MEMDOS ML

MB 1 04 11 / 1

Introduction

Diaphragm pumps of the series MEMDOS ML have been developed in special consideration of the price-/performance relation. The aim was dosing big quantities with small pressure.
MEMDOS ML series are maintenanc-free glandless diaphragm dosing pumps with isolating chamber and seperate diaphragm and infinite adjustment of discharge capacity.

Standard versions are dosing pumps with the dosing head arrangement on the left-hand side.
Type designation ML...L (symbol)

On request, dosing pumps with dosing head arrangement on the right-hand side are available.
Type designation ML...R (symbol)

Duplex pumps with equal dosing heads are also available. The motor power is the same for simplex and duplex dosing pumps because the diaphragm operate in a reciprocal arrangement.
Type designation ZML... (symbol)

Dosing Head

Manufactured from Polyethylen (LPDE-material code RCH 500) with uPVC valves - or heads and valves from stainless steel.

Suction and discharge valves are normally double-ball valves. Options are available using spring-loaded single-ball valves, recommended for media having a viscosity in excess of 400 mPas. These valves have a "loading" of c. 0,1 bar.

Diaphragm Chamber

The diaphragm flanges provide a seperating, or isolating chamber whivh is so arranged that if a rupture of the main dosing diaphragm occurs, no chemical can escape from the pump except via the drainagenozzle to which an extension tube can be fitted to drain, or back to the tank for safety. IMPORTANT: The drainage tube should not be run directly back to the tank or container by gravity, as it would then be possible for media gases to permeate into the pump drive mechanism. In this case, a tundish should be used between the outlet of the drainage tube and the tank top.The escaping leakage may be detected by a leakage probe which can be used for switching off the dosing pump and/or initiating a remote alarm.(See data sheet MB 1 31 01).

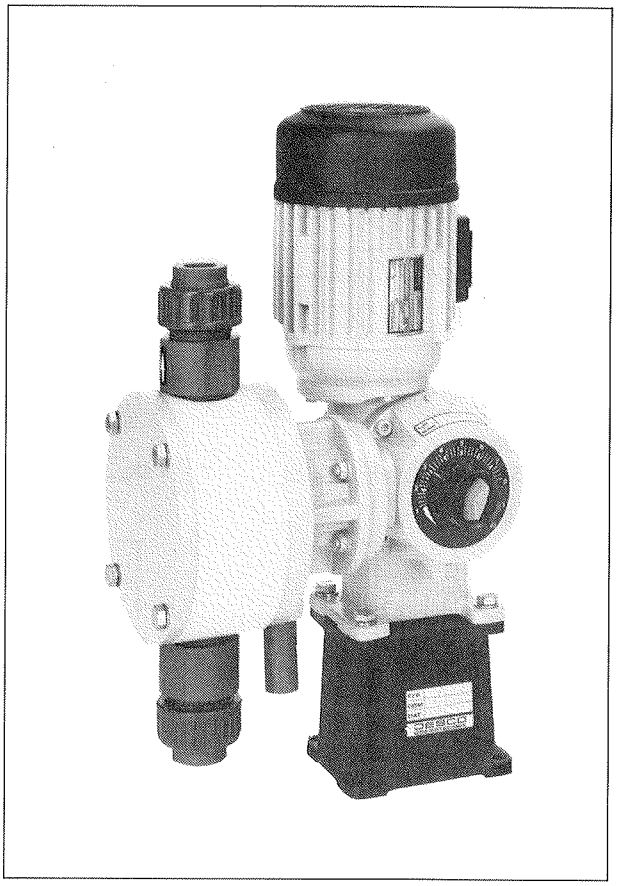
Drive Mechanism

This takes the form of an oil filled one-step reduction gearbox. The stroke is generated by a spring-loaded ram and an eccentric cam. Stroke adjustment is achieved by limiting the ram return stroke.

Infinite stroke adjustment can be made while the pump is at stand still, or while in operation. Severable operations are available:
- -- Manual adjustment by handwheel against stroke position scale calibrated 0-100%
- -- Remote control automatic stroke adjustment by means of a fitted reversing servo motor (type code ATE) with feedback potentiometer and adjustable endstop limit switches.

Accessories/Options

1. On request the dosing pump can be supplied with an inductive sensor (counter) for the eccentric shaft, allowing use of the number of strokes for control of batching processes, etc.



2. Proportional Dosing
   On/off control of the drive motor in proportion to a remote signal (e.g.: flow rate/pH value, etc.) when the pump can be controlled automatically by using controllers. This system allows proportional dosing delay (dependant on water meter contacts, for example) where each contact provides a fixed pump running time of between 1 and 30 seconds (see MB 1 34 01)
3. Thyristor Controller
   For the control of the direct current drive (see MB 4 20 01).
4. Pulsation Damper (see MB 1 27 01 and MB 1 27 02)

For further accessories see "Installation Example".

Technical Data

MEMDOS	ML	75	-	150	-	270	-
type	ZML	75	75	150	150	270	270
max. pressure	bars	5	5	4	4	2	2
at max.	litres/hr	80	80	155	155	270	270
pressure	mls/stroke	19	19	37	37	64	64
strokes/min		70	70	70	70	70	70
diaphragm dia.		90	90	120	120	150	150
suction height		120 mbars					
max. temperature		40° C					
drive P	kw	0,1		0,1		0,1	
weight (kg)	ML	13	-	13	-	14	-
with PE-head	ZML	15		15		17	
weight (kg)	ML	20	-	20	-	24	-
with steel-head	ZML	29		29		37	

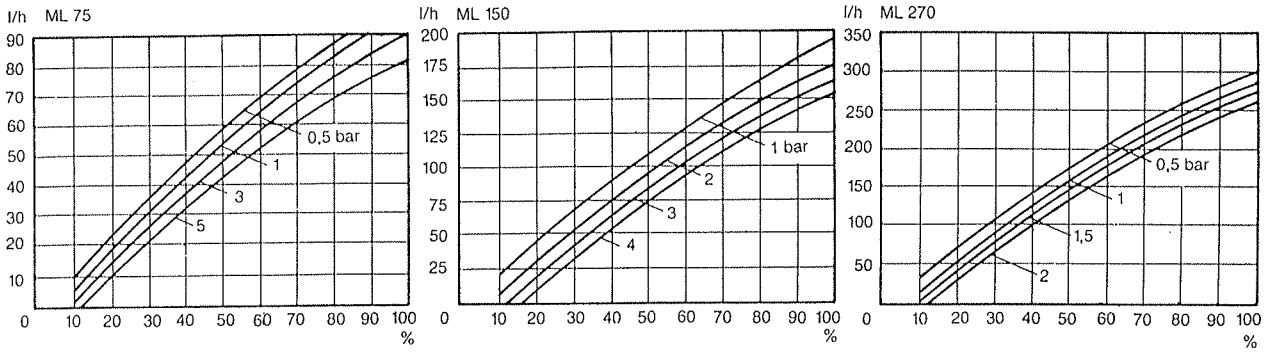
In case of electrical drive by alternating-current motors with Steinmetz-switch, indicated pressure cannot be exploited.

JESCO®

MEMDOS ML

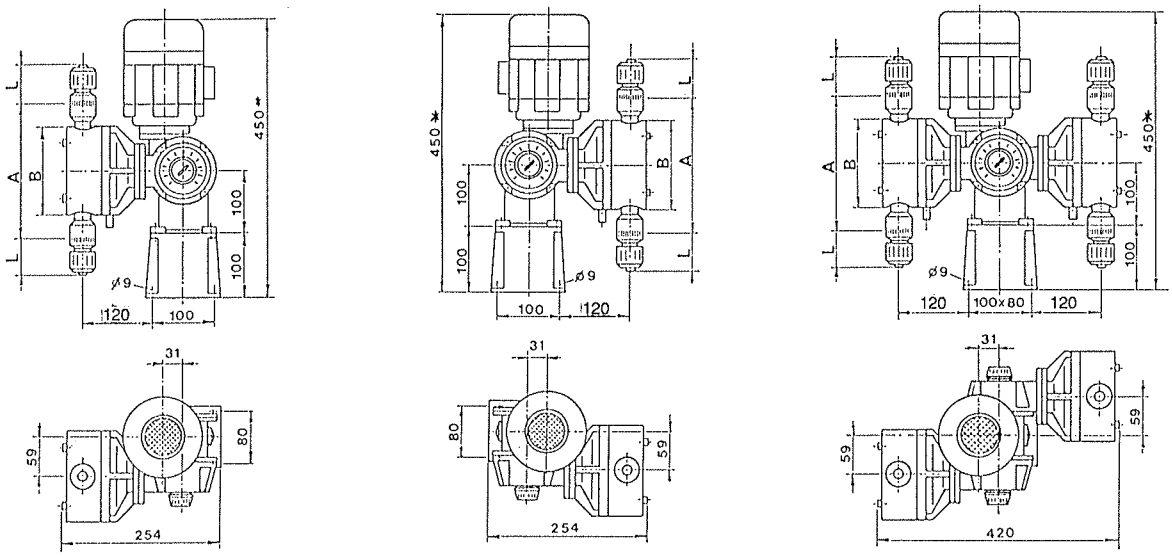
MB 1 04 11 / 2

Performance Curves



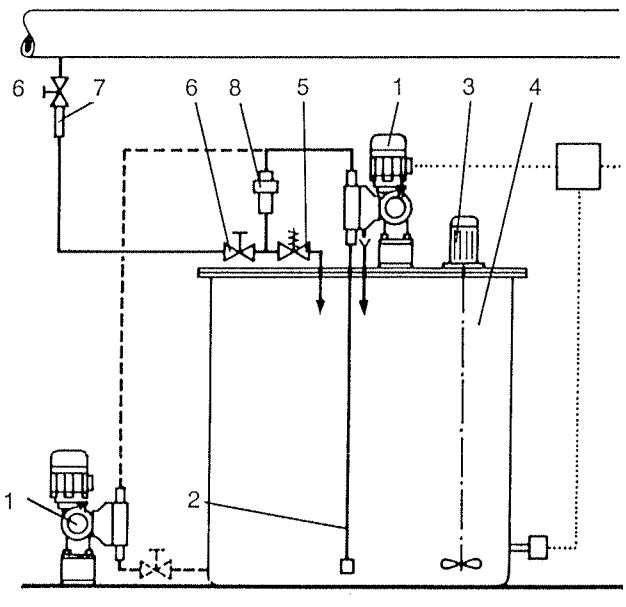
Dimensions

ML...L (Symbol) ML...R (Symbol) ZML... (Symbol)



* at standard types of reversing servo motors

Installation Example



Dimensions

Type ML	A	B
75	262	148
150	262	148
270	288	170

measure L see table 5

Legend

1	**Dosing Pump MEMDOS ML**	**MB 1 04 11**
2	Suction Pipe	MB 1 22 01
3	Electrical Mixer	MB 1 36 01
4	Tank	MB 1 20 01
5	Relief Valve	MB 1 25 01
6	Diaphragm Shutoff Valve	MB 1 24 01
7	Injection Point	MB 1 23 01
8	Pulsation Damper	MB 1 27 01

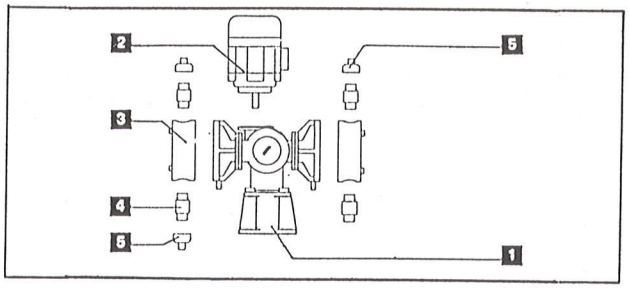
Selection Tables

In order to offer the user a wide variety of pumps, the dosing pumps have been divided into the most important functional groups. The may be individually made up as required

The user should select the dosing pump from:

1 Gear **2** Motor **3** Dosing Head

4 Valves **5** Connections



The numbers on the pump drawing refer to the corresponding selection tables.

1

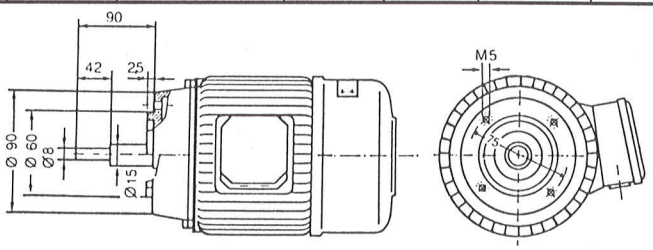
Pump Type	Simplex Gear				Duplex Gear	
	Left ML...L		Right ML...R		with equal Dosing Heads	
	Capacity Adjustment					
	man	ATE	man	ATE	man	ATE
ML 75	31.447	31.448	31.720	31.721	31.453	31.454
ML 150	31.449	31.450	31.722	31.723	31.455	31.456
ML 270	31.451	31.452	31.724	31.725	31.457	31.458

2

Standard-Motor Type	Part no. Motor		Connection	Voltage [V]	FLC [A]	Power [kW]	Speed [1/min]	Frequency [Hz]	Isolation [Protec.Class]
	compl.	single							
63 RF 0,12/4-71R	27.725	77.700	Δ Y	220/380	0,76/0,44	0,1	1400	50	B 54

3

Pump Type	PE	Stainl. St.
ML 75	23.721	23.727
ML 150	23.722	23.728
ML 270	23.723	22.334

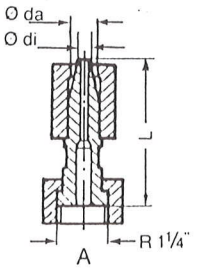


4

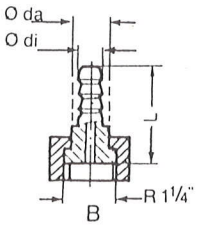
Double-ball Valves						Spring-loaded Valves					
PVC				Stainl. St.		PVC				Stainl. St.	
Hypalon		Viton		It S		Hypalon		Viton		It S	
Suction	Discharge	Suction	Discharge	Suction	Discharge	Suction	Discharge	Suction	Discharge	Suction	Discharge
26.841	27.356	26.842	27.357	29.694	29.695	26.845	27.353	25.707	27.354	29.696	29.697

5

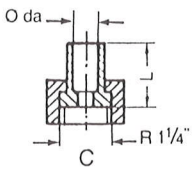
Pump Typ ML	DN	Dia-gram	Dimensions			Plastic	High-grade Steel
			di	da	L		
75	8	C	-	12	22	25.923	---
		E	-	10	41	---	25.926
	10	A	9	15	75	25.918	---
		B	9	15	52	25.921	25.925
		C	-	16	22	27.672	---
		D	-	R 3/8	29	25.930	27.037
75	15	A	16	26	89	25.932	---
150		B	16	26	50	25.936	25.935
270		C	-	20	29	25.937	---
		D	-	R 1/2	29	25.943	25.944
		E	-	18	44	---	25.939
		F	-	-	60	25.956	25.957



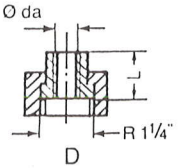
A
Locknut 'clamp' connection for flexible tube



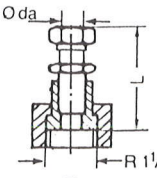
B
Hoseclip conn for flexible tube



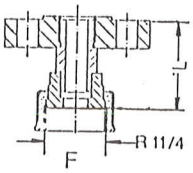
C
Solvent-cement 'plain' bush-uPVC rigid tube



D
Screw thread conn BSP or NPT as specified



E
Compression conn (e.g. Ermeto)



F
Flange connection

Order Sample

For the pH-control in a sewage-treament plant, a dosing pump to dose 60 l/h lime slurry is needed. The slurry will be fed to the pump by gravity. Dosing line between dosing pump and injection point is 15m, free outlet.

Control of the dosing pump will be done by a pH-controller with 3-point-step-outlet.

Dosing pump has to be electrically and remotely adjustable. This is because of the exsisting pH-controller. Furthermore, the pump has to be equipped with ATE-stroke adjustment drive. Our dosing pump type ML 75 in standard plastic construction with PE is suitable for 60 l/h lime slurry. Viscosity of lime slurry allows the use of double-ball valves.

Pump consists of the following componentens:

1	ATE gear	part. no.: 31.448
2	drive motor for 380 V, three-phase	part. no.: 27.725
3	dosing head of PE	part. no.: 23.721
4	double-ball valves	
	suction valve PVC/Hypalon	part. no.: 26.841
	discharge valve PVC/Hypalon	part. no.: 27.356
5	connections:	
	suction- and discharge side	part. no.: 25.918

Becauseof 15m distance between dosing pump and injection point, a pulsation damper has to be installed to reduce (avoid) acceleration pressure peaks. By this method, constant flow will be archieved which provides a considerably higher dosing accuracy and a careful treatment of the dosing pump and the line system.

Pump has to be provided with a pressure-sustaining valve to avoid free flow out of the tank, because of pressureless supply at the injection point.

Pulsation damper and pressure-sustaining valve, see installation example.

MEMDOS ML-ATE

MB 1 04 11 / 5

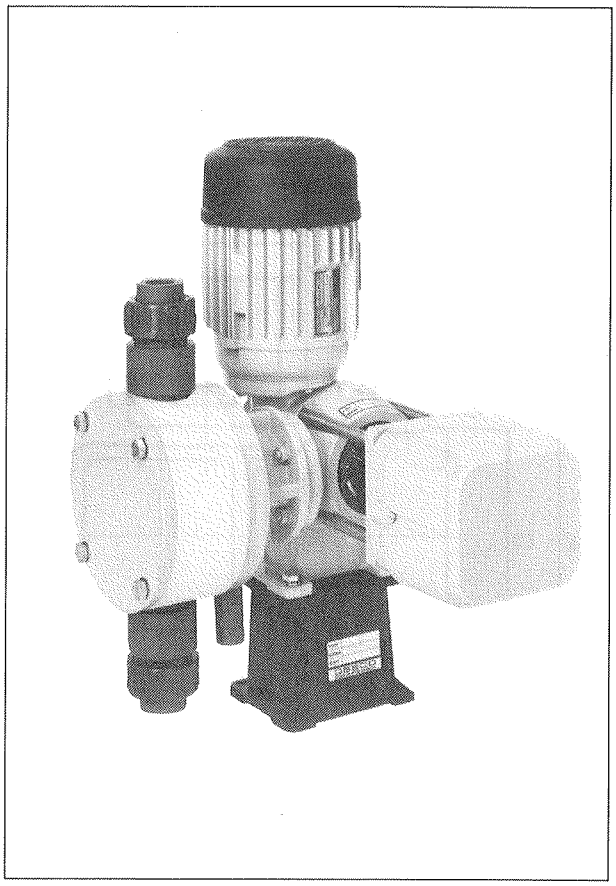
General

Dosing pumps for use as a correcting element in control circuits or control lines, can be equipped with electrical actuating (servo motor) drives, the stroke length can therefor be adjusted from remote electrical push-button contacts or controllers with a relay output. In the case of duplex pumps, each dosing head may have a separate automatic/remote actuating drive and be adjusted independently.

These pumps are denoted by the letters ATE used a suffix after the type, e.g. ML 75 L - ATE

The non-linearity of the characteristic performance curve of diaphragm dosing pumps is maintained despits the linear mechanics of the stroke adjustment. In the case of control systems without a feedback signal from the dosed solution (proportional dosing), consideration must be given to the characteristic curve of the dosing pump when setting up.

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



Actuating Drive

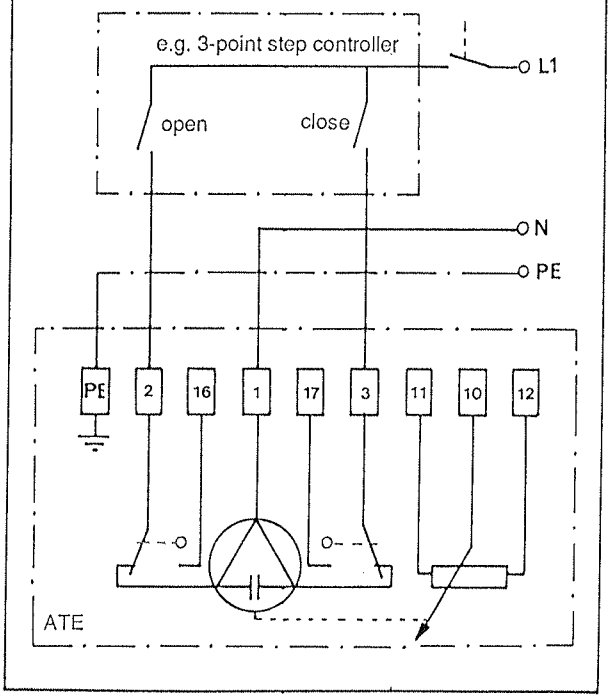
Construction:	Reversible AC Motor with self locking reduction gear.
Mains Connection:	220 V, 50/60 Hz, c. 2 VA
Regulating Distance:	270° for pump discharge from 0...max.
Regulating Time:	5,5 minutes 0...100%
Ambient Temp.:	max. +45° C
Protection Type:	IP 54 according to DIN 40 050
Limit Switches:	Limit switches disengage the motor in the limit position beyond an angle of rotation of 270°.
Indication:	The stroke position is indicated in each case on a scale (0...10). The relevant discharge (output) rate is obtained from the diagram on data sheet MB 1 04 11 / 2
Remote Indication:	A built-in potentiometer with a 130 ohm overall resistance on the drive shaft of the servo motor enables continous remote indication of the stroke position.
Weight:	Additional weight to basic pump/ motor with single actuating drive 2 kg. Additional weight to basic pump/ motor with twin actuating drive 4 kg.

Special Versions

1. Potentiometers rated other than 130 ohm
2. Two additional limit switches (contacts rated 6A, 250V non-inductive).

Wiring Diagram

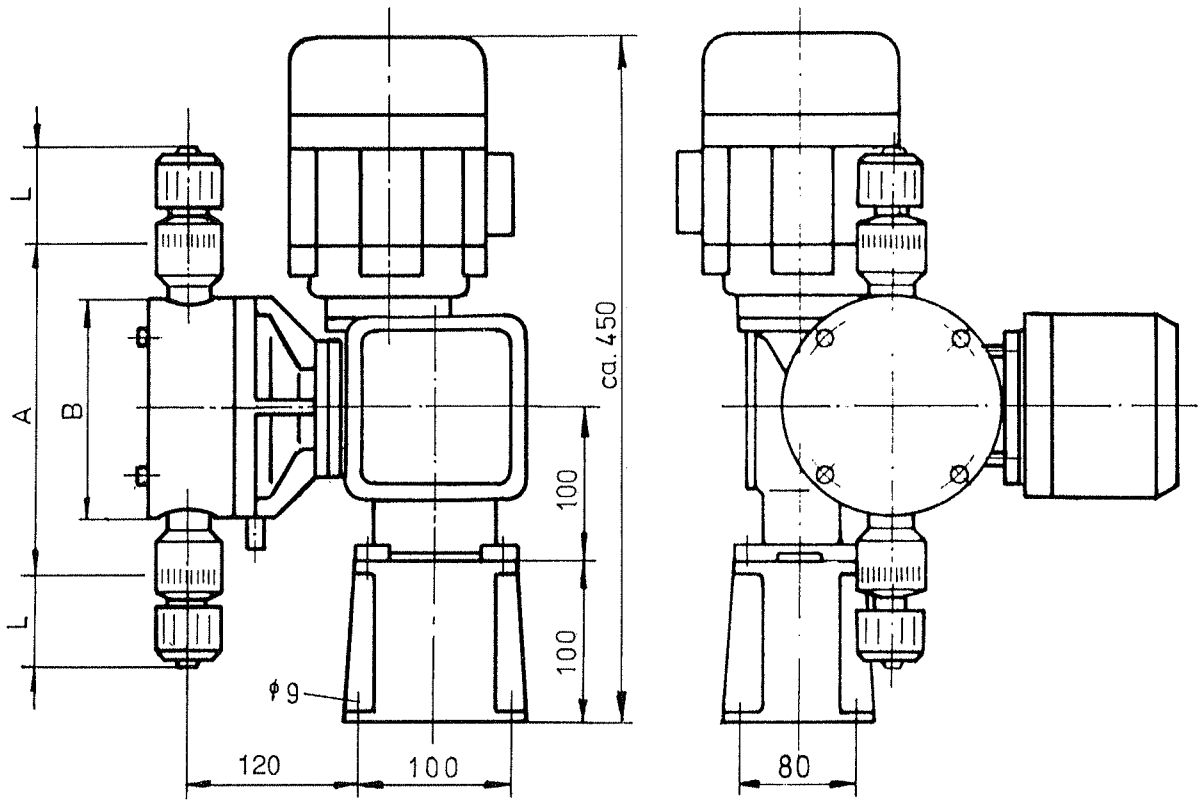
Warning: The ATE servo motor must not be operated if the pump drive motor is stationary. For this purpose an interlock with motor protection of the pump main drive motor should be incorporated in the control circuit.

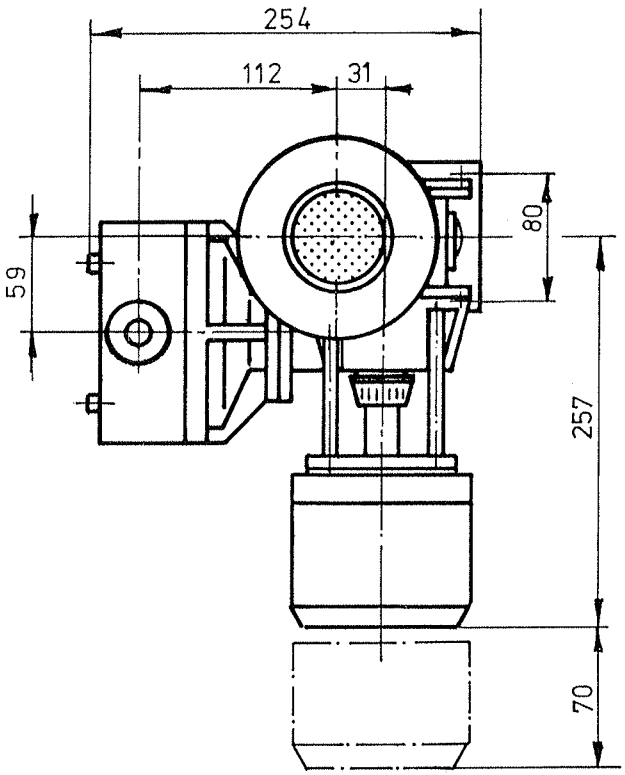


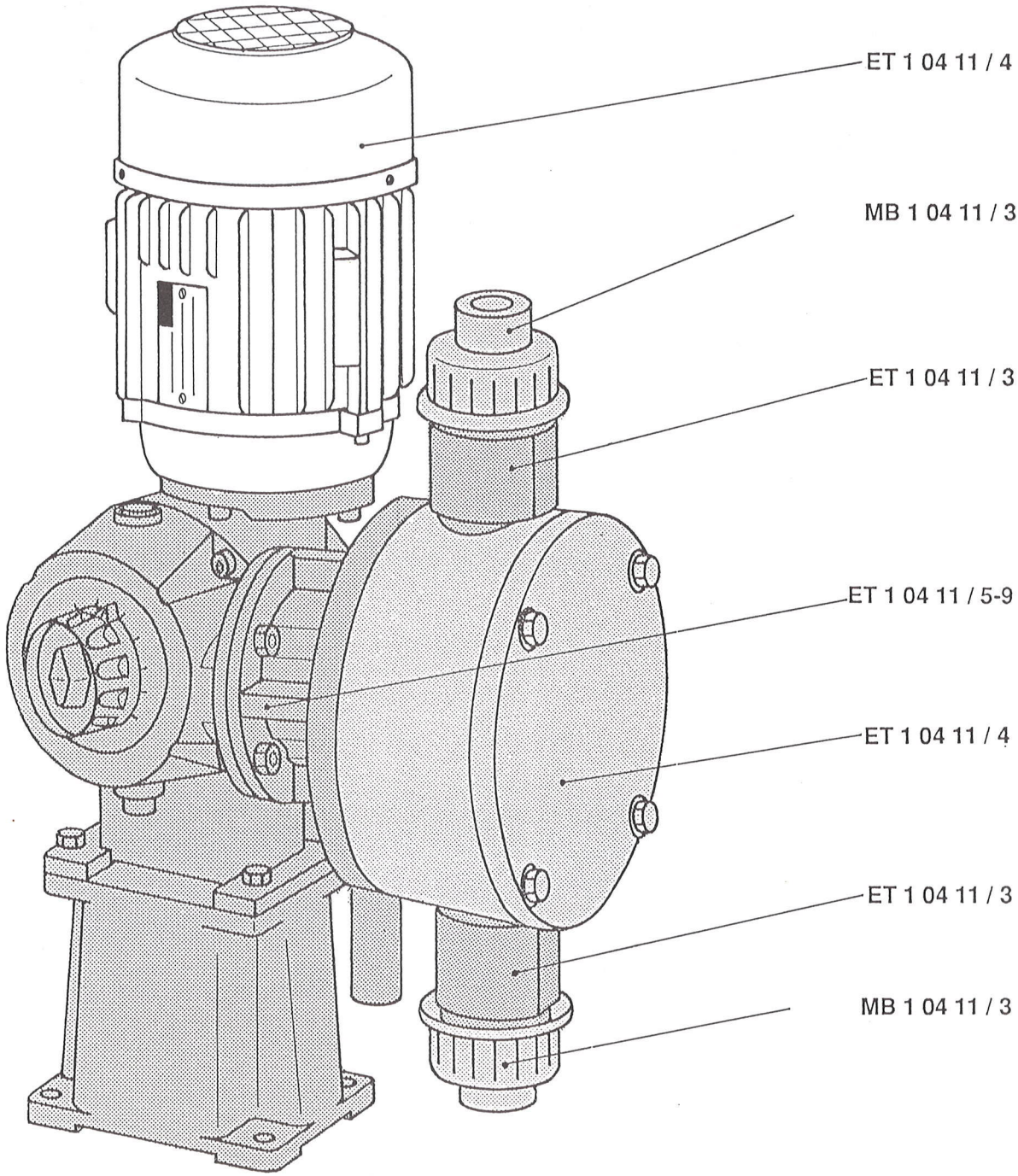
MEMDOS ML-ATE

MB 1 04 11 / 6

Dimensions



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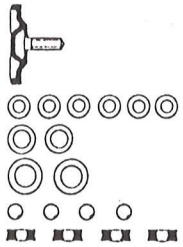
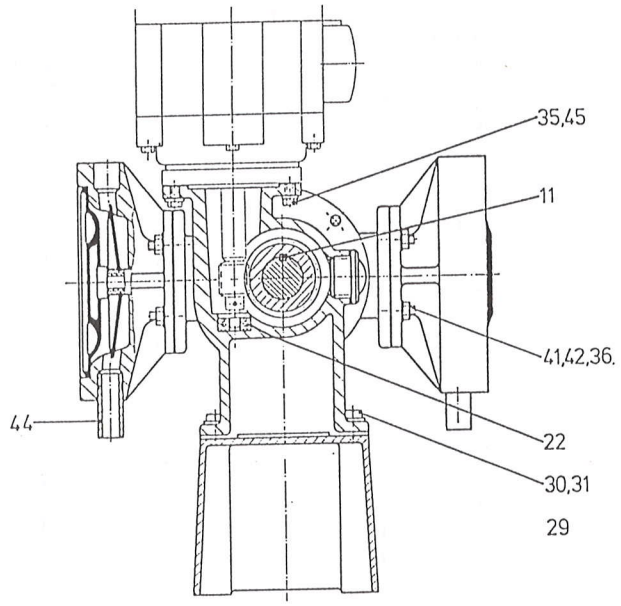
MEMDOS ML

ET 1 04 11 / 2 Spare Part Set

Consisting of:		Type:	Dosing Head-/ Packing Material	Article-Number
	Diaphragm Gaskets Valve Seats Valve Balls	ML 75	PE / Hypalon	28.300
			PE / Viton	28.301
			St.St. / It S	28.302
		ML 150	PE / Hypalon	28.308
			PE / Viton	28.309
			St.St. / It S	28.310
		ML 270	PE / Hypalon	28.316
			PE / Viton	28.317
			St.St. / It S	28.318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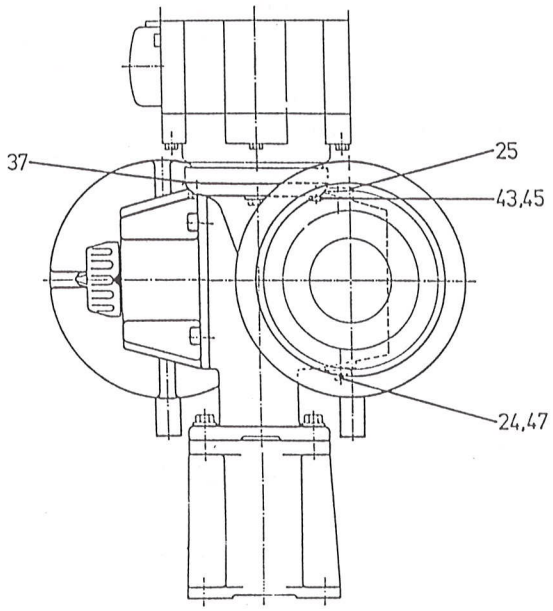
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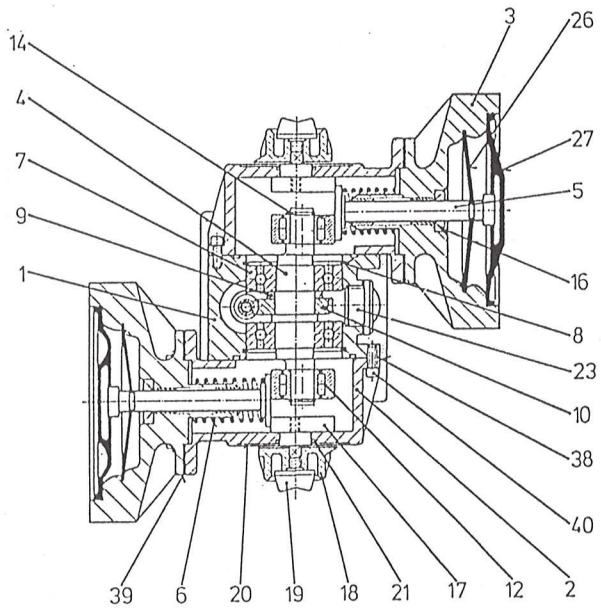
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2

MEMDOS ML

ET 1 04 11 / 8 Duplex-Drive

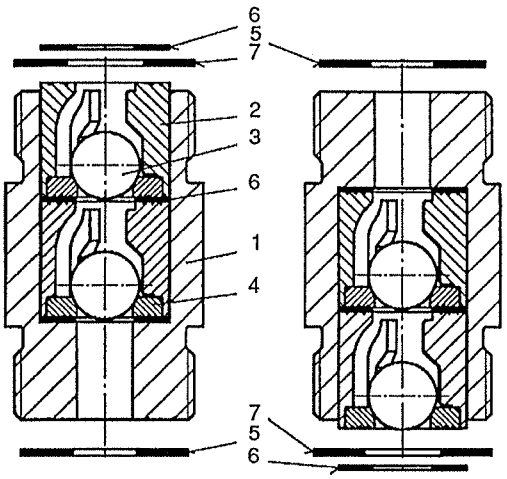
Item	Description	Material	Part-no.	ZML 75	ZML 150	ZML 270
1	Gear Housing	Al	18.101	1	1	1
2	Eccentric Housing	Al	31.421	2	2	2
3	Diaphragm Housing	Al	25.365	2	-	-
	Diaphragm Housing	Al	25.373	-	2	-
	Diaphragm Housing	Al	25.375	-	-	2
4	Driving Shaft	St	26.354	1	1	1
5	Diaphragm Rod	St	27.047	2	-	-
	Diaphragm Rod	St	27.048	-	2	2
6	Compression Spring	St	10.119	2	2	2
7	Ball Bearing	St	86.003	2	2	2
8	Circlip	St	84.004	2	2	2
9	Distance Ring	St	18.163	1	1	1
10	Worm Wheel	Bronze	19.156	1	1	1
11	Shaft Key	St	83.406	1	1	1
12	Ball Bearing	St	86.106	2	2	2
14	Circlip	St	84.010	2	2	2
15	Sleeve Bearing Bush	Bronze	19.377	4	4	4
16	Seal	St / Plastic	80.575	2	2	2
17	Adjustment Eccentric	IXEF	31.810	2	2	2
18	Adjusting Knob	Plastic	29.764	2	2	2
19	Thumb Srcew	St / Plastic	83.661	2	2	2
20	Scale	Plastic	87.412	2	2	2
21	O-ring	Perbunan	80.044	2	2	2
22	Ball Bearing	St	86.001	1	1	1
23	Oil Gauge	Plexi	82.181	1	1	1
24	Locking Screw	Ms	82.022	2	2	2
25	Plug	Kunststoff	83.019	2	2	2
26	Washer	Hypalon	22.057	2	-	-
	Washer	Hypalon	22.058	-	2	-
	Washer	Hypalon	22.059	-	-	2
*27	Diaphragm d=90	PTFE	81.466	2	-	-
	Diaphragm d=120	PTFE	81.167	-	2	-
	Diaphragm d=150	PTFE	81.468	-	-	2
29	Pump Base	Al	22.779	1	1	1
30	Hex. Screw	8.8	83.033	4	4	4
31	Washer	St nickel plated	84.026	4	4	4
35	Hex. Screw	8.8	83.030	2	2	2
36	Washer	St	84.000	8	8	8
37	Gasket	Klingerit	81.235	1	1	1
38	Gasket	Klingerit	81.082	2	2	2
39	Gasket	Klingerit	81.061	1	1	1
40	Socket Head Cap Screw	8.8 galvanized	83.421	8	8	8
41	Pin Screw	8.8 galvanized	83.672	8	8	8
42	Hex. Nut	8.8 galvanized	83.073	8	8	8
43	Hex. Screw	8.8 galvanized	83.157	2	2	2
44	Leakage Tube	uPVC	25.193	2	2	2
45	Supporting Disc	St	84.021	3	3	3
47	Gasket	Klingerit	81.042	2	2	2

* Recommended Spares (included in spare part set ET 1 04 11 / 2)

MEMDOS ML

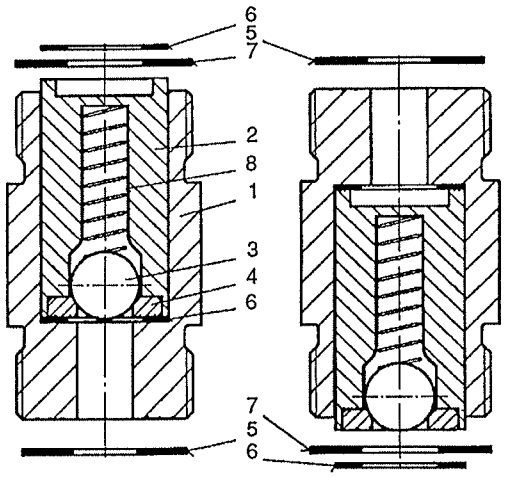
Valve DN 10 ET 1 04 11 / 3

Double-ball Valve



Suction Valve Discharge Valve

Spring-loaded Valve



Suction Valve Discharge Valve

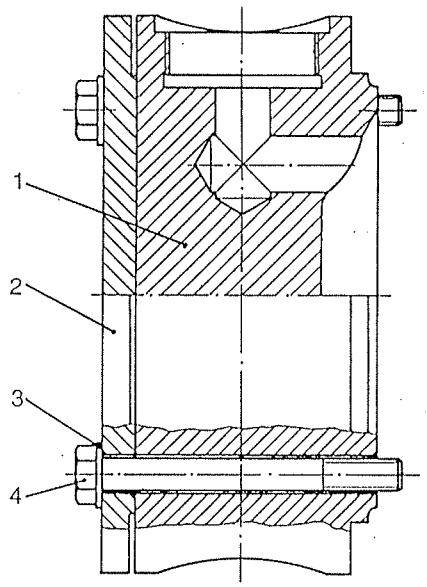
Item	Description	Material	Part No.	Double-ball Valve						Spring-loaded Valve					
				Suction Valve			Discharge Valve			Suction Valve			Discharge Valve		
				PP		1.4571	PP		1.4571	PP		1.4571	PP		1.4571
				Sealing material: H=Hypalon, V=Viton, AF=asbestos free											
				H	V	AF	H	V	AF	H	V	AF	H	V	AF
				26.841	26.842	29.694	27.356	27.357	29.695	26.845	25.707	29.696	27.353	27.354	29.697
1	Valve Housing	PP	32.453	1	1	—	1	1	—	1	1	—	1	1	—
		1.4571	32.449	—	—	1	—	—	1	—	—	1	—	—	1
2	Ball Bearing	PVC	82.455	2	2	—	2	2	—	—	—	—	—	—	—
		1.4581	82.112	—	—	2	—	—	2	—	—	—	—	—	—
		PP	22.882	—	—	—	—	—	—	1	1	—	1	1	—
		1.4581	22.881	—	—	—	—	—	—	—	—	1	—	—	1
*3	Valve Ball d 16	KER 221	82.457	2	2	—	2	2	—	1	1	—	1	1	—
		1.4401	82.114	—	—	2	—	—	2	—	—	1	—	—	1
*4	Valve Seat	PP	82.456	2	2	—	2	2	—	1	1	—	1	1	—
		1.4571	82.113	—	—	2	—	—	2	—	—	1	—	—	1
*5	Flat Gasket Ring	Hypalon	81.035	1	—	—	1	—	—	1	—	—	1	—	—
		Viton	81.198	—	1	—	—	1	—	—	1	—	—	1	—
		AF	81.629	—	—	1	—	—	1	—	—	1	—	—	1
*6	Flat Gasket Ring	Hypalon	81.238	2	—	—	2	—	—	1	—	—	1	—	—
		Viton	81.276	—	2	—	—	2	—	—	1	—	—	1	—
		AF	81.627	—	—	3	—	—	3	—	—	2	—	—	2
*7	Flat Gasket Ring	Hypalon	81.239	1	—	—	1	—	—	1	—	—	1	—	—
		Viton	81.277	—	1	—	—	1	—	—	1	—	—	1	—
*8	Valve Spring	Hastelloy	32.577	—	—	—	—	—	—	1	1	1	1	1	1

* recommended spares (contained in set of spares ET 1 04 11 / 2)

MEMDOS ML

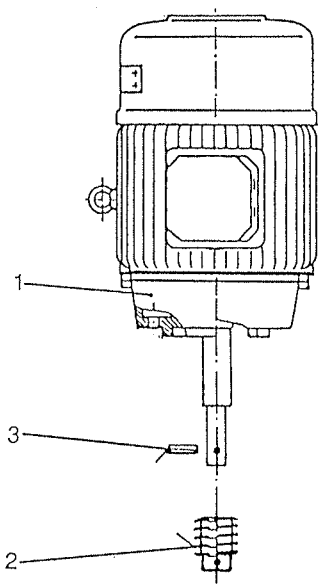
ET 1 04 11 / 4 Dosing Head complete / Motor complete

Dosing Head complete

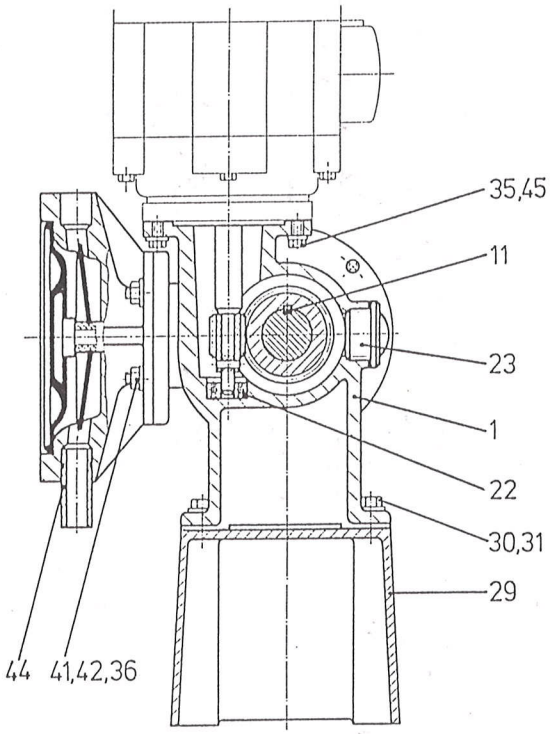


Item	No. off	Description	Material	Part-No. Dosing Head complete ML					
				75		150		270	
				Plastic	High-graded St.	Plastic	High-graded St.	Plastic	High-graded St.
				23.721	23.727	23.722	23.728	23.723	22.334
1	1	Diaphragm Housing	PE	22.044	---	22.046	---	22.048	---
			Stainl. St.	---	22.392	---	22.394	---	18.824
2	1	Plate	Al	18.453	---	18.453	---	18.822	---
3	4	Washer	A2	84.174	84.174	84.174	84.174	84.174	84.174
4	4	Hex. Screw	A2	83.495	83.542	83.495	83.542	83.495	83.230

Motor complete



Item	No. off	Description	Part-No. compl. 27.725
1	1	Motor 220/380 V 50 Hz	77.700
2	1	Worm Shaft	19.157
3	1	Heavy Clamping Pin	83.414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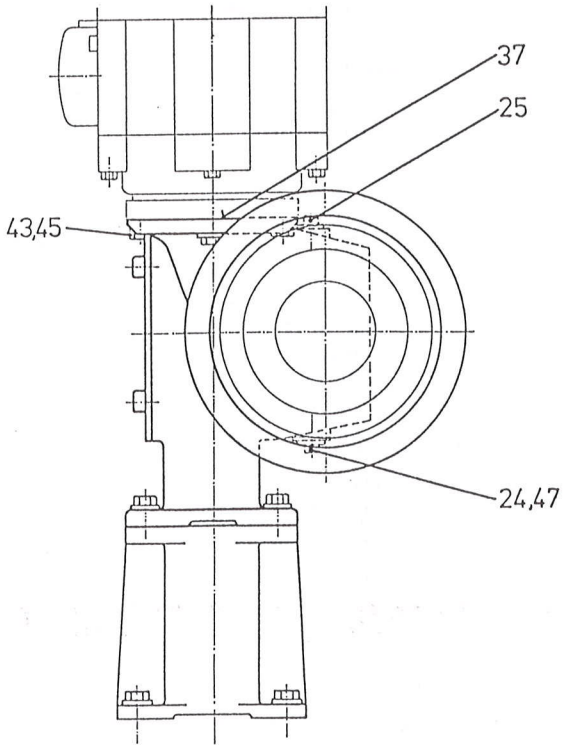
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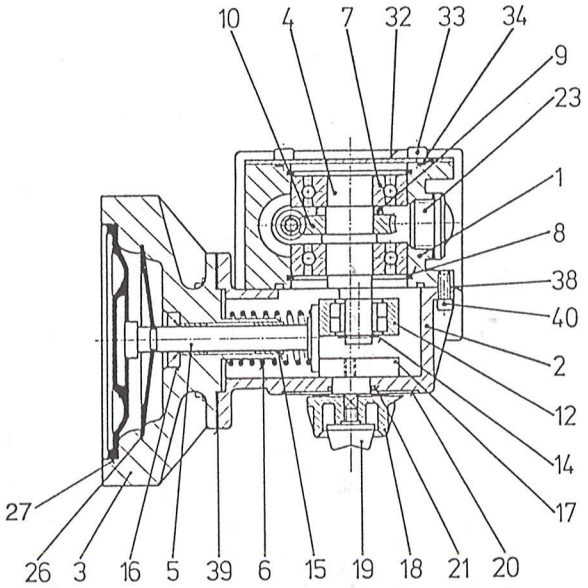
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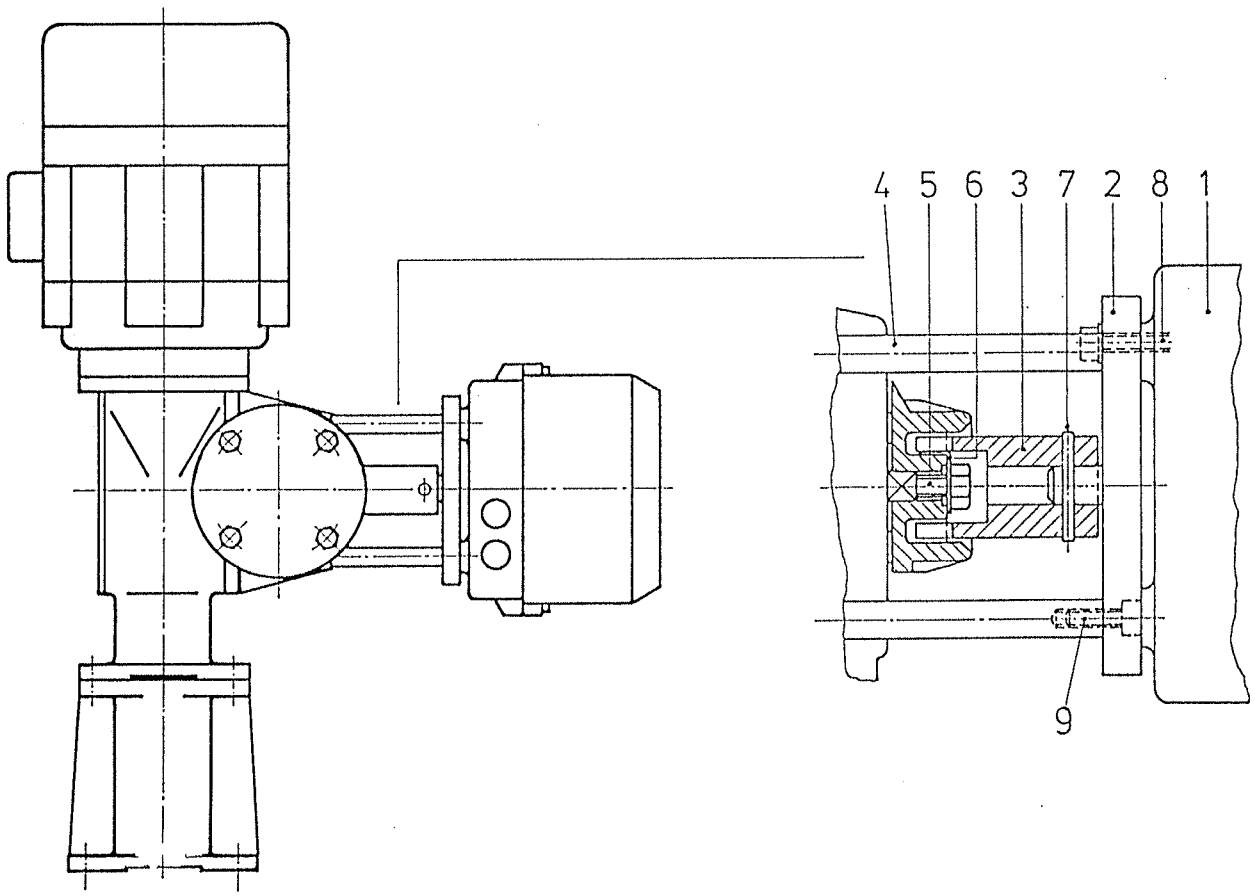
MEMDOS ML

ET 1 04 11 / 6 Single Drive

Item	Description	Material	Part-No.	ML 75	ML 150	ML 270
1	Gear Housing	Al	18.101	1	1	1
2	Eccentric Housing	Al	31.421	1	1	1
3	Diaphragm Housing	Al	25.365	1	-	-
	Diaphragm Housing	Al	25.373	-	1	-
	Diaphragm Housing	Al	25.375	-	-	1
4	Driving Shaft	St	26.553	1	1	1
5	Diaphrag Rod	St	27.047	1	-	-
	Diaphragm Rod	St	27.048	-	1	1
6	Compression Spring	St	10.119	1	1	1
7	Ball Bearing	St	86.003	2	2	2
8	Circlip	St	84.004	2	2	2
9	Distance Ring	St	18.163	1	1	1
10	Worm Wheel	Bronze	19.156	1	1	1
11	Shaft Key	St	83.406	1	1	1
12	Ball Bearing	St	86.106	1	1	1
14	Circlip	St	84.010	1	1	1
15	Sleeve Bearing Bush	Bronze	19.377	2	2	2
16	Seal	St / Plastic	80.575	1	1	1
17	Adjustment Eccentric	IXEF	31.810	1	1	1
18	Adjusting Knob	Plastic	29.764	1	1	1
19	Thumb Screw	St / Plastic	83.661	1	1	1
20	Scale	Plastic	87.412	1	1	1
21	O-ring	Perbunan	80.044	1	1	1
22	Ball Bearing	St	86.001	1	1	1
23	Oil Gauge	Plexi	82.181	1	1	1
24	Locking Screw	Ms	82.022	1	1	1
25	Locking Screw	Plastic	83.019	1	1	1
26	Washer	Hypalon	22.057	1	-	-
	Washer	Hypalon	22.058	-	1	-
	Washer	Hypalon	22.059	-	-	1
*27	Diaphragm d=90	PTFE	81.466	1	-	-
	Diaphragm d=120	PTFE	81.467	-	1	-
	Diaphragm d=150	PTFE	81.468	-	-	1
29	Pump Base	Al	22.779	1	1	1
30	Hex. Screw	8.8	83.033	4	4	4
31	Washer	St nickel plated	84.026	4	4	4
32	Lid	St	18.111	1	1	1
33	Socket Head Cap Screw	8.8 galvanized	83.423	4	4	4
34	O-ring	Perbunan	80.577	1	1	1
35	Hex. Screw	8.8	83.030	2	2	2
36	Washer	St	84.000	4	4	4
37	Gasket	Klingerit	81.235	1	1	1
38	Gasket	Klingerit	81.082	1	1	1
39	Gasket	Klingerit	81.061	1	1	1
40	Socket Head Cap Screw	8.8 galvanized	83.421	4	4	4
41	Pin Screw	8.8 galvanized	83.672	4	4	4
42	Hex. Nut	8.8 galvanized	83.073	4	4	4
43	Hex. Screw	8.8 galvanized	83.157	2	2	2
44	Leakage Tube	PVC	25.193	1	1	1
45	Supporting Disc	St	84.021	3	3	3
46	Threaded Spin	8.8 galvanized	83.241	1	1	1
47	Gasket	Klingerit	81.042	1	1	1

* Recommended Spares (included in spare part set ET 1 04 11 / 2)



Item	Description	Material	Part-No.	ML75-270 31.583	ZML75-270 31.583
1	Servo Motor	various	78.747	1	2
2	Support	Al	31.585	1	2
3	Coupling	PE	31.586	1	2
4	Threaded Rod	1.4304	96.177	4	8
5	Hex. Screw	St	83.021	1	2
6	Locking Plate	St	84.172	1	2
7	Clamping Pin	A2	83.652	2	4
8	Socket Head Cap Screw	A2	83.268	4	8
9	Socket Head Cap Screw	A2	83.606	4	8

MEMDOS ML

Operating & Maintenance Instructions

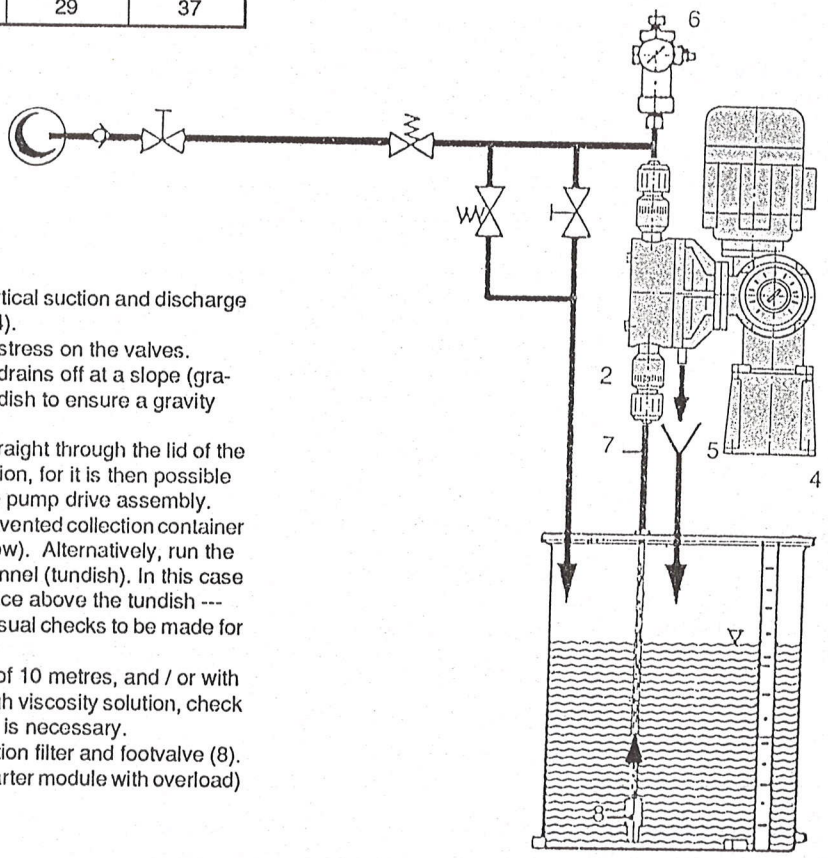
BW 1 04 11 / 1

Technical Data

MEMDOS	ML	75	---	150	---	270	---
type	ZML	75	75	150	150	270	270
max. pressure	[bar]	5	5	4	4	2	2
at max.	[l/h]	80	80	155	155	270	270
pressure	[ml/Hub]	19	19	37	37	64	64
strokes/min		70	70	70	70	70	70
diaphragm dia		90	90	120	120	150	150
suction height		180 m bar					
max. temperature		40° C					
Drive output (kW)		0,1		0,1		0,1	
Weight (kg)	ML	13	---	13	---	14	---
with PE-head	ZML	15		15		17	
Weight (kg)	ML	20	---	20	---	24	---
With st-head	ZML	29		29		37	

Maintenance

The MEMDOS ML dosing pump operates maintenance free. Nevertheless it is recommended that the pump gear oil be changed after approx. 5000 operating hours. Recommended lubricants for the gear: Viscosity class according to ISO VT 100 (equivalent to SAE 30). E.g: Gear oil EM 100 from BP.



Installation

1. Only install the pump (1) with the vertical suction and discharge valves (2+3), and mount the base (4).
2. Ensure the pipes do not cause any stress on the valves.
3. Make sure the separating chamber drains off at a slope (gradient) to the collector through or tundish to ensure a gravity flow.
   Note: Do not fit the drainage pipe straight through the lid of the chemical container back to the solution, for it is then possible for outlet gases to permeate into the pump drive assembly. Ensure the drainage pipe is run into a vented collection container (allowing for a gradient for gravity flow). Alternatively, run the pipe to discharge by gravity into a funnel (tundish). In this case ensure that there is a gap or clearance above the tundish --- this arrangement will also allow for visual checks to be made for any leakage.
4. For injection pipe lengths in excess of 10 metres, and / or with small diameter pipe sizes and / or high viscosity solution, check if a Pulsation Damper (accumulator) is necessary.
5. Provide the suction pipe (7) with suction filter and footvalve (8).
6. Fit and adjust motor safety switch (starter module with overload) in accordance with motor data.

Comissioning

1. Fill the pump with gear oil
2. Switch on the pump motor. (Check direction of rotation according to arrow, if applicable and indicated).
3. Adjust the pump to maximum output (100% scale) when running against no injection pressure.
4. If the pump fails to self-prime, detach the discharge valve and fill the pump head with liquid. (Use water if possible to avoid handling chemicals). Replace the valve and tighten switch the pump back on.
   Once delivery has been achieved , arrange for the pump to discharge into the correct injection pressure and adjust output setting accordingly.

Fault Finding Chart

TYPE OF FAULT	POSSIBLE CAUSE	RECOMMENDED ACTION
Pump falls to inject chemicals	Valves teaking	Clean and re-fit valves (see commissioning above)
	Valves fitted wrongly	Re-assemble valves. Ensure valve balls/seats are correctly positioned. See Part List Diagram
	Suction filter, footvalve or suction pipe leaking or blocked	Clean and re-seal suction assembly
	No stroke movement	Return spring broken. Re-new spring. Allow for density of the chemical. Suction/discharge pressures may be excessive for pump specification
Pump injects too little or too much	Adjusting knob mounted wrongly, discharge rate read-off	Drain pump and put adjusting knob in the right position
Pump injects irregularly	Valve blocked or leaking	Clean and re-seal valves
Pump injects too much	Pressure on suction side too high (pump kicks "up")	Fit pressure "loading" valve in discharge pipe
Diaphragm rupture frequently	Diaphragm not bolted "home" in its assembly	Screw new diaphragm on to carrier until the stop position is reached
	Accelerating pressure too high	Fit pulsation damper
	Pressure too high	Check operation sequence /process. Possibly the "loading" valve is over-pressurised
Pump very noisy	Roller bearing faulty	Re-new roller bearing
	No oil in gearbox	Re-fill with oil. If necessary re-new gear oil
Motor hums and will not operate	Wrongly connected	Re-check electrical supply wiring/control
	Capacitor defective (if fitted)	Re-connect correctly or fit new capacitor
	Pressure too high	Check process

If the faults cannot be eliminated by using the above mentioned information, it will be necessary to send the pump in to the factory or to contact our technical staff regarding further measures. Repairs will be executed forthwith.

MEMDOS ML-ATE

ATE-Drive BW 1 04 11 / 3

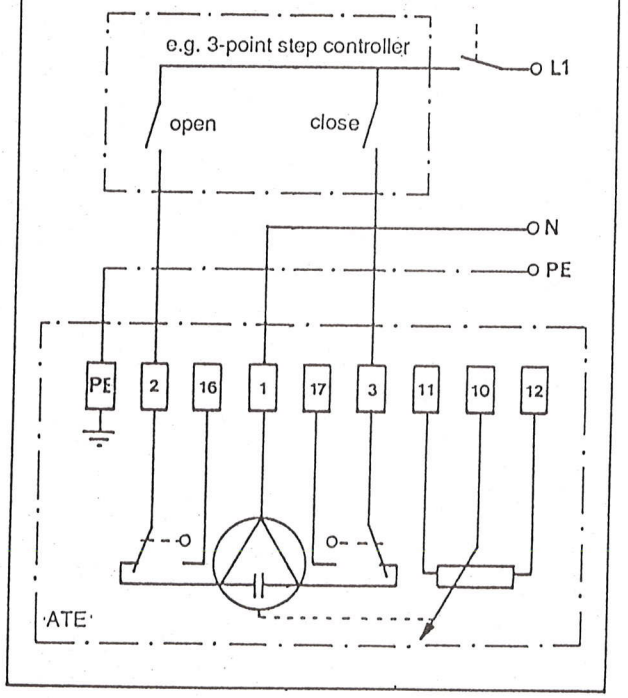
General

The dosing pump must be installed in accordance with Operating & Maintenance Instructions BW 1 04 11 / 1-2. Only the supplementary data for ATE drive versions are given below.

Actuating Drive

Construction:	Reversible AC Motor with self locking reduction gear.
Mains Connection:	220 V, 50/60 Hz, approx.
Regulating Distance:	270° for pump discharge 0...max.
Regulating Time:	5,5 minutes 0...100%
Ambient Temp.:	max. +45°C
Protection Type:	IP 54 according to DIN 40 050
Limit Switches:	Limit switches disengage the motor in the limit positions beyond an angle of rotation of 270°.
Indication:	The stroke position is indicated in each case on a scale (0...10). The relevant discharge (output) rate is obtained from the diagram on data sheet MB 1 04 11 / 2.
Remote Indication:	A built-in potentiometer with a 130 ohm overall resistance on the drive shaft of the servo motor enables continous remote indication of the stroke position.
Weight:	Additional weight to basic pump/ motor with single actuating drive 2 kg. Additional weight to basic pump/ motor with twin actating drive 4 kg.

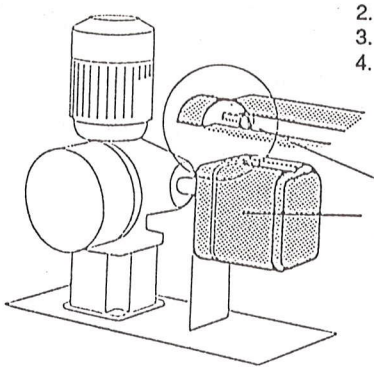
Warning: The ATE servo motor must not be operated if the pump drive motor is stationary. For this purpose an interlock with motor protection of the pump main drive motor should be incorporated in the control circuit.

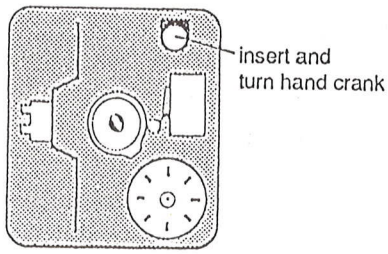


Manual Adjustment

(only for emergency use)

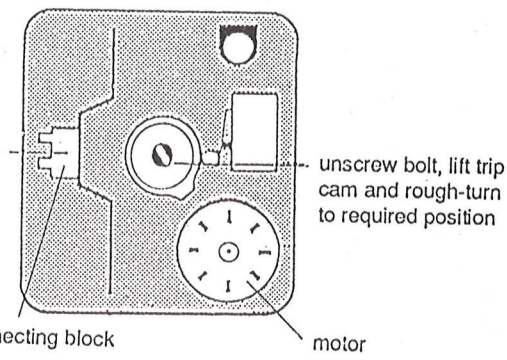
1. Switch off supply to the ATE unit
2. Remove cap of the ATE
3. Switch on the pump motor
4. Rotate in required direction using hand crank





Commissioning

1. Connect up electrically as shown in the circuit diagram above.
2. Give a few opening and closing pulses, and in so doing observe whether or not the motor rotates in the correct direction. If the direction of rotaion of the ATE drive is wrong, the leads must be transposed (terminal 2&3). Additional limit switches for testing by hand must be operated by lifting up the actuator lever from the control cam.
3. To test the limit switch adjustments for the drive, it must be moved, via electrical contacts, up to its limit positions at which the motor is switched off. Normally, th econtacts are set before leaving the factoryfor the angle of rotation of 270° which corresponds to the stroke length from 0 to 100%. If necessary, the angle of rotation can be changed according to the sketch below.



Maintenance

The actuating drive is adequately lubricated before leaving the works. However it is advisable to examine the drive once a year to ensure that it has sufficiant lubricant, and, if necessary lubricate the gears again. In the case of drives that are constantly exposed to elevated temperatures, shorter intervals between examinations are recommended. No other maintenance is necessary.