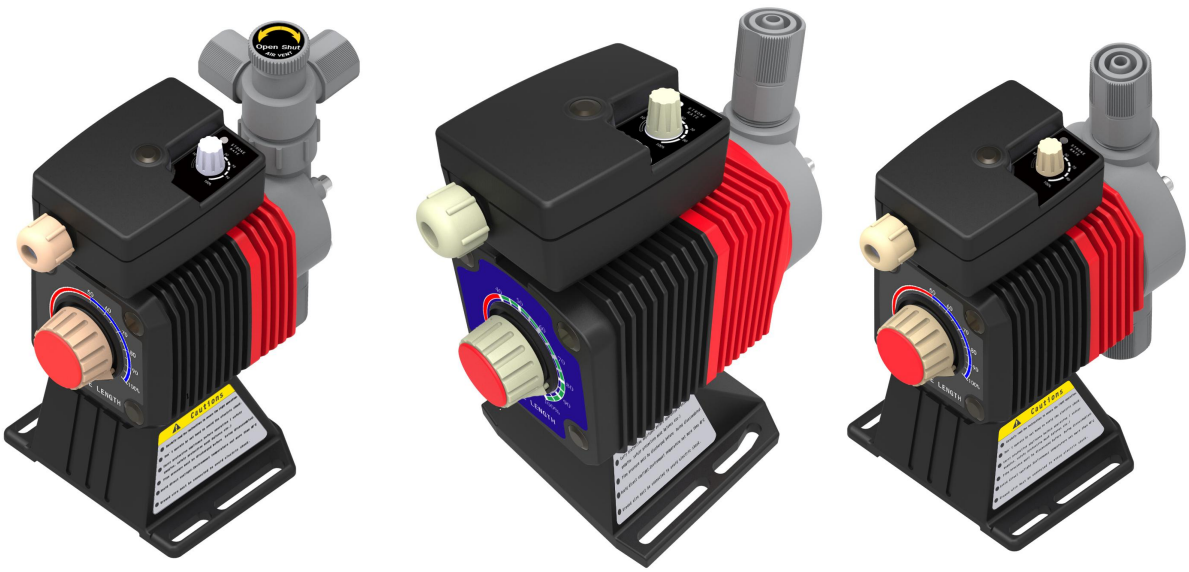
LANGO®

Shandong Lango Metering Pump Tech Co. Ltd

EZ
Series



Lango Electromagnetic Dosing Pump

EZ (Manual Model)

Instruction Manual

⚠Read this manual before use of product

Thank you for selecting the LANGO's electromagnetic dosing pump EZ series. This instruction manual deals with "Safety Instructions", "Outline", "Installation", "Operation" and"Maintenance" sections.
Please read through this manual carefully to ensure the optimum performance, safety and service of your pump.

Contents

Contact us or your nearest dealer if you have any questions.

Important instructions

For the Safe and
Correct Handling of the pump

- "Safety Instruction" section deals with important details about handling of the product. Before the use of the pump, read this section carefully for the prevention of personnel injury or loss.
- Observe the instructions accompanied with "WARNING" or "CAUTION" in this manual. These instructions are very important for protecting pump users from dangerous situations.
- The symbols on this instruction manual have the following meanings:

⚠ **WARNING**	**Nonobservance or misapplication of the contents of "Warning" section could lead to a serious accident which may result in death.**
⚠ **CAUTION**	**Nonobservance or misapplication of the contents of "Caution" section could lead to a personal injury or damage to the product.**

Types of Symbols

⚠ Indicates that "Warning" or "Caution" must be exercised. Inside this triangle, a concrete and practical image provided as a warning or caution message is depicted.

⃠ Indicates a prohibited action or procedure. Inside or near this circle, a concrete and practical image of the activity to be avoided is depicted.

❗ Indicates an important action or procedure which must be performed or carried out without fail. Failure to follow the instructions herein can lead to malfunction or damage to the pump.

Safety instructions

⚠WARNING

- **Turn off power**
  Working on the pump while the power is ON, you may be shocked. Be sure to turn off the pump and related devices before any work.

- **Terminate operation**
  Finding any abnormal condition, stop the operation immediately and inspect/solve problems.

- **For specified application only**
  The use of the pump in any application other than those clearly specified may result in injury or damage. Use the pump in a specified condition.

- **No modification**
  Do not modify the pump. We are not responsible for any accidents or damage due to modification.

- **Wear protective clothing**
  Always wear protective clothing such as safety goggles, protective gloves when arranging piping or dismantling the pump.

- **Do not place the pump close to water**
  The pump is not water-proof construction. The use of the pump in a humid place or a place where the pump can bet wet, electrical shock or short-circuit may result.

⚠CAUTION

- **Restriction on pump operator**
  The pump should be handled by a qualified person with a full understanding of the pump.

- **Specified voltage only**
  Do not apply any voltage other than the specified one on the nameplate. Otherwise damage or fire may result.

- **Do not run pump dry**
  Do not run pump dry. Parts friction heat is generated and damages the pump if the pump runs without liquid.

- **Do not wet the pump**
  If a liquid spills over electric parts or wires, a fire or electrical shock may be caused. Install the pump in a place free from liquid spillage.

Safety instructions

⚠CAUTION

- **Ventilate**
  Poisoning may result when handling toxic or odorous liquid. Ventilate the operating site sufficiently.

- **Countermeasure against efflux**
  Take a protective measure against the accidental efflux caused by the pump or piping breakage.

- **Damaged pumps**
  Do not use any damaged pump. Using a damaged pump could lead to an electric leak or shock.

- **Do not damage power cable**
  Do not scratch, damage, modify, or pull the power cable. Heating the cable or placing a heavy thing on it may damage the cable and may result in a fire or electrical shock.

- **Install an earth leakage breaker**
  Risk of electrical shock. Do not run the product without an optional leakage breaker. Secure a leakage breaker to reduce the risk of electrical shock. Purchase separately.

- **Damaged power cable**
  Do not use any damaged power cable for the prevention of a fire or electrical shock. Handle the power cable with care.

- **Wear parts replacement**
  Replace wear parts in accordance with instructions. Do not dismantle the pump beyond the extension described on this manual.

- **Limited operating site and storage**
  Do not install or store the pump in the following places...
  1. Ambient temperature is beyond 0~40 dig.C.
  2. Under a flammable atmosphere.

- **Pump disposal**
  Any used or damaged pump must be disposed of in accordance with local laws and regulations. (Consult a licensed industrial waste products disposing company.)

Outline

1. Safety and Caution Notes

Avoid areas where ambient temperature exceeds 40 degrees Celsius or falls below 0 degrees Celsius, or where the pump or tubing would be exposed to direct sunlight.

Disconnect the pump from electrical power source before performing any maintenance.

When working on or around a dosing pump, always wear proper protective clothing and equipment as recommended by the supplier of the liquid being pumped.

Depressurize the discharge tubing before disconnecting the tubing or performing any maintenance on the pump.

2. Principle of Operation

The EZ series electromagnetic dosing pump consists of a pump unit, a driving unit, and a control unit.
The drive unit is an electromagnetic solenoid. When the solenoid coil is energized by the control unit the armature shaft moves forward due to the magnetic force of the solenoid. The shaft is attached to a PTFE faced diaphragm which is part of the pump unit. The diaphragm is forced into the pump head cavity decreasing volume and increasing pressure which forces liquid in the pump head out through the discharge check valves. When the solenoid coil is de-energized, a spring returns the armature to its starting position. This action pulls the diaphragm out of the head cavity increasing volume and decreasing pressure. Atmospheric pressure then pushes liquid from the supply tank through the suction check valves to refill the pump head.

3. Specifications

Capacity/Pressure Rating

Model	EZ-B10	EZ-B15	EZ-B20	EZ-B30	EZ-C15	EZ-C20	EZ-C30	EZ-C35
Discharge amount ml/min	38	65	95	200	80	130	270	400
Discharge amount of each stroke ml/shot	0.05 ～ 0.11	0.09 ～ 0.18	0.13 ～ 0.26	0.28 ～ 0.56	0.09 ～ 0.22	0.14 ～ 0.36	0.30 ～ 0.75	0.44 ～ 1.11
Discharge pressure MPa	1.0	0.7	0.4	0.20	1.0	0.70	0.35	0.20
Stroke rate spm	0-360							
Connection tubing ID×OD mm	ø4×9			ø8×13	ø4×9		ø8×13	
Average power consumption	16 Watt				22 Watt			

1. The performance of the pump is obtained by clean water under a rated voltage and ambient temperature.
2. The above parameters are measured with clean water. The discharge amount increases when discharge pressure decreases.
3. Allowable ambient temperature: 0～40° C
4. Allowable liquid temperature: 0～40° C
5. Allowable voltage deviation: ±10% of the rated voltage

1) The allowable voltage range of special circumstances, such as the transmission of slurry, please consult us.

2) Due to product improvement, the product specifications may change without prior notice.

Flow end materials	VH	VC
Pump head	PVC	
Diaphragm	PTFE (bonded to EPDM)	
Valve ball	Ceramics	Ceramics
Valve seat	EPDM	FKM
Valve guide	PVC	PVC
Gasket	PTFE	PTFE
O ring	EPDM	FKM

PTFE: Polyterafluoroethylene

EPDM: Ethylene propylene diene monomer(Alkali-resistant rubber)

FKM: Fluoroelastmer(Acid-resistant rubber)

Installation

1. Unpacking

Open the shipping carton and inspect contents for damage. If any items are messing or damaged, contact your local distributor to arrange for replacement.

2. Location

Choose a location for the pump which is clean, dry, close to an electrical outlet, and allows convenient access to frequency control and tubing connections. Avoid areas where ambient temperature exceeds 40 deg.C or falls below 0 deg.C, or where the pump or tubing would be exposed to direct sunlight.

Flooded suction (mounting the pump below the level of liquid in the supply tank) is strongly recommended,especially when pumping liquids that readily generate gas bubbles (See Figure 1). Sodium hypochlorite and hydrogen peroxide are common examples of such liquids.

If flooded suction mounting is not possible, a shelf adjacent to (but not directly above) the supply tank often works well (See Figure 2).

The supply tank or cover can also be used if it is provisions for mounting a pump (See Figure 3).

In any cases, the total suction lift should not exceed 1.0m.

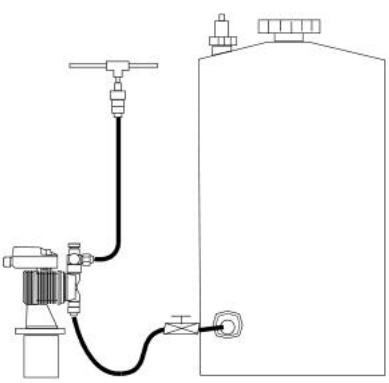


Figure 1
Flooded Suction

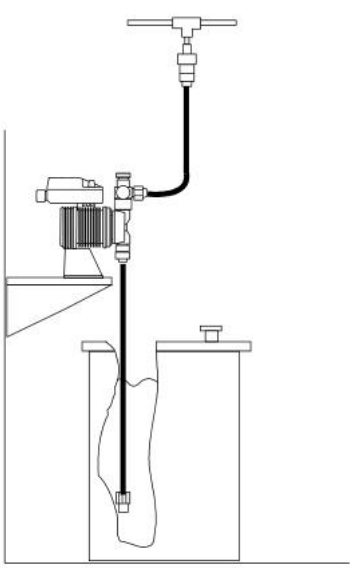


Figure 2
Shelf Mount

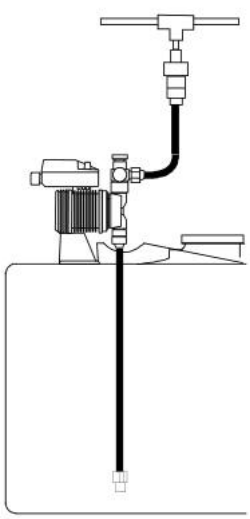


Figure 3
Tank Mount

3. Supply Tubing

The supply tubing run should be as short as possible. For flooded suction mounting, install a shout-off valve with an appropriate tubing connector at the tank outlet. Cut a length of tubing from the coil supplied and install between the shut-off valve and the pump inlet fitting. For suction lift applications, install a foot valve on one end of suction tubing and cut the tubing to a length such that the foot valve hangs vertically about 25mm above the bottom of the tank. Avoid any loops in the tubing run that could form a vapour trap.

Running the tubing through a length of PVC pipe will help to keep tubing straight.

4. Discharge Tubing

The discharge tubing run is less critical and can be any length required to reach the application point. Avoid sharp bends or kinks in the tubing and protect the tubing from sharp edges that could chafe or cut it. Install a check valve (optionally available) at the injection point and connect the discharge tubing to the check valve.

⚠CAUTION
Any check valve using Hastelloy or other metal springs in liquid end is not usable for chemicals (such as HCL) which corrode the Hastelloy or other metal springs. Ask LANGO for a special check valve for this application.

5. Electrical

Connect the pump power cord to a GROUNDED outlet supplying proper voltage. Avoid branch circuits that also supply power to heavy machinery or other equipment that could generate electrical interference.

Be sure to equip the power cord with a noise filter.

Operation

⚠CAUTION

- Do not operate the pump with a completely closed discharge-side valve. Operating the pump with the discharge-side valve fully closed may lead to liquid leakage or pipe rupture. In addition, more than 30 minutes of closed-discharge operation causes abnormal heat in the pump. This can lead to failure such as leakage when the pump head, valve case or so is deformed or the pump head is loosened. Make sure not to operate the pump with the discharge-side valve closed.

- Do not run the pump dry. A pump, which has been run dry, may experience liquid leakage during its liquid feeding operation. Make it a rule to run the pump after supplying liquid inside the pump.
  * Dry operation of the pump over a long time (longer than 30 minutes) causes the pump to overheat and the pump unit (pump head, valve guide etc.) to become deformed or the pump head attachment to become loose, which may result in liquid leakage trouble.

- Keep the pump head firmly assembled. If the installation bolts on the pump head are loosened, liquid leakage may result.
  * Fasten the 4 hex. socket bolts tightly before starting the initial pump operation. (The bolts may be loosened during storage or transportation of the pump, depending upon the condition of each.)
    * Fastening torque: 2.16N • m（B10/B15/B20/C15/C20 ）
      2.55N • m（B30/C30/C35 ）

  Tighten all the bolts fully by applying an equal amount of torque in a diagonal order among the bolts.

1. Priming

Install the pump as described above. With the pump turned on, set frequency at 100%. If the pump is equipped with an air vent valve, open the knob 1/2 turn. Liquid should move through the suction tubing and into the pump head. When liquid starts running through the vent tubing, close the air vent knob and continue with output adjustment described below. If the pump has no air vent valve, disconnect the discharge tubing from the injection valve. When liquid enters the discharge tubing at the pump head, set frequency to 0% to stop the pump and reconnect the discharge tubing to the injection valve.

2. Adjustment

If less than full output is required, set the frequency to the required flow.

3. Calibration

If exact output calibration is required, first complete the exhaust operation. Then connect a calibration column to the suction side of the pump. Turn the pump on for one minute and read the amount of liquid pumped from the column. Adjust the frequency up or down as necessary and check the output again. When the desired output is reached, disconnect the calibration column and reconnect the suction tubing (See Figure 4).

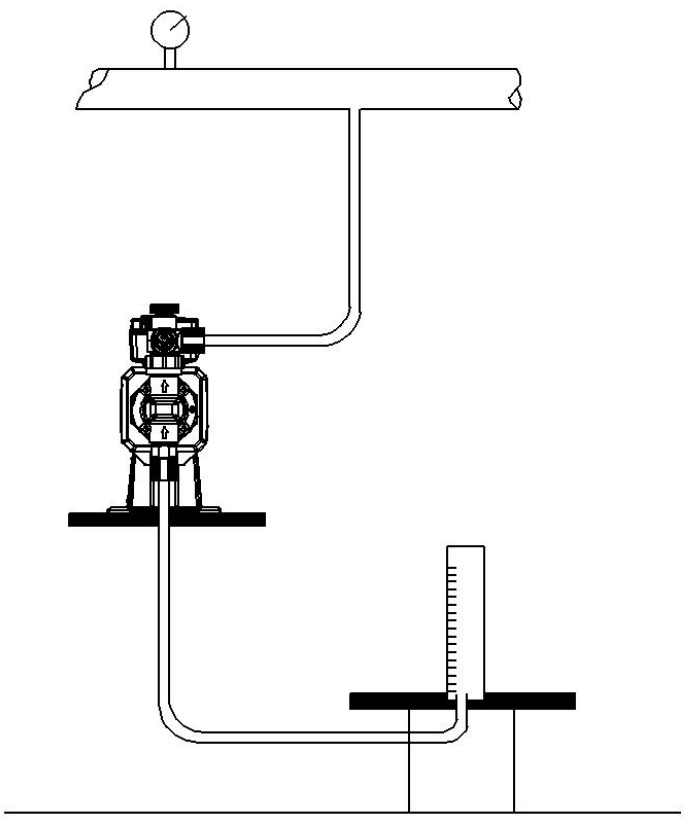


Figure 4

Maintenance

⚠CAUTION
● Before working on the pump, disconnect the power cord, depressurize the discharge tubing and drain or flush any residual liquid for the pump head and valves.

1. Diaphragm Replacement

Remove the power cord from the electrical outlet and disconnect the suction tubing, discharge tubing, and air vent tubing. Remove the four head bolts with a M4 or M5 hex wrench. Unscrew the diaphragm and remove its retainer (small spacer behind the diaphragm). Install the new retainer, diaphragm and spacer on the shaft. Turn the diaphragm clockwise until it bottoms on the shaft. Replace the pump head and tighten the head bolts to a torque of 2.16/2.55 N•m.

2.16N • m（B10/B15/B20/C15/C20 ）

2.55N • m（B30/C30/C35 ）

2. Valve Replacement

Remove the suction and discharge tubing. Remove the suction fitting, the valve ass'y (consists of 2 × valve ball, 2 × valve seat, 2 × valve guide, 1 × gasket & 1 × O ring). Install the new valve ass'y. Be sure both valve seats are in the same orientation. Refer to Figure 5, below. Tighten the suction fitting. Similarly remove and replace the discharge valve ass'y.

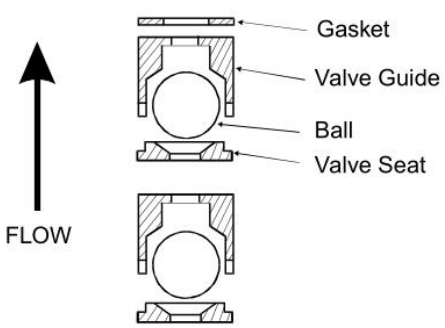


Figure 5
Valve Ass'y Orientation

3. Tubing

Check ends of tubing for splits, cracks or thin spots. Examine the full length of tubing for damage due to chafing, abrasion, stress cracks, excessive temperature or exposure to ultraviolet light (direct sunlight or mercury vapour lamps). If any signs of deterioration exist, replace the entire length of tubing. It is a good idea to replace discharge tubing on a regular preventive schedule every 12 months.

4. Troubleshooting

⚠CAUTION
● Before working on the pump disconnect the power cord, depressurize the discharge tubing and drain or flush any residual liquid from the pump head and valves.

Problem	Possible Cause	Corrective Action
Pump does not start	- Faulty wiring - Improper voltage - Electronic control unit is damaged.	- Correct wiring - Connect to proper voltage source - Replace control unit
Pump does not prime	- Air in suction tubing - Valve Gasket is not installed - Valve ass'y direction is wrong - Pump is air locked - Suction or discharge valve is clogged with foreign matter - Adhesion of valve onto valve seat	- Reroute suction tubing to eliminate air trap - Install Valve Gasket - Reassemble valve ass'y - Open air vent valve - Disassemble, inspect, clean - Disassemble, inspect, clean
Output fluctuates	- Suction or discharge valve is clogged with foreign matter - Air is trapped in pump - Overfeeding - Diaphragm is damaged	- Disassemble, inspect, clean - Open air vent valve - Install injection valve or back pressure valve - Replace diaphragm
Liquid leaks	- Fitting or coupling nut is loose - Pump head is loose - Diaphragm is damaged - O ring or valve gasket missing	- Tighten - Tighten pump head bolts - Replace diaphragm - Install O ring or valve gasket

❗ Check if the pump head mounting bolts are not loosened every 3 months. Tighten them diagonally on the following tightening torques as necessary. The mounting bolts may loosen during operation (An extent of looseness depends on operating condition.).

Tightening torque of the pump head mounting screw

Torque	Torque	Parts name
EZ-B10/B15/B20/C15/C20	2.16N • m	M4 hex. socket head bolts
EZ-B30	2.55N • m	M4 hex. socket head bolts
EZ-C30	2.55N • m	M4 hex. socket head bolts
EZ-C35	2.55N • m	M4 hex. socket head bolts

5. Model Code

EZ-B 15 VC- V 1
① ② ③ ④ ⑤ ⑥

① Series name
EZ: Manual Model

② Drive unit symbol
Average power consumption: B：16W, C：22W

③ Diaphragm effective diameter
10 : 10 mm 15 : 15 mm
20 : 20 mm 30 : 30 mm
35 : 35 mm

④ Flow end materials symbol
See the table of Flow end materials presented page 5.
VH: Ceramic ball valves
VC: Ceramic ball valves

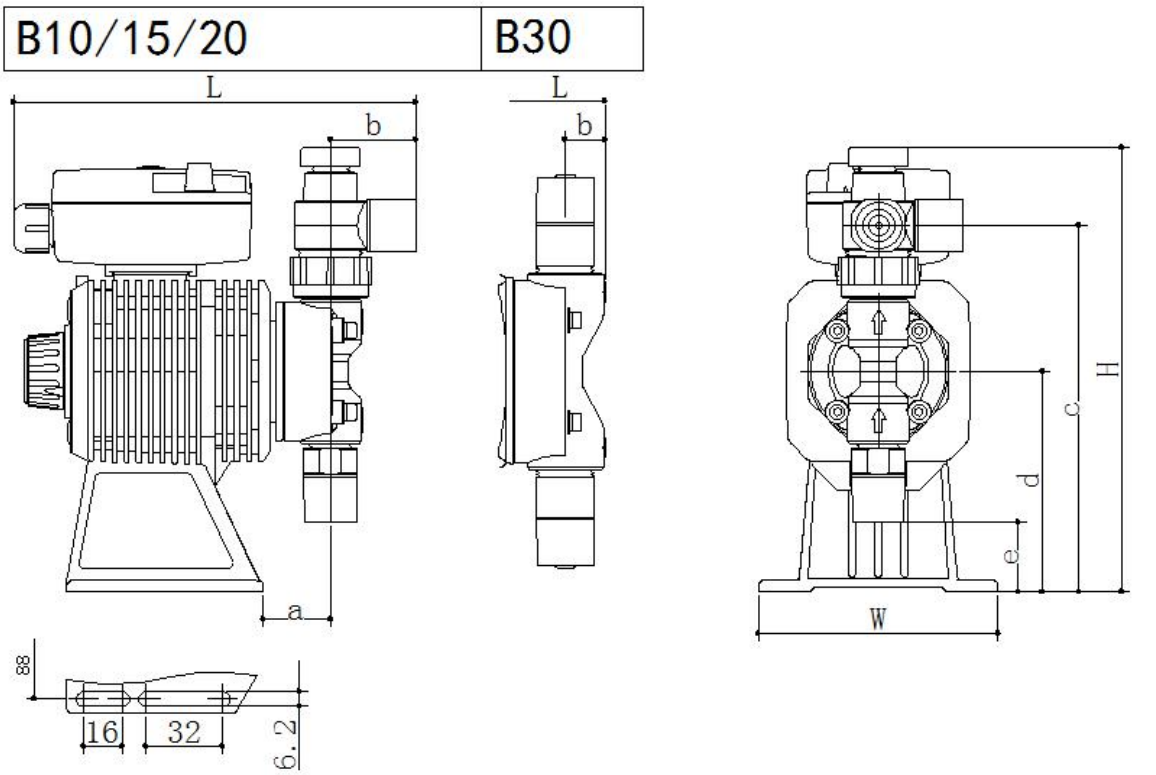
⑤ Power-supply voltage
V: AC220～240V W:AC100～240V

⑥ Connection Tubing inside diameter (ID) × Outside diameter (OD)

1	ø4 × 9mm	EZ-10,15,20
2	ø8 × 13mm	EZ-30,35

6. Dimensions

(EZ-B type)

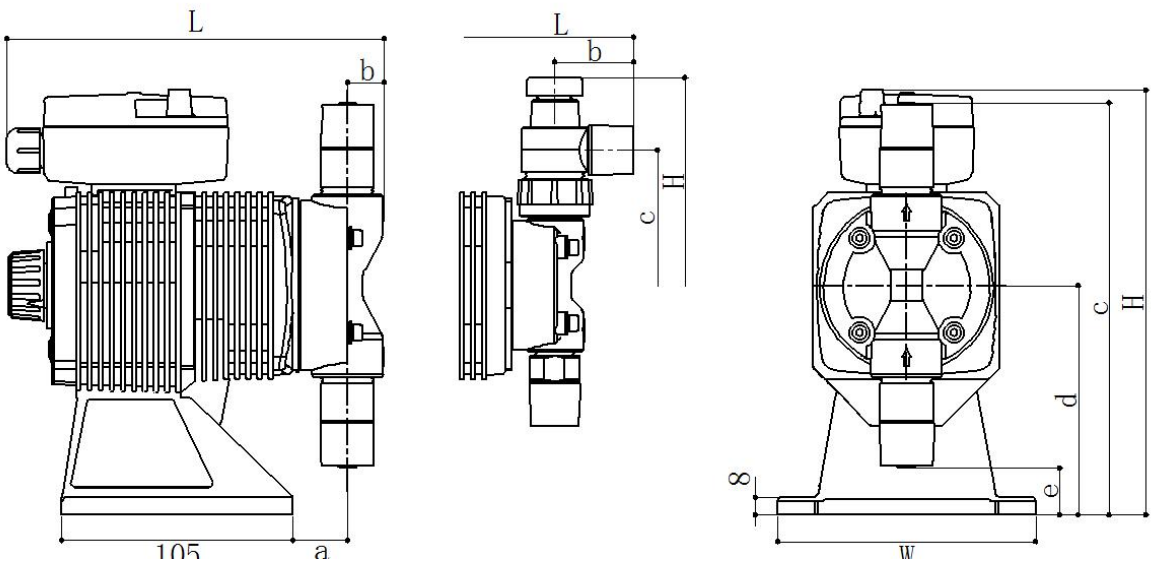


Dimensions in mm

Model	W	H	L	a	b	c	d	e	Hose connector
EZ-B10	100	185	168	28	37	153	92	29	ø4×9
EZ-B15	100	185	168	28	37	153	92	29	
EZ-B20	100	185	168	28	37	153	92	29	
EZ-B30	100	173	146	30	16	-	92	11	ø8×13

(EZ-C type)

C30/35	C15/20



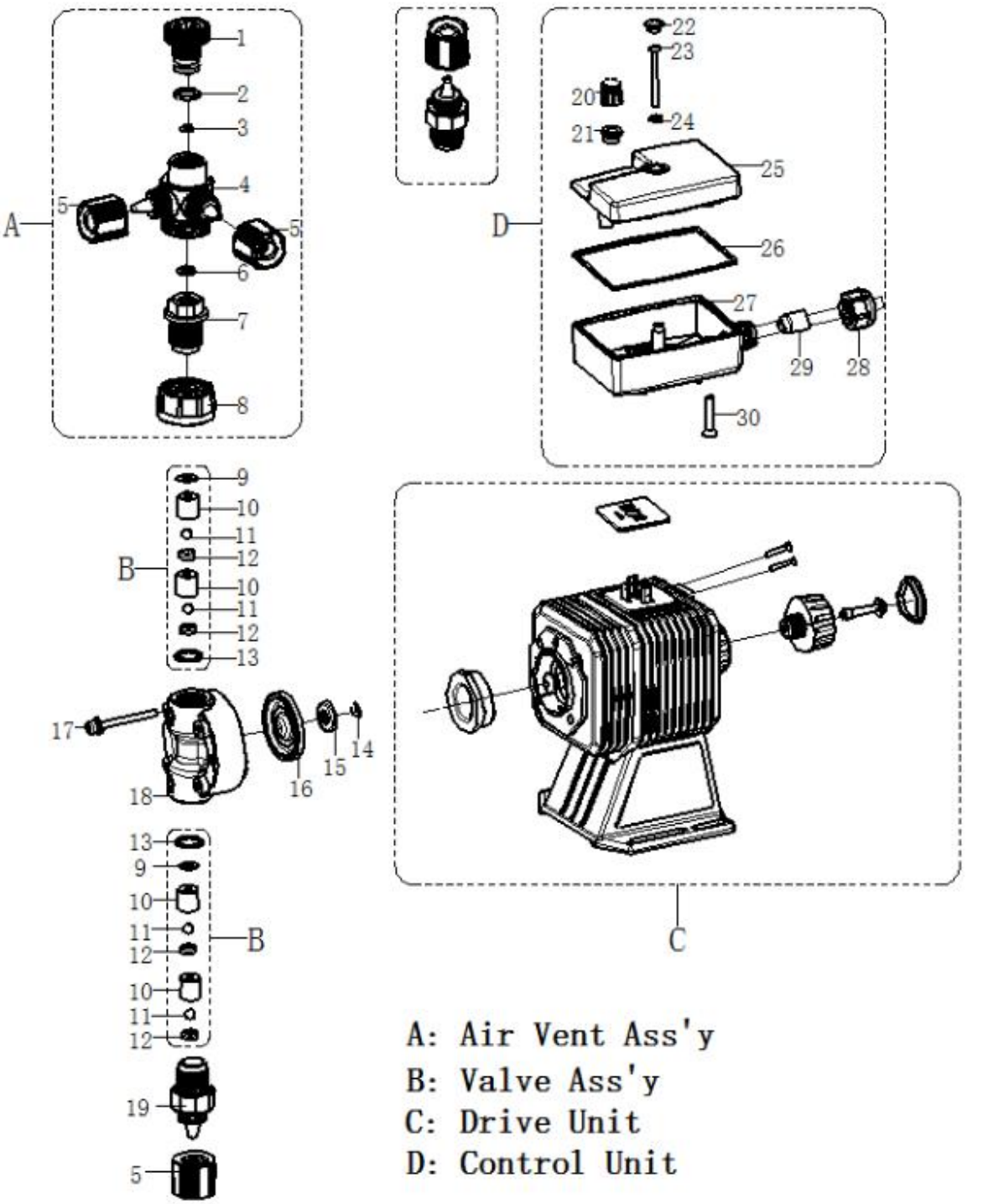
Dimensions in mm

Model	W	H	L	a	b	c	d	e	Hose connector
EZ-C15	116	195	196	27	37	153	90	26	ø4 x 9
EZ-C20									
EZ-C30	116	190	167	25	16	184	103	22	ø8×13
EZ-C35									

7. Exploded View

The pump in the diagram below is completely dismantled. Do not dismantle the pump beyond the extent shown in this instruction manual.

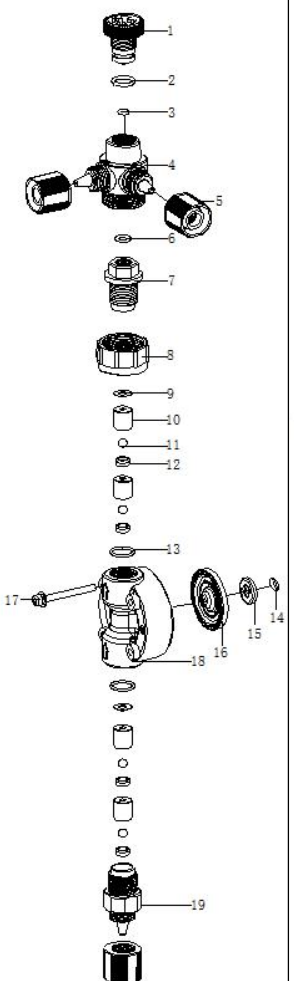
EZ-10/15/20 **EZ-30/35**



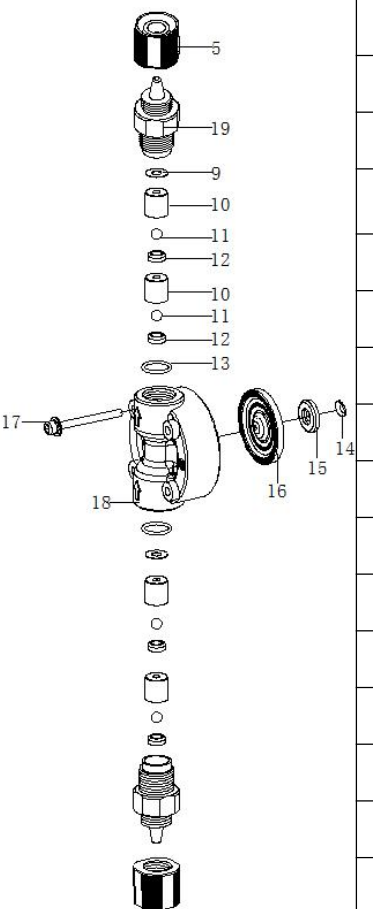
Notice: Actual fitting nut(4) may differ from illustrated ones.

8. Parts List

EZ-10,15,20



EZ-30,35



Item	Description	EZ-10,15,20	EZ-30,35
1	Adjusting Screw	1	-
2	O-RING	1	-
3	O-RING	1	-
4	Air vent body	1	-
5	Parts nut	3	2
6	O-RING	1	-
7	Air vent body B	1	-
8	Lock nut	1	-
9	Gasket	2	2
10	Valve guide	4	4
11	Valve ball	4	4
12	Valve seat	4	4
13	O-RING	2	2
14	Adjust spacer	（1）	（1）
15	Retainer	1	1
16	Diaphragm	1	1
17	Hex Socket	4	4
18	Pump head	1	1
19	Fittings	1	2

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