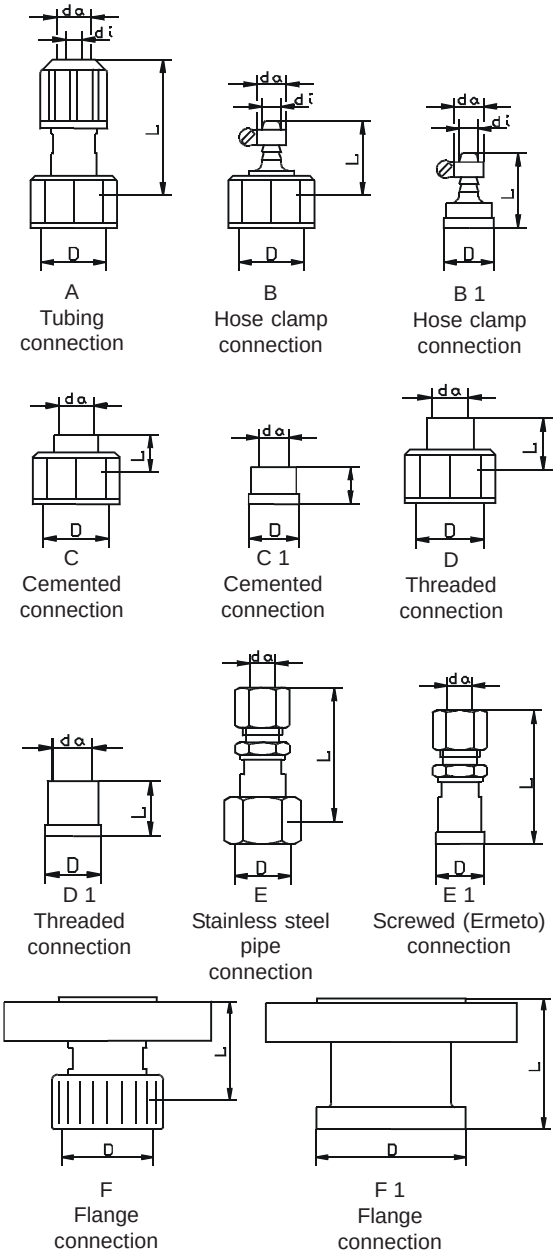
Piston Metering Pump REKOS KR

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	—	—

Piston Metering Pump REKOS KR

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
	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

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.

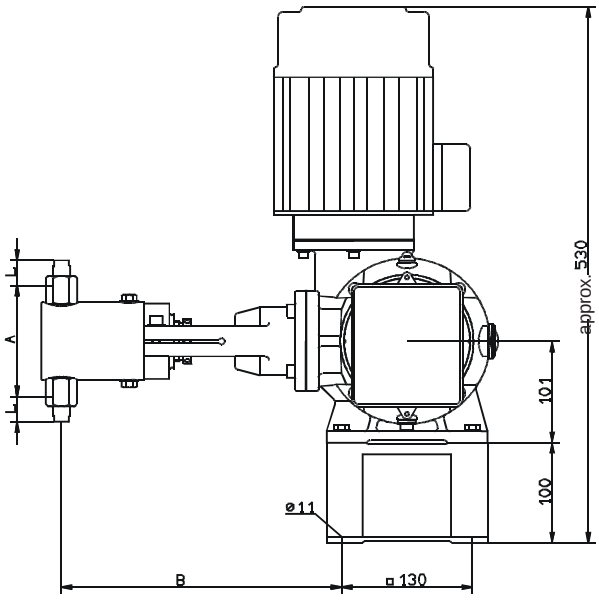
Two models with different technical data are available (see pages 10 and 11).

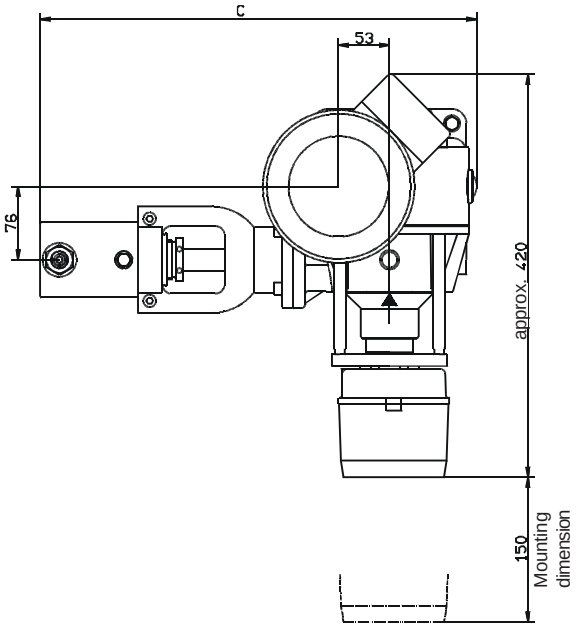
On request, "increased safety" and "air-tight" explosion-proof servomotors can be offered.

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



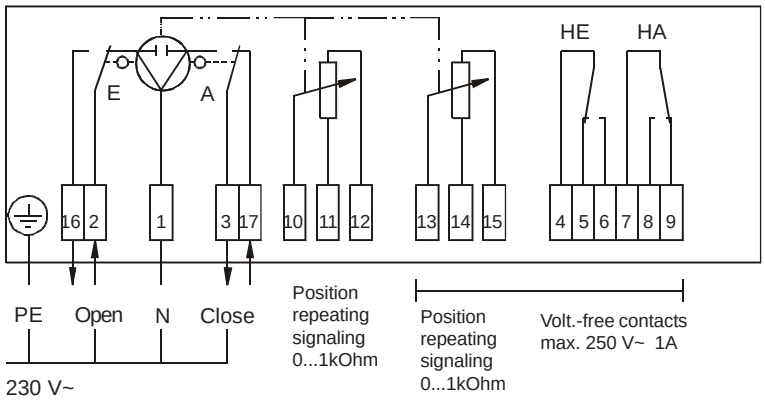


Technical data - types AR 30W23 and AR 30W23S

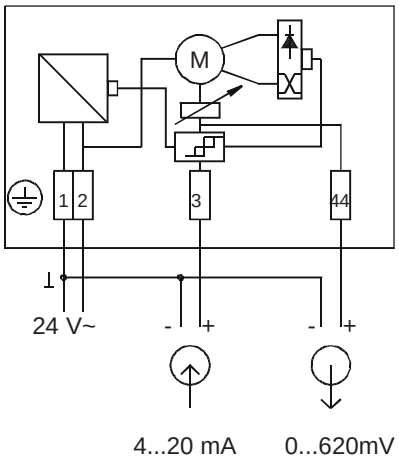
Type	AR 30W..	AR 30W..S
Design	Reversible a.c. motor with self-locking reduction gear.	
Use	For controllers with switching output (3-point control)	For controllers with continuous output (2...10V or 4...20mA)
Auxiliary voltage	230V~ ± 15% 50...60 Hz	24V ~ ± 20% 50...60 Hz
Control		2...10V or 4...20mA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



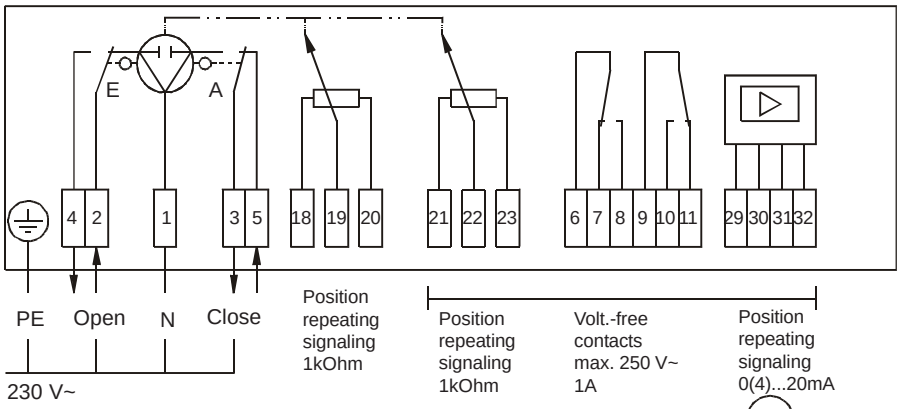
Piston Metering Pump REKOS KR-ATE

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	

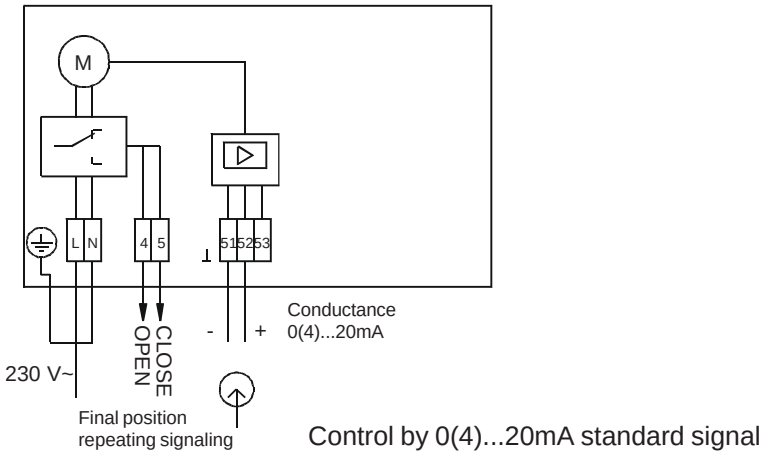
Electrical wiring diagrams

WAN 1



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

WAN 1-S



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

Piston Metering Pump KARDOS N

General
KARDOS stands for a group of precision metering pumps which have been developed especially for applications with a high demand for accuracy, reliability and flexibility in a wide performance range.

Versions
The symmetrically designed gearbox allows the arrangement of two metering heads on the same level and the stacking of three heads above one another, thus enabling a maximally 6-head pump. Each metering head is 100% adjustable independently. Any speed adjustment to the main drive has a simultaneous effect on all metering - heads, but the relative volume ratios remain unchanged.

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

Type N...L (Symbol)

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

Type N... R (Symbol)

Duplex metering pumps are available with the metering heads opposite to each other.

Type ZN... (Symbol)

Metering head
The correct choice of the metering head depends on the aggessivity of the chemical, its temperature and viscosity, and on the system pressure.
Environmental factors (rough operating conditions, radiant heat, etc.) must also be taken into consideration.
Plastic metering heads can be used up to 10 bar ; stainless steel metering heads allow operating pressures of up to max. 400 bar. Metering head pistons are available in ceramic or stainless steel material (see selection table).

Suction and discharge valves
Suction and discharge valves can be supplied as double-ball or spring-loaded single-ball valves. Spring-loaded valves are to be recommended if the chemical used has a viscosity exceeding 400 mPas.

Flushing attachment
As a standard the metering heads are provided with a flushing lantern. Flushing water should be connected if the chemical is very aggressive, in order not to cause any corrosion damage due to unavoidable leakages.
If the medium is abrasive, the flushing water will prevent premature failure of the piston and packing in the event of severe leakage. In this case, the pressure of the flushing water should be higher than that of the medium.

Piston Metering Pump KARDOS N

Technical data

KARDOS N...			16	36	56	72	130	225	320	530	750	1300	2500	4200
Max. pressure		plastic	10										65	3
[bar]		SS	400		325	250	130	80	52	32	24	13	6.5	3
Flow rate at max.		[l/h]	15	34	53	68	125	215	306	500	715	1225	2400	4400
pressure		[ml/stroke]	2.5	5.6	8.8	11.3	20.7	35	51	83	119	204	392	733
Piston- ø		[mm]	8	12	15	17	23	30	36	46	55	72	100	135
Stroke frequency		[1/min]	100											
Suction lift		[mbar]	120											
Motor power		[kW]	selectable 0.55 - 0.75 - 1.1- 1.5 - 2.2											
Weight [kg]	Metering head	plastic	4				8				15		20	30
		SS	7				17				34	38	45	78
	Simplex gear	manual	95				96				97		98	99
		ATE	100				101				102		103	104
	Duplex gear	manual	135				137				139		141	143
		ATE	145				147				149		151	153

Abrasive media

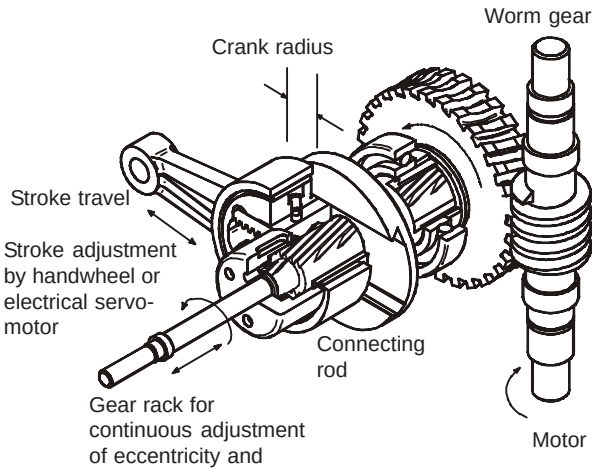
Piston packings are available as:
1. PTFE-braided packing and
2. Aramid-kevlar packing

The standard PTFE packing can be used for basically all chemicals up to a pressure of 100 bar. At higher pressures, leckage may become more severe.
In the case of abrasive media or pressures much higher than 100 bar, it is advisable to use aramid-kevlar packings if compatible with the chemical used. Aramid-kevlar is not resistant to concentrated acids ar alkalis. If these are to be metered against higher pressures, the PTFE packing must be used despite the more severe leakage, and, possibly, the flushing attachment must be connected.

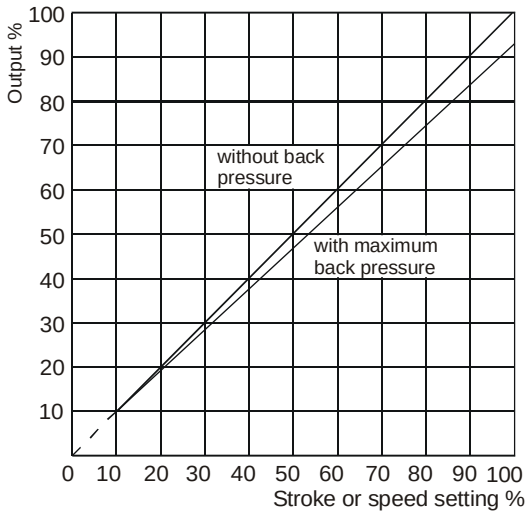
Drive

The drive consists of an oil-filled worm gear with single-stage reduction.
The heart of the KARDOS drive is the radially displaceable cam. It can be adjusted via the helical gear rack according to the desired flow rate. An advantage of this system is that, after stroke adjustment, there is no relative movement of the sliding parts. The cam acts like a rigid crank pin.
The drive is normally a 3-phase motor, although variable DC motors and explosion-proof motors are available. The stroke length, which determines the flow rate, can be varied linearly during operation between 0 and 100%. The standard version is equipped with manual adjustment. Upon request, electrical remote adjustment (ATE) is available.
By combining the variable drive motor and the remotely settable stroke length adjustment, two independent control points for the metering pump are available, and enable disturbance variable superimposition in automatic control systems.

Functional diagram



Performance curves



Accessories

Stroke counter
Upon request, the metering pump can be fitted with an inductive scanner button to count the strokes.

Proportional metering
e.g. as a function of water meter contacts, where every contact initiates a positively adjustable pump running time of 1 to 30 seconds (see data sheets MB 1 34 01).

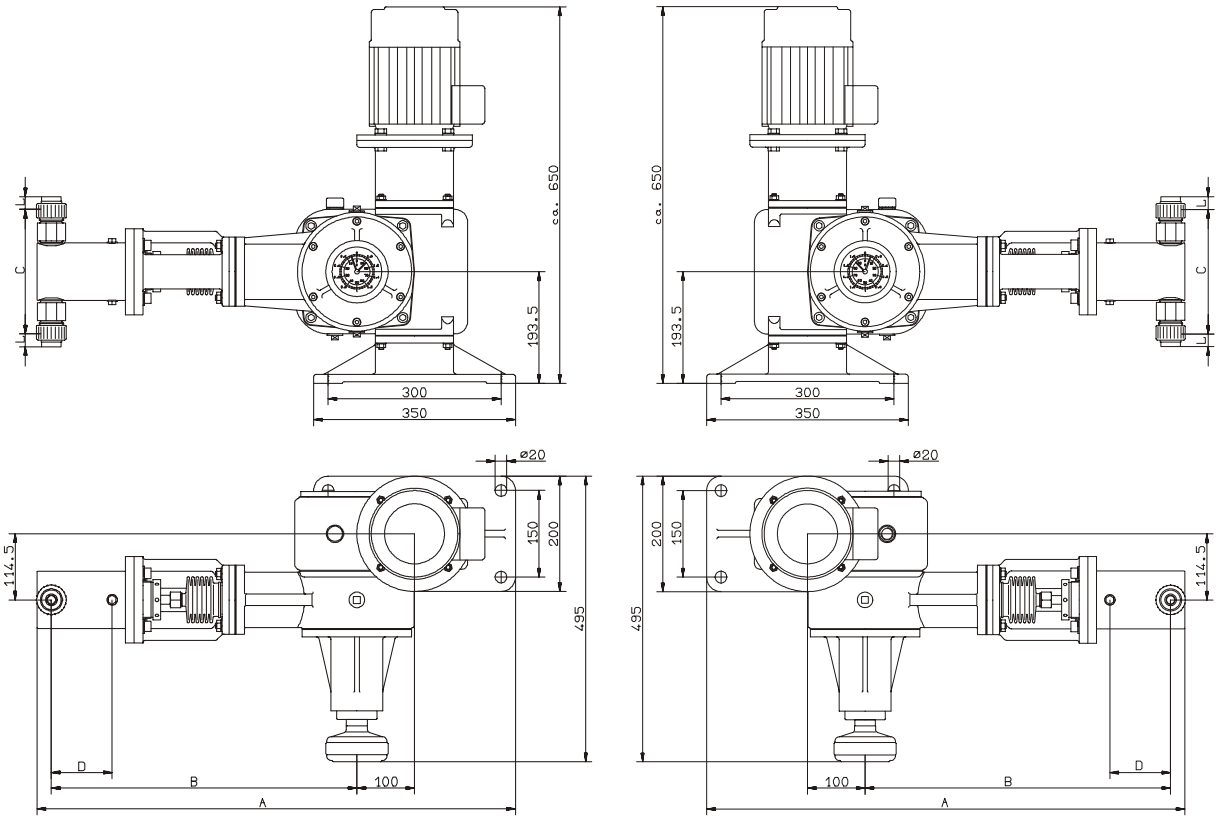
Metering head heating
For fluids which are solid when cold the metering head can be fitted with a warm water, steam or electrical heating.

Remote control
Electrical, reversible sevomotor for remote adjustment of the stroke length via a manual key or via a 3-point step controller.
See data sheet MB 1 09 02 / 9 for details.

Dimension table for simplex and duplex pumps

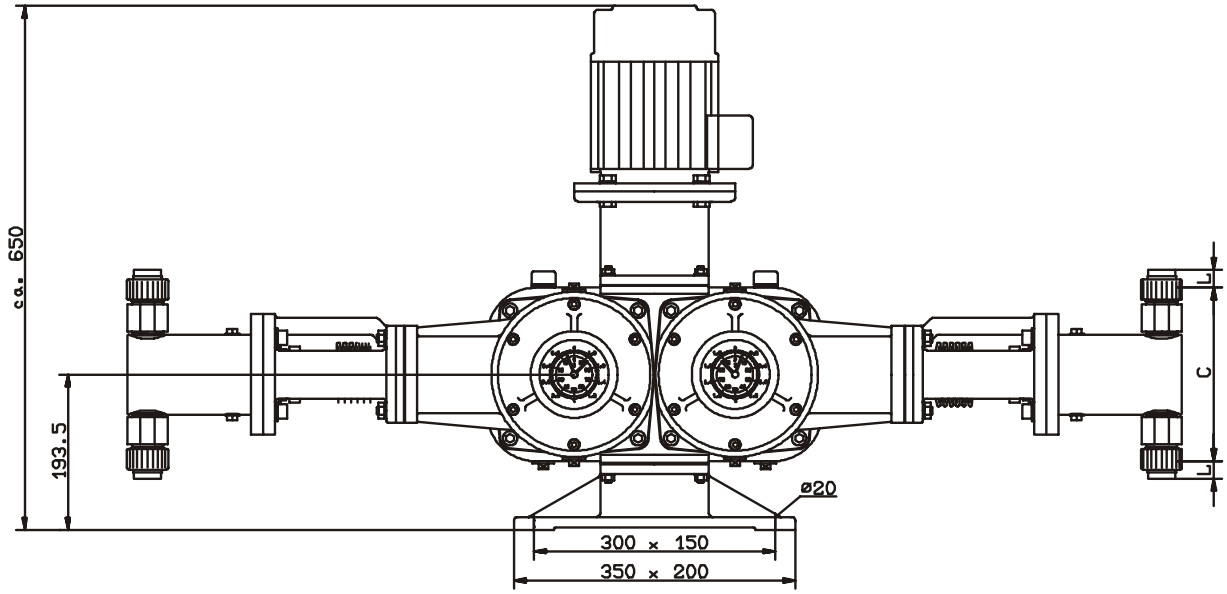
Pump	A		B		C		D		E	
Type	Plastic	SS	Plastic	SS	Plastic	SS	Plastic	SS	Plastic	SS
N 16 ... 72	782	782	482	482	138	108	80	80	1215	1215
N 130 ... 530	840	830	530	530	258	219	115.5	105.5	1330	1310
N 750	860	835	492	505	226	218	70	83	1370	1320
N 1300	885	835	517	505	230	218	95	83	1420	1320
N 2500 ... 4200	900	875	530	530	330	308	108.5	108.5	1450	1400

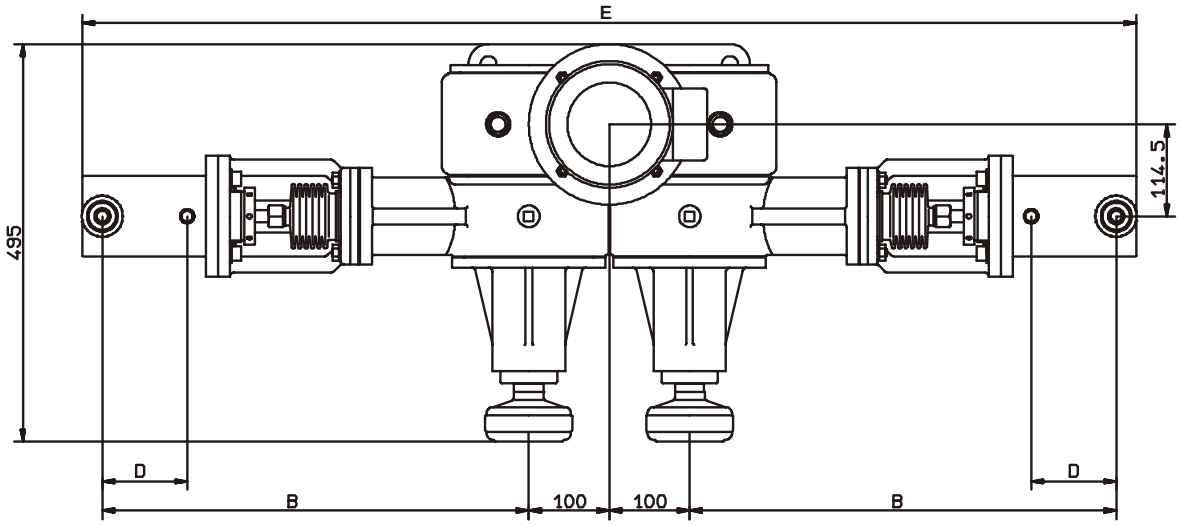
Simplex pump



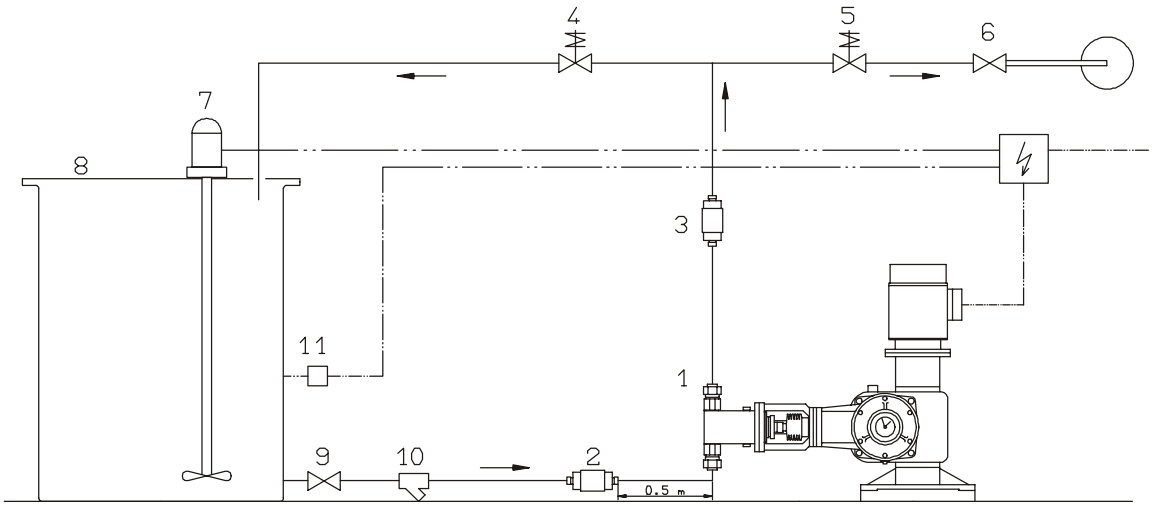
Piston Metering Pump KARDOS N

Douplex pump





Piston Metering Pump KARDOS N



1.	Metering pump KARDOS N	MB 1 09 02	
2.	Pulsation dampener for suction line	MB 1 27 01	
3.	Pulsation dampener for discharge line	MB 1 27 01	
4.	Relief valve	MB 1 25 01	
5.	Backpressure valve	MB 1 25 01	
6.	Injection nozzle	MB 1 23 01	
7.	Electric agitator	MB 1 36 01	
8.	Polyethylene tank	MB 1 20 01	
9.	Shutoff valve	MB 1 24 01	
10.	Dirt trap	MB 1 22 02	
11.	Low level protection	MB 4 10 01	

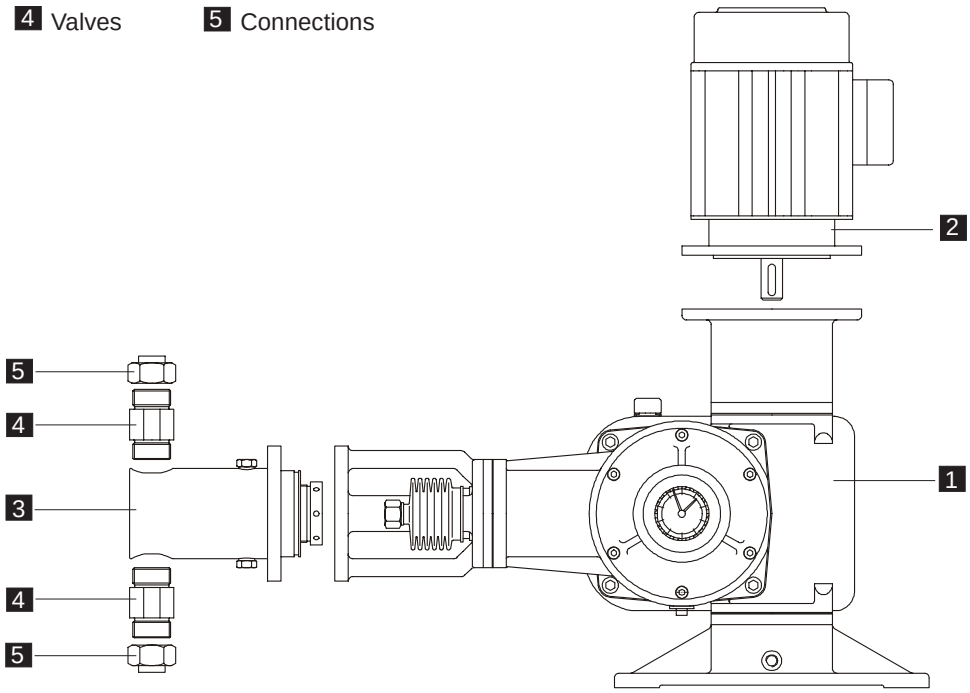
The accessories shown may be fitted as required.

Selection tables

In order to offer the user a wide variety of pumps, the metering pumps have been divided into the most important functional groups. These can be combined individually as required.

The numbers of the pump drawing refer to the corresponding selection tables.
More than 2 metering heads or superimposed metering heads on request.

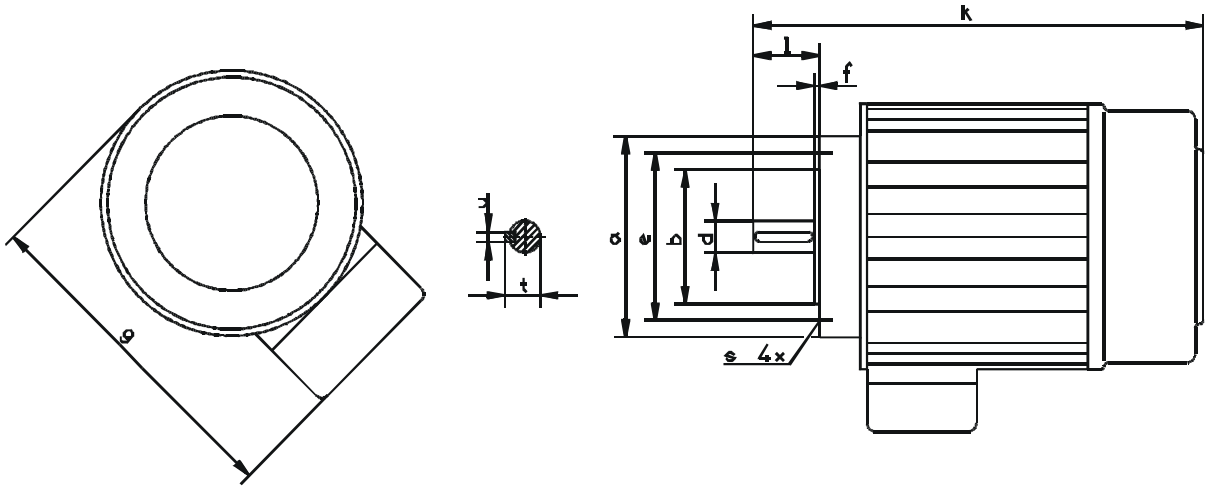
1 Gear
2 Motor
3 Metering head
4 Valves
5 Connections

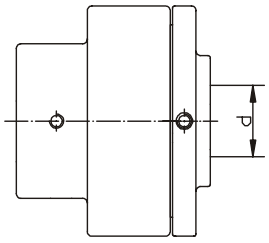


Piston Metering Pump KARDOS N

1 Gear				
	Left-hand version		Right-hand version	
	Output adjustment			
Pump type	manual	ATE	manual	ATE
N 16 ... 72	29661	29671	29666	29676
N 130 ... 530	29662	29672	29667	29677
N 750 ... 1300	29663	29673	29668	29678
N 2500	29664	29674	29669	29679
N 4200	29665	29675	29670	29680

Gear for multiple-head pumps upon request.





Coupling

2 Motor																
Motor type	Voltage 380/220 V, frequency 50 Hz, Y circuit, ISO class B, IP 54															
	Motor Assbly PartNo	Motor Part No	Current consumpt. [A]	Power [kW]	Speed [1/min]	Dimensions [mm]										
						a	g~	s	e	f	b	d	l	u	t	k~
RF0.55/4-7	31068	77687	2.6/1.55	0.55	1410	200	219	11.5	165	3.5	130	19	40	6	21.5	267
RF0.75/4-7	31069	77689	3.4/2.0	0.75	1400	200	219	11.5	165	3.5	130	19	40	6	21.5	267
RF1.1/4-72	31070	77137	4.8/2.8	1.1	1420	200	239	11.5	165	3.5	130	24	50	8	27	318
RF1.5/4-72	31071	77133	6.3/3.7	1.5	1420	200	239	11.5	165	3.5	130	24	50	8	27	318
RF2.2/4-75	31072	78632	8.5/4.9	2.2	1440	200	253	M10	165	3.5	130	28	60	8	31	365

Other motor versions upon request.

Determination of motor power (approximation values for single and duplex pumps).

$P = a \times Q \times (p+l)$

P [Watt] p [bar] pressure

Q [l/h] a = 0.125

3 Metering head			
Packing material*		PTFE silk packing	
Metering head material		Plastic	1.4571
Piston material		Ceramic	1.4571
Pump type	Piston-ø		
16	8	25272	25296
36	12	25273	25303
56	15	25274	25310
72	17	25275	25317
130	23	29721	25348
225	30	29722	26272
320	36	29723	26276
530	46	29725	26284
750	55	29726	26296
1300	72	29728	26306
2500	100	29730	29737
4200	135	29733[1)]	29740

* Other materials upon request.

[1)] Piston material SS 1.4571

4 Valves											
Seal material		Viton				Hypalon				AF	
Valve material		Plastic		1.4571		Plastic		1.4571		1.4571	
Valve type	Pump type	S	D	S	D	S	D	S	D	S	D
Double-ball valves	N 16 ... N 72	18185	18186	26967	26968	18187	18188	24035	24036	26967	26968
	N 130 ... N 530	23698	23701	29785	29786	26697	23700	23699	23702	28839	28640
Spring-loaded single-ball valves	N 16 ... N 72	25162	27517	25408	23409	25161	27516	25163	25164	26775	28776
	N 130 ... N 530	24112	24113	29787	29788	24114	24115	22880	24102	28841	28842
	N 750 ... N 1300	23704	23704	25681	25681	23703	23703	23705	23705	—	—
	N 2500 ... N 4200	24073	24073	29961	29961	24072	24072	24071	24071	—	—

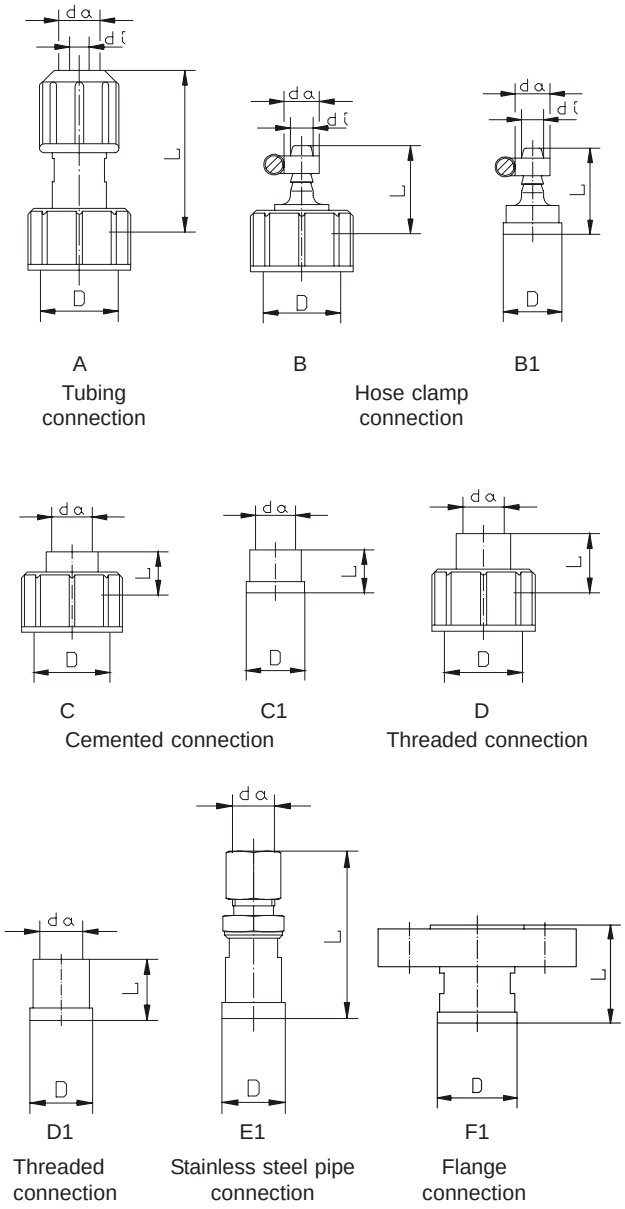
S = Suction valve

D = Discharge valve

AF = asbestos-free fiber packing

Piston Metering Pump KARDOS N

5 Connections								
Pump type	Dimensions						Part No. material	
	DN	Abb.	ø D	di	da	L	Plastic	1.4571
N 16 - 72	4	A	G 3/4	4	6	35	19480	—
	6	A	G 3/4	6	12	55	19175	—
	6	A	G 3/4	6	8	30	28159	—
	6	B	G 3/4	6	12	30	23342	—
	6	B1	ø 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	D1	ø 20	—	G 1/4	20	—	82105
	6	E1	ø 20	—	8	20	—	27519
	8	E1	ø 20	—	10	20	—	23427
	10	E1	ø 20	—	12	20	—	23428
N 130 - 530	10	B	G 11/4	9	15	41	25921	25925
	15	B	G 11/4	16	26	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 11/4	—	G 3/8	22	25930	27037
	15	D	G 11/4	—	G 1/2	22	25943	25944
N 750 - 1300	25	B1	68	25	34	95	24034	24063
	25	C1	68	—	32	40	21488	—
	32	C1	68	—	40	40	21491	—
	25	D1	68	—	G 1	40	—	27040
	32	D1	68	—	G 1 1/4	40	32759	25252
	25	E1	68	—	28	60	—	27852
	25	F1	68	—	—	64	25622	25623
N 2500 - 4200	40	C1	100	—	50	100	21548	—
	40	D1	100	—	G 11/2	100	—	25255
	40	F1	100	—	—	100	27100	27101
	50	C1	100	—	63	100	21529	—
	50	F1	100	—	—	100	27103	27104
	50	D1	100	—	G2	100	—	27046



Pump selection

It can be seen from MB 1 09 02 / 1 that the KARDOS N 4200 metering pump is suitable for this application. Since an abrasive medium is involved, the packing material should be aramid and the metering head and piston should be made of stainless steel 1.4571. Hypalon seals are resistant to this medium and are therefore satisfactory.

Order example

A metering pump is required for injecting lime slurry. The 3.400 l/h of lime slurry at 20° C have to be metered against 3bar. The output has to be manually adjustable.

Order

The metering pump consists of the following modules:

1	Gear:	Part No. 29665
2	Drive motor:	Part No. 31072
3	Metering head:	Part No. 29740 with aramid kevlar packing
4	Suction valve: Discharge valve:	Part No. 24071 Part No. 24071
5	Connections suction and discharge side, 2 off	Part No. 27101

Piston Metering Pump KARDOS N - ATE

General

Metering heads with a servomotor are used as correcting elements in automatic control systems or control lines.
A reversible AC motor allows to adjust the stroke length for each metering head, in the case of multiple-head pumps separately for each head. Manual adjustment is possible by using the hand wheel.
This type of pump is specified by adding "ATE" to the name, e.g. KARDOS N 65-ATE.

Technical data of the servomotor

Design:	reversible AC motor with reduction gear
Mains connection:	220 V, 50 Hz approx. 10 VA
Protection class:	IP 54 ISO Cl. B
Ambient temperature:	- 15°C ... + 60°C
Regulating distance:	50 rotations
Regulating time:	2 minutes
Position indication:	mounted handwheel with scale
Remote display:	integrated potentiometer with 1000 Ohm overall resistance
Weight:	extra weight 3 kg

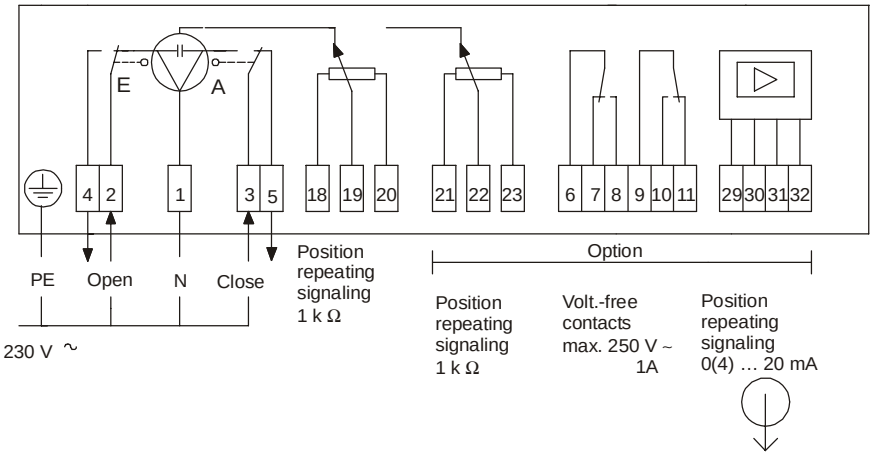
Other versions of power supply or possibilities of control upon request.

Additional equipment:

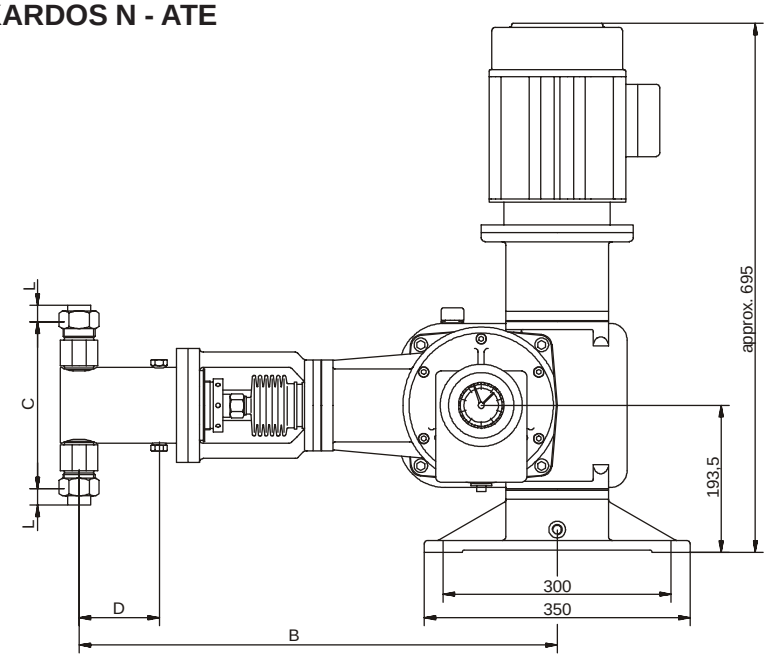
1. other repeating signaling resistance than 1000 Ohm
2. higher protection class IP 65
3. other power supply

Wiring diagram

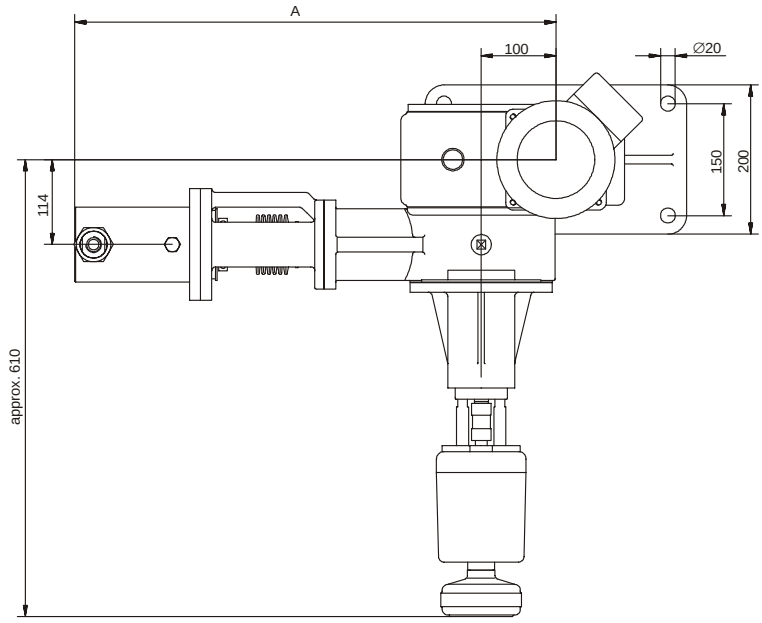
Caution!
The ATE servomotor must not be in operation when the pump motor is not working. Therefore the main motor is to be locked electrically.



Dimensions KARDOS N - ATE



For dimension L refer to table 5



Pumpe type	Stainless steel metering head				Plastic metering head			
	Dimensions							
	A	B	C	D	A	B	C	D
N 16 ... 72	782	482	108	80	782	482	138	80
N 130 ... 530	830	530	219	105.5	840	530	258	115.5
N 750 ... 1300	855	530	198	108.5	885	530	246	108.5
N 2500 ... 4200	875	530	308	108.5	900	530	330	108.5

KARDOS KN

General

KARDOS stands for a group of precision metering pumps which have been developed especially for applications with a high demand for accuracy, reliability and flexibility in a wide performance range.

Versions

The symmetrically designed gearbox allows the arrangement of four metering heads on the same level and the stacking of three heads above one another, thus enabling a maximally 12-head pump. Each metering head is 100% adjustable independently. Any speed adjustment to the main drive has a simultaneous effect on all metering heads, but the relative volume ratios remain unchanged.

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

Type KN...L (Symbol)

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

Type KN...R (Symbol)

Duplex metering pumps are available with head combinations as indicated in the tables. In the standard version the heads are arranged opposite to each other.

Type ZKN... (Symbol)

Metering head

The correct choice of the metering head depends on the aggessivity of the chemical, its temperature and viscosity, and on the system pressure.

KMS piston-diaphragm system

Piston-diaphragm heads are also available in three sizes. These are recommended if, despite higher pressures, leakage-free metering is required because the chemical is toxic, aggressive or abrasive. Piston-diaphragm heads are separated from the gear oil, and have their own hydraulic system (glycerine).

Piston- diaphragm heads may also be retrofitted in existing installations (see data sheets MB 1 40 01).

Technical data

KARDOS KN			10	23	35	45	85	150	210	350	500	850	1460
Max. pressure [bar]		Plastic	10									6.5	3
		SS	400	250	160	125	65	40	25	16	11	6.5	3
Flow rate at max. pressure		[l/h]	9,9	22	35	45	82	140	200	325	465	800	1550
		[ml/stroke]	1.5	3.4	5.3	6.8	12.5	21.2	30.5	50	71.3	122	235
Piston ø		[mm]	8	12	15	17	23	30	36	46	55	72	100
Stroke frequency		[1/min]	110										
Suction lift		[mbar]	120										
Motor power		[kW]	0.55 - 0.75 - 1.1 depending on power consumption										
Weight (kg)	Metering head	Plastic	2					3				4	5
		SS	7					10				15	18
	Simplex gear	manual	45					46				47	48
		ATE	49					50				51	52
	Duplex gear	manual	55					57				59	61
		ATE	63					65				67	69

Suction and discharge valves

Suction and discharge valves can be supplied as double-ball, single-ball or spring-loaded single-ball valves, depending on the size of the metering head. Spring-loaded valves are to be recommended if the chemical used has a viscosity exceeding 400 mPas.

Flushing attachment

As a standard the metering heads are provided with a flushing attachment. Flushing water should be connected if the chemical is very aggressive, in order not to cause any corrosion damage due to unavoidable leakages.
If the medium is abrasive, the flushing water will prevent premature failure of the piston and packing in the event of severe leakage. In this case, the pressure of the flushing water should be higher than that of the medium.

Abrasive media

Piston packings are available as:
1. PTFE-braided packing and
2. Aramid-kevlar packing

The standard PTFE packing can be used for basically all chemicals up to a pressure of 100 bar. At higher pressures, leakage may become more severe and a special enclosure necessary.
In the case of abrasive media or pressures much higher than 100 bar, it is advisable to use aramid-kevlar packings if compatible with the chemical used. Aramid-kevlar is not resistant to concentrated acids ar alkalis. If these are to be metered against higher pressures, the PTFE packing must be used despite the more severe leakage, and, possibly, the flushing attachment must be connected.

Drive

The drive consists of an oil-filled worm gear with single-stage reduction.
The heart of the KARDOS drive is the radially displaceable cam. It can be adjusted via the helical gear rack according to the desired flow rate. An advantage of this system is that, after stroke adjustment, there is no relative movement of the sliding parts. The cam acts like a rigid crank pin.
The drive is normally a 3-phase motor, although variable DC motors and explosion-proof motors are available. The stroke length, which determines the flow rate, can be varied linearly during operation between 0 and 100%. The standard version is equipped with manual adjustment. Upon request, electrical and pneumatic (ATP) remote adjustment (ATE) are available.
By combining the variable drive motor and the remotely settable stroke length adjustment, two independent control points for the metering pump are available, and enable disturbance variable superimposition in automatic control systems.

Accessories

Stroke counter

Upon request, the metering pump can be fitted with an inductive scanner button to count the strokes.

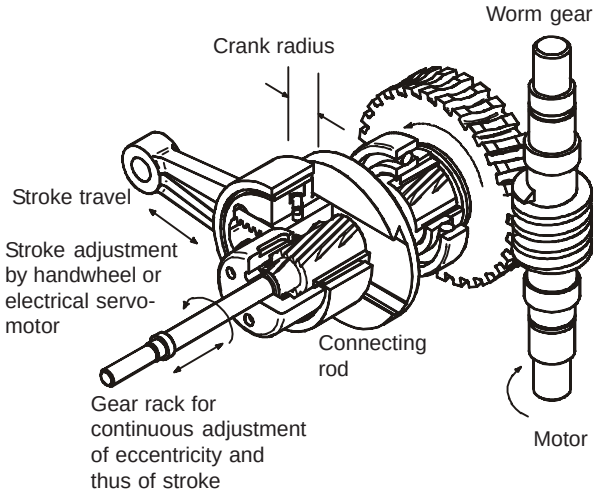
Metering head heating

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

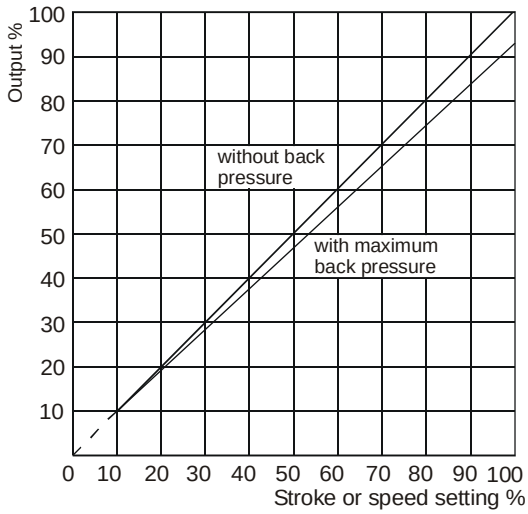
Remote control

Electrical, reversible sevomotor for remote adjustment of the stroke length via a manual key or via a 3-point step controller.
See data sheet MB 1 09 01 / 9 for details.

Functional diagram



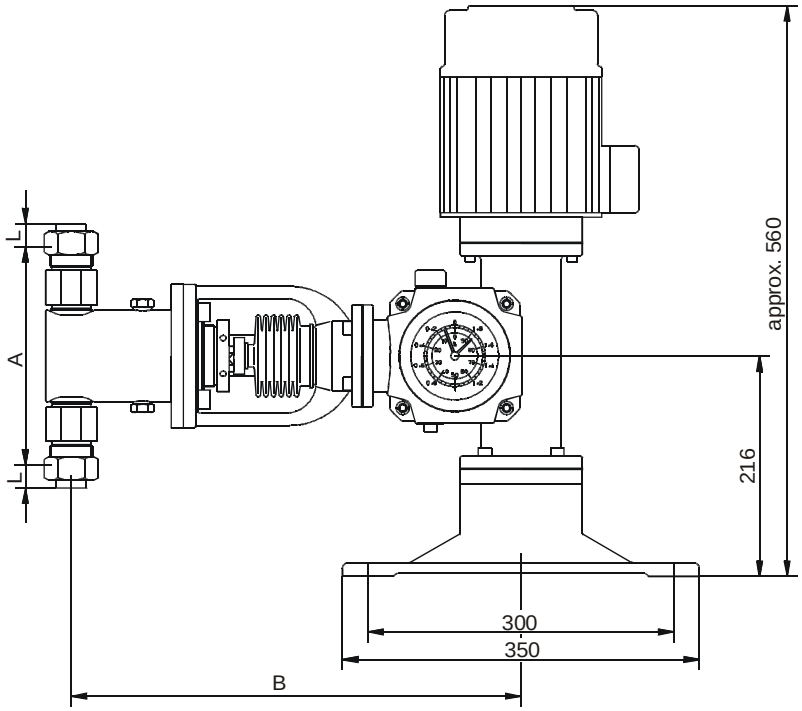
Performance curves

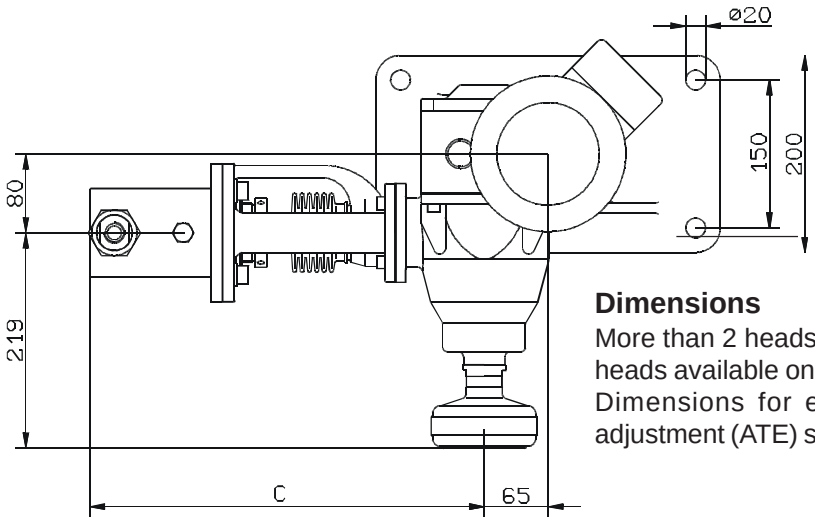


Dimensions

Pump type	A		B		C		D	
	Plastic	SS	Plastic	SS	Plastic	SS	Plastic	SS
KN 10 ... 45	138	101	413	413	376	368	882	866
KN 85	148	111	413	413	376	368	882	866
KN 150 ... 350	248	215	431	441	407	401	944	932
KN 500 ... 850	218	198	446	454	464	444	1058	1018
KN 1460	233	238	460	457	479	454	1088	1038

Simplex pump





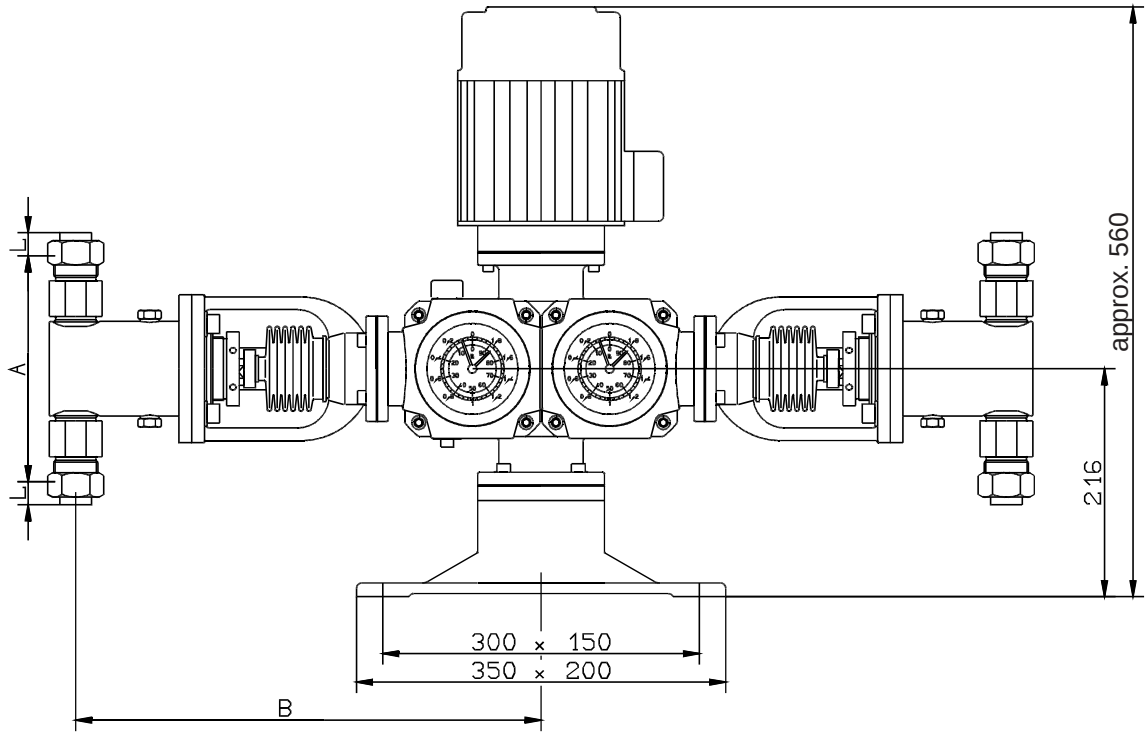
Dimensions

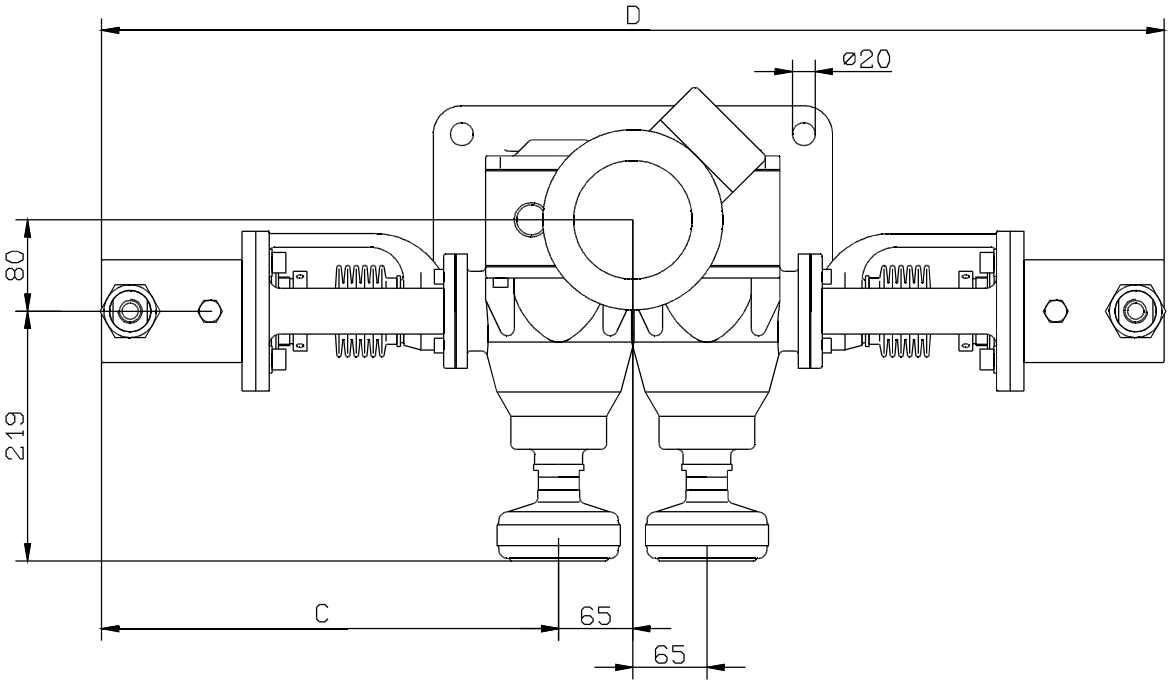
More than 2 heads or superimposed heads available on request.

Dimensions for electrical remote adjustment (ATE) see MB 1 09 01 / 9.

KARDOS KN

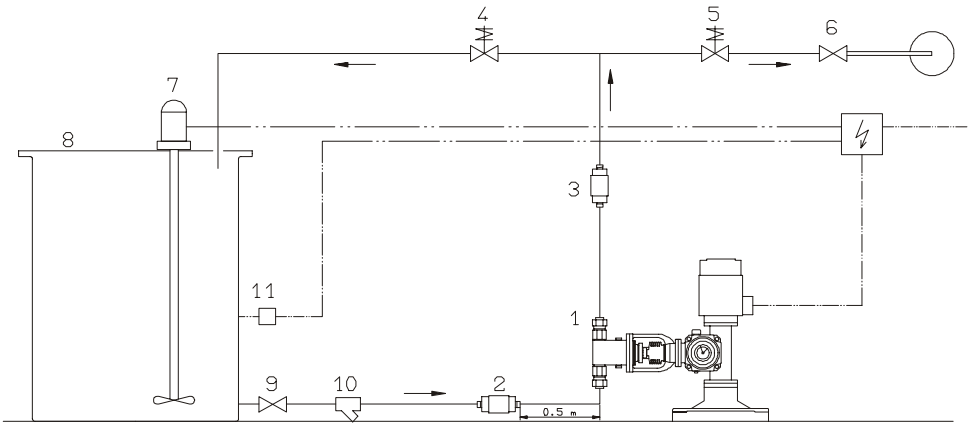
Duplex pumps





KARDOS KN

Installation example



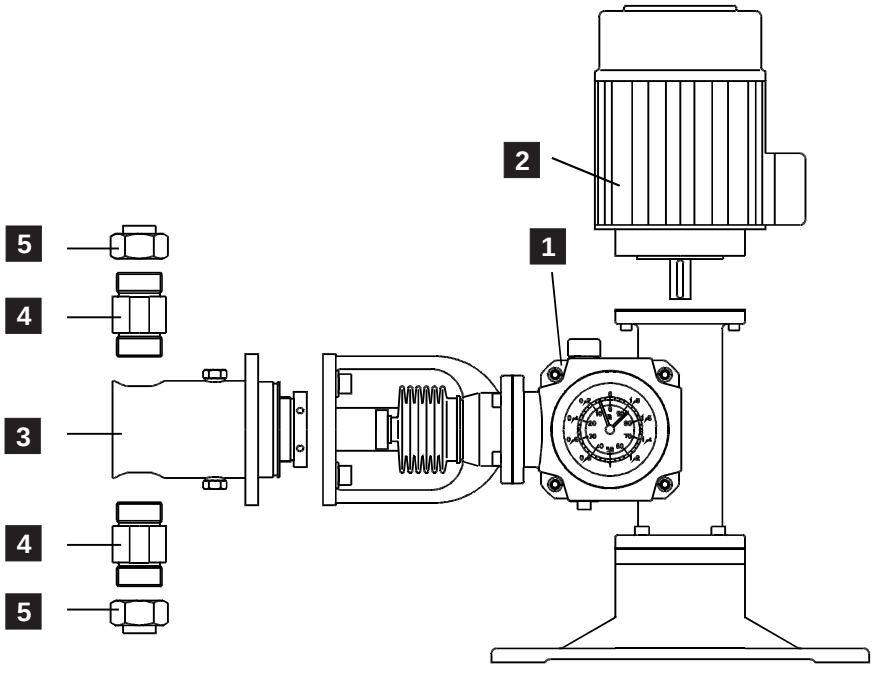
1. Metering pump KARDOS KN	MB 1 09 01	7. Electric agitator	MB 1 36 01
2. Pulsation dampener for suction line	MB 1 27 01	8. Polyethylene tank	MB 1 20 01
3. Pulsation dampener for discharge line	MB 1 27 01	9. Shutoff valve	MB 1 24 01
4. Relief valve	MB 1 25 01	10. Dirt trap	MB 1 22 02
5. Backpressure valve	MB 1 25 01	11. Low level protection	MB 4 10 01
6. Injection nozzle	MB 1 23 01	The accessories shown may be fitted as required.	

Selection tables

In order to offer the user a wide variety of pumps, the metering pumps have been divided into the most important functional groups. These can be combined individually as required.

1 Gear **2** Motor **3** Metering head
4 Valves **5** Connection

The numbers of the pump drawing refer to the corresponding selection tables.
More than 2 metering heads or superimposed metering heads on request.



Gear 1						
Pump type	Gear with output adjustment		KMS size*	I	II	III
			Head combinations **			
	manual	ATE	KN 10...85	KN 150...350	KN 500...850	KN 1460
KN ... L	29594	29598	■			
	29595	29599		■		
	29596	29600			■	
	29597	29601				■
KN ... R	29602	29606	■			
	29603	29607		■		
	29604	29608			■	
	29605	29609				■
ZKN ...	29610	29620	■			
	29611	29621	■	■		
	29612	29622	■		■	
	29613	29623	■			■
	29614	29624		■		
	29615	29625		■	■	
	29616	29626		■		■
	29617	29627			■	
	29618	29628			■	■
	29619	29629				■

* Usable optional piston-diaphragm system heads. See MB 1 40 01 for explanations.

** The heads on duplex pumps can be combined as required. With different head sizes, the larger head should be located on the left side.

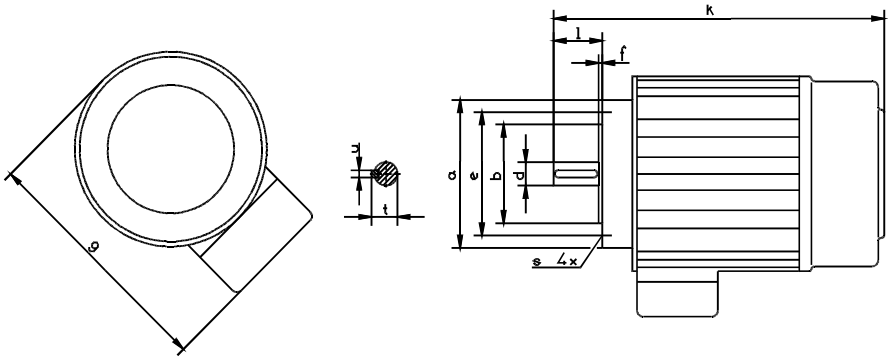
Motor 2																
1) E-motor type	Voltage 220/380 V, frequency 50 Hz; connection Y Δ, ISO Cl. B, IP 54															
	Part No.	Current consumpt. [A]	Power [kW]	Speed [1/min]	Dimensions [mm]											
					a	g	s	e	f	b	d	l	u	t	k
80-AF 0.55/4-11	78629	2.6/1.55	0.55	1410	120	199	M6	100	3	80	19	40	6	21.5	267
80-AF 0.75/4-11	78903	3.4/2.0	0.75	1400	120	199	M6	100	3	80	19	40	6	21.5	267
90-AF 1.1/4-11	77137[2]	4.8/2.8	1.1	1420	200	239	11.5	165	3.5	130	24	50	8	27	293

1) Motor size as required.
Other motor models on request.

2) The 1.1 kW motor requires an intermediate flange (29522) and an intermediate shaft (29521)
Assembly No. 29554

Determination of motor output (approximation values for single and duplex pumps).

$P=a \cdot Q \cdot (p + 1)$ P (watt) p(bar) pressure
Q (l/hr) a=0.125
(Q=Output for only one head at the ZKN)



Head 3			
Packing material*		PTFE-silk packing	
Head material		Plastic	1.4571
Pump type	Piston material Piston dia.	Ceramic	1.4571
KN 10	8	25983	26005
KN 23	12	25984	26009
KN 35	15	25985	26013
KN 45	17	25986	26017
KN 85	23	29631	26025
KN 150	30	29632	26036
KN 210	36	29633	26042
KN 350	46	29635	26063
KN 500	55	29636	29854
KN 850	72	29638	26088
KN 1460	100	29640	29644

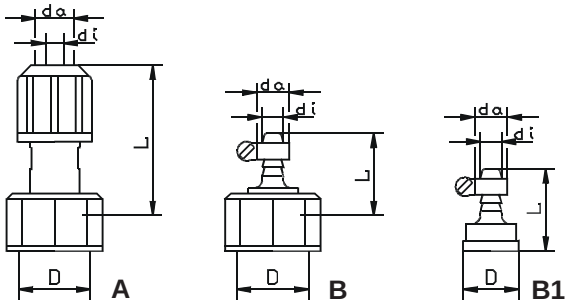
Valves 4											
Pump type	KMS size	Standard Valves KN 10 ... KN 350 duplex ball / KN 500 ... KN 1460 single ball spring-loaded									
		Plastic				1.4571					
		Hypalon		Viton		Hypalon		Viton		IT C	
		S	D	S	D	S	D	S	D	S	D
KN 10 ... KN 85	I	18187	18188	18185	18186	—	—	—	—	26967	26968
KN 150 ... KN 350	II	26841	27356	26842	27357	—	—	—	—	29694	29695
KN 500 ... KN 1460	III	23703	23703	23704	23704	23705	23705	25681	25681	—	—
		Spring loaded valves									
KN 10 ... KN 85	I	25161	27516	25162	27517	—	—	—	—	28775	28776
KN 150 ... KN 350	II	26845	27353	25707	27354	—	—	—	—	29696	29697

S=suction valve / D= discharge valve

KARDOS KN

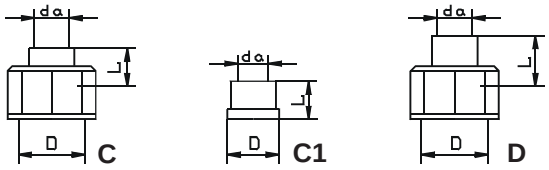
5 Connections

Pump type	Dimensions						Part No. model:	
	DN	Abb.	ø D	di	da	L	PVC	1.4571
KN 10-85 KMS I	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	ø20	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	—	G1/4	20	25165	—
	6	D1	ø20	—	G1/4	20	—	82105
	6	E1	ø20	—	8	20	—	27519
	6	E1	ø20	—	10	20	—	23427
	10	E1	ø20	—	12	20	—	23428
KN 150-350 KMS II	10	B	G 11/4	9	15	41	25921	25925
	15	B	G 11/4	16	26	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 11/4	—	G3/8	22	25930	27037
	15	D	G 11/4	—	G1/2	22	25943	25944
	20	D	G 11/4	—	G3/4	22	—	27689
	10	E	G 11/4	—	10	41	—	25926
	15	E	G 11/4	—	18	44	—	25939
	15	F	G 11/4	—	15	53	25956	25957
KN 500-1460 KMS III	25	B1	68	25	34	95	24034	24063
	25	C1	68	—	32	40	21488	—
	32	C1	68	—	40	40	21491	—
	25	D1	68	—	G1	40	28458	27040
	32	D1	68	—	G11/4	40	—	25252
	25	E1	68	—	28	60	—	27852
	25	F1	68	—	25	64	25622	25623



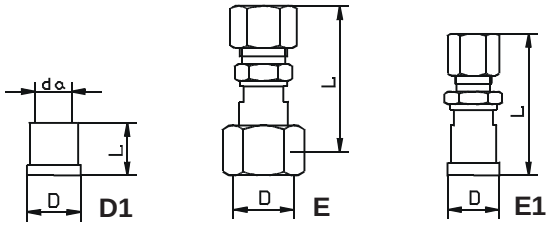
Tubing Connection

Hose clamp connection



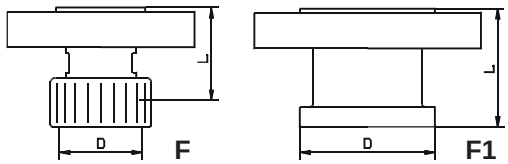
Cemented connection

Threaded connection



Threaded connection

Stainless steel pipe connection



Flange connection

Example order

For pulp treatment of a paper machine, a metering pump for dispersant and polymer is required, which is to be metered proportionally to the paper speed. Since both components are to be added at a fixed ratio of 1:5, independent of speed, it is advisable to use a duplex pump with central drive. The pump can be fitted with a normal 3-phase motor, because the latter is controlled by a frequency converter (provided by the customer) which receives the speed proportional signal from the paper machine. Note: It is recommended to select a motor which is one size larger than required and / or to use a separate fan for speed below 25 Hz. The reachable backpressure decreases.

Determining the wetted end components

40 l/h dispersant and 200 l/h polymer are to be metered against 10 bar.

Because of the high viscosity, the head for polymer is to be fitted with spring-loaded valves.

All components into contact with the medium must be made of stainless steel.

Seal elastomers should be made of It.

Order

The metering pump consists of the following modules:

1	Gear ZKN 45/210		Part No. 29611
2	Drive motor 0.55-kW		Part No. 78629
3	Metering head for	KN 45	Part No. 26017
	Metering head for	KN 210	Part No. 26042
4	Suction valve for	KN 45	Part No. 28775
	Discharge valve for	KN 45	Part No. 28776
	Suction valve for	KN 210	Part No. 29696
	Discharge valve for	KN 210	Part No. 29697
5	Suction connection for	KN 45	Part No. 82105
	Discharge connection for	KN 45	Part No. 82105
	Suction connection for	KN 210	Part No. 25944
	Discharge connection for	KN 210	Part No. 25944

KARDOS KN-ATE

General

Metering heads with a servomotor are used as correcting elements in automatic control systems or control lines.
A reversible AC motor allows to adjust the stroke length for each metering head, in the case of multiple-head pumps separately for each head. In addition, manual adjustment is possible by using the hand wheel.
This type of pump is specified by adding "ATE" to the name, e.g. KARDOS KN 23-ATE.

Technical data of the servomotor

Design:	reversible AC motor with reduction gear
Mains connection:	220 V, 50 Hz approx. 10 VA
Protection class:	IP 54 ISO Cl. B
Ambient temperature:	- 15°C ... + 60°C
Regulating distance:	50 rotations
Regulating time:	2 minutes
Position indication:	mounted handwheel with scale
Remote display:	integrated potentiometer with 1000 Ohm overall resistance
Weight:	extra weight 3 kg

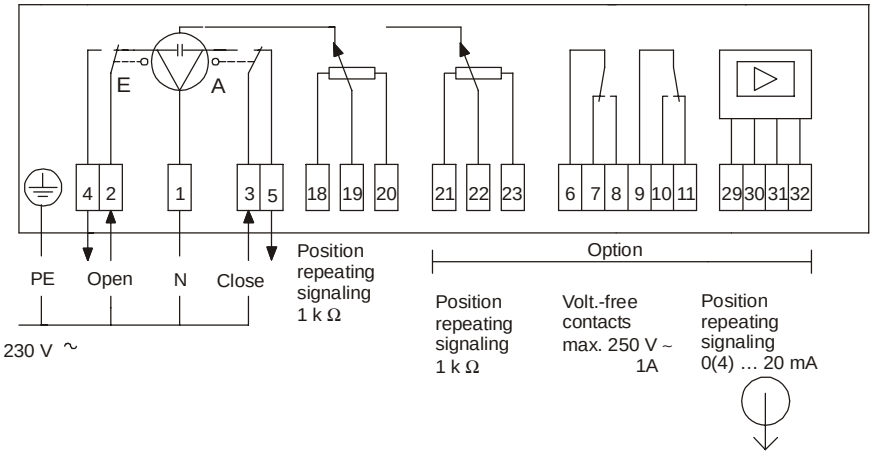
Other versions of power supply or possibilities of control upon request.

Additional equipment:

1. other repeating signaling resistance than1000 Ohm
2. higher protection class IP 65
3. other power supply

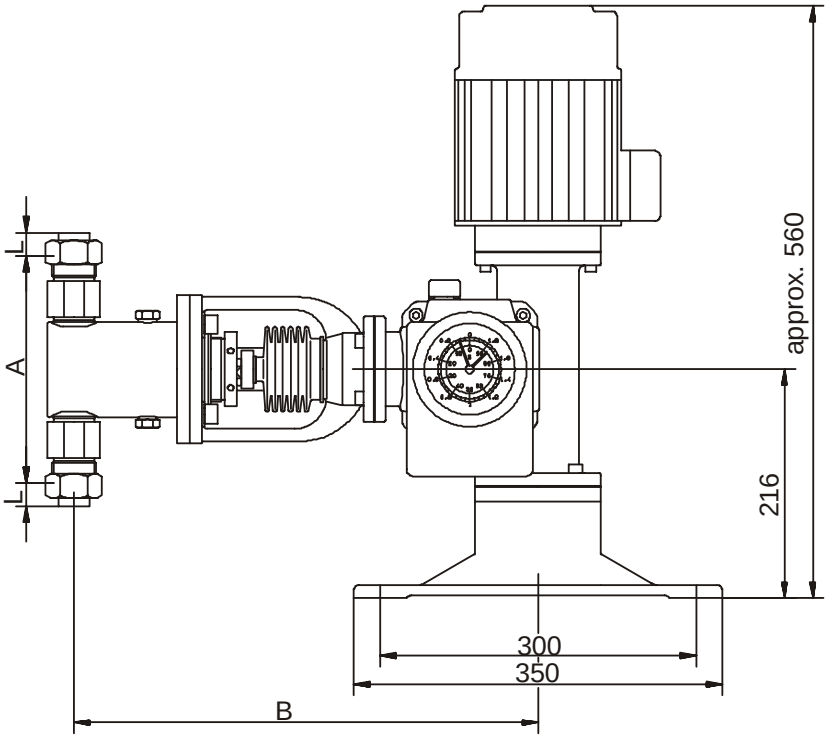
Wiring diagram

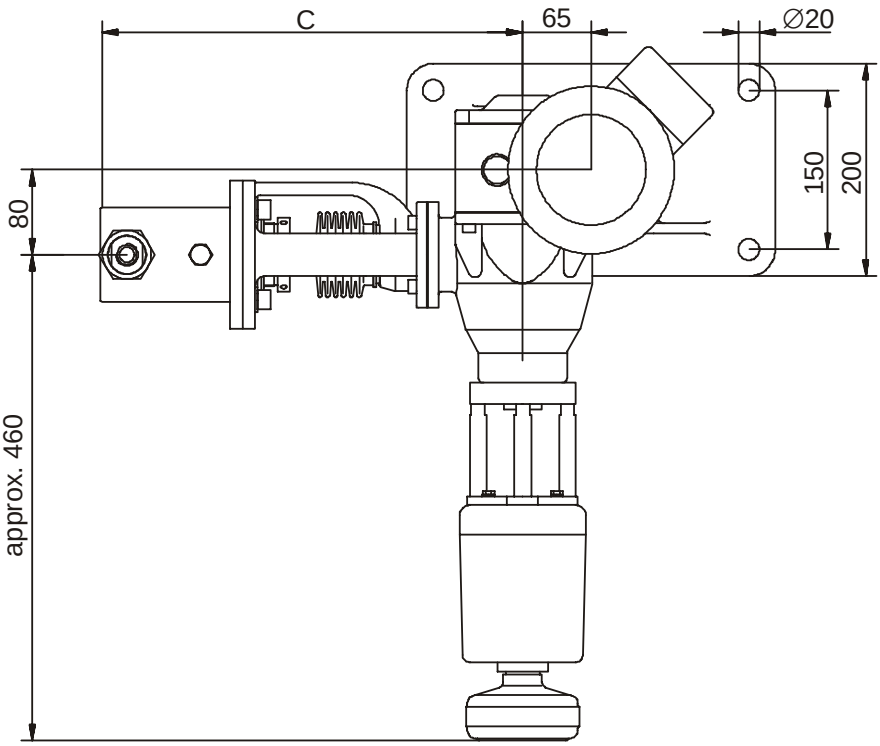
Caution!
The ATE servomotor must not be in operation when the pump motor is not working. Therefore the main motor is to be locked electrically.



KARDOS KN-ATE

Dimensions Kardos KN - ATE





Dimensions a,b,c,d see MB 1 09 01 / 3