LANGO®

Solenoid Dosing Pump Instruction Manual

EZ
Series



Carefully read and understand the manual before installation and operation.

Thank you for choosing our EZ series solenoid metering pump.

This operation manual introduces the safety instructions, product introduction, installation, operation, and maintenance of the EZ series metering pump.

To maximize the performance and safe operation of the pump, please read this manual thoroughly and thoroughly before using the pump.

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If you have any questions, please consult our nearest distributor or our after sales service email : service@langopump.com

Important Instructions

- The "safety instructions" cover all the important details of operating the pump. Before using the pump, please read this section carefully to avoid personal injury or property damage.

- Always follow the the "Warning" or "Caution" in this instruction. This part is very important to allow the operator of the pump to avoid injury in dangerous conditions.

- Below is the meaning of the symbol：

 **Warning**	Neglect or incorrect use of "warnings" can lead to death or a serious injury to the body.
 **Caution**	Neglect or incorrect use of the "caution" content will cause the person injury or product damage.

Types of Symbols



Indicates a warning or caution that must be executed. Within this triangle, there is specific and practical information explained in the form of warnings or precautions.



Indicates a prohibited operation or program. Describe specific actions that are necessary to avoid within or next to the symbol.



Indicates an operation or program that must be executed correctly and without error. The operation error mentioned here will lead to pump failure or damage.

Safety Instructions

Caution

- **Cut off power supply**

Operating the pump without power off can cause a shock. Ensure that the power is turned off and the pump and other related equipment is stopped before any pump operation.



- **Stop the operation**

During the operation, once any abnormality is found, the operation should be suspended immediately, checked and troubleshooting.



- **Only applies to the specified conditions**

Using the pump under unspecified applicable conditions may cause personal injury or damage to the pump. Please use the pump strictly according to the specified conditions.



- **No modify**

Do not modify the pump. We are not liable for any accident caused by any unauthorized renovation.



- **Wear protective equipment**

When arranging pipelines or dismantling pumps, be sure to wear protective equipment such as safety glasses, protective gloves, etc.



- **water proofing**

The pump is not capable of having a waterproof function. Using a pump in places with water splashes and easily wet can cause a shock or short circuit.



Caution

- **Qualified operator**

The pump operator must have sufficient knowledge and experience in operating the pump.



- **Only applies for the specified voltage**

Do not operate the pump at a voltage not specified by the nameplate, otherwise it will cause damage to the pump or cause a fire.



- **No empty running**

Do not let the pump run empty long time, otherwise the heat generated by friction between pump components may cause damage to the pump.



- **No wetting**

If the liquid splashes to wet the electrical components or wires, it may cause a fire or electric shock. The pump shall be installed away from the liquid splash.



- **Air circulation**

Poisoning may occur during work involving toxic liquids. Therefore, to ensure that the operation site is fully ventilated.



- **Prevent the accidental outflow of fluid**

Appropriate measures shall be taken to prevent accidental outflow of fluid due to pump or pipe rupture.



Caution

- **Fault pump**

Do not use the damaged pumps. Using a faulty pump may cause electric leakage or electric shock.



- **Do not damage the wires**

Do not pull, destroy, change connecting wires, hang heavy objects on wires or heat them, which may lead to fire or electric shock.



- **Ground and install electric leakage protector (optional)**

Please connect the ground wire and install the leakage protector, otherwise there is a risk of electric shock.



- **Wire processing**

Do not use any broken wires, or a fire or electric shock may occur. The wires should be handled with great care.



- **Replacement of wear parts**

Wear parts should be replaced according to the instructions in this manual. Do not perform operations beyond the content of this manual during maintenance.



- **Provisions on the operation and storage points**

Do not install or store the pump in:

1.Ambient temperature exceeds the range of 0 to 40 degrees

2.Nearby flammable gas



- **Treatment of old pumps**

According to relevant laws and regulations, pumps that have been used or damaged must be properly disposed of. (Please consult a certified industrial waste disposal company)



Product Description

1. Safety and precautions

Avoid environments with temperatures exceeding 0-40. C. Or use the pump and pipeline directly exposed to direct sunlight. Be sure to cut off the power supply of the pump before carrying out maintenance.

When working on the pump or its surrounding environment, it is essential to correctly wear protective equipment and equipment recommended by the liquid supplier being transported. Before disassembling the pipeline or repairing the pump, be sure to release the pressure of the discharged pipeline beforehand

2. Operational principle

The EZ series solenoid metering pump consists of a pump head, driver, and controller. The driver is an electromagnetic coil. When the controller powers the coil, the iron core and connecting rod are driven forward by electromagnetic force to move the diaphragm connected to the connecting rod. The forward movement of the diaphragm reduces the pump chamber space, increases pressure, and forces the liquid inside the pump chamber to be discharged through the valve component of the discharge pipeline. After cutting off the current of the coil, relying on the elasticity of the reset spring, the iron core and connecting rod are bounced back to their original positions. The connecting rod drives the diaphragm to move backward, increasing the space in the pump chamber and reducing the pressure. Under the action of atmospheric pressure, the liquid in the liquid tank enters and refills the pump chamber through the suction pipeline valve assembly. By driving the driver through the controller, the liquid is continuously sucked in and expelled through frequent actions.

3. Specifications

Model	EZ-B10	EZ-B15	EZ-B20	EZ-B30	EZ-C15	EZ-C20	EZ-C30	EZ-C35
Flow rate (L/H)	2.28	3.9	5.7	12	4.8	7.8	16.2	24
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
Pressure (Bar)	10	7	4	2	10	7	3.5	2
spm	0～360							
Connection	PVC Head: ø4×9/ ø4×6 （ model B10/15/20,C15/20); ø8×13 (model B30, C30/35) PVDF Head: ø4×6 (model B10/15/20,C15/20); ø8×10 (model B30, C30/35) SS316 Head: 1/4'' female thread for all models							
Power	20W				24W			

Note: 1. The performance of the pump is achieved by pumping clear water at an ambient temperature and at a rated voltage.

2. The above parameters were measured with clean water. When the discharge pressure decreases, the discharge volume will increase.

3. Allowable ambient temperature: 0~40 ° C

4. Allowable liquid temperature: 0 ~ 40 ° C; (PVC) 0~60 ° C(PVDF/SS316)

5. Allowable voltage lifting range: within ± 10%

1） The allowable voltage lifting range in special cases, such as slurry transmission, please consult us.

2） If the product specifications may change due to the product improvement, adjusted without advance notice.

Liquid End Materials	VH	VC	DF	SU
Pump head	PVC		PVDF	SS316
Diaphragm	Composite PTFE			
Valve ball	Ceramic	Ceramic	Ceramic	SS316
Valve seat	EPDM	FKM	FKM	SS316
Valve guide	PVC	PVC	PVDF	SS316
Gasket	PTFE	PTFE	PTFE	PTFE
O ring	EPDM	FKM	PTFE	PTFE

Installation

1. Open the package and check

After opening the product package, check the pump and its accessories for damage. If any parts are lost or damaged, please request your local distributor.

2. Installation location

Choose a clean, dry place close to the power source to install the pump, which should facilitate stroke adjustment and pipeline connection. Avoid selecting installation locations outside the ambient temperature range of 0-40 degrees Celsius, and avoid exposing pumps and pipelines to direct sunlight.

The installation mode of the pump should be preferred (the inlet of the pump is below the level of the tank). This is usually used to transport bubbles, such as sodium hypochlorite and hydrogen peroxide (see Figure 1).

If the spontaneous flow suction installation cannot be achieved, install the bracket on the side wall beside the tank to place the pump body (not directly above the tank) to operate the pump well (see Figure 2).

If the pump can be installed directly on the tank, the pump can also work properly (see Figure 3).

In any case, the suction and installation height of the EZ metering pump shall not exceed 1.0m.

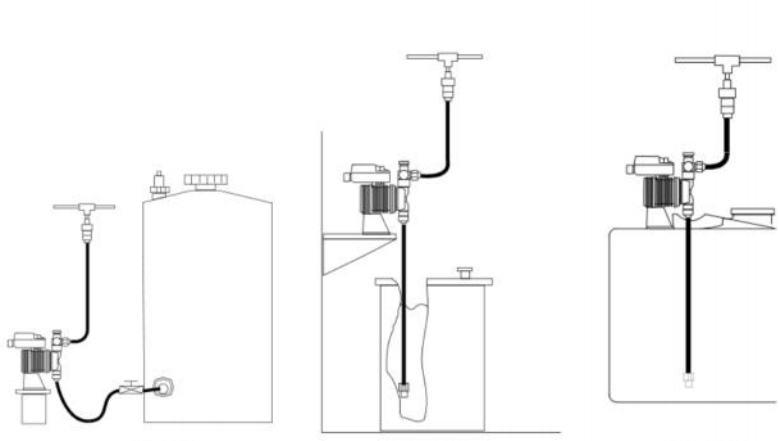


Figure 1
Flooded Suction

Figure 2
Shelf Mount

Figure 3
Tank Mount

3. Suction pipe installation

The suction pipeline should be as short as possible. For self-priming suction type, a shut-off valve should be installed at a suitable position on the outlet pipe of the liquid tank, and the distance between the shut-off valve and the pump suction port should be minimized as much as possible. For bracket mounted or top mounted, a bottom valve should be installed at the end of the suction pipe. The vertical height between the bottom valve and the bottom surface of the liquid tank is about 25mm. To avoid creating bubbles in the suction pipe due to bending, a rigid PVC pipe is suggested outside the suction pipe to maintain its straightness.

4. Discharge pipe installation

The requirements for discharging tube installation are not high. The outgoing tube end can connect to any injection point with liquid to be injected, but avoid sharp curves and kinks. Do not make the pipe be cut or cut off by sharp edges and corners. It is recommended to install the check valve at the injection point and connect the discharge pipe to the check valve.

Caution
When transporting corrosive liquids such as HCL, please inquire with us about selecting the appropriate material for the check valve.

5. Power supply wiring

To connect the pump power cord to a socket with suitable voltage and grounding. Do not use this power supply circuit to supply heavy equipment or other equipment at the same time to avoid generating clutter and interfere with the normal operation of the pump.

Operation

Caution

- Do not allow the pump to operate with the outlet valve completely closed. Otherwise, it may lead to liquid leakage or pipe rupture. If the operation runs for more than 30 minutes, the heat will accumulate in the pump, causing the pump head, valve body and other deformation after the connection loosening, resulting in leakage. Never keep the pump running when the discharge valve is closed.

- Do not let the pump empty run. After the pump runs empty, it is easy to cause leakage. It should be ensured that the pump chamber is filled with liquid before starting the pump.

  *If the pump empty run for a long time (more than 30 minutes), it will cause the pump body overheating, resulting in deformation of the pump assembly (pump head, valve sleeve, etc.) or loosening of the pump head connection, resulting in liquid leakage.

- Keep the pump head connections firmly connected. If the pump head connection bolt is loose, it will cause leakage.

  *Before first running the pump, confirm that the four socket connection bolts are tightened.(Pump head connection bolts may be loose during storage or transportation)

  *Pretight torque：2.16N • m（B10 • B15 • B20 • C15 • C20 ）
  2.55N • m（B30 • C30 • C35 ）

  The pump head shall be fully connected with the same amount of torque in diagonal order.

1. Suction

Install and start the pump according to the above requirements, and set the stroke frequency to 100%. If the pump has an air release valve, screw the valve knob 1/2 lap. The liquid will pass into the pump chamber through the suction duct. Close the air release valve when the liquid starts to spit out from the air release valve and adjust the discharge amount according to the following procedure. If the air release valve is not installed on the pump, the discharge pipe can be removed from the injection point check valve. When the liquid enters the discharge pipe, adjust the stroke frequency to 0, the pump

stops working, and connect the end of the discharge pipe to the check valve again.

2. Adjustment

If the required is not the maximum output, the stroke frequency percentage shall be adjusted as required.

3. Calibration

If precise output output is required, complete the exhaust and conditioning operation, then attach a calibration container to the suction end of the pump. Run the pump for one minute to measure the output from the calibration container. Adjust the stroke frequency as necessary and measure the output again. When the required discharge volume is reached, remove the calibration vessel and reattach the suction tube (see Figure 4).

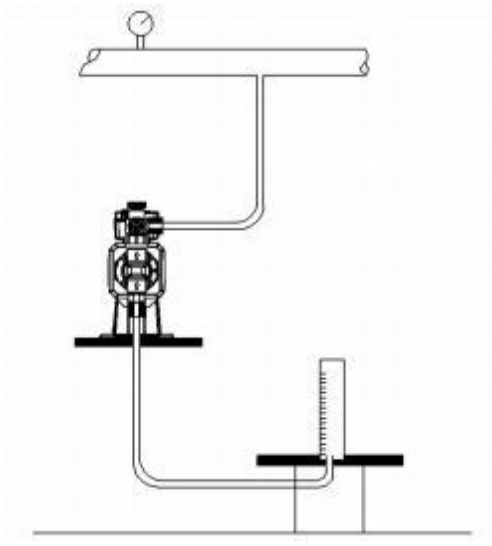


Figure 4

Maintenance

Caution
Before maintaining the pump, cut off the power supply, release the outlet pressure, drain and flush the residual fluid in the pump head and valve assembly.

1. Diaphragm replacement

Cut off the power supply, remove the suction pipe, and spit out the pipe and exhaust pipe. Remove the pump head connection bolt with M4 or M5 hexagon wrench, unscrew the diaphragm, remove the small gasket behind the diaphragm, install new diaphragm, baffle and small gasket on the connecting rod, and turn the diaphragm clockwise until the diaphragm is completely locked on the connecting rod. Reinstall the pump head and connect the bolts with the pump head with a suitable torque wrench. Pretension torque reference page 8.

2. Valve replacement

Remove the suction pipe and the discharge pipe, and disassemble the suction end and the valve assembly (including 2 valve balls, 2 valve seats, 2 valve guides, 1 gasket and 1 sealing ring). Install a new valve assembly to ensure that both seats are oriented correctly. Finally, tighten the suction end and the connector (see Figure 5 below). Replace the vent valve assembly for the same thing。

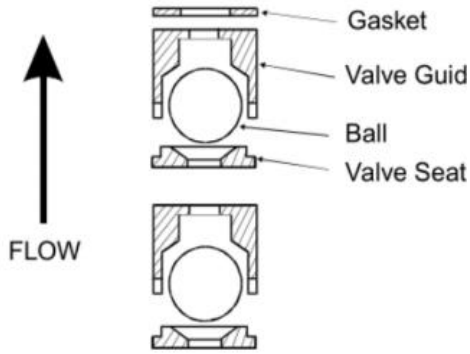


Figure 5
Valve Ass'y Orientation

3. Pipelines replacement

Check for scratches, cracks, and worn areas in the pipeline. Inspect the entire pipeline for damage caused by friction, corrosion, stress, overheating, or exposure to ultraviolet radiation (direct sunlight or mercury vapor lamps). If the above situation occurs, the entire pipeline should be replaced. It is recommended to replace the discharge pipe regularly every 12 months.

4. Troubleshooting

Caution
Before maintaining the pump, cut off the power supply, release the outlet pressure, drain and flush the residual fluid in the pump head and valve assembly.

Trouble	Probable cause	Solutions
Pump can not start	● Wiring error ● Wrong voltage ● Controller damage	○ Correct wiring ○ Correct voltage ○ Change controller
Pump can not suction	● Air in inlet pipeline ● Gasket missing ● Check valve wrong direction ● Occurrence of cavitation ● Pipeline block ● Ball stuck	○ Exhaust air ○ Install gasket ○ Reinstall the valve assembly ○ Open the exhaust valve ○ Disassemble, check, and clean up ○ Disassemble, check, and clean up
Flow not stable	● Pipeline block ● Bubbles in the pump ● Liquid over supply ● Diaphragm damage	○ Disassemble, check, and clean up ○ Open the exhaust valve ○ Install the injection valve or the back-pressure valve ○ Replace the Diaphragm
Liquid leakage	● Connector or the lock nut loose ● Pump head loose ● Diaphragm damage ● Seals or gaskets missing	○ Tighten the screw ○ Tighten the bolts ○ Replace the Diaphragm ○ Install the seals or gaskets

The pump connection bolts may become loose during pump operation (depending on the operating condition of the pump). The pump head connection bolts shall be checked for loosening once every three months. Pretension torque reference page 8.

5. Model identification

ID：EZ - B 15 - VC - W - 1 - C

1 2 3 4 5 6 7

1. Series name

EZ: Manual Model

2. Drive unit symbol

Power consumption: B：20W, C：24W

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.

VC: PVC/Ceramic/FKM **VH:** PVC/Ceramic/EPDM

DF: PVDF/Ceramic/FKM **SU**: SS316/Ceramic/PTFE

5. Power-supply voltage

W: AC100~240V,50~60Hz

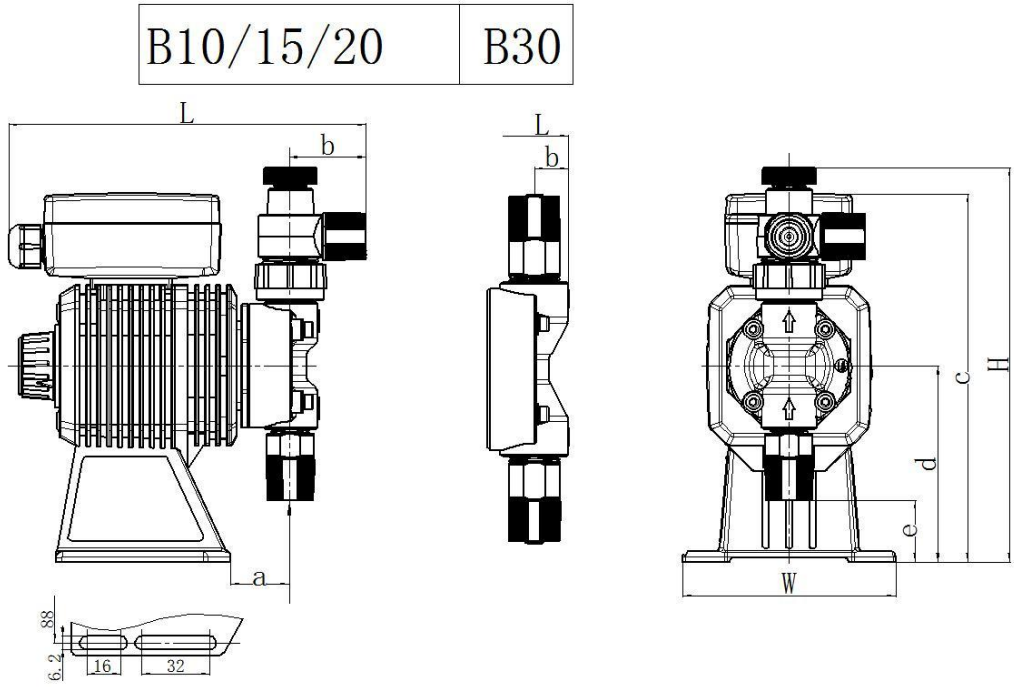
6. Connection Tubing inside diameter (ID) ×Outside diameter (OD)

1	ø4×6mm (PVC transparent tube 3m)	B10/15/20/25;C15/20(PVC)
2	ø4×6mm (PE tube 3m)	B10/15/20/25;C15/20(PVC)
3	ø4×9mm (PVC transparent braided tube 3m)	B10/15/20/25;C15/20(PVC)
4	ø8×13mm (PVC transparent braided tube 3m)	B30;C30/35(PVC)
5	ø4×6mm (PTFE transparent tube 3m)	B10/15/20/25;C15/20(PVDF)
6	ø8×10mm (PTFE transparent tube 3m)	B30;C30/35(PVDF)
7	1/4'' female thread	All model(SS316)

7. Plug Type

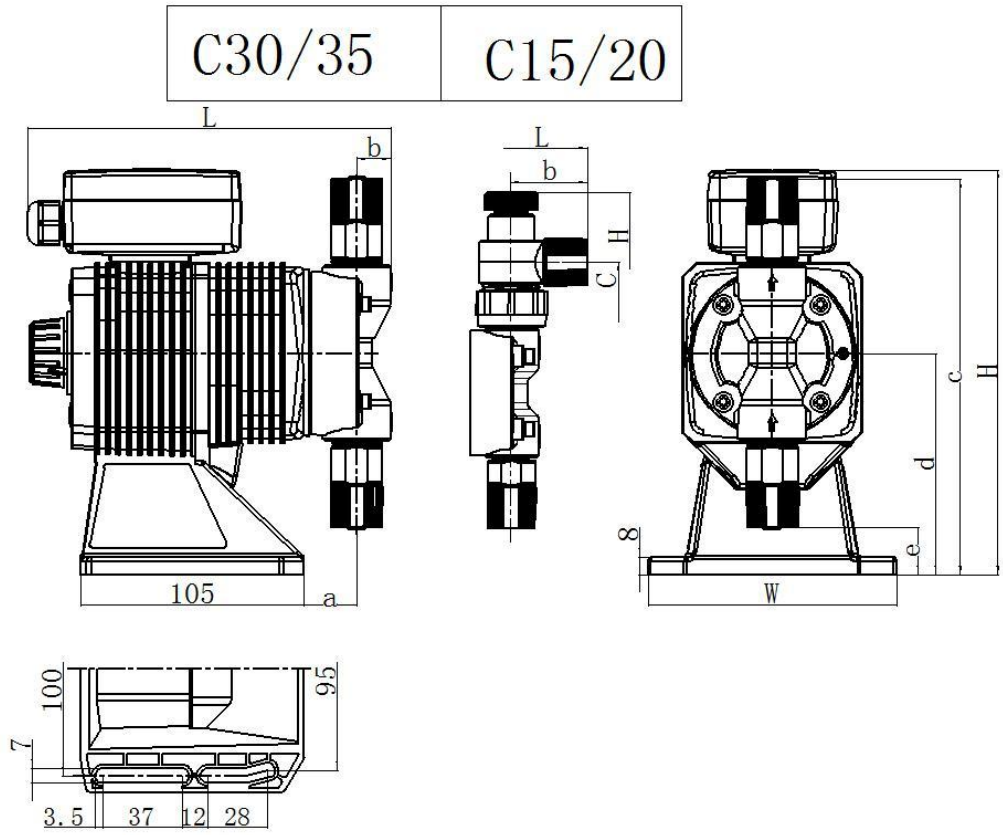
A	Australia, New Zealand, Taiwan
B	British
C	China
E	Europe
U	United States
S	South Africa
X	No Plug

Installation Drawing



Unit（mm）

Model	W	H	L	a	b	c	d	e	Connection
EZ-B10	100	185	168	28	37	153	92	29	Ø4 x 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 x 13

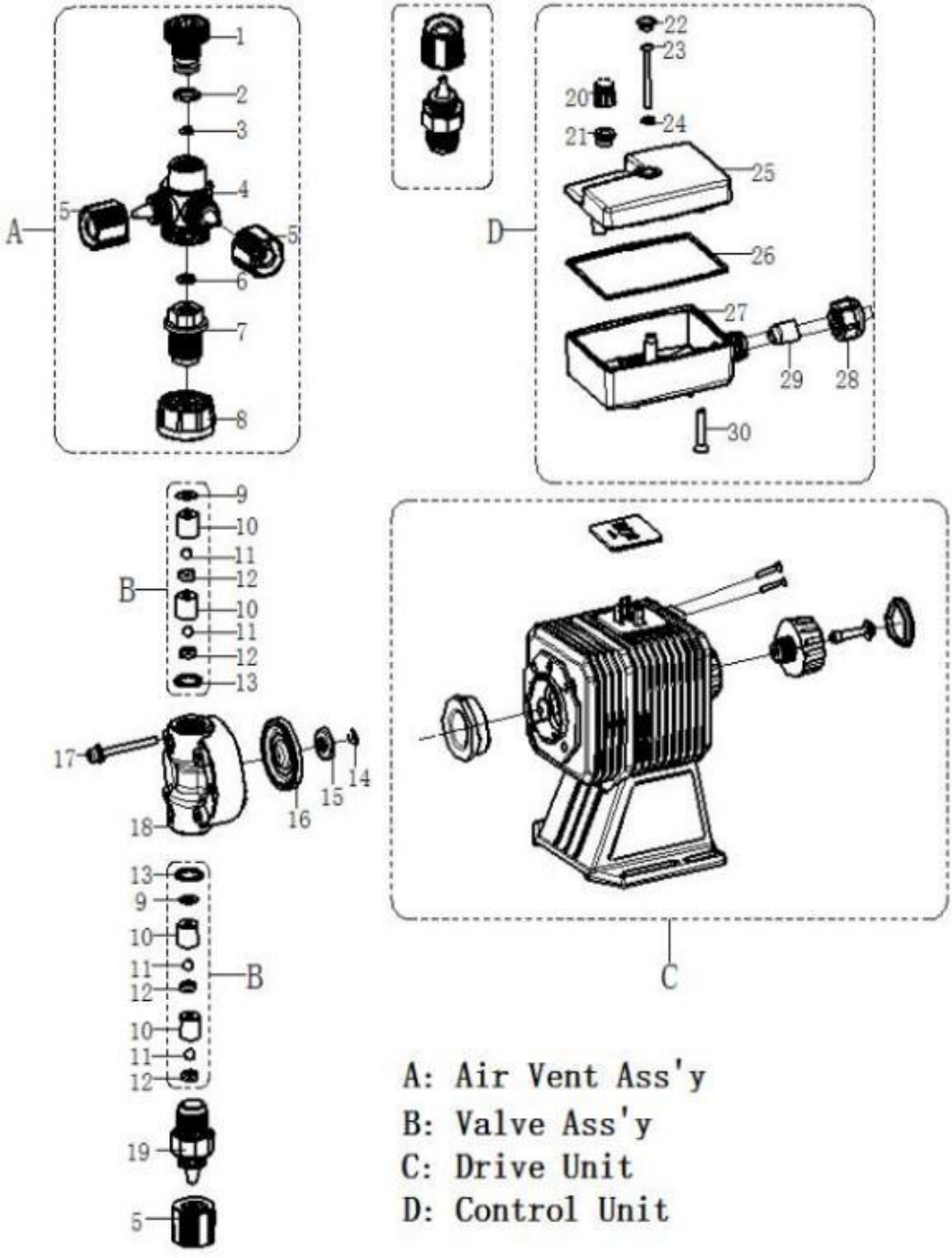


Unit（mm）

Model	W	H	L	a	b	c	d	e	Connection
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 x 13
EZ-C35									

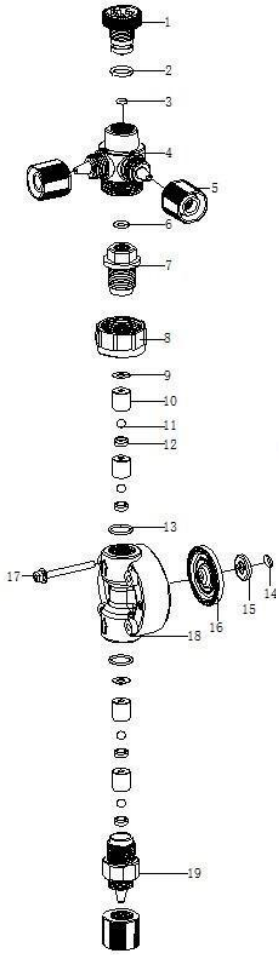
Parts List

Boom Drawing

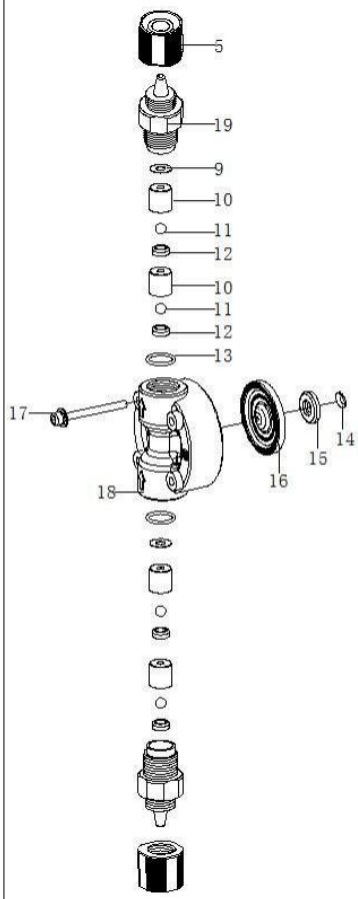


Liquid Parts List

EZ-10,15,20



EZ-30,35



No.	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

SHANDONG LANGO METERING PUMP TECHNOLOGY CO., LTD
ADD：Building 2, No. 850 Government Street, Muping District,
Yantai City, Shandong Province
WEBSITE: www.langopump.com
E-MAIL：sale@langopump.com
Ver.: EZ-M-2024/A