

MAGDOS DE/DX

Solenoid-diaphragm dosing pump



EN

02

Operating Manual

Read this operating manual before start-up!
To be retained for future reference.

Table of Contents

1. Safety instructions	3
2. Use for intended purpose	7
3. Function	7
4. Dimensioned drawings	8
4.1 MAGDOS DE/DX 01...12	8
4.2 MAGDOS DE/DX 20...100	8
5. Technical data	9
6. Delivery characteristic curves	10
7. Installation	11
7.1 General information	11
7.2 Installation location	11
7.3 Water meter installation	12
7.4 Electrical connection	12
7.5 Level monitoring	12
7.6 Pressure control and pressure relief valves	13
7.7 Injection nozzle installation	13
7.8 Installation examples	14
8. Operation	16
8.1 Connections and cable assignments	16
8.2 Flow rate setting	17
9. Start-up	19
9.1.1 Automatic venting	20
10. Shutdown	21
10.1 Disposal of old equipment	21
Device revision	21
11. Maintenance	22
11.1 Replacing diaphragm, MAGDOS DE/DX 01...12	22
11.2 Checking and replacing deflector plate	26
11.3 Valves	26
11.4 Correcting stroke length adjustment	29
12. Spare parts	30
12.1 Spare parts list MAGDOS DE/DX 01...03	31
12.2 Spare parts list MAGDOS DE/DX 07...12	32
12.3 Spare parts list MAGDOS DE/DX 20	33
12.4 Spare parts list MAGDOS DE/DX 40...100	34
13. Troubleshooting	35
Index	36
Declaration of No Objection	37
Warranty claim	38
EC Declaration of Conformity	39

1. Safety instructions

1.1 General

This operating manual contains basic instructions to be followed during installation, operation and maintenance. It is therefore essential that the Operating Manual be read by the installation technician before installing and commissioning the pump/system, as well as by the relevant operating personnel/operating company of the unit. The Operating Manual must remain accessible at the dosing pump/system for reference at all times.

Besides the general safety instructions in this "Safety" section, the special safety instructions in the other sections are also to be followed.

1.2 Identification of safety instructions in this operating manual

Failure to follow the safety instructions in this operating manual may result in personal injury or damage to the environment and the dosing pump/system. Safety instructions are identified by the following symbols:

DANGER!

Indicates immediate danger.

Failure to follow this instruction will lead to death or extremely serious injuries.



WARNING!

Refers to a potentially hazardous situation. Failure to follow this instruction may lead to death or extremely serious injuries.

CAUTION!

Refers to a potentially hazardous situation. Failure to follow this instruction may lead to minor injuries or damage to property.

IMPORTANT! or NOTE!

Failure to follow these safety instructions may endanger the machine and its functions.

IMPORTANT!

This indicates additional information that makes work easier and ensures trouble-free operation.



Information attached directly to the dosing pump, such as

- cable markings
- markings for fluid connections

must be followed without fail and must remain fully legible at all times.

1.3 Personnel qualifications and training

The personnel employed for operation, maintenance, inspection, and installation must be suitably qualified for this work. The responsibilities, areas of competence and personnel supervision must be clearly defined by the operating company. Personnel who do not have the required know-how must be duly trained and instructed. If necessary, this can also be done by the manufacturer/supplier on behalf of the operating company. In addition, the operating company must ensure that the personnel are fully familiar with, and have understood the contents of this operating manual.

1.4 Important safety instructions

Basic safety precautions should always be followed when installing and using this electrical equipment. These precautions include the following:

ATTENTION!

Read and follow all instructions!

Keep these instructions in a safe place!



**WARNING!**

To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

WARNING!

Risk of electric shock. Connect the device only to a socket outlet with earthing contact protected by a ground fault circuit interrupter (GFCI). Consult a qualified electrician if you are uncertain whether the socket is protected by a GFCI.

Do not bury the cable. Secure cable to avoid damage by lawn mowers, hedge trimmers and other equipment.

WARNING!

To reduce the risk of electric shock, replace the cable immediately if damaged.

WARNING!

To reduce the risk of electric shock, do not use extension lead to connect unit to electric supply; use an appropriately located socket outlet.

1.5 Hazards due to failure to follow safety instructions

Failure to follow the safety instructions may endanger not only persons, but also the environment and the device. Failure to follow the safety instructions may invalidate any damage claims. Non-compliance with the safety instructions may give rise to the following hazards:

- Failure of major functions of the device.
- Failure of required maintenance and repair methods.
- Danger to persons due to electrical, mechanical and chemical effects.
- Danger to the environment due to leakage of hazardous substances.

1.6 Safety-conscious working

The safety instructions contained in this operating manual must be observed. The operating company is responsible for ensuring compliance with local safety regulations.

Faults that may affect safety must be repaired immediately.

1.7 Safety instructions for the operating company/operator

Leakages of dangerous substances (e.g. aggressive, toxic), for example due to a broken diaphragm, must be suitably drained away so that they do not cause danger to persons or the environment. Statutory regulations must be observed.

Hazards posed by electric power must be ruled out (for further details, refer to the VDE¹⁾ regulations and the requirements of the local public utilities as well as Section 1.4).

¹⁾ German Association for Electrical, Electronic & Information Technologies

1.8 Safety instructions for inspection, maintenance and installation work

The operating company must ensure that all maintenance, inspection and installation work is carried out by authorised and duly qualified personnel, who have read and understood this operating manual.

The dosing pump must always have come to a complete stop before starting any work on the pump. Always follow the procedure specified in the operating manual for shutting down the dosing pump/system.

Dosing pumps or systems which convey hazardous media must be decontaminated.

All safety and protective equipment must be reattached and activated immediately after the work has been completed.

The instructions given in Section 7.2 "Installation location" and Section 9 "Start-up" must be observed before start-up.

1.9 Unauthorised modification and production of spare parts

The device may only be modified or converted in consultation with the manufacturer. Use only the manufacturer's spare parts and accessories. Otherwise the warranty is invalidated.

1.10 Inadmissible operating practices

Any methods of operation other than those described in Section 2 "Proper use" are not permitted and will invalidate any manufacturer liability under the warranty.

1.11 Dosing of chemicals

CAUTION!

When working on dosing systems, the local accident prevention regulations must be observed and the specified personal protective equipment must be worn. The following standard protective clothing is recommended, depending on the hazardousness of the metered medium:



Protective clothing



Protective gloves



Protective goggles

It is recommended that all persons responsible for the installation and maintenance of piping systems, hoses and accessories wear this protective clothing.

Before working on the dosing pump and system, disconnect it from the mains power supply and prevent it from being switched on.

CAUTION!

Any chemical still present in the dosing head may spray out when the voltage supply is reconnected. This may lead to chemical or other burns to the face and hands. Dosing lines must always be connected before switching on again.

The chemical resistance of the construction materials in the pump must be verified before dosing aggressive media!

The pump dosing head and the system connections and lines may be under pressure. Working on the dosing system requires special safety precautions and may only be carried out by instructed technical personnel:

CAUTION!

Chemical may spray out. This may lead to chemical or other burns. Always release the pressure before starting work on the dosing pump.

Before working on the dosing head, valves and connections, flush the dosing pump with a harmless medium (water in most cases), to avoid unintentional contact with the metered medium.

WARNING!

Never look into the open end of a clogged line or valve. Chemicals may emerge unexpectedly and cause chemical or other burns to face and hands.

Before start-up, all screw connections must be inspected for correct tightness and leak-tightness, and must be re-tightened using an appropriate tool if necessary.

CAUTION!

If connections at the dosing head are loosened during operation, for venting or other reasons, leaking chemicals must be removed properly. Only in this way is it possible to effectively avoid the risk of injuries caused by chemicals and corrosion at the dosing pump. Leaking chemicals may also damage the diaphragm at its mounting edge.



**ATTENTION!**

If changing the chemical, check the materials in the pump and other system parts for chemical resistance. If there is a danger of chemical reaction between the different media, clean thoroughly beforehand.

**IMPORTANT!**

The lock screw must be retightened after adjusting the stroke length. The setting of the adjusting knob may otherwise change, thus causing faulty flow rates.

After changing the electrical connections, e.g. removing the level monitor, the threaded cable joint must be tightened to maintain the protection class of the dosing pump.

**DANGER!**

Risk of burns. Shock wave: parts may fly off and cause fatal injury. Under no circumstances must the device be used in potentially explosive atmospheres.

**CAUTION!**

Hot metal parts may burn your hands. Always disconnect the mains power supply before opening the magnetic drive and allow the dosing pump to cool down for at least one hour.

**CAUTION!**

Malfunctions may arise in circuits, magnetic strips or mobile phones if brought into the direct vicinity of the magnet.

1.12 Scope of delivery**IMPORTANT!**

Carefully unpack the dosing pump and any accompanying accessories ordered, so that small parts are not left inside the packaging. Compare the delivery content with the delivery note immediately. If there are any discrepancies, determine the cause.

The following are part of the scope of delivery:

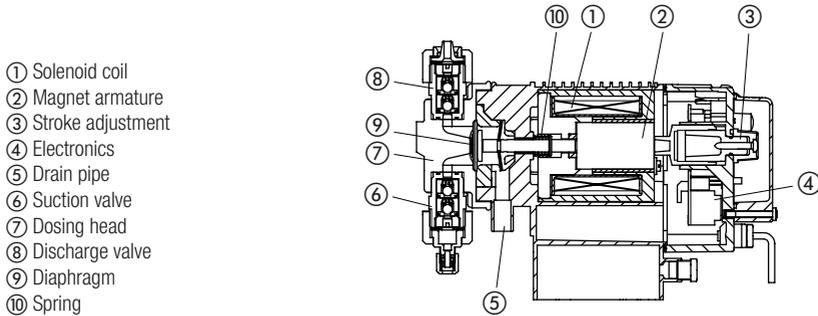
- Dosing pump MAGDOS DE/DX
- Suction and discharge side connections
- Operating Manual

2. Use for intended purpose

The device is intended for the following purpose only: the conveying and dosing of chemicals. Operating safety is guaranteed only if the device is used for its intended purpose. Use for any other purpose is not permitted and will invalidate any liability under the warranty. The operating conditions described in section 5 "Technical Data" must be observed!

3. Function

Dosing pumps are used to add chemicals in precisely metered quantities in various processes. Its universal control system allows flexible use of MAGDOS DE/DX in all applications. The dosing rates range from 0.1 to 115 litres per hour. The precise metered quantities at different backpressures can be derived from Section 6 "Delivery Characteristic Curves".



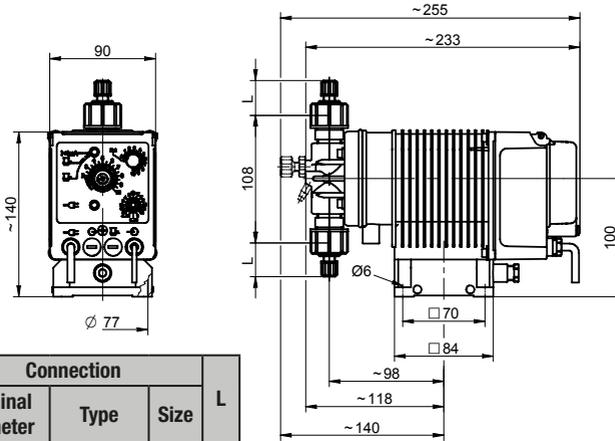
Electronics ④ of MAGDOS DE/DX controls coil ① of the magnetic drive with a pulsating characteristic. Magnet armature ② presses diaphragm ⑨ to the left, thus displacing liquid in dosing head ⑦. The liquid passes through discharge valve ⑧ into the discharge line. After the solenoid is switched off, spring ⑩ returns armature ② and diaphragm ⑨ to their initial position. Stroke adjustment ③ limits the backward movement of the solenoid armature. A negative pressure is produced in dosing head ⑦ and liquid is drawn in through suction valve ⑥. Leaks due to diaphragm rupture are discharged in a controlled manner through drain pipe ⑤.

Function overview

	MAGDOS DE	MAGDOS DX
Internal operation	0...100%	
Control with pulse frequency (relay contacts)	Yes	
Pulse step-up and step-down	No	1:64 ... 64:1
0/4...20 mA actuation	No	Yes
Level monitoring	Dual	
Alarm relay	optional	
Display	optional	

4. Dimensioned drawings

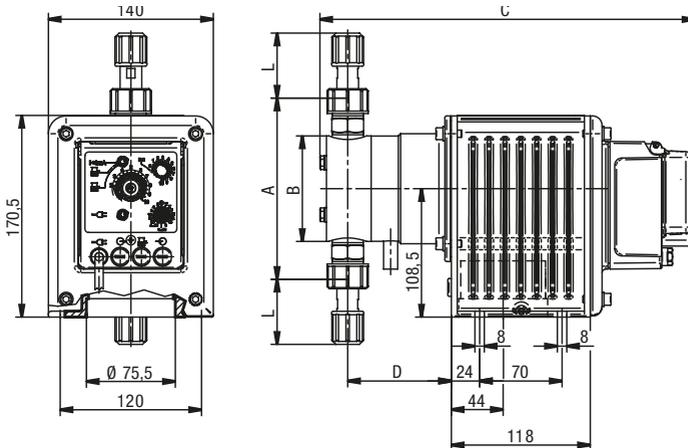
4.1 MAGDOS DE/DX 01...12



Connection			L
Nominal diameter	Type	Size	
DN 4 *	Hose clip	4/6	13
DN 6		6/12	23
		6/9	34

*) Only use on the intake side on DE/DX 12, all dimensions in mm

4.2 MAGDOS DE/DX 20...100



MAGDOS	Material	A	B	C	D	Connection		L	
						Type	Size		
DE/DX 20	PVC	155	89	310	87	DN 6	Hose clip	6/12	55
	1.4571	135					Screw-in thread	G 1/4 i	25
DE/DX 40/100	PP	280	152	337	105	DN 10	Pipe bonded	d 16 i	22
			1.4571				148	310	

All dimensions in mm

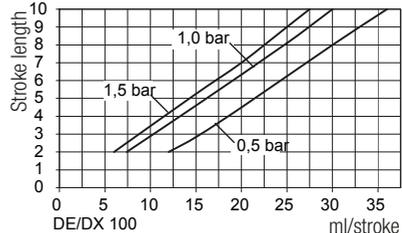
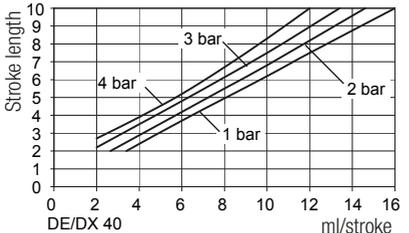
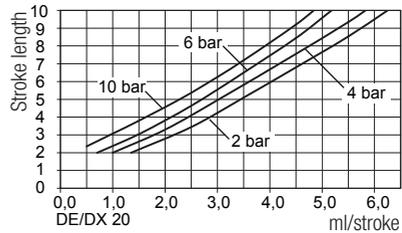
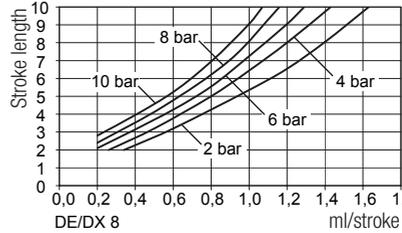
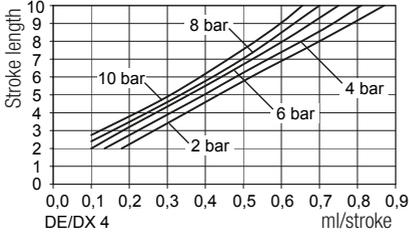
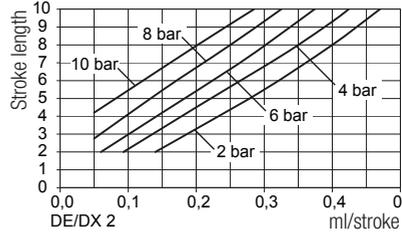
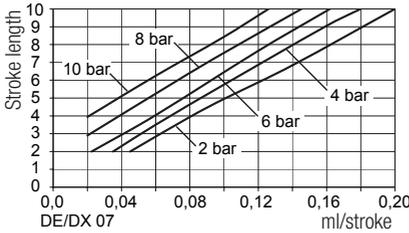
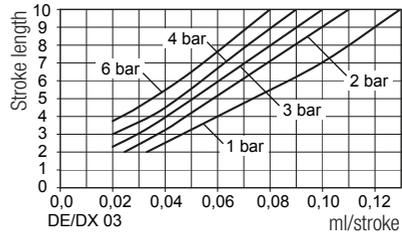
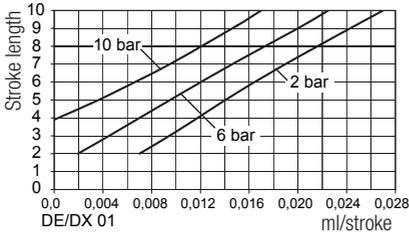
5. Technical data

MAGDOS DE/DX 01...100		Unit	01	03	07	2	4	8	12	20	40	100	
Delivery rate at max. pressure *		l/h	0.1	0.46	0.72	1.86	3.9	6	12	20.2	50.4	115	
Max. delivery pressure *		bar	10	6	10	10	10	10	4	10	4	1.5	
max. stroke frequency		rpm	100						70				
Suction head for non-gassing media		m water col.	3				2		1.2				
Max. supply pressure (Σ static and dynamic)		mbar	800				700		400	200	100	0	
Voltage supply		V AC	115 or 230. +/- 10 %. 50/60 Hz										
Power cable			2 m cable with: - Shock-proof plug, 230 V AC - with UL/CSA connector. 115 V AC										
Power consumption	230 V AC	W	21				30			70			
	115 V AC		33						66				
Max. current consumption during dosing stroke	230 V AC	A	2.3						4.1				
	115 V AC		3.6						7.4				
Soldered fuse	230 V AC	A	T 0.8						T 2				
	115 V AC		T 1.6						T 4				
Protection class			IP 65										
Insulation class			F										
Input pulse duration		ms	> 30										
Solenoid excitation time per pulse	230 V AC	ms	60						160				
	115 V AC		80						190				
Fault signalling relay with changeover contact (optional)	230 V AC	A	2.5										
	115 V AC		2.5										
Voltage, level monitoring connection		V DC	5. for potential-free switching outputs										
Voltage, pulse input		V DC	5. for potential-free switching outputs										
Load for 0/4...20 mA input		Ω	150										
Max. ambient temperature		°C	40										
Max. temperature of the medium		°C	50 (35 with PVC parts)										
Weight	Plastic	kg	2.9 approx.						10.5	12.5			
	Stainless steel		3.5 approx.						12	20			
Max. sound pres. level, depressurised		dB(A)	58				66			61			
Max. sound pres. level at test pres.		dB(A)	60				68			62			

* The precise metered quantities can be derived from the Delivery Characteristic Curves, Section 6.

6. Delivery characteristic curves

The delivery characteristic curves refer to water at 20 °C (68 °F). The delivery capacity depends on the medium (density and viscosity) and temperature. Dosing pumps must therefore be gauged in litres for the application.



7. Installation

7.1 General information

Local rules and regulations must be taken into account when selecting a dosing pump for designing a system, and for installation and operation. This applies to the selection of the appropriate materials for the dosing pump, the handling of chemicals, and electrical installation. The technical data of the dosing pump (Section 5) must also be taken into consideration. The system must be designed accordingly (e.g. pressure loss in lines depending on nominal diameter and length).

NOTE!

The size of the lines used in connection with MAGDOS DE/DX 12 must be at least DN 6. DN 4 should only be used for short lines (up to 1 m) and low-viscosity media (<20 mPa s).

The designer and operating company are responsible for ensuring that the entire system, including the dosing pump, is designed in such a way that neither system equipment nor buildings are damaged in the case of chemical leakage due to the failure of wearing parts (e.g. diaphragm rupture) or burst hoses. If the chemical system represents a potential source of danger, the installation must be designed in such a way that no unreasonable consequential damage occurs, even if the dosing pump fails. We therefore recommend installing leakage monitors and collecting pans.

The drain socket of the dosing head must be visible so that a diaphragm rupture can be detected. Drainage should be able to flow freely downward through the drain pipe.

To increase the dosing accuracy and to ensure the functional reliability, we recommend the use of additional accessories. These include pressure control valves, pressure relief valves, leakage monitors and low level indicators, as shown in the installation examples.

Always use appropriate tools for the installation of plastic connection parts. To avoid damage, never apply excessive force.

IMPORTANT!

Plastic parts (especially PVC parts) can be tightened and loosened more easily by applying lubricant (e.g. silicone grease) to the thread beforehand.

To prevent seizing, threaded stainless steel parts (e.g. dosing head and valves) must be lubricated before being assembled (e.g. with PTFE spray).

ATTENTION!

Compatibility of the lubricant with the metered chemicals must be checked.

7.2 Installation location

The installation location of the dosing pump must be easily accessible by operating and service personnel.

It is possible that the running noise of the dosing pump is transmitted through the piping, thus resulting in a disturbing noise level. Installation of the dosing pump on a wall bracket should be preferred in such cases. For the same reason, it is recommended to mount the pump on an outside wall and not on inside walls with adjacent rooms used for residential purposes. When installing the dosing pump below the liquid level, care must be taken to ensure that chemical leakages due to a broken diaphragm cannot cause any damage (collecting pan, leakage sensor).

It is also possible to mount the pump directly on the chemical tank.

Pay attention to the maximum permissible ambient temperature of the dosing pump (refer to Technical Data). Radiant heat from apparatus and heat exchangers must be shielded so that heat from the dosing pump can be dissipated sufficiently. Avoid exposure to direct sunlight. If the dosing pump is installed outside, provide a roof to protect it from the effects of weather.



7.3 Water meter installation

The MAGDOS DE/DX can be controlled by any commercially available contact water meter. To avoid interference or faulty pulses, the dosing pump must not be fixed directly to the water meter. Direct mounting is acceptable if a spacer is used, which guarantees a distance of 50 mm (refer to Section 7.8 Installation Examples). The pump should therefore be mounted on a chemical supply tank or a wall bracket. The pulse sequence of the water meter must be tuned to the maximum stroke frequency of the dosing pump (Section 5 Technical Data).

7.4 Electrical connection

DANGER!

Risk of burns. Shock wave: parts may fly off and cause fatal injury. Under no circumstances must the MAGDOS DE/DX be used in potentially explosive atmospheres. The electrical connection of the dosing pump must be made in accordance with locally applicable requirements and may only be carried out by technical personnel.

NOTE!

The dosing pump must be plugged into a grounded power outlet. The 230 V version of the MAGDOS DE/DX is connected by a shockproof earthing-pin plug. The 115 V version is equipped with a UL/CSA connector.

NOTE!

The dosing pump is double insulated and earthed. Signal cables must not be laid parallel to high-voltage current lines or mains cables. Lay supply and signal lines in separate channels. An angle of 90° is required at line crossings. If signal lines are longer than 2 m, shielded cables must be used.

7.5 Level monitoring

If a level monitor is connected, the jack plug has to be covered by a plastic sleeve in order to maintain the protection class. The required sleeve is part of the level monitor (also in combination with a suction line).

With the level monitor connected, the dosing pump stops if the chemical level in the supply tank is low, in order to prevent air bubbles from entering the suction line and the dosing head. The red LED is lit. As soon as the level contact closes again, the dosing pump restarts.

The level sensor must be designed as a max. N.O. contact.

MAGDOS DE/DX is equipped with a low level alert. When the first contact opens, the red LED begins to flash, the dosing pump continues delivering medium and the alarm relay (optional) is activated. The pump only stops when the second contact opens. The red LED lights continuously.

The "low level alert" function is not available when using a 2-pin connector and a simple float switch.

NOTE!

A dummy plug must be attached if a float switch is not connected. The dosing pump is delivered with a dummy plug already attached. If a float switch is to be connected, the dummy plug has to be removed before inserting the jack plug.

MAGDOS DX

The level LED has a dual function in connection with this dosing pump. It also begins to flash when the input signal drops below 4 mA in 4...20 mA mode (cable break).

7.6 Pressure control and pressure relief valves

Pressure control valves are used to optimise the dosing process. They are used

- to increase the dosing accuracy in the case of fluctuating backpressure.
- when the dosing lines are long, in order to prevent excess delivery, since the accelerated medium continues moving due to its own inertia even after the delivery stroke has ended.
- to prevent siphoning, if the supply pressure is higher than system pressure.

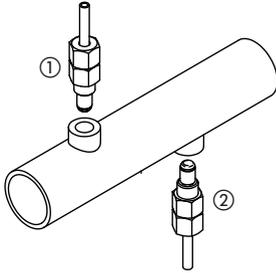
Pressure relief and safety valves are used for overload protection of the dosing pump and the associated valves and lines. They prevent inadmissible pressure rises in the delivery side system of the dosing pump; for example, if shutoff valves close while the pump is running, or if the injection nozzle is clogged.

The PENTABLOC is a combination valve and performs the functions of a pressure control valve and a safety valve. It also integrates functions such as anti-siphoning, pressure relief and dosing control.

7.7 Injection nozzle installation

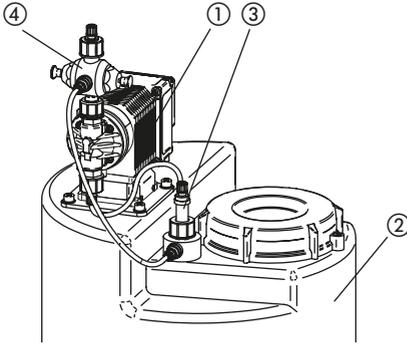
Injection nozzles are used to inject the metered medium into the main flow, while at the same time acting as non-return valve. The injection nozzle is usually mounted from the top into the main line. Mounting from below is recommended only for media that have a tendency to crystallise, in order to prevent air bubbles from being trapped in.

For media that tend to contaminate the injection nozzle, we recommend installing an injection nozzle that can be shut off and removed for maintenance purposes.

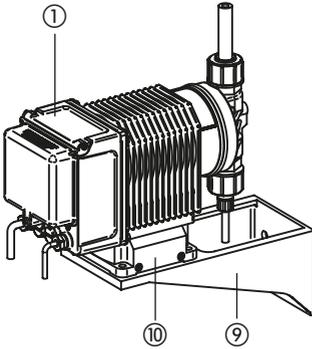


① Injection nozzle mounted from above, ② Injection nozzle mounted from below (for media that tend to crystallise)

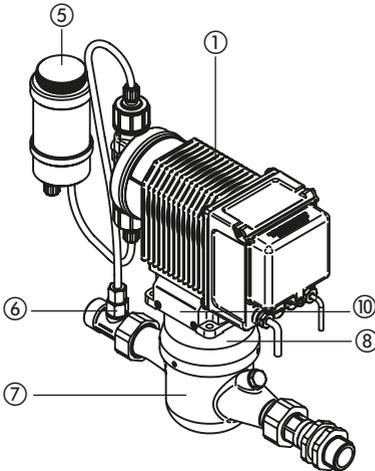
7.8 Installation examples



On chemical tank



On wall bracket



On water meter

- ① MAGDOS DE/DX
- ② Chemical tank
- ③ Suction line with integrated low level indication
- ④ Priming aid
This equipment allows easy start-up of small dosing pumps in particular. The air cushion serves as a pulsation damper.
- ⑤ Multifunctional valve PENTABLOC
- ⑥ Injection nozzle with non-return valve
- ⑦ Water meter with contact unit
- ⑧ Spacer for water meter
The spacer is required to avoid the drive solenoid affecting the water meter contact.
- ⑨ Wall bracket
- ⑩ Mounting kit MAGDOS pump base

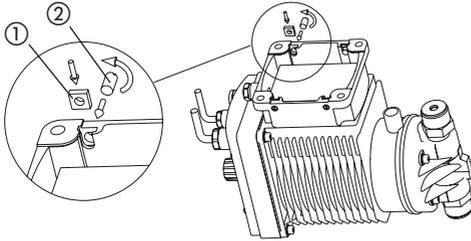
Mounting on wall bracket, tank adapter and pump base

Mounting kit MAGDOS pump base

consisting of:

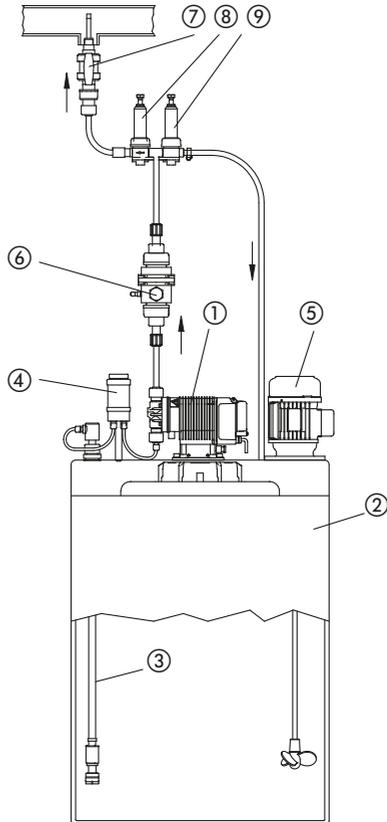
4x square nut ①

4x setscrew ②

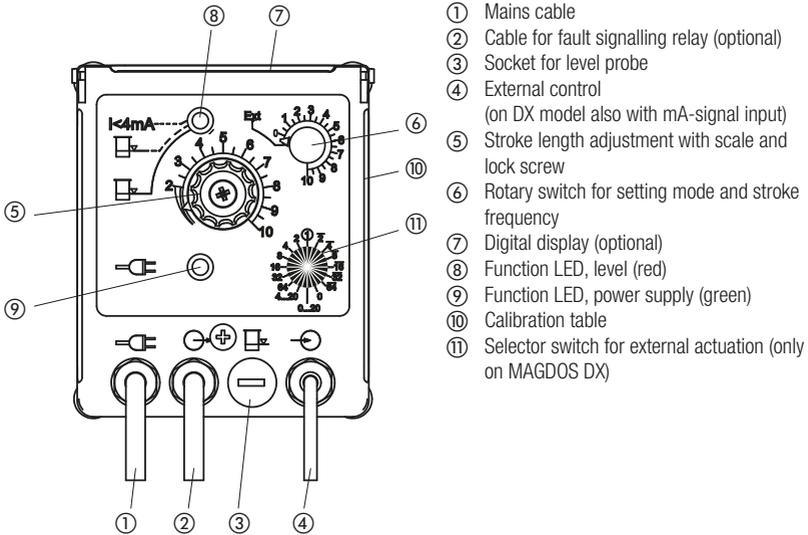


Installation example

- ① MAGDOS DE/DX
- ② Chemical tank
- ③ Suction line with integrated low level indication
- ④ Priming aid
- ⑤ Electrical agitator
- ⑥ Pulsation damper
- ⑦ Injection nozzle with non-return and shutoff valve
- ⑧ Pressure control valve
- ⑨ Pressure relief valve (safety valve)



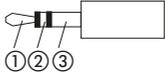
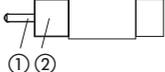
8. Operation



- ① Mains cable
- ② Cable for fault signalling relay (optional)
- ③ Socket for level probe
- ④ External control
- ⑤ Stroke length adjustment with scale and lock screw
- ⑥ Rotary switch for setting mode and stroke frequency
- ⑦ Digital display (optional)
- ⑧ Function LED, level (red)
- ⑨ Function LED, power supply (green)
- ⑩ Calibration table
- ⑪ Selector switch for external actuation (only on MAGDOS DX)

8.1 Connections and cable assignments

Control unit MAGDOS DE/DX		Standard version	CSA version
①	L	Voltage supply (2 m cable) 230 V AC, 50/60 Hz or 115 V AC, 50/60 Hz	BR (brown)
	N		BU (blue) or GY (grey)
	PE		GN/YE (green/yellow)
②	RO Break contact	 Fault Operation	BU (blue) or GY (grey)
	Rw Changeover contact		BR (brown)
	R1 Make contact		BK (black)
			BK (black)

Connection		Connector	Housing	Cable	
③	Level input	3.5 mm jack plug	Socket	 ① ② ③ Manufacturer's accessories	
				① Main alarm	RD (red)
				② Low level alert	WH (white)
				③ Ground (GND)	BK (black)
④	External control	RCA (MAGDOS DE/DX 20 ... 100)	Socket	 ① ② 1.5 m 2-wire (cable included in delivery)	
				① Input (+)	BN (brown)
				② Ground (GND)	WH (white)
				CSA version	Plug
			1 = input (+)	BN (brown)	
			2 = -	BK (black)	
			3 = ground (GND)	BU (blue)	
			Cable (MAGDOS DE/DX 01 ... 12)	WH (white) = Pulses BN (brown) = Ground (GND)	

NOTE!

The protection class of the control unit is only ensured if the connection ports are protected by caps or the standard connectors are inserted.



8.2 Flow rate setting

The flow rate is defined by two parameters:

1. Volumetric displacement per dosing stroke

The stroke length adjustment limits the movement of the diaphragm. Adjusting the stroke length does not have a linear proportional effect on the stroke volume. The volume per dosing stroke is derived from the delivery characteristic curves or the delivery table on the dosing pump.

To adjust, undo the lock screw, set the required value and retighten the lock screw.

ATTENTION!

Do not adjust stroke length while the pump is stationary but rather only during the delivery stroke.

2. Stroke frequency

Changing the stroke frequency has a directly proportional effect on the flow rate. It is either set to a fixed value or defined by an external pulse generator (e.g. electronic controller or contact water meter).

To ensure effective adaptation of the dosing pump to the respective process, the MAGDOS can be set to different stroke frequencies in internal mode.



8.2.1 Operating mode selection

MAGDOS DE

The rotary switch ⑥ defines the stroke rate (0..100/min) infinitely variable in internal mode.

External mode is activated by turning to the left-hand stop (beyond the detent). A dosing stroke is executed for every incoming pulse in external mode.

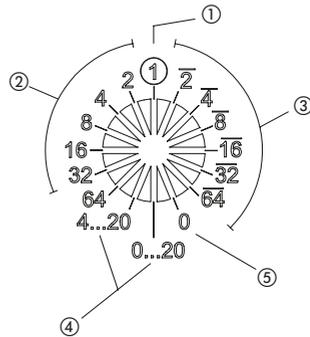
IMPORTANT!

Pulses are not saved when the dosing pump is driven at more than the maximum pulse rate (see Technical Data). When driven at higher pulse rates, the pump does not continue running at a constant maximum frequency but rather dosing strokes are omitted.

MAGDOS DX

In addition to the functions of the MAGDOS DE, optional functions can be selected for external operation with the MAGDOS DX. The additional selector switch has the following settings:

- ① Pulse 1:1
- ② Pulse multiplication 2 / 4 / 8 / 16 / 32 / 64
- ③ Pulse division 2 / 4 / 8 / 16 / 32 / 64
- ④ Signal input 0..0.20 mA or 4..0.20 mA
- ⑤ Pump stop at "0"



8.2.2 Digital display (optional)

The display shows the different operating modes and possible error messages.

Display	Meaning
080	Stroke frequency of 80 strokes per minute in either "internal control" or "DC signal control" mode
1.1	External control mode at ratio of 1:1
1.16	External control mode with pulse multiplication factor of 16
8.1	External control mode with pulse division factor of 8
E - L	Tank empty message
I - E	Input signal < 4 mA with 4-20 mA actuation (e.g. cable break)
OFL	Input signal > 20 mA with 0/4...20 mA actuation
OFF	Selector switch position "0"

9. Start-up

CAUTION!

Personal protective equipment as specified by the applicable accident prevention regulations must be worn during all work on the dosing pump/system!



Protective clothing



Protective gloves



Protective goggles

1. For initial start-up, set the pump to internal operation at 100% stroke frequency and allow the pump to prime. It is advisable to set the stroke length to "10" for this purpose. If the dosing pump does not prime, switch off the dosing pump, unscrew the discharge valve and fill the dosing head with fluid. If non-hazardous, the medium itself can be used; otherwise use a neutral medium that will not disturb the process. (In many cases, water can be used.)

WARNING!

Chemical may spray out. This may lead to chemical or other burns. Ensure that the discharge line is depressurised before disconnecting.



Then reinstall the discharge valve, switch on the dosing pump and allow it to prime. (A priming aid is recommended. See installation examples)

2. If there is a vent valve integrated in the dosing head or installed as a separate fitting, open it while the dosing pump is operating until fluid comes out. Then close it again. In the case of outgassing media, allow the fluid to flow off continuously (about 1 drop per 1 - 3 strokes). The outflowing chemicals are to be returned to the supply tank. Use a hose connector for this purpose.

3. When trouble-free delivery is established, set the required flow rate and tighten adjusting knob. For initial approximation refer to the calibration table attached to the dosing pump which shows the stroke length setting for a selected flow rate per stroke (ml/pulse) as a function of backpressure. Intermediate values are to be determined.

Example:

Required dosing quantity: 0.07 ml/pulse at 4 bar (58 psig). The value determined for stroke length is 8.0 and must be set on the stroke length adjusting knob when the dosing pump is operating.

ml pulse	Hublänge stroke length 03			
0,10	7,0	9,0	---	---
0,09	6,3	8,0	9,9	---
0,08	5,5	7,1	9,0	---
0,07	4,8	6,0	8,0	9,0
0,06	4,0	5,0	6,6	7,5
0,05	3,3	4,2	5,6	6,5
0,04	2,5	3,2	4,5	5,4
0,03	---	2,4	3,6	4,5
0,02	---	---	3,0	3,7
bar	1	2	4	6
psig	14,5	29	58	87

NOTE!

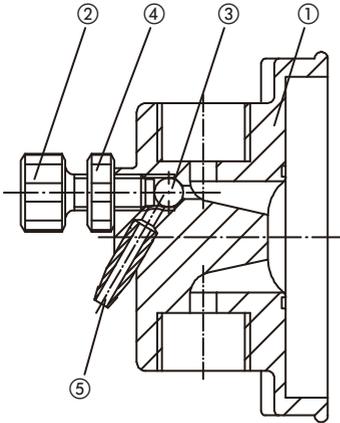
Depending on the installation, the chemicals used and the temperature of the medium, these values may differ and must be checked under operating conditions.



4. In the case of externally controlled dosing pumps (e.g. water meter mode), set pump to "external". To check operation, initiate water flow by opening a water valve and wait for pulse output.

5. The manufacturer of the dosing equipment is not responsible for damage due to excessive or insufficient flow rates at the dosing pump or incorrect or faulty installation of peripheral fittings

9.1.1 Automatic venting



The automatic venting facility (standard features on DE/DX 03, 07 otherwise optional extra) consists of a non-return ball valve. The ball ③ rolls against the seat during the suction stroke and away from it during the pressure stroke. The stroke length of the ball is determined by the screw ②. Starting from the position at which the screw blocks the ball, turn the screw by half a turn to the left and start the dosing pump. Depending on the operating pressure that may already be applied at the discharge valve ③, the dosing pump is primed until the metered medium emerges from the vent outlet ⑤. Now tighten screw ② until medium no longer emerges and the dosing pump assumes normal delivery.

To regularly dispose of gas collected in the dosing head, a certain permanent, unavoidable leakage quantity is to be established (approx. 25 - 30% of the dosing rate, corresponding to approx. 0.5 - 0.7 l/h on the DE/DX 2) which flows through the vent outlet ⑤ via a 4/6 PVC hose back to the supply tank. The leakage quantity is set by carefully turning screw ② and locking nut ④.

The leakage quantity depends on the operating pressure. If the operating pressure is subject to fluctuations, the consistency of the leakage quantity and therefore of dosing itself can be increased by installing a pressure control valve. The pressure control valve should be set approx. 0.5 bar above the maximum expected operating pressure.

10. Shutdown

Before starting any maintenance work or before long downtimes, drain the chemicals from the dosing pump and rinse it thoroughly with a neutral medium.

CAUTION!

Excess chemicals must be disposed of properly. Observe the applicable accident prevention regulations and wear personal protective equipment.



Protective clothing



Protective gloves



Protective goggles



CAUTION!

The dosing pump must be disconnected from the voltage supply and secured to prevent it being restarted.

CAUTION!

Before disconnecting the discharge line from the pump discharge valve, release the pressure so that chemicals do not spray out.

The discharge and suction valves should be unscrewed in order to drain the dosing head.



10.1 Disposal of old equipment

If the equipment is being disposed of, it should be washed thoroughly. Residual chemicals should be disposed of properly. The equipment was manufactured in accordance with the ROHS guideline and the waste electrical equipment legislation. The manufacturer will take care of disposal if the equipment is returned free of charge. It should not be disposed of as domestic waste!

11. Maintenance

These dosing pumps are produced to the highest quality standards, and have a long service life. Nevertheless, some of their parts are subject to wear due to operation (e.g. diaphragms, valve seats, valve balls). Regular visual inspections are therefore necessary in order to ensure a long operating life. Regular maintenance will protect the dosing pump from operation interruptions. If locally applicable regulations do not stipulate more frequent maintenance intervals, the manufacturer recommends that maintenance be performed annually.



ATTENTION!

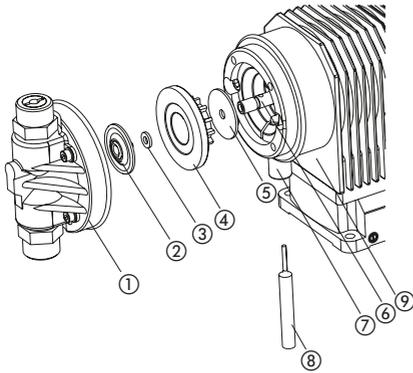
It may be necessary to readjust the dosing pump after replacing the diaphragm or other spare parts (Section 11.5 Correcting stroke length adjustment).

11.1 Replacing diaphragm, MAGDOS DE/DX 01...12



CAUTION!

Chemical may spray out. This may lead to chemical or other burns. The dosing pump must always be depressurised and rinsed with water or a suitable medium before starting any work on the dosing pump.



- | | | |
|--|-------------------|------------------------|
| ① Dosing head w. discharge/suction valve | ② Diaphragm | ③ Support plate/spacer |
| ④ Diaphragm insert | ⑤ Deflector plate | ⑥ Diaphragm rod |
| ⑦ Drainage channel | ⑧ Lock pin | ⑨ Drive unit housing |

Replacing the diaphragm

1. The stroke length is set to the minimum value while the dosing pump is running. Consequently, the diaphragm is at the greatest possible distance from the housing and can be easily grasped.

IMPORTANT!

Before you continue, disconnect the power supply to the pump or switch off the pump.

2. Use a suitable tool (WAF 3 wrench for hexagon socket head cap screws) to remove the dosing head ① (see Fig. 1)

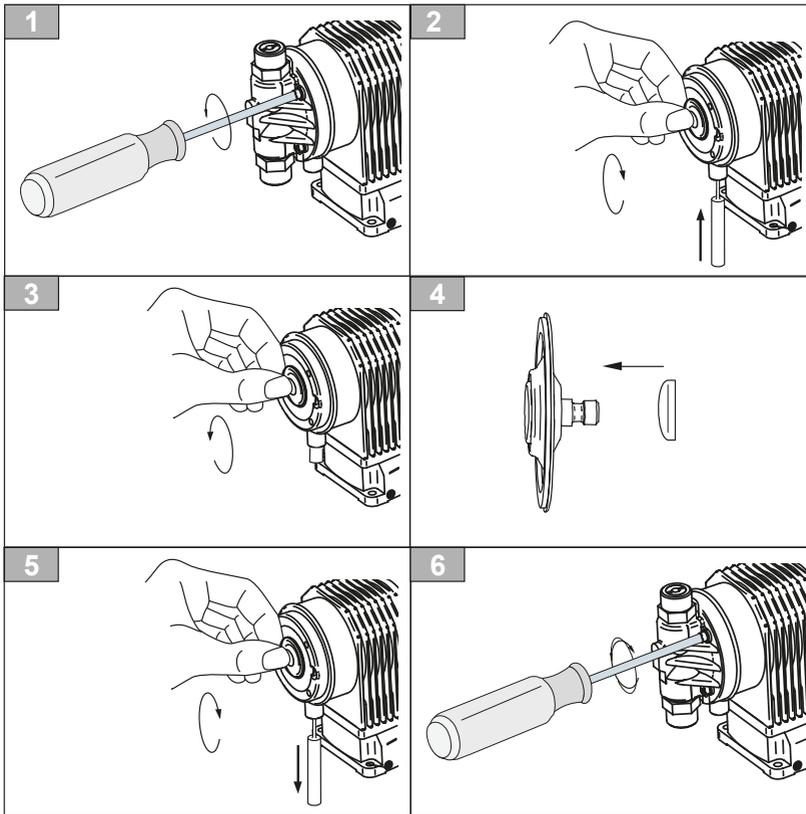
3. The lock pin ⑧ is inserted through the drainage channel into the cross hole in the diaphragm rod ⑥.

If the diaphragm rod has twisted so that the cross hole cannot be reached, grasp the outer edge of the diaphragm ② and turn it clockwise until the cross hole can be seen through the drainage channel. The diaphragm rod can then be secured with the lock pin (see Fig. 2)

4. Grasp the edge of the diaphragm ② and remove by turning in counterclockwise direction. The support plate/spacer ③ behind the diaphragm is removed at the same time (see Fig. 3)

IMPORTANT!

Before fitting a new diaphragm, the area around the diaphragm insert ④ and support plate/spacer ③ must be cleaned to remove any chemicals, otherwise they may corrode the back of the diaphragm.



NOTE!

Check that the deflector plate ⑤ is in perfect condition (Section 11.2 "Checking and replacing deflector").

5. Grease the diaphragm rod with Molykote Longterm W2 at the contact point with the housing and along the diaphragm thread.

6. Push the support plate on to the threaded connector of the new diaphragm with the concave side facing towards the diaphragm (see Fig. 4)

7. Screw the new diaphragm ② clockwise into the diaphragm rod together with the support plate/spacer ③ until it firmly makes contact. The smooth side of the support plate presses against the end of the diaphragm rod (see Fig. 5)

8. Now remove lock pin ⑧ (see Fig. 5)

9. Attach dosing head ①. Tighten the screws crosswise, e.g. top left, bottom right, top right, bottom left. The tightening torque for the dosing head screws is 125 Ncm (see Fig. 6)

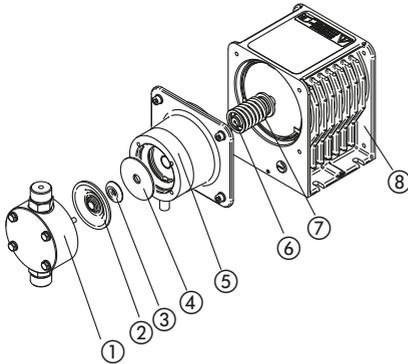
IMPORTANT!

The diaphragm will not provide a tight seal if the tightening torque is too low.
The dosing head may be damaged if the tightening torque is too high.

10. After connecting the dosing lines, the dosing pump is started as described in "Start-up" (Section 9). If the diaphragm wears down frequently, refer to "Troubleshooting" (Section 13) for a description of possible causes.



11.1.1 Replacing diaphragm, MAGDOS DE/DX 20...100

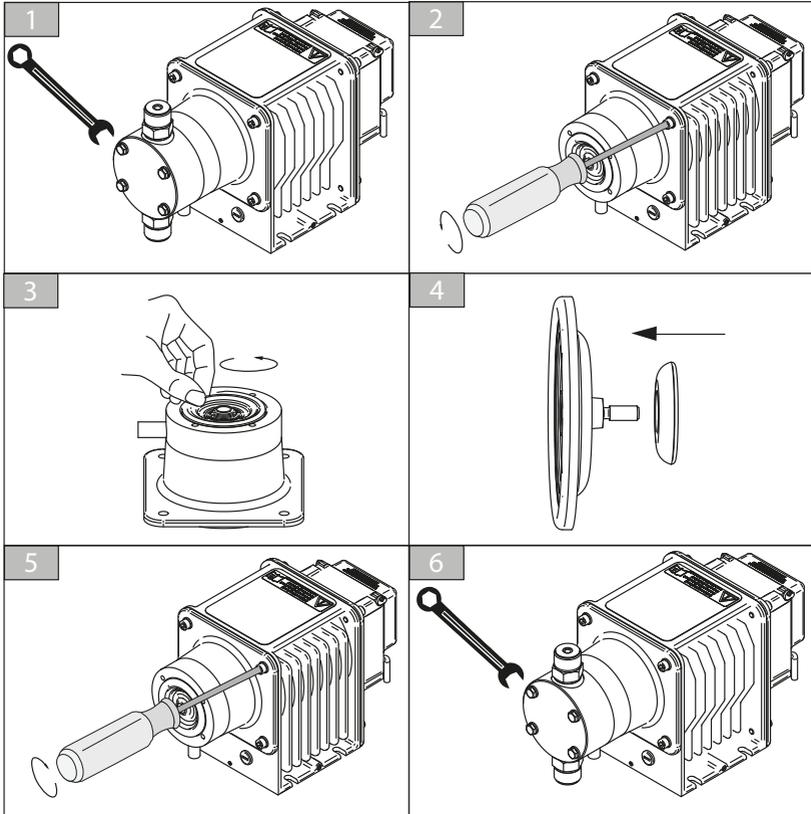


- ① Dosing head with valves
- ② Diaphragm
- ③ Support plate (only on DE/DX 20)
- ④ Deflector plate
- ⑤ Diaphragm flange
- ⑥ Diaphragm rod
- ⑦ Compression spring
- ⑧ Drive unit



CAUTION!

Chemical may spray out. This may lead to chemical or other burns. The dosing pump must always be depressurised and rinsed with water or a suitable medium before starting any work on the dosing pump.



1. The stroke lengths is set to the minimum value while the dosing pump is running. Consequently, the diaphragm is at the greatest possible distance from the housing and can be easily grasped.

IMPORTANT!

Before you continue, disconnect the power supply to the pump or switch off the pump.

2. Use a suitable tool (WAF 10 open-ended spanner for DE/DX 20 and WAF 13 for DE/DX 40...100) to remove the dosing head ① (see Fig. 1). Slightly loosen the diaphragm by turning in counterclockwise direction.

3. Diaphragm flange ⑤ is removed complete with diaphragm ②, support plate ③ (only on DE/DX 20), deflector plate ④, diaphragm rod ⑥ and compression spring ⑦ using a suitable tool (WAF 5 wrench for hexagon socket head cap screws) (see Fig. 2)

4. Grasp the edge of the diaphragm ② and remove by turning in counterclockwise direction. On the DE/DX 20, the support plate ③ behind the diaphragm is removed at the same time. If diaphragm ② can not be removed because the diaphragm rod ⑥ is also turning, clamp the end of the diaphragm rod to secure it in position. Diaphragm ② can now be removed (see Fig. 3)

NOTE!

Before fitting a new diaphragm, the support plate ③ (only on DE/DX 20) must be cleaned to remove any chemicals, otherwise they may corrode the back of the diaphragm.

5. Check that the deflector plate ④ is in perfect condition and replaced if necessary.

6. Grease diaphragm rod ⑤ with Molykote Longterm W2 at the contact point with the housing and along the diaphragm thread. Also grease the area around compression spring ⑦ .

7. Push the support plate ③ (only on DE/DX 20) on to the threaded connector of the new diaphragm ② with the concave side facing towards the diaphragm (see Fig. 4)

8. Turn the new diaphragm ② together with support plate ③ (only on DE/DX 20) in clockwise direction until it rests securely in diaphragm rod ⑥. The smooth side of the support plate presses against the end of the diaphragm rod

NOTE!

Make sure deflector plate 4 is positioned correctly. It must sit on the spigot of the diaphragm rod and must not be trapped between the diaphragm rod and the support plate.

9. Diaphragm flange ⑤ is reinstalled complete with diaphragm ②, support plate ③ (only on DE/DX 20), deflector plate ④, compression spring ⑦ and diaphragm rod ⑥. Tighten screws crosswise (see Fig. 5)

10. Attach dosing head ①. Tighten screws crosswise, e.g. top left – bottom right – top right – bottom left. The tightening torque for the dosing head screws is 2 Nm on the MAGDOS DE/DX 20 and 6 Nm on the MAGDOS DE/DX 40...100 (see Fig. 6).

IMPORTANT!

The diaphragm will not provide a tight seal if the tightening torque is too low. The dosing head may be damaged if the tightening torque is too high.

11. After connecting the dosing lines, the dosing pump is started as described in "Start-up" (Section 9). If the diaphragm wears down frequently, refer to "Troubleshooting" (Section 13) for a description of possible causes.



11.2 Checking and replacing deflector plate

CAUTION!

Chemical may spray out. This may lead to chemical or other burns. The dosing pump must always be depressurised and rinsed with water or a suitable medium before starting any work on the dosing pump.

The following steps are required to check that the deflector plate is in perfect condition and replace it if necessary. Repeat steps 1 - 4 in Section 11.1 "Replacing diaphragm".

The deflector plate ⑤ on the MAGDOS DE/DX 01...12 is accessible after removing diaphragm insert ④. The diaphragm insert can be removed without difficulty by prying it out with two screwdrivers inserted in the recesses of the outer flanges (see Fig. 1)

MAGDOS DE/DX 20...100 is not equipped with a diaphragm insert. The deflector plate is accessible after removing the diaphragm and the support plate (only on MAGDOS DE/DX20).

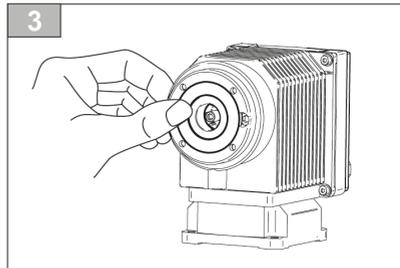
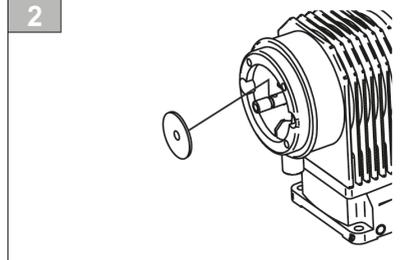
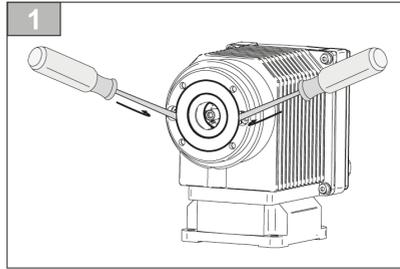
Now check condition of the diaphragm.

The deflector plate must be replaced if it is chemically corroded.

Remove the old deflector plate.

Slide new deflector plate ⑤ on to the diaphragm rod until it engages in the groove on the diaphragm rod ⑥ (see Fig. 2)

Now press the diaphragm insert into the flange and proceed through steps 5 - 10 in Section 11.1 "Replacing diaphragm". (see Fig. 3)



11.3 Valves

The dosing pump valves must be cleaned regularly.

IMPORTANT!

Dirty valves will affect the dosing accuracy.

NOTE!

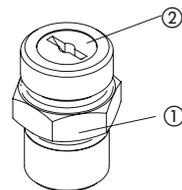
When screwing the valves into the dosing head, tighten to a torque of 2 Nm +10 % and -20 %.

CAUTION!

Chemical may spray out. This may lead to chemical or other burns. The dosing pump must always be depressurised and rinsed with water or a suitable medium before starting any work on the dosing pump.

DN3 and DN4 valves are pre-assembled units which can be removed from the dosing head without disintegrating into their individual components. To disassemble the valves, use a screwdriver with a 10 mm bit.

① Valve body, ② screw-in valve plug



Double ball valves DN 3	Valves DN 4	
MAGDOS DE/DX 01 ... 03	MAGDOS DE/DX 07 ... 12	
	Double-ball valves	Spring-loaded valves
Discharge valve		
Suction valve		
<p>① *) O-ring ② Valve body ③ *) Flat gasket ④ Ball guide ⑤ *) Valve ball ⑥ *) Valve seat ⑦ *) O-ring ⑧ Valve plug ⑨ *) Seal ⑩ *) Compression spring</p>	<p>① *) O-ring ② Valve body ③ *) Flat gasket ④ Ball guide ⑤ *) Valve ball ⑥ *) Valve seat ⑦ *) O-ring ⑧ Valve plug ⑨ *) Seal</p>	

* included in the spare parts kits.

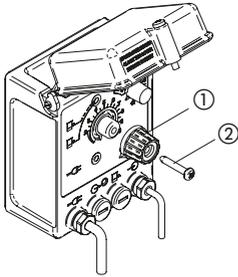
Valves DN 6		Valves DN 10	
MAGDOS DE/DX 20		MAGDOS DE/DX 40 ... 100	
Double-ball valves	Spring-loaded valves	Double-ball valves	Spring-loaded valves
Discharge valve			
Suction valve			
<p>① *) Flat gasket ② Ball guide ③ *) Valve ball ④ *) Valve seat ⑤ *) Flat gasket ⑥ Valve body ⑦ *) Flat gasket ⑧ *) Compression spring</p>		<p>① * Flat gasket ② * Flat gasket ③ Valve body ④ Ball guide ⑤ * Valve ball ⑥ * Valve seat ⑦ * Flat gasket ⑧ * Flat gasket ⑨ * Compression spring</p>	

* included in the spare parts kits.

11.4 Correcting stroke length adjustment

IMPORTANT!

It may be necessary to readjust the dosing pump after replacing the diaphragm or other spare parts



① Stroke length adjustment knob, ② lock screw

1. Dosing pump set to internal control.
2. Regardless of the pointer position, release the lock screw and turn the stroke length adjustment knob counterclockwise until the dosing pump stops delivering medium or delivery is reduced to a minimum during depressurised operation.

ATTENTION!

Do not use force. Due to the flexibility of the stop buffer the diaphragm can still move by a certain extent even in position "0".

If zero delivery cannot be achieved because the knob is up against the limit stop, after undoing the lock screw, remove the knob and reinstall turned in clockwise direction. Then adjust zero delivery.



CAUTION!

The delivery line must be routed back to the storage tank during setup in order to prevent overdosing.

3. Detach knob and re-attach so that the indicator is pointing to "0".
Holding the knob firmly in position, tighten the lock screw.
4. Gauge the capacity of the dosing pump by litres according to a setting shown in the calibration table.
If there is a major discrepancy, correct the position of the knob.

12. Spare parts

MAGDOS DE/DX	01	03	07	2	4	8	12	20	40	100	
⑧ Diaphragm	81683	81424	81424			81463	81464	81465	81466	81467	
⑨ Support plate	-	-	-	29312		23892	-	28977	-	-	
Spacer	-	-	-	-	-	-	33897	-	-	-	
⑩ Deflector plate	22066	-	22066					22056	22057	22058	
⑪ Drive unit	230 V AC	32956	32732	32719	32733	32720	32722	32723	34338	34339	34340
	115 V AC	33053	32953	33054	32943	33055	33056	33057	34341	34342	34343
Damper ring (part of drive unit)	81680		78509					78511			
⑫ Control unit	Depending on version										

⑦ Dosing head, including mounting bolts										
MAGDOS DE/DX	01	03	07	2 ... 4	8	12	20	40	100	
PVC	33321	13328608*		23809	23810	23811	23909	-	-	
PP	34632	34633	34633	34634	34635	34636	34661	23721	23722	
PVDF	34445	28115	28115	28117	28119	29178	-	-	-	
PMMA	32962	25189	-	-	-	-	-	-	-	
Stainless steel	-	-	-	23812	23813	23814	23911	23727	23728	

* With automatic dosing head venting

12.1 Spare parts list MAGDOS DE/DX 01...03

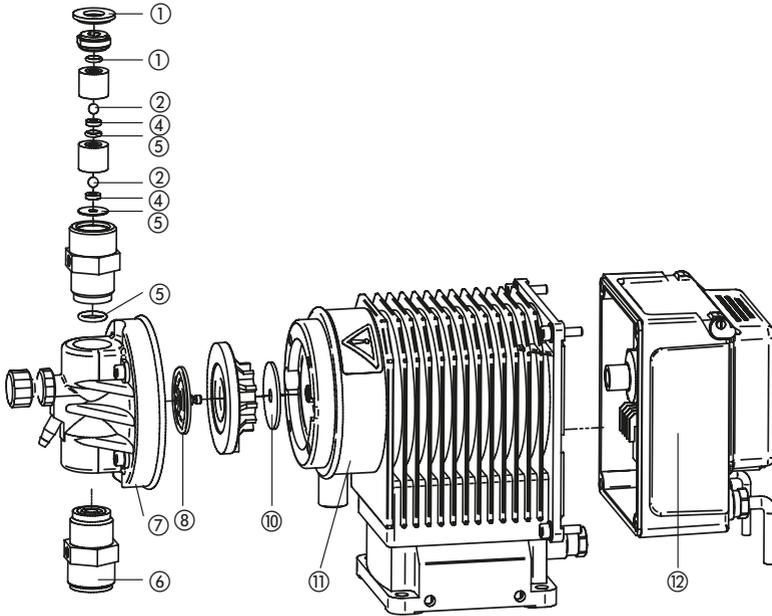


Fig. 12.1: Spare parts MAGDOS DE/DX 01 ... 03

Maintenance kits for DE/DX 01...03 with double ball valves			⑥ Double ball valves	
Consisting of ① flat gaskets, ② balls, ④ valve seats, ⑤ O-rings and ⑧ diaphragm				
Dosing head / ball / seal	DE/DX 01	DE/DX 03	Suction valve	Discharge valve
PVC / ceramic / FPM	33066	29742	29434	29435
PVC / ceramic / EPDM	35596	38446	34389	34390
PMMA / ceramic / FPM	33066	-	-	-
PMMA / ceramic / EPDM	35596	-	-	-
PVC / ceramic / PTFE	33067	29758	-	-
PVDF / ceramic / PTFE	-	33858	27626	27627
PP/ ceramic / FPM	-	-	35936	35937
PP/ ceramic / EPDM	-	-	34641	34642
PVDF / ceramic / FPM	-	-	33700	33701
Stainless steel / ceramic / FPM	-	-	28459	28461

12.2 Spare parts list MAGDOS DE/DX 07...12

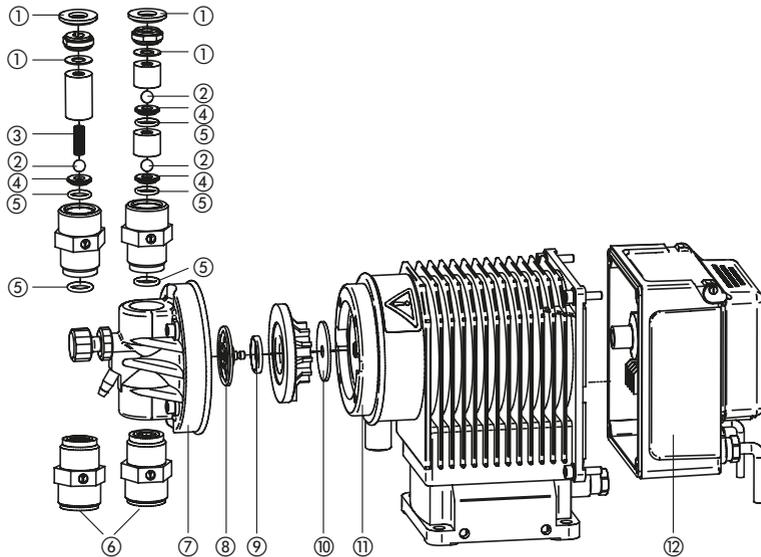


Fig. 12.2: Spare parts MAGDOS DE/DX 07 ... 12

Maintenance kits DE/DX 07...12	with double ball valves			with spring-loaded valves			
Consisting of:	MAGDOS DE/DX	07...4	8	12	07...4	8	12
① Seals	PVC / Ceramic / FPM	29746	29748	29750	34775	37332	37336
② Valve balls	PVC / Ceramic / EPDM	33696	33697	33698	37296	37333	37337
③ * Spring							
④ Valve seats	PP/ Ceramic / FPM	29746	29748	29750	34775	37332	37336
⑤ O-rings	PP/ Ceramic / EPDM	33696	33697	33698	37296	37333	37337
⑧ Diaphragm	PVDF / PTFE / PTFE	33859	33862	35572	37297	37340	37341
* in spring-loaded valves	PVDF / PTFE / FPM	33854	33855	33856	37326	37334	37338
	Stainless Steel / Stainless Steel / PTFE	29747	29749	29751	37296	37335	37339

DE/DX 07 ... 12	Double-ball valves, complete		Spring-loaded valves, complete	
	Discharge valve	Suction valve	Discharge valve	Suction valve
PVC / Ceramic / FPM	20891	20890	25088	25087
PVC / Ceramic / EPDM	33498	33497	33500	33499
PP/ Ceramic / FPM	35606	35605	35263	35262
PP/ Ceramic / EPDM	34648	34647	34809	34733
PVDF/PTFE/PTFE	28112	28111	29384	29385
PVDF / PTFE / FPM	33704	33703	34371	34370
Stainless Steel / Stainless Steel / PTFE	24030	24029	25090	25089

12.3 Spare parts list MAGDOS DE/DX 20

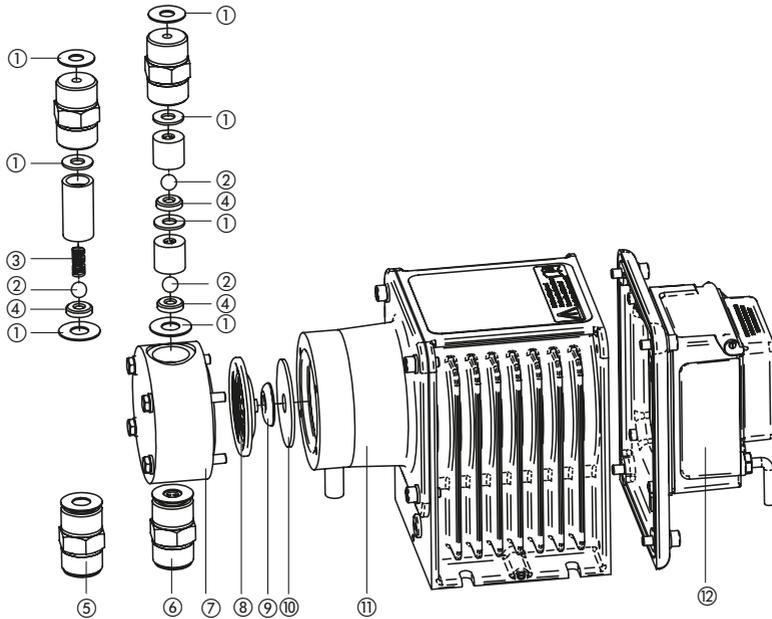


Fig. 12.3: Spare parts MAGDOS DE/DX 20

Maintenance kits DE/DX 20		<i>with double ball valves</i>	<i>with spring-loaded valves</i>
Consisting of:	PVC / Ceramic / FPM	27803	27815
① Flat gaskets	PVC / Ceramic / CSM	27802	27814
② Valve balls	PP/ Ceramic / FPM	35567	37496
③ * Spring	PP/ Ceramic / CSM	35346	37497
④ Valve seats	Stainless Steel / Stainless Steel / asbestos-free (AF)	27808	27820
⑧ Diaphragm * in spring- loaded valves			

DE/DX 20	⑥ Double-ball valves, complete		⑤ Spring-loaded valves, complete	
	Discharge valve	Suction valve	Discharge valve	Suction valve
PVC / Ceramic / FPM	18186	18185	27517	25162
PVC / Ceramic / CSM	18188	18187	27516	25161
PP/ Ceramic / FPM	35200	35199	35261	35260
PP/ Ceramic / CSM	34671	34670	34811	34810
Stainless Steel / Stainless Steel / asbestos-free (AF)	26968	26967	28776	28775

12.4 Spare parts list MAGDOS DE/DX 40...100

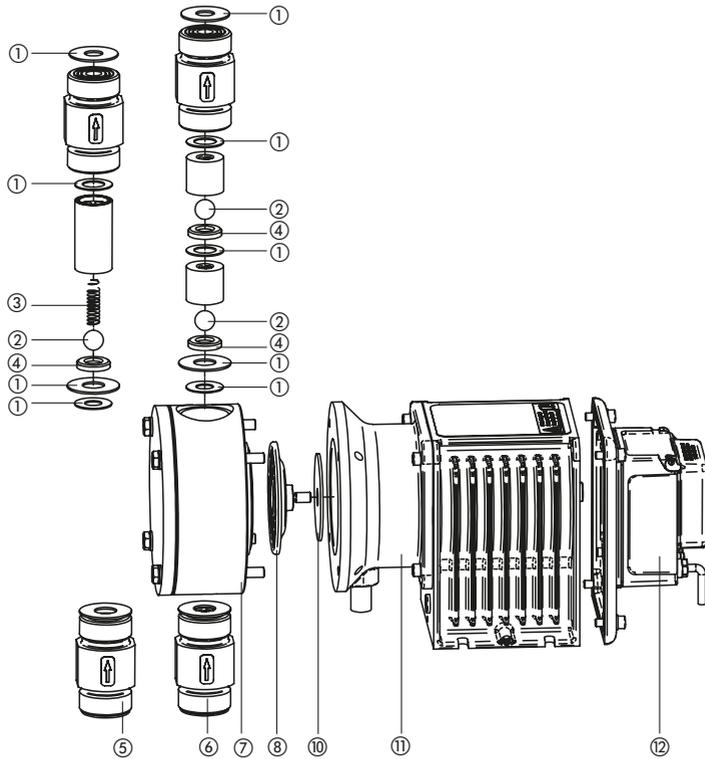


Fig. 12.4: Spare parts MAGDOS DE/DX 40 ... 100

Maintenance kits DE/DX 40 ... 100		<i>with double ball valves</i>		<i>with spring-loaded valves</i>	
Consisting of:	MAGDOS DE/DX	40	100	40	100
① Seals	PP / Ceramic / FPM	27805	27807	38312	28313
② Valve balls	PP / Ceramic / CSM	27804	27806	38198	28312
③ * Spring	Stainless Steel / Stainless Steel / asbestos-free (AF)	27810	27812	28306	28314
④ Valve seats					
⑧ Diaphragm					
* in spring-loaded valves					

DE/DX 40 ... 100	⑥ Double-ball valves, complete		⑤ Spring-loaded valves, complete	
	Discharge valve	Suction valve	Discharge valve	Suction valve
PP / Ceramic / FPM	27357	26842	27354	25707
PP / Ceramic / CSM	27356	26841	27353	26845
1.4571 / 1.4401 / asbestos-free (AF)	29659	29694	29697	29696

13. Troubleshooting

Problem	Possible cause	Remedy
Dosing pump not delivering or output too low.	Valves leaking or blocked.	Clean the valves and vent the dosing pump. See also "Start-up"
	Valves incorrectly installed.	Reassemble the valves. Ensure that the valve balls are located above the valve seats.
	Suction valve or suction line leaking or blocked.	Clean or seal the suction line.
	Suction lift too high.	Set the dosing pump at the inlet. Install the pulsation damper on the suction side. Install a priming aid.
	Viscosity too high.	Install spring-loaded valves. Increase the pipe diameter. Use a special dosing head. >> Contact manufacturer
No stroke movement	Dosing pump set to zero stroke.	Set the stroke length adjusting knob correctly.
	Diaphragm return spring broken.	Replace the spring.
	Fuse blown. No LED is lit.	Check power supply voltage, contact service.
	Power supply interrupted.	Switch on power supply.
	Solenoid defective.	Check coil resistance and isolation; replace solenoid, if required.
Red "Empty" indicator.	Chemical tank empty. Level monitoring connector or dummy plug incorrectly inserted. Cable break.	Fill supply tank and check lines.
Frequent diaphragm failures.	No support plate. See "Maintenance"	Install new diaphragm with support plate/spacer. When replacing the diaphragm, check if deflector plate or diaphragm rod have been corroded by chemical.
	Diaphragm not screwed up to end stop on diaphragm rod.	Screw a new diaphragm up to the end stop. Support plate/spacer must be clamped between diaphragm and diaphragm rod.
	System backpressure too high. (measured at discharge connection of dosing pump).	Inspect the system. Clean blocked injection nozzle. Install pulsation dampers to reduce pressure peaks if pipes are too long. Check safety valves.
	Media sediment in dosing head.	Clean the dosing head.
Dosing pump delivery rate too high (Pump siphoning)	Pressure on suction side too high.	Install pressure control valve or suction pressure regulator.
	Stroke stop shifted.	Readjust stop.
	Stroke frequency too high.	Reduce stroke frequency.

If the problem cannot be solved with the above remedies, please return the dosing pump to the factory or contact our After-Sales Service for further assistance. Repairs will be carried out immediately.

Index

C

Checking and replacing deflector plate26

D

Declaration of conformity39

Declaration of no objection37

Delivery characteristic curves10

Delivery Rate19

Diaphragm replacement22

Digital display18

Dosing accuracy11

Dosing of chemicals5

Dosing rate7

Draining21

F

Fault35

Flow rate setting17

Function7

I

Initial start-up19

Injection nozzle installation13

Installation11

Installation examples14

Installation location11

L

Level monitoring12

M

Maintenance22

O

Operating mode18

Operating state18

Operation16

P

Personal protective equipment19

Pressure control and safety valves13

Protective clothing5

R

Replacing the diaphragm22

S

Shutdown21

Start-up19

Stroke length adjustment29

System design11

T

Technical data9

Troubleshooting35

U

Use for intended purpose7

V

Valves26

Vent valve19

W

Warranty claim38

Water meter installation12

Water meter operation19

Declaration of No Objection

When sending in for repair, please copy this form, fill in and send along with each device!

Declaration of No Objection - Form

(please fill in one form for each device and attach it to the outside of the device)

We are returning the following device for repair:

Device and device type:

Part No.:

Order No.:

Date of delivery:

Reason for repair:

Medium conveyed

Description:

Properties:.....

Irritant: Yes/No*) Corrosive: Yes/No*)

*) Please delete as appropriate!

We hereby certify that the product has been cleaned thoroughly on the inside and outside before shipment, that it is free from hazardous chemical, biological, or radioactive substances and that the oil has been drained. *)

If the manufacturer finds it necessary to carry out further cleaning work, we will accept the related costs.

We confirm that the above statements are correct and complete and that the device is being shipped according to legal requirements.

Company:.....

Address:.....

.....

.....

Telephone:.....

Fax:.....

E-mail:

Customer No.:

Contact person:

Date, signature, stamp:

Warranty claim

Please copy and enclose with the device!

If the device fails during the warranty period, please clean it and return, accompanied by the completed warranty claim form.

Sender

Company:..... Telephone:..... Date:.....

Address:.....

Contact person:

Manufacturer order No.:..... Date of delivery:

Device type:..... Serial number:.....

Nominal delivery rate./Nominal pressure:.....

Description of fault:

.....

.....

Type of fault:

1. Mechanical fault

Premature wear

Wearing parts

Breakage/other damage

Corrosion

Damage in transit

2. Electrical fault

Connections, connectors or cables loose

Operating controls (e.g. switches / push-buttons)

Electronics

3. Leaks

Connections

Dosing head

4. No or inadequate operation

Diaphragm defective

Other

Operating conditions of the device

Location/description of installation:

Accessories used if any:

.....

.....

Commissioning (date):.....

Running time (approx. operating hours):

Please indicate the specific features of the installation and enclose a simple sketch showing materials, diameters, lengths and heights.

(DE) EU-Konformitätserklärung

Hiermit erklären wir, dass das nachfolgend bezeichnete Gerät aufgrund seiner Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der aufgeführten EG-Richtlinien entspricht. Bei einer nicht mit uns abgestimmten Änderung am Gerät verliert diese Erklärung ihre Gültigkeit.

(EN) EU Declaration of Conformity

We hereby certify that the device described in the following complies with the relevant fundamental safety and sanitary requirements and the listed EC regulations due to the concept and design of the version sold by us.

If the device is modified without our consent, this declaration loses its validity.

(FR) Déclaration de conformité UE

Nous déclarons sous notre propre responsabilité que le produit ci-dessous mentionné répond aux exigences essentielles de sécurité et de santé des directives CE énumérées aussi bien sur le plan de sa conception et de son type de construction que du modèle que nous avons mis en circulation.

Cette déclaration perdra sa validité en cas d'une modification effectuée sur le produit sans notre accord explicite.

(ES) Declaración de conformidad UE

Por la presente declaramos que, dados la concepción y los aspectos constructivos del modelo puesto por nosotros en circulación, el aparato mencionado a continuación cumple con los requisitos sanitarios y de seguridad vigentes de las directivas de la U.E. citadas a continuación.

Esta declaración será invalidada por cambios en el aparato realizados sin nuestro consentimiento.

(NL) EU-overeenstemmingsverklaring

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

(PT) Declaração de conformidade UE

Declaramos pelo presente documento que o equipamento a seguir descrito, devido à sua concepção e ao tipo de construção daí resultante, bem como a versão por nós lançada no mercado, cumpre as exigências básicas aplicáveis de segurança e de saúde das diretivas CE indicadas.

A presente declaração perde a sua validade em caso de alteração ao equipamento não autorizada por nós.

Bezeichnung des Gerätes:

Magnet-Membrandosierpumpe

Description of the unit:

Solenoid diaphragm dosing pump

Désignation du matériel:

Pompe doseuse à membrane magnétique

Descripción de la mercancía:

Bomba dosificadora magnética de membrana

Omschrijving van het apparaat:

Magneet Membraandoseerpomp

Designação do aparelho:

Bomba doseadora de membrana magnética

Typ:

MAGDOS DE

Type:

MAGDOS DX

EG-Richtlinien:

2006/42/EG, 2014/30/EU

EC directives:

Die Schutzziele der Niederspannungsrichtlinie 2014/35/EG wurden gemäß Anhang I, Nr. 1.5.1 der Maschinenrichtlinie 2006/42/EG eingehalten.

The protective aims of the Low Voltage Directive 2014/35/EU were adhered to in accordance with Annex I, No. 1.5.1 of the Machinery Directive 2006/42/EC.

Harmonisierte Normen:

DIN EN ISO 12100:2011-03

Harmonized standards:

DIN EN 809:2012-10

Dokumentationsbevollmächtigter:

Lutz-Jesco GmbH

Authorized person for documentation:



Heinz Lutz
Geschäftsführer / Chief Executive Officer
Lutz-Jesco GmbH
Wedemark, 01.06.2018

Lutz-Jesco GmbH
Am Bostelberge 19
30900 Wedemark
Germany

Order No. BA-10220-02-V06
Subject to technical changes
and inaccuracies
© Lutz-Jesco GmbH 06.2018