TACMINA

Solenoid-driven Diaphragm Metering Pump

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

Small Capacity


S-size only


S-size only

PZ
Manual Setting

PZ	No-input

Small Capacity


Standard


High-viscosity


Boiler

PW
Digital Setting
Multi Functions

PW	Digital-input/output
PWM	Digital-input/output & Analog-input
PWT	Digital-input/output & Timer Control

Middle Capacity


PZD


PZI

PZD
Digital Setting

PZD	No-input

PZi
Digital Setting
Advanced Functions

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

Large Capacity


Standard


High-viscosity type

PZiG
Digital Setting
Advanced Functions

PZiG	Digital-input/output & Analog-input

For Sodium Hypochlorite


DCLPW


CLPW


CLPZ

DCLPW
Air Block
In-Line Automatic Air-release

CLPW
In-Line Automatic Air-release

CLPZ

DCLPW	Digital-input/output
DCLPWM	Digital-input/output & Analog-input
DCLPWT	Digital-input/output & Timer Control
CLPW	Digital-input/output
CLPWM	Digital-input/output & Analog-input
CLPWT	Digital-input/output & Timer Control
CLPZ	No-Input

For Sodium Hypochlorite


ARPZ

AR
Automatic Air-release

ARPZ	No-input

Application
Explanation & Corrosion-resistance Table
Related Equipment & Option

By Application

✶Conditions: Clean water, ro

For Injection of General Chemicals

Series		Small Capacity						Small Capacity							Middle Capacity				Large Capacity			
		PZ Manual Setting						PW Digital Setting Multi Functions PW PWM PWT							PZD Digital Setting		PZi PZi4 PZi8 Digital Setting Advanced Functions		PZiG Digital Setting PZiG Advanced Functions			
		w/ Relief Valve						w/ Relief Valve														
Model		30R	60R	100R	30	60	100	30R	60R	100R	30	60	100	200	300	500	300	500	300	500	700	1000
Max. discharge volume	mL/min	30	60	100	30	60	100	30	60	100	30	60	100	220	360	540	360	540	340	530	760	1000
	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	13.2	21.6	32.4	21.6	32.4	20.4	31.8	45.6	60.0
Max. discharge pressure	MPa	0.7		0.4	1.0	0.8	0.4	0.7			1.0		0.7	0.2	0.3	0.2	0.3	0.2	1.0	0.7	0.4	0.3
	bar	7.0		4.0	10.0	8.0	4.0	7.0			10.0		7.0	2.0	3.0	2.0	3.0	2.0	10.0	7.0	4.0	3.0
Max. allowable viscosity	mPa·s	~50						~50							~50		~50		~50			
Relief valve function		○			—			○			—			—	—		—		—			
Signal		No-input						PW Digital-input/output PWM Digital-input/output & Analog-input PWT Digital-input/output & Timer Control							PZD No-input		PZi4 Digital-input & Analog-input PZi8 Digital-input/output & Analog-input		PZiG Digital-input/output & Analog-input			
Liquid-end material		PVC/PVDF/SUS												PVC	PVC/PVDF/SUS				PVC/PVDF			
Reference page		GO to P5						GO to P7							GO to P13				GO to P17			

For Injection of Boiler / High-pressure

Series		Small Capacity		Small Capacity		
		PZ Manual Setting		PW Digital Setting Multi Functions PW PWM PWT		
		w/ Relief Valve		w/ Relief Valve		
Model		30R	30	30R	30	30
Max. discharge volume	mL/min	28		28		25
	L/h	1.68		1.68		1.5
Max. discharge pressure	MPa	1.5		1.5		2.0
	bar	15.0		15.0		20.0
Max. allowable viscosity	mPa·s	~50		~50		
Relief valve function		○	—	○	—	
Signal		No-input		PW Digital-input/output PWM Digital-input/output & Analog-input PWT Digital-input/output & Timer Control		
Liquid-end material		PVC				
Reference page		GO to P5		GO to P7		

For Injection of High-viscosity Chemicals

Series		Small Capacity		Middle Capacity		Large Capacity			
		PW Digital Setting Multi Functions PW PWM PWT		PZD Digital Setting PZD		PZiG Digital Setting PZiG Advanced Functions			
Model		60	100	300	500	300	500	700	1000
Max. discharge volume	mL/min	60	100	360	540	340	530	760	1000
	L/h	3.6	6.0	21.6	32.4	20.4	31.8	45.6	60.0
Max. discharge pressure	MPa	1.0	0.7	0.3	0.2	1.0	0.7	0.4	0.3
	bar	10.0	7.0	3.0	2.0	10.0	7.0	4.0	3.0
Max. allowable viscosity	mPa·s	~3000*1							
Relief valve function		—		—		—			
Signal		PW Digital-input/output PWM Digital-input/output & Analog-input PWT Digital-input/output & Timer Control		No-input		Digital-input/output & Analog-input			
Liquid-end material		PVC							
Reference page		GO to P7		GO to P13		GO to P17			

✶1 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.

om 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		DCLPW (Air Block / In-Line Automatic Air-release) DCLPW DCLPWM DCLPWT						CLPW (In-Line Automatic Air-release) CLPW CLPWM CLPWT						CLPZ						ARPZ (Automatic Air-release)		
		w/ Relief Valve						w/ Relief Valve						w/ Relief Valve								
Model		30R	60R	100R	30	60	100	30R	60R	100R	30	60	100	30R	60R	100R	30	60	100	31	61	12
Max. discharge volume	mL/min	30	60	90	30	60	90	30	60	90	30	60	90	30	60	100	30	60	100	27	54	93
	L/h	1.8	3.6	5.4	1.8	3.6	5.4	1.8	3.6	5.4	1.8	3.6	5.4	1.8	3.6	6.0	1.8	3.6	6.0	1.62	3.24	5.58
Max. discharge pressure	MPa	0.7			1.0		0.7	0.7			1.0		0.7	0.7		0.4	1.0	0.8	0.4	1.0	0.8	0.4
	bar	7.0			10.0		7.0	7.0			10.0		7.0	7.0		4.0	10.0	8.0	4.0	10.0	8.0	4.0
Max. allowable viscosity	mPa·s	~50																				
Relief valve function		○		—				○		—				○		—				—		
Signal		DCLPW Digital-input/output DCLPWM Digital-input/output & Analog-input DCLPWT Digital-input/output & Timer Control						CLPW Digital-input/output CLPWM Digital-input/output & Analog-input CLPWT Digital-input/output & Timer Control						No-input								
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			Small Capacity				Middle Capacity			Large Capacity	For Sodium Hypochlorite				
			PZ	PW	PWM	PWT	PZD	PZi4	PZi8	PZiG	DCLPW CLPW	DCLPWM CLPWM	DCLPWT CLPWT	CLPZ	ARPZ
Signal (No. of ports)	Digital	Input	—	2	1	2	—	2	4	4	2	1	2	—	—
		Output	—	2			—	—	2	2	2			—	—
	Analog Input		—		1	—	—	1		1	—	1	—	—	—
Power supply to Flow Checker			—				—	—	○	—	—			—	—
Control	Manual	Stroke speed	○				○	○		○	○			—	—
		Discharge volume	—	○	—		○	○		○	○	—		—	—
		Percentage	—				○	○		○	—			—	—
	Auto	Pulse-input proportional control	○	—	○		—	○		○	○	—	○	—	—
		Analog-input proportional control	—	○	—		—	○		○	—	○	—	—	—
		Interval operation	—		○		—	○		○	—		○	—	—
		Timer control	—		○		—	—		—	—		○	—	—
		Count operation (batch control)	—		○		—	○		○	—		○	—	—
		External operation-signal control	—	○			—	—		—	○			—	—
		External stop-signal control	—	○			—	○		○	○			—	—
		2-point Level Switch control*1	—	○			—	○		○	○			—	—
	ECO mode		—	○			—	—		—	—			—	—
	SAFE mode		—	○			—	—		—	○			—	—
	Relief valve function		—	○			—	—		—	○			—	—
	Alarm function		—	○			—	—	○	○	○			—	—
Error/ Alarm	Memory-read error (LCD display only)		—	—			○	○		○	—			—	—
	Tank-level alarm	w/1-point Level Switch	—	○			—	○		○	○			—	—
		w/2-point Level Switch	—	—			—	—	○	○	—			—	—
	Pulse-Input error		—	○			—	○ (display only)	○	○	○			—	—
	Analog-Input error		—	○			—	○ (display only)	○	○	○			—	—
	Lower discharge-volume alarm*2		—	—			—	○ (display only)	○	—	—			—	—
Easy calibration function			—	○	—		○	—		○	○	—		—	—
Momentary discharge-volume display function*2			—	—			—	—	○	—	—			—	—

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

Small Capacity

PZ

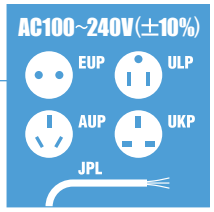
Manual Setting

No-input

(30R/60R/100R)

(30/60/100)

Wide Voltage Range Power Supply

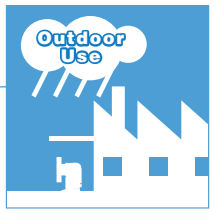


There is no need to worry about site power supply voltage or voltage fluctuations since it can be used with AC100 to 240 V (±10%) power supplies. You can also keep it in stock safely since it can be used for a variety of sites and applications.

Adjusting Dial for Easy Operation

Manual adjustment from
15 to 300 pulses per minute

Water- & Dust-proof Specifications

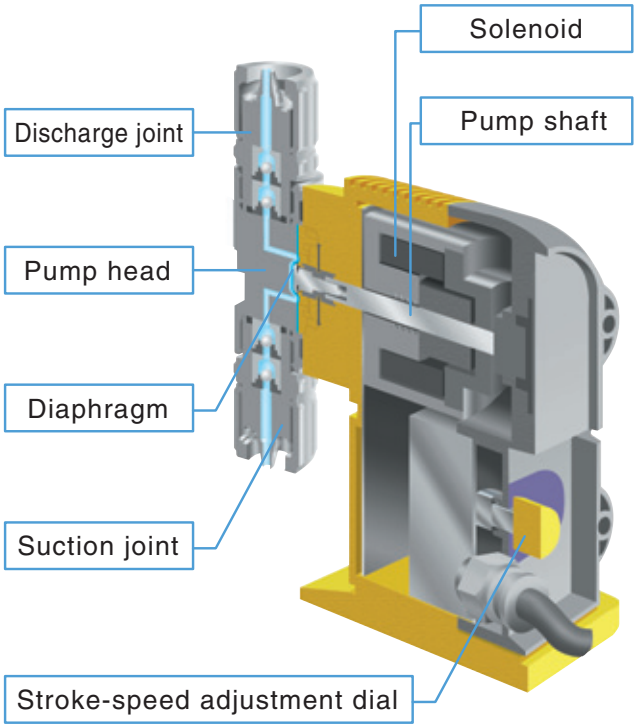


IEC standard: IP65 or equivalent

∗ Avoid condensation and immersion in water.

Simple Structure

Minimum number of parts allows easy maintenance.



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

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

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

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

Specification: PZ

Specification \ Model		30R/30							60R/60						100R/100					
		VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCET (for injection of boiler chemicals)	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT
Max. discharge volume*1	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*1	MPa	0.7 [1.0]					0.5	1.5	0.7 [0.8]					0.5	0.4					
	bar	7.0 [10]					5.0	15.0	7.0 [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"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)		
	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																		

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
- VTCET

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

Liquid-end Material

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

Part \ Model	VTCE	VTCF	FTCE	FTCF	FTCT	VTCET (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	PTFE	—
Joint	PVC		PVDF			PVC	SUS316
Ball stopper	PVC		PVDF	PTFE (valve stopper)		PVC	PTFE (valve stopper)

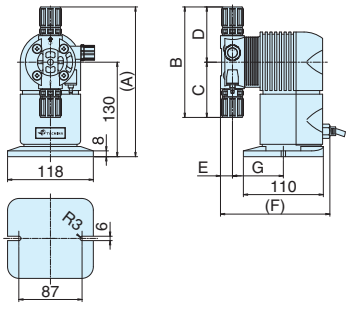
Accessory

✻ Power cable (2 m) is attached.

Item \ Model	30R/60R/100R 30/60/100						
	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCET (for injection of boiler chemicals)
Hose/Tube*1	3 m						Discharge side : 2 m Suction side : 1 m
Relief /air-release hose*1	1 m*2					—	1 m*2
Anti-siphon check valve	1 set (R1/2)				1 set (R1/2 or R3/8)		1 set (R1/2)
Foot valve	1 set						
Ceramic weight	1 set*2		1 set			—	
Hose pump for air-release	—					1 set	—
INSULOK for Relief /air-release hose	1 piece					—	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 This hose is already attached to 30R/60R/100R models.

External Dimension (mm)



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
VTCET	193	139	76	63	16.5	150.5	70

✻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.

Small Capacity

PW

Digital Setting

Multi Functions

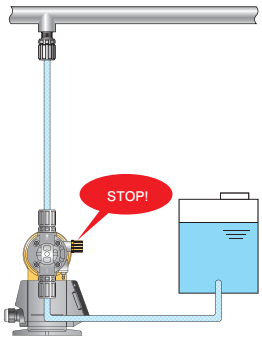
PW Digital-input/output
PWM Digital-input/output & Analog-input
PWT Digital-input/output & Timer Control

Higher Safety

Three types of safety functions that realize higher rank risk management

SAFE mode for preventing abnormal pressure buildup

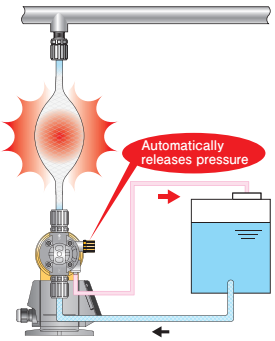
While the discharge valve is closed, the liquid transfer force is controlled to prevent pressure buildup.



∗To use the SAFE mode, set the stroke length to 100%.
∗The SAFE mode is not available for PW-200, boiler type and high-pressure type.
∗The function is disabled at the factory default setting.

Relief valve function for releasing abnormal pressure

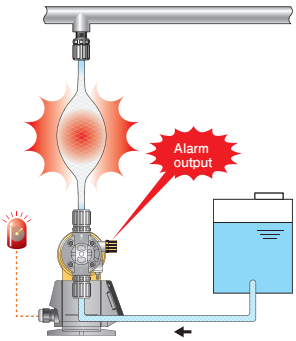
When the pressure exceeds the setting value, the relief valve operates automatically.



∗Standard type pump discharge pressure: 0.7MPa. Boiler-type pump discharge pressure: 1.5MPa.
∗The Relief valve function cannot be selected for SUS type, high-viscosity type, and high-pressure type pumps.

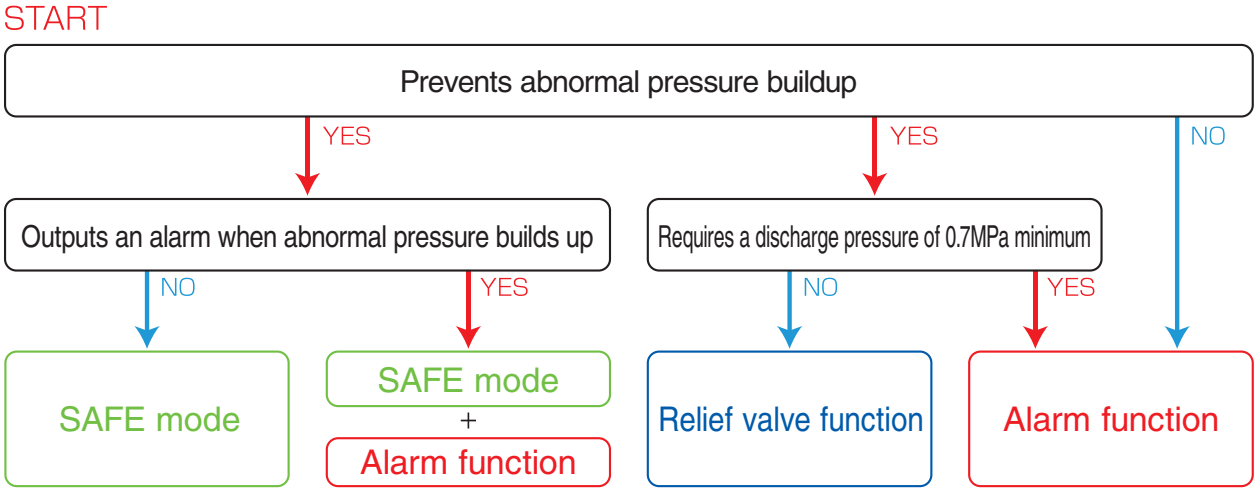
Alarm function for notifying abnormal pressure

When abnormal pressure builds up due to clogging of the pipes or while the discharge valve is closed, an alarm is emitted to warn this condition.



∗When the alarm function is used together with the SAFE mode, an alarm is emitted for pressure lower than the normal pressure.
∗This function is disabled at the factory default setting.

Safety function selection flow



Function correspondence table

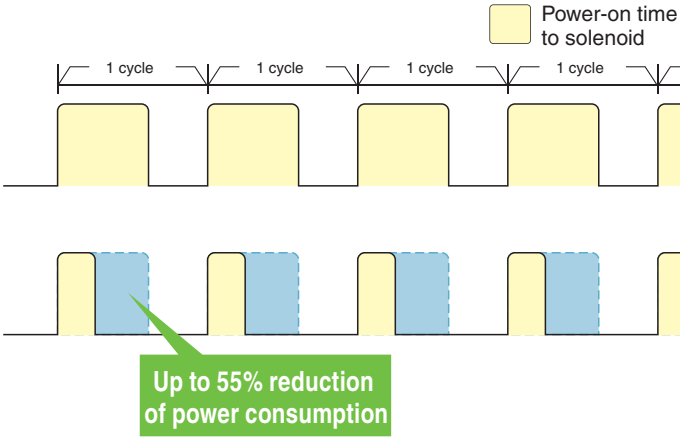
	PW/PWM/PWT							DCLPW/DCLPWM/DCLPWT CLPW/CLPWM/CLPWT	
	General chemical model			High-viscosity	Boiler		High-pressure	Sodium hypochlorite	
	30R/60R/100R	30/60/100	200	60/100	30R	30	30	30R/60R/100R	30/60/100
Relief valve function	○	–	–	–	○	–	–	○	–
SAFE mode	○	○	×	○	×	×	×	○	○
Alarm function	○	○	○	○	○	○	○	○	○
ECO mode	○	○	×	○	○	○	○	×	×

∗ A circle (○) is indicated for the corresponding function that can be set. A cross (×) is indicated for the corresponding function that must not be set even though it is technically possible.

Superior Eco-friendly Performance

Automatically cuts power-on time in accordance with the discharge pressure

The power of conventional pumps was always turned on for a specific period regardless of the discharge pressure. The ECO mode of PW pumps always monitors operation conditions and automatically shortens the power-on time during low-pressure operation in order to reduce power consumption.



Power consumption reduction example: PW-60 model

Operating pressure: 1.0MPa
Number of strokes: 300 strokes/min.
Average power consumption: **18W**

Operating pressure: 0.1MPa
Number of strokes: 300 strokes/min.
Average power consumption: **8W**

Optimal Ease of Use

Operability

Simple key operations and user interface enable intuitive operation.

Wide power supply range

Operation can be performed using a voltage between AC100 and 240V (±10%).

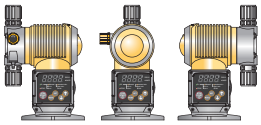
Water-&Dust-proof structure

IEC standard:
IP65 or equivalent

Easy maintenance

The liquid-end parts are easy to disassemble and replace by simply detaching four bolts.

Flexible installation methods

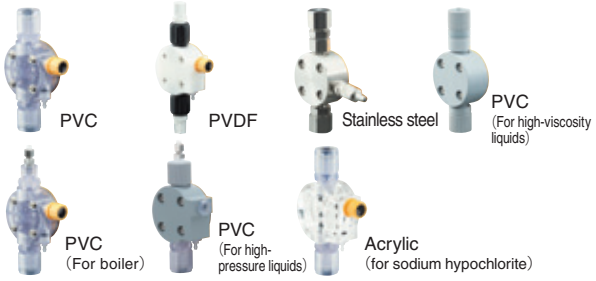


The head can be moved in three directions.

High-brightness display

The high-brightness LED is clearly visible even in low-light environments.

Wide variety of liquid-end components



Wide-ranging Control Functions Realize Ideal Chemical Injection Systems

Common functions

PW PWM PWT

Manual operation

Strokes/minute control

The stroke speed can be set in increments of 1 stroke per minute.

Discharge volume control (PW only)

The discharge volume can be set in increments of 0.1mL per minute.

External operation & stop control

The pump can be turned on and off using a input signal from an external device.

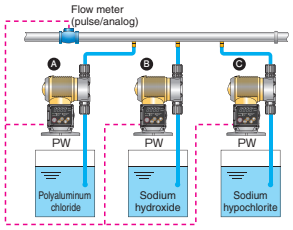
Alarm output

When the pump is used in combination with a level meter and checker, an alarm is output during abnormal pressure buildup.

Synchronous pulse control

A single pulse can be output for a single pump operation. The output pulse can be input to a second pump to perform synchronous operation.

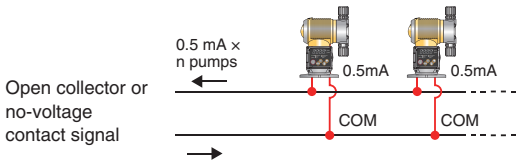
Example: For a single stroke (Pump A), controls such as three strokes (Pump B) and 2 strokes (Pump C) can be enabled.



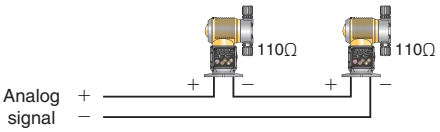
Signal distribution

The following connections are possible without using a signal distributor.

Pulse signal You can connect multiple instances of this pump in parallel.



Analog signal You can connect multiple instances of this pump in parallel.



* The pumps operate in a linked manner.
To operate pumps separately, install a signal distributor.

Pulse input-based proportional control

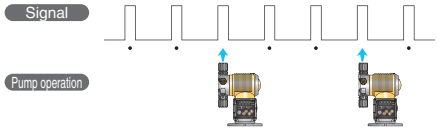
PW PWT*1

*1 For PWT, this is available only when using timer function.

Pulse frequency-division

The pump performs a single injection operation for 'n' times of input pulse signals.
Setting range: n = 1 to 999

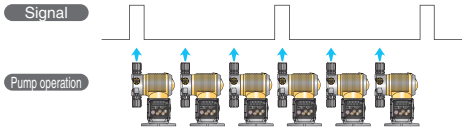
Setting example: n = 3



Pulse frequency-magnification

The pump performs the injection operation 'n' times for a single input pulse signal.
Setting range: n = 1 to 999

Setting example: n = 3



Analog input signal-based proportional control

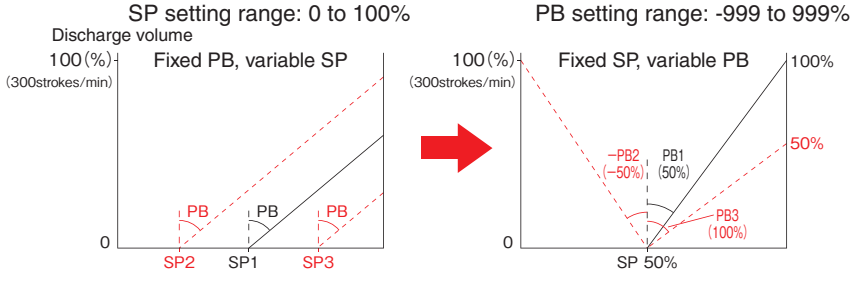
PWM

Automatic operation

The pump operates for a specified number of strokes in the range of 0 to 300 strokes per minute in accordance with the setting value (set point, proportional band), upon receiving an analog input signal (4 to 20mA).

(1) Set point (SP) setting
SP setting range: 0 to 100%

(2) Proportional band (PB) setting
PB setting range: -999 to 999%



Item			PW (pulse type)	PWM (analog type)	PWT (timer type)
Input signal	Number of ports	Digital	2	1	2
		Analog	—	1	—
	Type		Stop signal, pulse signal	Stop signal, pulse signal	Stop signal, pulse signal
Output signal	Number of ports	Digital	2	2	2
	Type		Sync pulse, alarm output	Sync pulse, alarm output	Sync pulse, alarm output
Control	Manual operation	Number of strokes	1 to 300 (Enables setting in 1-stroke units)		
		Discharge volume control	0.1 to maximum discharge volume (Enables setting in 0.1mL/minute units)	—	—
	Pulse proportional control		●	—	●
	Analog proportional control		—	●	—
	Timer control		—	—	●
	External operation & stop input signal		●	●	●

Timer control

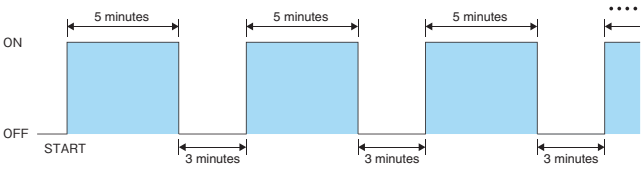
PWT

PW

Interval mode

Pump operation can be turned on and off in accordance with the setting of the timer. You can set any ON and OFF period for one pattern each in the range of 1 to 9999 minutes.

Setting example: ON period: 5 minutes
OFF period: 3 minutes

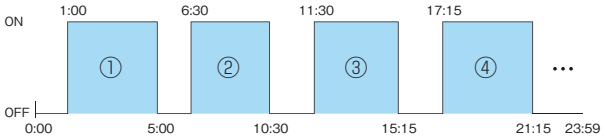


DAY mode

The pump operates automatically everyday using the same ON and OFF timing that is set. You can set up to nine program patterns within the range of 0:00 to 24:00 in 1-minute unit.

＊DAY mode cannot be used together with the WEEK mode.

Setting example: ON time: ① 1:00 ② 6:30 ③11:30 ④17:15
OFF time: ①5:00 ②10:30 ③15:15 ④21:15



●When both interval mode and pulse operation are simultaneously set, the pump will operate in accordance with pulse frequency-division or pulse frequency-magnification setting within the ON time set for the DAY mode and interval mode.

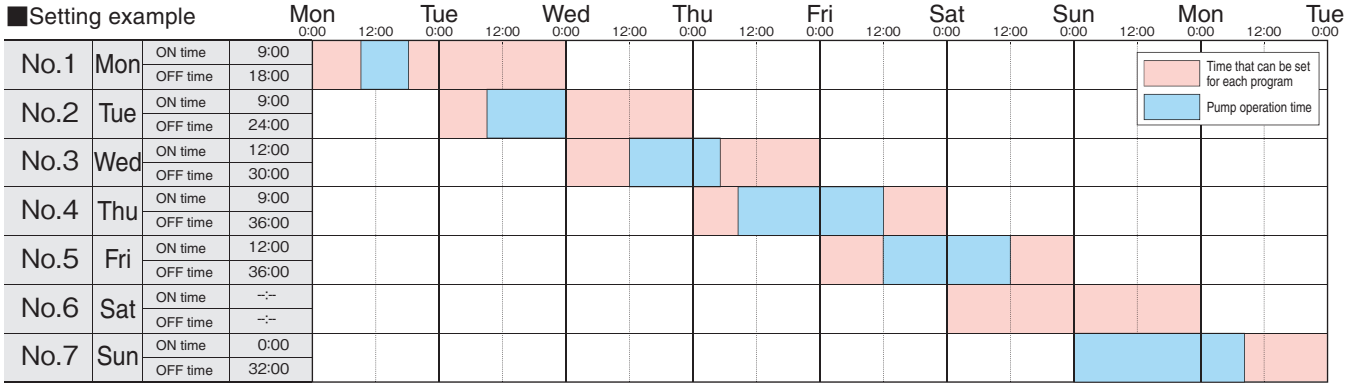
WEEK mode

The pump automatically operates every week at the same ON and OFF time being set for the day of the week.

You can set one program pattern for each day of the week. You can set the ON time from 0:00 to 24:00 and OFF time within the range 0:00 to 48:00 in 1-minute unit.

＊WEEK mode cannot be used together with DAY mode.

■Setting example



●When the pulse proportional control operation is set, the pump will operate in accordance with the pulse frequency-division or pulse frequency-magnification set for this operation.

●When both interval mode and pulse proportional control operation are simultaneously set, the pump will operate in accordance with pulse frequency-division or pulse frequency-magnification set for this operation.*1

*1 The number of strokes will be the value set in each program.

The following combination of functions can also be used besides the abovementioned combination.

Interval mode / DAY mode / WEEK mode + Pulse proportional control + External operation control / External stop control

DAY mode / WEEK mode + Interval mode + Pulse proportional control + External operation control / External stop control

Model code

＊Not all model combinations are possible. When selecting the pump model, first check “Specification” and “Liguid-end material”.

PW – 30 – VTCE – 4×9PVC – W – S – JPL

1 2 3 4 5 6 7

1 Series name	2 Model(discharge volume standard)	3 Liquid-end material	4 Hose standard (size/material)	5 Joint specification	6 Applicable standard	7 Power plug
PW: Standard (pulse input) type PWM: Analog input type PWT: Timer control type	[General chemical liquid injection model w/relief valve] 30R : 30mL/min 60R : 60mL/min 100R : 100mL/min [General chemical liquid injection model] 30 : 30mL/min 60 : 60mL/min 100 : 100mL/min 200 : 220mL/min*1	VTCE VTCF FTCE FTCF FTCT 6TCT	4×9 PVC 6×11 PVC 6×8 PE/FEP/PTFE 1/4"×3/8" PE/FEP	W : Standard	S : Standard CE : CE marking -compatible	EUP : Euro plug ULP : UL plug AUP : Australia plug UKP : UK plug JPL : Japan lead wire
	[Boiler chemical liquid injection model w/relief valve*2] 30R : 28mL/min [Boiler chemical liquid injection model*2] 30 : 28mL/min	VTCET	4×6 PA	BW : Boiler		
	[High-pressure chemical liquid injection model *2] 30 : 25mL/min	VTCET	4×6 PA FNPT 1/4	PW : High-pressure		
	[High-viscosity chemical liquid injection model] 60 : 60mL/min 100 : 100mL/min	VTCF	12×18 PVC	V : High-viscosity		

*1 SAFE mode and ECO mode cannot be used. The information pertaining to liquid-end parts only applies to the VTCE/VTCF type. *2 SAFE mode cannot be used.

Performance specifications

Specification \ Model		PW/PWM/PWT										
		30R/30			30	30R/30	30	60R/60			60	60
		VTCE/VTCF	FTCE/FTCF	FTCT	6TCT	VTCET(boiler)	VTCET(high-pressure)	VTCE/VTCF	FTCE/FTCF	FTCT	6TCT	VTCF(high-viscosity)
Max.discharge volume*1	mL/min	30			27	28	25	60			55	60
	L/H	1.8			1.62	1.68	1.5	3.6			3.3	3.6
Max.discharge pressure*1	MPa	0.7/1.0 *2			0.5	1.5	2	0.7/1.0 *2			0.5	0.7
	bar	7/10 *2			5	15	20	7/10 *2			5	7
Stroke speed		1 ～ 300 strokes/min (Enables setting in 1-stroke units)										
Stroke length		0.5 ～ 1 mm (Enables adjustment using the dial)										
Connection (hose/tube:I.D x O.D)	Discharge side	4 x 9(PVC braidedhose) 6 x 8(PE) 1/4"x3/8"(PE)	6 x 8(PE) 1/4"x3/8"(PE)	6 x 8(FEP) 1/4"x3/8"(FEP)	6 x 8(PTFE)	4 x 6(PA) 4 x 9(PVC braided hose)	4 x 6(PA) 4 x 9(PVC braided hose)	6 x 11(PVC braided hose) 6 x 8(PE) 1/4" x 3/8"(PE)	6 x 8(PE) 1/4"x3/8"(PE)	6 x 8(FEP) 1/4"x3/8"(FEP)	6 x 8(PTFE)	12 x 18 (PVC braided hose)
	Suction side											
	Air-release	4 x 6 (soft PVC hose)			–	4 x 6 (soft PVC hose)					–	
Viscosity of transfer liquid		50mPa・s or less										3,000mPa・s or less*3
Temperature of transfer liquid		0 ～ 40℃(no freezing allowed)										
Ambient temperature		0 ～ 40℃										
Environmental resistance		IEC standard:IP65 or equivalent (water-&dust-proof)										
Insulation class		B										
Power supply	Rated voltage	AC 100 to 240 V (±10%)										
	No. of phases/Frequency	1-phase/50 or 60 Hz										
	Max. current	2 A				2.5 A						
	Max. power consumption	200 VA				250 VA						
	Avg. power consumption	15 W				18 W						
	Cable	Cabtyre cable (ϕ5～10)										
Weight	kg	1.8	1.8	1.8	3.2	1.9	1.9	1.9	1.9	1.9	3.3	1.9

*1 Conditions:Clean water, room temperature. *2 0.7MPa (7bar) for models w/relief valve(R type) whereas 1.0MPa (10bar) for models w/o relief valve.
*3 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.

Specification \ Model		PW/PWM/PWT					
		100R/100			100	100	200
		VTCE/VTCF	FTCE/FTCF	FTCT	6TCT	VTCF(high-viscosity)	VTCE/VTCF
Max.discharge volume*1	mL/min	100			95	100	220
	L/H	6			5.7	6	13.2
Max.discharge pressure*1	MPa	0.7			0.5	0.7	0.2
	bar	7			5	7	2
Stroke speed		1 ～ 300 strokes/min (Enables setting in 1-stroke units)					
Stroke length		0.5 ～ 1 mm (Enables adjustment using the dial)					
Connection (hose/tube:I.D x O.D)	Discharge side	6 x 11(PVC braided hose) 6 x 8(PE) 1/4" x 3/8"(PE)	6 x 8(PE) 1/4"x3/8"(PE)	6 x 8(FEP) 1/4"x3/8"(FEP)	6 x 8(PTFE)	12 x 18 (PVC braided hose)	6 x 11(PVC braided hose) 6 x 8(PE) 1/4" x 3/8"(PE)
	Suction side						
	Air-release	4 x 6 (soft PVC hose)			–		–
Viscosity of transfer liquid		50mPa・s or less				3,000mPa・s or less*2	50mPa・s or less
Temperature of transfer liquid		0 ～ 40℃(no freezing allowed)					
Ambient temperature		0 ～ 40℃					
Environmental resistance		IEC standard:IP65 or equivalent (water-&dust-proof)					
Insulation class		B					
Power supply	Rated voltage	AC 100 to 240 V (±10%)					
	No. of phases/Frequency	1-phase/50 or 60 Hz					
	Max. current	2.5 A					
	Max. power consumption	250 VA					
	Avg. power consumption	18 W					
	Cable	Cabtyre cable (ϕ5～10)					
Weight	kg	1.9	1.9	1.9	3.3	1.9	4

*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.

Control function specifications

Item			PW	PWT	PWM
Signal	Analog input		—		One port: analog signal (DC 4 to 20 mA, input resistance: approximately 110 Ω)
	Digital	Input	One port: pulse signal (no-voltage contact or open collector, maximum no. of pulses: 1200 pulses/minute, minimum pulse width: 25 ms [ON period]) One port: pump stop signal (no-voltage contact or open collector, maximum no. of pulses: 1200 pulses/minute, minimum pulse width: 25 ms [ON period])		One port: pump stop signal (no-voltage contact or open collector, maximum no. of pulses: 1200 pulses/minute, minimum pulse width: 25 ms [ON period])
		Output	One port: solenoid sync pulse signal (DC 25 V, 10 mA or less) One port: batch warning signal (DC 25 V, 10 mA or less)		
Control	Manual operation	Number of strokes	1 to 300 (Enables setting in 1-stroke units)		
		Discharge volume control	0.1 to maximum discharge volume (Setting in 0.1mL/min. units enabled)	—	—
	Pulse proportional control	Division	1/999～1/1	—	—
		Magnification	1～999	—	—
	Analog proportional control		—	—	Proportional band/set point method
	Timer	Interval	—	1 pattern (1～9999min.)	—
		DAY	—	9pattern	—
		WEEK	—	7pattern	—
		DAY + Interval	—	○	—
		WEEK + Interval	—	○	—
	Timer + Pulse proportional control	Division	—	1/999～1/1	—
		Magnification	—	1～999	○
	External operation signal		○	○	○
	External stop signal		○	○	○
	Operation sync pulse		○	○	○
	Alarm output		○	○	○

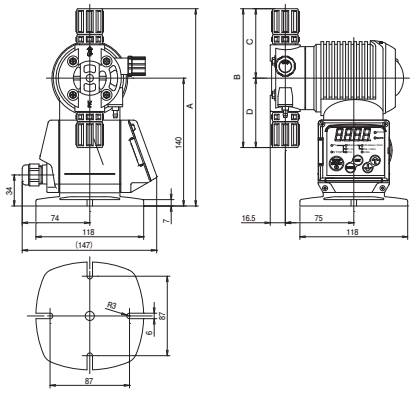
Accessories

Item	PW/PWM/PWT								
	General chemical model						Boiler	High pressure	High viscosity
	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCET	VTCET	VTCF
Hose / Tube	3m		3m		3m	3m	Discharge side: 2m Suction side: 1m		3m
Air purge hose with relief valve*1	1m*2		1m			—	1m		—
Anti siphonal check valve	1set(R1/2)				1 set (R1/2 or R3/8)		1set (R1/2)		—
Foot valve	1set								—
Ceramic weight	—		1set			—			
Hose pump	—					1set	—		
Cable ties (INSULOK®) for relief hose (spare)*3	1					—	1	—	
Signal cable	2m								
Pump attachment bolts and nuts	2 sets (M5x30)								
Instruction manual	1copy								

*1 This hose is already attached to models with the simple relief valve.
*2 This hose is not supplied with 200-type models.
*3 This accessory is supplied with models with the simple relief valve.
* The signal cable is sold separately. The signal cable is included when the PWM and the chemical injection PTS series are purchased as a set.

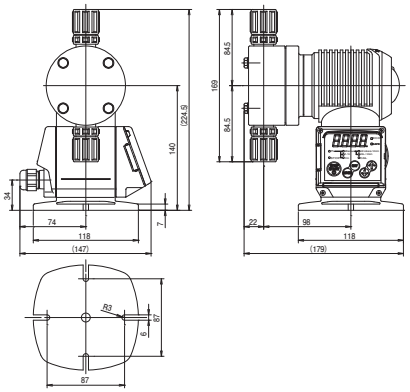
External dimensions

●PW/PWM/PWT/−30□/60□/100□

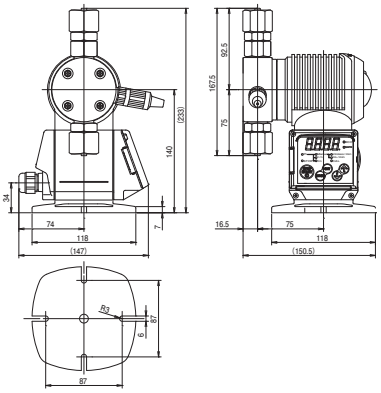


	A	B	C	D
VTCE/VTCF	216	152	76	76
FTCE/FTCF/FTCT	237	195	97.5	97.5
VTCF (High viscosity)	233	167.5	92.5	75
VTCET(BWJ)	230	166	90	76
VTCET(PWJ)	233	169	93	76

●PW/PWM/PWT−200



●PW/PWM/PWT/−30□/60□/100□ (6TCT)



* The shape and dimensions differ slightly depending on the liguid-end material and connection type.

Liquid-end Material

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

Part \ Model	VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	VTCF (High-viscosity)	VTCET (Boiler/High-pressure)
Pump head	PVC	PVC	PVDF	PVDF	PVDF	SUS316	PVC	PVC
Diaphragm	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Check ball	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic	Ceramic
O-ring	EPDM	Fluoro rubber	EPDM	Fluoro rubber	Special fluoro rubber	PTFE	Fluoro rubber	EPDM
Valve seat	EPDM	Special fluoro rubber	EPDM	Special fluoro rubber	PTFE	—	—	PTFE
Packing	—	—	—	—	PTFE	—	—	—
Joint	PVC	PVC	PVDF, PP	PVDF、PP	PVDF	SUS316	PVC	PVC, SUS304
Ball stopper	PVC	PVC	PVDF	PVDF	PTFE	—	—	PVC
Valve stopper	—	—	—	—	—	PTFE	PE	—
Compression coil spring	—	—	—	—	—	—	SUS304	—

Middle Capacity

PZD

Digital Setting

PZD No-input

PZi

Digital Setting

Advanced Functions

PZi4 Digital-input & Analog-input

PZi8 Digital-input/output & Analog-input

Common Functions

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)

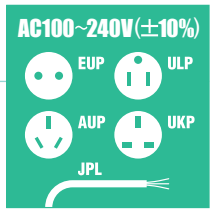
[By discharge volume]

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))

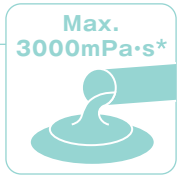
Wide Voltage Range Power Supply



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.

High-viscosity

The PZD 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.

Extensive Range of Liquid-end Materials

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)

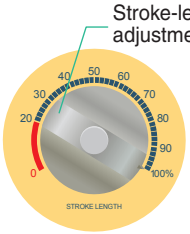
6TCT
Material: Stainless steel (SUS316·304)
Application example:
Transfer/injection of solutions/special chemicals

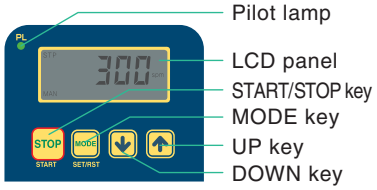
VTCF (high-viscosity type*)
Material: PVC
Application example:
Transfer/injection of high-viscosity liquids

* Provided for PZD series only.

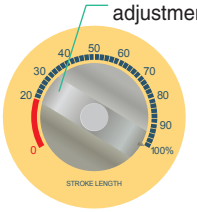
Simple Key Layout

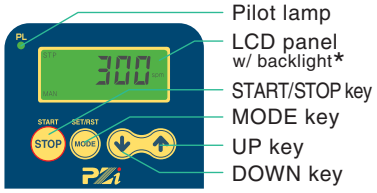
●PZD





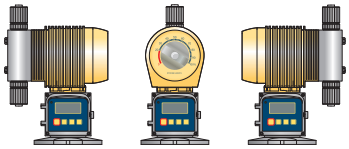
●PZi



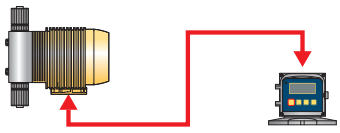


* Backlight is provided only on PZi8.

3-directional Pump Head



Separate-type Head & Controller



* 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.

PZD

Quick & Easy Calibration

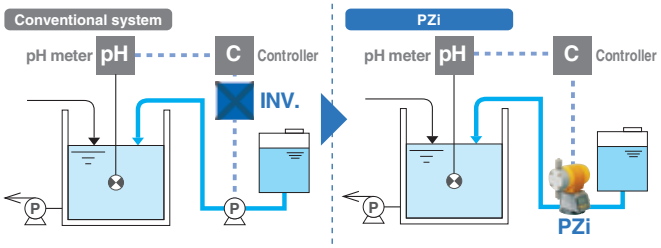
The PZD Series is provided with easy calibration function for accurate pump calibration. Just push the button to automatically discharge 300 strokes' worth of chemical and enter the actual discharge volume that you will be measuring. This is all you need to do for accurate calibration.

PZi4 | PZi8

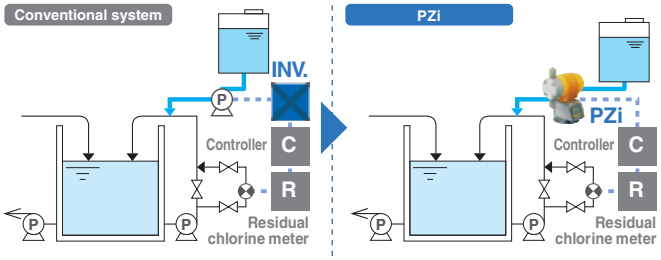
Analog-Input Proportional Control

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.

pH Control



Residual Chlorine Control

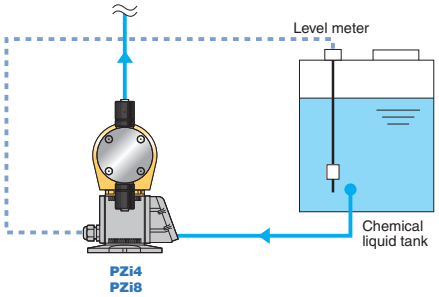


Motor Driven Pump	PZi
·Inverter required	·Inverter not required
·Narrow control range of 1:10 (6 to 60 Hz)	·Wide control range of 1:300 (1 to 300 strokes/min)
·Raw liquid must be diluted since the discharge volume per stroke is large.	·Raw liquid can be injected since the discharge volume per stroke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

PZi4 | PZi8

External operation & stop control

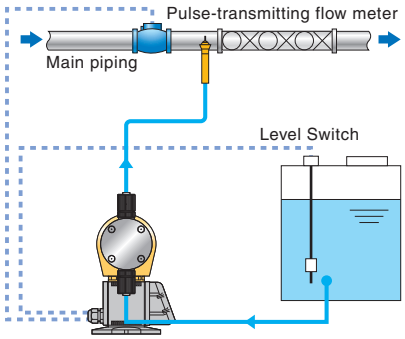
The pump can be turned on and off using a input signal from an external device.



PZi4 | PZi8

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.

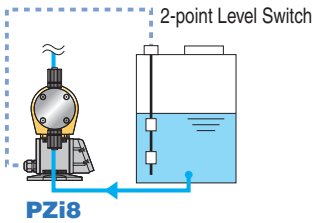


∗ For details on the Level Switch, see "Option" on the back cover.

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.



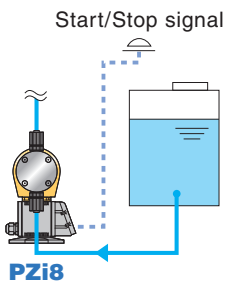
Count (batch) & Interval (timer) Operation

●Count setting

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

●Interval setting

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



Specification: PZD

Specification \ Model			300				500			
			VTCE	VTCF	FTCT	STCT	VTCE	VTCF	FTCT	STCT
Max. discharge volume*		mL/min	360		330		540		510	
		L/h	21.6		19.8		32.4		30.6	
Max. discharge pressure*		MPa	0.3				0.2			
		bar	3.0				2.0			
Stroke speed			1 to 300 strokes/min (digital setting)							
Stroke length			0.2 to 1.5 mm (manual dial)							
Connection (hose/tube: I.D x O.D)	Discharge side		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									
	Air-release		—							
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		3.0 A							
	Power consumption		Max.: 500 VA/Ave.: 30 W							
Weight			4.0 kg		4.2kg	6.0kg	4.0 kg		4.2kg	6.0kg

★ Conditions: Clean water, room temperature

Specification: PZi4/PZi8

Specification \ Model				300				500			
				VTCE	VTCF	FTCT	STCT	VTCE	VTCF	FTCT	STCT
Max. discharge volume*1			mL/min	360		330		540		510	
			L/h	21.6		19.8		32.4		30.6	
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				0.2 to 1.5 mm (adjustable by manual dial)							
Connection (hose/tube: I.D x O.D)	Discharge side			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										
	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, 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, min. pulse width: 50 msec (ON time)) PZi8 : 2 ports: High-speed pulse signal (no-voltage contact or open collector, 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, 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*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							
		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)		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*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			3.0 A							
	Power consumption			Max.: 500 VA/Ave.: 30 W							
Weight				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

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]

300 : 300 mL/min
500 : 500 mL/min

2 Liquid-end material

VTCE
VTCF
FTCT
STCT

3 Hose standard (size/material)

12 x 18 PVC
9 x 12 PE
3/8" x 1/2" PE
12 x 15 PTFE

4 Joint specification

W : Standard

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

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]

300 : 300 mL/min
500 : 500 mL/min

3 Liquid-end material

VTCE
VTCF
FTCT
STCT

4 Hose standard (size/material)

12 x 18 PVC
9 x 12 PE
3/8" x 1/2" PE
12 x 15 PTFE

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

Accessory

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

Item \ Model	PZD				PZi4/PZi8			
	VTCE	VTCF	FTCT	STCT	VTCE	VTCF	FTCT	STCT
Hose/Tube*1	3 m				3 m			
Anti-siphon check valve	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*2		—	
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

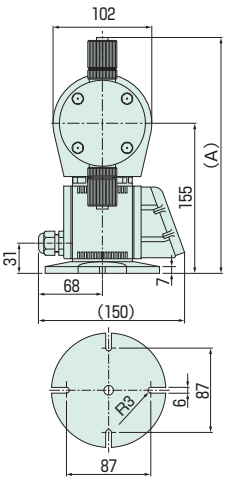
Liquid-end Material

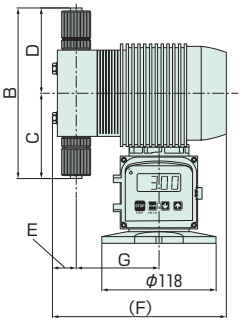
✻Also refer to the "Corrosion-resistance Table" on page 26.

Part \ Model	VTCE	VTCF	FTCT	STCT (L-size)
Pump head	PVC		PVDF	SUS304
Diaphragm	PTFE			
Check ball	Ceramic			
O-ring	EPDM	Fluoro-rubber	PTFE	
Valve seat	EPDM	Special fluoro-rubber	PTFE	–
Joint	PVC		PVDF	SUS304
Ball stopper	PVC		PTFE (valve stopper)	

External Dimension (mm)

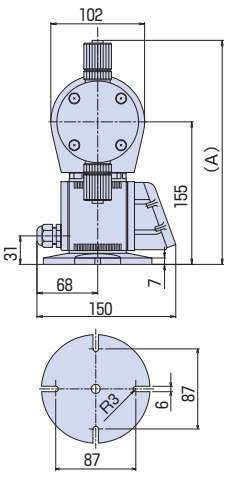
●PZD

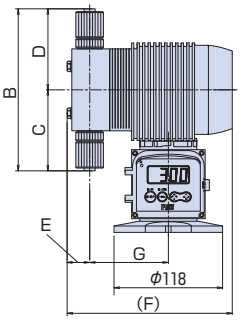




Model	(A)	B	C	D	E	(F)	G
VTCE/VTCF	243	176	88	88	24.5	180	85.5
FTCT/STCT	255.5	183	82.5	100.5	22	174.5	83
VTCF (High-viscosity)	281.5	253	126.5	126.5	26	181	85.5

●PZi4/PZi8





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.

Large Capacity

PZiG

Digital Setting

Advanced Functions

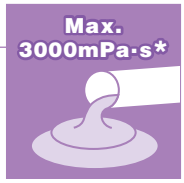
PZiG Digital-input/output & Analog-input

Large-capacity

Lineup of four models supporting large-capacity injection up to 1000 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)

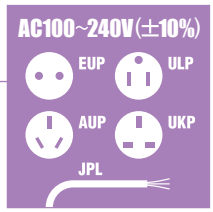
[By discharge volume]

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

[By percentage]

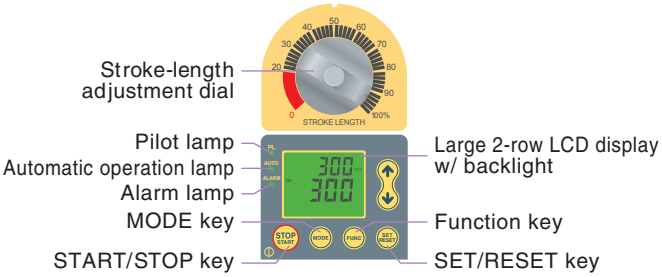
Setting range: 1 to 100% (minimum setting increment: 1% (3 strokes/min))

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 240V(±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.

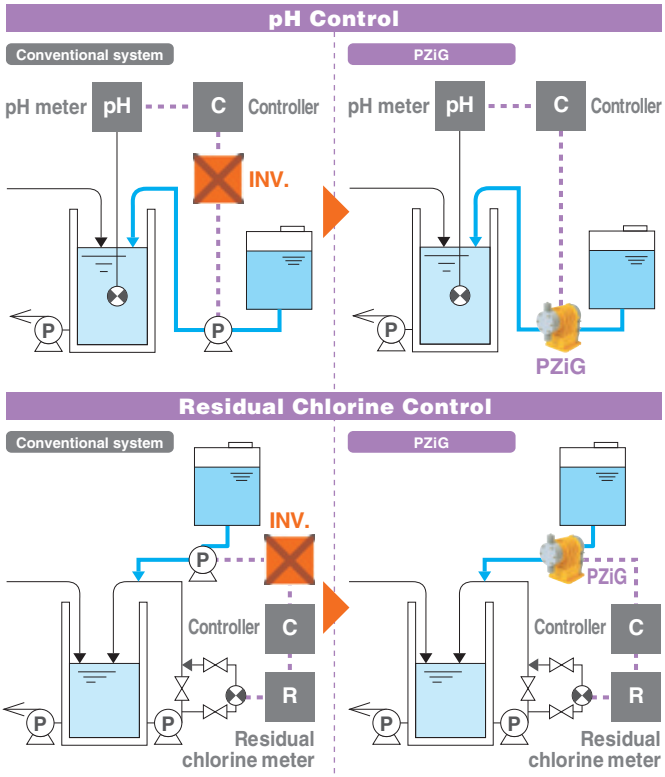
VTCE/VTCF
Material: PVC
Application example: Transfer/injection of general chemicals

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-Input Proportional Control

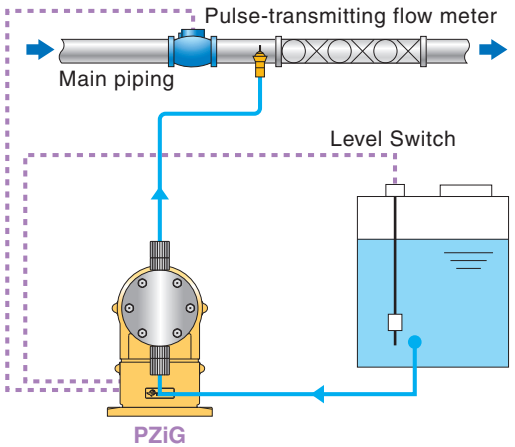
The injection amount (stroke frequency: 0 to 300 strokes/min) can be set according to the analog input signal (0 to 20 mA or 4 to 20 mA) from an external device.



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

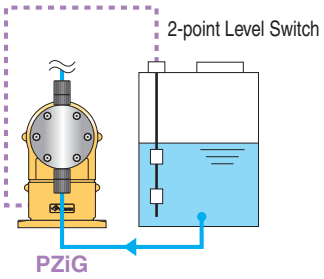
Pump ON/OFF can be controlled by an external stop input signal. Also, the injection amount (1/9999 to 9999 strokes/pulse) can be set according to the pulse input signal from an external device.



* 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.



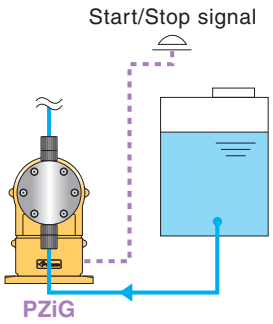
Count (batch) & Interval (timer) Operation

●Count setting

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

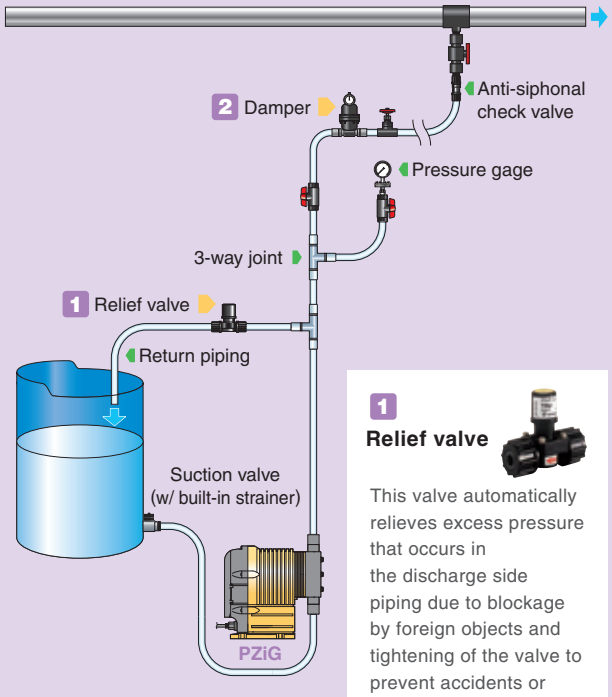
●Interval setting

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.

Specification

Specification \ Model			300				500			
			VTCE	VTCF	FTCT	VTCF (high-viscosity type)	VTCE	VTCF	FTCT	VTCF (high-viscosity type)
Max. discharge volume*1		mL/min	340				530			
		L/h	20.4				31.8			
Max. discharge pressure*1		MPa	1.0		0.5	1.0	1.0	0.7	0.5	0.7	0.7
		bar	10.0		5.0	10.0	10.0	7.0	5.0	7.0	7.0
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			3000mPa·s*2	50mPa·s			3000mPa·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, 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, 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

[High-viscosity type]
- 300 : 300 mL/min
- 500 : 500 mL/min
- 700 : 700 mL/min
- 1000 : 1000 mL/min

2 Liquid-end material
- VTCE
- VTCF
- FTCT

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			700				1000			
			VTCE	VTCF	FTCT	VTCF (high-viscosity type)	VTCE	VTCF	FTCT	VTCF (high-viscosity type)
Max. discharge volume*1		mL/min	760				1000			
		L/h	45.6				60.0			
Max. discharge pressure*1		MPa	0.4				0.3			
		bar	4.0				3.0			
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			50mPa·s			3000mPa·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, 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, 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

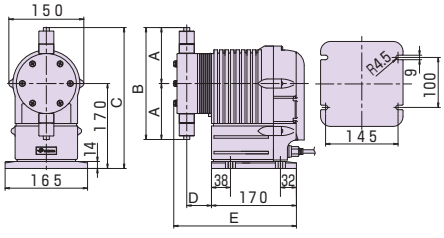
Liquid-end Material

✻ 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

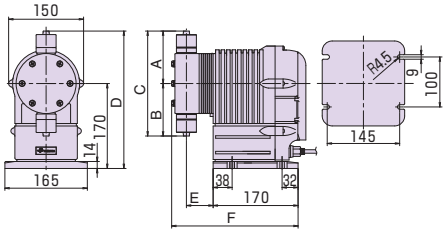
External Dimension (mm)

VTCE/VTCF



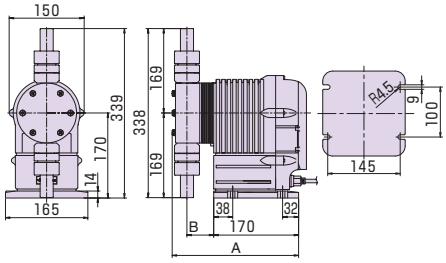
Model	A	B	C	D	E
300/500	112	224	282	49.5	246
700	103	206	273	53.5	253
1000	105	210	275	53.5	253

FTCT



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

VTCF (high-viscosity type)



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

PZiG

For Sodium Hypochlorite

DCLPW

Air Block

In-Line Automatic Air-release

DCLPW	Digital-input/output
DCLPWM	Digital-input/output & Analog-input
DCLPWT	Digital-input/output & Timer Control

CLPW

In-Line Automatic Air-release

CLPW	Digital-input/output
CLPWM	Digital-input/output & Analog-input
CLPWT	Digital-input/output & Timer Control

CLPZ

CLPZ	No-input

Two mechanisms for preventing gas lock

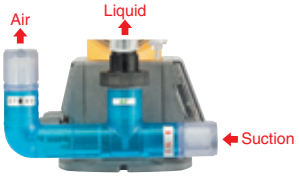
Easy-to-check trapped air

The transparent acrylic pump head, which has an innovative design to minimize dead space, enables the operator to check the trapped air at a glance.

Air block mechanism

DCL series pumps are equipped with a degassing joint as standard equipment. The degassing joint prevents intrusion of air that causes gas lock.

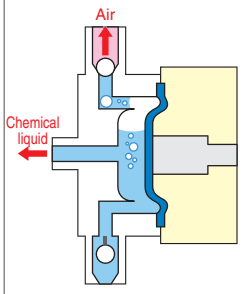
Prevents intrusion of maximum 15cc of air.



In-line type automatic air-release mechanism

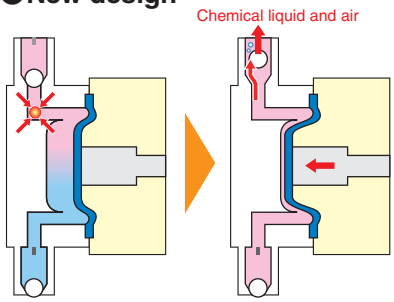
DCL and CL series are equipped with an air-release mechanism designed using a new concept. The in-line air-release mechanism of these models assures the elimination of air that is trapped in the pump head and automatically prevents the discharge trouble caused by gas lock.

●Conventional design



Air is discharged from a dedicated air purge port. Chemical liquid leaks into the air purge port side under some conditions and the discharge volume becomes unstable.

●New design



Standby state

The pressure inside the discharge side and pump head becomes equal and the air is compressed.

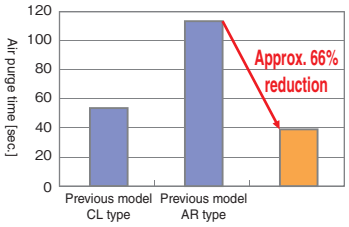
Discharge process

The smaller volume of air after it is compressed is discharged together with the liquid.

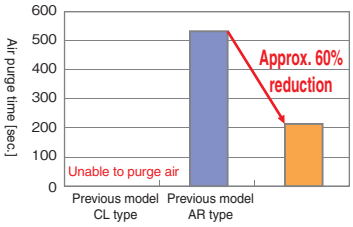
Air-release performance

Comparison of the time required to purge air that is trapped in the pump head between CLPW and previous models (CLPZD, ARPZD).

Test conditions (Discharge pressure: 1.0MPa, air volume: 0.1mL)

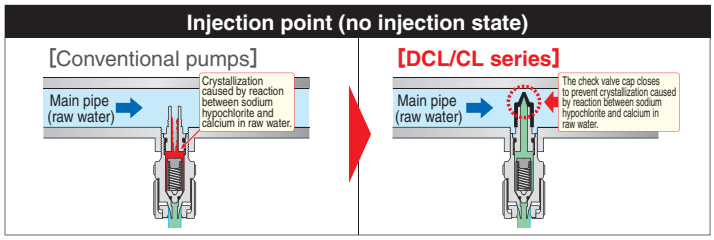


Test conditions (Discharge pressure: 1.0MPa, air volume: 0.5mL)



Prevention of trouble caused by crystallization

Anti siphonal check valve that prevents clogging at the injection point



Alarm function for notifying injection trouble

When injection trouble occurs, an alarm is emitted to warn this condition.

For details, see "Higher Safety" on page 7.

[Usage Precaution]
When diluting sodium hypochlorite, use pure water or water processed with a water softener.
Otherwise the pump may malfunction or discharge trouble may result.

Model code

＊Not all model combinations are possible. When selecting the pump model, first check “Specification” and “Liguid-end material”.

DCLPW □ – 30 – ATCF – 4×9PVC – W – S – JPL

1 2 3 4 5 6 7 8

1 Series name	2 Control type	3 Model (discharge volume standard)	4 Liquid-end material	5 Hose standard (size/material)	6 Joint specification	7 Applicable standard	8 Power plug
DCLPW : Air block and in-line type automatic air-release functions CLPW : In-line type automatic air-release function	None : Standard (pulse input) type M : Analog input type T : Timer control type	[W/ relief valve] 30R: 30mL/min 60R: 60mL/min 100R: 90mL/min [W/O relief valve] 30 : 30mL/min 60 : 60mL/min 100 : 90mL/min	ATCF	4×9PVC 6×11PVC 6×8PE 1/4"×3/8"PE	W: Standard	S: Standard CE: CE marking -compatible	EUP:Euro plug ULP:UL plug AUP:Australia plug UKP:UK plug JPL:Japan lead wire
CLPZ	None : No-input	[W/ relief valve] 30R: 30mL/min [W/O relief valve] 30 : 50mL/min	ATCF	4×9PVC 6×11PVC 6×8PE 1/4"×3/8"PE	W: Standard	S: Standard CE: CE marking -compatible	EUP:Euro plug ULP:UL plug AUP:Australia plug UKP:UK plug JPL:Japan lead wire

Specifications

Specification \ Model		DCLPW						CLPW						CLPZ					
		30R	60R	100R	30	60	100	30R	60R	100R	30	60	100	30R	60R	100R	30	60	100
Max.discharge volume	mL/min	30	60	90	30	60	90	30	60	90	30	60	90	30	60	100	30	60	100
	L/H	1.8	3.6	5.4	1.8	3.6	5.4	1.8	3.6	5.4	1.8	3.6	5.4	1.8	3.6	6	1.8	3.6	6
Max.discharge pressure	MPa	0.7			1.0		0.7	0.7			1.0		0.7	0.7		0.4	1.0	0.8	0.4
	bar	7.0			10.0		7.0	7.0			10.0		7.0	7.0		4.0	10.0	8.0	4.0
Stroke speed		1 to 300 strokes/min (Enables setting in 1-stroke units)												15 to 300 strokes/min (dial setting)					
Stroke length		0.5～1 mm (Enables adjustment using the dial)												Fixed at 1.0 mm					
Connection (hose/tube:I.D × O.D)	Discharge side	4 × 9 (PVC braided hose)	6 × 11 (PVC braided hose)		4 × 9 (PVC braided hose)	6 × 11 (PVC braided hose)		4 × 9 (PVC braided hose)	6 × 11 (PVC braided hose)		4 × 9 (PVC braided hose)	6 × 11 (PVC braided hose)		4 × 9 (PVC braided hose)	6 × 11 (PVC braided hose)		4 × 9 (PVC braided hose)	6 × 11 (PVC braided hose)	
	Suction side	6 × 8 (PE) 1/4" × 3/8" (PE)			6 × 8 (PE) 1/4" × 3/8" (PE)			6 × 8 (PE) 1/4" × 3/8" (PE)			6 × 8 (PE) 1/4" × 3/8" (PE)			6 × 8 (PE) 1/4" × 3/8" (PE)			6 × 8 (PE) 1/4" × 3/8" (PE)	
	Air-release	4 × 6 (soft PVC hose)			—			4 × 6 (soft PVC hose)			—			4 × 6 (soft PVC hose)			—		
	Degassing joint*3	1/4" × 3/8" (soft PVC hose)						—											
Viscosity of transfer liquid		50mPa･s or less																	
Temperature of transfer liquid		0～40℃(no freezing allowed)																	
Ambient temperature		0～40℃																	
Environmental resistance		IEC standard:IP65 or equivalent (water-&dust-proof)																	
Weight	kg	2	2.1		2	2.1		1.8	1.9		1.8	1.9		1.7	1.8		1.7	1.8	

*1 Conditions:Clean water, room temperature.
*2 0.7MPa (7bar) for models w/relief valve(R type) whereas 1.0MPa (10bar) for models w/o relief valve.
*3 Provided for the DCLPW series only.

＊For details on the control functions, see "Control function specifications" on page 12.

Liquid-end materials

Item	DCLPW	CLPW	CLPZ
Pump head	Acrylic（PMMA）		
Diaphragm	PTFE		
Check ball	Ceramic		
O-ring	Fluoro rubber		
Valve seat	Special fluoro rubber		
Packing	PTFE		
Joint	PVC		
Degassing joint	PVC	——	
Ball stopper	PVC		

Accessories

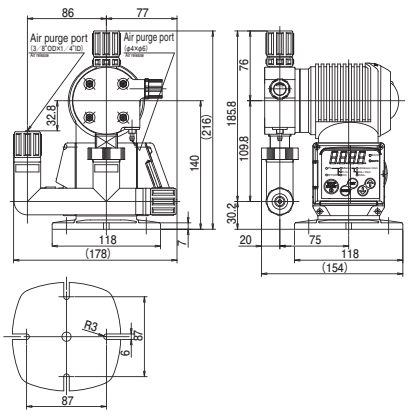
＊Power cable(2m)is attached.

Item	DCLPW	CLPW	CLPZ
Hose/tube	3m		
Air purge hose with relief valve*1	1m		
Degassing joint	1 set (hose already attached)	——	
Anti siphonal check valve	1 set (R1/2)		
Foot valve	——	1 set	
Cable ties (INSULOK®) for relief hose (spare)*2	1piece		
Signal cable	2m	——	
Pump attachment bolts and nuts	1 set		
Operating instructions	1 copy		

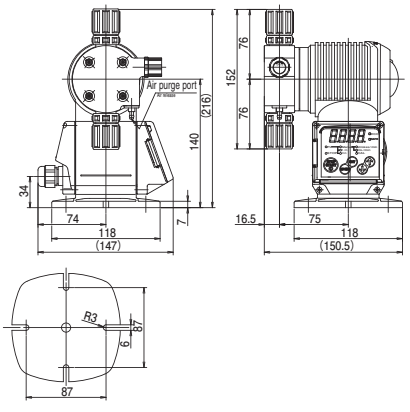
*1 The air purge hose with relief valve is already attached to this pump.
*2 This accessory is supplied for models with the relief valve (R type).
＊ The signal cable is sold separately. The signal cable is included when the □PWM and the chemical injection PTS series are purchased as a set.

External dimensions

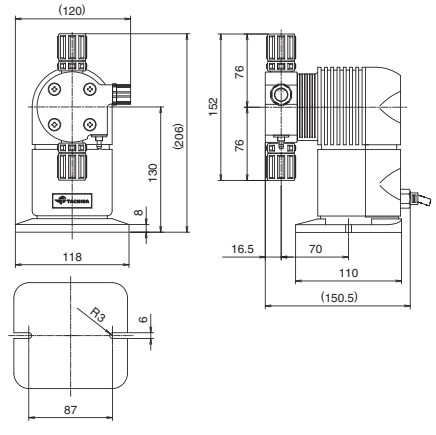
●DCLPW/DCLPWM/DCLPWT



●CLPW/CLPWM/CLPWT



●CLPZ



For Sodium Hypochlorite

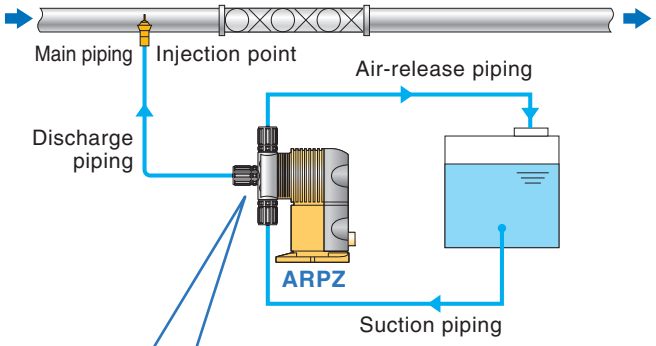
AR

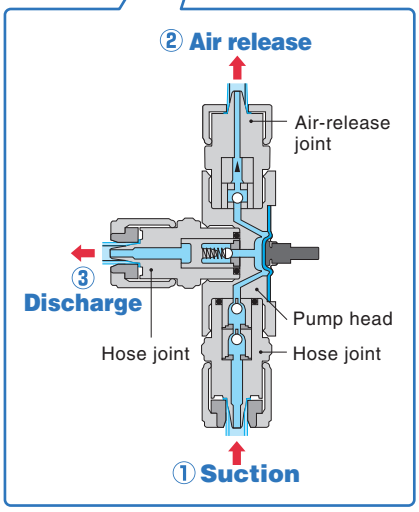
Automatic Air-release

ARPZ No-input

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.



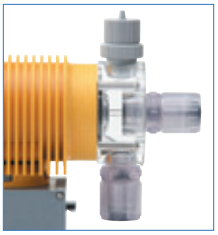


① Suction
Bubbles or gas that occur in the chemical tank are sucked into the pump head.

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

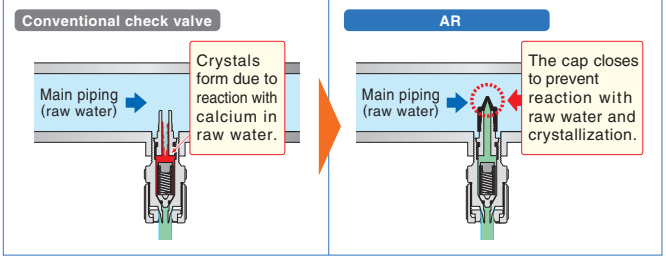


The transparent acrylic pump head allows you to check at-a-glance if air has entered.

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 is the same as those for the PZ, respectively.

Specification \ Model			ARPZ		
			31	61	12
Max. discharge volume*		mL/min	27	54	93
		L/h	1.62	3.24	5.58
Max. discharge pressure*		MPa	1.0	0.8	0.4
		bar	10.0	8.0	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 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	
	Power consumption	Max.	200 VA	250 VA	
		Ave.	15 W	18 W	
Weight			1.7 kg	1.8 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

✻Power cable(2m)is attached

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

✻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

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

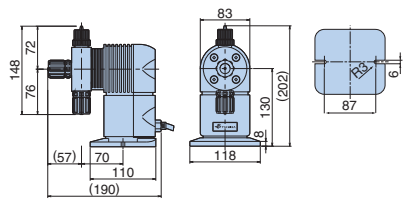
5 Joint specification
W : Standard

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

External Dimension (mm)

ARPZ

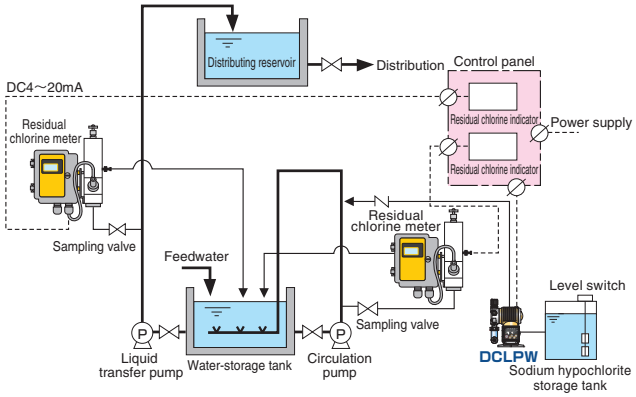


✻ The mounting pitch allows mounting from 87 to 110 mm.

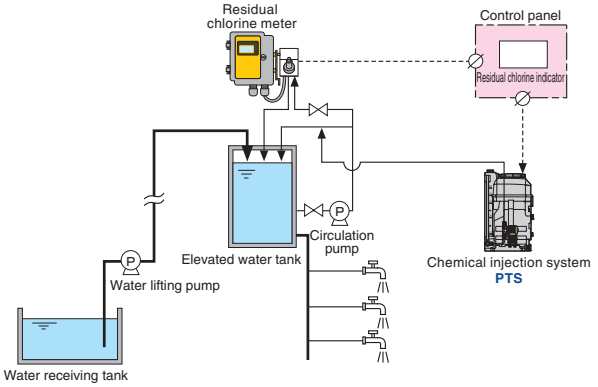
AR

Application examples

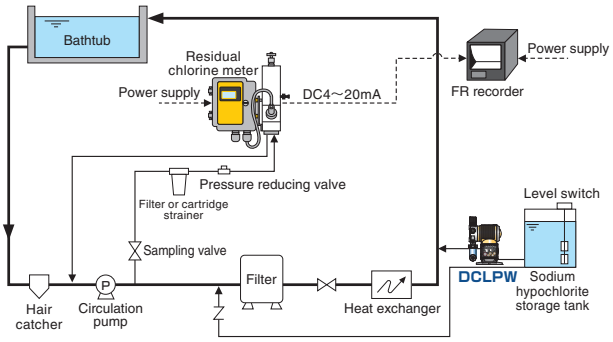
■Simple water purifying treatment



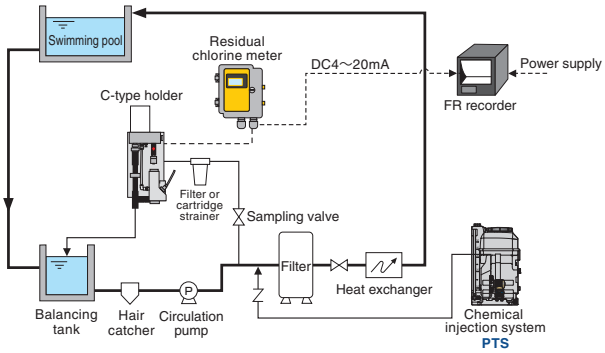
■Elevated water tank



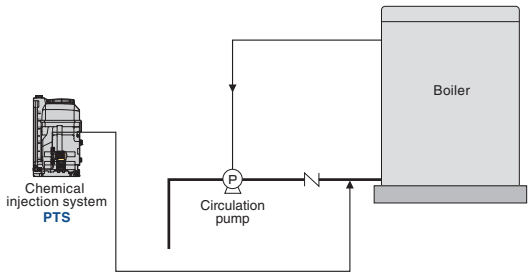
■Circulation type bathtub



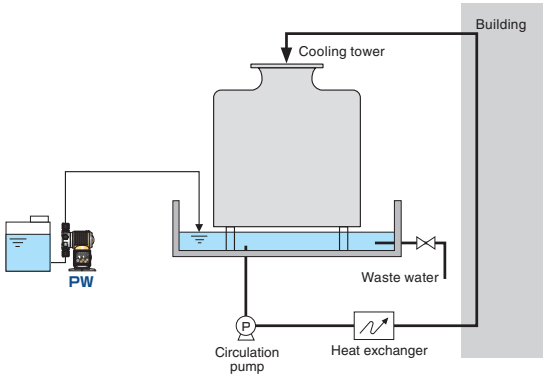
■Swimming pool



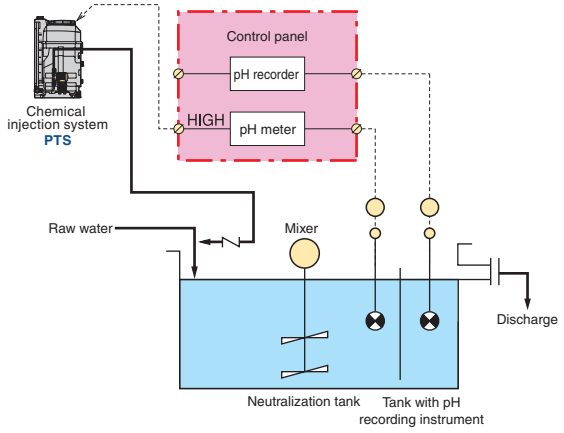
■Chemical injection for boiler



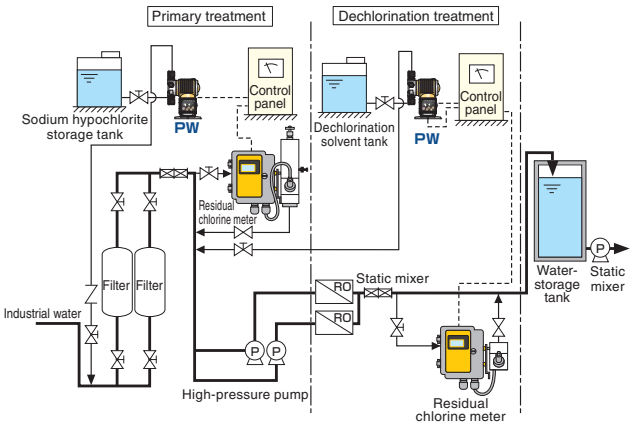
■Water treatment of cooling tower



■Neutralization of pH in waste water



■Dechlorination treatment of RO film process



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
	Level Switch signal*1	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*1	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)

✻1 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)

✻1 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	VTCET (for injection of boiler chemicals) ✻PZ/PW only	VTCF (high-viscosity type) ✻PW/PZD/PZIG only	6TCT	STCT	ATCF
Hydrochloric acid	$HC\ell$	—	to 20%	—	to 20%	to 38%	—				
Sulfuric acid	H_2SO_4	to 60%	to 80%	to 60%	to 80%	to 98%	—		98%		—
Sodium hydroxide	NaOH	○	—	—	—		○	—	○		—
Aqueous ammonia	NH_4OH	○	—	—	—		○	—	○		—
Sodium hypochlorite	$NaC\ell O$	—	to 12%	—	to 12%		—		—		to 12%
Hydrogen peroxide	H_2O_2	—	to 30%	—	to 30%		—		to 90%		—
Poly-aluminum chloride (PAC)		○							—		
Aluminum sulfate	$A\ell_2(SO_4)_3$	○							○		—
Polymer coagulants		—						to 3000mPa·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.

Options

Degassing joint

Degassing joint is installed at the suction side of a pump. It separates absorbed air bubbles from the liquid to prevent air bubbles from entering the pump head.

*This joint is supplied with the DCLPW series as standard equipment.

Flow checker

Flow checker is highly resistant to acid and alkalis and allows the injection operation of the pump to be checked at low cost. The pump-direct connection type and hose connection type are the two types of volume checkers available.

Parts kit

Parts kit includes all required consumables in a set and is more economical than purchasing the parts separately. Since all consumables are packaged in one box, it also makes inventory management easier.

Residual pressure exhaustion valve

Residual pressure exhaustion valve is directly connected to the discharge side of the pump so that the pipes can be safely purged of abnormal pressure that builds up. It also enables residual pressure and residual liquid to be safely discharged when maintenance services are performed.

Relief valve (safety valve)

Relief valve automatically releases excessive pressure that builds up inside the discharge side pipes due to clogging of the pipes or while the discharge valve is closed. It can prevent accidents such as damage to the pump or piping.

Back pressure valve

Back pressure valve prevents excessive liquid flow and siphon effect by sealing the outlet port of the liquid with a diaphragm, and by applying just enough force (back pressure) to overcome the fluid inertia force.

Pulse generator type flowmeter

When using this flowmeter in combination with a Tacmina pulse signal input type metering pump, you can construct a simple and low-cost injection system proportional to the required flow rate.

Flow indicator and photoelectric sensor

These optional products enable you to check the injection operation visually as well as by means of a sensor.

Float switch

Float switch will stop the pump when the remaining volume of chemical liquid in the tank becomes low. They also cause an alarm to be emitted to notify you that it is time to refill the liquid. Two types of float switches are available, namely the float type with choices of one-point and two-point type sensors, and the electrode type, which is highly resistant to chemicals.

Related equipments

Pump and tank combination

Chemical injection system

PTS

Tank capacity

30/50/120 L

- Compact design and easy to assemble in equipment and install.
- You can start operation by simply connecting the power supply and piping.

Tank

Tank capacity

25 to 1000L

Solution tank **PE tank** **PVC tank**

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

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