

## Electromagnetic metering pumps Electromagnetic metering pumps with 100% watertight construction

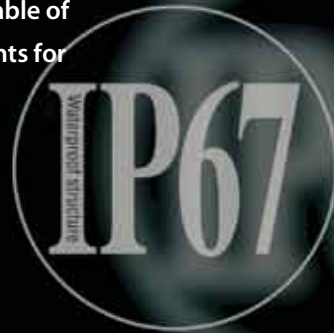


The EK series electromagnetic metering pumps are constructed to be perfectly watertight.  
The EK series is the world's first plastic resin electromagnetic metering pumps  
that are capable of being used outdoors.  
They can be used widely in various facilities  
and plants for water treatment, surface treatment and so forth.



# Electromagnetic metering pumps with 100% watertight construction

The EK series electromagnetic metering pumps are constructed to be perfectly watertight. Conventional electromagnetic pumps are thought to be vulnerable to exposure to external liquids, which means that they are unsuitable for outdoor use. To address this weak point, we have done our best to make the controller unit and the drive unit fully watertight and moisture proof. As a result, the EK series is the world's first plastic resin electromagnetic metering pumps that are capable of being used outdoors. They can be used widely in various facilities and plants for water treatment, surface treatment and so forth.



## Waterproof structure (equivalent to IP67)

By integrating a one-piece pump body, sealing portions are reduced in number to prevent liquids from entering due to sealing defects. A rubber gasket is provided between the pump head and the bracket to prevent water from entering through the periphery of the pump head.

To keep the controller unit watertight, a plastic cover with gasket is provided as standard equipment.

The adoption of membrane switches for the controller panel is another measure for the prevention of liquid penetration.

Note: Be sure to close the plastic cover during operation.

## High resolution

For discharge flow adjustment, a dual control system which controls the length of stroke and the number of strokes is employed. Since stroke by stroke adjustment is possible, the discharge rate can be controlled in a wide range from a minimal flow rate to a maximum discharge.

## Controller

The controller has a CPU. Both the stop function and the external function are included as standard equipment. As the display for the number of strokes, a high-temperature resistant LCD is employed to allow long-term exposure to the direct rays of the sun.

## Moistureproof structure

The electronic parts and printed board have been molded with resin.

This prevents dew condensation and short-circuiting caused by atmospheric gas.



EK-B11PC



EK-B11VC



# High-tech combination of pump technology and electronics technology



SUS 316 type

## Pump unit

### Pump head

Four types, PVC, GFRPP, PVDF and Stainless steel 316 are available.



PVDF type

GFRPP type

PVC type

### Diaphragm

Use of the proven diaphragm seal design of motor-driven process metering pumps gives reliability in a wider range of applications. EPDM coating on the diaphragm ensures great chemical resistance and durability.



### Valve

A two-stage valve system, which has high checking ability, is used. There are two types of valve assemblies, i.e., for acid liquid and for alkaline liquid.

### Air vent valve

The smaller flow rate types (to the EK-21) have air vent valves as standard equipment. Air in the pump chamber can be easily released simply by turning knob.



Note: For SUS316 type, airvent valve is available for all pump sizes.

## Controller unit

### Controller

A CPU is mounted to raise the resolution and promote functional diversity.

### Control panel

A LCD suitable for use under high temperature is also weather-tight and easy for the operator to read. To protect the controller portion from external liquids, membrane switches are used.

### Stroke length adjusting dial

The large adjusting dial is easy to operate. Dual control of the number of strokes as well as the length of stroke allows a wide range of discharge adjustment.

### Controller cover

All the models have controller covers as standard equipment.

### Connector

Sealability has been improved by the adoption of an IP68 connector.

## Drive unit

### Solenoid

A coil and a thermal protector, insert-molded by resin, ensure insulation. For the convenience in recycling, the resin portion and the metal portion are constructed to be easily separable.

### Pump body

The body is in a PPE case; this material offers strong protection against ultraviolet rays and has high chemical resistance. All of the assembled portions are attached with rubber seals; its watertightness is equivalent to IP67.



Control panel

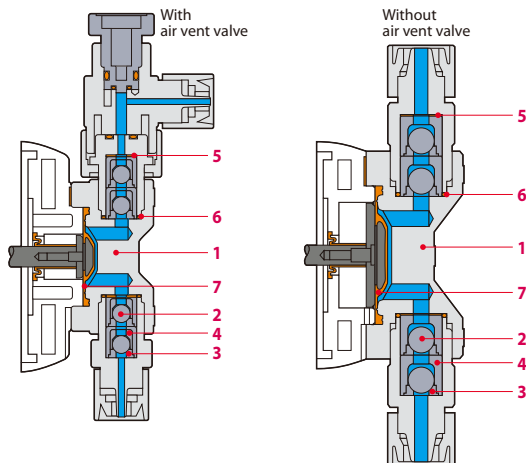
Stroke length adjusting dial

Connector

## Wet-end materials

	VC	VH	PC	PH	TC	SH
<b>1 Pump head</b>	PVC	PVC	GFRPP	GFRPP	PVDF	SUS316
<b>2 Valve</b>	Alumina ceramic	Hastelloy C276	Alumina ceramic	Hastelloy C276	Alumina ceramic	Hastelloy C276
<b>3 Valve seat</b>	FKM	EPDM	FKM	EPDM	FKM	SUS316
<b>4 Valve guide</b>	PVC	PVC	GFRPP	GFRPP	PVDF	SUS316
<b>5 Valve gasket</b>	PTFE					
<b>6 O ring</b>	FKM	EPDM	FKM	EPDM	FKM	-
<b>7 Diaphragm</b>	PTFE coated EPDM					

Note : Illustration shows PVC and GFRPP type.



## Pump identification

**EK - B 11 VC - 20E P R 2**

- Series name**  
Iwaki electromagnetic metering pump  
EK series
- Drive unit symbol**  
Average power consumption / Length of stroke  
B: 20W / 1mm  
C: 22W / 1.25mm
- Effective diameter of diaphragm**  
11: 10mm 16: 15mm  
21: 20mm 31: 30mm  
36: 35mm
- Wet-end material symbol**  
For details, see the table of materials.
- Power supply voltage symbol**  
100: AC100/110/115V single phase 50/60Hz  
20E: AC220V/230V/240V single phase 50/60Hz
- Power cord terminal**  
P: With plug
- Diameter of connecting tube (mm)**  
1: 4x9 2: 4x6 3: 6x8  
4: 8x13 5: 9x12  
6: 10x12 9: Rc1/4"
- Controller unit type**  
R: R type

## Specifications of pump

Model		B11	B16	B21	B31	C16	C21	C31	C36	
Capacity	VC, VH, PC, PH	L/hr	2.4	3.9	6.9	12.6	4.8	8.7	16.2	25.2
		mL/min	40	65	115	210	80	145	270	420
		mL/shot	0.11	0.18	0.31	0.58	0.22	0.4	0.75	1.17
	TC, SH	L/hr	2.4	-	6.9	-	-	8.1	16.2	24.0
		mL/min	40	-	115	-	-	135	270	400
		mL/shot	0.11	-	0.31	-	-	0.38	0.75	1.11
Max. discharge pressure	MPa	1.0	0.7	0.4	0.2	1.0	0.7	0.35	0.2	
Stroke length (Effective adjustment range)	mm	1 (40-100%)				1.25 (30-100%)				
Stroke rate		1-360spm								
Power supply (common to 50/60Hz)		AC100V / 110V / 115V or 220V / 230V / 240V single phase								
Insulation type, etc.		E type insulation / with built-in thermal protector / with 2.0 m power cord								
Average power consumption	W	20				22				
Connection (Applicable tube diameter)	VC, VH	mm	4x6, 4x9, 6x8			8x13, 9x12		4x6, 4x9, 6x8		8x13, 9x12
	PC, PH	mm	4x6, 4x9			8x13, 9x12		4x6, 4x9		8x13, 9x12
	TC, SH	mm	4x6	-	4x6	-	-	4x6	10x12	
Thread connection	SH		Rc1/4"	-	Rc1/4"	-	-	Rc1/4"		
Mass	kg	2.8				3.7				

Note 1: The maximum discharges are values with clear water and under maximum discharge pressures. Under lower discharge pressures, larger amounts than the above are discharged.

Note 2: To prevent overfeeding, discharge pressure should be 0.12 MPa or higher. (For B31 and C36: 0.05 MPa or higher.) If these levels are not reached, make sure to use a check valve (optional item).

Note 3: Above mass are PVC, GFRPP & PVDF type. Please contact Iwaki for SUS316 type.

### Operating Conditions

• Liquid temperature range VC/VH : 0 to 40°C, PC/PH/TC/SH : 0 to 60°C (Without dew condensation.)

• Ambient temperature range VC/VH : 0 to 45°C, PC/PH/TC/SH : 0 to 50°C

## Specifications of controller

Operational function	Function	MANUAL (Manual operation) EXT (Operation by external signals) STOP (Operation to be stopped by external signals)
	Switching	Selection by operating keys (UP and DOWN keys) START / STOP key (Membrane)
Control function	Setting	• MANUAL The number of strokes between 1 and 360 spm • EXTERNAL Digital input operation 1 : 1 (No pulse to be stored)
	Stop	Stop contact input stops pump operation.
Input	Highest SPM	360 spm.
	Pulse	No-voltage contact or open collector
Connection	Stop	Level sensor : No-voltage contact or open collector
	External connection	Terminal connector connection (Original type)

### Operating Conditions

• Ambient temperature range : 0 to 50°C

• Ambient humidity range : 35 to 95% RH (Without dew condensation inside the controller.)

## Accessories

### Check valve CA / CB / CS

This has the function of a nonreturn valve and prevents siphon and overfeed.

**CA** : Available in PVC and CFRPP.



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



**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>CA-1VC (1V)</b>	4x6	R3/8 and R1/2	0.17 ±0.04	PVC (CFRPP)	Hastelloy C276	FKM	EK-B11, B16, B21, C16, C21
<b>CA-1VE (1E)</b>	4x9					EPDM	
<b>CA-2VC (2V)</b>	8x13					FKM	
<b>CA-2VE (2E)</b>	9x12	EPDM	0.17 ±0.04	PVC (CFRPP)	Hastelloy C276	FKM	EK-C31
<b>CA-2VCL (2VL)</b>	8x13	EPDM					
<b>CA-2VEL (2EL)</b>	9x12	EPDM					
<b>CA-2VCL (2VL)</b>	8x13	R3/8 and R1/2	0.05 +0.04 -0.03	PVC (CFRPP)	Hastelloy C276	FKM	EK-B31, C36
<b>CA-2VEL (2EL)</b>	9x12					EPDM	
<b>CB-1VC (1V)</b>	4x6					4x6	
<b>CB-1VE (1E)</b>	4x9	4x9	EPDM				
<b>CB-2VC (2V)</b>	8x13	8x13	FKM	EK-C31			
<b>CB-2VE (2E)</b>	9x12	9x12	EPDM				
<b>CB-2VCL (2VL)</b>	8x13	8x13	FKM		EK-B31, C36		
<b>CB-2VEL (2EL)</b>	9x12	9x12	EPDM				
<b>CS-15</b>	Rc1/4	Rc1/4	0.2 ±0.03	SUS316	Hastelloy C276	—	EK-B11, B21, C21, C31
<b>CS-15L</b>							

### 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		Body	Spring	O-ring	
Note <b>BVC-1</b> □□	4x6 6x8 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.

### Air vent valve AV

For EK-B31, C31 and C36.



### Specifications

Model	Tube connection	Material	Applicable pump
<b>AV-E30/35VC-□</b>	8x13mm 9x12mm	PVC, FKM	EK-B31, C31, C36-VC
<b>AV-E30/35V6-□</b>		PVC, EPDM	EK-B31, C31, C36-VH
<b>AV-E30/35PC-□</b>		GFRPP, FKM	EK-B31, C31, C36-PC
<b>AV-E30/35P6-□</b>		GFRPP, EPDM	EK-B31, C31, C36-PH

### Foot valve FS / FSP

Foot valve with a strainer.  
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>	6x8mm	PVC / EPDM / HastelloyC276	
<b>FSPV</b>	8x13mm	GFRPP / FKM / Alumina ceramic	
<b>FSPE</b>	9x12mm	GFRPP / EPDM / HastelloyC276	

### Chemical tank CT

Light and strong polyethylene round tank. 25L, 50L, and 100L models are available.



CT-100N

CT-50A

CT-25A

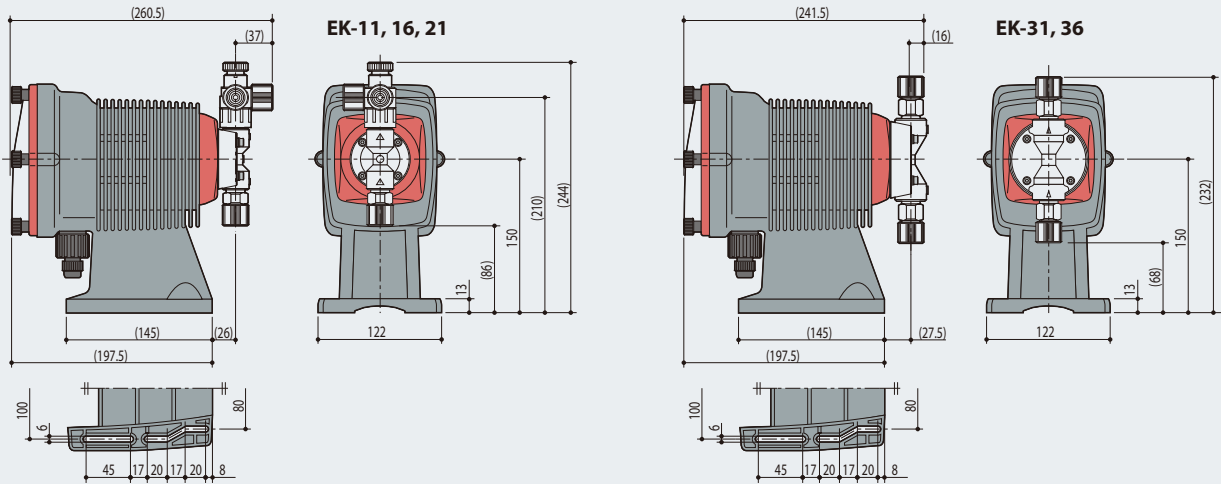
### Chemical tank CT-U120N

Square polyethylene tank with a pump located below. This tank can be used safely, as it is free from gas-lock problems.

Capacity : 110L



## Dimensions in mm



Note: Above dimensions are PVC, GFRPP and PVDF type. Please contact to Iwaki for dimensions of SUS316 type.

[www.iwakipumps.jp](http://www.iwakipumps.jp)

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( )Country codes

**⚠ Caution for safety use:** Before use of pump, read instruction manual carefully to use the product correctly.

Actual pumps may differ from the photos. Specifications and dimensions are subject to change without prior notice. For further details please contact us.

**⚠ Legal attention related to export.**

Our products and/or parts of products fall in the category of goods contained in control list of international regime for export control. Please be reminded that export license could be required when products are exported due to export control regulations of countries.

