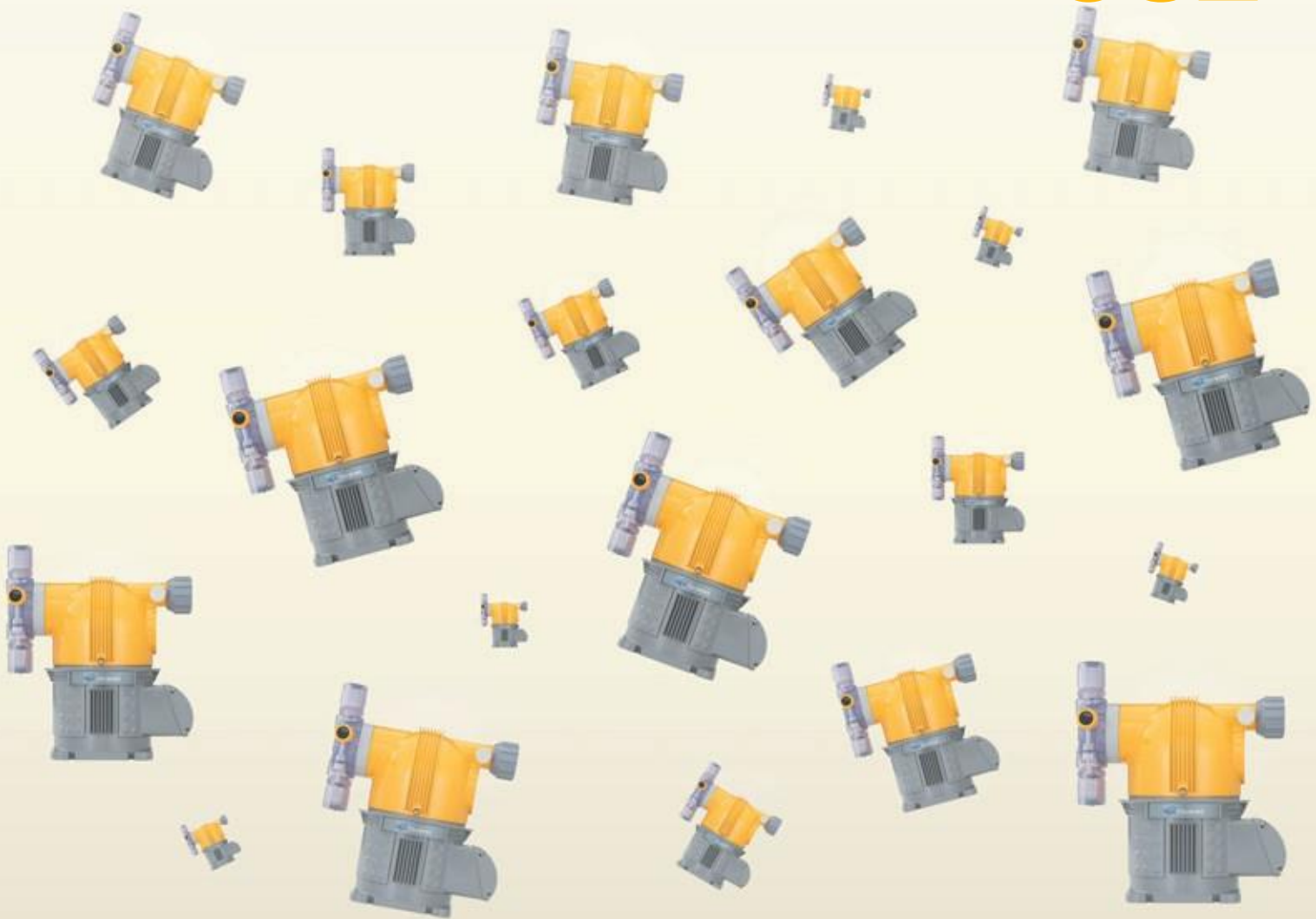


TAC
MINA

Motor-driven
Diaphragm Metering Pump

CSII



www.tacmina.com

Supplierfilterair.com

Easy, Tough and Safe

This stylishly designed safe TACMINA metering pump is easy-to-use and user-friendly developed with excellent utility, functionality and durability.

Easy

Easy handling and maintenance by simple construction

Tough

Durability improved by tough body

Safe

Relief Valve prevents accidents.

Application Examples

[Air-conditioning]

- Algicides
- Corrosion/rust inhibitors
- Slime inhibitors
- Scale inhibitors

[Boiler]

- Rust inhibitors
- Deoxidizers
- pH conditioners
- Corrosion/rust inhibitors

[Water Treatment]

- Sulfuric acid
- Hydrochloric acid
- Caustic soda
- Polyaluminum chloride (PAC)
- Polymer molecule flocculants

[Sterilization]

- Sodium hypochlorite

... etc

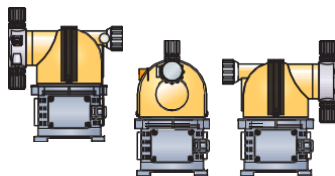


- Max. discharge volume of **1000 mL/min** (Totally **7** models on the same body)
- Wide Voltage Range (**100 to 440 V**)
- Tough Body for Outdoor Use (**IEC529-IPX3 : water-proof type**)
- Easy Disassembly/ Assembly with Just **Single Screwdriver**



3-directional Pump Head

The pump adopts a swivel head that allows you to change the direction the liquid end section faces to suit the installation site. This is handy when incorporating the pump into other equipment or installing the pump in confined locations.



Easy Flow Rate Adjustment

The CSI is equipped with an easy-to-grip stepless flow rate adjusting dial so that you can easily fine-adjust the flow rate during pump operation.



Extensive Range of Liquid-end Materials

For Injection of General Chemicals		For Injection of Boiler Chemicals	For Injection of High-viscosity Chemicals	For Injection of Sodium Hypochlorite
<p>(hose type)</p> <p>VTCE/ VTCF</p>	<p>Application: Transfer/injection of general chemicals</p>	<p>(flange type)</p>	<p>FTCE/FTCF/FTCT</p>	<p>Material: PVDF Application: Transfer/injection of special chemicals</p>

(e.g. strong and mixed acids)

**STCT/
6TCT**

Material:
Stainless steel (SUS 304/316)
Application:
Transfer/injection of solutions/special chemicals

VTCE

Material: PVC
Application: Transfer/injection of boiler chemicals

VT6E

Material: PVC
Application: Transfer/injection of high-viscosity chemicals (e.g. polymer coagulants)



ATCF (CLCS)

Material: PMMA
Application: Transfer/injection of chemicals that easily cause gas lock (e.g. sodium hypochlorite)

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Model Code

* When selecting the pump model, refer to the "Liquid-end Material & Corrosion-resistance Table".



CS II - **10** - **VTCE** - **HW** - **100V1** - **Y** - **S** - **S**

1 Series name **2 Model** (discharge volume standard) **3 Liquid-end material** **4 Joint specification** **5 Motor specification** (voltage + phases) **6 Paint color** **7 Power supply connection** **8 General specification**


For injection of general chemicals

CS II	w/ Relief Valve 10R : 10 mL 30R : 30 mL 60R : 60 mL 100R : 100 mL 300R : 300 mL		VTCE VTCF	HW: PVC braided hose FW: Flange * Relief Valve is not provided in the flange specification.
	w/out Relief Valve 10N : 10 mL 30N : 30 mL 60N : 60 mL 100N : 100 mL 300N : 300 mL 600 : 600 mL 1000 : 1000 mL			
	w/ Relief Valve 10R : 10 mL 30R : 30 mL 60R : 60 mL 100R : 100 mL 300R : 300 mL		FTCE FTCF	HW: FEP tube
	w/out Relief Valve 10 : 10 mL 30 : 30 mL 60 : 60 mL 100 : 100 mL 300 : 300 mL			
	w/ Relief Valve 10R : 10 mL 30R : 30 mL 60R : 60 mL 100R : 100 mL 300R : 300 mL		FTCT	HW: FEP tube
	w/out Relief Valve 10 : 10 mL 30 : 30 mL 60 : 60 mL 100 : 100 mL 300 : 300 mL 600 : 600 mL 1000 : 1000 mL			
	w/out Relief Valve 10 : 10 mL 30 : 30 mL 60 : 60 mL 100 : 100 mL 300 : 300 mL		6TCT	HW: PTFE tube
	w/out Relief Valve 600 : 600 mL 1000 : 1000 mL		STCT	HW: PTFE tube

For Injection of Boiler Chemicals

CS II	w/ Relief Valve 10R : 10 mL 30R : 30 mL 60R : 60 mL 100R : 100 mL		VTCE	BW: PVC braided hose and Nylon tube
	w/out Relief Valve 10N : 10 mL 30N : 30 mL 60N : 60 mL 100N : 100 mL			

For Injection of High-viscosity Chemicals

CS II	w/out Relief Valve 30N : 30 mL 60N : 60 mL 100N : 100 mL 300N : 300 mL 600 : 600 mL 1000 : 1000 mL		VT6E	HV: PVC braided hose
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For Injection of Sodium Hypochlorite

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CLCS II

w/ Relief Valve

- 10R : 10 mL
- 30R : 30 mL
- 60R : 60 mL
- 100R : 100 mL



ATCF

HW: PVC braided hose

w/out Relief Valve

- 10N : 10 mL
- 30N : 30 mL
- 60N : 60 mL
- 100N : 100 mL



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Specification

Model		For Injection of General Chemicals w/ Relief Valve									
		10R		30R		60R		100R		300R	
Item		VTCE/ VTCF	FTCE/ FTCF/ FTCT	VTCE/ VTCF	FTCE/ FTCF/ FTCT	VTCE/ VTCF	FTCE/ FTCF/ FTCT	VTCE/ VTCF	FTCE/ FTCF/ FTCT	VTCE/ VTCF	FTCE/ FTCF/ FTCT
		Max. discharge volume* ¹ (mL/min)	50Hz	10		30		60		100	
60Hz	12		36		72		120		360		
Max. discharge pressure* ²	MPa	0.7* ²									
Stoke speed (strokes/min)	50 Hz	56				104				102	
	60 Hz	67				125				122	
Stroke length (mm)		0 to 2				0 to 3				0 to 6	
Connection (hose/tube: I.D x O.D)	Discharge side	4 x 9	6 x 8	4 x 9	6 x 8	6 x 11	6 x 8	6 x 11	6 x 8	6 x 11	6 x 8
	Suction side										
	Relief Valve/Air Release	4 x 6									
Max. allowable viscosity		100 mPa·s									
Allowable temperature	Ambient	0 to 40 °C									
	Liquid	VTCE/VTCF: 0 to 40 °C / FTCE/FTCF/FTCT: 0 to 60 °C (no freezing allowed)									
Environmental protection		IEC529-IPX3 (water-proof)									
Weight (kg)		5.0	5.2	5.0	5.2	5.0	5.2	5.0	5.2	5.0	5.2

* 1 Conditions: Clean water, room temperature * 2 Though the max. discharge pressure of the pump is 1.0 MPa, the Relief Valve operates when 0.7 MPa is exceeded. In applications requiring a discharge pressure of 0.7 MPa or more, ask for a model w/out the Relief Valve, and install a separate relief valve for extra safety.

Model		For Injection of General Chemicals w/out Relief Valve																																	
		10N			10			30N			30			60N			60			100N			100			300N			300			600			1000
Item		VTCE/ VTCF	FTCE/ FTCF/ FTCT	6TCT	VTCE/ VTCF	FTCE/ FTCF/ FTCT	6TCT	VTCE/ VTCF	FTCE/ FTCF/ FTCT	6TCT	VTCE/ VTCF	FTCE/ FTCF/ FTCT	6TCT	VTCE/ VTCF	FTCE/ FTCF/ FTCT	6TCT	VTCE/ VTCF	FTCE/ FTCF/ FTCT	6TCT	VTCE/ VTCF	FTCF	STCT	VTCE/ VTCF	FTCF	STCT	VTCE/ VTCF	FTCF	STCT							
		Max. discharge volume* (mL/min)	50Hz	10			30			60			100			300			600			1000													
60Hz	12			36			72			120			360			720			1200																
Max. discharge pressure* ¹	MPa	1.0	0.5		1.0	0.5		1.0	0.5		1.0	0.5		1.0	0.5		1.0	0.5		1.0	0.5		0.5	0.5		0.5	0.5		0.3						
Stoke speed (strokes/min)	50 Hz	56						104						102																					
	60 Hz	67						125						122																					
Stroke length (mm)		0 to 2						0 to 3						0 to 6																					
Connection (hose/tube: I.D x O.D)	Discharge side	4 x 9	6 x 8		4 x 9	6 x 8		6 x 11	6 x 8		6 x 11	6 x 8		6 x 11	6 x 8		12 x 18	12 x 15		12 x 18	12 x 15		12 x 18	12 x 15		12 x 18	12 x 15								
	Suction side																																		
	Air Release	4 x 6			4 x 6			4 x 6			4 x 6			4 x 6																					
	Flange	JIS 10K15A			JIS 10K15A			JIS 10K15A			JIS 10K15A			JIS 10K15A			JIS 10K15A			JIS 10K15A			JIS 10K15			JIS 10K15									
Max. allowable viscosity		100 mPa·s									50 mPa·s																								
Allowable temperature	Ambient	0 to 40 °C																																	
	Liquid	VTCE/VTCF: 0 to 40 °C / FTCE/FTCF/FTCT/6TCT/STCT: 0 to 60 °C (no freezing allowed)																																	
Environmental protection		IEC529-IPX3 (water-proof)																																	
Weight (kg)	Hose	5.0	5.2	6.3	5.0	5.2	6.3	5.0	5.2	6.3	5.0	5.2	6.3	5.0	5.2	6.3	5.0	5.2	6.3	5.6	5.7	7.3	6.2	6.3	7.9										
	Flange	5.1			5.1			5.1			5.1			5.1			5.1			5.7			6.3												

* Conditions: Clean water, room temperature

Model		For Injection of Boiler Chemicals								For Injection of High-viscosity Chemicals						For Injection of Sodium Hypochlorite (CLCSII)																	
		w/ Relief Valve				w/out Relief Valve				w/out Relief Valve						w/ Relief Valve				w/out Relief Valve													
Item		10R	30R	60R	100R	10N	30N	60N	100N	30N	60N	100N	300N	600	1000	10R	30R	60R	100R	10N	30N	60N	100N	10N	30N	60N	100N						
		Max. discharge volume* ¹ (mL/min)	50Hz	10	30	60	100	10	30	60	100	30	60	100	300	600	1000	10	30	60	100	10	30	60	100	10	30	60	100				
60Hz	12		36	72	120	12	36	72	120	36	72	120	360	720	1200	12	36	72	120	12	36	72	120	12	36	72	120						
Max. discharge pressure* ²	MPa	1.5								1.0						0.5		0.3		0.7* ²													
Stoke speed (strokes/min)	50 Hz	56				104				56				104				56				104				56				104			
	60 Hz	67				125				67				125				67				125				67				125			
Stroke length (mm)		0 to 2		0 to 3		0 to 2		0 to 3		0 to 2		0 to 3		0 to 6		0 to 2		0 to 3		0 to 2		0 to 3		0 to 2		0 to 3							
Connection (hose/tube: I.D x O.D)	Discharge side	4 x 6		6 x 8		4 x 6		6 x 8		12 x 18						19 x 26		4 x 9		6 x 11		4 x 9		6 x 11									
	Suction side	4 x 9		6 x 11		4 x 9		6 x 11										4 x 9		6 x 11		4 x 9		6 x 11									
	Relief Valve/Air Release	4 x 6								4 x 6						—		4 x 6															
Max. allowable viscosity		100 mPa·s								2000 mPa·s* ³						1000 mPa·s* ³		100 mPa·s															
Allowable temperature	Ambient	0 to 40 °C																															
	Liquid	0 to 40 °C (no freezing allowed)																															
Environmental protection		IEC529-IPX3 (water-proof)																															
Weight (kg)		5.0								5.0						5.7		6.3		5.1													

* 1 Conditions: Clean water, room temperature * 2 Though the max. discharge pressure of the pump is 1.0 MPa, the Relief Valve operates when 0.7 MPa is exceeded. In applications requiring a discharge pressure of 0.7 MPa or more, ask for a model w/out the Relief Valve, and install a

separate relief valve for extra safety. *3 When transferring high-viscosity liquids, the max. discharge volume may be lower than the specified volume depending on the characteristics of the liquid and operating conditions. Consult TACMINA separately when transferring high-viscosity liquids.

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Liquid-end Material & Corrosion-resistance Table

Part	Model	For Injection of General Chemicals						For Injection of Boiler Chemicals	For Injection of High-viscosity Chemicals	For Injection of Sodium Hypochlorite (CLCSII)	
		VTCE	VTCF	FTCE	FTCF	FTCT	6TCT	STCT	VTCE	VT6E	ATCF
Pump head		PVC		PVDF			SUS316	SUS304	PVC		Acrylic (PMMA)
Diaphragm		PTFE									
Check ball		Ceramic							SUS316	Ceramic	
O-ring		EPDM	Fluoro-rubber	EPDM	Fluoro-rubber	Special fluoro-rubber Paful [®] *1	PTFE		EPDM		Fluoro-rubber
Valve seat		EPDM	Special fluoro-rubber	EPDM	Special fluoro-rubber	—	—	—	EPDM		Special fluoro-rubber
Joint		PVC		PVDF		PTFE	SUS316	SUS304	PVC		—
Ball stopper		PVC		PVDF		PTFE	PTFE (valve stopper)		PVC	—	PVC
Ball guide		—		—		—	—		—	PVC	—
Compressed coil spring		—		—		—	—		—	SUS304	PVC
Corrosion-resistance Table (0 to 40) °C											
Hydrochloric acid	HCl	—	to 20 %	—	to 20 %	to 38 %	—		—		—
Sulfuric acid	H ₂ SO ₄	to 60 %	to 80 %	to 60 %	to 80 %	to 98 %	98 %		—		—
Acetic acid	CH ₃ COOH	—	to 20 %	—	to 20 %	to 80 %	—		—		—
Sodium hydroxide	NaOH	○	—	○	—		○		—		—
Aqueous ammonia	NH ₄ OH	○	—	○	—		○		—		—
Sodium hypochlorite	NaOCl	—	to 12 %	—	to 12 %		—		—		to 12 %
Hydrogen peroxide	H ₂ O ₂	—	to 30 %	—	to 30 %		to 90 %		—		—
Poly-aluminum chloride (PAC)		○		○		—		○		—	
Aluminum sulfate	Al ₂ (SO ₄) ₃	○		○		○		○		—	
Polymer coagulants		—		—		—		to 2000 mPa-s ^{*2}		—	

* 1 PTFE for 600/1000 * 2 To 1000 mPa-s for 1000 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 liquid. * 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.

Motor Specification

1-phase													
Item	Model	50 Hz					60 Hz						
		100 V	120 V	200 V	220 V	230 V	240 V	100 V	110 V	115 V	120 V	200 V	220 V
Output		10 W					10 W						
Rated motor current		0.62 A	0.52 A	0.30 A	0.35 A	0.26 A	0.28 A	0.62 A	0.65 A	0.59 A	0.61 A	0.30 A	0.32 A
Starting current		1.22 A	1.00 A	0.59 A	0.67 A	0.51 A	0.54 A	1.12 A	1.26 A	0.92 A	0.97 A	0.56 A	0.64 A
Number of poles		4					4						
3-phase													
Item	Model	50 Hz					60 Hz						
		200 V	346 V	380 V	400 V	415 V	200 V	220 V	230 V	380 V	400 V	440 V	
Output		10 W						10 W					
Rated motor current		0.23 A	0.14 A	0.15 A	0.16 A	0.17 A	0.19 A	0.21 A	0.22 A	0.13 A	0.13 A	0.15 A	
Starting current		0.56 A	0.33 A	0.36 A	0.38 A	0.40 A	0.53 A	0.58 A	0.61 A	0.34 A	0.36 A	0.40 A	
Number of poles		4						4					

Accessory

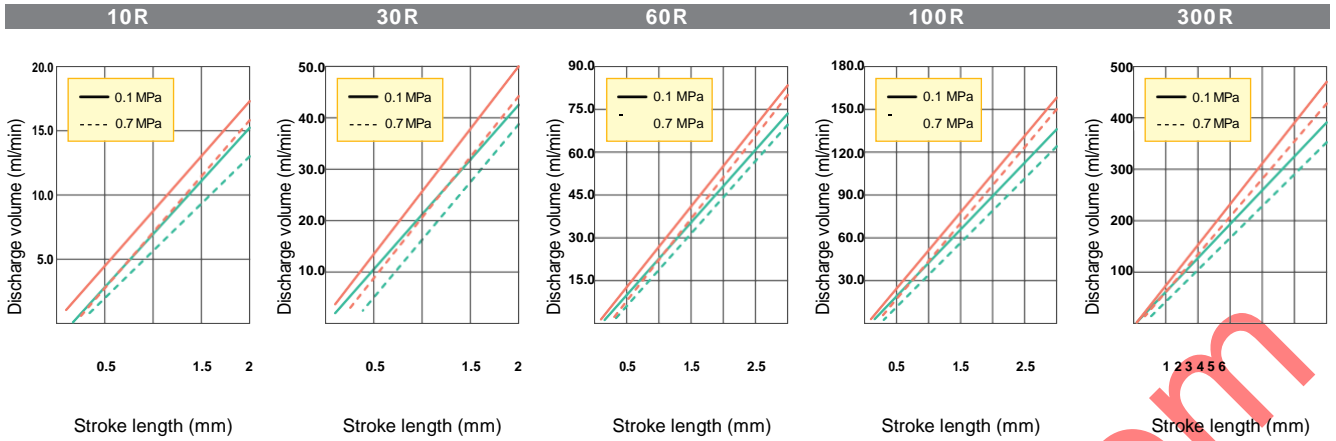
Item	Model	For Injection of General Chemicals				For Injection of Boiler Chemicals	For Injection of High-viscosity Chemicals	For Injection of Sodium Hypochlorite (CLCSII)			
		VTCE/VTCE	FTCE/FTCF	FTCT	6TCT/STCT	VTCE	VT6E	ATCF			
Hose/Tube*		PVC braided hose (3m) * Not available on flange model	FEP tube (3 m)	FEP tube (3 m) * PTFE on 600/1000	PTFE tube (3 m)	PVC braided hose (1 m) Nylon tube (2 m)	PVC braided hose (3m)	PVC braided hose (3m)			
Soft PVC hose for Relief Valve/Air Release		1 m (installed only on w/ Relief Valve) *Not available on 600/1000		—	—	1 m (installed only on w/ Relief Valve) *Not available on 600/1000	1 m *Not available on 600/1000	1 m (installed only on w/ Relief Valve)			
Anti-siphonal check valve		1 set (R1/2)			1 set (R1/2 or R3/8)	1 set (R1/2)	—	1 set (R1/2)			
Foot valve		1 set			—	1 set	—	1 set			
Ceramic weight		1 set			—	—	—	—			
Hose pump for Air Release		—			1 piece Not available on 600/1000	—	—	—			
INSULOK for Relief Valve/Air Release hose		1 m (w/ Relief Valve only)			—	1 m (w/ Relief Valve only)	—	1 m (w/ Relief Valve only)			
Pump installation nut/bolt		4 sets (M5 x 30: w/ spring washer, plain washer, flange nut)									
Operation Manual		1 set									
Performance curve sticker		1 sheet									

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

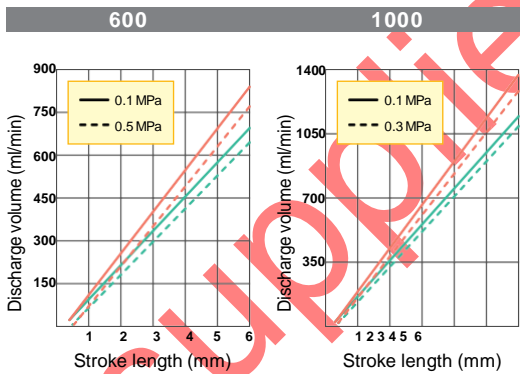
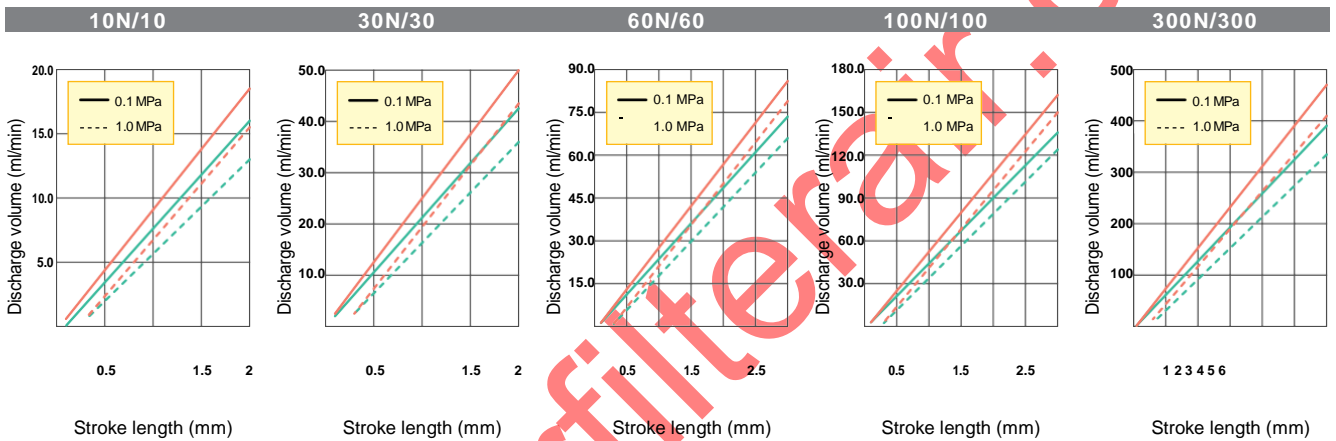
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Performance Curve

w/ Relief Valve : VTCE/ VTCF/FTCE/FTCF/FTCT/ATCF (CLCS) ¹



w/out Relief Valve : VTCE/ VTCF/FTCE/FTCF/FTCT/ VT6E (high-viscosity type) /ATCF (CLCS) ²



Conditions: Clean water, room temperature

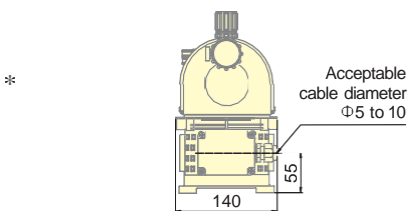
— 0.1 MPa (50 Hz) - - - - Max. discharge output of each model (50 Hz)
 — 0.1 MPa (60 Hz) - - - - Max. discharge output of each model (60 Hz)

¹ ATCF (CLCS) : 10 to 100 only
² VTCE/VTCF: 10 to 300 only, VT6E (high-viscosity type): 30 to 1000 only,
 ATCF (CLCS) : 10 to 100 only

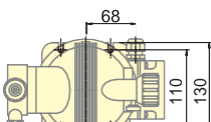
* For performance curves for the 6TCT/STCT/VTCE (for injection of boiler chemicals), consult TACMINA separately.

External Dimension (mm)

All models



The figure is for the VTCE/VTCF type. Sizes are as indicated above. However, the shape of the pump head and joint differ slightly depending on model and liquid-end materials.



VTCE/TCF [Example]

VTCE/TCF (HW: Flange/tube connection)							
	10	30	60	100	300	600	1000
(A)	250	250	250	250	271	271	279
(B)	152	152	152	152	176	176	192
(C)	76	76	76	76	79	79	87
(D)	76	76	76	76	76	76	105
(E)	16.5	16.5	16.5	16.5	16.5	16.5	22.6
(F)	96.5	98.5	98	98	107	107	109
(G)	220.5	222.5	222	222	222.5	238	239

VTCE/TCF (Fvw: Flange connection)							
	10N	30N	60N	100N	300N	600	1000
(A)	292.5	292.5	292.5	292.5	297.5	315	323
(B)	7	7	7	7	7	7	5.5
(C)	285.5	285.5	285.5	285.5	285.5	285.5	328.5
(D)	119.5	119.5	119.5	119.5	119.5	124	149
(E)	118.5	118.5	118.5	118.5	118.5	118.5	81
(F)	51	51	51	51	51	51	22.6
(G)	96.5	98.5	98	98	107	107	109
(H)	255	257	256.5	256.5	257	265.5	267.5

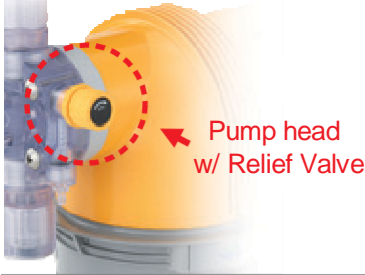
The shape and dimensions differ slightly depending on the liquid-end material and connection type. For details on the external dimensions of other models, consult TACMINA separately.

*

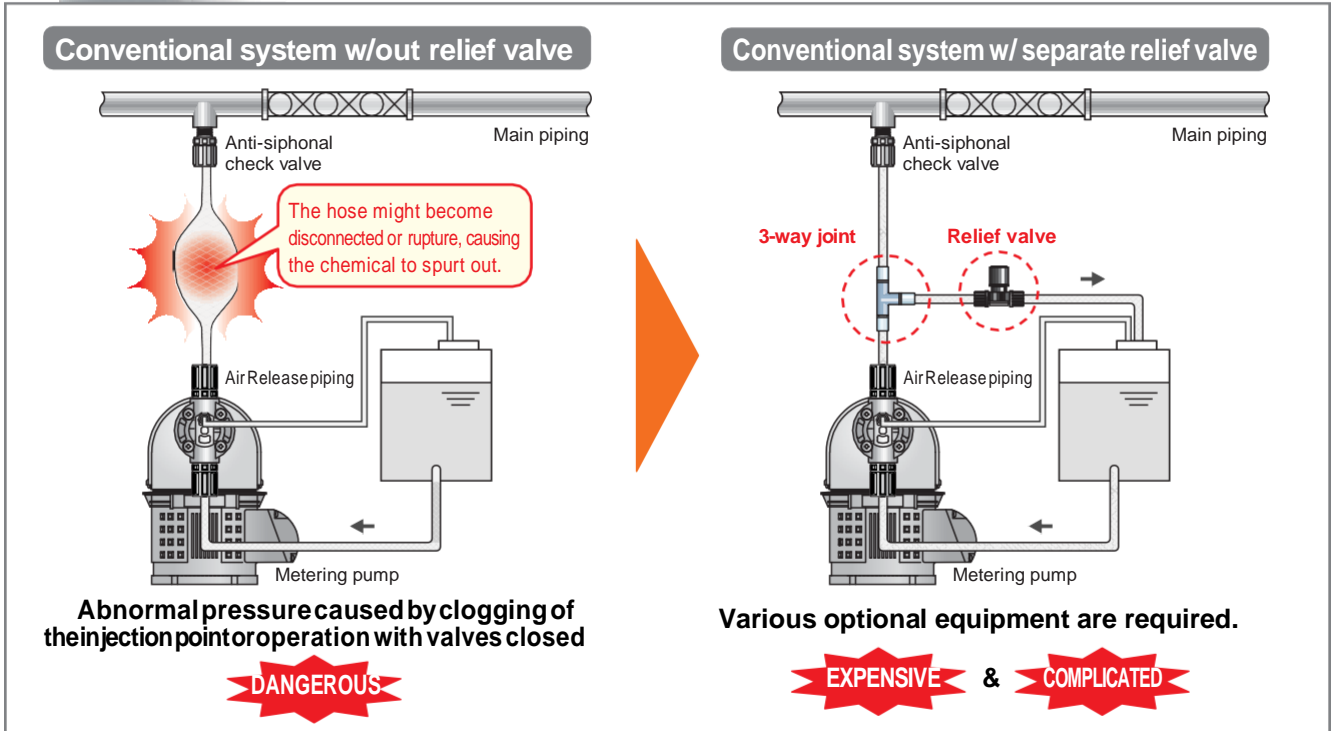
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Relief Valve Function

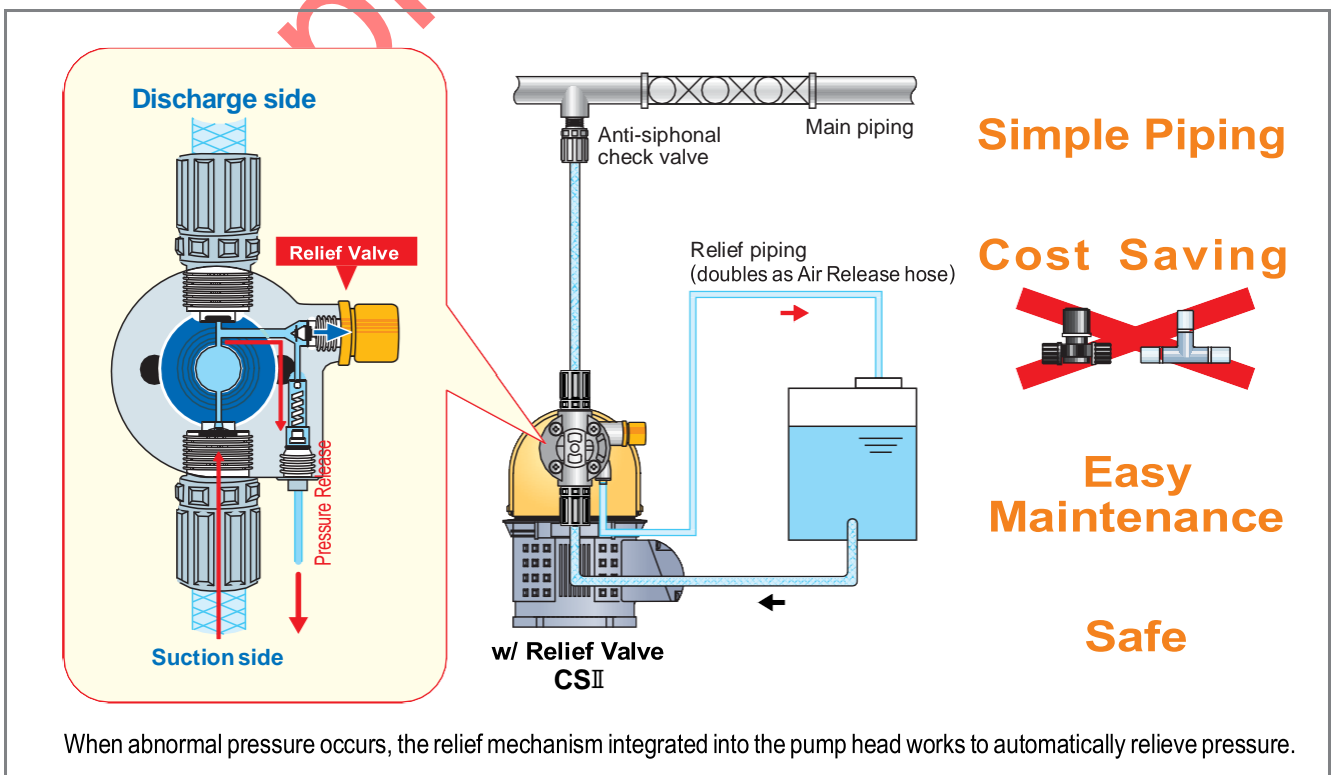
"Abnormal Pressure" Automatically Relieved to Prevent Accidents



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



The Relief Valve Function Solves All These Problems



■ Related equipment

No More Troublesome Piping Work! Simple Injection of Chemicals!!



Chemical Injection Unit

PTU

- Compact design enables simple fitting into equipment and easy installation.
- Just connect the power supply and piping to start operation.
- Ideal layout for preventing defective discharge caused by gaslock, etc.
- Large supply port for easy filling of chemicals
- Reliably protected against chemicals, dirt and dust by pump cover
- Entry of foreign matter prevented by suction valve w/ strainer
- Easy pump removal and maintenance by slide-type pump stand*
... and more

Tank capacity 25 / 50 / 100 L

* 50/100 L only

■ Option

● Flow Checker



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

Applicable pumps CSII - 30R/60R/100R/30/60/100/300
CLCSII - 30R/60R/100R/30/60/100

● Flow Indicator



Installed on the discharge side of the metering pump, this indicator allows you to visually check discharge operation, which helps in preventing trouble.

● Level Switch



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

● Relief Valve



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

● Back Pressure Valve



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

● Defoaming Joint



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

● Parts Kit



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

● Tanks (25 to 100 L)



Solution tank



PE tank



PVC tank

● Air Chamber & Hose / Joint



*1 Overfeed: The phenomenon that the force (inertia) of the discharge during chemical flow with pulsation causes chemicals to continue flowing when chemical flow should stop, resulting in excessive chemical discharge beyond the specified volume.

*2 Siphoning: The phenomenon that chemicals continue to be sucked out naturally and continue flowing when the tip of the pump's discharge-side piping is lower than the level of liquid in the suction-side tank.

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

TACMINA CORPORATION

Head Office:
2-4-8 Minami-Semba, Chuo-ku,
Osaka 542-0081 Japan
Tel. +81(0)6-6271-3974
Fax. +81(0)6-6271-4677
URL <http://www.tacmina.com>

E-mail trade@tacmina.com

Europe Representative Office:
Hochstr. 35
5
6
2

35 Ransbach-Baumbach,
Germany
Tel. +49(0)2623-928-345
Fax. +49(0)2623-928-507
E-mail trade@tacmina.com



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