

Solenoid-Driven Metering Pumps with Automatic Air Release

ARPZ Series

Operation Manual Supplement

The ARPZ series of Solenoid-Driven metering pumps have been created by adding an automatic air release mechanism to the PZ Series Solenoid-Driven metering pumps.

For details which cannot be found in this supplementary manual, refer to the separate operation manual which accompanies the PZ series pumps. In the manual, read "PZ," and "PZL" as "ARPZ," and "ARPZL," respectively.

Only the CL type is used as the liquid-end part material in the ARPZ series pumps.



Accessories list

Part name	Quantity
Polyethylene hose (3m), PVC braided hose (1m)	1 pc.
Hose for air release (dia.4 X dia.8) (1 m)	1 pc.
Anti-siphon check valve (R 1/2)	1 pc.
Foot valve	1 pc.
Pump mounting bolts and nuts (M5 X 30)	2 sets
Operation Manual	1 vol.

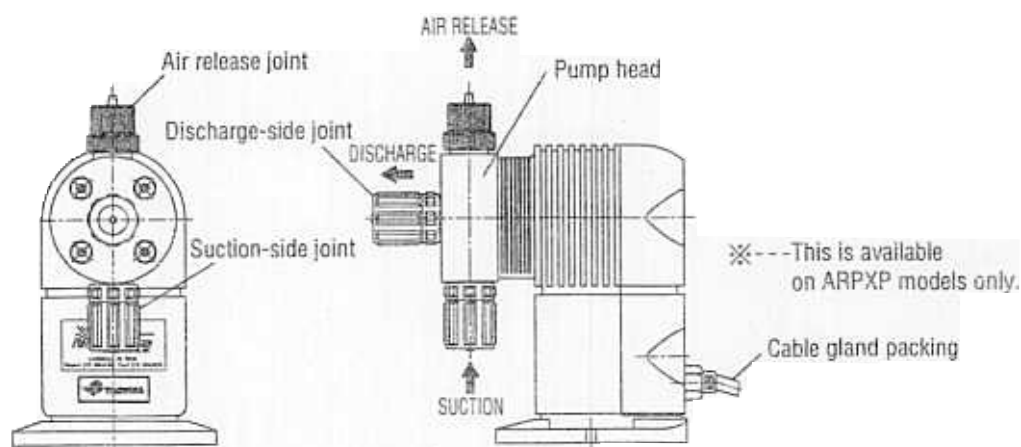
*1) The joints used to connect the air release hose (return pipe to tank) and the tank are available as an option.

3 Outline

The ARPZ Series pulse metering pumps with automatic air release have been created by adding an automatic air release mechanism to the PX Series pulse metering pumps.

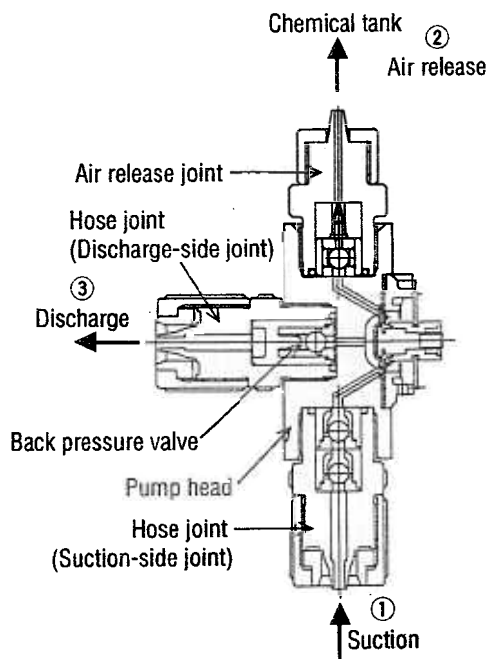
This mechanism automatically discharges the air bubbles and gases mixed with the chemical from the pump head and prevents discharge problems caused by gas-locking, discharge stoppages and other kinds of trouble.

Overall Configuration



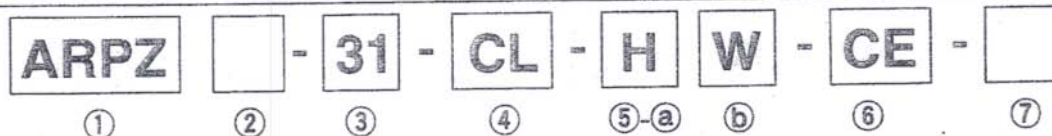
5 Operating Principle

Excellent functions and structure of automatic air release



- ① Suction
The air bubbles and gases generated are sucked into the pump head.
- ② Air release
The air bubbles and gases sucked in pass through the air release joint and are returned via the air release pipe to the chemical tank.
- ③ Discharge
After the air bubbles and gases have been discharged from the pump head, the chemicals are sent via the back pressure valve and discharge-side joint to the discharge-side pipe.

6 Model Code



- ① Series name
ARPZ: PZ Series with automatic air release
- ② Pump models
None: Standard model
L: Level switch interlock type
- ③ Model (based on discharge volume)
31:0.42 G/H (1.6 L/H)
61:0.84 G/H (3.2 L/H)
12:1.47 G/H (5.6 L/H)
- ④ Liquid-end part materials: CL type
Pump head/Acrylic
Valve seat and O-ring/Special fluororubber
Check ball/Ceramic
* For further details, refer to the Materials Table for Standard Liquid-End Parts in section 8-1
- ⑤ Specifications
 - ① Connection type
H: Standard hose type
 - ② Joint specifications
W: Standard
- ⑥ General specifications
None: Standard model
CE: CE Mark compliant
- ⑦ Power plug

7-1 Specifications and Performance Table

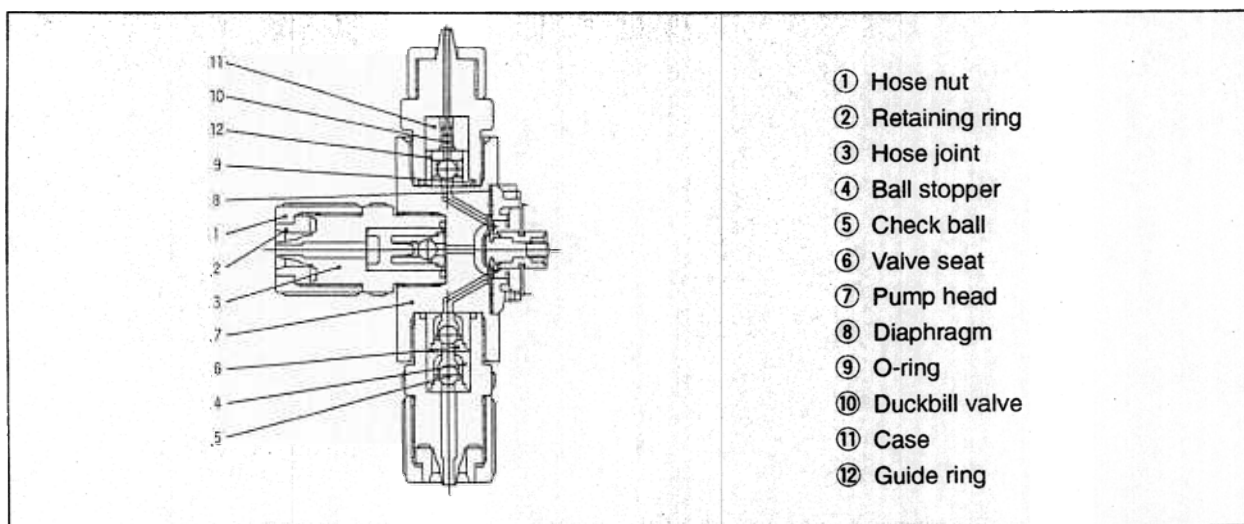
Specifications		Type	ARPZ□-31	ARPZ□-61	ARPZ□-12
Maximum discharge volume G/H (L/H)			0.42 (1.6)	0.84 (3.2)	1.47 (5.6)
Maximum discharge pressure psi (MPa)			145 (1.0)	116 (0.8)	58 (0.4)
Number of pulses (pulses/min)			0 to 300		
Stroke length (mm)			1.0		
Stroke length adjustment range (%)			Fixed at 100		
Connection aperture (mm)	PVC braided hose		dia.4 X dia.9	dia.6 X dia.11	
Operating temperature range			Ambient temperature: 0 to 40°C		
			Chemicals transfer temperature: 0 to 40°C		
Pump color	Pump case (front)		Munsell (approximately) 10YR 7.5/14		
	Pump case (rear)		Munsell (approximately) 5PB 6/2.5		
Weight (kg)			1.8		

NOTES

- 1) The discharge volume differs slightly from the PZ Series.
- 2) Self-priming height: Less than -0.5 m

8-1 Pump Head Section

■ CL type



Materials Table for Standard Liquid-End Parts

Part code	Pump head	Joint	Diaphragm	Valve seat	Check ball	Hose
CL	Acrylic	PVC	PTFE	Special fluororubber	Ceramic	Soft PVC

9 Performance Curves

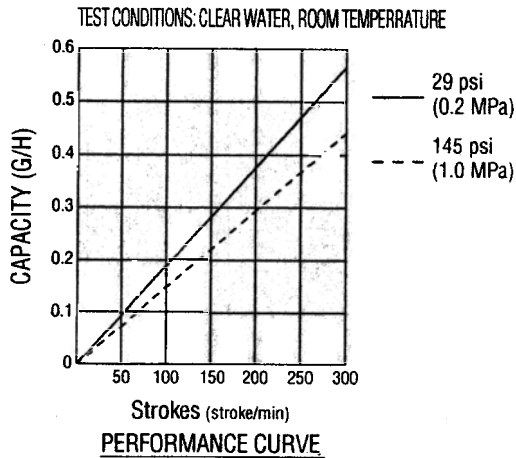
IMPORTANT

- Be sure to always measure the discharge volume under the actual conditions in which the pump will be used, and then set the number of strokes based on the appropriate performance curve.

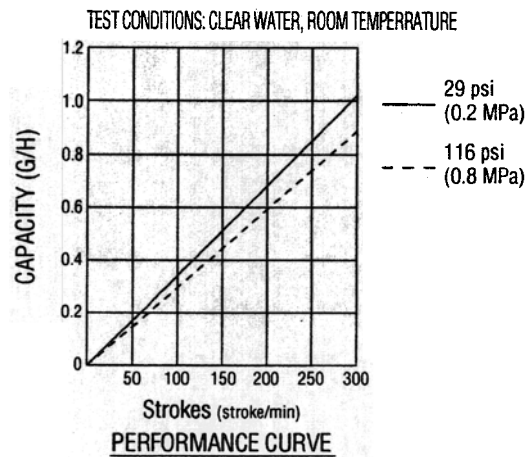
NOTE

- The following performance curves are the results of measurements performed under controlled conditions at our testing facilities. The actual performance curve of your pump may differ slightly from our measurements according to the actual conditions under which the pump is used and pump differences.
Conditions: Room temperature, clean water, suction height of -0.5 m
- This pump discharges the proper amount of chemical continuously from the air release pipe since its gases are constantly being released to prevent gas locking.
- The amount of chemicals discharged to the discharge-side may drop or fluctuate during air releasing operations.

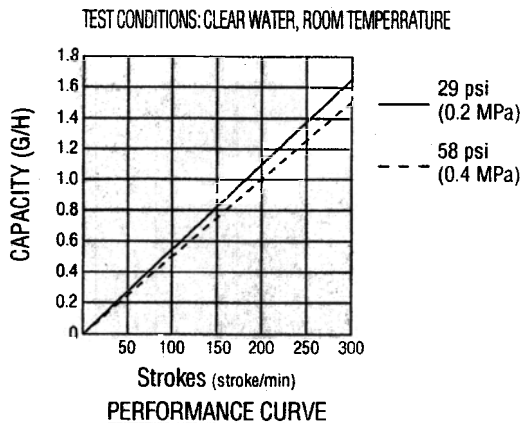
ARPZ-31 Model



ARPZ-61 Model

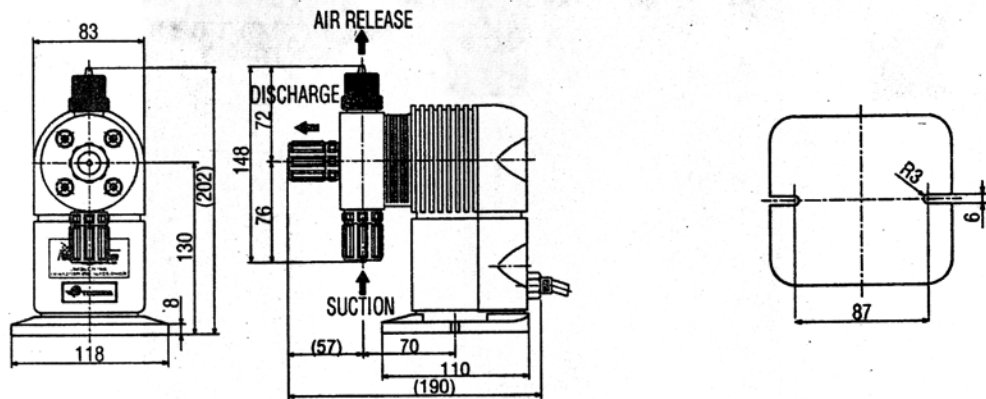


ARPZ-12 Model



10 External Dimensions

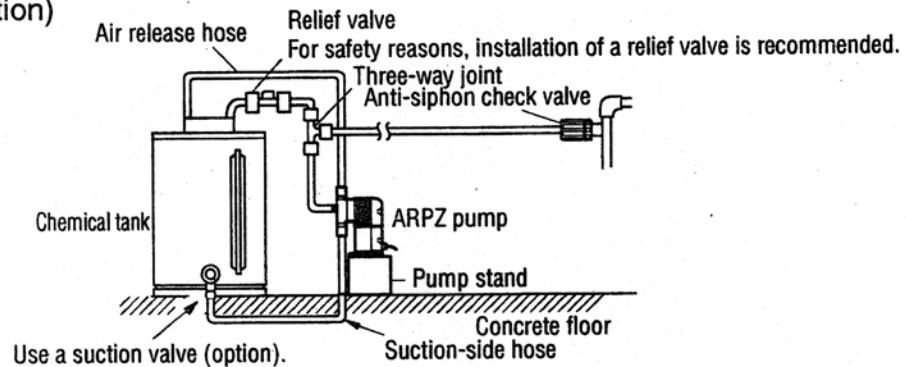
- CL Type



* The mounting pitch allows mounting from 87 to 110 mm.

11-3-5 Installing with the TACMINA Tank

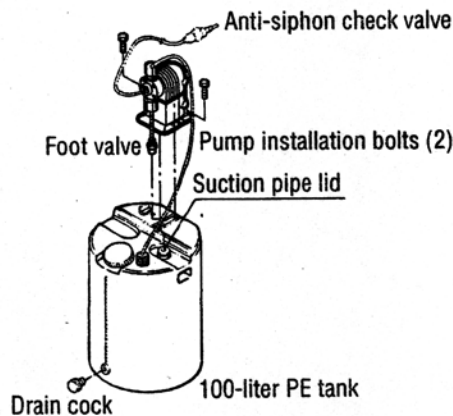
(Pump floor-installation)



IMPORTANT

- Pass the air release hose through the hose nut and connect the hose to the air release joint. Return the end of the hose to the chemical tank.

(Pump installation on the tank)



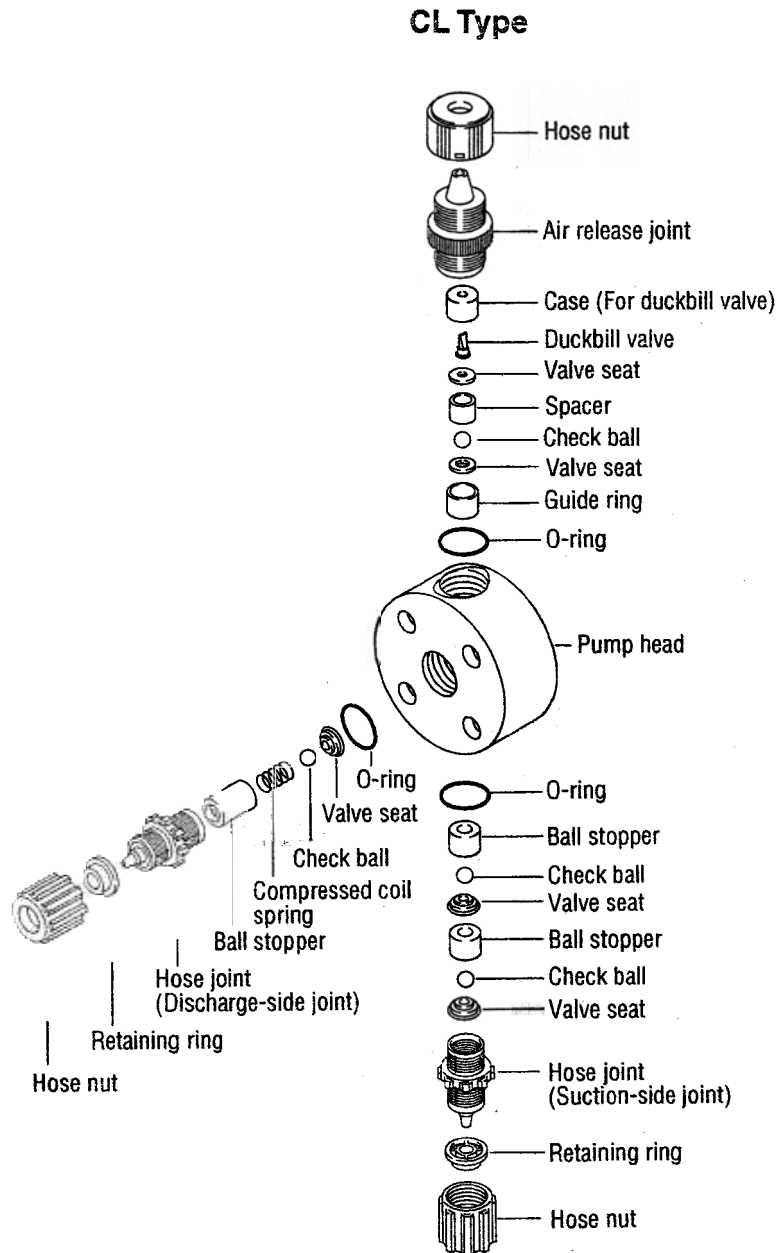
IMPORTANT

- The self-priming height of this pump is -0.5 m. If the level of the chemical is low, the chemical may not be sucked into the pump.
- Pump installation on the tank is not recommended for chemicals which are prone to form air bubbles.

14-4 Replacing the Valve Seat and Check Ball

IMPORTANT

- Do not forget to install the O-rings, ball stoppers, and check balls.
- (1) When removing and reinstalling the upper and lower joints, be careful not to confuse the joints.
 - (2) Check that there are no flaws in the O-rings or check balls. Also, check that there is no dust on or flaws in the valve seats.



19 Consumables and Spare Parts

19-1 Consumables

⚠ CAUTION

- The replacement intervals given for consumable parts in the tables below are based on TACMINA in-house test operation using clean water at room temperature. The actual replacement intervals will vary according to the conditions of operation. Keeping in mind the target replacement intervals, please replace the consumables promptly, because operating the pump with worn parts can result in faulty discharge (injection) or malfunction.
- In particular, failure to properly replace the hose can result in the chemicals spilling out.

Part name		Quantity per pump	Recommended replacement interval*
Joints	Valve seat	3	4000 hours of operation or one year
	Check ball	3	
	O-ring	3	
Diaphragm		1	4000 hours of operation or one year
Protective diaphragm		1	
Air release valve set for AR (consisting of duckbill valve, chuck ball, valve seat and guides)		1	4000 hours of operation or one year
Anti-siphon check valve	Poppet valve (with O-ring)	1	4000 hours of operation or one year
	Compression coil spring	1	
Foot valve	Valve seat	1	4000 hours of operation or one year
	Check ball	1	
	O-ring	1	
Hose		3 m for chemical, 1 m for air release	4000 hours of operation or one year

The part should be replaced when the operation time (4000 hours) or usage period (one year) is reached, whichever comes first.

19-2 Spare Parts

- Hose nut
- Retaining ring
- Suction-side joint
- Discharge-side joint
- Air release joint
- Valve seat
- Ball stopper
- Check ball
- O-ring
- Diaphragm
- Protective diaphragm

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