

IWAKI  
ELECTROMAGNETIC  
METERING  
PUMPS

**EWN-R**



# Multi voltage, High-speed operation, Multifunctional controller The high-end electromagnetic metering pump



**The EWN-R is the diaphragm type electromagnetic metering pump with a built-in multifunctional digital controller.**  
**Our technology makes the high-speed operation of 360spm available.**  
**The built-in controller that handles both digital and analogue signals controls operation in various ways.**  
**PVC, GFRPP, PVDF or SUS316 pump head is selectable.**  
**Also, special pump types for particular purposes are lined up.**  
**The user-friendly EWN-R will meet a wide variety of demands for chemical feeding.**



### High resolution

The stroke rate can be set with 1spm increments in between 1 and 360spm. The stroke length adjustment further assists fine adjustment that the stroke rate adjustment cannot reach. Contentious precise chemical feeding is now available.

### Multi voltage

The use of the multi voltage circuit design allows the pump to work anywhere in the world.

### A wide variation

In addition to the standard type of PVC, GFRPP, PVDF or SUS316 pump head, B- or C-type drive unit and each diaphragm size, the high compression type for gaseous liquid transfer (sodium hypochlorite, etc), the high pressure type for power injection (boiler compounds, etc) and the high viscosity type for viscous liquid transfer (polymer liquid. etc) are available.

### Built-in controller

The EWN-R has the mode of 1:1 operation, multiplier/divider programming control (digital signal) and proportional control (analogue signal) and can dedicate itself to a particular purpose by selecting a suitable mode. Also, the flow rate indication can be converted from spm to L/H or GPH.

### Pump body

The use of the integrated controller reduces a sealing area, so that the water-/dust-proof design of IP65 is attained. Also, a plastic cover protects the control panel under an adverse environment.

### Air vent valve

Rotating a standard air vent valve, the remained gas can be easily expelled from the pump head.



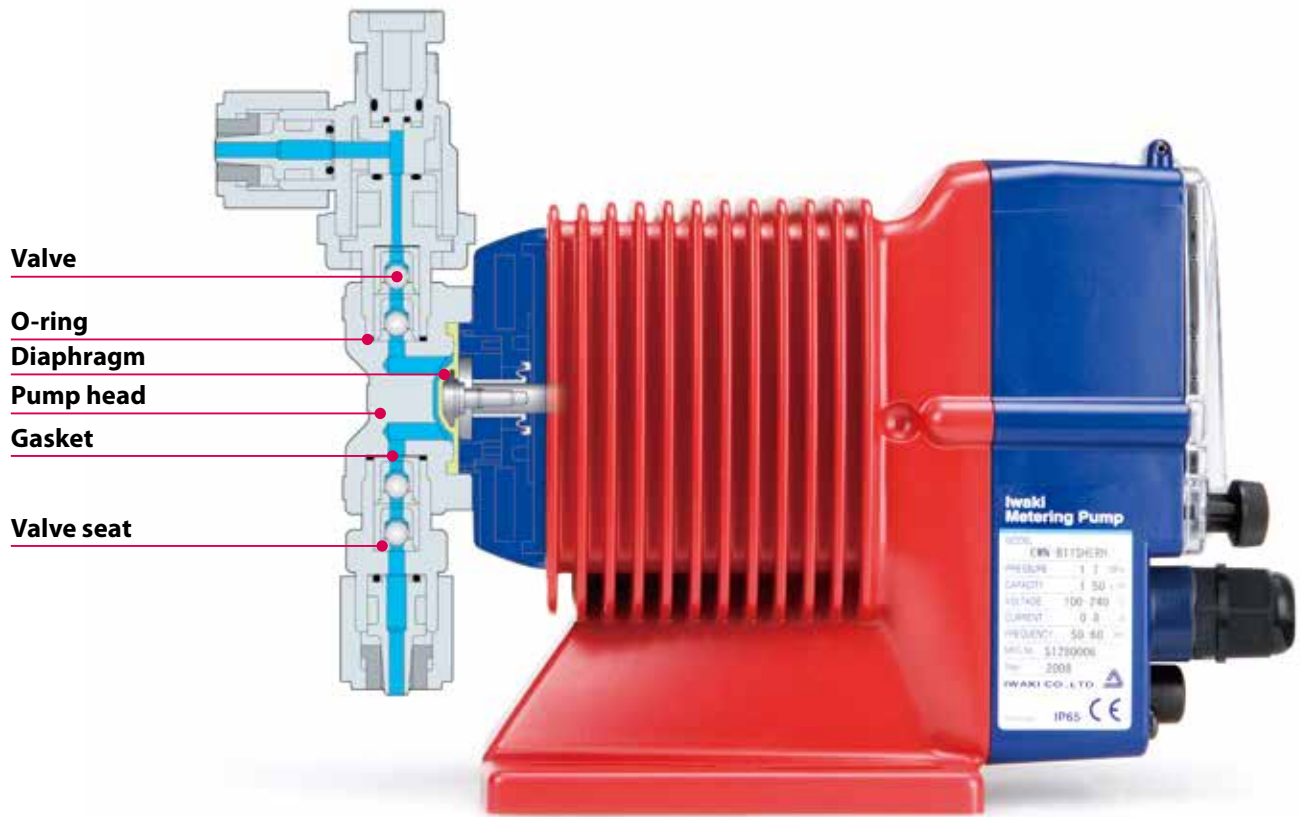
### Multi hose connection

The use of a new hose stopper eliminates a twist in tube connection.



# Technical data

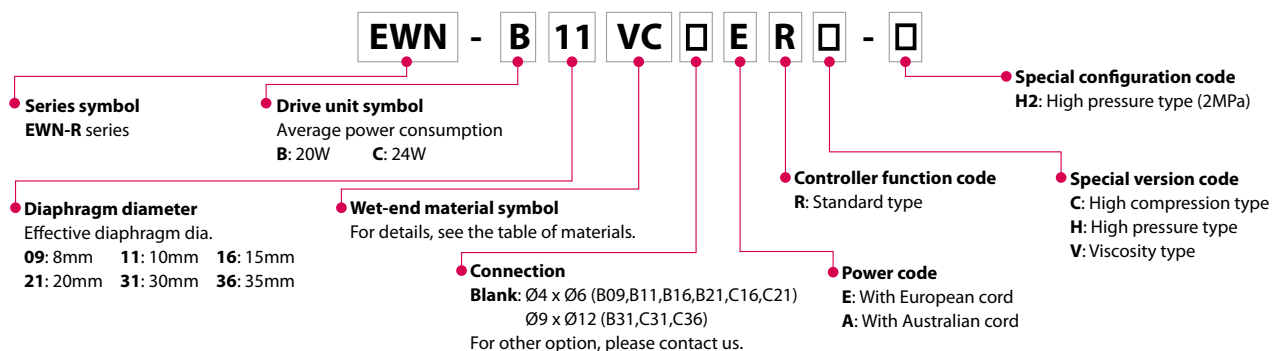
## Construction



## Wet-end materials

	Pump head	Valve	Valve seat	O-ring	Diaphragm	Gasket
VC	PVC	Alumina ceramic	FKM	FKM	PTFE+EPDM	PTFE
VH		Hastelly C276	EPDM	EPDM		
PC	GFRPP	Alumina ceramic	FKM	FKM		
PH		Hastelly C276	EPDM	EPDM		
FC	PVDF	Alumina ceramic	PCTFE	-		
TC			FKM	FKM		
SH	SUS316	Hastelly C276	SUS316	-		

## Pump identification





## Specifications of pump

Model		B11	B16	B21	B31	C16	C21	C31	C36		
									VC/VH/PC/PH	FC/SH/TC	
Capacity	L/hr	2.3	3.9	6.0	12.0	4.8	7.8	16.2	25.2	24.6	
	mL/min	38	65	100	200	80	130	270	420	410	
	mL/shot	0.05 to 0.1	0.09 to 0.18	0.14 to 0.28	0.28 to 0.56	0.09 to 0.22	0.14 to 0.36	0.3 to 0.75	0.47 to 1.17	0.46 to 1.14	
Rated discharge pressure	MPa	1.0	0.7	0.4	0.2	1.0	0.7	0.35	0.2	0.2	
Max. pressure	MPa	(1.4)	(0.8)	(0.5)	-	(1.2)	(0.8)	-	-	-	
Stroke rate	% (spm)	0.1 to 100 (1 to 360)									
Stroke length range	% (mm)	50 to 100 (0.5 to 1.0)				40 to 100 (0.5 to 1.25)					
Current	A	0.8				1.2					
Average power consumption	W	20				24					

Note 1: Each discharge capacity shown above is at discharge pressure (stroke length 100%, stroke rate 100%) and increases as a discharge pressure reduces.

Note 2: The performance is based on pumping clean water at ambient temperature at rated voltage.

Note 3: Liquid temperature -VC/VH types: -10 to 40°C -PC/PH/FC/SH/TC types: -10 to 60°C

Note 4: Max pressure is not guaranteed under any discharge condition. Max pressure of PVC type is 1.2MPa. Please contact us for details.

## Specifications of controller

Operational mode	MAN		0.1 to 100% stroke rate
	EXT	DIV (Dividing)	/1 to 9999
		MULT (Multiply)	×1 to 9999
		ANA.R (Analog, rigid)	4 to 20, 0 to 20, 20 to 4, 20 to 0 mA
	ANA.V (Analog, variable)	2 points 0.0 to 20.0 mA range 0.0 to 100% stroke rate	
Display	LCD	14seg 5digits % , ml/m, L/H, GPH, STOP, PRIME, AUX etc	
	LED	ON	Green Green lights when power is put and blinks synchronous with stroke.
		STOP	Orange/Red Orange lights when Pre-STOP is activated, and red when STOP is activated.
Keypad	5 Keys	Start/Stop, ▲ (Up), ▼ (Down), EXT, DISP	
Control function	STOP/Pre-Stop		Pump keeps running when Pre-STOP is activated. Pump stops when STOP is activated.
	Prime		Pump runs at max. stroke rate while up and down keys are pushed.
	Key lock		Key can be locked and unlocked.
	Calibration		Discharge capacity per shot is calculated automatically by operating and stopping pump at calibration mode to make flow rate indication possible.
	Buffer memory		ON or OFF is selectable. Max. 65535 stroke pulses are put in memory.
Input	Pulse		Non Voltage contact or open collector, Max. 200Hz
	Current		DC0 to 20mA (Input resistance 200Ω)
	Level sensor		No Voltage contact or open collector, 2- steps contact
	AUX		Pump runs at max.stroke rate while AUX signal is input.
Output	Photo-MOS relay AC/DC24V 0.1A		
	STOP, Synchronous with stroke		
	Synchronous with stroke is standard.		
Power Voltage	100 to 240 VAC 50/60Hz (90 to 264 VAC)		

\* Note 1: If the max. stroke rate by calculation exceeds 100% stroke rate because of the relation between the setting and input signal when the pump is in EXT operation, the operation is fixed at Maximum stroke rate speed of manual operation.

\* Note 2: By changing the setting, the pump can run when the contact signal comes in.

\* Note 3: The max. frequency of input pulse is 200 Hz. ON time of input pulse is 10 to 100 mS.

\* Note 4: The max. chargeable voltage to a contact is 12V and current is 0.1mA. If a contact such as relay is used, the minimum application load should be 0.1mA or below.

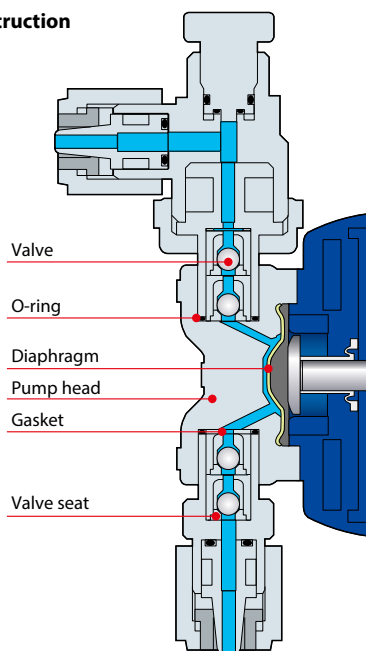
# The pump can be specialized for the need of a special chemical transfer.

## High compression type

### The optimum feeding for gaseous liquids

Increased compression ratio due to minimized dead volume in pump chamber. Suitable for injection of gaseous liquids such as sodium hypochlorite, hydrogen peroxide etc.

#### Construction



#### Wet-end material

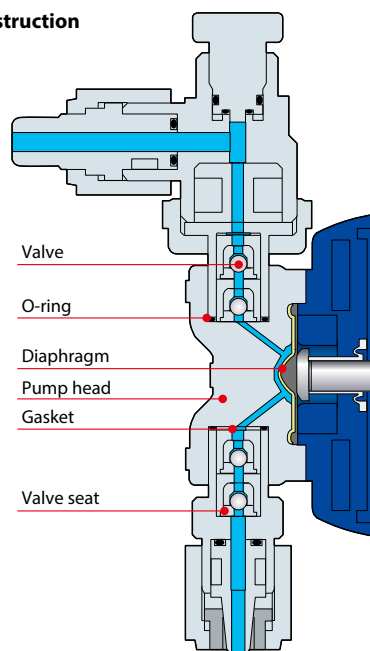
Material code	VC	VH
Pump head	PVC	
Valve	Alumina ceramic	Hastelloy C276
Valve seat	FKM	EPDM
Gasket	PTFE	
O-ring	FKM	EPDM
Diaphragm	PTFE+EPDM	

## High pressure type

### Suitable for boiler chemical injection

- The high pressure type can handle the maximum discharge pressure of 1.7MPa.
- The 25 and 40mL/min (max. discharge pressure) types are available.
- Capable of boiler chemical injection to the discharge line of a water-supply pump as long as the discharge pressure is 1.7MPa or below.

#### Construction



#### Wet-end material

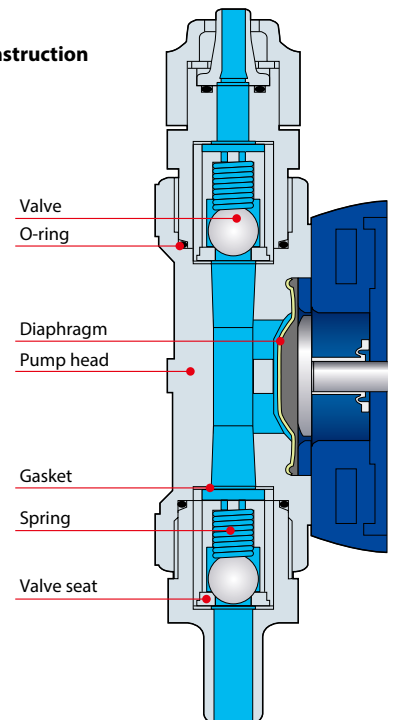
Material code	PC	PH	SH
Pump head	GFRPP		
Valve	Alumina ceramic	Hastelloy C276	Hastelloy C276
Valve seat	FKM	EPDM	SUS316
Gasket	PTFE		
O-ring	FKM	EPDM	-
Diaphragm	PTFE+EPDM		

## Viscosity type

### Suitable for high-polymer coagulant injection

- Suitable for polymer flocculants injection in wastewater treatment. Please contact us for details.

#### Construction



#### Wet-end material

Material code	PC
Pump head	GFRPP
Valve	Alumina ceramic
Valve seat	FKM
Spring	Hastelloy C276
Gasket	PTFE
O-ring	FKM
Diaphragm	PTFE+EPDM

#### Specifications

Model		High compression type					
		B09	B11	B16	B21	C16	C21
Capacity	L/hr	0.7	1.4	2.4	3.8	3.2	4.7
	mL/min	12	23	40	63	54	78
	mL/shot	0.03 to 0.07	0.06 to 0.13	0.11 to 0.22	0.18 to 0.35	0.12 to 0.30	0.17 to 0.43
Discharge pressure	MPa	1.0	1.0	0.7	0.4	1.0	0.7
Stroke rate	% (spm)	0.1 to 100 (1 to 180)					
Stroke length range	% (mm)	50 to 100 (0.625 to 1.25)				40 to 100 (0.6 to 1.50)	
Current	A	0.8				1.2	
Average power consumption	W	20				24	

Model		High pressure type		High pressure type (2MPa)	Viscosity type
		B11	C16	B11	C31
Capacity	L/hr	1.5	2.4	1.0	9.0
	mL/min	25	40	17	150
	mL/shot	0.05 to 0.1	0.07 to 0.17	0.05 to 0.07	0.25 to 0.63
Discharge pressure	MPa	1.7	1.7	2.0	0.5
Stroke rate	% (spm)	0.1 to 100 (1 to 240)		0.1 to 100 (1 to 240)	0.1 to 100 (1 to 240)
Stroke length range	% (mm)	50 to 100 (0.5 to 1.0)	40 to 100 (0.5 to 1.25)	70 to 100 (0.6 to 0.9)	40 to 100 (0.5 to 1.25)
Current	A	0.8	1.2	0.8	1.2
Average power consumption	W	20	24	20	24

Note 1: Each discharge capacity shown above is at discharge pressure (stroke length 100%, stroke rate 100%) and increases as a discharge pressure reduces.  
 Note 2: The performance is based on pumping clean water at ambient temperature at rated voltage.

# Optional accessories

## Accessories

### Check valve CAN / CBN / CS

This has the function of a non-return valve and prevents siphon and overfeed.

**CAN:** Available in PVC and GFRPP/CFRPP.

**CBN:** In-line type to be connected in the middle of a hose; made of PVC.

**CS:** Made of stainless steel for SH type.



### Specifications

Model	Connection		Set pressure MPa	Material			Applicable pump
	Inlet mm	Outlet mm		Body	Spring	O-ring	
<b>CAN-1VC</b>	4x6, 5x8 6x8, 6x12	R3/8 and R1/2	0.17±0.04	PVC (GFRPP/ CFRPP)	Hastelloy C276	FKM	EWN-B09, 11, 16, 21, C16, 21
<b>(CAN-1V)</b>			0.17 ±0.05 0.04			FKM	
<b>CAN-1VE (1E)</b>			0.17±0.04			EPDM	
<b>CAN-2VC (2V)</b>	6x12 9x12	R3/8 and R1/2	0.17±0.04	PVC (GFRPP/ CFRPP)	Hastelloy C276	FKM	EWN-C31
<b>CAN-2VE (2E)</b>			0.17±0.04			EPDM	
<b>CAN-2VCL (2VL)</b>	6x12 9x12	R3/8 and R1/2	0.05 ± 0.04 0.03	PVC (GFRPP/ CFRPP)	Hastelloy C276	FKM	EWN-B31, C36
<b>CAN-2VEL (2EL)</b>			0.05 ± 0.04 0.03			EPDM	
<b>CBN-1VC</b>	4x6	4x6	0.17±0.04	PVC	Hastelloy C276	FKM	EWN-B09, 11, 16, 21, C16, 21
<b>CBN-1VE</b>			0.17±0.04			EPDM	
<b>CS-1S</b>	Rc1/4	Rc1/4	0.2±0.03	SUS316	Hastelloy C276	-	EWN-B11, 16, 21, C16, 21, 31
<b>CS-1SL</b>			0.05±0.03			-	

\* There are 1V, 1E, 2VC, 2VE, 2V and 2E.

### Siphon preventing valve BVC

Made of PVC or GFRPP consisting of non-metallic parts.



### Specifications

Model	Connection		Set pressure MPa	Material		Applicable pump
	Inlet mm	Outlet mm		Body	O-ring	
Note <b>BVC-1□□</b>	4x6 9x12	R3/8 or R1/2	0.2 or 0.05	PVC	FKM or EPDM	All models

Note: Different models are available. Please contact for particulars.

### Multi-function valve MFV

This valve has the multi-function of air vent, pressure release inside pipe, pressure relief and back pressure valve.



### Specifications

Model	Tube connection	Set pressure		Material	Applicable pump
		Back pressure valve	Relief valve		
<b>MFV-HTC-2/3/7/23/24</b>	4x6mm, 5x8mm, 6x8mm, 6x12mm, 9x12mm, 10x12mm, 1/4x3/8mm, 3/8x1/2mm	0.25±0.1 MPa	1.25±0.2 MPa	PVDF / FEPM / PTFE+EPDM* (Not a wet end)	B11/B16/C16/C21
<b>MFV-MTC-2/3/7/23/24</b>		0.25±0.1 MPa	0.55±0.1 MPa		B21
<b>MFV-MTC-5/6/8</b>		0.25±0.1 MPa	0.55±0.1 MPa		C31
<b>MFV-LTC-5/6/8</b>		0.1±0.05 MPa	—		B31/C36

### Foot valve FS / FSP / FSTC

This foot valve with a strainer is made of PVC or GFRPP.



### Specifications

Model	Tube connection	Material	Applicable pump
<b>FSV</b>	4x6mm	PVC / FKM / Alumina ceramic	All models
<b>FSE</b>	5x8mm	PVC / EPDM / HastelloyC276	
<b>FSPV</b>	6x8mm	GFRPP / FKM / Alumina ceramic	
<b>FSPE</b>	6x12mm	GFRPP / EPDM / HastelloyC276	
<b>FSTC</b>	9x12mm	PVDF / FKM / Alumina ceramic	
	10x12mm		

### Chemical tank EXDT

This is a polyethylene round tank.



**Capacity:** 35, 60, 100, 200 or 300L

### Priming set PS

Made of PVC furnished with level sensor(s) and foot valve.



### Specifications

Model	Level switch	Connection mm	Length mm
<b>PS-1</b>	Single	4x6, 5x8, 6x8, 6x12, 9x12	520, 650, 810, 1000, 1350
<b>PS-2</b>	Double		520, 720, 810, 1000, 1350

### Pulse oscillating flow meter



### Specifications

Connection	Max. capacity	Range of pulse
3/4"	5m³/h	1xOutput pulse against 0.25L
		1xOutput pulse against 0.50L
		1xOutput pulse against 1.00L
1"	12m³/h	1xOutput pulse against 0.25L
		1xOutput pulse against 0.50L
		1xOutput pulse against 1.00L
1 1/2"	20m³/h	1xOutput pulse against 0.25L
		1xOutput pulse against 0.50L
		1xOutput pulse against 1.00L

### Flow checker FCM

Failed flow detection

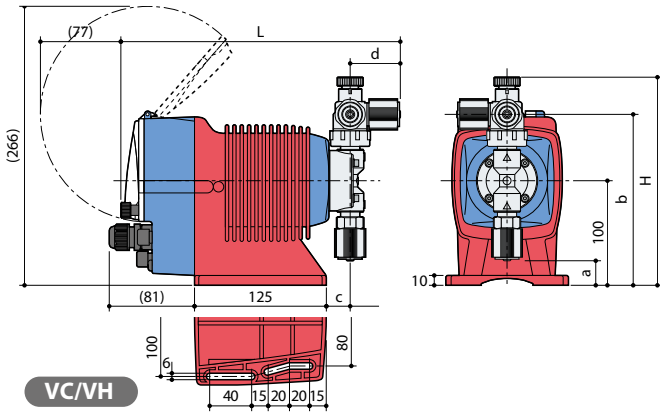


### Specifications

Model	FCM-VC-2	FCM-VH-2
<b>Power voltage</b>	DC5 to 24V	
<b>Output</b>	NPN open collector	
<b>Max. power consumption (Load capacity)</b>	8mA (15mA)	
<b>Materials</b>	PVC	
	Wet ends	FKM
O ring	FKM	EPDM
<b>Min. discharge capacity</b>	0.1 ml/shot (Max. capacity varies with pump spec.)	
<b>Min. discharge pressure</b>	0.2 MPa (Max. pressure varies with pump spec.)	
<b>Applicable pumps</b>	EWN-B11/16/21, EWN-C16/21	
<b>Connection</b>	4x6mm	4x6mm

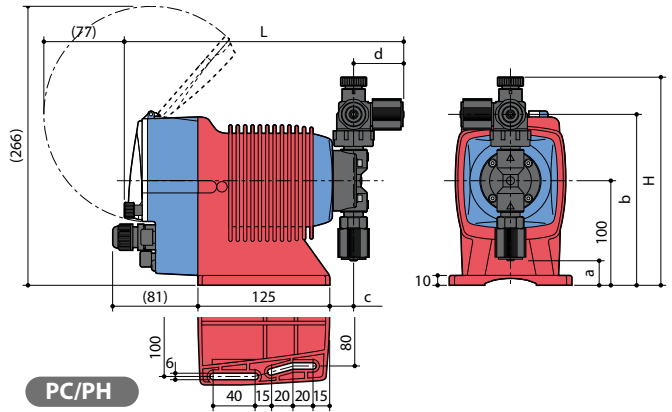
- Run the pump with 100% stroke length when the FCM is installed.
- Install a check valve to observe the minimum discharge pressure of 0.2MPa.
- Loosen the hex socket head screw(M3) and adjust the adjusting screw (remove it as necessary) when the pulse output from the FCM is unstable.

**Dimensions in mm**



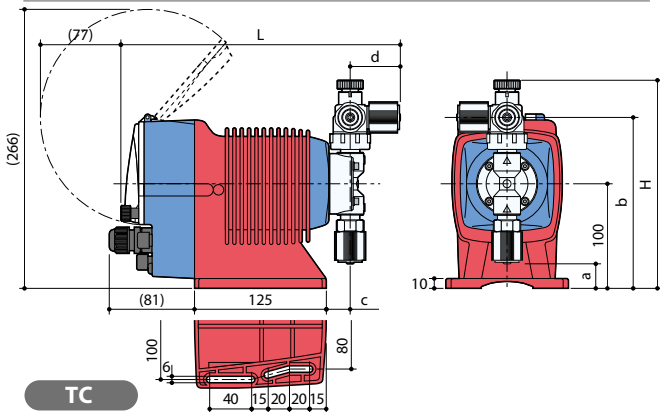
**VC/VH**

Model	H	L	a	b	c	d
<b>EWN-11, 16, 21</b>	(199)	(265)	(24)	(164)	(23)	(47)
<b>EWN-31</b>	(212)	(267)	(6)	(177)	(25)	(48)
<b>EWN-36</b>	(211)	(267)	(7)	(176)	(24)	(48)



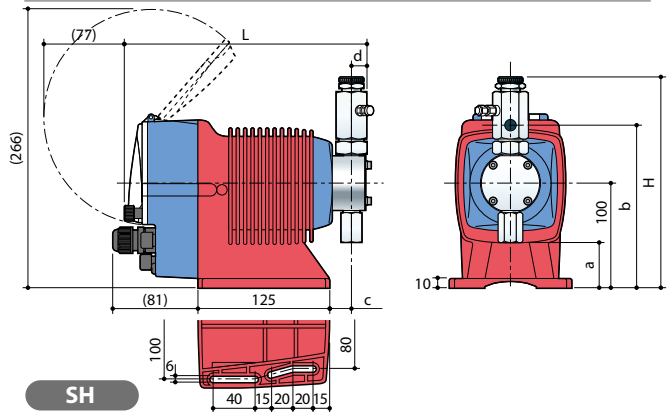
**PC/PH**

Model	H	L	a	b	c	d
<b>EWN-11, 16, 21</b>	(199)	(265)	(24)	(164)	(23)	(47)
<b>EWN-31</b>	(212)	(267)	(6)	(177)	(25)	(48)
<b>EWN-36</b>	(211)	(267)	(7)	(176)	(24)	(48)



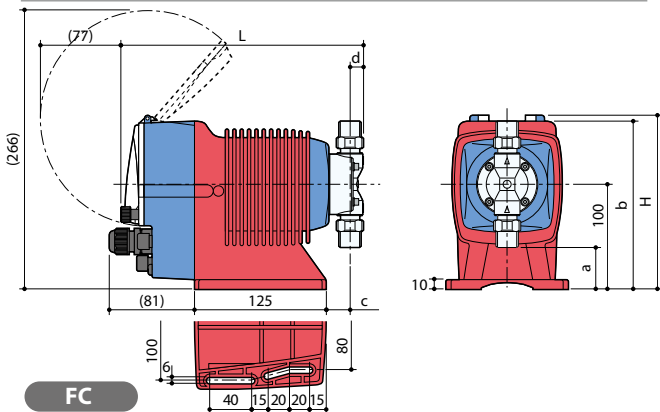
**TC**

Model	H	L	a	b	c	d
<b>EWN-11, 16, 21</b>	(198)	(265)	(25)	(163)	(23)	(47)
<b>EWN-31</b>	(211)	(267)	(7)	(176)	(25)	(48)
<b>EWN-36</b>	(211)	(268)	(6)	(176)	(24)	(49)



**SH**

Model	H	L	a	b	c	d
<b>EWN-11, 16, 21</b>	(201)	(232)	(44)	(155)	(22)	(15)
<b>EWN-31</b>	(213)	(233)	(34)	(167)	(23)	(15)
<b>EWN-36</b>	(216)	(233)	(32)	(170)	(23)	(15)



**FC**

Model	H	L	a	b	c	d
<b>EWN-11, 16, 21</b>	(166)	(231)	(40)	(160)	(23)	(13)
<b>EWN-31</b>	(177)	(236)	(23)	-	(25)	(16)
<b>EWN-36</b>	(177)	(235)	(23)	-	(24)	(16)

• Please contact us for special version.



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