TACMINA

Solenoid-driven Diaphragm Metering Pump

CE

www.tacmina.com

Safe, Easy and Long-life

Relief-valve function,
wide voltage range,
easy operation,
tough body,
extensive selection of
liquid-end materials,
wide discharge-volume range,
various control functions
...and many more.
TACMINA's lineup of solenoid-
driven diaphragm-type
metering pumps, highly reliable and
top-quality pumps, will answer
all kinds of customers' chemical
injection requirements.

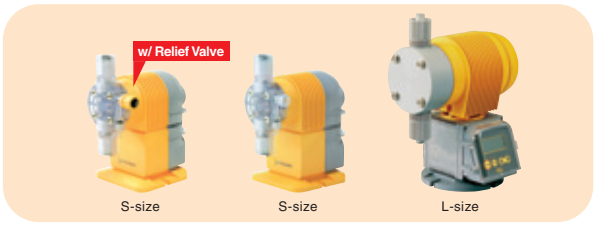
Model Selection Guide by Application and Function

PZ
Manual Setting

PZ	No-Input

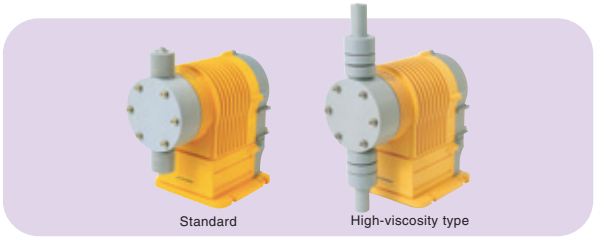
PZD
Digital Setting

PZD	No-Input



PZi
Digital Setting
Advanced Functions

PZi4	Analog/Digital-Input
PZi8	Analog/Digital-Input & Digital-Output



PZiG
Digital Setting
Advanced Functions
Large-capacity

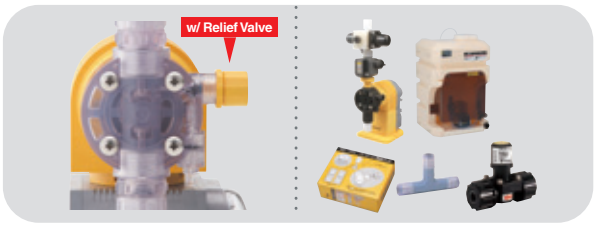
PZiG	Analog/Digital-Input & Digital-Output

CL
For Injection of Sodium Hypochlorite

CLPZ	No-Input
CLPZD	No-Input
CLPZi4	Analog/Digital-Input
CLPZi8	Analog/Digital-Input & Digital-Output

AR
For Injection of Sodium Hypochlorite
Automatic Air-release

ARPZ	No-Input
ARPZD	No-Input
ARPZi4	Analog/Digital-Input
ARPZi8	Analog/Digital-Input & Digital-Output



Relief-valve Function
Explanation & Corrosion-resistance Table
Related Equipment & Option

By Application

✱ Conditions: Clean water, ro

For Injection of General Chemicals

Series		PZ (Manual Setting)						PZD (Digital Setting)							PZi (Digital Setting / Advanced Functions) PZi4 PZi8							PZiG (Digital Setting / Advanced Functions / Large-capacity)				
		w/ Relief Valve						w/ Relief Valve							w/ Relief Valve											
		S-size only			S-size only			S-size			S-size		L-size		S-size			S-size			L-size			Standard			High-viscosity type	
Model		30R	60R	100R	30	60	100	30R	60R	100R	30	60	100	300	500	30R	60R	100R	30	60	100	300	500	300	500	700	1000	1300
Max. discharge volume*	mL/min	30	60	100	30	60	100	30	60	100	30	60	100	360	540	30	60	100	30	60	100	360	540	340	530	760	1000	1300
	L/h	1.8	3.6	6.0	1.8	3.6	6.0	1.8	3.6	6.0	1.8	3.6	6.0	21.6	32.4	1.8	3.6	6.0	1.8	3.6	6.0	21.6	32.4	20.4	31.8	45.6	60.0	78.0
Max. discharge pressure*	MPa	0.7		0.4	1.0	0.8	0.4	0.7			1.0		0.7	0.3	0.2	0.7		0.4	1.0	0.8	0.4	0.3	0.2	1.0	0.7	0.4	0.3	0.2
	bar	7.0		4.0	10.0	8.0	4.0	7.0			10.0		7.0	3.0	2.0	7.0		4.0	10.0	8.0	4.0	3.0	2.0	10.0	7.0	4.0	3.0	2.0
Max. allowable viscosity	mPa·s	50																						Standard: 50 High-viscosity type: 3000*1				
Signal		—														PZi4 :Analog/Digital-Input PZi8 :Analog/Digital-Input & Digital-Output								Analog/Digital-Input & Digital-Output				
Liquid-end material		PVC/PVDF/Stainless steel																						PVC/PVDF				
Reference page		GO to P5						GO to P9							GO to P13									GO to P17				

✱1 When transferring high-viscosity liquids, the max. discharge volume may be lower than the specified volume depending on the characteristics of the liquid and operating conditions. Consult TACMINA separately when transferring high-viscosity liquids.

For Injection of Boiler Chemicals

Series		PZ (Manual Setting)		PZD (Digital Setting)		PZi (Digital Setting / Advanced Functions) PZi4 PZi8	
		w/ Relief Valve		w/ Relief Valve		w/ Relief Valve	
		S-size only	S-size only	S-size only	S-size only	S-size only	S-size only
Model		30R	30	30R	30	30R	30
Max. discharge volume*	mL/min	28	28	28	28	28	28
	L/h	1.68	1.68	1.68	1.68	1.68	1.68
Max. discharge pressure*	MPa	1.5	1.5	1.5	1.5	1.5	1.5
	bar	15.0	15.0	15.0	15.0	15.0	15.0
Max. allowable viscosity	mPa·s	50					
Signal		—				PZi4 :Analog/Digital-Input PZi8 :Analog/Digital-Input & Digital-Output	
Liquid-end material		PVC					
Reference page		GO to P5		GO to P9		GO to P13	

oom temperature. The maximum discharge volume and maximum discharge pressure may differ slightly according to material and specifications.
✻ For details on each product, see the reference page for the respective model.

For Injection of Sodium Hypochlorite

Series		CL For Injection of Sodium Hypochlorite												AR For Injection of Sodium Hypochlorite / Automatic Air-release								
		CLPZ						CLPZD				CLPZi4 CLPZi8						ARPZ			ARPZD			ARPZi4 ARPZi8		
		 S-size only			 S-size only			 S-size only			 S-size only			 S-size only			 S-size only			 S-size only			 S-size only			 S-size only		
Model		30R	60R	100R	30	60	100	30R	60R	100R	30	60	100	30R	60R	100R	30	60	100	31	61	12	31	61	12	31	61	12
Max. discharge volume*	mL/min	30	60	100	30	60	100	30	60	100	30	60	100	30	60	100	30	60	100	27	54	93	30	57	93	27	54	93
	L/h	1.8	3.6	6.0	1.8	3.6	6.0	1.8	3.6	6.0	1.8	3.6	6.0	1.8	3.6	6.0	1.8	3.6	6.0	1.62	3.24	5.58	1.8	3.42	5.58	1.62	3.24	5.58
Max. discharge pressure*	MPa	0.7		0.4	1.0	0.8	0.4	0.7			1.0		0.7	0.7		0.4	1.0	0.8	0.4	1.0	0.8	0.4	1.0		0.7	1.0	0.8	0.4
	bar	7.0		4.0	10.0	8.0	4.0	7.0			10.0		7.0	7.0		4.0	10.0	8.0	4.0	10.0	8.0	4.0	10.0		7.0	10.0	8.0	4.0
Max. allowable viscosity	mPa·s	50																										
Signal		—												CLPZi4 :Analog/ Digital-Input CLPZi8 :Analog/ Digital-Input & Digital-Output						—				ARPZi4:Analog/ Digital-Input ARPZi8:Analog/ Digital-Input & Digital-Output		
Liquid-end material		Acrylic (PMMA)																										
Reference page		GO to P21 																		GO to P23 								

By Function

✻ For details on each product, see the reference page for the respective model or "Explanation" on page 26.

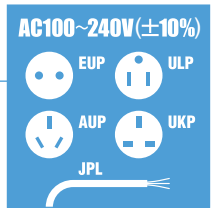
Function \ Series			PZ	PZD	PZi		PZiG	CL				AR			
					PZi4	PZi8		CLPZ	CLPZD	CLPZi4	CLPZi8	ARPZ	ARPZD	ARPZi4	ARPZi8
Signal (No. of ports)	Analog Input		—	—	1		1	—	—	1		—	—	1	
	Digital	Input	—	—	2	4	4	—	—	2	4	—	—	2	4
		Output	—	—	—	2	2	—	—	—	2	—	—	—	2
Power supply to Flow Checker			—	—	—	○	—	—	—	—	○	—	—	—	○
Control	Manual		Dial setting	Digital setting				Dial setting	Digital setting			Dial setting	Digital setting		
	Auto	Analog-Input proportional control	—	—	○		○	—	—	○		—	—	○	
		Pulse-Input proportional control	—	—	○		○	—	—	○		—	—	○	
		Count operation (batch control)	—	—	—	○	○	—	—	—	○	—	—	—	○
		Interval operation (timer control)	—	—	—	○	○	—	—	—	○	—	—	—	○
		External stop-signal control	—	—	○		○	—	—	○		—	—	○	
		2-point Level Switch control*1	—	—	—	○	○	—	—	—	○	—	—	—	○
Error/ Alarm	Memory-read error (LCD display only)		—	○	○		○	—	○	○		—	○	○	
	Tank-level alarm	w/ 1-point Level Switch (Pump stop only)	—	—	○		○	—	—	○		—	—	○	
		w/ 2-point Level Switch (LCD display/Alarm output/Pump stop)	—	—	—	○	○	—	—	—	○	—	—	—	○
	Pulse-Input error (LCD display/Alarm output/Pump stop)		—	—	○ (display only)	○	○	—	—	○ (display only)	○	—	—	○ (display only)	○
	Analog-Input error (LCD display/Alarm output/Pump stop)		—	—	○ (display only)	○	○	—	—	○ (display only)	○	—	—	○ (display only)	○
	Lower discharge-volume alarm*2 (LCD display/Alarm output/Pump stop)		—	—	○ (display only)	○	—	—	—	○ (display only)	○	—	—	○ (display only)	○
Easy calibration function			—	○	—		○	—	○	—		—	○	—	
Momentary discharge-volume display function*2			—	—	—	○	—	—	—	—	○	—	—	—	○
LCD display			—	1-row	1-row	1-row (w/ backlight)	2-row (w/ backlight)	—	1-row	1-row	1-row (w/ backlight)	—	1-row	1-row	1-row (w/ backlight)

*1 When 2-point Level Switch is used *2 When Flow Checker is used

PZ

Manual Setting

Wide Voltage Range Power Supply

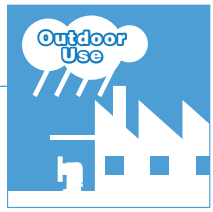


There is no need to worry about site power supply voltage or voltage fluctuations since it can be used with AC100 to 240 V (±10%) power supplies. You can also keep it in stock safely since it can be used for a variety of sites and applications.

Adjusting Dial for Easy Operation

Manual adjustment from
15 to 300 pulses per minute

Water- & Dust-proof Specifications

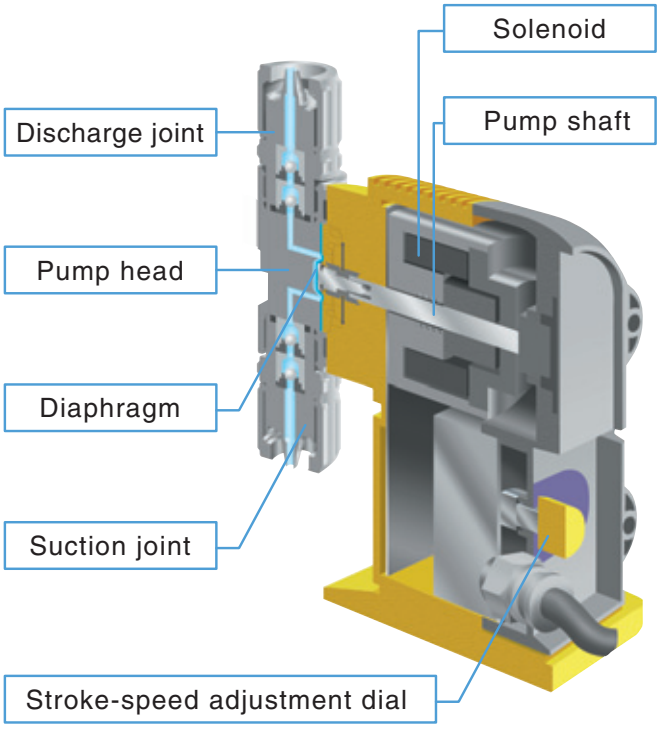


IEC standard: IP65 or equivalent

∗ Avoid condensation and immersion in water.

Simple Structure

Minimum number of parts allows easy maintenance.



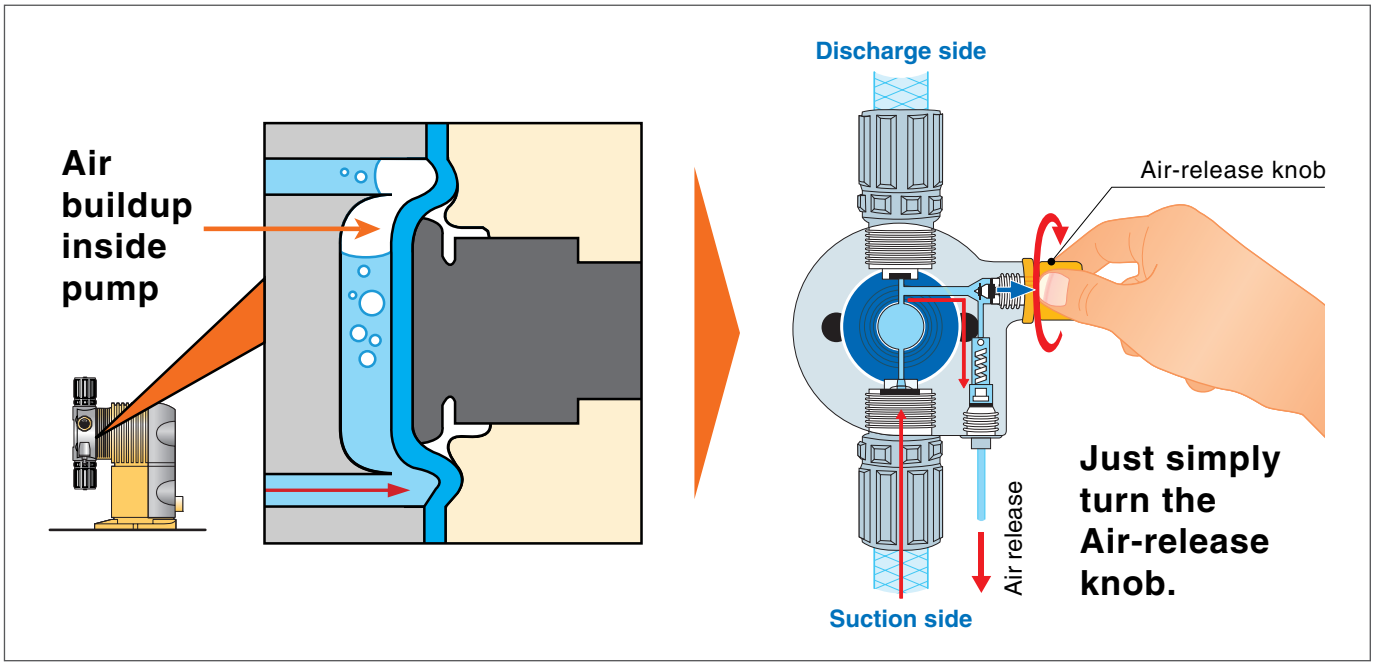
No-Input

S-size only
(30R/60R/100R)

S-size only
(30/60/100)

Simple, Safe, Air Release

"Gas-lock" is the phenomenon that air enters the pump head and prevents chemicals from being discharged. The PZ Series is equipped with Air-release valve as standard. Even if air gets into the pump head, you can simply and safely release the air just by lightly turning the Air-release knob.



* Illustration shows the model with Relief Valve.

Extensive Range of Liquid-end Materials

* For details, refer to the "Liquid-end Material" table on the following page.

Pump Head

w/ Relief Valve *

VTCE/VTCF
Material: PVC
Application example: Transfer/injection of general chemicals

w/ Relief Valve *

FTCE/FTCF/FTCT
Material: PVDF
Application example: Transfer/injection of special chemicals (e.g. strong and mixed acids)

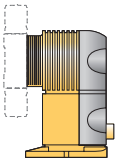
w/ Relief Valve *

VTCE
(for injection of boiler chemicals)
Material: PVC
Application example: Transfer/injection of boiler chemicals

6TCT
Material: Stainless steel (SUS316)
Application example: Transfer/injection of solutions/special chemicals

* For a detailed explanation of the Relief Valve, see "Relief Valve Function" on page 25.

Pump Body



S-size only
(30R/60R/100R/30/60/100)

Anti-siphon Check Valve

VTCE/VTCF

FTCE/FTCF/FTCT

VTCE
(for injection of boiler chemicals)

6TCT

Foot Valve

VTCE/VTCF

FTCE/FTCF/FTCT

VTCE
(for injection of boiler chemicals)

6TCT

Specification: PZ w/ Relief Valve

Specification \ Model		30R						60R						100R					
		VTCE	VTCF	FTCE	FTCF	FTCT	VTCE (for injection of boiler chemicals)	VTCE	VTCF	FTCE	FTCF	FTCT		VTCE	VTCF	FTCE	FTCF	FTCT	
Max. discharge volume*1	mL/min	30					28	60						100					
	L/h	1.8					1.68	3.6						6.0					
Max. discharge pressure*1	MPa	0.7*2					1.5	0.7*3						0.4					
	bar	7.0*2					15.0	7.0*3						4.0					
Stroke speed		15 to 300 strokes/min (dial setting)																	
Stroke length		Fixed at 1.0 mm																	
Connection (hose/tube: I.D x O.D)	Discharge side	4 x 9 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4"x 3/8" (FEP)	4 x 6 (nylon tube)	6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4"x 3/8" (FEP)		6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4"x 3/8" (FEP)
	Suction side						4 x 9 (PVC braided hose)												
	Relief /air-release	4 x 6 (soft PVC hose)																	
Max. allowable viscosity		50 mPa·s																	
Allowable temperature		Ambient temperature: 0 to 40°C/Transferring liquid: 0 to 40°C (no freezing allowed)																	
Ambient humidity		35 to 85% RH																	
Environmental protection		IEC standard: IP65 or equivalent (water- and dust-proof)																	
Altitude of installation location		Less than 1,000 m																	
Noise level		Less than 85 dB																	
Operation mode	Manual	Setting stroke speed (15 to 300 strokes/min) w/ manual dial																	
Power supply	Rated voltage	AC 100 to 240 V (±10%)																	
	No. of phases/Frequency	1-phase/50 or 60 Hz																	
	Maximum current	2.0 A																	
	Power consumption	Max.: 200 VA/Ave.: 15 W																	
Weight		1.7 kg																	

★1 Conditions: Clean water, room temperature ★2 Though the max. discharge pressure of the 30R models is 1.0 MPa (10.0 bar), the Relief Valve operates when 0.7 MPa (7.0 bar) is exceeded. In applications requiring a discharge pressure of 0.7 MPa (7.0 bar) or more, ask for a model w/out the Relief Valve, and install a separate relief valve for extra safety.
★3 Though the max. discharge pressure of the 60R models is 0.8 MPa (8.0 bar), the Relief Valve operates when 0.7 MPa (7.0 bar) is exceeded. In applications requiring a discharge pressure of 0.7 MPa (7.0 bar) or more, ask for a model w/out the Relief Valve, and install a separate relief valve for extra safety.

Model Code

✻ Not all model combinations are possible. When selecting the pump model, first check "Specification" and "Liquid-end Material".

PZ – 30R – VTCE – 4x9PVC – W – S – JPL

1 2 3 4 5 6

1 Model (discharge volume standard)

[for injection of general chemicals]

30R : 30 mL/min (w/ Relief Valve)
60R : 60 mL/min (w/ Relief Valve)
100R : 100 mL/min (w/ Relief Valve)
30 : 30 mL/min
60 : 60 mL/min
100 : 100 mL/min

[for injection of boiler chemicals]

30R : 30 mL/min (w/ Relief Valve)
30 : 30 mL/min

2 Liquid-end material

VTCE
VTCF
FTCE
FTCF
FTCT
6TCT

VTCE

3 Hose standard (size/material)

4 x 9 PVC
6 x 11 PVC
6 x 8 PE/FEP/PTFE
1/4" x 3/8" PE/FEP

4 x 6 PA

4 Joint specification

W : Standard

BW : Boiler

5 Applicable standard

S : Standard
CE : CE marking-compatible

6 Power plug

EUP : Euro plug
ULP : UL plug
AUP : Australia plug
UKP : UK plug
JPL : Japan lead wire

Accessory

✻ Power cable (2 m) is attached.

Item \ Model	w/ Relief Valve 30R/60R/100R						30/60/100						
	VTCE	VTCF	FTCE	FTCF	FTCT	VTCE (for injection of boiler chemicals)	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE (for injection of boiler chemicals)
Hose/Tube*1	3 m					Discharge side : 2 m Suction side : 1 m	3 m						Discharge side : 2 m Suction side : 1 m
Relief /air-release hose*1	1 m (installed)						1 m					—	1 m
Anti-siphon check valve	1 set (R1/2)				1 set (R1/2 or R3/8)	1 set (R1/2)	1 set (R1/2)				1 set (R1/2 or R3/8)		1 set (R1/2)
Foot valve	1 set						1 set						
Ceramic weight	1 set*2		1 set			—	1 set*2		1 set				—
Hose pump for air-release	—						—					1 set	—
INSULOK for Relief /air-release hose	1 piece						—						
Pump mounting nuts/bolts	2 sets (M5 x 30)												
Operation manual	1 set												

★1 For details on the hose/tube aperture, see "Connection" for the respective model in "Specification" table above. ★2 Only when PE tube is selected

Specification: PZ

Specification \ Model		30							60						100					
		VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE (for injection of boiler chemicals)	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT
Max. discharge volume*	mL/min	30					27	28	60					55	100					95
	L/h	1.8					1.6	1.68	3.6					3.3	6.0					5.7
Max. discharge pressure*	MPa	1.0					0.5	1.5	0.8					0.5	0.4					
	bar	10.0					5.0	15.0	8.0					5.0	4.0					
Stroke speed		15 to 300 strokes/min (dial setting)																		
Stroke length		Fixed at 1.0 mm																		
Connection (hose/tube: I.D x O.D)	Discharge side	4 x 9 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 8 (FEP) 1/4"x3/8" (FEP)	6 x 8 (PTFE)	4 x 6 (nylon tube)			6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 8 (FEP) 1/4"x3/8" (FEP)	6 x 8 (PTFE)			6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 8 (FEP) 1/4"x3/8" (FEP)	6 x 8 (PTFE)		
	Suction side					4 x 9 (PVC braided hose)														
	Air-release	4 x 6 (soft PVC hose)																		
Max. allowable viscosity		50 mPa·s																		
Allowable temperature		Ambient temperature: 0 to 40°C/Transferring liquid: 0 to 40°C (no freezing allowed)																		
Ambient humidity		35 to 85% RH																		
Environmental protection		IEC standard: IP65 or equivalent (water- and dust-proof)																		
Altitude of installation location		Less than 1,000 m																		
Noise level		Less than 85 dB																		
Operation mode	Manual	Setting stroke speed (15 to 300 strokes/min) w/ manual dial																		
Power supply	Rated voltage	AC 100 to 240 V (±10%)																		
	No. of phases/ Frequency	1-phase/50 or 60 Hz																		
	Maximum current	2.0 A																		
	Power consumption	Max.: 200 VA/Ave.: 15 W																		
Weight		1.7 kg																		

* Conditions: Clean water, room temperature

Liquid-end Material

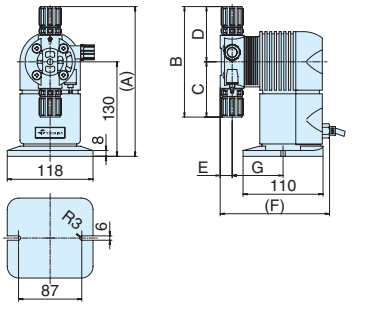
* Also refer to the "Corrosion-resistance Table" on page 26.

Part \ Model	VTCE	VTCF	FTCE	FTCF	FTCT	VTCE (for injection of boiler chemicals)	6TCT
Pump head	PVC		PVDF			PVC	SUS316
Diaphragm	PTFE						
Check ball	Ceramic						
O-ring	EPDM	Fluoro-rubber	EPDM	Fluoro-rubber	Special fluoro-rubber Pafulo®	EPDM	PTFE
Valve seat	EPDM	Special fluoro-rubber	EPDM	Special fluoro-rubber	PTFE	EPDM	—
Joint	PVC		PVDF			PVC	SUS316
Ball stopper	PVC		PVDF	PTFE (valve stopper)		PVC	PTFE (valve stopper)

External Dimension (mm)

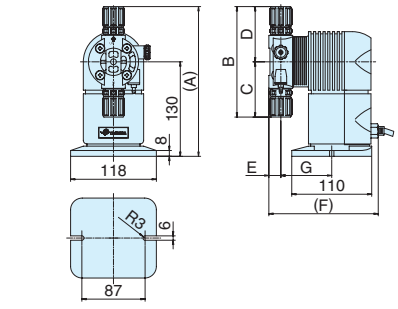
w/ Relief Valve

30R/60R/100R



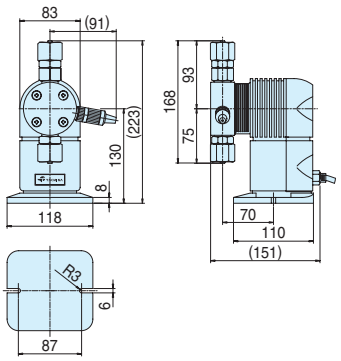
Model	(A)	B	C	D	E	(F)	G
VTCE/VTCF	206	152	76	76	16.5	150.5	70
FTCE/FTCF/FTCT	227.5	195	97.5	97.5	17.5	142	69.5
VTCE (for injection of boiler chemicals)	193	139	76	63	16.5	150.5	70

30/60/100



Model	(A)	B	C	D	E	(F)	G
VTCE/VTCF	206	152	76	76	16.5	150.5	70
FTCE/FTCF/FTCT	227.5	195	97.5	97.5	17.5	142	69.5
VTCE (for injection of boiler chemicals)	193	139	76	63	16.5	150.5	70

30/60/100(6TCT)



* The shape and dimensions differ slightly depending on the liquid-end material and connection type.
* The mounting pitch allows mounting from 87 to 110 mm.

PZ

PZD

Digital Setting

No-Input

S-size (30R/60R/100R) | S-size (30/60/100) | L-size (300/500)

Direct Entry of Injection Amount

The injection amount can be set according to three patterns:

[By stroke speed]

Setting range: 1 to 300 strokes/min
(minimum setting increment: 1 stroke/min)

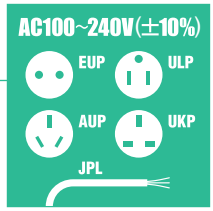
[By discharge volume]

Setting range: 0.1 to (maximum discharge volume of selected model) mL/min
(minimum setting increment: 0.1 mL/min)

[By percentage]

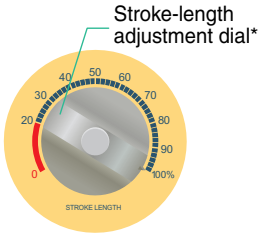
Setting range: 1 to 100%
(minimum setting increment: 1% (3 strokes/min))

Wide Voltage Range Power Supply

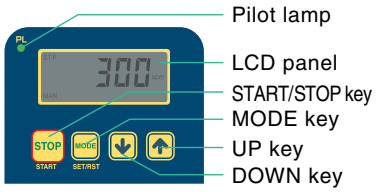


There is no need to worry about site power supply voltage or voltage fluctuations since it can be used with AC100 to 240 V (±10%) power supplies. You can also keep it in stock safely since it can be used for a variety of sites and applications.

Simple Key Layout



* L-size (300/500) models only



3-directional Pump Head

●S-size (30R/60R/100R/30/60/100)

●L-size (300/500)

Separate-type Head & Controller

●S-size (30R/60R/100R/30/60/100)

●L-size (300/500)

* This feature is limited depending on the operating conditions. Consult us for details.

Water- & Dust-proof Specifications

IEC standard: IP65 or equivalent

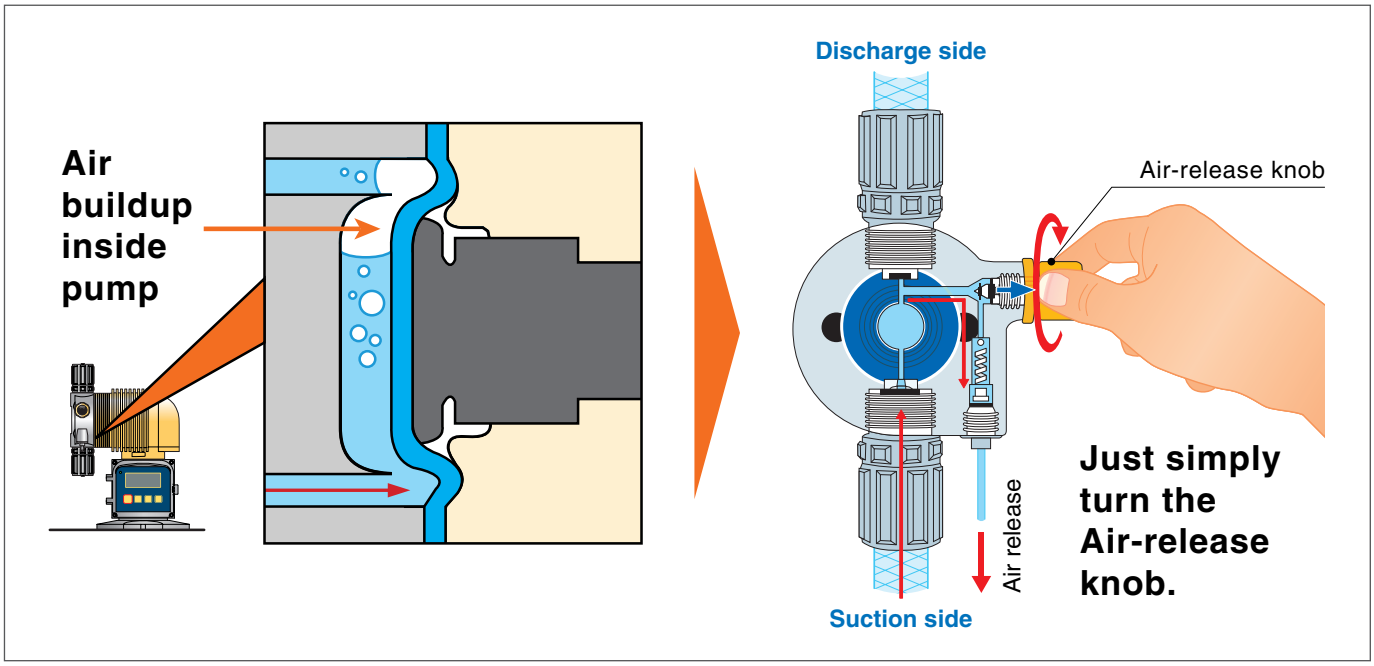
* Avoid condensation and immersion in water.

Quick & Easy Calibration

The PZD Series is provided with easy calibration function for accurate pump calibration. Just push the button to automatically discharge 300 strokes' worth of chemical and enter the actual discharge volume that you will be measuring. This is all you need to do for accurate calibration.

Simple, Safe, Air Release

"Gas-lock" is the phenomenon that air enters the pump head and prevents chemicals from being discharged. The PZD Series is equipped with Air-release valve as standard. Even if air gets into the pump head, you can simply and safely release the air just by lightly turning the Air-release knob.



∗ S-size (30R/60R/100R/30/60/100) only ∗ Illustration shows the model with Relief Valve.

Extensive Range of Liquid-end Materials

∗ For details, refer to the "Liquid-end Material" table on the following page.

Pump Head

w/ Relief Valve *

VTCE/VTCF
Material: PVC
Application example:
Transfer/injection of general chemicals

w/ Relief Valve *

FTCE/FTCF/FTCT
Material: PVDF
Application example:
Transfer/injection of special chemicals
(e.g. strong and mixed acids)

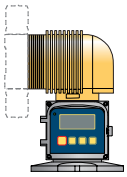
w/ Relief Valve *

VTCE
(for injection of boiler chemicals)
Material: PVC
Application example:
Transfer/injection of boiler chemicals

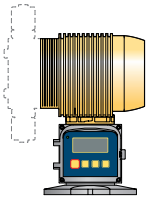
6TCT
Material: Stainless steel (SUS316·304)
Application example:
Transfer/injection of solutions/special chemicals

∗ For a detailed explanation of the Relief Valve, see "Relief Valve Function" on page 25.

Pump Body



S-size
(30R/60R/100R/30/60/100)



L-size
(300/500)

∗ The Relief Valve is not provided on the L-size (300/500).

Anti-siphon Check Valve

VTCE/VTCF

FTCE/FTCF/FTCT

VTCE
(for injection of boiler chemicals)

6TCT/STCT

Foot Valve

VTCE/VTCF

FTCE/FTCF/FTCT

VTCE
(for injection of boiler chemicals)

6TCT/STCT

PZD

Specification: PZD (S-size w/ Relief Valve)

Specification \ Model		30R						60R					100R				
		VTCE	VTCF	FTCE	FTCF	FTCT	VTCE (for injection of boiler chemicals)	VTCE	VTCF	FTCE	FTCF	FTCT	VTCE	VTCF	FTCE	FTCF	FTCT
Max. discharge volume*1	mL/min	30					28	60					100				
	L/h	1.8					1.68	3.6					6.0				
Max. discharge pressure*1	MPa	0.7*2					1.5	0.7*2					0.7				
	bar	7.0*2					15.0	7.0*2					7.0				
Stroke speed		1 to 300 strokes/min (digital setting)															
Stroke length		Fixed at 1.0 mm															
Connection (hose/tube: I.D x O.D)	Discharge side	4 x 9 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4"x 3/8" (FEP)	4 x 6 (nylon tube)	6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4"x 3/8" (FEP)	6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4"x 3/8" (FEP)
	Suction side						4 x 9 (PVC braided hose)										
	Relief /air-release	4 x 6 (soft PVC hose)															
Max. allowable viscosity		50 mPa·s															
Allowable temperature		Ambient temperature: 0 to 40˚C/Transferring liquid: 0 to 40˚C (no freezing allowed)															
Ambient humidity		35 to 85% RH															
Environmental protection		IEC standard: IP65 or equivalent (water- and dust-proof)															
Altitude of installation location		Less than 1,000 m															
Noise level		Less than 85 dB															
Operation mode	Manual	Digital settings: 3 patterns [stroke speed (1 to 300 strokes/min, in 1 stroke/min increments), discharge volume (in 0.1 mL/min increments), percentage (1 to 100%, in 1% increments)]															
Power supply	Rated voltage	AC 100 to 240 V (±10%)															
	No. of phases/Frequency	1-phase/50 or 60 Hz															
	Maximum current	2.0 A					2.5 A	2.5 A					2.5 A				
	Power consumption	Max.: 200 VA/Ave.: 15 W					Max.: 250 VA/Ave.: 18 W	Max.: 250 VA/Ave.: 18 W					Max.: 250 VA/Ave.: 18 W				
Weight		1.7 kg					1.8 kg	1.8 kg					1.8 kg				

★1 Conditions: Clean water, room temperature ★2 Though the max. discharge pressure of the 30R/60R models is 1.0 MPa (10.0 bar), the Relief Valve operates when 0.7 MPa (7.0 bar) is exceeded. In applications requiring a discharge pressure of 0.7 MPa (7.0 bar) or more, ask for a model w/out the Relief Valve, and install a separate relief valve for extra safety.

Model Code

✻ Not all model combinations are possible. When selecting the pump model, first check "Specification" and "Liquid-end Material".

PZD – 30R – VTCE – 4x9PVC – W – S – JPL

1 2 3 4 5 6

1 Model (discharge volume standard)

[for injection of general chemicals]

30R : 30 mL/min (w/ Relief Valve)
60R : 60 mL/min (w/ Relief Valve)
100R : 100 mL/min (w/ Relief Valve)
30 : 30 mL/min
60 : 60 mL/min
100 : 100 mL/min
300 : 300 mL/min
500 : 500 mL/min

[for injection of boiler chemicals]

30R : 30 mL/min (w/ Relief Valve)
30 : 30 mL/min

2 Liquid-end material

VTCE
VTCF
FTCE
FTCF
FTCT
6TCT
STCT

3 Hose standard (size/material)

4 x 9 PVC
6 x 11 PVC
12 x 18 PVC
6 x 8 PE/FEP/PTFE
9 x 12 PE
1/4" x 3/8" PE/FEP
3/8" x 1/2" PE
12 x 15 PTFE
4 x 6 PA

4 Joint specification

W : Standard
BW : Boiler

5 Applicable standard

S : Standard
CE : CE marking-compatible

6 Power plug

EUP : Euro plug
ULP : UL plug
AUP : Australia plug
UKP : UK plug
JPL : Japan lead wire
NON : No Cable

Accessory

✻ When "NON" is selected for **6** Power plug, the power cable (2 m) is not provided.

Item \ Model	S-size w/ Relief Valve						S-size							L-size			
	30R/60R/100R						30/60/100							300/500			
	VTCE	VTCF	FTCE	FTCF	FTCT	VTCE (for injection of boiler chemicals)	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE (for injection of boiler chemicals)	VTCE	VTCF	FTCT	STCT
Hose/Tube*1	3 m					Discharge side : 2 m Suction side : 1 m	3 m						Discharge side : 2 m Suction side : 1 m	3 m			
Relief /air-release hose*1	1 m (installed)						1 m					—	1 m	—			
Anti-siphon check valve	1 set (R1/2)				1 set (R1/2 or R3/8)	1 set (R1/2)	1 set (R1/2)				1 set (R1/2 or R3/8)		1 set (R1/2)	1 set (R1/2 or R3/8)		1 set (R1/2)	
Foot valve	1 set													1 set			
Ceramic weight	1 set*2		1 set			—	1 set*2		1 set				—	1 set*2		—	
Hose pump for air-release	—						—					1 set	—	—			
INSULOK for Relief /air-release hose	1 piece						—							—			
Pump mounting nuts/bolts	2 sets (M5 x 30)																
Operation manual	1 set																

★1 For details on the hose/tube aperture, see "Connection" for the respective model in "Specification" table above. ★2 Only when PE tube is selected

Specification: PZD (S-size/L-size)

Specification \ Model		30						60						100						300				500			
		VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE (for injection of boiler chemicals)	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE	VTCF	FTCT	STCT	VTCE	VTCF	FTCT	STCT
Max. discharge volume*	mL/min	30					27	28	60					55	100					95	360		330		540		510	
	L/h	1.8					1.62	1.68	3.6					3.3	6.0					5.7	21.6		19.8		32.4		30.6	
Max. discharge pressure*	MPa	1.0					0.5	1.5	1.0					0.5	0.7					0.5	0.3				0.2			
	bar	10.0					5.0	15.0	10.0					5.0	7.0					5.0	3.0				2.0			
Stroke speed		1 to 300 strokes/min (digital setting)																										
Stroke length		Fixed at 1.0 mm																			0.3 to 1.5 mm (manual dial)							
Connection (hose/tube: I.D x O.D)	Discharge side	4 x 9 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 8 (FEP) 1/4" x 3/8" (FEP)	6 x 8 (PTFE)		4 x 6 (nylon tube)	6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 8 (FEP) 1/4" x 3/8" (FEP)	6 x 8 (PTFE)		6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 8 (FEP) 1/4" x 3/8" (FEP)	6 x 8 (PTFE)		12 x 18 (PVC braided hose) 9 x 12 (PE) 3/8" x 1/2" (PE)		12 x 15 (PTFE)		12 x 18 (PVC braided hose) 9 x 12 (PE) 3/8" x 1/2" (PE)		12 x 15 (PTFE)	
	Suction side							4 x 9 (PVC braided hose)																				
	Air-release	4 x 6 (soft PVC hose)																			–							
Max. allowable viscosity		50 mPa·s																										
Allowable temperature		Ambient temperature: 0 to 40°C/Transferring liquid: 0 to 40°C (no freezing allowed)																										
Ambient humidity		35 to 85% RH																										
Environmental protection		IEC standard: IP65 or equivalent (water- and dust-proof)																										
Altitude of installation location		Less than 1,000 m																										
Noise level		Less than 85 dB																										
Operation mode	Manual	Digital settings: 3 patterns [stroke speed (1 to 300 strokes/min, in 1 stroke/min increments), discharge volume (in 0.1 mL/min increments), percentage (1 to 100%, in 1% increments)]																										
Power supply	Rated voltage	AC 100 to 240 V (±10%)																										
	No. of phases/Frequency	1-phase/50 or 60 Hz																										
	Maximum current	2.0 A						2.5 A	2.5 A												3.0 A							
	Power consumption	Max.: 200 VA/Ave.: 15 W						Max.: 250 VA/Ave.: 18 W	Max.: 250 VA/Ave.: 18 W												Max.: 500 VA/Ave.: 30 W							
Weight		1.7 kg					1.8 kg		1.8 kg					1.9 kg	1.8 kg					1.9 kg	4.0 kg	4.2 kg	6.0 kg		4.0 kg	4.2 kg	6.0 kg	

* Conditions: Clean water, room temperature

PZD

Liquid-end Material

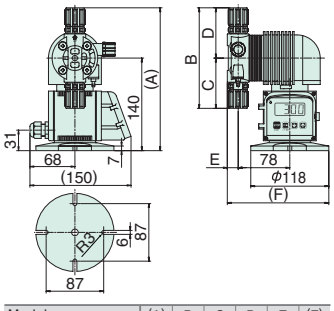
* Also refer to the "Corrosion-resistance Table" on page 26.

Part \ Model	VTCE	VTCF	FTCE	FTCF	FTCT	VTCE (for injection of boiler chemicals)	6TCT (S-size)	STCT (L-size)
Pump head	PVC		PVDF			PVC	SUS316	SUS304
Diaphragm	PTFE							
Check ball	Ceramic							
O-ring	EPDM	Fluoro-rubber	EPDM	Fluoro-rubber	Special fluoro-rubber Pafulo®*	EPDM	PTFE	PTFE
Valve seat	EPDM	Special fluoro-rubber	EPDM	Special fluoro-rubber	PTFE	EPDM	–	–
Joint	PVC		PVDF			PVC	SUS316	SUS304
Ball stopper	PVC		PVDF	PTFE (valve stopper)		PVC	PTFE (valve stopper)	

* PTFE for L-size (300/500)

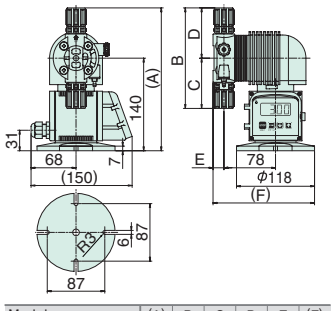
External Dimension (mm)

S-size w/ Relief Valve 30R/60R/100R



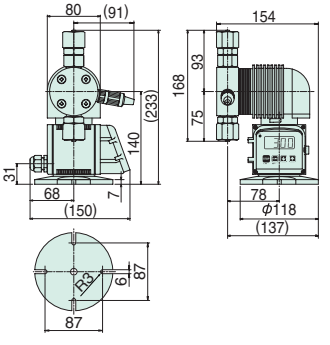
Model	(A)	B	C	D	E	(F)
VTCE/VTCF	216	152	76	76	16.5	153.5
FTCE/FTCF/FTCT	237.5	195	97.5	97.5	17.5	154.5
VTCE (for injection of boiler chemicals)	203	139	76	63	16.5	153.5

S-size 30/60/100

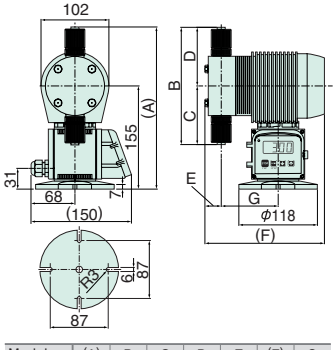


Model	(A)	B	C	D	E	(F)
VTCE/VTCF	216	152	76	76	16.5	153.5
FTCE/FTCF/FTCT	237.5	195	97.5	97.5	17.5	154.5
VTCE (for injection of boiler chemicals)	203	139	76	63	16.5	153.5

S-size 30/60/100(6TCT)



L-size 300/500



Model	(A)	B	C	D	E	(F)	G
VTCE/VTCF	243	176	88	88	24.5	180	85.5
FTCT/STCT	255.5	183	82.5	100.5	22	174.5	83

* The shape and dimensions differ slightly depending on the liquid-end material and connection type.
* The mounting pitch allows mounting from 87 to 110 mm.

PZi

Digital Setting

Advanced Functions

Analog/Digital-Input

PZi4

Analog/Digital-Input & Digital-Output

PZi8

S-size (30R/60R/100R)

S-size (30/60/100)

L-size (300/500)

Direct Entry of Injection Amount

The injection amount can be set according to three patterns:

[By stroke speed]

Setting range: 1 to 300 strokes/min
(minimum setting increment: 1 stroke/min)

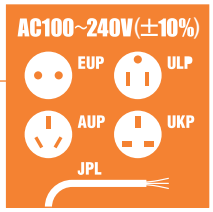
[By discharge volume]

Setting range: 0.1 to (maximum discharge volume of selected model) mL/min
(minimum setting increment: 0.1 mL/min)

[By percentage]

Setting range: 1 to 100%
(minimum setting increment: 1% (3 strokes/min))

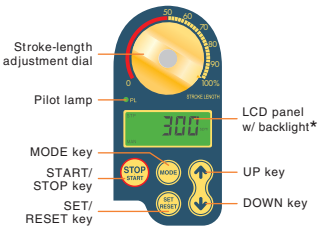
Wide Voltage Range Power Supply



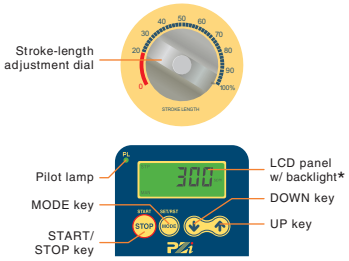
There is no need to worry about site power supply voltage or voltage fluctuations since it can be used with AC100 to 240 V (±10%) power supplies. You can also keep it in stock safely since it can be used for a variety of sites and applications.

Simple key Layout

●S-size (30R/60R/100R/30/60/100)



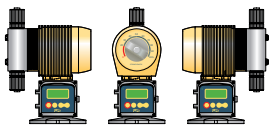
●L-size (300/500)



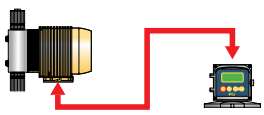
* Backlight is provided only on PZi8.

3-directional Pump Head

* Large-size (300/500) only



Separate-type Head & Controller



* Large-size (300/500) only
* This feature is limited depending on the operating conditions. Consult us for details.

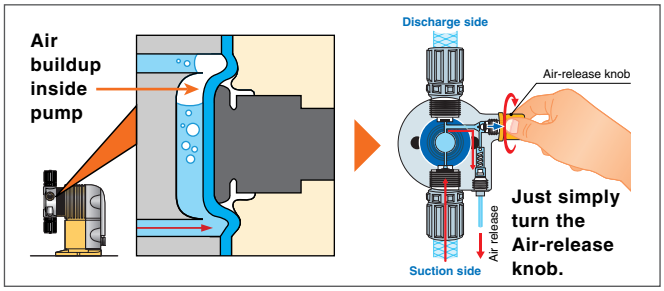
Water- & Dust-proof Specifications

IEC standard: IP65 or equivalent

* Avoid condensation and immersion in water.

Simple, Safe, Air Release

The PZi Series is equipped with an Air-release valve as standard. Even if air gets into the pump head, you can simply and safely release the air just by lightly turning the Air-release knob.



∗ S-size (30R/60R/100R/30/60/100) only ∗ Illustration shows the model with Relief Valve.

Extensive Range of Liquid-end Materials

∗ For details, refer to the "Liquid-end Material" table on the following page.

w/ Relief Valve *

VTCE/VTCF
Material: PVC
Application example:
Transfer/injection of general chemicals

w/ Relief Valve *

FTCE/FTCF/FTCT
Material: PVDF
Application example:
Transfer/injection of special chemicals
(e.g. strong and mixed acids)

w/ Relief Valve *

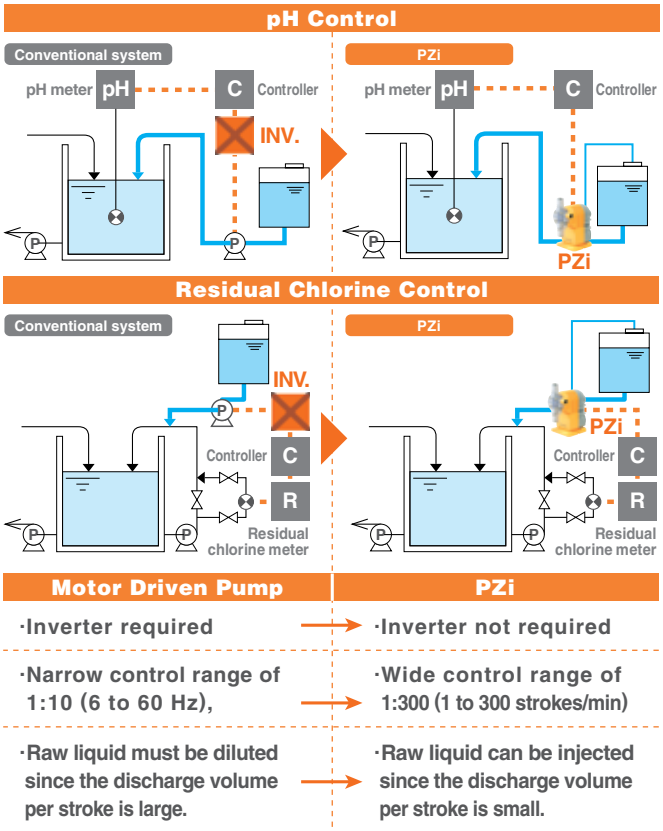
VTCE
(for injection of boiler chemicals)
Material: PVC
Application example:
Transfer/injection of boiler chemicals

6TCT
Material: Stainless steel (SUS316·304)
Application example:
Transfer/injection of solutions/special chemicals

∗ For a detailed explanation of the Relief Valve, see "Relief Valve Function" on page 25.

Analog-Input Proportional Control

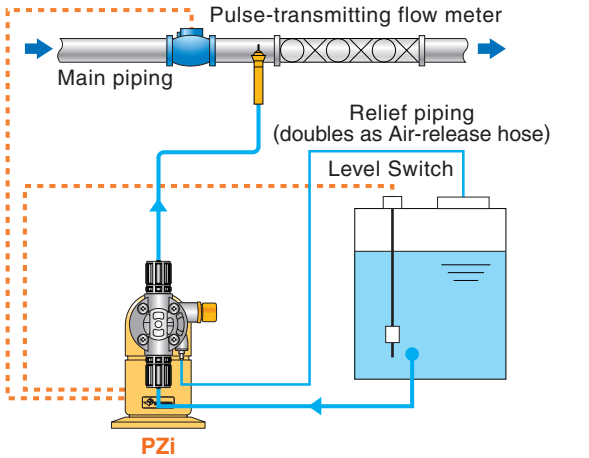
The injection amount (stroke frequency: 0 to 300 strokes/min) can be set according to the analog input signal (PZi4: 4 to 20 mA, PZi8: 0 to 20 mA or 4 to 20 mA) from an external device.



Motor Driven Pump	PZi
·Inverter required	·Inverter not required
·Narrow control range of 1:10 (6 to 60 Hz),	·Wide control range of 1:300 (1 to 300 strokes/min)
·Raw liquid must be diluted since the discharge volume per stroke is large.	·Raw liquid can be injected since the discharge volume per stroke is small.

Pulse-Input Proportional Control & External Stop Input Control

Pump ON/OFF can be controlled by an external stop input signal. Also, the injection amount (1/9999 to 9999 strokes/pulse) can be set according to the pulse input signal from an external device.

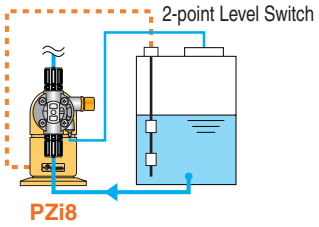


∗ For details on the Level Switch, see "Option" on the back cover.

PZi8

2-point Level Switch Control

Control such as alarm display and output, and pump stop is performed in accordance with the remaining amount of chemicals.



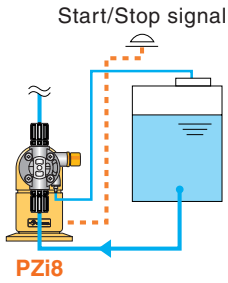
Count (batch) & Interval (timer) Operation

●Count setting

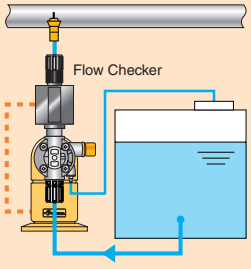
1 to 9999 strokes
(x1, x10, x100, x1000)

●Interval setting

ON time : 1 to 9999 min
OFF time : 1 to 9999 min



Precision Control by Actual Discharge Volume



Installed directly on the discharge side of the PZi8, the momentary discharge volume can be displayed and alarm output when it has fallen below the set value.

∗ For details on the Flow Checker, see "Option" on the back cover.

Specification: PZi4/PZi8 (S-size w/ Relief Valve)

Specification \ Model			30R						60R					100R				
			VTCE	VTCF	FTCE	FTCF	FTCT	VTCE (for injection of boiler chemicals)	VTCE	VTCF	FTCE	FTCF	FTCT	VTCE	VTCF	FTCE	FTCF	FTCT
Max. discharge volume*1		mL/min	30					28	60					100				
		L/h	1.8					1.68	3.6					6.0				
Max. discharge pressure*1		MPa	0.7*2					1.5	0.7*3					0.4				
		bar	7.0*2					15.0	7.0*3					4.0				
Stroke speed			1 to 300 strokes/min (digital setting)															
Stroke length			0.5 to 1.0 mm (adjustable by manual dial)															
Connection (hose/tube: I.D x O.D)	Discharge side		4 x 9 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4" x 3/8" (FEP)	4 x 6 (nylon tube)	6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4" x 3/8" (FEP)	6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4" x 3/8" (FEP)
	Suction side							4 x 9 (PVC braided hose)										
	Relief /air-release		4 x 6 (soft PVC hose)															
Max. allowable viscosity			50 mPa·s															
Allowable temperature			Ambient temperature: 0 to 40˚C/Transferring liquid: 0 to 40˚C (no freezing allowed)															
Ambient humidity			35 to 85% RH															
Environmental protection			IEC standard: IP65 or equivalent (water- and dust-proof)															
Altitude of installation location			Less than 1,000 m															
Noise level			Less than 85 dB															
Signal	Analog-Input		PZi4 : 1 port : Analog signal (4 to 20 mA DC, input resistance: approx. 110Ω)*4 PZi8 : 1 port : Analog signal (4 to 20 mA DC, 0 to 20 mA, input resistance: approx. 110Ω)*4															
	Digital*5 Input		PZi4 : 1 port : High-speed pulse signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, max. number of pulses: 7500 pulse/min, min. pulse width: 4 msec (ON time))*4 1 port : Pump stop signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, min. pulse width: 50 msec (ON time)) PZi8 : 2 ports: High-speed pulse signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, max. number of pulses: 7500 pulse/min, min. pulse width: 4 msec (ON time))*4 2 ports: Low-speed pulse signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, min. pulse width: 50 msec (ON time)) Signal assignments (4 selectable): Unassigned, Pulse signal, Stop signal, Reset/Restart signal, Alarm reset signal, Flow Checker signal (only when Flow Checker is used), Level Switch signal (only when Level Switch is used)															
		Output	PZi8 only : 2 ports: Pulse signal (3 mA DC, 25 V or less) Signal assignments (2 selectable): Unassigned, Solenoid-operation sync pulse signal, In-operation signal, Operation end signal, Lamp alarm signal, Low tank-level alarm signal (only when 2-point Level Switch is used), Pulse-Input error signal, Analog-Input error signal, Lower discharge-volume alarm signal (only when Flow Cheker is used)															
Power supply to Flow Checker*6			PZi8 only															
Operation mode	Manual		Digital settings: 3 patterns [stroke speed (1 to 300 strokes/min, in 1 stroke/min increments), discharge volume (in 0.1 mL/min increments), percentage (1 to 100%, in 1% increments)]															
	Auto	Analog-Input proportional control*7	Control possible by Proportional Band (PB/variable range: ±1 to ±999%) setting/Shift (S/variable range: 0 to ±100%) setting															
		Pulse-Input proportional control*7	Control possible by Frequency-division (1/1 to 1/9999) setting/Multiplication (1 to 9999) setting															
		Count operation (batch control)	PZi8 only : 1 to 9999 strokes (x1, x10, x100, x1000)															
		Interval operation (timer control)	PZi8 only : ON time: 1 to 9999 min/OFF time: 1 to 9999 min															
		External stop input control	"STP" flashing display, pump stopped															
		2-point Level Switch control*8	PZi8 only : [Low tank-level alarm] "E-02" displayed and alarm output/[Lower tank-level alarm] "STP" flashing display and pump stopped															
Power supply	Rated voltage		AC 100 to 240 V (±10%)															
	No. of phases/Frequency		1-phase/50 or 60 Hz															
	Maximum current		2.2 A															
	Power consumption		Max.: 220 VA/Ave.: 16 W															
Weight			1.9 kg				2.0 kg	1.9 kg	1.9 kg									

★1 Conditions: Clean water, room temperature ★2 Though the max. discharge pressure of the 30R models is 1.0 MPa (10.0 bar), the Relief Valve operates when 0.7 MPa (7.0 bar) or more, ask for a model w/out the Relief Valve, and install a separate relief valve for extra safety.
★3 Though the max. discharge pressure of the 60R models is 0.8 MPa (8.0 bar), the Relief Valve operates when 0.7 MPa (7.0 bar) is exceeded. In applications requiring a discharge pressure of 0.7 MPa (7.0 bar) or more, ask for a model w/out the Relief Valve, and install a separate relief valve for extra safety.
★4 Combined use of Analog-Input signal and high-speed pulse signal not possible. ★5 For a detailed explanation on signals, see "Digital Signal" on page 26. ★6 For details on the Flow Checker, see "Option" on the back cover.
★7 For details, see "Analog-Input Proportional Control" and "Pulse-Input Proportional Control" on page 14. ★8 When 2-point Level Switch is used

Model Code

✻ Not all model combinations are possible. When selecting the pump model, first check "Specification" and "Liquid-end Material".

PZi8 – 30R – VTCE – 4x9PVC – W – S – JPL

1 2 3 4 5 6 7

1 Series name

PZi4 : Analog/Digital-Input
PZi8 : Analog/Digital-Input & Digital-Output

2 Model (discharge volume standard)

[for injection of general chemicals]
30R : 30 mL/min (w/ Relief Valve)
60R : 60 mL/min (w/ Relief Valve)
100R : 100 mL/min (w/ Relief Valve)
30 : 30 mL/min
60 : 60 mL/min
100 : 100 mL/min
300 : 300 mL/min
500 : 500 mL/min

[for injection of boiler chemicals]
30R : 30 mL/min (w/ Relief Valve)
30 : 30 mL/min

3 Liquid-end material

VTCE
VTCF
FTCE
FTCF
FTCT
6TCT
STCT
VTCE

4 Hose standard (size/material)

4 x 9 PVC
6 x 11 PVC
12 x 18 PVC
6 x 8 PE/FEP/PTFE
9 x 12 PE
1/4" x 3/8" PE/FEP
3/8" x 1/2" PE
12 x 15 PTFE
4 x 6 PA

5 Joint specification

W : Standard
BW : Boiler

6 Applicable standard

S : Standard
CE : CE marking-compatible

7 Power plug

EUP : Euro plug
ULP : UL plug
AUP : Australia plug
UKP : UK plug
JPL : Japan lead wire
NON : No Cable*

★ L-size only (300/500)

✻ The 4-pin/8-pin cable (2 m or 5 m selectable) is an option.
✻ When "NON" is selected for 7 Power plug, the power cable (2 m) is not providad.

Accessory

Item \ Model	S-size w/ Relief Valve 30R/60R/100R						S-size 30/60/100							L-size 300/500			
	VTCE	VTCF	FTCE	FTCF	FTCT	VTCE (for injection of boiler chemicals)	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE (for injection of boiler chemicals)	VTCE	VTCF	FTCT	STCT
Hose/Tube*1	3 m					Discharge side: 2 m Suction side: 1 m	3 m						Discharge side: 2 m Suction side: 1 m	3 m			
Relief /air-release hose*1	1 m (installed)						1 m					—	1 m	—			
Anti-siphon check valve	1 set (R1/2)				1 set (R1/2 or R3/8)	1 set (R1/2)	1 set (R1/2)			1 set (R1/2 or R3/8)			1 set (R1/2)	1 set (R1/2 or R3/8)		1 set (R1/2)	
Foot valve	1 set													1 set			
Ceramic weight	1 set*2		1 set			—	1 set*2		1 set				—	1 set*2		—	
Hose pump for air-release	—						—					1 set	—	—			
INSULOK for Relief /air-release hose	1 piece						—							—			
Pump mounting nuts/bolts	2 sets (M5 x 30)																
Operation manual	1 set																

★1 For details on the hose/tube aperture, see "Connection" for the respective model in "Specification" table above. ★2 Only when PE tube is selected

Specification: PZi4/PZi8 (S-size/L-size)

Specification \ Model		30							60						100						300				500			
		VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE (for injection of boiler chemicals)	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE	VTCF	FTCT	STCT	VTCE	VTCF	FTCT	STCT
Max. discharge volume*1	mL/min	30					27	28	60					55	100					95	360		330		540		510	
	L/h	1.8					1.62	1.68	3.6					3.3	6.0					5.7	21.6		19.8		32.4		30.6	
Max. discharge pressure*1	MPa	1.0					0.5	1.5	0.8					0.5	0.4						0.3				0.2			
	bar	10.0					5.0	15.0	8.0					5.0	4.0						3.0				2.0			
Stroke speed		1 to 300 strokes/min (digital setting)																										
Stroke length		0.5 to 1.0 mm (adjustable by manual dial)																										
Connection (hose/tube: I.D x O.D)	Discharge side	4 x 9 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4" x 3/8" (FEP)	6 x 8 (PTFE)	4 x 6 (nylon tube)	6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4" x 3/8" (FEP)	6 x 8 (PTFE)	6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (PE) 1/4" x 3/8" (PE)		6 x 8 (FEP) 1/4" x 3/8" (FEP)	6 x 8 (PTFE)	12 x 18 (PVC braided hose) 9 x 12 (PE) 3/8" x 1/2" (PE)		12 x 15 (PTFE)		12 x 18 (PVC braided hose) 9 x 12 (PE) 3/8" x 1/2" (PE)		12 x 15 (PTFE)	
	Suction side							4 x 9 (PVC braided hose)																				
	Air-release	4 x 6 (soft PVC hose)																										
Max. allowable viscosity		50 mPa·s																										
Allowable temperature		Ambient temperature: 0 to 40°C/Transferring liquid: 0 to 40°C (no freezing allowed)																										
Ambient humidity		35 to 85% RH																										
Environmental protection		IEC standard: IP65 or equivalent (water- and dust-proof)																										
Altitude of installation location		Less than 1,000 m																										
Noise level		Less than 85 dB																										
Signal	Analog-Input	PZi4 : 1 port : Analog signal (4 to 20 mA DC, input resistance: approx. 110Ω)*2 PZi8 : 1 port : Analog signal (4 to 20 mA DC, 0 to 20 mA, input resistance: approx. 110Ω)*2																										
	Digital*3 Input	PZi4 : 1 port : High-speed pulse signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, max. number of pulses: 7500 pulse/min, min. pulse width: 4 msec (ON time))*2 1 port : Pump stop signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, min. pulse width: 50 msec (ON time)) PZi8 : 2 ports: High-speed pulse signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, max. number of pulses: 7500 pulse/min, min. pulse width: 4 msec (ON time))*2 2 ports: Low-speed pulse signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, min. pulse width: 50 msec (ON time)) Signal assignments (4 selectable): Unassigned, Pulse signal, Stop signal, Reset/Restart signal, Alarm reset signal, Flow Checker signal (only when Flow Checker is used), Level Switch signal (only when Level Switch is used)																										
	Digital*3 Output	PZi8 only : 2 ports: Pulse signal (3 mA DC, 25 V or less) Signal assignments (2 selectable): Unassigned, Solenoid-operation sync pulse signal, In-operation signal, Operation end signal, Lamp alarm signal, Low tank-level alarm signal (only when 2-point Level Switch is used), Pulse-Input error signal, Analog-Input error signal, Lower discharge-volume alarm signal (only when Flow Cheker is used)																										
Power supply to Flow Checker*4		PZi8 only																										
Operation mode	Manual	Digital settings: 3 patterns [stroke speed (1 to 300 strokes/min, in 1 stroke/min increments), discharge volume (in 0.1 mL/min increments), percentage (1 to 100%, in 1% increments)]																										
	Auto: Analog-Input proportional control*5	Control possible by Proportional Band (PB/variable range: ±1 to ±999%) setting/Shift (S/variable range: 0 to ±100%) setting																										
	Auto: Pulse-Input proportional control*5	Control possible by Frequency-division (1/1 to 1/9999) setting/Multiplication (1 to 9999) setting																										
	Auto: Count operation (batch control)	PZi8 only : 1 to 9999 strokes (x1, x10, x100, x1000)																										
	Auto: Interval operation (timer control)	PZi8 only : ON time: 1 to 9999 min/OFF time: 1 to 9999 min																										
	Auto: External stop input control	"STP" flashing display, pump stopped																										
	Auto: 2-point Level Switch control*6	PZi8 only : [Low tank-level alarm] "E-02" displayed and alarm output/[Lower tank-level alarm] "STP" flashing display and pump stopped																										
Power supply	Rated voltage	AC 100 to 240 V (±10%)																										
	No. of phases/Frequency	1-phase/50 or 60 Hz																										
	Maximum current	2.2 A																			3.0 A							
	Power consumption	Max.: 220 VA/Ave.: 16 W																			Max.: 500 VA/Ave.: 30 W							
Weight		1.9 kg		2.0 kg	1.9 kg		1.9 kg		2.0 kg		1.9 kg			2.0 kg	1.9 kg					2.0 kg	4.0 kg	4.2 kg	6.0 kg		4.0 kg	4.2 kg	6.0 kg	

★1 Conditions: Clean water, room temperature ★2 Combined use of analog input signal and high-speed pulse signal not possible. ★3 For a detailed explanation on signals, see "Digital Signal" on page 26. ★4 For details on the Flow Checker, see "Option" on the back cover.
★5 For details, see "Analog-Input Proportional Control" and "Pulse-Input Proportional Control" on page 14. ★6 When 2-point Level Switch is used

Liquid-end Material

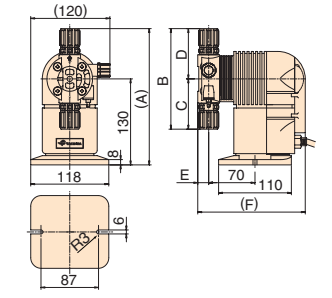
✻ Also refer to the "Corrosion-resistance Table" on page 26.

Part \ Model	VTCE	VTCF	FTCE	FTCF	FTCT	VTCE (for injection of boiler chemicals)	6TCT (S-size)	STCT (L-size)
Pump head	PVC		PVDF			PVC	SUS316	SUS304
Diaphragm	PTFE							
Check ball	Ceramic							
O-ring	EPDM	Fluoro-rubber	EPDM	Fluoro-rubber	Special fluoro-rubber Pafulo®*	EPDM	PTFE	PTFE
Valve seat	EPDM	Special fluoro-rubber	EPDM	Special fluoro-rubber	PTFE	EPDM	—	—
Joint	PVC		PVDF			PVC	SUS316	SUS304
Ball stopper	PVC		PVDF	PTFE (valve stopper)		PVC	PTFE (valve stopper)	

★ PTFE for L-size (300/500)

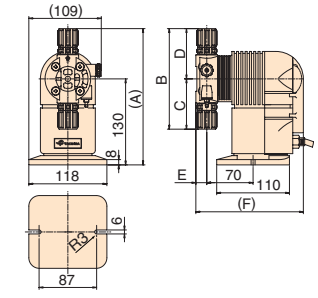
External Dimension (mm)

S-size w/ Relief Valve 30R/60R/100R



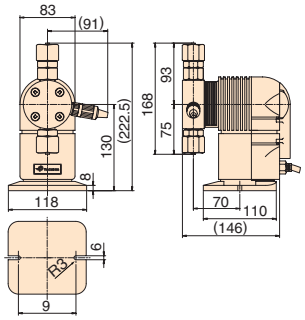
Model	(A)	B	C	D	E	(F)
VTCE/VTCF	206	152	76	76	16.5	162.5
FTCE/FTCF/FTCT	227.5	195	97.5	97.5	17.5	163.5
VTCE (for injection of boiler chemicals)	193	139	76	63	16.5	162.5

S-size 30/60/100

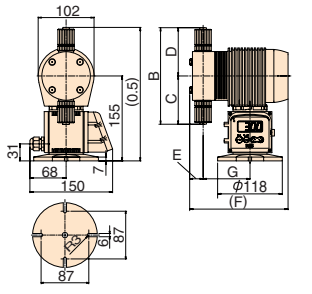


Model	(A)	B	C	D	E	(F)
VTCE/VTCF	206	152	76	76	16.5	162.5
FTCE/FTCF/FTCT	227.5	195	97.5	97.5	17.5	163.5
VTCE (for injection of boiler chemicals)	193	139	76	63	16.5	162.5

S-size 30/60/100(6TCT)



L-size 300/500



Model	(A)	B	C	D	E	(F)	G
VTCE/VTCF	243	176	88	88	24.5	180	85.5
FTCT/STCT	255.5	183	82.5	100.5	22	174.5	83

✻ The shape and dimensions differ slightly depending on the liquid-end material and connection type.
✻ The mounting pitch allows mounting from 87 to 110 mm.

PZiG

Digital Setting

Advanced Functions

Large-capacity

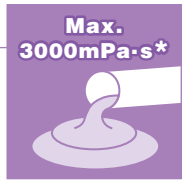
Large-capacity

Lineup of five models supporting large-capacity injection up to 1300 mL/min

High-viscosity

The PZiG series can also be used for the injection of polymer coagulant.

* When transferring high-viscosity liquids, the maximum discharge volume may be lower than the specified volume depending on the characteristics of the liquid and operating conditions. Consult TACMINA separately when transferring high-viscosity liquids.



Direct Entry of Injection Amount

The injection amount can be set according to three patterns:

[By stroke speed]

Setting range: 1 to 300 strokes/min (minimum setting increment: 1 stroke/min)

[By discharge volume]

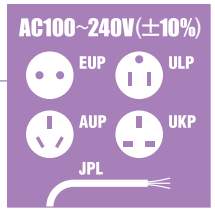
Setting range: 0.1 to (maximum discharge volume of selected model) mL/min (minimum setting increment: 0.1 mL/min)

[By percentage]

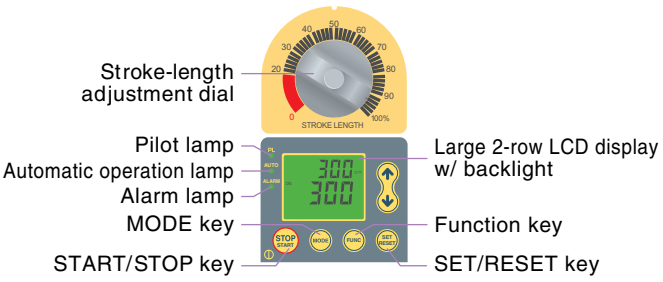
Setting range: 1 to 100% (minimum setting increment: 1% (3 strokes/min))

Wide Voltage Range Power Supply

There is no need to worry about site power supply voltage or voltage fluctuations since it can be used with AC100 to 240 V (±10%) power supplies. You can also keep it in stock safely since it can be used for a variety of sites and applications.



Simple key Layout



Water- & Dust-proof Specifications

IEC standard: IP65 or equivalent

* Avoid condensation and immersion in water.

Quick & Easy Calibration

The PZiG Series is provided with easy calibration function for accurate pump calibration. Just push the button to automatically discharge 300 strokes' worth of chemical and enter the actual discharge volume that you will be measuring. This is all you need to do for accurate calibration.

Extensive Range of Liquid-end Materials

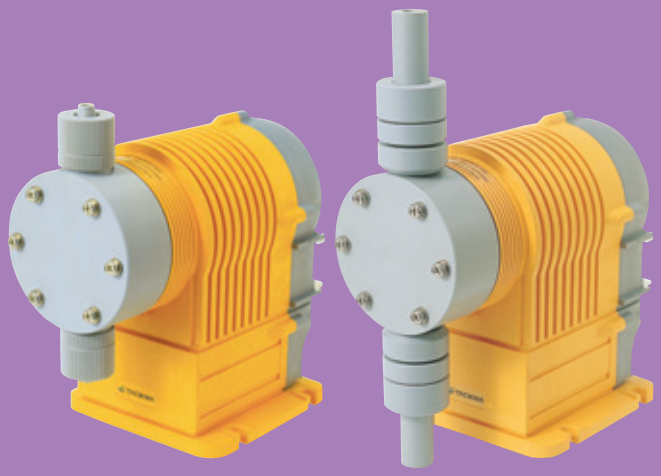
* For details, refer to the "Liquid-end Material" table on the following page.

VTCE/VTCF
Material: PVC
Application example: Transfer/injection of general chemicals

FTCT
Material: PVDF
Application example: Transfer/injection of special chemicals (e.g. strong and mixed acids)

VTCF (high-viscosity type)
Material: PVC
Application example: Transfer/injection of high-viscosity liquids

Analog/Digital-Input & Digital-Output

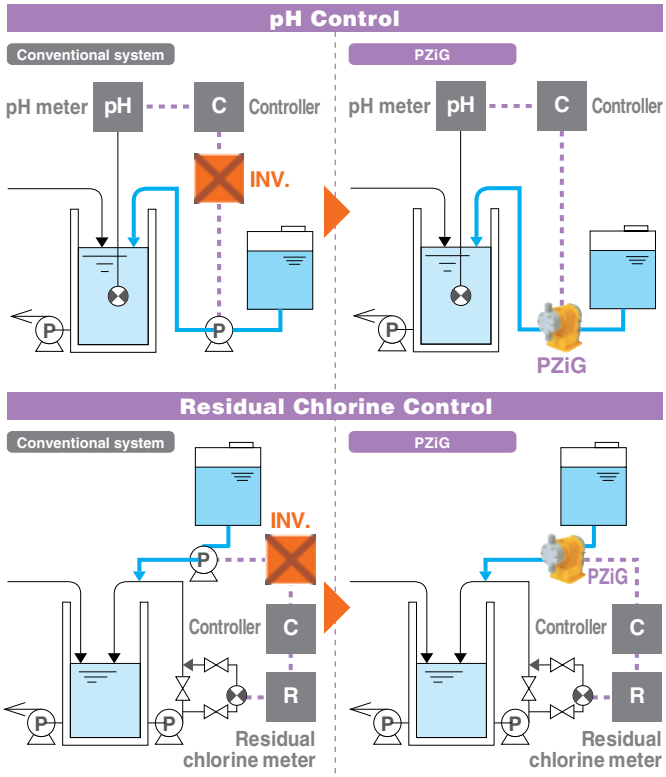


Standard
(300/500/700/1000/1300)

High-viscosity type
(300/500/700/1000/1300)

Analog-Input Proportional Control

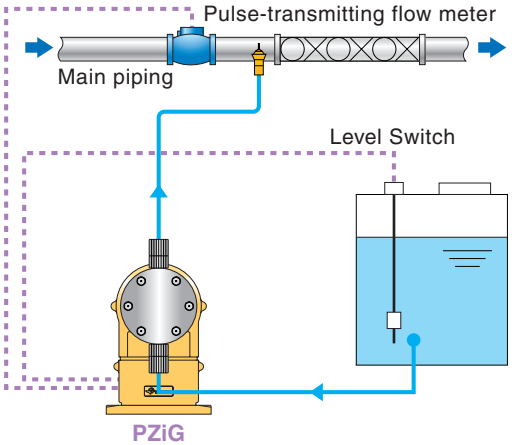
The injection amount (stroke frequency: 0 to 300 strokes/min) can be set according to the analog input signal (0 to 20 mA or 4 to 20 mA) from an external device.



Motor Driven Pump	PZiG
·Inverter required	·Inverter not required
·Narrow control range of 1:10 (6 to 60 Hz),	·Wide control range of 1:300 (1 to 300 strokes/min)
·Raw liquid must be diluted since the discharge volume per stroke is large.	·Raw liquid can be injected since the discharge volume per stroke is small.

Pulse-Input Proportional Control & External Stop Input Control

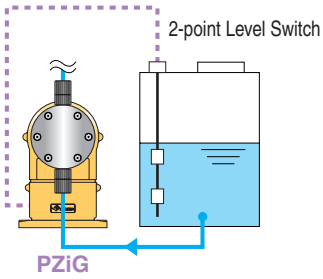
Pump ON/OFF can be controlled by an external stop input signal. Also, the injection amount (1/9999 to 9999 strokes/pulse) can be set according to the pulse input signal from an external device.



* For details on the Level Switch, see "Option" on the back cover.

2-point Level Switch Control

Control such as alarm display and output, and pump stop is performed in accordance with the remaining amount of chemicals.



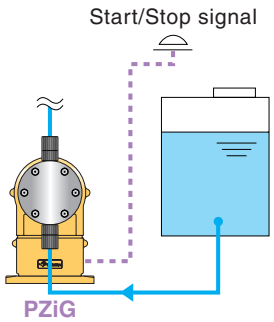
Count (batch) & Interval (timer) Operation

Count setting

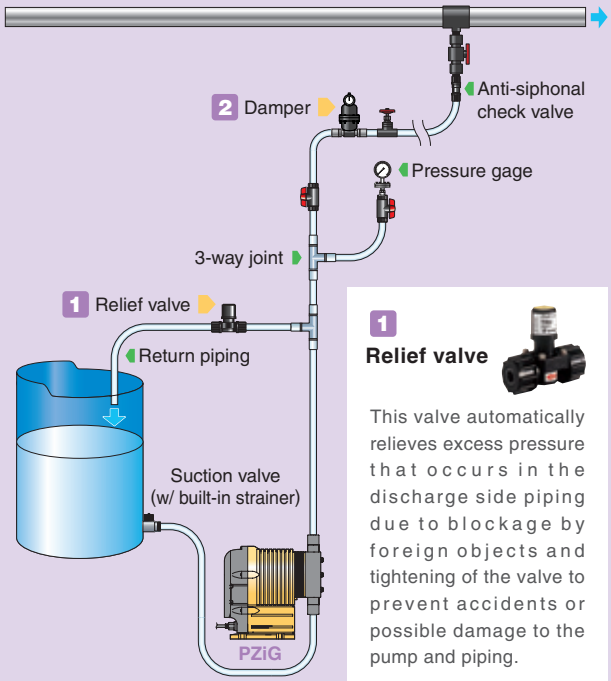
1 to 9999 strokes
(x1, x10, x100, x1000)

Interval setting

ON time : 1 to 9999 min
OFF time : 1 to 9999 min



Example of Safe Hose Piping
for Fully Demonstrating the Performance of the PZiG



1 Relief valve

This valve automatically relieves excess pressure that occurs in the discharge side piping due to blockage by foreign objects and tightening of the valve to prevent accidents or possible damage to the pump and piping.

2 Damper

Install a damper or air chamber when the piping is long or to suppress vibration on the piping. Also, be sure to install the damper near to the pump when the PZiG1300 model is used and the discharge side piping is to be extended beyond two meters.

Specification

Specification \ Model			300				500				700			
			VTCE	VTCF	FTCT	VTCF (high-viscosity type)	VTCE	VTCF	FTCT	VTCF (high-viscosity type)	VTCE	VTCF	FTCT	VTCF (high-viscosity type)
Max. discharge volume*1		mL/min	340				530				760			
		L/h	20.4				31.8				45.6			
Max. discharge pressure*1		MPa	1.0		0.5	1.0 / 1.0	0.7		0.5	0.7 / 0.7	0.4			
		bar	10.0		5.0	10.0 / 10.0	7.0		5.0	7.0 / 7.0	4.0			
Stroke speed			1 to 300 strokes/min (digital setting)											
Stroke length			0.3 to 1.5 mm (adjustable by manual dial)											
Connection (hose/tube: I.D x O.D)	Discharge side		12 x 18 (PVC braided hose) FNPT 1/2		12 x 15 (PTFE)	FNPT 1/2 / FNPT 3/4 MNPT 3/4 VP 20 (Union Joint)	12 x 18 (PVC braided hose) FNPT 1/2		12 x 15 (PTFE)	FNPT 1/2 / FNPT 3/4 MNPT 3/4 VP 20 (Union Joint)	12 x 18 (PVC braided hose) FNPT 1/2		12 x 15 (PTFE) FNPT 1/2	FNPT 3/4 MNPT 3/4 VP 20 (Union Joint)
	Suction side													
	Relief /air-release		—											
Max. allowable viscosity			50 mPa·s			3000 mPa·s*2	50 mPa·s			3000 mPa·s*2	50 mPa·s			3000 mPa·s*2
Allowable temperature			Ambient temperature: 0 to 40°C/Transferring liquid: 0 to 40°C (no freezing allowed)											
Ambient humidity			35 to 85% RH											
Environmental protection			IEC standard: IP65 or equivalent (water- and dust-proof)											
Altitude of installation location			Less than 1,000 m											
Noise level			Less than 85 dB											
Signal	Analog-Input		1 port : Analog signal (4 to 20 mA DC, 0 to 20 mA, input resistance: approx. 110 Ω)*3											
	Digital*4	Input	2 ports: High-speed pulse signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, max. number of pulses: 7500 pulse/min, min. pulse width: 4 msec (ON time))*3 2 ports: Low-speed pulse signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, min. pulse width: 50 msec (ON time)) Signal assignments : Unassigned, Pulse signal, Stop signal, Start signal, Reset/Restart signal, Alarm reset signal, (4 selectable) Level Switch signal (only when Level Switch is used), Compulsive MAX operation signal											
		Output	2 ports: Pulse signal (10 mA DC, 25 V or less) Signal assignments : Unassigned, Solenoid-operation sync pulse signal, In-operation signal, Running signal, Operation end signal, Lamp alarm signal, (4 selectable) Low tank-level alarm signal (only when 2-point Level Switch is used), Pulse-Input error signal, Analog-Input error signal											
Operation mode	Manual		Digital settings: 3 patterns [stroke speed (1 to 300 strokes/min, in 1 stroke/min increments), discharge volume (in 0.1 mL/min increments), percentage (1 to 100%, in 1% increments)]											
	Auto	Analog-Input proportional control*5	Control possible by Proportional Band (PB) setting/Set Point (SP) setting											
		Pulse-Input proportional control*5	Control possible by Frequency-division (1/1 to 1/9999) setting/Multiplication (1 to 9999) setting											
		Count operation (batch control)	1 to 9999 strokes (x1, x10, x100, x1000)											
		Interval operation (timer control)	ON time: 1 to 9999 min/OFF time: 1 to 9999 min											
		External stop input control	"STP" flashing display, pump stopped											
		2-point Level Switch control*6	[Low tank-level alarm] "E-02" displayed and alarm output/[Lower tank-level alarm] "STP" flashing display and pump stopped											
Power supply	Rated voltage		AC 100 to 240 V (±10%)											
	No. of phases/Frequency		1-phase/50 or 60 Hz											
	Maximum current		4.0 A											
	Power consumption		Max.: 750 VA/Ave.: 100 W											
Weight			11 kg											

*1 Conditions: Clean water, room temperature *2 When transferring high-viscosity liquids, the maximum discharge volume may be lower than the specified volume depending on the characteristics of the liquid and operating conditions. Consult TACMINA separately when transferring high-viscosity liquids.
*3 Combined use of Analog-Input signal and high-speed pulse signal not possible. *4 For a detailed explanation on signals, see "Digital Signal" on page 26.
*5 For details, see "Analog-Input Proportional Control" and "Pulse-Input Proportional Control" on page 18. *6 When 2-point Level Switch is used

Model Code

* Not all model combinations are possible. When selecting the pump model, first check "Specification" and "Liquid-end Material".

PZiG – 300 – VTCE – 12x18PVC – W – S – JPL – [ ]

1 2 3 4 5 6 7

1 Model (discharge volume standard)
[for injection of general chemicals]
300 : 300 mL/min
500 : 500 mL/min
700 : 700 mL/min
1000 : 1000 mL/min
1300 : 1300 mL/min
[High-viscosity type]
300 : 300 mL/min
500 : 500 mL/min
700 : 700 mL/min
1000 : 1000 mL/min
1300 : 1300 mL/min

2 Liquid-end material
VTCE
VTCF
FTCT
VTCF

3 Hose standard (size/material)
12 x 18 PVC
12 x 15 PTFE
FNPT 1/2
FNPT 3/4
MNPT 3/4
VP 20 (Union Joint)

4 Joint specification
W : Standard
V : high-viscosity type

5 Applicable standard
S : Standard
CE : CE marking-compatible

6 Power plug
EUP : Euro plug*
ULP : UL plug
AUP : Australia plug
UKP : UK plug*
JPL : Japan lead wire

7 General specification
None : Standard
X : Special

Accessory

* The 4-pin/8-pin cable (2 m or 5 m selectable) is an option.

Item \ Model	VTCE	VTCF	FTCT	VTCF (High-viscosity type)
Hose/Tube*	3 m			—
Anti-siphon check valve	1 set (R1/2 or R3/8)			—
Strainer	1 set			—
Pump mounting nuts/bolts(M5 x 30)	4 sets			
Operation manual	1 set			

* For details on the hose/tube aperture, see "Connection" for the respective model in "Specification" table above.

Specification

Specification \ Model			1000				1300			
			VTCE	VTCF	FTCT	VTCF (high-viscosity type)	VTCE	VTCF	FTCT	VTCF (high-viscosity type)
Max. discharge volume*1		mL/min	1000				1300			
		L/h	60.0				78.0			
Max. discharge pressure*1		MPa	0.3				0.2			
		bar	3.0				2.0			
Stroke speed			1 to 300 strokes/min (digital setting)							
Stroke length			0.3 to 1.5 mm (adjustable by manual dial)							
Connection (hose/tube: I.D x O.D)	Discharge side		12 x 18 (PVC braided hose) FNPT 1/2		12 x 15 (PTFE) FNPT 1/2	FNPT 3/4 MNPT 3/4 VP 20 (Union Joint)	12 x 18 (PVC braided hose) FNPT 1/2		12 x 15 (PTFE) FNPT 1/2	FNPT 3/4 MNPT 3/4 VP 20 (Union Joint)
	Suction side									
	Relief /air-release		—							
Max. allowable viscosity			50 mPa·s			3000 mPa·s*2	50 mPa·s			3000 mPa·s*2
Allowable temperature			Ambient temperature: 0 to 40°C/Transferring liquid: 0 to 40°C (no freezing allowed)							
Ambient humidity			35 to 85% RH							
Environmental protection			IEC standard: IP65 or equivalent (water- and dust-proof)							
Altitude of installation location			Less than 1,000 m							
Noise level			Less than 85 dB							
Signal	Analog-Input		1 port : Analog signal (4 to 20 mA DC, 0 to 20 mA, input resistance: approx. 110 Ω)*3							
	Digital*4	Input	2 ports: High-speed pulse signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, max. number of pulses: 7500 pulse/min, min. pulse width: 4 msec (ON time))*3 2 ports: Low-speed pulse signal (no-voltage contact or open collector, input resistance: approx. 2 kΩ, min. pulse width: 50 msec (ON time)) Signal assignments : Unassigned, Pulse signal, Stop signal, Start signal, Reset/Restart signal, Alarm reset signal, (4 selectable) Level Switch signal (only when Level Switch is used), Compulsive MAX operation signal							
		Output	2 ports: Pulse signal (10 mA DC, 25 V or less) Signal assignments : Unassigned, Solenoid-operation sync pulse signal, In-operation signal, Running signal, Operation end signal, Lamp alarm signal, (2 selectable) Low tank-level alarm signal (only when 2-point Level Switch is used), Pulse-Input error signal, Analog-Input error signal							
Operation mode	Manual		Digital settings: 3 patterns [stroke speed (1 to 300 strokes/min, in 1 stroke/min increments), discharge volume (in 0.1 mL/min increments), percentage (1 to 100%, in 1% increments)]							
	Auto	Analog-Input proportional control*5	Control possible by Proportional Band (PB) setting/Set Point (SP) setting							
		Pulse-Input proportional control*5	Control possible by Frequency-division (1/1 to 1/9999) setting/Multiplication (1 to 9999) setting							
		Count operation (batch control)	1 to 9999 strokes (x1, x10, x100, x1000)							
		Interval operation (timer control)	ON time: 1 to 9999 min/OFF time: 1 to 9999 min							
		External stop input control	"STP" flashing display, pump stopped							
		2-point Level Switch control*6	[Low tank-level alarm] "E-02" displayed and alarm output/[Lower tank-level alarm] "STP" flashing display and pump stopped							
Power supply	Rated voltage		AC 100 to 240 V (±10%)							
	No. of phases/Frequency		1-phase/50 or 60 Hz							
	Maximum current		4.0 A							
	Power consumption		Max.: 750 VA/Ave.: 100 W							
Weight			11 kg							

★1 Conditions: Clean water, room temperature ★2 When transferring high-viscosity liquids, the maximum discharge volume may be lower than the specified volume depending on the characteristics of the liquid and operating conditions. Consult TACMINA separately when transferring high-viscosity liquids.
★3 Combined use of Analog-Input signal and high-speed pulse signal not possible. ★4 For a detailed explanation on signals, see "Digital Signals" on page 26.
★5 For details, see "Analog-Input Proportional Control" and "Pulse-Input Proportional Control" on page 18. ★6 When 2-point Level Switch is used

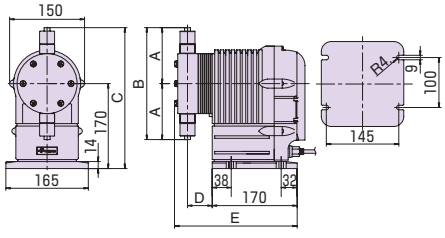
Liquid-end Material

✻ Also refer to the "Corrosion-resistance Table" on page 26.

Part \ Model	VTCE	VTCF	FTCT	VTCF (high-viscosity type)
Pump head	PVC		PVDF	PVC
Diaphragm	PTFE			
Check ball	Ceramic			
O-rings	EPDM	Fluoro-rubber	PTFE	Fluoro-rubber
Valve seat	EPDM	Special fluoro-rubber	PTFE	Special fluoro-rubber
Joint	PVC		PVDF	PVC
Ball stopper	PVC		PTFE(valve stopper)	—
Ball guide	—		—	PVC
Compressed coil spring	—		—	SUS304

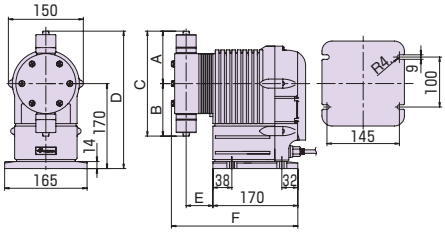
External Dimension (mm)

VTCE/VTCF



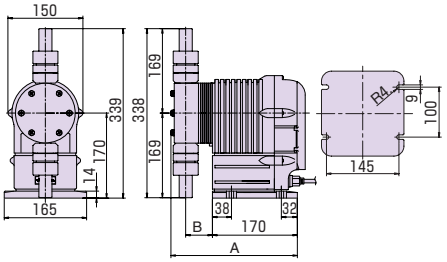
Model	A	B	C	D	E
300/500	112	224	282	49.5	246
700	103	206	273	53.5	253
1000/1300	105	210	275	53.5	253

FTCT



Model	A	B	C	D	E	F
300/500/700	115	97	212	285	49.5	246
1000/1300	128	128	256	298	53.5	253

VTCF (high-viscosity type)



Model	A	B
300/500/700	249	49.5
1000/1300	253	53.5

PZiG

CL

For Injection of Sodium Hypochlorite

Manual Setting

No-Input

CLPZ

S-size only
(30R/60R/100R)

S-size only
(30/60/100)

Digital Setting

No-Input

CLPZD

S-size only
(30R/60R/100R)

S-size only
(30/60/100)

Digital Setting

Advanced Functions

Analog/Digital-Input

CLPZi4

Analog/Digital-Input & Digital-Output

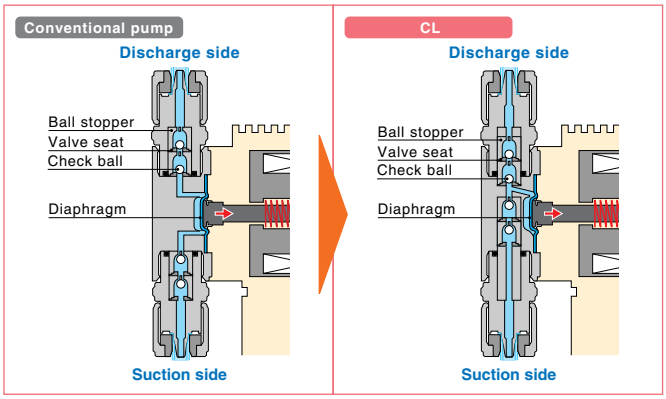
CLPZi8

S-size only
(30R/60R/100R)

S-size only
(30/60/100)

Prevention of Air Entry/Buildup

Dead space inside the pump head has been limited to the bare minimum to prevent entry and build up air in the pump that leads to gas lock.

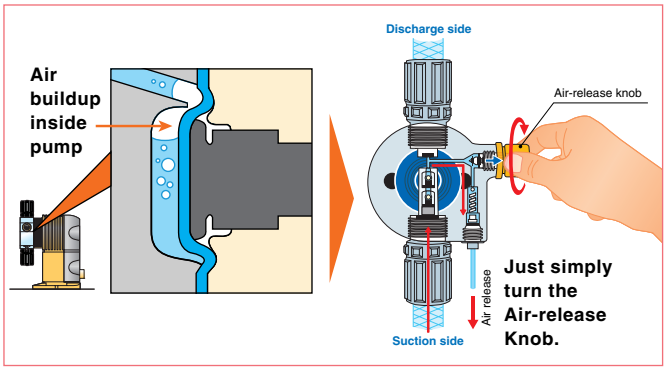


At-a-glance Inspection of Air Entry

The transparent acrylic pump head allows you to check at-a-glance if air has entered.

Simple, Safe, Air Release

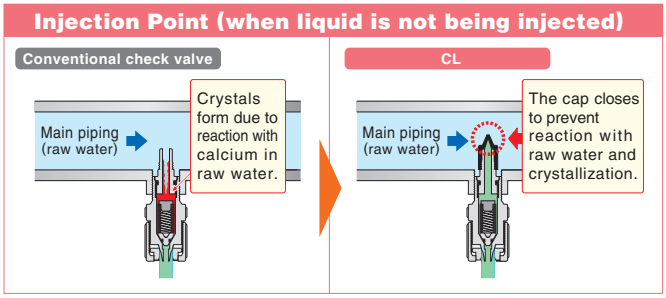
The CL Series is equipped with an Air-release valve as standard. Even if air gets into the pump head, you can simply and safely release the air just by lightly turning the Air-release knob.



* Illustration shows the model with Relief Valve.

Prevention of Clogging at Injection Point

When injecting sodium hypochlorite, it reacts with calcium in the raw water that flows through the main piping and forms crystals at the injection point. The "Anti-siphon check valve with a duck-bill cap" was developed to solve this problem. This check valve solves all of your worries when injecting sodium hypochlorite, including overfeed and siphoning.



Specification

✻ The operation modes of the CLPZ, CLPZD, CLPZi4 and CLPZi8 are the same as those for the PZ, PZD, PZi4 and PZi8, respectively.

Specification \ Model		CLPZ						CLPZD						CLPZi4/CLPZi8					
		w/ Relief Valve			30	60	100	w/ Relief Valve			30	60	100	w/ Relief Valve			30	60	100
		30R	60R	100R				30R	60R	100R				30R	60R	100R			
Max. discharge volume*1	mL/min	30	60	100	30	60	100	30	60	100	30	60	100	30	60	100	30	60	100
	L/h	1.8	3.6	6.0	1.8	3.6	6.0	1.8	3.6	6.0	1.8	3.6	6.0	1.8	3.6	6.0	1.8	3.6	6.0
Max. discharge pressure*1	MPa	0.7*2		0.4	1.0	0.8	0.4	0.7*3		0.7	1.0		0.7	0.7*2		0.4	1.0	0.8	0.4
	bar	7.0*2		4.0	10.0	8.0	4.0	7.0*3		7.0	10.0		7.0	7.0*2		4.0	10.0	8.0	4.0
Stroke speed		15 to 300 strokes/min (dial setting)						1 to 300 strokes/min (digital setting)											
Stroke length		Fixed at 1.0 mm												0.5 to 1.0 mm (adjustable by manual dial)					
Connection (hose/tube: I.D x O.D)	Discharge side	4 x 9 (PVC braided hose)	6 x 11 (PVC braided hose)		4 x 9 (PVC braided hose)	6 x 11 (PVC braided hose)		4 x 9 (PVC braided hose)	6 x 11 (PVC braided hose)		4 x 9 (PVC braided hose)	6 x 11 (PVC braided hose)		4 x 9 (PVC braided hose)	6 x 11 (PVC braided hose)		4 x 9 (PVC braided hose)	6 x 11 (PVC braided hose)	
	Suction side	6 x 8 (PE) 1/4" x 3/8" (PE)																	
	Relief Valve/Air Release	4 x 6 (soft PVC hose)			–			4 x 6 (soft PVC hose)			–			4 x 6 (soft PVC hose)			–		
	Air-release	–			4 x 6 (soft PVC hose)			–			4 x 6 (soft PVC hose)			–			4 x 6 (soft PVC hose)		
Max. allowable viscosity		50 mPa·s																	
Allowable temperature		Ambient temperature: 0 to 40°C/Transferring liquid: 0 to 40°C (no freezing allowed)																	
Ambient humidity		35 to 85% RH																	
Environmental protection		IEC standard: IP65 or equivalent (water- and dust-proof)																	
Altitude of installation location		Less than 1,000 m																	
Noise level		Less than 85 dB																	
Power supply	Rated voltage	AC 100 to 240 V (±10%)																	
	No. of phases/Frequency	1-phase/50 or 60 Hz																	
	Maximum current	2.0 A	2.5 A		2.0 A	2.5 A		2.0 A	2.5 A		2.0 A	2.5 A		2.2 A					
	Power consumption Max.	200 VA	250 VA		200 VA	250 VA		200 VA	250 VA		200 VA	250 VA		220 VA					
	Power consumption Ave.	15 W	18 W		15 W	18 W		15 W	18 W		15 W	18 W		16 W					
Weight		1.7 kg	1.8 kg		1.7 kg	1.8 kg		1.7 kg	1.8 kg		1.7 kg	1.8 kg		1.9 kg					

★1 Conditions: Clean water, room temperature ★2 Though the max. discharge pressure of the 30R model is 1.0 MPa (10.0 bar) (0.8 MPa (8.0 bar) on the 60R model), the Relief Valve operates when 0.7 MPa (7.0 bar) is exceeded. In applications requiring a discharge pressure of 0.7 MPa (7.0 bar) or more, ask for a model w/out the Relief Valve, and install a separate relief valve for extra safety. ★3 Though the max. discharge pressure of the 30R/60R models is 1.0 MPa (10.0 bar), the Relief Valve operates when 0.7 MPa (7.0 bar) is exceeded. In applications requiring a discharge pressure of 0.7 MPa (7.0 bar) or more, ask for a model w/out the Relief Valve, and install a separate relief valve for extra safety.

Liquid-end Material

Part \ Model	All Models
Pump head	Acrylic (PMMA)
Diaphragm	PTFE
Check ball	Ceramic
O-ring	Fluoro-rubber
Valve seat	Special fluoro-rubber
Joint	PVC
Ball stopper	PVC

✻ Also refer to the "Corrosion-resistance Table" on page 26.

Accessory

Item \ Model	All Models					
	w/ Relief Valve			30	60	100
	30R	60R	100R			
Hose/Tube*1	3 m					
Relief /air-release hose*1	1 m (installed)			1 m		
Anti-siphon check valve	1 set (R1/2)					
Foot valve	1 set					
Ceramic weight	1 set*2					
INSULOK for Relief /air-release hose	1 piece			–		
Pump mounting nuts/bolts	2 sets (M5 x 30)					
Operation manual	1 set					

✻ For the CLPZi4/CLPZi8, the 4-pin/8-pin cable (2 m or 5 m selectable)is an option.
✻ For the CLPZD, when "NON" is selected for 7Power plug, the power cable (2m) is not provided.

★1 For details on the hose/tube aperture, see "Connection" for the respective model in "Specification" table above. ★2 Only when PE tube is selected

Model Code

✻ Not all model combinations are possible. When selecting the pump model, first check "Specification" and "Liquid-end Material".

CLPZ – **30R** – **ATCF** – **4x9PVC** – **W** – **S** – **JPL**

1 2 3 4 5 6 7

1 Series name
CLPZ : Manual setting, No-Input
CLPZD : Digital setting, No-Input
CLPZi4 : Digital setting, Analog/Digital-Input
CLPZi8 : Digital setting, Analog/Digital-Input & Digital-Output

2 Model (discharge volume standard)
30R : 30 mL/min (w/ Relief-valve)
60R : 60 mL/min (w/ Relief-valve)
100R : 100 mL/min (w/ Relief-valve)
30 : 30 mL/min
60 : 60 mL/min
100 : 100 mL/min

3 Liquid-end material
ATCF

4 Hose standard (size/material)
4 x 9 PVC
6 x 11 PVC
6 x 8 PE
1/4" x 3/8" PE

5 Joint specification
W : Standard

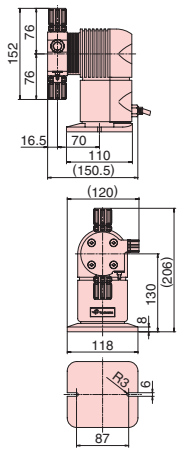
6 Applicable standard
S : Standard
CE : CE marking-compatible

7 Power plug
EUP : Euro plug
ULP : UL plug
AUP : Australia plug
UKP : UK plug
JPL : Japan lead wire
NON : No Cable*
★ CLPZD only

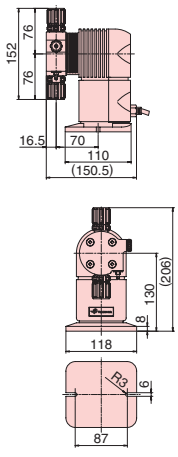
External Dimension (mm)

CLPZ

30R/60R/100R w/ Relief Valve

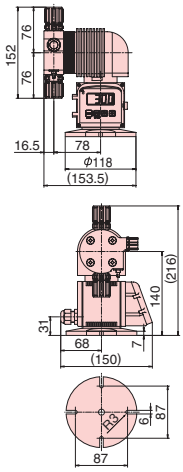


30/60/100

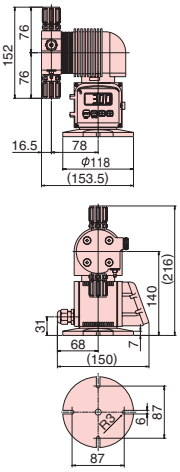


CLPZD

30R/60R/100R w/ Relief Valve

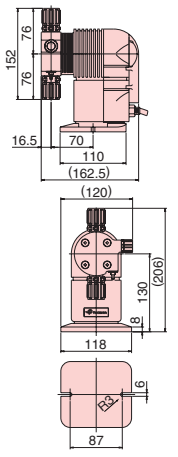


30/60/100

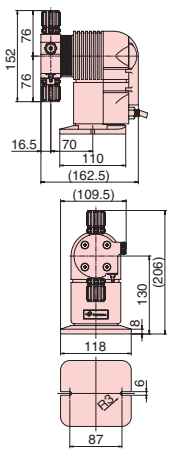


CLPZi4/CLPZi8

30R/60R/100R w/ Relief Valve



30/60/100



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

CL

AR

For Injection of Sodium Hypochlorite

Automatic Air-release

Manual Setting

No-Input

ARPZ

S-size only
(30/60/100)

Digital Setting

No-Input

ARPZD

S-size only
(30/60/100)

Digital Setting

Advanced Functions

Analog/Digital-Input

ARPZi4

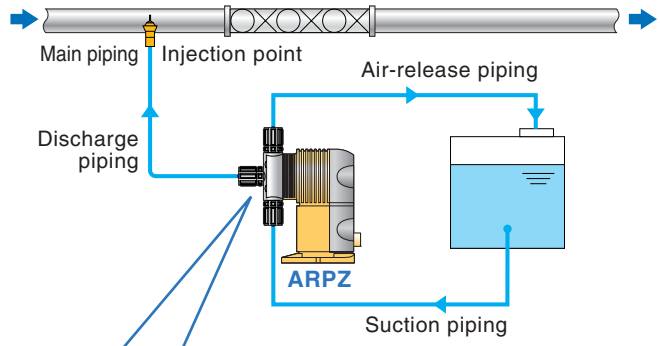
Analog/Digital-Input & Digital-Output

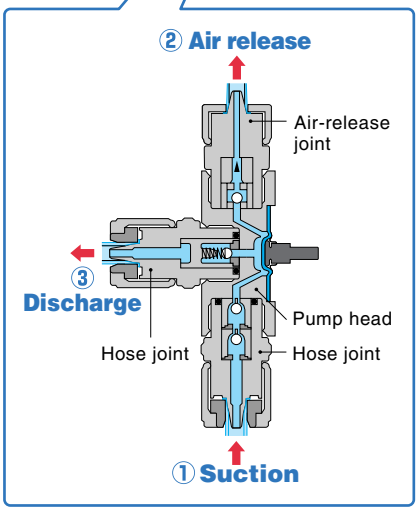
ARPZi8

S-size only
(30/60/100)

Automatic Relase of Air in Pump Head

Dead space inside the pump head has been limited to the bare minimum to prevent air entry and build up. Should air get into the pump, it is automatically released.



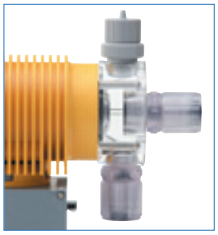


① Suction
Bubbles or gas that occur in the chemical tank are sucked into the pump head.

② Air release
The bubbles or gas pass through the Air-release joint and are fed back to the chemical tank along the Air-release piping.

③ Discharge
After all the bubbles or gas are discharged from the pump head, the chemical is discharged from the discharge side.

At-a-glance Inspection of Air Entry

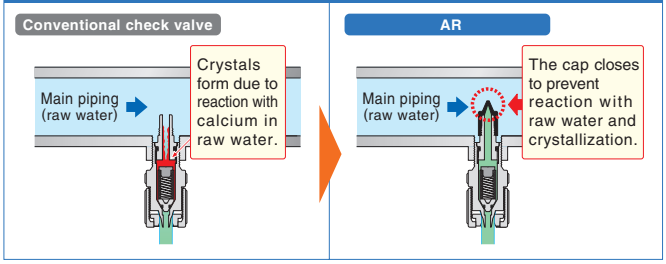


The transparent acrylic pump head allows you to check at-a-glance if air has entered.

Prevention of Clogging at Injection Point

When injecting sodium hypochlorite, it reacts with calcium in the raw water that flows through the main piping and forms crystals at the injection point. The "Anti-siphon check valve with a duck-bill cap" was developed to solve this problem. This check valve solves all of your worries when injecting sodium hypochlorite, including overfeed and siphoning.

Injection Point (when liquid is not being injected)



Specification

✻ The operation modes of the ARPZ, ARPZD, ARPZi4 and ARPZi8 are the same as those for the PZ, PZD, PZi4 and PZi8, respectively.

Specification \ Model			ARPZ			ARPZD			ARPZi4/ARPZi8		
			31	61	12	31	61	12	31	61	12
Max. discharge volume*		mL/min	27	54	93	30	57	93	27	54	93
		L/h	1.62	3.24	5.58	1.8	3.42	5.58	1.62	3.24	5.58
Max. discharge pressure*		MPa	1.0	0.8	0.4	1.0	1.0	0.7	1.0	0.8	0.4
		bar	10.0	8.0	4.0	10.0	10.0	7.0	10.0	8.0	4.0
Stroke speed			15 to 300 strokes/min (dial setting)			1 to 300 strokes/min (digital setting)					
Stroke length			Fixed at 1.0 mm						0.5 to 1.0 mm (adjustable by manual dial)		
Connection (hose/tube: I.D x O.D)	Discharge side		4 x 9 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		4 x 9 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)		4 x 9 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)	6 x 11 (PVC braided hose) 6 x 8 (PE) 1/4" x 3/8" (PE)	
	Suction side										
	Air-release		4 x 8 (soft PVC hose)								
Max. allowable viscosity			50 mPa·s								
Allowable temperature			Ambient temperature: 0 to 40˚C/Transferring liquid: 0 to 40˚C (no freezing allowed)								
Ambient humidity			35 to 85% RH								
Environmental protection			IEC standard: IP65 or equivalent (water- and dust-proof)								
Altitude of installation location			Less than 1,000 m								
Noise level			Less than 85 dB								
Power supply	Rated voltage		AC 100 to 240 V (±10%)								
	No. of phases/Frequency		1-phase/50 or 60 Hz								
	Maximum current		2.0 A	2.5 A		2.0 A	2.5 A		2.2 A		
	Power consumption	Max.	200 VA	250 VA		200 VA	250 VA		220 VA		
		Ave.	15 W	18 W		15 W	18 W		16 W		
Weight			1.7 kg	1.8 kg		1.7 kg	1.8 kg		1.9 kg		

★ Conditions: Clean water, room temperature

Liquid End Material

Part \ Model	All Models
Pump head	Acrylic (PMMA)
Diaphragm	PTFE
Check ball	Ceramic
O-ring	Fluoro-rubber
Valve seat	Special fluoro-rubber
Joint	PVC
Ball stopper	PVC
Compressed coil spring	Hastelloy C

✻ Also refer to the "Corrosion-resistance Table" on page 26.

Accessory

Item \ Model	All Models
Hose/Tube*1	3 m
Air-release hose*1	1 m
Anti-siphon check valve	1 set (R1/2)
Foot valve	1 set
Ceramic weight	1 set*2
Pump mounting nuts/bolts	2 sets (M5 x 30)
Operation manual	1 set

✻ For the ARPZi4/ARPZi8, the 4-pin/8-pin cable (2 m or 5 m selectable)is an option.
✻ For the ARPZD, when "NON" is selected for 7 Power plug, the power cable (2m) is not provided.

★1 For details on the hose/tube aperture, see "Connection" for the respective model in "Specification" table above. ★2 Only when PE tube is selected

Model Code

✻ Not all model combinations are possible. When selecting the pump model, first check "Specification" and "Liquid-end Material".

ARPZ – **31** – **CL** – **4x9PVC** – **W** – **S** – **JPL**

1 2 3 4 5 6 7

1 Series name
ARPZ : Manual setting, No-Input
ARPZD : Digital setting, No-Input
ARPZi4 : Digital setting, Analog/Digital-Input
ARPZi8 : Digital setting, Analog/Digital-Input & Digital-Output

2 Model (discharge volume standard)
31 : 30 mL/min
61 : 60 mL/min
12 : 100 mL/min

3 Liquid-end material
CL

4 Hose standard (size/material)
4 x 9 PVC
6 x 11 PVC
6 x 8 PE
1/4" x 3/8" PE

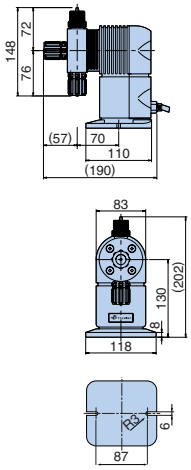
5 Joint specification
W : Standard

6 Applicable standard
S : Standard
CE : CE marking-compatible

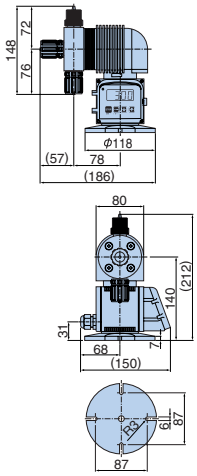
7 Power plug
EUP : Euro plug
ULP : UL plug
AUP : Australia plug
UKP : UK plug
JPL : Japan lead wire
NON : No Cable*
★ ARPZD only

External Dimension (mm)

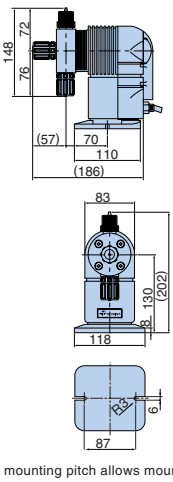
ARPZ



ARPZD



ARPZi4/ARPZi8

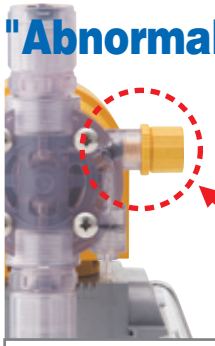


✻ The mounting pitch allows mounting from 87 to 110 mm.

AR

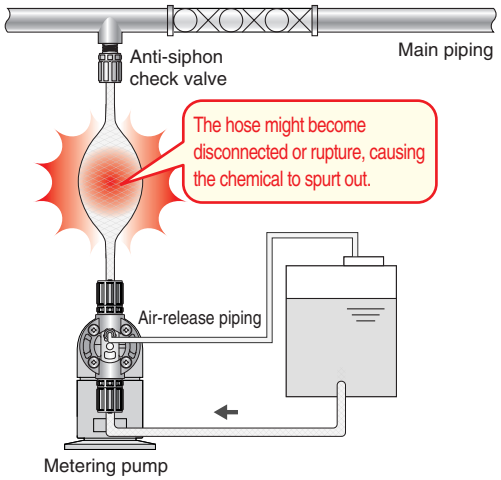
Relief Valve Function

"Abnormal Pressure" Automatically Relieved to Prevent Accidents



Clogging or operation with valves closed generates abnormal pressure in the discharge-side piping, which makes it easier for hoses to become disconnected or ruptured, causing chemicals to spurt out and leading to a major disaster. This Relief Valve function automatically releases this abnormal pressure to prevent possible accidents, such as pump and piping damage. Also, costs and maintenance can be greatly reduced since optional equipment is no longer needed.

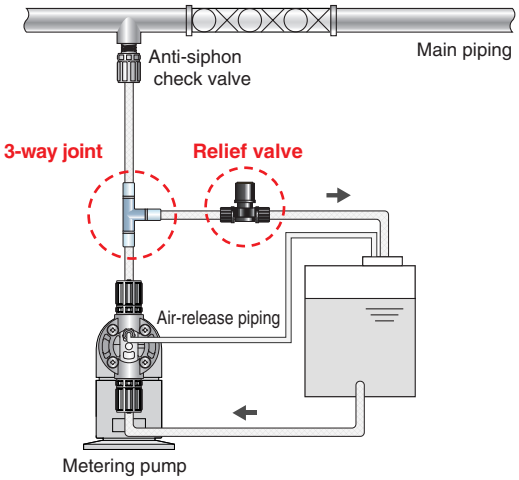
Conventional system w/out relief valve



Abnormal pressure caused by clogging of the injection point or operation with valves closed

DANGEROUS

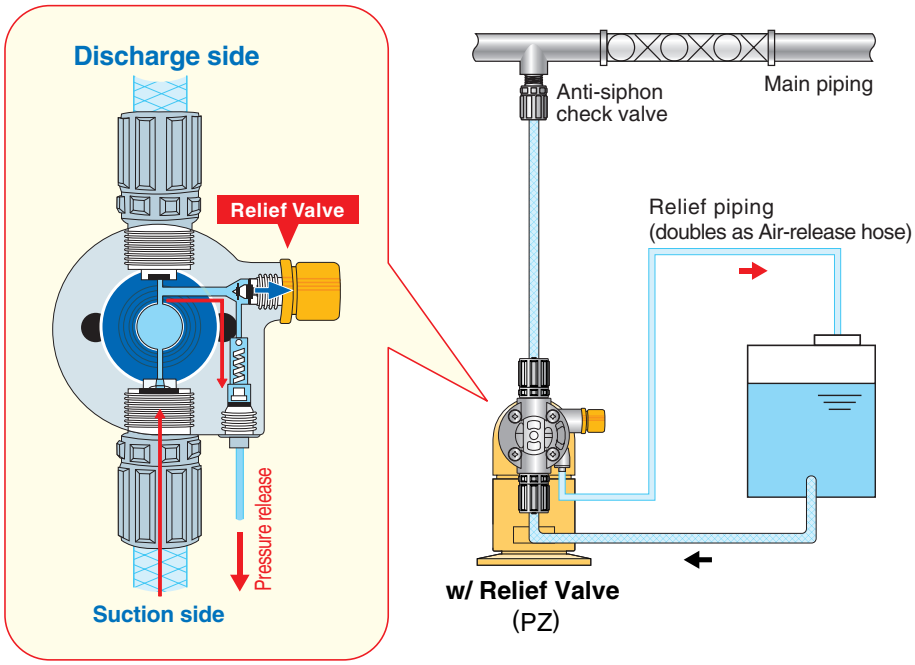
Conventional system w/ separate relief valve



Various optional equipment are required.

EXPENSIVE & COMPLICATED

The Relief Valve Function Solves All These Problems



Simple Piping

Cost Saving

Easy Maintenance

Safe

When abnormal pressure occurs, the relief mechanism integrated into the pump head works to automatically relieve pressure.

Explanation

Digital Signal

✻ Also refer to "Specification" for each model.

Input	Unassigned	Selected ports not to be unassigned
	Pulse signal	Input signal required for Pulse-Input proportional control
	Stop signal	Signal from an external device to stop the pump
	Start signal	Signal from an external device to start the pump
	Reset/Restart signal	Signal from an external device to reset the current value (count, time) during count operation (batch control) or interval operation (timer control) and to restart operation
	Alarm reset signal	Signal from an external device to reset display/output of errors and alarms
	Flow Checker signal*1	Signal from the Flow Checker to display on the pump the momentary discharge-volume, and to display on the pump and output the Lower discharge-volume alarm.
	Level Switch signal*2	Signal from the Level Switch installed in the tank to stop the pump operation ✻ When 2-point Level Switch is used ... [Low tank-level alarm] "E-02" displayed and alarm output/ [Lower tank-level alarm] "STP" flashing display and pump stopped
	Compulsive MAX operation signal	Signal that forces the pump to run at MAX speed (300 strokes/min) regardless of operation mode
Output	Unassigned	Selected ports not to be unassigned
	Solenoid-operation sync pulse signal	One pulse signal to be output per stroke
	In-operation signal	Signal to be output during the operation (including "in standby")
	Running signal	Signal to be output during the pump is running (not including "in standby")
	Operation end signal	Signal to be output when the preset number of strokes is reached during count operation (batch control)
	Lamp a Alarm signal	Signal to be output when one of the following errors and alarms is detected
	Tank-level alarm signal*3	Signal to be output when 2-point Level Switch is used and the volume of the chemical has fallen to the preset (low) level (Low tank-level alarm) ✻ For Lower tank-level alarm, "STP" flashing display and pump stopped. However, no signal is output
	Pulse-Input error signal	Signal to be output when the number of Pulse-Input signals momentarily exceeds the buffer size during Pulse-Input proportional control
	Analog-Input error signal	Signal to be output when the Analog-Input signal goes outside of the specified range during Analog -Input proportional control (In the case of the 4 to 20 mA range, 3 mA or less or 22 mA or more. In the case of the 0 to 20 mA range, 0 mA or less or 22 mA or more)
	Lower discharge-volume alarm signal*1	Signal to be output when there is no subsequent Pulse-Input signal from the Flow Checker within the preset time period during the Flow Checker is in use (Meaning that the discharge volume is lower than the preset lower-limit value or the Flow Checker is malfunctioning)

✶1 When Flow Checker is used ✶2 When Level Switch is used

Error & Alarm

✻ Also refer to "By Function" on page 4.

Error/ Alarm	Memory-read error	Pump circuit- or program-related error
	Tank-level alarm*1	Alarm when the chemical volume has fallen to the preset (low) level
	Pulse-Input error	Error when the number of Pulse-Input signals momentarily exceeds the buffer size during Pulse-Input proportional control
	Analog-Input error	Error when the Analog-Input signal goes outside of the specified range during Analog -Input proportional control (In the case of the 4 to 20 mA range, 3 mA or less or 22 mA or more. In the case of the 0 to 20 mA range, 0 mA or less or 22 mA or more)
	Lower discharge-volume alarm signal*2	Alarm when there is no subsequent Pulse-Input signal from the Flow Checker within the preset time period durung the Flow Checker is in use (Meaning that the discharge volume is lower than the preset lower-limit value or the Flow Checker is malfunctioning)

✶1 When Level Switch is used ✶2 When Flow Checker is used

Corrosion-resistance Table

✻ Also refer to "Liquid-end Material" for each model.

Chemical (0 to 40℃) \ Liquid-end material		VTCE	VTCF	FTCE	FTCF	FTCT	VTCE (for injection of boiler chemicals) ✶ PZ/PZD/PZi only	VTCF (high-viscosity type) ✶ PZiG only	6TCT	STCT	ATCF
Hydrochloric acid	HCl	—	to 20%	—	to 20%	to 38%	—				
Sulfuric acid	H_2SO_4	to 60%	to 80%	to 60%	to 80%	to 98%	—		98%		—
Acetic acid	CH_3COOH	—	to 20%	—	to 20%	to 80%	—				
Sodium hydroxide	NaOH	○	—	○	—		○	—	○		—
Aqueous ammonia	NH_4OH	○	—	○	—		○	—	○		—
Sodium hypochlorite	$NaClO$	—	to 12%	—	to 12%		—		—		to 12%
Hydrogen peroxide	H_2O_2	—	to 30%	—	to 30%		—		to 90%		—
Poly-aluminum chloride (PAC)		○							—		
Aluminum sulfate	$Al_2(SO_4)_3$	○							○		—
Polymer coagulants		—						to3000mPa·s*	—		

✶ When transferring high-viscosity liquids, the maximum discharge volume may be lower than the specified volume depending on the characteristics of the liquid and operating conditions. Consult TACMINA separately when transferring high-viscosity liquids.
✻ The corrosion resistance of materials is greatly affected by temperature, concentration, UV rays, and other environmental conditions. For this reason, this selection table does not completely guarantee safety.
✻ The above figures are the corrosion resistance for pump liquid-end materials. Consult TACMINA separately regarding the corrosion resistance of hoses and tubes.

Related Equipment

Fully Automatic for Accurate Operation

Flow Checker built-in

Solenoid-driven Automatic Flow-Correction Metering Pump

PZiA

- Preset discharge volume maintained at all times
- Deviation-alarm function interlocked with change in discharge volume

Max. discharge volume 30 to 100 mL/min

Max. discharge pressure 1.0 MPa

Integrated Pump and Tank

Chemical Injection Unit

PTU

- Compact design enables simple fitting into equipment and easy installation.
- Just connect the power supply and piping to start operation.

Tank capacity 25/50/100L

Option

Parts Kit

This kit contains a complete set of all required consumables. It is economical, and an easy way to store and manage the parts you need.

<Contents>
- Diaphragm
- Protective diaphragm
- Valve seat set
- O-rings, etc.

∗ Contents may differ slightly according to the model.

Defoaming Joint

Installed on the suction side of the pump, this joint separates air bubbles and fluid to prevent air bubbles from entering the pump head.

Flow Checker

This highly acid- and alkali-resistant, low-cost flow meter allows you to monitor injection operation of the pump. It can be directly attached on the discharge side of the pump

Level Switch

When this sensor detects the low chemical level in the tank, it stops pump operation and emits an alarm to notify the operator that it is time to fill up the tank. Two models, a 1-point (single-sensor) and a 2-point (double-sensor) model, are available.

Tank (25 to 100L)

Solution tank　PE tank　PVC tank

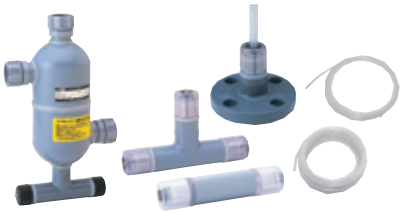
Relief Valve

This valve automatically releases abnormal pressure that occurs in the discharge side piping, due to blockage by foreign objects and tightening of the valve, to prevent accidents or possible damage to the pump and piping.

Back Pressure Valve

This valve prevents overfeeding*1 and siphoning*2 phenomena by sealing the chemical outlet with a diaphragm and applying just the right amount of pressure (back pressure) to suppress the inertia force of the fluid.

Air Chamber & Hose / Joint



∗1 Overfeed: The phenomenon that the force (inertia) of the discharge during chemical flow with pulsation causes chemicals to continue flowing when chemical flow should stop, resulting in excessive chemical discharge beyond the specified volume.
∗2 Siphoning: The phenomenon that chemicals continue to be sucked out naturally and continue flowing when the tip of the pump's discharge-side piping is lower than the level of liquid in the suction-side tank.

Product designs and specifications are subject to change without notice for product improvement.

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