

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)

PZi4/PZi8

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)



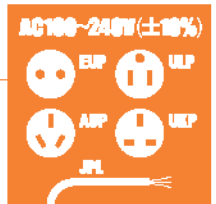
[By percentage]

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



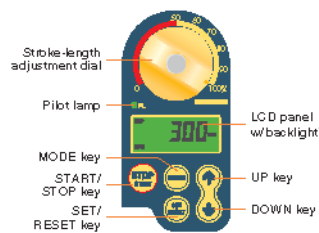
Wide Voltage Range Power Supply

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

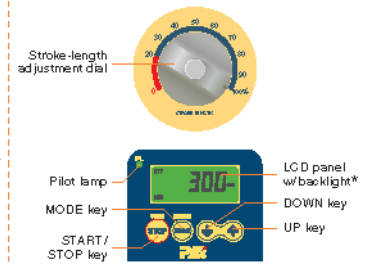


Simple key Layout

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



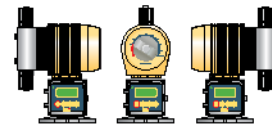
L-size (300/500)



* Backlight is provided only on PZi8.

3-directional Pump Head

* Large-size (300/500) only



Separate-type Head & Controller



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

Water- & Dust-proof Specifications

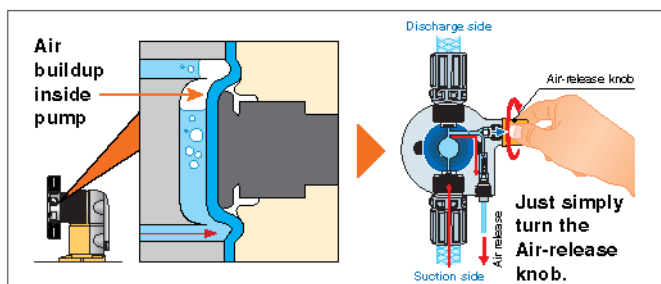
IEC standard: IP65 or equivalent

● Avoid condensation and immersion in water.



Simple, Safe, Air Release

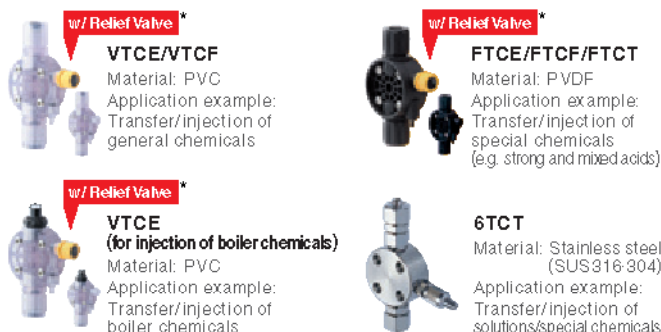
The PZi Series is equipped with an Air-release valve as standard. Even if air gets into the pump head, you can simply and safely release the air just by lightly turning the Air-release knob.



★ 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.

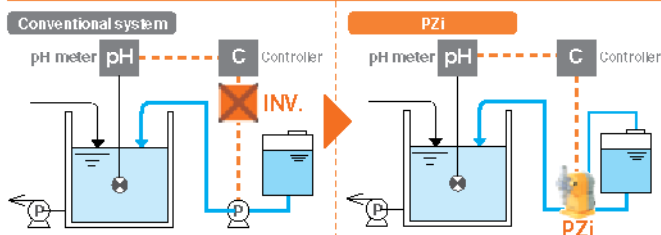


★ For a detailed explanation of the Relief Valve, see 'Relief Valve Function' on page 25.

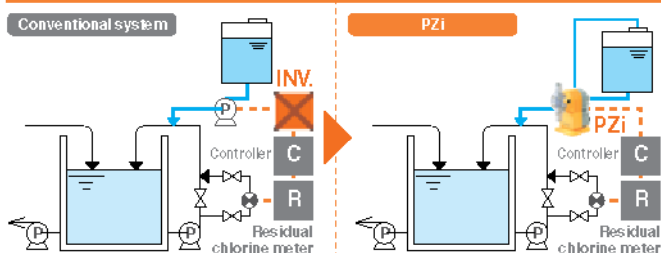
Analog-Input Proportional Control

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.

pH Control



Residual Chlorine Control



Motor Driven Pump

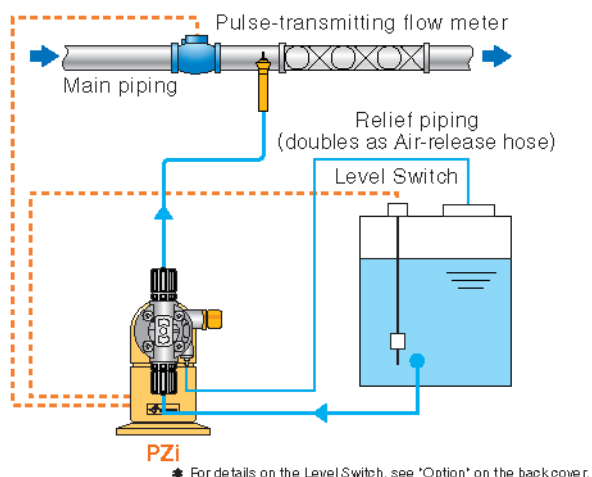
- Inverter required
- Narrow control range of 1:10 (6 to 60 Hz),
- Raw liquid must be diluted since the discharge volume per stroke is large.

PZi

- Inverter not required
- Wide control range of 1:300 (1 to 300 strokes/min)
- 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.

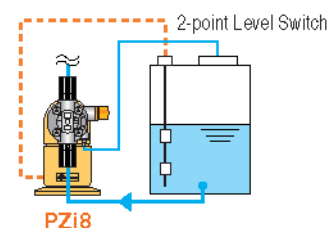


★ For details on the Level Switch, see 'Option' on the back cover.

PZi8

2-point Level Switch Control

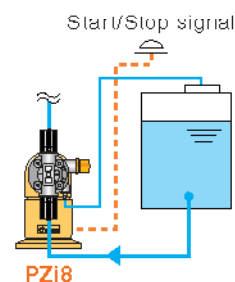
Control such as alarm display and output, and pump stop is performed in accordance with the remaining amount of chemicals.



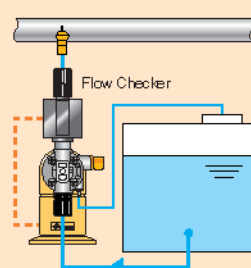
Count (batch) & Interval (timer) Operation

- **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)

Model		30R					60R					100R									
		VTCE	VTCF	FTCE	FTCF	FTCT	VTCE (for injection of boilerchemicals)	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: ID x OD)	Discharge side	(PVC braided hose) 4 x 9 6 x 8 (FE)	6 x 8 (PE) 1/4" x 3/8"	6 x 8 (FEP) 1/4" x 3/8"	4 x 6 (nylon tube) 4 x 9 (PVC braided hose)	(PVC braided hose) 6 x 11 6 x 8 (FE) 1/4" x 3/8"	6 x 8 (PE) 1/4" x 3/8"	6 x 8 (FEP) 1/4" x 3/8"	(PVC braided hose) 6 x 11 6 x 8 (FE) 1/4" x 3/8"	6 x 8 (PE) 1/4" x 3/8"	6 x 8 (FEP) 1/4" x 3/8"	6 x 11 (PVC braided hose) 6 x 8 (FE) 1/4" x 3/8"	6 x 8 (PE) 1/4" x 3/8"	6 x 8 (FEP) 1/4" x 3/8"	6 x 8 (FE) 1/4" x 3/8"	6 x 8 (FEP) 1/4" x 3/8"					
	Suction side	1/4" x 3/8" (FE)	1/4" x 3/8" (PE)	1/4" x 3/8" (FEP)	4 x 9 (PVC braided hose)	1/4" x 3/8" (FE)	1/4" x 3/8" (PE)	1/4" x 3/8" (FEP)	1/4" x 3/8" (FE)	1/4" x 3/8" (PE)	1/4" x 3/8" (FEP)	1/4" x 3/8" (FE)	1/4" x 3/8" (PE)	1/4" x 3/8" (FEP)	1/4" x 3/8" (FE)	1/4" x 3/8" (FEP)					
	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 : Unassigned, Pulse signal, Stop signal, Reset/Restart signal, Alarm reset signal, Flow Checker signal (only when Flow Checker is used), (4 selectable) 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 : 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), (2 selectable) Pulse-Input error signal, Analog-Input error signal, Lower discharge-volume alarm signal (only when Flow Checker 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 model is 10 MPa (100 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 without the Relief Valve, and install a separate relief valve for extra safety. *3 Though the max. discharge pressure of the 60R model 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 without 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 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
PZi4 : Analog/ Digital-Input PZi8 : Analog/ Digital-Input & Digital-Output	[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	VTCE VTCF FTCE FTCF FTCT 6TCT STCT	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	W : Standard	S : Standard CE : CE marking-compatible	EUP : Euro plug ULP : UL plug AUP : Australia plug UKP : UK plug JPL : Japan lead wire NON : No Cable* * L-size only (300/500)
		VTCE	4 x 6 PA	BW : Boiler		

Accessory

* 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 provided.

Item	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)	VTCF	FTCE	FTCF	FTCT	6TCT	VTCE (for injection of boiler chemicals)	VTCF	FTCF	FTCT	STCT
Hose/Tube*1	3 m					3 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						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)

Model		30						60						100						300				500											
		VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	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						60						100						95				360				540				510			
	L/h	1.8						3.6						6.0						5.7				21.6				32.4				30.6			
Max. discharge pressure ^{*1}	MPa	1.0						0.8						0.5						0.3				0.2				0.2							
	bar	10.0						8.0						5.0						3.0				2.0				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.xO.D)	Discharge side	4 x 9 (PVC braided hose) 6 x 8 (PE)	6 x 8 (PE)	6 x 8 (FEP) 1/4" x 3/8"	6 x 8 (PTFE)	4 x 6 (nylon tube)	6 x 11 (PVC braided hose) 6 x 8 (PE)	6 x 8 (PE)	6 x 8 (FEP) 1/4" x 3/8"	6 x 8 (PTFE)	6 x 11 (PVC braided hose) 6 x 8 (PE)	6 x 8 (PE)	6 x 8 (FEP) 1/4" x 3/8"	6 x 8 (PTFE)	6 x 8 (PE)	6 x 8 (FEP) 1/4" x 3/8"	6 x 8 (PTFE)	12 x 18 (PVC braided hose) 9 x 12 (PE)	12 x 15 (PTFE)	12 x 18 (PVC braided hose) 9 x 12 (PE)	12 x 15 (PTFE)	12 x 18 (PVC braided hose) 9 x 12 (PE)	12 x 15 (PTFE)	12 x 18 (PVC braided hose) 9 x 12 (PE)	12 x 15 (PTFE)										
	Suction side	1/4" x 3/8" (PE)	1/4" x 3/8" (PE)	3/8" (FEP)	3/8" (PTFE)	4 x 9 (PVC braided hose)	1/4" x 3/8" (PE)	1/4" x 3/8" (PE)	3/8" (FEP)	3/8" (PTFE)	1/4" x 3/8" (PE)	1/4" x 3/8" (PE)	3/8" (FEP)	3/8" (PTFE)	1/4" x 3/8" (PE)	1/4" x 3/8" (PE)	3/8" x 1/2" (PE)	3/8" x 1/2" (PE)	3/8" x 1/2" (PE)	3/8" x 1/2" (PE)	3/8" x 1/2" (PE)	3/8" x 1/2" (PE)	3/8" x 1/2" (PE)	3/8" x 1/2" (PE)	3/8" x 1/2" (PE)										
	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: 7800 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 : Unassigned, Pulse signal, Stop signal, Reset/Restart signal, Alarm reset signal, Flow Checker signal (only when Flow Checker is used), (4 selectable) 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 : 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, 2 selectable) Pulse-Input error signal, Analog-Input error signal, Lower discharge-volume alarm signal (only when Flow Checker 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	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	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		S-size		S-size		L-size	
30R/60R/100R		30/60/100		30/60/100(6TCT)		300/500	
Model	(A) B C D E (F)	Model	(A) B C D E (F)	Model	(A) B C D E (F)	Model	(A) B C D E (F) G
VTCE/VTCF	206 152 76 76 16.5 162.5	VTCE/VTCF	206 152 76 76 16.5 162.5	VTCE/VTCF	206 152 76 76 16.5 162.5	VTCE/VTCF	243 176 88 88 24.5 180 85.5
FTCE/FTCF/FTCT	227.5 195 97.5 97.5 17.5 163.5	FTCE/FTCF/FTCT	227.5 195 97.5 97.5 17.5 163.5	FTCE/FTCF/FTCT	227.5 195 97.5 97.5 17.5 163.5	FTCT/STCT	255.5 183 82.5 100.5 22 174.5 83
VTCE (for injection of boiler chemicals)	193 139 76 63 16.5 162.5	VTCE (for injection of boiler chemicals)	193 139 76 63 16.5 162.5	VTCE (for injection of boiler chemicals)	193 139 76 63 16.5 162.5		

* 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.