

# FWT<sup>®</sup>

fluid and water technology



## SOLENOID DRIVEN DOSING PUMPS MX series

## INTRODUCING MX SERIES

FWT is pleased to introduce MX solenoid driven dosing pumps, a new series which will enable to widen the product range covering the market sectors where there is a request for wall mounting and competitive price.

### MX main characteristics are:

- **WALL MOUNTING HOUSING:** PP reinforced plastic housing, it includes a support bracket for easy quick mounting.
- **SMALL DIMENSIONS:** ready also for mounting into small cabinets and small environments.
- **PRICE AND QUALITY:** the new design allows a more competitive price but keeping the same quality of FX series.

### Two versions are available:

**MX** series mounts a strong solenoid and CERAMIC ball check valves. Ceramic is widely known for its great chemical resistance to aggressive chemicals and excellent sealing performance

**MXE** series mounts a smaller type of solenoid with limited performances but good enough for applications such as cooling towers, small RO systems, swimming pools, small water treatment process. MXE series mounts LIP type valves in order to reduce price, however they are very efficient for the above mentioned applications.



## PUMPS MAIN FEATURES

Power supply: **230 Vac (±10-15%) - 1 phase - 50/60 Hz**

Reproducibility under standard conditions: **± 5%**

Plastic housing and support: **PP reinforced, IP65 (IP56)**

Connectors: **4 pole**

Upon request: **110 Vac/60 Hz; 12-24 Vdc** (limited range)

Ambient working temperature: **45°C**

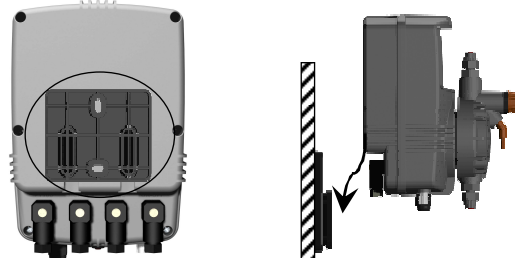
Voltage working range: **min.207V + Max 253 V**

Voltage Peak: **Max 270 V**

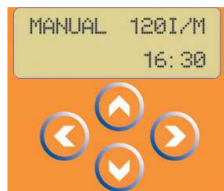
All products are provide with accessory kit, are individually tested and manufactured according **CE regulations**

### MOUNTING MODE

MX and MXE series are wall mounting provided with a quick mounting bracket, easy to install and disassemble.



## MX SERIES CONTROLS



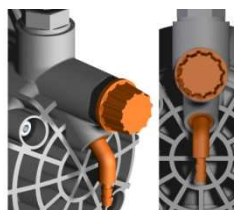
### STROKE FREQUENCY ADJUSTMENT

MX series control operations feature two operating controls versions:

- Analog with L.E.D. indicators
- Digital with display and L.E.D.



Connectors: **4 pole IP65**



### Air bleed (manual) pump head

Available automatic air bleed pump head

### LEVEL SWITCH WITH FIXING BRACKET



### ACCESSORIES KIT

- ⇒ 1 - Injection valve;
- ⇒ 2 m - Discharge Hose PE semi-rigid;
- ⇒ 2 m - Suction Hose PVC flexible;
- ⇒ 1,5 m - Air Bleed Hose PVC flexible;
- ⇒ 1 - Foot Valve/Filter

## TECHNICAL CHARACTERISTICS MX

Pump type range	Max Flow / Max Pressure		Start up* performance		Frequency imp/min	Stroke volume cc(ml) / stroke	Pump head type	Valves types
	l/h	bar	l/h	bar				
MX 1,5-10	1,5	10	1,5	10	120	0,21	PP 3/8"	Ball checks
MX 2,5-15	2,5	15	2,4	15	120	0,34	PP 3/8"	Ball checks
MX 5,5-07	5,5	7	6	7	120	0,77	PP 3/8"	Ball checks
MX 07-04	7	4	7	4	120	0,98	PP 3/8"	Ball checks

## TECHNICAL CHARACTERISTICS MXE

Pump type range	Max Flow / Max Pressure		Start up*performance		Frequency imp/min	Stroke volume cc(ml) / stroke	Pump head type	Valves types
	l/h	bar	l/h	bar				
MXE 01-05	1	5	1,2	5	120	0,14	PP 3/8"	"Lip" types
MXE 2,5-06	2,5	6	3,2	6	120	0,34	PP 3/8"	"Lip" types
MXE 05-04	5	4	5	5	120	0,69	PP 3/8"	"Lip" types
MXE 07-02	7	2	7,4	2	120	0,98	PP 3/8"	"Lip" types

Hose size: 4 x 6 mm (available 6x8 fittings)

Max suction lift: 2 m

Power consumption: **MX 37 watt - MXE 32 watt**

Current consumption: **MX 0,16 Amp - MXE 0,14 Amp**

**AVAILABLE:** 12Vdc and 24Vdc are available only with following types: MX C/A, C/AL, MF - 1,5-10; 2,5-15; 5,5-07

**\*NOTE:** "Start up" refer to pump starting performances; such performances are constant only if duties are not for continuous working and/or for time periods not over than 30/40 min. continuously and with at least 15 minutes rest

## LIQUID ENDS

WETTED PARTS	STANDARD VERSION	UPON REQUEST
Pump head	PP	PVDF; PMMA <sup>MEMO 1/ NOTE</sup> ; AISI 316
MX series Ball check valve	CERAMIC (MX series)	AISI 316
MXE series "Lip" type check valve	FPM (Viton ®) (MXE series)	EPDM (Dutral®); NBR; SILICON
Diaphragm	PTFE	-----
Pump head Nipples / Hose-nut	PP	PVDF; AISI 316
Seals / O-rings	FPM (Viton ®)	EPDM (Dutral®); NBR; SILICON
Injection Fitting	PP	PVDF ; AISI 316; PTFE
Injection No-Return Valve (sleeve)	FPM (Viton ®)	EPDM (Dutral®); NBR; SILICON
Foot "Lip" type check valve	FPM (Viton ®)	EPDM (Dutral®); NBR; SILICON
Filter body / Filtering media	PP / GLASSWOOL	PVDF; AISI 316
Suction Hose/Air Bleed hose 4x6mm	PVC flexible	PTFE
Discharge Hose 4x6mm	PE semi- flexible	PTFE

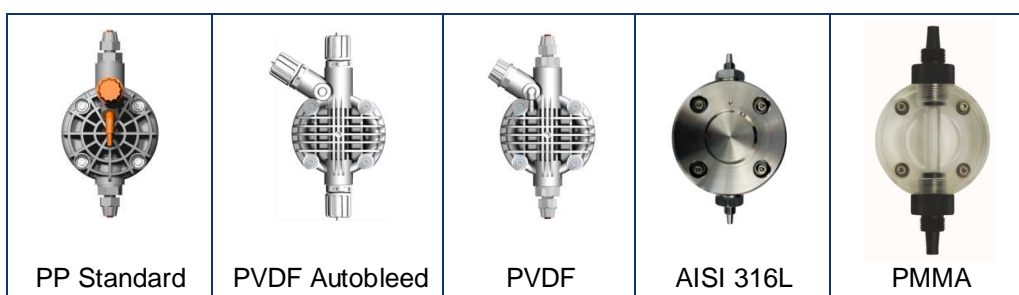
### OTHER OPTIONS AND SPECIAL CONFIGURATIONS UPON REQUEST:

Reed type "Lip" Valve	FPM (Viton ®)	EPDM (Dutral®); NBR; SILICON
Hastelloy spring foot ball valve/Fitting	HASTELLOY/CERAMIC/PP-PVC	PVDF; AISI 316
Hastelloy spring injection valve/Fitting	HASTELLOY / PYREX / PP-PVC	PVDF; AISI 316
Automatic autobleed pump head	PVDF AUTO BLEED <sup>NOTE</sup>	-----
Aggressive chemicals configuration	PVDF acid configuration <sup>MEMO2</sup>	-----

**MEMO 1:** polymer viscous liquid configuration (only MX series)

**MEMO 2:** aggressive chemical configuration

**NOTE** Using AUTO-BLEED or Polymer PMMA configuration, pump pressure performance decreases of about 50%



## COMMON CHARACTERISTICS TO ALL MX RANGE

- Ceramic ball checks MX series – “LIP” type valve MXE
  - Plastic housing PP reinforced
  - IP65 rating (when using connectors IP56)
  - Standard accessories
  - “Sleeve” type no-return injection valve FPM (avail.EPDM)
  - PTFE diaphragm
  - Air Bleed valve for priming
  - Quick mounting bracket
- 
- Hastelloy Spring return Injection and Foot ball Valve: also available AISI 316 spring

## CONSTANT-ON/OFF MODE - ANALOG CONTROLS

### MX C/A • MXE C/A

CONSTANT-ON/OFF pumps for those application where a simple pump at low cost is required but keeping maximum reliability. Pump flow rate is obtained by adjusting pulse frequency percentage (%). It also features reduction frequency scale range 1/5 reducing range from 100% to 20%.

- Constant flow rate / ON-OFF mode (also called Manual mode)
- Strokes frequency adjustment 0÷100%
- Frequency reduction ratio 100%÷20%
- Analog controls
- 2 LED display status: power and pulses



### MX C/AL • MXE C/AL

- Constant flow rate – ON/OFF (Manual) with level control
- Provided with level control connector and floating level switch
- Other characteristics as above MX-MXE C/A
- 3 LED display status: power, pulses and level alarm
- Available with double level control

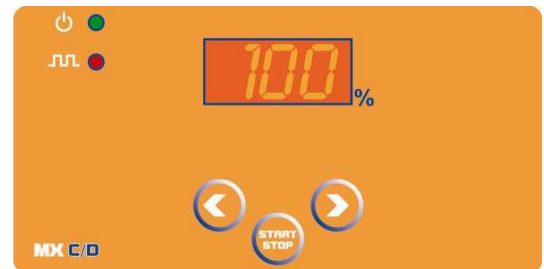


## CONSTANT MODE - DIGITAL CONTROLS - MICROPROCESSOR TECHNOLOGY

### MX C/D • MXE C/D

Pump flow rate is obtained by adjusting pulse frequency percentage (%) by digital controls.

- Digital Constant flow rate / ON-OFF mode (Manual)
- Frequency adjustment 0÷100%; imp/min; imp/hour; imp/day
- Microcontroller technology
- Digital controls and display
- Level control (Level switch upon request)
- Available with double level control



## MULTIFUNCTIONS DOSING MODE PUMP

### MX MF/D • MXE MF/D

- Multifunction dosing pumps including most dosing operations modes
- Microcontroller technology, display LCD and digital controls
- Proportional to external digital pulses: divider n : 1; multiplier 1xN
- Proportional to external analog signal 0...4 mA÷20mA or reverse
- PPM dosing mode
- Constant mode with digital adjustment : imp/min; imp/hour; imp/day
- Digital timer, weekly and daily programming
- Sequence strokes/ injection with flow sensor (sensor on request)
- Level alarm output contact: NO/NC
- Level control (Level switch upon request)
- Available with double level control



## PROPORTIONAL TO EXTERNAL DIGITAL CONTACT

### MX P/D • MXE P/D

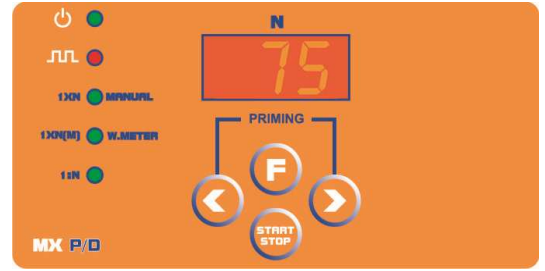
Proportional dosing pump to external digital pulses, (e.g.pulse water meters or equipment releasing voltage free pulse contacts).

- Proportional dosing pump to external digital pulses
- Constant modes operations
- Strokes frequency adjustment 0÷100%
- Microcontroller technology, display and digital controls
- 3 LED display status: power, pulses and level
- Level control (Level switch upon request)
- Available upon request PPM dosing mode

For available **pulse water meters**, contact FWT sales office.

### MX P/D+ • MXE P/D+

- Sequence strokes/ injection with flow sensor (latter on request)
- Other characteristics as above MX-MXE P/D



#### PROPORTIONAL MODES:

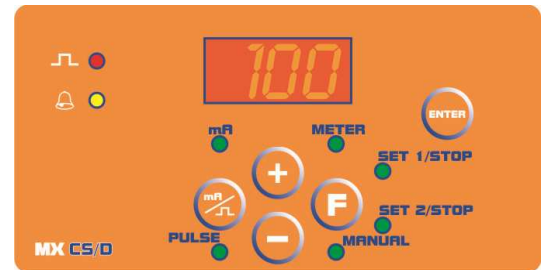
- Divider n1 (n= pulses received /1= injection)
- Multiplier 1xN (1=pulse received \*N= injections)
- Multiplier 1xN M (with Memory)
- Pacing 1:1 (1 pulse received/1 injections)

## PROPORTIONAL TO REMOTE CURRENT SIGNAL mA

### MX CS/D • MXE CS/D

- Proportional dosing pump to remote mA signal
- Selection range 0/4...÷20mA or reverse
- Constant modes operations
- Strokes frequency adjustment 0÷100%
- Microcontroller technology, display and digital controls
- 3 LED display status: power, pulses and level
- Level control (Level switch upon request)

PROPORTIONAL MODES: Direct Or Reverse



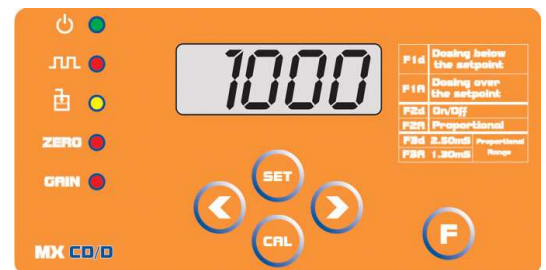
## DOSING PUMPS WITH BUILT-IN CONDUCTIVITY PROPORTIONAL CONTROLLER

### MX CD/D • MXE CD/D

Dosing pumps with built-in conductivity controller, all in one enclosure. Conductivity range: **0÷10mS** = 10.000µS (resolution 0,1mS);

Available ranges: **0÷1mS** = 1000 µS • **0÷100mS** = 100.000 µS

- Proportional and ON/OFF control modes
- Microcontroller technology, display and digital controls
- Direct or Reverse mode
- Delay working time
- Hysteresis regulation
- Strokes frequency adjustment 0÷100%
- Level control (Level switch upon request)



FWT dosing pumps with built-in CD controllers are provided with conductivity probe according to measuring range. Please contact FWT sales office for conductivity probes characteristics.

## DOSING PUMPS WITH BUILT-IN PH-RX PROPORTIONAL CONTROLLER

### MX CTRL2 • MXE CTRL2

These series includes is a simple and economic version of above CTRL3 unit which features two parameters all in one enclosure: PH or RX (ORP). **BENEFITS:** reducing stock value against a versatile economic solution.

- ⇒ **pH:** measuring range 0÷14,00 pH (resolution 0,01pH)
- ⇒ **RX:** measuring range: -1000÷ +1400 mV (resolution 1mV)
- Microcontroller, back-lit LCD graphic display, digital controls
- ON-OFF and Proportional modes
- Level control (Level switch upon request)



CTRL2 dosing pump with integral controller is NOT provided with electrodes and sensors which are available upon request. Please contact FWT sales office for these items characteristics.

## DOSING PUMP WITH BUILD-IN PROPORTIONAL MULTIPARAMETER CONTROLLERS

### MX CTRL3a • MXE CTRL3b

Three different controllers and a dosing pump into one enclosure with great advantage to stock only one model for 3 measuring parameters.

**pH:** measuring range 0÷14,00 pH (resolution 0,01pH)

**RX:** measuring range -1000÷ +1400 mV (resolution 1mV)

**Free chlorine\*:** range 0÷20,00 ppm (resolution 0,1ppm)

\*CL controller is suitable either with amperometric-potentiostatic membrane Chlorine sensors or open Chlorine cells (latter on request)

- Microcontroller technology, back-lit LCD display, digital controls
- Injection frequency adjustment
- Connectors: BNC for electrode and 4 pole IP65 for CL sensors
- 2 Reset modes: full reset - partial reset keeping calibration settings
- Level control (Level switch upon request).
- Proportional mode range value selection
- Delay adjustment - Delay at powering ON (electrodes polarization)
- Hysteresis regulation
- Password setting
- Calibration of mA output
- 4÷20 mA output for chart recorder
- Alarm functions:
  - Over dosing alarm value to prevent excess of chemical injection
  - Alarm for minimum or Maximum time for reaching set point
- Direct or Reverse mode (Alkaline or Acid, Oxidant or Reducing RX)
- Stand-by mode for cleaning electrodes and sensors or re-calibration

MX-MXE CTRL FEATURE TWO VERSIONS WITH TWO OPERATING MENUS:

#### CTRL 3a (advanced)

ADVANCED MENU offers more measurements options and functions.

- Temperature measurement °C or °F
- Suitable for Temperature probe PT100
- Setting for proximity switch to stop operations in case of no water (in place of level control)
- Alarm functions and setting with relay output

#### CTRL 3b (basic)

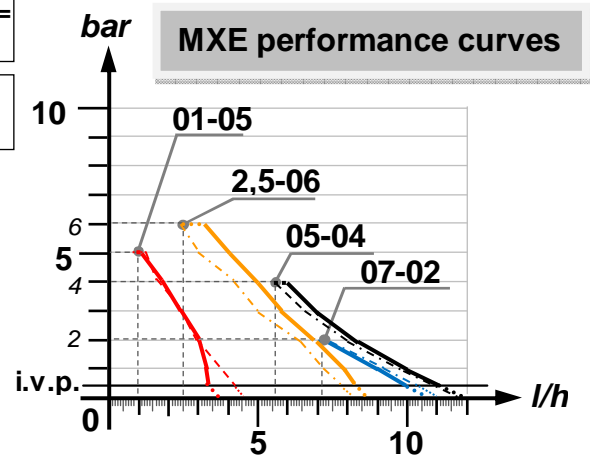
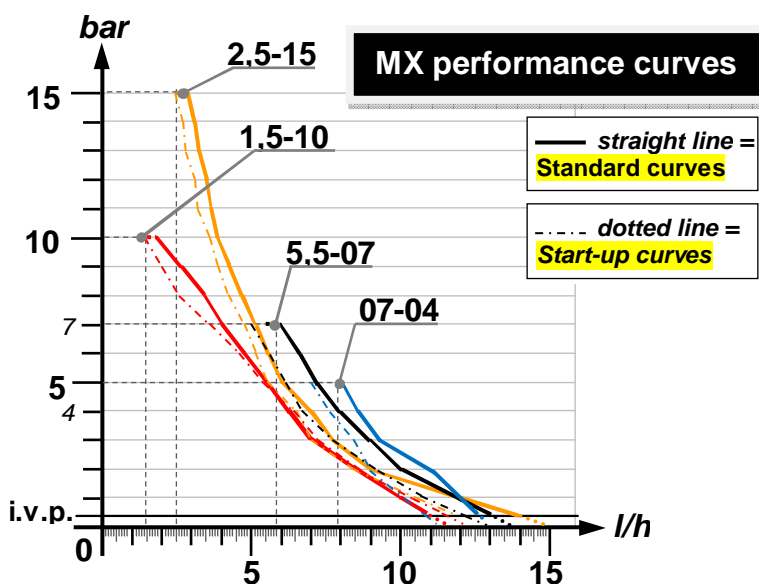
BASIC MENU for simple operations: without the functions listed in "advanced" operating menu.



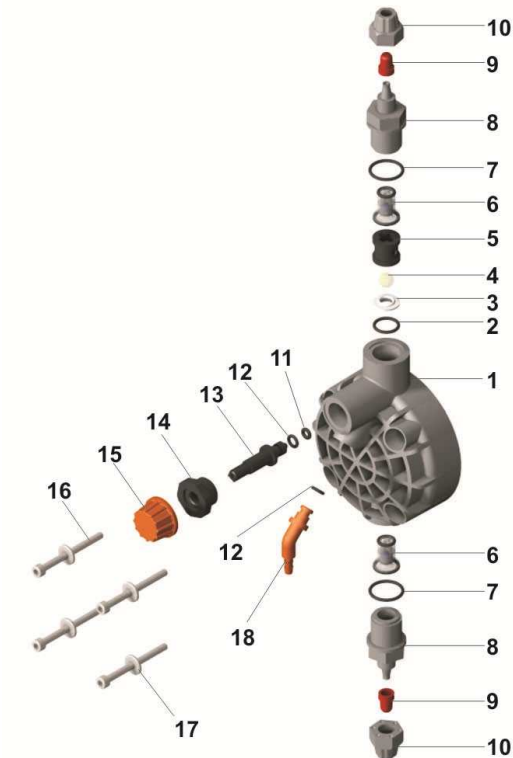
MX CTRL3 dosing pump with integral controller are NOT provided with electrodes and sensors which are available upon request. Please contact FWT sales office for these items.

## MX SERIES PERFORMANCE CURVES

Herein the following pages are shown the performance curves both for tradition mode adjustment, via strokes frequency percentage adjustment. Ratings can vary with a tolerance of 5÷10 % which must be taken into account when choosing the type of pump. Also variations occur when using a self-bleed or PMMA pump head (polymer dosing), pressure performances decreases consequently of about 50/65%. All flow rates indicated in the following diagrams are obtained testing the pump with medium hardness water at rated pressure, 1,5 m suction lift, room temperature. Diagrams indicate max metering pump flow variation in relation to working pressure in the plant; diagrams also include injection valve losses (I.V.P.).

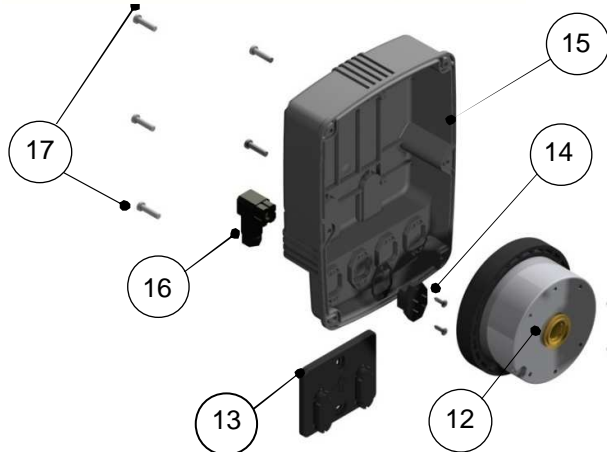


## EXPLODED VIEWS



### PUMP HEAD EXPLODED VIEW

1. PUMP HEAD (PP standard 1÷15 l/h) \*
2. AIR BLEED VALVE O-RING
3. BALL CHECK SEAT (air bleed)
4. BALL CHECK VALVE (air bleed)
5. VALVE SPACER (air bleed)
6. P.HEAD BALL CHECK VALVE ASSEMBLY
7. NIPPLE O-RING
8. NIPPLE
9. PROTECTION CAP
10. HOSE NUT
- 11 / 12 / 13 / 14 / 15. AIR BLEED KNOB ASSEMBLY
- 16 / 17. PUMP HEAD SCREWS
18. BLEED OUTLET

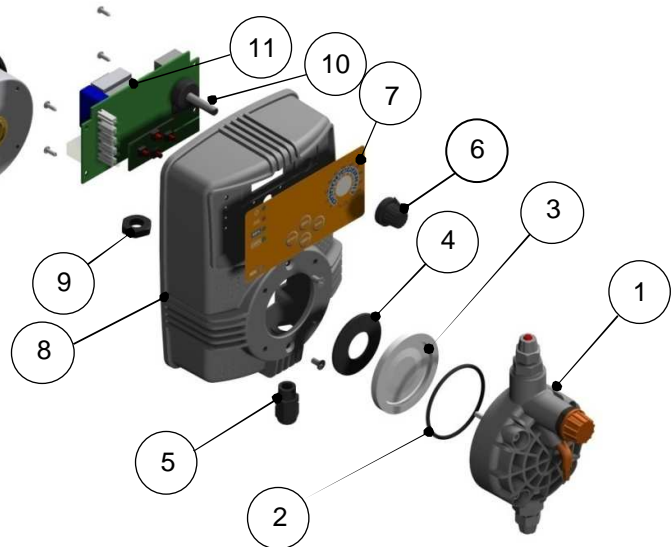


### DOSING PUMP EXPLODED VIEW

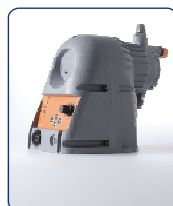
10. controls PCB (printed circuit board)
11. pcb internal mounting screws
12. solenoid
13. wall quick mounting bracket
- 14 / 16. utility connector assembly
15. back housing
17. housing screws

### DOSING PUMP EXPLODED VIEW

1. pump head (complete)
2. diaphragm / pump head o-ring
3. PTFE diaphragm
4. piston flange
- 5 / 9. power cable assembly
6. flow (pulse frequency) adjustment knob
7. front controls panel
8. housing



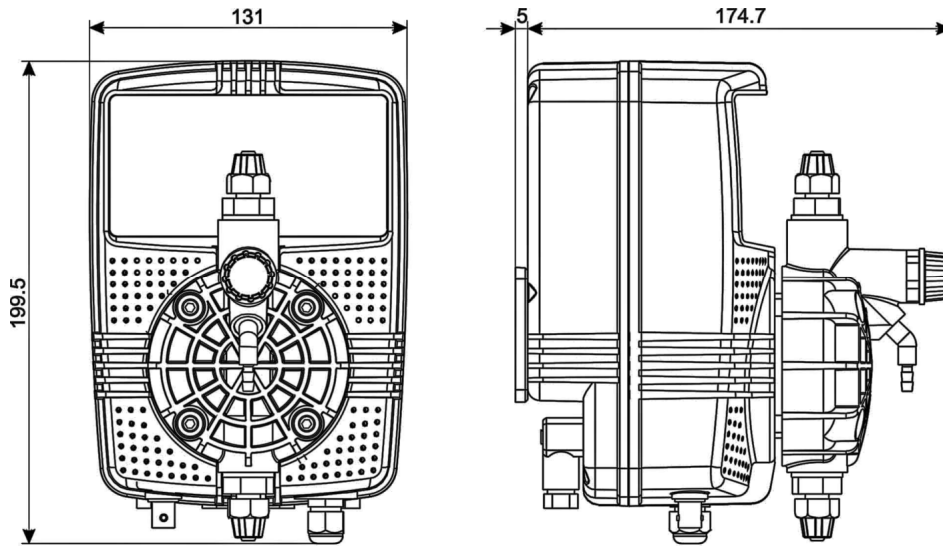
## FWT OTHER SOLENOID DRIVEN PUMP FX SERIES



FX solenoid driven dosing pumps main characteristics are:

- **FOOT MOUNTING HOUSING:** PP reinforced plastic housing.
- **STROKE LENGTH ADJUSTMENT:** ready also for mounting into small cabinets and small environments.
- **PRICE AND QUALITY:** the new design allows a more competitive price but keeping high and durable quality.

## MX SERIES OVERALL DIMENSIONS (mm)



Approximate net weight kg 1.9÷2.7

## FWT PRODUCTS AND ACCESSORIES

FWT offers also a wide range of accessories and sensors to guarantee a complete service such as:

- Safety relief/Anti-siphon valves • Pulsation dampeners • Suction and injection lances • Over voltage protection

### DOSING TANKS



### PULSE WATER METER



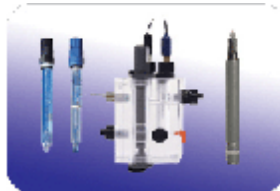
### MIXERS



### CONTROLLERS



### PROBES AND SENSORS



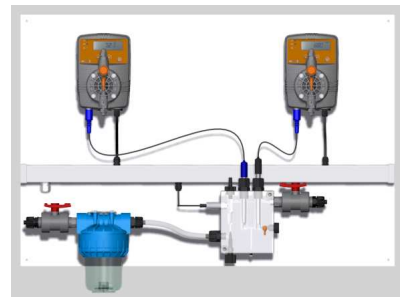
### PERISTALTICS



### MOTOR DRIVEN DOSING PUMPS



### COMPLETE DOSING / CONTROL PANELS



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