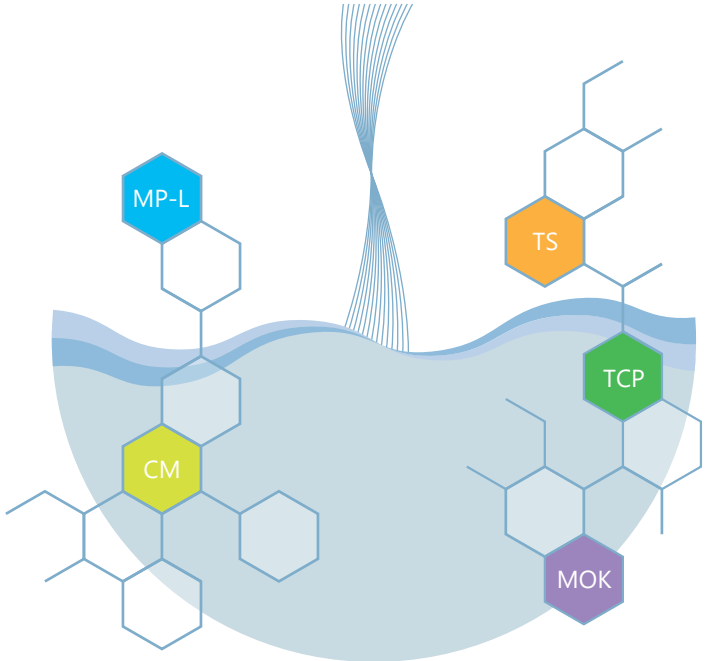
TOHKEMY CORPORATION

CHEMICAL PUMP
GENERAL CATALOG

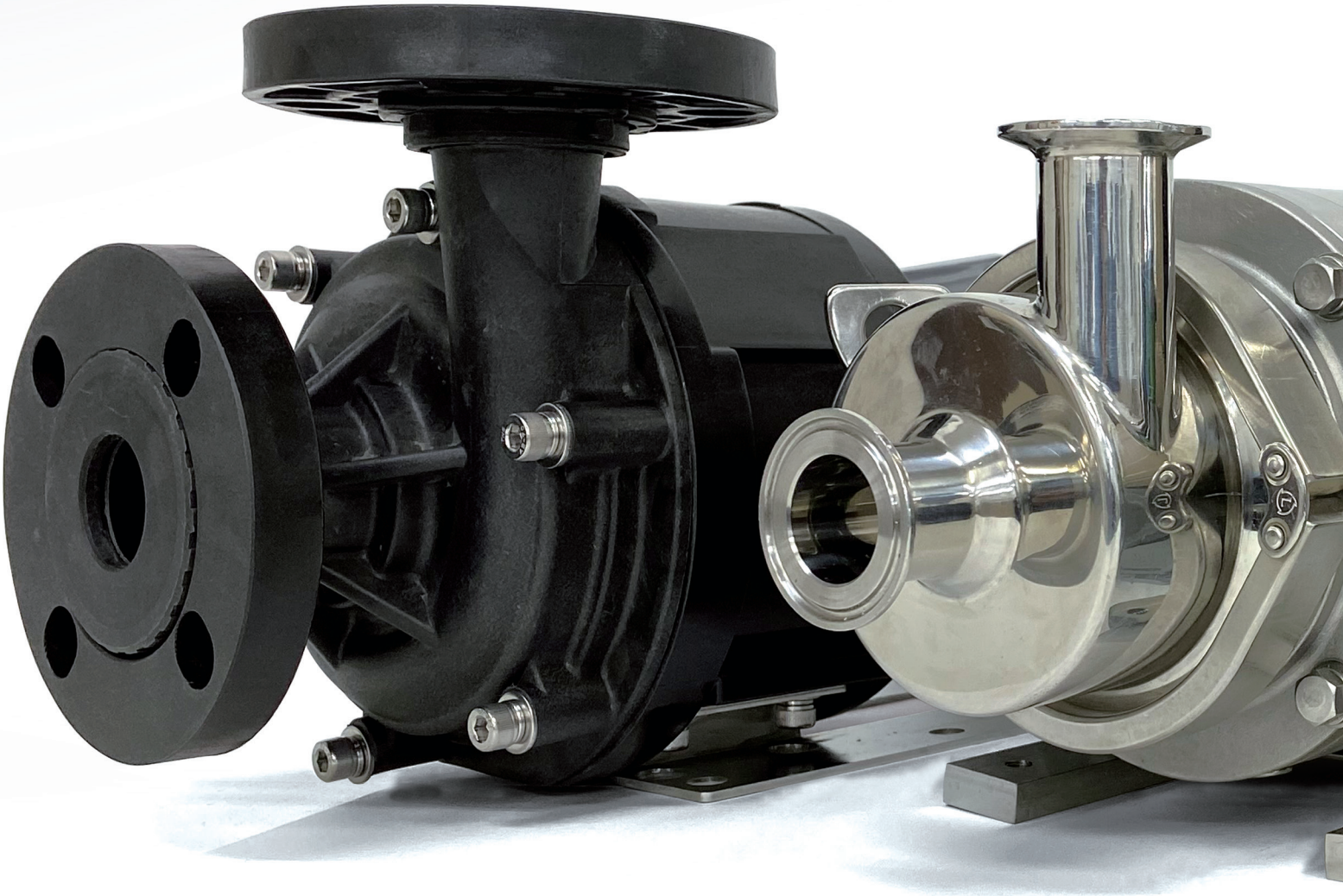


Chemical Dosing / Transfer Pumps

株式会社トーケミ

Accuracy, Safety and Long life

Transfer and Dosing any



Evolution of Water purification.

Chemicals with TOHKEMY

Chemicals are now essential for our social life and economic activities.
Chemicals are diluted and used in the solution on site in most cases,
but there is a risk to handle highly-concentrated chemicals.
Tohkemy's chemical transfer and dosing pumps are useful in such fields, with the **accuracy, safety, long life.**

For all users...

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CHEMICAL PUMP PRODUCTS INFORMATION

Chemical Dosing / Transfer Pumps

MP-L

CHEMICAL PUMP MP-L series

Solenoid-driven diaphragm type metering pump

Simple setting for operation from the digital indication panel

- MP-L30P
- MP-L60P
- MP-L200P
- MP-L30N
- MP-L60N

Use of MP-L series

- For injection chemical for water treatment agents, acids and alkalis
- For chemical injection in physics and chemistry and medical fields
- For small water-supply system and chlorine sterilization for swimming pools
- For boiler chemicals
- For nutrient and disinfectant for hydroponics and stock-raising sites

Standard type
MP-L30P・60P

Non-gas lock type
MP-L30N・60N

Standard type
MP-L200P

Model	Discharge rate	Discharge pressure
MP-L30P/N	1.6MPaG	～240mℓ/min (50/60Hz)
MP-L60P/N	0.5MPaG	
MP-L200P	0.2MPaG	

MP-L

Solenoid-driven diaphragm type metering pump

MP-L30P/MP-L30N/MP-L60P/MP-L60N/MP-L200P

features

Applicable for high discharge pressure (MP-L30P/30N)

Max. discharge pressure is 1.6MPa. It enables a continuous injection to injection point at 1.0MPa of back pressure.

Compatible with various control signals

It is compatible with "contact signal (pulse) input" and "analog signal (0/4~20mA) input" to enable automatic operation mode, and various operation modes with remote ON/OFF, batch operation and special operation function.

※Optional control cable is necessary.

MP-L30・60・200P(Standard type)

Main liquid-end parts: PVDF

High corrosion resistance resin PVDF (polyvinylidene difluoride) is adopted to main liquid-end parts which is high resistance against not only general chemicals but also acids and alkalis.

Manual air extract function is standard equipment

Air in liquid-end parts is easily extracted by rotating the air extract valve even while pump operation.

MP-L30P type

MP-L30・60N(Non-gas lock type)

The most suitable for injection of bubble generating chemicals such as Sodium hypochlorite, etc.

MP-L30N type

Reliable air extract function

Quantitative injection without gas lock by air extract function in liquid-end parts working automatically even for chemicals from which bubbles tend to be generated.

Acrylic pump head: liquid moving in the pump head is visible.

Generation of the gas lock (air lock) and discharge status can be checked from outside.

■Model / specifications

Model	Normal discharge pressure		Max. discharge pressure		Stroke frequency [spm]	Protection structure	Power - consumption	Max. current value	Operating ambient temperature	Weight
	Discharge rate [mℓ/min]	Discharge pressure [MPa]	Discharge rate [mℓ/min]	Discharge pressure [MPa]						
MP-L30P	41	0.8	35	1.6	0～180	IP65	17W	3.6A	−10～45℃	Approx. 2.9kg
MP-L30N	29	0.8	23	1.6						
MP-L60P	70	0.25	65	0.5						
MP-L60N	50	0.25	43	0.5						
MP-L200P	240	0.1	200	0.2						

■Common specifications

- Manual operation, various control operation function
- Stroke frequency adjustment: 0 to 180spm (stroke frequency/min.)
- Stroke length adjustment: 0 to 100%
  (The recommended stroke length adjustment - MP-L30/60/200P: 30% or more / MP-L30/60N: 50% or more)
- Power source: AC 100 to 230V (+/-10%) 50/60 Hz

■ Liquid-end parts specifications

	MP-L30P・60P・200P Standard type			MP-L30N・60N Non-gas lock type
Applicable chemicals	Ferric chloride / PAC / Aluminum sulfate / Sodium hypochlorite / Ferric sulfate	Hydrochloric acid / Dilute sulfuric acid / Nitric acid / Other strong acids	Sodium hydroxide	Bubble generating solutions such as sodium hypochlorite, etc.
Pump head	PVDF			Acryl
Valve	PVDF			PVC
Valve seat	PVDF			Special fluoro rubber
Check bal	Ceramic			Ceramic
Valve spring	—			Hastelloy C
Gasket	PTFE			Special fluoro rubber
O-ring	PTFE			Special fluoro rubber
Diaphragm	Liquid end surface PTFE (Back surface EPDM)			Liquid end surface PTFE (Back surface EPDM)
Hose spec	MP-L30P/60P：φ4×φ9mm, bladed soft PVC hose MP-L200P：φ6×φ11mm, bladed soft PVC hose	MP-L30P/60P：φ4×φ6mm, polyethylene hose MP-L200P：φ6×φ9mm, polyethylene hose		φ4×φ9mm, bladed soft PVC hose

* Please feel free to contact us if you have any inquiries of hose selection.
* The hose spec. φ6 x 11mm Tetron braded soft PVC hose or φ6 x 9mm PE hose for MP-L200P.

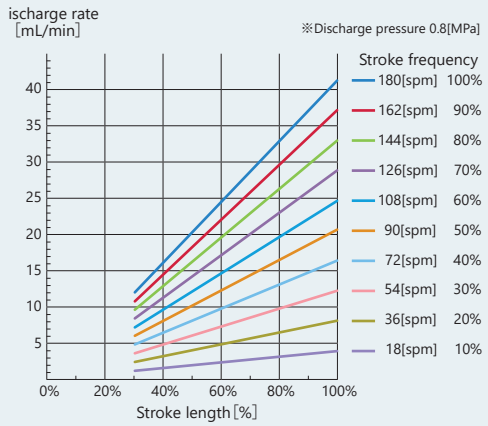
■ Viscosity of fluid

Refer to the right chart for transferring high-viscous fluid.

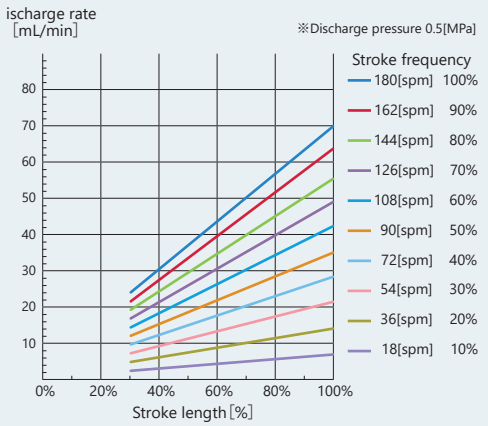
Model / Connection	Viscosity
MP-L30P・60P・200P	0～200mPa・s
MP-L30N・60N	0～50mPa・s

■ Performance curve

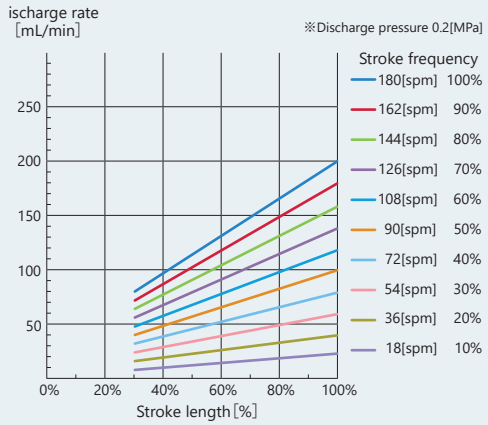
MP-L30P Performance curve



MP-L60P Performance curve



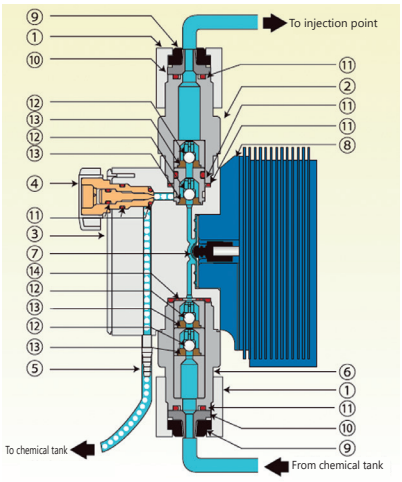
MP-L200P Performance curve



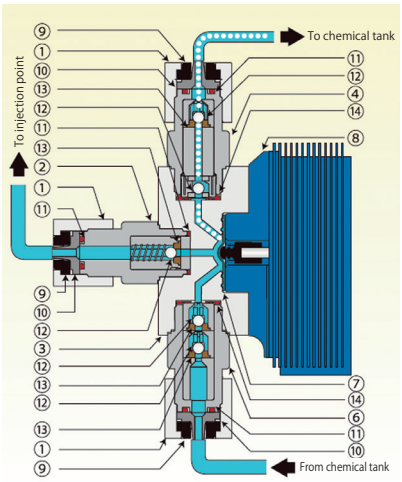
[Expected performance]
Each chart shows the discharge rate at 0.8 [MPa] of pump discharge pressure.
Discharge rate is adjusted to a required volume with 0 to 180 [spm] and stroke length 0 (30) to 100 [%].
Attention: Accuracy decrease or gas lock may cause in range of stroke length close to 0%.
Please use at the below recommended stroke length or more.
・MP-L30P/60P/200P: 30% or more
・MP-L30N/60N: 50% or more

■Liquid-end parts construction

▼Standard type (MP-L30P/60P/200P)



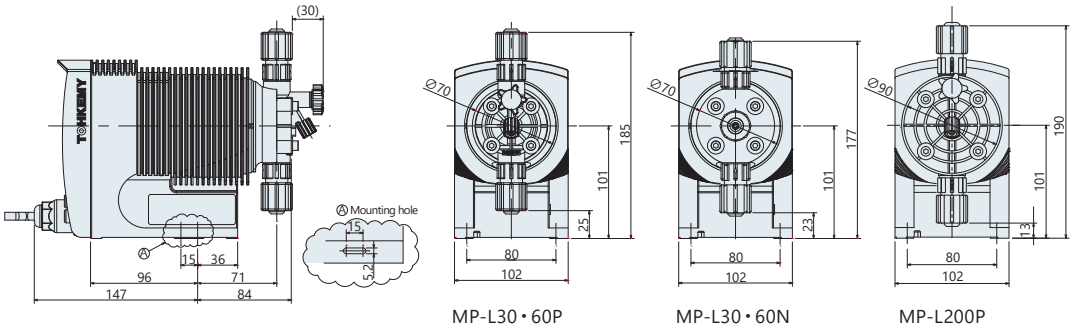
▼Non-gas lock type (MP-L30N/60N)



P/N	Part name
1	Union nut
2	Discharge valve
3	Pump head
4	Air extract valve
5	Air extract nozzle
6	Suction valve
7	Diaphragm
8	Back plate
9	Grip ring
10	Hose nozzle
11	O-ring
12	Valve ball
13	Valve seat
14	Gasket

■Pump Dimensions

(Unit：mm)



■Model Code

e.g. ▶ MP-L **30P** — **V4**

❶ ❷

❶:Model

30・60・200P	Standard type	PVDF/PTFE
30・60N	Non-gas lock type	Acryl/PVC/PTFE

❷:Hose connection

P4(P6)	φ4 x 6mm (φ6 x 9) Polyethylene hose
V4(V6)	φ4 x 9mm (φ6 x 11) Tetron braded soft PVC hose

※φ6×9・φ6×11:MP-L200P

■Standard accessories

- Power cable 2m
- Hose 3m
- Check valve
- Foot valve
- M4 mounting bolt and nut x 2
- Instruction manual

■Optional accessories

- Control cable 2-core / 5-core (2m, 5m, 10m)
- Spring check valve (PVDF)
- Anti-siphonage valve (PVC)

▼Inform us of the following items when you place an order for MP-L series.

Model	Applicable solutions	Power source	Connection	Others
MP-L□□O	Name, Concentration, Temperature, Specific Gravity, Viscosity	OOOV、Oφ、OOHz	Hose	Remark

■ Control operation functions

Manual operation mode

Select ON/OFF and stroke frequency (0 to 180spm) on the operation panel of pump body. By means of control cable, it is externally operatable by ON/OFF signal from outside without pump power off.
(Remote ON/OFF function)

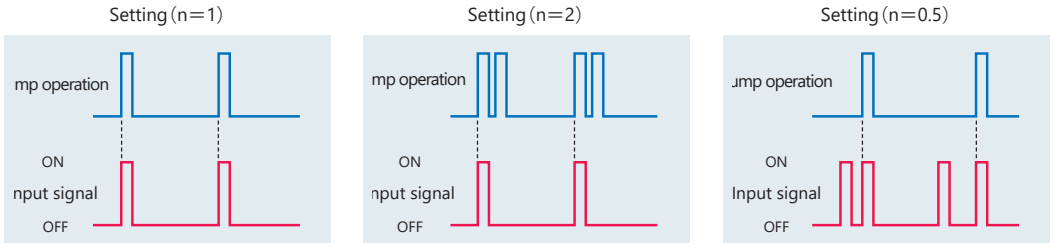
Digital input (pulse) operation mode

Pump stroke frequency can be controlled automatically by interlocking with external pulse signal in combination with pulse generating flowmeter etc.
One (1) pump stroke with one (1) pulse signal (synchronous) in normal setting. Multiplying and Dividing modes are also available.

Multiplying setting	When pump stroke frequency is increased against pulse input numbers. Memory function to store input pulse signals to pump operating (ON/OFF setting available)
Dividing setting	When pump stroke frequency is increased against pulse input numbers. Memory function to store input pulse signals to pump operating (ON/OFF setting available)

※Setting range of input pulse numbers (n: 0.01 to 99.99)

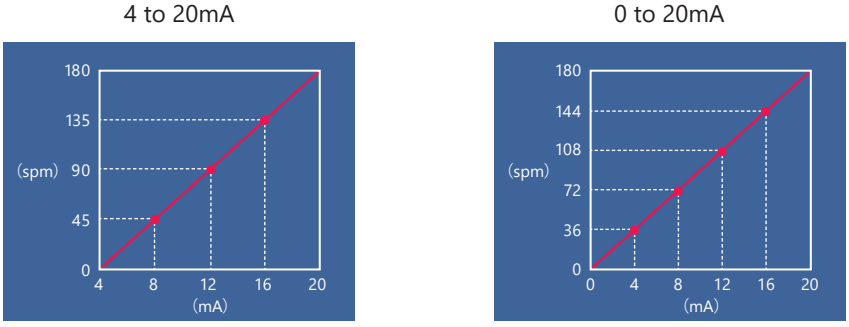
Setting example



[Standard] Pulse input 1 = Pump stroke 1
[Multiplying] Pulse input 1 = Pump stroke 2
[Dividing] Pulse input 2 = Pump stroke 1

Analogue input operation mode

Proportional control of stroke frequency in interlocking with analogue signal (0/4 to 20mA) from outside.



CM

CHEMICAL PUMP CM series

Motor-driven diaphragm type metering pump

Accurate and simple, distinguished durability

CM-V

Medium-pressure
small-capacity

Discharge pressure	吐出量
1.0MPaG (1V,2V,6V,8V,25V)	~1.6ℓ/min (60Hz)
0.5MPaG (50V,80V,130V)	~1.3ℓ/min (50Hz)

CM-G

Medium-pressure
medium-capacity

Discharge pressure	Discharge rate
1.0/1.5MPaG (3G,7G,12G)	~7.0ℓ/min (60Hz)
0.5/1.0MPaG (30G~100G)	~5.8ℓ/min (50Hz)
0.5MPaG (200G)	
0.3MPaG (350G,700G)	

CMD-G

Medium-pressure
medium-capacity

Discharge pressure	Discharge rate
1.0/1.5MPaG (3G,7G,12G)	~14ℓ/min (60Hz)
0.5/1.0MPaG (30G~100G)	~11.6ℓ/min (50Hz)
0.5MPaG (200G)	
0.5MPaG (350G,700G)	

CM-W

Low-pressure
medium-capacity

Discharge pressure	Discharge rate
0.5MPa (CM-100/200W)	~18ℓ/min (60Hz)
0.3MPa (CM-500/1000/1500W)	~15ℓ/min (50Hz)

CM-Y

Medium-pressure
small-capacity (linearity)

Discharge pressure	Discharge rate
1.0MPaG (2Y,6Y,10Y,25Y)	~1.2ℓ/min (60Hz)
0.7MPaG (45Y,85Y)	~1.0ℓ/min (50Hz)
0.5MPaG (120Y)	

CM-R

Low-pressure
large-capacity

Discharge pressure	Discharge rate
0.5MPaG (4R~9R)	~34ℓ/min (60Hz)
0.3MPaG (14R~34R)	~28ℓ/min (50Hz)

CMD-R

Low-pressure
large-capacity

Discharge pressure	Discharge rate
0.3MPaG (D-32R~D-68R)	~68ℓ/min (60Hz) ~56ℓ/min (50Hz)

CM-L

Medium-pressure
large-capacity

Discharge pressure	Discharge rate
0.7MPaG (1L~6L)	~17ℓ/min (60Hz)
0.5MPaG (9L~17L)	~14ℓ/min (50Hz)

CMK

Control motor
for automatic stroke-length adjustment

Refer to CM-Y, R, L.

Features of CM series

- **Accurate discharge rate and simple setting.**

Accurate discharge rate is realized by means of various devices such as fine construction and processing of pump head, use of special-shape dial cam, reciprocating motions with spring-back, etc. The discharge rate can be simply adjusted by a dial.

- **Most suitable for metering and dosing various chemical solutions.**

The pump can safely meter and dose various chemicals being used in water treatment and industry plant by use of suitable chemical-resistant materials for liquid-end parts.

- **Strong body of distinguished durability.**

The pump body is strong enough to withstand the use under severe conditions for industry purpose.

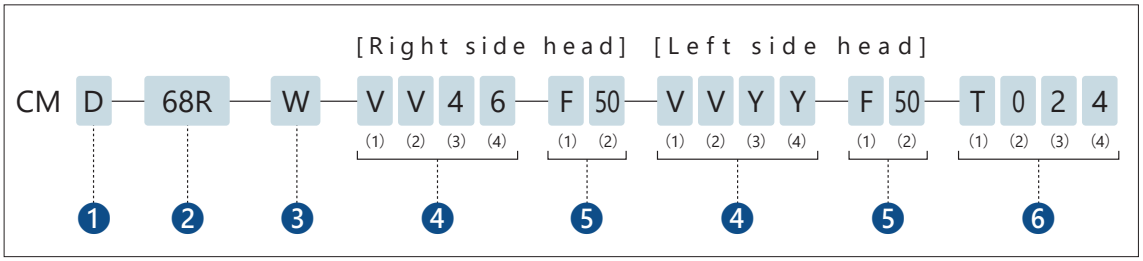
- **Easy maintenance.**

The pump construction of drive and liquid-end parts is very simple. It is easy to replace the parts and maintain the pump.

- **Reasonable prices and immediate delivery.**

We are positively trying to reduce costs by reduction of parts and mass production of molded parts. In addition, we are generally trying to improve the lead time for prompt delivery.

CM series code explanation (Motor-driven diaphragm type metering pump)



■CM: Nomination of our pump series

1 No. of pump head and stroke-length adjustment system

Blank	: Single head
D	: Double head
K4	: Control motor

2 Pump type (See the table on the each model page.)

3 Diaphragm type

Blank	: Single
W	: Double

4 Liquid-contact part material

The model code is basically a four number
but a three number for the model not having the spring.

- For CM-W/V/G
  - (1) Pump head
  - (2) Connector
  - (3) Valve seat
  - (4) Check ball
- For CM-V/G-VV46/XV46
  For CM-G-VVYY/XXU/XXU6/444/4446
  For CM-Y
  - (1) Pump head
  - (2) Connector
  - (3) Check ball
  - (4) Spring
- For CM-R/L
  - (1) Pump head / connector
  - (2) Valve guide / valve seat
  - (3) Check ball
  - (4) Spring

Material codes	
V	PVC (Polyvinyl chloride)
H	HTPVC
P	PP(Polypropylene)
4	SUS304
6	SUS316
9	SUS316L
Y	Hasteloy C
F	FKM(Fluorine rubber)
E	EPDM (Ethylene propylene rubber)
S	Aflas®

Material codes	
A	Acryl
T	PTFE(Fluorine resin)
N	Hypalon
C	Ceramics
U	Urethane
X	Resin + SUS reinforced
Z	Others

● Aflas® is a registered trademark of AGC Inc.

5 Piping connection

(1) Type / (2) Nominal diameter (mm)

F	: Flange joint JIS 10K	Nominal diameter indicated
G	: Flange joint JIS 20K	
A	: Flange joint ANSI 150lb	
B	: Flange joint ANSI 300lb	
U	: Union joint	
V	: PVC braded hose joint	Hose inner diameter indicated
P	: Polyethylene hose joint	
TP	: FEP fluorine resin hose	
X	: Hose for suction, union for discharge	Discharge-side nominal diameter indicated
Y	: Hose for suction, flange joint for discharge	
Z	: Others	

6 Motor

(1) Type

T	: Standard (flange type)
F	: General-purpose, totally-enclosed, fan-cooled (flange type)
Y	: General-purpose, totally-enclosed, fan-cooled (foot mount)
E	: Safety explosion-proof
G	: Pressure and explosion-proof
V	: Variable speed (foot-mount)
Z	: Others

(2) Location

I	: Indoor
O	: Outdoor

(3) Voltage, phase, No. of poles and insulation class

1	: 100/110V, single-phase, 4P
2	: 200/220V, three-phase, 4P
3	: 200/220V, three-phase, 6P
4	: 400/440V, three-phase, 4P
5	: 400/440V, three-phase, 6P
6	: Others
7	: 200/220V, single-phase, 4P

(4) Output

Output code						(kW)
1	0.1	4	0.75	7	3.7	
2	0.2	5	1.5	8	5.5	※ Blank for CM-V
3	0.4	6	2.2	9	Others	

CM-V

Motor
25w 60w

Medium-pressure small-capacity Motor-driven metering pump

CM-1V/CM-2V/CM-6V/CM-8V/CM-25V/CM-50V/CM-80V/CM-130V

features

Smallest pump among CM series

CM-V behaves accurate discharge performance although it is small type using 25W and 60W motors.

Various power source specifications

- Various power source motors lined up as standard and semi-standard.
  •100V •110V •200V •220V •230V
  •380V •400V •415V •440V
- Totally-enclosed fan-cooled (TEFC) outdoor flange type motor.

  Take measures such as using the motor cover of standard accessory for outdoor use.

※Consider the installation so as not to expose the pump to the sun.
※It is not available to the explosion-proof requirement.
※ It is not applicable to the specified color painting.

Variety of standard accessories.

A sight glass is standardly equipped for the pump body. (for hose connection of CM-1V-25V, except for XV46 specification, flange and union connections) A motor cover and simple tools are attached to all models. An air extract valve, check valve and foot valve are attached to the hose connection of CM-1V-25V-VVFC/VVE4 with sight glass. Motor cover, air extract pump, simple tools, check valve (only for hose connection), foot valve (only for hose connection)

Model / specifications

Model	Discharge rate (ml/min) at 0.1MPaG		Max. discharge rate at the max. discharge pressure (ml/min)		Max. discharge pressure (MPaG)	Diameters of Pump head / Diaphragm (mm)	Stroke frequency(spm) / Reduction ratio		Max. stroke length (mm)	Motor (W)	Weight (kg)	
	60Hz	50Hz	60Hz	50Hz			60Hz	50Hz			Hose	Flange
CM-1V	2.4～12	2～10	10	8	1.0	φ70/φ39	8 / 1:180	7 / 1:180	3	25	Approx. 4.0	Approx. 4.3
CM-2V	4.8～24	4～20	19	16			16 / 1:90	14 / 1:90				
CM-6V	14.4～72	12～60	70	55			50 / 1:30	41 / 1:30				
CM-8V	20～100	16～80	75	58		φ70/φ49						
CM-25V	60～300	50～250	260	210			120 / 1:12.5	100 / 1:12.5				
CM-50V	120～600	100～500	300	250	0.5	φ110/φ90	51 / 1:30	43 / 1:30	4	60	Approx. 7.8	Approx. 8.1
CM-80V	200～1000	160～800	650	500			86 / 1:18	72 / 1:18				
CM-130V	320～1600	260～1300	1250	1010					6			

- The discharge rate was calculated at discharge pressure of 0.1MPaG, suction head of -0.01MPaAq equivalent to the same pipe diameter as in the pump; and normal temperature using clear water.
  Use the pump under 0 to 40℃ of the ambient temperature, -0.01MPaAq of suction head, approx. 0.06MPa Abs. of NPSH req.

■Common specifications

Connection	Hose	CM-1V-25V: φ4 x φ9 or φ4 x φ6, CM-50V/80V: φ6 x φ11, φ6 x φ9 or φ15 x φ22, CM-130V: φ1 x φ22, CM-1V-25V-XV46: φ6 x φ11　CM-50V/80V-VV46: φ15 x φ22
	Flange	15A JIS10KF　13A union joint
Motor	Standard	Three-phase, 4P, Insulation class B, 60Hz (200/220/230V), 50Hz (200/220V), 25W: Totally-enclosed self-cooled indoor flange type
	Semi-standard	60W: Totally-enclosed fan-cooled outdoor flange type
		Three-phase, 4P, Insulation class B, 60Hz (380/400/415/440V), 50Hz (380/400/415/440V), 25W: Totally-enclosed fan-cooled indoor flange type, 60W: Totally-enclosed fan-cooled outdoor flange type 60W: Totally-enclosed fan-cooled indoor flange type
Reducer		Spur-gear multistage combination mechanism
Standard accessories		● Motor cover set (w/ mounting stay, set screws) 1 set ● Simple tools (Hexagonal wrench) ● Hose 4m (except for hose φ15 x φ22 of CM-1V-80V) ● Air extract hose (PE hose 1m) (for CM-1V-25V-VVFC/VVE4) ● Pump mounting bolts and nuts M6 x 35L 4 sets ● Instruction manual ● Foot valve (Hose specifications only・Excluding φ15 × φ22) ● Check valve (Hose specifications only・Excluding φ15 × φ22) ● Air extract pump
Color		For motor and reduction gear parts: Astero silver, similarly Munsell 2.5Y6.5/1.5, For driving parts: Silver

■Liquid-end parts specifications

Part name \ Combination		VVFC		VVE4		XV46(1V～25V) VV46(50V～130V)
Applicable chemicals		Sodium hypochlorite, Ferric chloride, PAC, Aluminum sulfate, Ferrous sulfate, Ferric sulfate	Hydrochloric acid, Dilute sulfuric acid, Other strong acids	Sodium hydroxide	Ammonia water	Polymer flocculants
Pump head		PVC		PVC		PVC
Diaphragm		PTFE		PTFE		PTFE
Connector		PVC		PVC		PVC
Valve seat		FKM		EPDM		—
Check ball		Ceramics		SUS304		SUS304
Spring		—		—		SUS316
O-ring, Gasket		Aflas®		Aflas®		φ70PTFE/φ110Aflas®
Connection	Hose	φ4 x φ9mm, φ6 x φ11mm, φ15 x φ22mm Braded soft PVC hose	φ4 x φ6mm, φ6 x φ9mm PE hose	φ4 x φ6mm, φ6 x φ9mm PE hose	φ4 x φ9mm, φ6 x φ11mm, φ15 x φ22mm Braded soft PVC hose	φ6 x φ11mm, φ15 x φ22mm Braded soft PVC hose
	Flange	15A JIS 10K　Flange				

- Since chemical resistance of material varies according to temperature and concentration of fluid, the above applicable chemicals are basic examples. It is possible to combine different materials.
- Aflas® is a registered trademark of AGC Inc.
- Since there are two kinds of connecting hose for VVFC combination, for selection, specify a chemical name or hose size to be used.

■Viscosity of fluid

Refer to the chart below for transferring high-viscous fluid such as Polymer flocculants.

Model \ Connection	φ6×φ11mm hose	φ15×φ22mm hose	15A　Flange
CM-1V	50mPa・s max.	—	50mPa・s max.
CM-2V～8V	200mPa・s max.	—	300mPa・s max.
CM-25V	80mPa・s max.	—	300mPa・s max.
CM-50V/80V	Not used	500mPa・s max.	500mPa・s max.
CM-130V	Not used	500mPa・s max.	500mPa・s max.

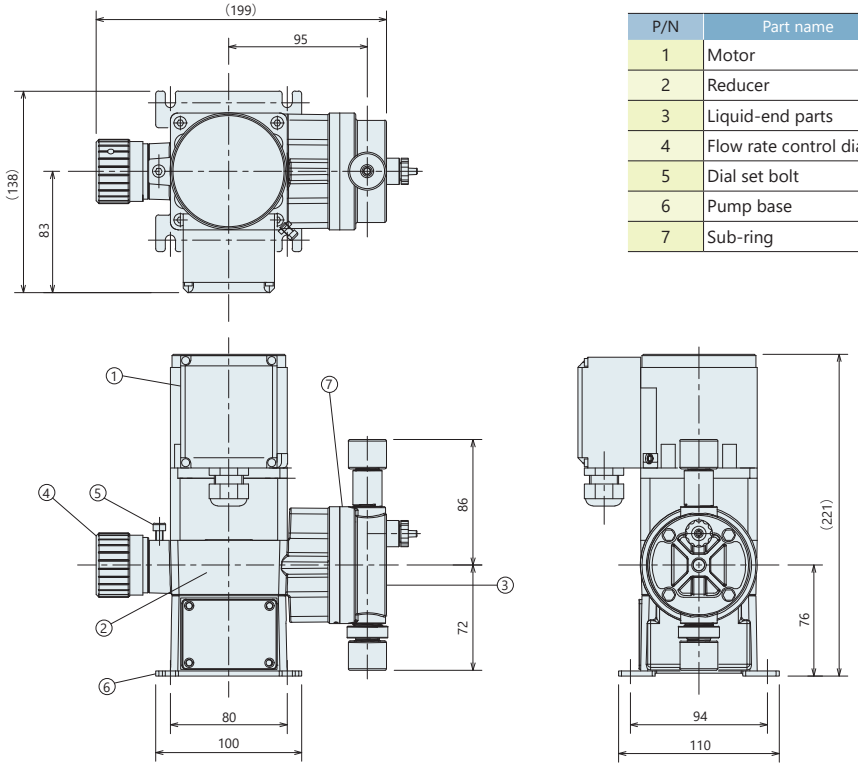
▼Inform us of the following items when you place an order for CM-V series.

Model	Chemical to be used	Power source	Connection	Others
CM- ○○V	Name, concentration, temperature, specific gravity,	○○○V、○φ、○○Hz	Hoseφ○×○mm or flange	Remark

■Pump Dimensions

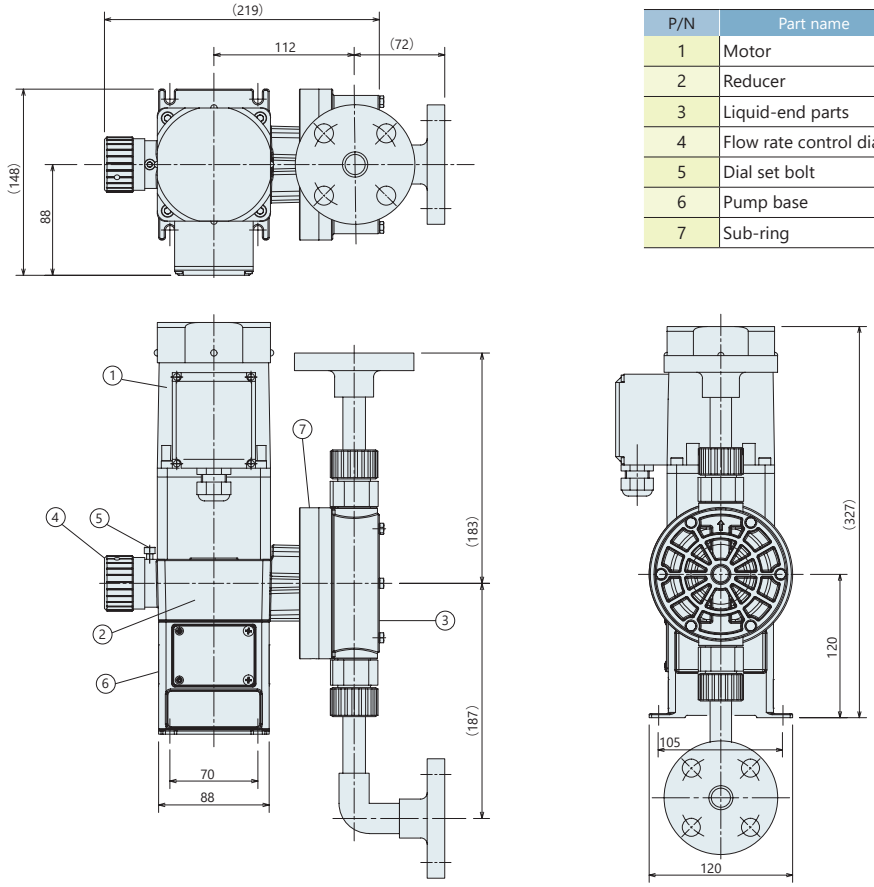
（unit：mm）

CM-1V～25V



P/N	Part name
1	Motor
2	Reducer
3	Liquid-end parts
4	Flow rate control dial
5	Dial set bolt
6	Pump base
7	Sub-ring

CM-50V～130V

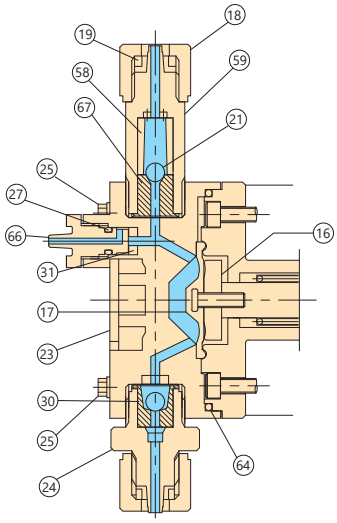


P/N	Part name
1	Motor
2	Reducer
3	Liquid-end parts
4	Flow rate control dial
5	Dial set bolt
6	Pump base
7	Sub-ring

Liquid-end parts construction

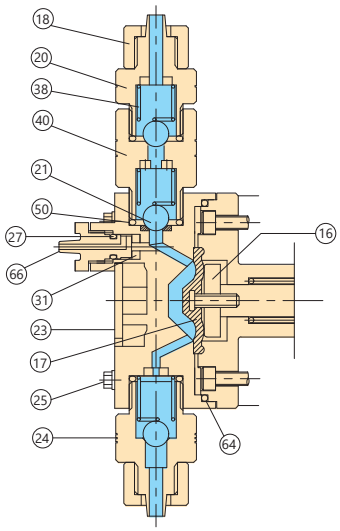
CM-1V～25V-VVFC/VVE4

Hose connection
w/ Sight glass



CM-1V～25V-XV46

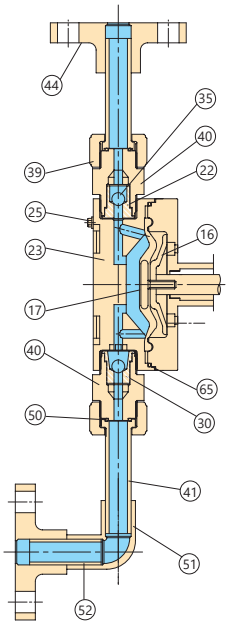
Hose connection



P/N	Part name
16	Diaphragm washer
17	Diaphragm
18	Hose lock nut
19	Hose lock ring
20	Discharge-side 1st stage connector
21	Check ball
23	Pump head
24	Suction-side connector
25	Pump head mounting bolt
27	O-ring
30	Suction-side valve seat
31	Gasket
38	Spring
40	Discharge-side 2nd stage connector
50	O-ring
58	Float guide
59	Sight glass case
64	O-ring
66	Air extract plug
67	Discharge-side valve seat

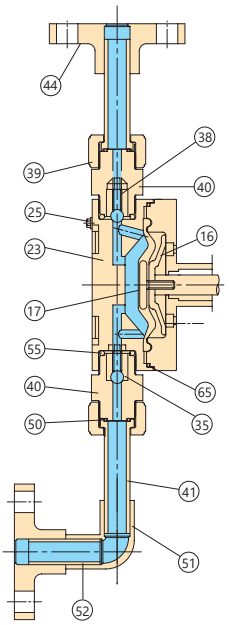
CM-50V～130V-VVFC/VVE4

Flange connection



CM-50V～130V-VV46

Flange connection



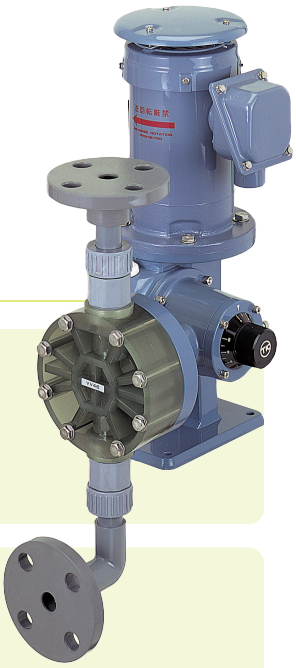
P/N	Part name
16	Diaphragm washer
17	Diaphragm
22	Discharge side valve seat
23	Pump head
25	Pump head mounting bolt
30	Suction-side valve seat
35	Check ball
38	Spring
39	Lock nut
40	Connector
41	Union socket
44	TS flange
50	O-ring
51	Elbow
52	Short pipe
65	O-ring

Single head type CM-G

motor 0.2kW 0.4kW

Medium-pressure medium-capacity Motor-driven metering pump

CM-3G/CM-7G/CM-12G/CM-30G/CM-60G/CM-100G/CM-200G/CM-350G/CM-500G/CM-700G



features

General-purpose motor used

This pump is equipped with 0.2kW or 0.4kW of general-purpose motor and it is possible to follow every electric condition by use of a designated motor. The motor can be selected from 0.2kW and 0.4kW according to designing condition and designated specifications.

Various power source specification

- Various power source motors lined up as standard and semi-standard.
  •100V •110V •200V •220V •380V •400V •415V •420V •440V
- Totally-enclosed fan-cooled (TEFC) outdoor flange type motor.

Possible to be equipped with a safety-increase explosion-proof motor, a pressure and explosion-proof motor

The pump can be equipped with a safety-increase explosion-proof, a pressure and explosion-proof motor of designated manufacturer, to be used in dangerous condition without anxiety. In addition, when controlling the pump discharge rate by use of invertor, the pump can be easily equipped with an exclusive invertor motor.

Model and specifications

0.2kW motor

Model	Discharge rate (ml/min) at 0.1MPaG		Max. discharge rate at the max. discharge pressure (ml/min)		Max. discharge pressure (MPaG)	Diameters of Pump head / Diaphragm (mm)	Stroke frequency (spm) / Reduction ratio		Max. stroke length (mm)	Motor (kW)	Weight (kg)
	60Hz	50Hz	60Hz	50Hz			60Hz	50Hz			
CM-3G	6～30	5～25	25	21	1.0 (Single) 1.5 (Three)	φ70/φ39	35 / 1:50	29 / 1:50	2	Single/ Three 0.2	about 16
CM-7G	14～70	12～58	65	54					4		
CM-12G	24～120	20～100	113	94			58 / 1:30	48 / 1:30			
CM-30G	60～300	50～250	132	110	0.5 (Single) 1.0 (Three)	φ110/φ90	35 / 1:50	29 / 1:50			about 17
CM-60G	120～600	100～500	418	348					7		
CM-100G	200～1000	160～800	667	556			58 / 1:30	48 / 1:30			
CM-200G	400～2000	320～1600	1748	1456	0.5	φ150/φ120					
CM-350G	700～3500	600～2900	3451	2876	0.3				12	Three 0.2	about 19
CM-500G	1000～5000	800～4000	4769	3974			112 / 1:16	87 / 1:16	8		
CM-700G	1400～7000	1200～5800	6720	5600					12		

0.4kW motor

Model	Discharge rate (ml/min) at 0.1MPaG		Max. discharge rate at the max. discharge pressure (ml/min)		Max. discharge pressure (MPaG)	Diameters of Pump head / Diaphragm (mm)	Stroke frequency (spm) / Reduction ratio		Max. stroke length (mm)	Motor (kW)	Weight (kg)
	60Hz	50Hz	60Hz	50Hz			60Hz	50Hz			
CM-3G	6～30	5～25	25	21	1.5	φ70/φ39	35(1:50)	29(1:50)	2	Three 0.4	about 17
CM-7G	14～70	12～58	65	54					4		
CM-12G	24～120	20～100	113	94			58(1:30)	48(1:30)			
CM-30G	60～300	50～250	132	110	1.0	φ110/φ90	35(1:50)	29(1:50)			about 18
CM-60G	120～600	100～500	418	348					7		
CM-100G	200～1000	160～800	667	556			58(1:30)	48(1:30)			
CM-200G	400～2000	320～1600	1748	1456	0.5	φ150/φ120					
CM-350G	700～3500	600～2900	3254	2711					12		about 20
CM-500G	1000～5000	800～4000	4259	3549			112(1:16)	87(1:16)	8		
CM-700G	1400～7000	1200～5800	6067	5056					12		

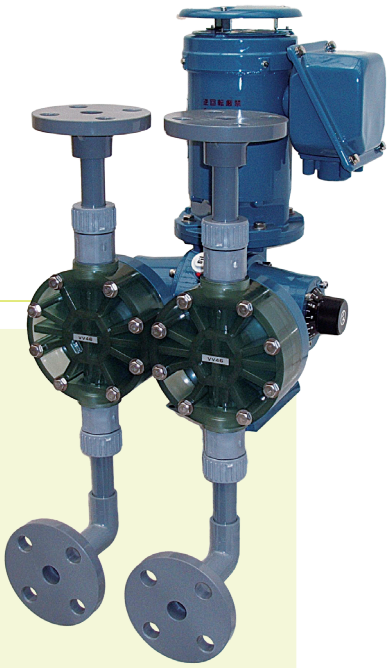
- The discharge rate was calculated at discharge pressure of 0.1MPaG, suction head of -0.01MPaAq equivalent to the same pipe diameter as in the pump; and normal temperature using clear water.
- For use with flange connection, the discharge pressure of CM-3G to 12G should be 1.0MPaG maximum.
- There is no hose connection and single-phase motor type for CM-200G to 700G. When your pump is of the standard specification, use it in the ambient temperature range of 0-40℃, the liquid temperature range of 0-50℃ and about 0.06MPaA (0.6kgf/cm2A) of NPSH req.
- The maximum discharge rate of CM-3G to 12G at the maximum discharge pressure should be at 1.0MPaG of the pressure.

Double head type CMD-G

motor 0.2kW 0.4kW

Medium-pressure medium-capacity | Motor-driven metering pump

CMD-3G／CMD-7G／CMD-12G／CMD-30G／CMD-60G／CMD-100G／CMD-200G／
CMD-350G／CMD-500G／CMD-700G



features

CMD series works two diaphragms operated by one motor.
The comparison features between CM series and CMD series as follows.

- The discharge rate of CMD series is twice of model CM series.
- Lessen pulsation by dosing from two pump head to one line.
- Two flow-rate adjustment dials for two pump heads to control each discharge rate independently.
- This pump can be equipped with two different combination of liquid-end material to dose two different fluids by one pump.

It is possible to keep initial and running costs lower to improve cost merit.

Remark for use

- Both pump heads (diaphragms) shall be the same diameter. It means that both discharge rates shall not be so different.
  Since the driving motor is one, each of the dosing cannot be stopped during operation. Be careful about operation with automatic control such as ON-OFF control by output signal from controllers.

Model and specifications

0.2kW motor

Model	Discharge rate (ml/min) at 0.1MPaG		Max. discharge rate at the max. discharge pressure (ml/min)		Max. discharge pressure (MPaG)	Diameters of Pump head / Diaphragm (mm)	Stroke frequency (spm) / Reduction ratio		Max. stroke length (mm)	Motor (kW)	Weight (kg)
	60Hz	50Hz	60Hz	50Hz			60Hz	50Hz			
CMD-3G	12～60	10～50	50	42	1.0(Single) 1.5(Three)	φ70/φ39	35 / 1:50	29 / 1:50	2	Single/ Three 0.2	about 21
CMD-7G	28～140	24～116	130	108					4		
CMD-12G	48～240	40～200	226	188			58 / 1:30	48 / 1:30			
CMD-30G	120～600	100～500	264	220	0.5(Single) 1.0(Three)	φ110/φ90	35 / 1:50	29 / 1:50			about 22
CMD-60G	240～1200	200～1000	836	696					7		
CMD-100G	400～2000	320～1600	1334	1112			58 / 1:30	48 / 1:30			
CMD-200G	800～4000	640～3200	3496	2912	0.5	φ150/φ120				Three 0.2	about 25

0.4kW motor

Model	Discharge rate (ml/min) at 0.1MPaG		Max. discharge rate at the max. discharge pressure (ml/min)		Max. discharge pressure (MPaG)	Diameters of Pump head / Diaphragm (mm)	Stroke frequency (spm) / Reduction ratio		Max. stroke length (mm)	Motor (kW)	Weight (kg)
	60Hz	50Hz	60Hz	50Hz			60Hz	50Hz			
CMD-3G	12～60	10～50	50	42	1.5	φ70/φ39	35 / 1:50	29 / 1:50	2	Three 0.4	about 22
CMD-7G	28～140	24～116	130	108					4		
CMD-12G	48～240	40～200	226	188			58 / 1:30	48 / 1:30			
CMD-30G	120～600	100～500	264	220	1.0	φ110/φ90	35 / 1:50	29 / 1:50			about 23
CMD-60G	240～1200	200～1000	836	696					7		
CMD-100G	400～2000	320～1600	1334	1112			58 / 1:30	48 / 1:30			
CMD-200G	800～4000	640～3200	3496	2912	0.5	φ150/φ120					about 26
CMD-350G	1400～7000	1200～5800	6508	5422					12		
CMD-500G	2000～ 10000	1600～8000	8518	7098			112 / 1:16	87 / 1:16	8		
CMD-700G	2800～ 14000	2400～ 11600	12134	10112					12		

- The discharge rate was calculated at discharge pressure of 0.1MPaG, suction head of -0.01MPaAq equivalent to the same pipe diameter as in the pump; and normal temperature using clear water.
- For use with flange connection, the discharge pressure of CMD-3G to 12G should be 1.0MPaG maximum.
- Discharge rates of CMD series are twice of CM series. There is no hose connection and single-phase motor type for CMD-200G to 700G.
  When your pump is of the standard specification, use it in the ambient temperature range of 0-40℃, the liquid temperature range of 0-50℃ and about 0.06MPaA (0.6kgf/cm2A) of NPSH req.
- The maximum discharge rate of CMD-3G to 12G at the maximum discharge pressure should be at 1.0MPaG of the pressure.

■Common specifications

Connection	Hose	(3G to 12G) φ4 x φ6mm polyethylene or φ4 x φ9mm braided soft PVC (φ6 x φ11mm braided soft PVC hose for XV46, XXU, 444, 4446 type)
		(30G to 100G) φ6 x φ9mm polyethylene or φ6 x φ11mm braided soft PVC
	Flange	(3G to 100G) 15A JIS 10K flange, 13A union
		(200G, 350G) 20A JIS 10K flange, 20A union
		(500G, 700G) 25A JIS 10K flange, 20A union
Motor	Standard	0.2kW, Three-phase, 4P, class E, 60Hz (200/220V), 50Hz (200V), TEFC outdoor flange type
	Semi-standard	0.2kW, Single-phase, 4P, class E, 60Hz (200/220V), 50Hz (200V), TEFC outdoor flange type
		0.2kW, 7-rated Three-phase, 4P, class E, 60Hz (380/400/440V), 50Hz (380/400/415/420V), TEFC outdoor flange type
		0.2kW, 7-rated Three-phase, 4P, class E, 60Hz (380/400/440V), 50Hz (380/400/415/420V), TEFC outdoor flange type
		0.2kW or 0.4kW, Three-phase, 4P, class E, 60Hz (200/220V), 50Hz (200V), safety-increase explosion-proof outdoor flange type
		0.4kW, Three-phase, 4P, class E, 60Hz (200/220V), 50Hz (200V), pressure and explosion-proof outdoor flange type
Reducer		Worm gear reduction type, lubricated with viscosity 320mm2/s (cSt) worm gear oil
Standard accessories	Hose	Foot valve (except for XXU, XXU6, 444, 4446 combination), Ball-type anti-siphonage valve (except for XXU, XXU6, 444, 4446 combination), Hose x 4m, Simple tools, Pump mounting bolts and nuts (w/ washers, M8 x 30L) x 4 sets, Instruction manual, Air extract pump, Air extract hose (PE 0.85m) (for 3G to 12G, VVFC and VVE4 combination))
	Flange	Simple tools, Pump mounting bolts and nuts (w/ washers, M8 x 30L) x 4 sets, Instruction manual, Air extract pump, Air extract hose (PE 0.85m) (for 3G to 12G, VVFC and VVE4 combination)
Color		Munsell 2.5PB 5/2 for motor & reducer

■Liquid-end parts specifications

Part name \ Combination	VVFC		VVE4		XV46(3G～12G) VV46(30G～700G)	XXU(3G～350G) XXU6(500G,700G)	444(3G～12G) 4446(30G～700G)
Applicable chemicals	Sodium hypochlorite, Ferric chloride,PAC, Aluminum sulfate, Ferrous sulfate, Ferric sulfate	Hydrochloric acid, Sulfuric acid, Nitric acid, Other strong acid	Sodium hydroxide	Ammonia water	Polymer flocculants, Sodium hydroxide, Ammonia water	Slaked lime, Sludge, Powdered activated carbon (solution)	Methanol
Pump head	PVC		PVC		PVC + SUS RF (XV46), PVC (VV46)	PVC + SUS RF	SUS304
Diaphragm	PTFE		30G-100G: EPDM,Others: PTFE			PTFE	PTFE
Connector	PVC		PVC		PVC	PVC + SUS RF	SUS304
Valve seat	FKM		EPDM		—	—	—
Check ball	Ceramics		SUS304		SUS304	Urethane	SUS304
Spring	—		—		SUS316	—/SUS316	—/SUS316
O-ring, Packing	Aflas®		Aflas®		XV46：PTFE VV46：Aflas®	Aflas® 3G～12G：PTFE	PTFE
Connection: Hose connection	φ4 x φ9mm or φ6 x φ11mm braided soft PVC	φ4 x φ6mm or φ6 x φ9mm PE	φ4 x φ9mm or φ6 x φ9mm braided soft PVC		φ6 x φ11mm braided soft PVC	φ6 x φ11mm braided soft PVC	φ6 x φ9mm PE
Connection: Flange connection	(3G to 100G) 15A, (200G, 350G) 20A, (500G, 700G) 25A, JIS 10K flange						

* Since chemical resistance of material varies according to temperature and concentration of fluid, the above applicable chemicals are basic examples. It is possible to combine different materials.
* Since there are two kinds of connection hose for VVFC combination, for selection, specify a chemical name or hose size to be used.
* Do not use CMD-G series for organic solvent.
* VVFC/VVE4 will be VVYY at CM-500G, CM-700G, CMD-500G and CMD-700G. ("Y" for Hasteloy C)
* Please use VV46 instead VVE4 when you use the CM-350G and CMD-350G.
* Aflas® is a registered trademark of AGC Inc.

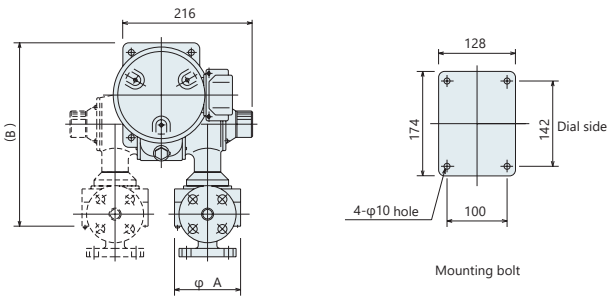
■Viscosity of fluid

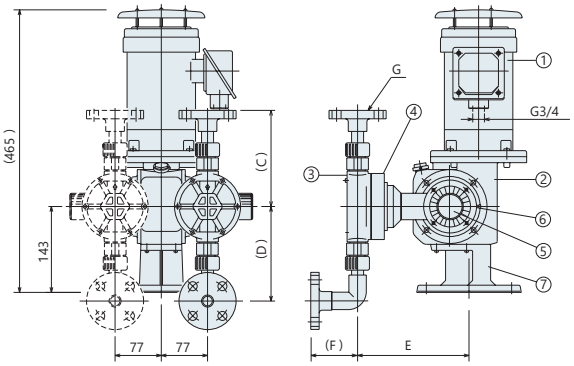
Refer to the chart below for transfer high-viscous fluid such as Polymer flocculants.

Model \ Combination	φ6 hose	Flange		Liquid-end combination
CM-3G～12G	200mPa･s max.	15A	800mPa･s max.	XV46
CM-30G	80mPa･s max.			VV46
CM-60G･100G	Not used			
CM-200G･350G		20A		
CM-500G･700G		25A		

■Pump Dimensions

（unit：mm）





P/N	Part name
1	Motor
2	Reducer
3	Liquid-end parts
4	Pump frame
5	Flow rate control dial
6	Dial set bolt
7	Pump base

Hose connection

Dimensions	φA	B	C	D	E
CM/CMD-3G～12G	70	274	115	69	172
CM/CMD-30G～100G	110	293	125	125	186

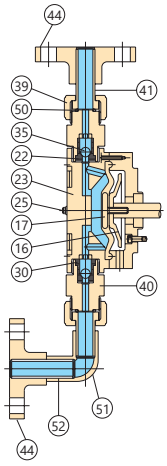
Flange connection

Dimensions	φA	B	C	D	E	F	G
CM/CMD-3G～12G	70	274	160	155	172	72	15A JIS10KFF
CM/CMD-30G～100G	110	293	183	187	186		
CM/CMD-200G･350G	150	311	232※	247※	198	90	20A JIS10KFF
CM/CMD-500G･700G			230	245		95	25A JIS10KFF

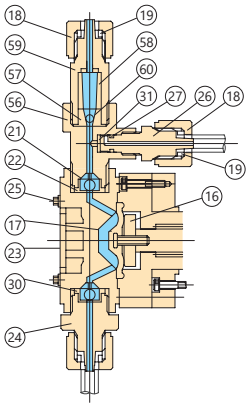
*The above dimensions are for VVFC/VVE4. C: 230 and D: 245 for VV46/XXU.

■Liquid-end parts construction

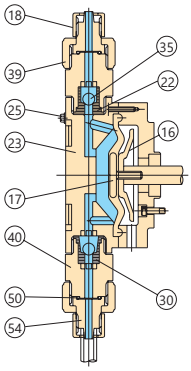
CM-30G～700G
Flange connection



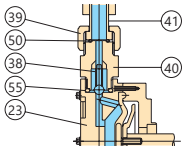
CM-3G～12G
Hose connection



CM-30G～100G
Hose connection



VV46･XXU6･4446
Sectional view



P/N	Part name
16	Diaphragm washer
17	Diaphragm
18	Hose lock nut
19	Hose lock ring
21	Check ball
22	Discharge-side valve seat
23	Pump head
24	Suction-side connector
25	Pump head mounting bolt
26	Air extract plug
27	O-ring
30	Suction-side valve seat
31	Gasket
35	Check ball
38	Spring
39	Lock nut
40	Connector
41	Union socket
44	TS flange
50	O-ring
51	Elbow
52	Short pipe
54	Hose joint
55	O-ring
56	Discharge-side connector
57	Float seat
58	Float guide
59	Sight glass case
60	Float

▼Inform us of the following items when you place an order for CM-G series.

Model	Chemical to be used	Power source	Connection	Others
CMO - ○○G	Name, concentration, temperature, specific gravity, viscosity	○○○V、○φ、○○Hz	Hose diameter or flange	Remark

CM-W

motor
0.2kw 0.4kw

Low-pressure medium-capacity Motor-driven metering pump

CM-100W／CM-200W／CM-500W／CM-1000W／CM-1500W

features

Low-pressure medium-capacity metering pump of Tohkemy

This pump is suitable for large-capacity metering at low pressure (0.3MPa or lower).
It is possible to dose 10L/min (by CM-1000W) with 0.2kW motor which is used for CM-G series.

Power source specification

- Various power source motors lined up as standard and semi-standard.
  •200V •220V •380V •400V •415V •420V •440V
- Totally-enclosed fan-cooled (TEFC) outdoor flange type motor.

Possible to be equipped with a safety-increase explosion-proof motor, a pressure and explosion-proof motor

The pump can be equipped with a safety-increase explosion-proof, a pressure and explosion-proof motor of designated manufacturer, to be used in dangerous condition without anxiety. In addition, when controlling the pump discharge rate by use of invertor, the pump can be easily equipped with an exclusive invertor motor.

Air chamber as a standard accessory (CM-500/1000/1500W)

Air chamber is a standard accessory for CM-500/1000/1500W.
Install the air chamber at the top end of straight discharge piping of pump.

■Model and specifications

Model	Discharge rate (ml/min) at 0.1MPaG		Max. discharge rate at the max. discharge pressure (ml/min)		Max. discharge pressure (MPaG)	Diameters of Pump head / Diaphragm (mm)	Stroke frequency (spm) / Reduction ratio		Max. stroke length (mm)	Piping specification	Motor (kW)	Weight (kg)
	60Hz	50Hz	60Hz	50Hz			60Hz	50Hz				
CM-100W	280-1400	230-1160	1200	1000	0.5	φ130/ φ100	89 / 1:19	73 / 1:19	3	20A Union	Three 0.2	about 17
CM-200W	530-2650	440-2200	2400	2000			170 / 1:10	140 / 1:10)				
CM-500W	1320-6600	1100-5500	6000	5000	0.3	φ195/ φ150	154 / 1:11	127 / 1:11	3.9	25A flange		about 27
CM-1000W	2520-12600	2100-10500	12000	10000					7.2	40A flange		
CM-1500W	3960-19800	3300-16500	18000	15000					10.5		Three 0.4	about 29

- The discharge rate was calculated at discharge pressure of 0.1MPaG, suction head of -0.01MPaAq equivalent to the same pipe diameter as in the pump; and normal temperature using clear water.
- When your pump is of the standard specification, use it in the ambient temperature range of 0-40℃, the liquid temperature range of 0-50℃ and about 0.06MPa Abs. of NPSH req.
- A connection flange and coupling set is additionally required to install the specified motor, which is not standard, in CM-100/200W.

■Common specifications

Connection	100/200W	20A PVC union
	500W	25A JIS 10K flange
	1000/1500W	40A JIS 10K flange
Motor	Standard	Three-phase, 4P, class E, 60Hz (200/220V), 50Hz (200V), TEFC outdoor flange type
	Semi-standard	Three-phase, 4P, class E, 60Hz (380/400/440V), 50Hz (380/400/415/420V), TEFC outdoor flange type
		Safety-increase explosion-proof type, pressure and explosion-proof type, inverter motor, etc.
Reducer		Worm reduction gear, lubricated with viscosity 220mm2/s worm gear oil is recommended.
Standard accessories		Simple tools 1 set,Pump mounting bolts M8 x 30L and nuts(w/washers),Air chamber(except for CM-100/200W))
Color		For both motor and reduction gear parts: Munsell 7.5PB 4/12

■Liquid-end parts specifications

Part name \ Combination	PPFC	PPEC	PPF4	PPE4	VVFC
Applicable chemicals	Hydrochloric acid, Sulfuric acid, PAC,35% or lower Hydrogen peroxide, Ferric chloride	Sodium hydroxide, Ammonia water	Polymer flocculants (fluid-undiluted, fluid-diluted solution) Others, Viscous fluid	Polymer flocculants (powder-diluted solution) Others, Viscous fluid	Sodium hypochlorite, Other strong acids
Pump head	PP				PVC
Diaphragm	PTFE				
Connector	PP				PVC
Valve guide	PP				PVC
Valve seat	FKM	EPDM	FKM	EPDM	FKM
Check ball	Ceramics		SUS304		Ceramics
O-ring	Aflas®				

- Since chemical resistance of material varies according to temperature and concentration of fluid, the above applicable chemicals are basic examples. It is possible to combine different materials.
- It is not suitable for transferring fluid containing slurry. ●Aflas® is a registered trademark of AGC Inc.

■Viscosity of fluid

Refer to the chart below for transferring high-viscous fluid such as Polymer flocculants.

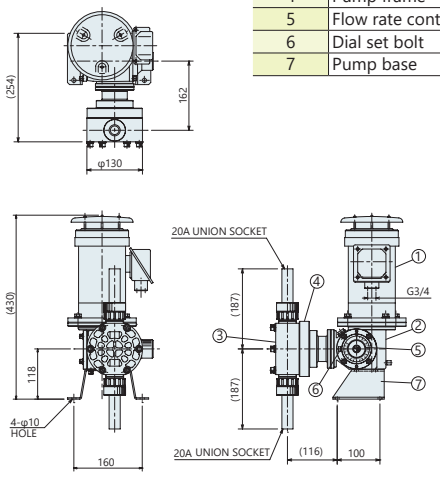
Model \ Combination	Viscosity	Liquid-end parts combination
CM-100W/200W CM-500W CM-1000W/1500W	1000mPa･s max	PPF4/PPE4

■Pump Dimensions

（unit：mm）

CM-100/200W

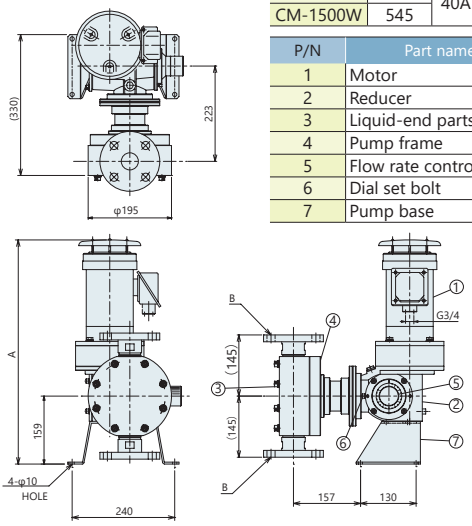
P/N	Part name
1	Motor
2	Reducer
3	Liquid-end parts
4	Pump frame
5	Flow rate control dial
6	Dial set bolt
7	Pump base



CM-500/1000/1500W

Model	A	B
CM-500W	525	25A JIS10K
CM-1000W		40A JIS10K
CM-1500W	545	

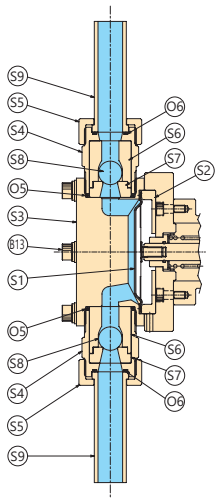
P/N	Part name
1	Motor
2	Reducer
3	Liquid-end parts
4	Pump frame
5	Flow rate control dial
6	Dial set bolt
7	Pump base



■Liquid-end parts construction

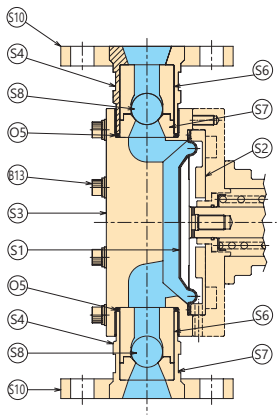
CM-100/200W

P/N	Part name
S1	Diaphragm
S2	Backup ring
S3	Pump head
S4	Connector
S5	Lock nut
S6	Valve guide
S7	Valve seat
S8	Check ball
S9	Union socket
O5	O-ring P-34
O6	O-ring P-22
B13	Pump head mounting bolt



CM-500/1000/1500W

P/N	Part name
S1	Diaphragm
S2	Backup ring
S3	Pump head
S4	Connector
S5	Lock nut
S6	Valve guide
S7	Valve seat
S8	Check ball
O5	O-ring P-44
B13	Pump head mounting bolt



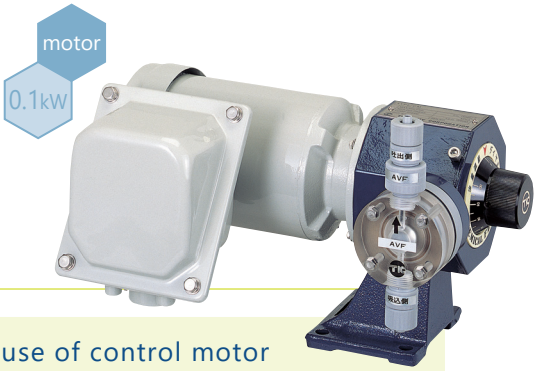
▼Inform us of the following items when you place an order for CM-W series.

Model	Chemical to be used	Power source	Others
CM - OOW	Name, concentration, temperature, specific gravity,	OOOV、Oφ、OOHz	Remark

CM-Y

Medium-pressure small-capacity (linearity) **Motor-driven metering pump**

CM-2Y／CM-6Y／CM-10Y／CM-25Y／CM-45Y／CM-85Y／CM-120Y



features

Best suited for proportional dosing control by use of control motor

This pump is designed to keep the discharge linearity at the lowest limit by adopting special type of gear reduction and double-check system at the discharge side. It must be the most suitable for chemical dosing if the input, such as flow rate and water quality, would fluctuate much. In such case, select the proportional dosing control of stroke adjustment by use of control motor. (Refer to Control motor CMK.)

Various power source specification

- Various power source motors lined up as standard and semi-standard.
  •200V •220V •380V •400V •415V •420V •440V
- Totally-enclosed fan-cooled (TEFC) outdoor flange type motor.

Possible to be equipped with a safety-increase explosion-proof motor, a pressure and explosion-proof motor (coupling connection)

The pump can be equipped with a safety-increase explosion-proof, a pressure and explosion-proof motor, to be used in dangerous condition without anxiety, and with an inverter motor, VS motor, etc. by coupling connection on a common base.

■Model and specifications

Model	Discharge rate(ml/min) at 0.1MPaG		Max. discharge rate at the max. discharge pressure (ml/min)		Max. discharge pressure (MPaG)	Diameters of Pump head / Diaphragm (mm)	Stroke frequency (spm) / Reduction ratio		Max. stroke length (mm)	Motor (W)	Weight (kg)
	60Hz	50Hz	60Hz	50Hz			60Hz	50Hz			
CM-2Y	5～25	4～20	20	16	1.0	φ70	18 / 1:90	15 / 1:90	3.5	0.1	PVC about 13 SUS about 16
CM-6Y	12～60	10～50	55	46			34 / 1:50	28 / 1:50	4.5		
CM-10Y	20～100	16～80	92	77		φ100	18 / 1:90	15 / 1:90	3.5		
CM-25Y	50～250	42～210	231	192			34 / 1:50	28 / 1:50	4.5		
CM-45Y	90～450	74～370	416	347	0.7		61 / 1:30	51 / 1:30			
CM-85Y	170～850	140～700	777	645			102 / 1:16	85 / 1:16			
CM-120Y	240～1200	200～1000	1068	890	0.5				6.0		

● The discharge rate was calculated at discharge pressure of 0.1MPaG, suction head of -0.01MPaAq equivalent to the same pipe diameter as in the pump; and normal temperature using clear water. When your pump is of the standard specifications, use it in the ambient temperature range of 0-40℃, the liquid temperature range of 0-50℃ and about 0.06MPa Abs. of NPSH req.

■Common specifications

Connection	Hose	φ6 x φ11mm braided soft PVC hose or φ6 x φ9mm polyethylene
	Union	R3/8 male screw
	Flange	15A JIS 10K flange
Motor	Standard	Three-phase, 4P, class E, 60Hz (200/220V), 50Hz (200V), TEFC outdoor flange type
	Semi-standard	7-rated three-phase, 4P, class E, 60Hz (380/400/440V), 50Hz (380/400/415/420V), TEFC outdoor flange type
Reducer		Planet-gear two-stage combination, lubricated with molybdenum grease
Standard accessories	Hose	Hose x 4m, Foot valve, Check valve, Simple tools, Mounting bolts and nuts (M8 x 30L) x 4 sets, Instruction manual
	Hose	Special water socket (R3/8 x 13A) x 3 pcs, Simple tools, Mounting bolts and nuts (M8 x 30L) x 4 sets, Instruction manual
	Flange	Simple tools, Mounting bolts and nuts (M8 x 30L) x 4 sets, Instruction manual
Color		Munsell 2.5PB 2.5/7 for reducer, Munsell N7 for motor

● The contents of standard accessories are different for XXU (for slurry fluid), 4446 (SUS) and TTT (all Teflon) of liquid-end.

■Liquid-end parts specifications

Part name \ Combination	VVF		AVF	AV46		XXU	4446	TTT
Applicable chemicals	PAC	Hydrochloric acid,Sulfuric acid	Sodium hydroxide, Aluminum sulfate, Ferric chloride	Sodium hydroxide,	Polymer flocculants, Ammonia water	Slaked lime,Sludge, Powdered activated carbon (solution)	Organic solvent, Methanol	Strong acid
Pump head	PVC		Acryl	Acryl		Acryl(SUS RF)	SUS304	PTFE
Diaphragm	PTFE		PTFE	PTFE		PTFE	PTFE	PTFE
Connector	PVC		PVC	PVC		PVC(SUS RF)	SUS304	PTFE
Check ball	FKM		FKM	SUS304		Urethane	SUS304	PTFE
Spring	—		—	SUS316		—	SUS316	—
O-ring	PTFE		PTFE	PTFE		PTFE	PTFE	PTFE
Hose connection	φ6 x φ11mm braided soft PVC	φ6 x φ9mm PE	φ6 x φ11mm braided soft PVC	φ6 x φ9mm PE	φ6 x φ11mm braided soft PVC		φ6 x φ9mm PE or fluororesin	

- Since chemical resistance of material varies according to temperature and concentration of fluid, the above applicable chemicals are basic examples.
- Since there are two kinds of connection hose for VVF and AV46 combination, for selection, specify a chemical name or hose size to be used.

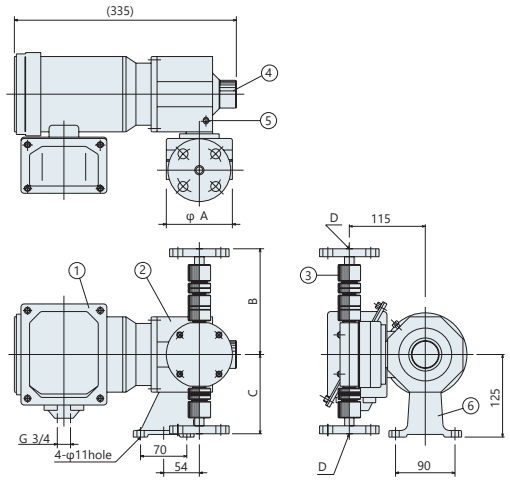
■Viscosity of fluid

Refer to the chart below for transferring high-viscous fluid such as Polymer

Model \ Combination	φ6 x φ11mm hose	15A flange	Liquid-end combination
CM-2Y～10Y	200mPa.s max.	700mPa.s max.	AV46
CM-25Y	100mPa.s max.		
CM-45Y	Not used		
CM-85Y・120Y	Not used	500mPa.s max.	

■Pump Dimensions

（unit：mm）



P/N	Part name
1	Motor
2	Reducer
3	Liquid-end parts
4	Flow rate control dial
5	Dial set bolt
6	Pump base

Flange connection

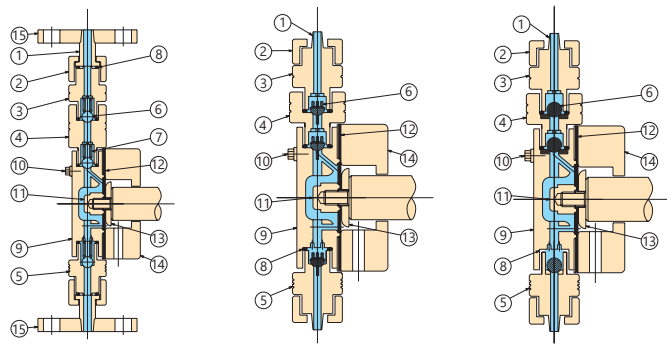
Model	φA	B	C	D
CM-2Y,6Y	70	145	105	15A JIS10KFF
CM-10Y～120Y	100	160	120	

Hose connection

Model		φA	B	C
CM-2Y,6Y	AVF,VVF TTT,XXU	70	95	70
	4446,AV46		100	75
CM-10Y～120Y	AVF,VVF TTT,XXU	100	110	85
	4446,AV46		115	90

■Liquid-end parts construction

CM-Y (Flange connection)　CM-Y(Hose connection)　CM-Y (XXU Hose connection)



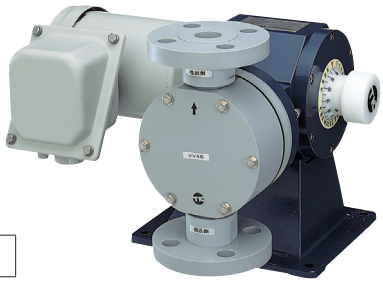
P/N	Part name
1	Socket
2	Hose lock nut
3	Discharge-side 1st stage connector
4	Discharge-side 2nd stage connector
5	Suction-side valve seat
6	Check ball
7	Spring
8	O-ring
9	Pump head
10	Pump head mounting bolt
11	Diaphragm lock nut
12	Diaphragm
13	Diaphragm washer
14	Sub-ring
15	Connection flange

▼Inform us of the following items when you place an order for CM-Y series.

Model	Chemical to be used	Power source	Connection	Others
CM- ○○Y	Name, concentration, temperature, specific gravity, viscosity	○○○V、○φ、○○Hz	Hose diameter or flange	Remark

Single head type CM-R
Double head type CMD-R

motor
0.2kW 0.4kW
0.75kW



Low-pressure large-capacity Diaphragm type metering pump

CM-4R／CM-6R／CM-9R／CM-14R／CM-16R／CM-22R／CM-27R／CM-34R／CMD-32R／CMD-44R／CMD-54R／CMD-68R

features

This pump is of spring-back, direct-acting diaphragm, fixed-displacement type. The resin-made fluid-contact section has been successfully modified to be simple and solid. Flange (JIS10K) are used for pipe connections, as standard design-less damage-prone and much easier to handle compared the former series.

Low-pressure large-capacity pump of Tohkemy

Discharge quantity is a lot, this dosing pump suitable for use in discharge pressure is low (Less than 0.3MpaG). Compared with same size of CM-L as large series, possible to discharge will be large as low power source.

Power source

Various power source motors lined up as standard and semi-standard.
•200V •220V •380V •400V •415V •420V •440V
Possible to be supported with different voltage and explosion proof type.
Please contact to confirm us about delivery terms.

Outdoors specification

Totally-enclosed fan-cooled (TEFC) outdoor flange type motor.

Possible to be equipped with coupling connection.

The pump can be equipped with a safety-increase explosion-proof motor, a pressure and explosion proof motor and other designated motor by coupling connection.

Protect option (Double diaphragms)

Normally pump diaphragm is single. The double –diaphragm design that possible to protect the reduction gears from corrosive liquid leak which might be caused by the damage of the diaphragm. For the option only, ready to install the double diaphragm.

● Applicable to CM-27R, CM-34R, CMD-54R, CMD-68R (except for V4U6 combination)

Air Chamber standard accessory

■Model and specifications

Model	Discharge rate (L/min) at 0.1MPaG		Max. discharge rate at the max. discharge pressure (L/min)		Max. discharge pressure (MPaG)	Diameters of Pump head / Diaphragm (mm)		Stroke frequency (spm) / Reduction ratio		Max. stroke length (mm)	Connection flange (JIS 10K)		Motor (kW/pole)	Weight (kg) PVC/SUS	Air chamber φ×L(mm)	
	60Hz	50Hz	60Hz	50Hz				60Hz	50Hz							
CM-4R	0.8～4	0.7～3.3	3.6	3	0.5	120		170 / 1:10	140 / 1:10	6.5	20A		0.2/4P	20/26	3^8×400	
CM-6R	1.2～6	1～5	5.2	4.4		140					25A			22/30	4^8×400	
CM-9R	1.8～9	1.5～7.5	7.6	6.3						10			0.4/4P	31/39		
CM-14R	2.8～14	2.4～12	13	11	0.3	160					40A			32/45	4^8×600	
CM-16R	3.2～16	2.7～13	14	12						12						
CM-22R	4.4～22	3.6～18	20	17		180							0.75/4P	39/54	6^8×600	
CM-27R	5.4～27	4.4～22	25	21		200								42/59		
CM-34R	6.8～34	5.6～28	32	26		220					50A			45/65	8^8×600	
CMD-32R	3.2～32	2.7～26	28	24		160	Double-head				40A	Double-head	0.4/4P	42/68	4^8×600	Double-head
CMD-44R	4.4～44	3.6～36	40	33		180							0.75/4P	51/82	6^8×600	
CMD-54R	5.4～54	4.4～44	51	42		200								55/90		
CMD-68R	6.8～68	5.6～56	63	53		220					50A			62/110	8^8×600	

● The discharge rate was calculated at discharge pressure of 0.1MPaG, suction head of -0.01MPaAq equivalent to the same pipe diameter as in the pump; and normal temperature using clear water. When your pump is of the standard specifications, use it in the ambient temperature range of 0-40℃, the liquid temperature range of 0-50℃ and about 0.06MPaA (0.6kgf/cm2A) of NPSH req.

■ Common specifications

Motor	Standard	0.2 to 0.4kW: Three-phase, 4P, class E, 60Hz (200, 220V), 50Hz (200V), TEFC outdoor flange type
		0.75 kW: Three-phase, 4P, class F, 60Hz (200, 220V), 50Hz (200V), TEFC outdoor flange type
	Semi-standard	0.2 and 0.4kW: Three-phase, 4P, class E, 60Hz (400, 440V), 50Hz (400V), TEFC outdoor flange type
		0.75kW: Three-phase, 4P, class F, 60Hz (380, 400, 440V), 50Hz (380, 400, 415, 420V), TEFC outdoor flange type
Reducer		Planetary gear speed reducer, lubricated with molybdenum grease
Standard accessories		Air chamber, Simple tools, Mounting bolts and nuts (washer with M8 x 30L) x 4 sets, Instruction manual
Color		Munsell 2.5PB 2.5/7 for reducer, Munsell N7 for motor

■Liquid-end parts specifications

Part name \ Combination	VV46	VVYY	VVC	4446	V4U6
Applicable chemicals	High viscosity liquid, Sodium hydroxide, Ammonia water	Sodium hypochlorite, Sulfurous acid, Hydrochloric acid, Nitric acid, Ferric chloride, PAC, Ferrous / Ferric sulfate, Sulfuric acid band, Chromic acid		Methanol, Organic solvent solution	Slaked lime solution, Sludge liquor
Pump head	PVC			SUS304	PVC
Diaphragm	PTFE				Urethane /PTFE
Valve case	PVC			SUS304	PVC
Valve guide	PVC			SUS304	
Check ball	SUS304	Hasteloy C	Ceramics	SUS304	Urethane
O-ring	Aflas®			PTFE	Aflas®
Spring	SUS316	Hasteloy C	—	SUS316	

● Take this table as a general guide, because the material corrosion depends on liquid temperature and concentrations. Other combinations of materials than above are also available.
● Aflas® is a registered trademark of AGC Inc.

■Viscosity of fluid

Refer to the chart below for transferring high-viscous fluid such as Polymer flocculants.

Model \ Combination	Viscosity
CM-R/CMD-R	1000mPa･s max.

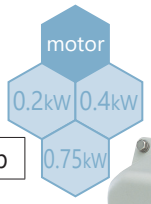
■Comparison at a glance for large-capacity diaphragm pump

Model	Stroke frequency (spm)	Normal pressure (MPaG)	Discharge accuracy (%)	Air chamber
R	170/140(60/50Hz)	0.2～0.3	±5%	necessary
L	56～108/47～89(60/50Hz)	0.3～0.5	±2%	

▼Inform us of the following items when you place an order for CM-R and CMD-R series.

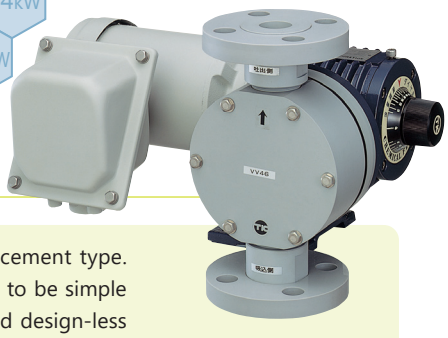
Model	Chemical to be used	Power source	Head	Others
CMO - OOR	Name, concentration, temperature, specific gravity, viscosity	OOOV、Oφ、OOHz	Single or Double	Remark

CM-L



Medium-pressure large-capacity | Diaphragm type metering pump

CM-1L／CM-2L／CM-3L／CM-6L／CM-9L／CM-13L／CM-17L



features

This pump is of spring-back, direct-acting diaphragm, fixed-displacement type. The resin-made fluid-contact section has been successfully modified to be simple and solid. Flange (JIS10K) are used for pipe connections, as standard design-less damage-prone and much easier to handle compared the former series.

Medium-pressure large-capacity pump of Tohkemy

Discharge quantity is a lot, this dosing pump suitable for use in discharge pressure is medium (Less than 0.5MpaG).

Motor specification

Various power source motors lined up as standard and semi-standard.

•200V •220V •380V •400V •415V •420V •440V

Possible to be equipped with different voltage and explosion-proof.
(Please contact to ask us about delivery terms.)

Outdoors specification

Totally-enclosed fan-cooled (TEFC) outdoor flange type motor.

Possible to be equipped with coupling connection.

The pump can be equipped with a safety-increase explosion-proof motor, a pressure and explosion proof motor and other designated motor by coupling connection.

Protect option (Double diaphragms)

Normally pump diaphragm is single. The double –diaphragm design that possible to protect the reduction gears from corrosive liquid leak which might be caused by the damage of the diaphragm.
For the option only, ready to install the double diaphragm.

● Applicable to CM-17L (except for V4U6 combination)

Air Chamber standard accessory

Model and specifications

Model	Discharge rate (L/min) at 0.1MPaG		Max. discharge rate at the max. discharge pressure (L/min)		Max. discharge pressure (MPaG)	Diameters of Pump head / Diaphragm (mm)	Stroke frequency (spm) / Reduction ratio		Max. stroke length (mm)	Connection flange (JIS 10K)	Motor (kW/pole)	Weight (kg) PVC/SUS	Air chamber φ×L(mm)
	60Hz	50Hz	60Hz	50Hz			60Hz	50Hz					
CM-1L	0.3～1.4	0.2～1.2	1.3	1.1	0.7	120	56 / 1:30	47 / 1:30	6.3	20A	0.2/4P	20/26	3^{B}×400
CM-2L	0.5～2.4	0.4～2.0	2.1	1.8			100 / 1:16	80 / 1:16	6.5				
CM-3L	0.7～3.6	0.6～3.0	3.3	2.8		140				25A		22/30	4^{B}×400
CM-6L	1.2～6.0	1.0～5.0	5.2	4.4			108 / 1:16	89 / 1:16	10		0.4/4P	31/39	
CM-9L	1.8～9.0	1.5～7.5	8.2	6.8	0.5	160				40A		32/45	4^{B}×600
CM-13L	2.6～13	2.2～11	12	10		180			12		0.75/4P	39/54	
CM-17L	3.4～17	2.8～14	16	13		200						42/58	6^{B}×600

- The discharge rate was calculated at discharge pressure of 0.1MPaG, suction head of -0.01MPaAq equivalent to the same pipe diameter as in the pump; and normal temperature using clear water.
  When your pump is of the standard specifications, use it in the ambient temperature range of 0-40℃, the liquid temperature range of 0-50℃ and about 0.06MPaA (0.6kgf/cm2A) of NPSH req.

Common specifications

Motor	Standard	0.2 to 0.4kW: Three-phase, 4P, class E, 60Hz (200, 220V), 50Hz (200V), TEFC outdoor flange type
		0.75 kW: Three-phase, 4P, class F, 60Hz (200, 220V), 50Hz (200V), TEFC outdoor flange type
	Semi-standard	0.2 and 0.4kW: Three-phase, 4P, class E, 60Hz (400, 440V), 50Hz (400V), TEFC outdoor flange type
		0.75kW: Three-phase, 4P, class F, 60Hz (380, 400, 440V), 50Hz (380, 400, 415, 420V), TEFC outdoor flange type
Reducer		Planetary gear speed reducer, lubricated with molybdenum grease
Standard accessories		Air chamber, Simple tools, Mounting bolts and nuts (washer with M8 x 30L) x 4 sets, Instruction manual
Color		Munsell 2.5PB 2.5/7 for reducer, Munsell N7 for motor

Liquid-end parts specifications

Part name \ Combination	VV46	VVC	4446	V4U6
Applicable chemicals	High viscosity liquid, Sodium hydroxide, Ammonia water	Sodium hypochlorite, Sulfurous acid, Hydrochloric acid, Nitric acid, Ferric chloride, PAC, Ferrous / Ferric sulfate, Sulfuric acid band, Chromic acid	Methanol, Organic solvent solution	Slaked lime solution, Sludge liquor
Pump head	PVC		SUS304	PVC
Diaphragm	PTFE			Urethane/PTFE
Valve case	PVC		SUS304	PVC
Valve guide	PVC		SUS304	
Check ball	SUS304	Ceramics	SUS304	Urethane
O-ring	Aflas®		PTFE	Aflas®
Spring	SUS316	—	SUS316	

- Take this table as a general guide, because the material corrosion depends on liquid temperature and concentrations.
  Other combinations of materials than above are also available.
- Aflas® is a registered trademark of AGC Inc.

Viscosity of fluid

Refer to the chart below for transferring high-viscous fluid such as Polymer

Model \ Combination	Viscosity
CM-L	1000mPa･s max.

Comparison at a glance for large-capacity diaphragm pump

Model	Stroke frequency (spm)	Normal pressure (MPaG)	Discharge accuracy (%)	Air chamber
R	170/140(60/50Hz)	0.2～0.3	±5%	necessary
L	56～108/47～89(60/50Hz)	0.3～0.5	±2%	

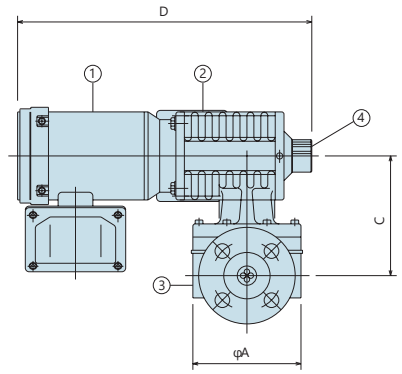
▼Inform us of the following items when you place an order for CM-L series.

Model	Chemical to be used	Power source	Others
CM- ○○L	Name, concentration, temperature, specific gravity, viscosity	○○○V、○φ、○○Hz	Remark

■Pump dimensions

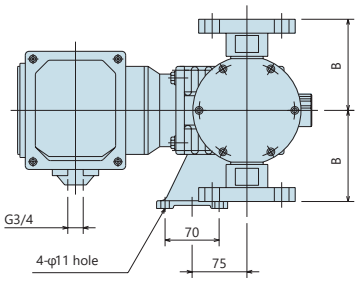
（unit：mm）

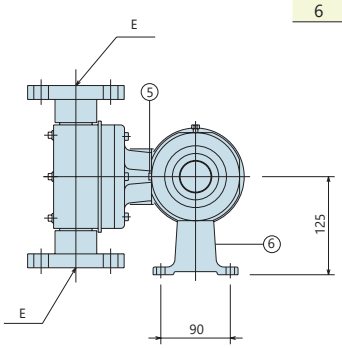
CM-4R･6R　1L～3L



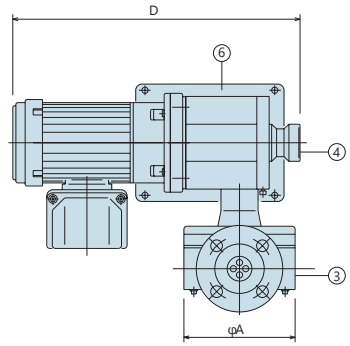
Model	φA	B	C	D	E
CM-1L	120	99	141	380	20A JIS10KFF
CM-4R CM-2L			151		
CM-6R CM-3L	140	118	155		25A JIS10KFF

P/N	Part name
1	Motor
2	Reducer
3	Liquid-end parts
4	Flow rate control dial
5	Dial set bolt
6	Pump base





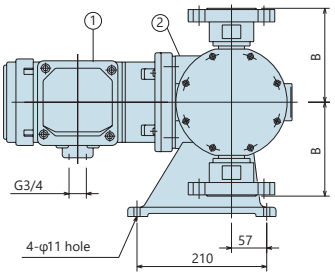
CM-9R～34R　6L～17L

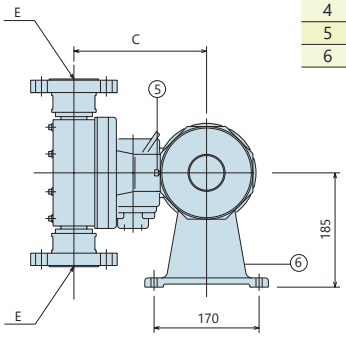


Model	φA	B	C	D	F
CM-9R,6L	140	118	210	440	25A JIS10KFF
CM-14R,16R,9L	160	151(141)	215		40A JIS10KFF
CM-22R,13L	180	162(152)		480	
CM-27R,17L	200	173(163)			
CM-34R	220	206(184)	220		50A JIS10KFF

Figures in parentheses are only applicable to VVC combination.

P/N	Part name
1	Motor
2	Reducer
3	Liquid-end parts
4	Flow rate control dial
5	Dial set bolt
6	Pump base

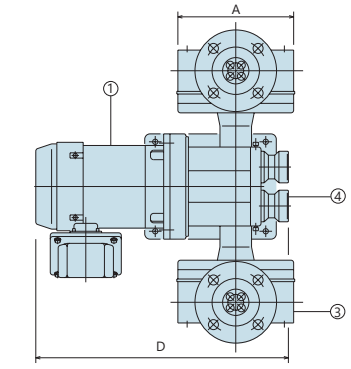




■Pump dimensions

（unit：mm）

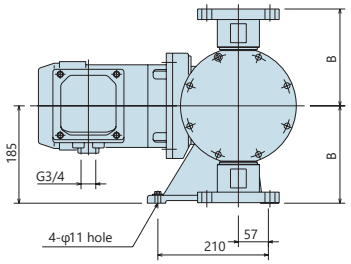
CMD-32R～68R

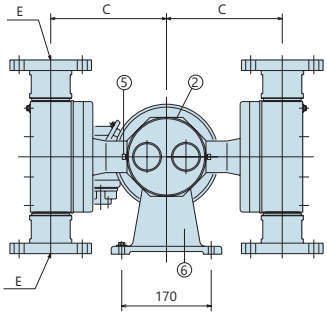


Model	φA	B	C	D	F
CMD-32R	160	151(141)	215	440	40A JIS10KFF
CMD-44R	180	162(152)		480	
CMD-54R	200	173(163)			
CMD-68R	220	206(184)	220		50A JIS10KFF

Figures in parentheses are only applicable to VVC combination.

P/N	Part name
1	Motor
2	Reducer
3	Liquid-end parts
4	Flow rate control dial
5	Dial set bolt
6	Pump base

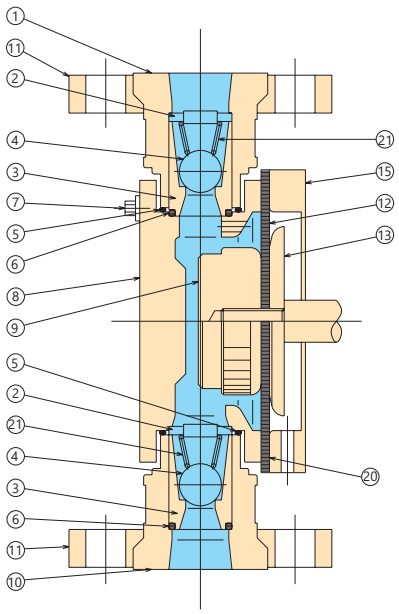




■Liquid-end parts construction

CM-R･L

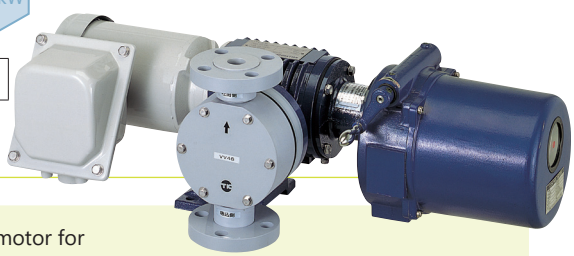
Single-diaphragm specification



P/N	Part name
1	Discharge-side valve case
2	Valve guide
3	Valve seat
4	Check ball
5	O-ring
6	O-ring
7	Pump head mounting bolt
8	Pump head
9	Diaphragm lock nut
10	Suction side valve seat
11	Connection flange
12	Diaphragm
13	Diaphragm washer
15	Sub-ring
20	Diaphragm seat
21	Spring

CMK

motor 0.1kw 0.2kw



Control motor for stroke length control of chemical dosing pump

features

The CMK series is additionally equipped with a control motor for the manual flow rate adjustment mechanism for automatic stroke length adjustment.
It is used in combination with proportional control system equipment for feed forward control to turbidity, flow rate and feedback control to residual chlorine, pH, etc.
Even doing our company, we have to develop a chemical dosing pump CMK type for proportional control of the stroke adjustment method development. (Collectively the diaphragm metering pump by our spring-back method is called the CM type. Install the control motor to the manual flow rate adjustment mechanism of CM pump and possible to control auto stroke adjustment called CMK type.

Pump model to be equipped

CM-2Y～120Y
CM-4R～6R
CM-1L～3L

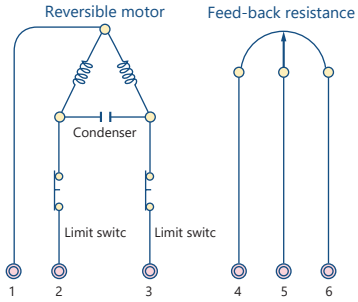
Possible to use in dual control system with speed control

In combination with speed control by use of VS motor and invertor, it is possible to use in dual control system of flow rate and concentration, and possible to have wide dosing range.

■Specifications

Nominal model of control motor	K-4
Manual setting devices	MCH-1C
Manual setting devices	Equipped
Type of servo motor	Reversible condenser motor with brake
Voltage, Frequency	AC100V 50/60Hz
Output	8W
Rated revolution	60 Hz：1,450 rpm / 50 Hz：1,200 rpm
Feed-back resistance	200Ω 1.5W
Operating time	49/58 SEC(60/50Hz)
Operating angle	0～300°
Ambient temperature	−20～+60℃
Protections	Outdoor drip-proof
Color	Munsell 2.5PB 2.5/7
Weight	5kg

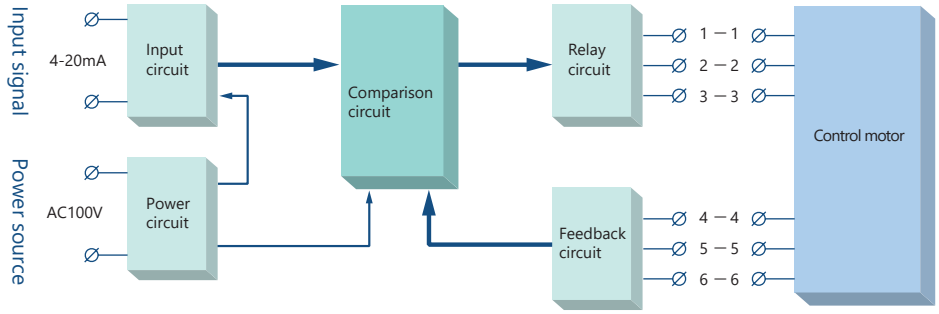
■Control motor circuit



No. of terminal	Explanation	
1	AC100V	Common
2	AC100V	100% side
3	AC100V	0% side
4	Feed-back signa	0% side
5	Feed-back signa	Common
6	Feed-back signa	100% side

Control motor
Line between (1) and (2) energized: Turning to maximum stroke
Line between (1) and (3) energized: Turning to minimum stroke

■Proportional controller and Positioner block diagram



▼Inform us of the following items when you place an order for CMK series.

Model	Model to be used	Chemical to be used	Power source	Connection	Others
CMK4	CM-○○Y/R/L	Name, concentration, temperature	○○○V、○φ、○○Hz	Hose diameter or flange	Remark

- If normal and reverse rotations are repeated, install a twin timer in the control circuit to prevent the reversible motor from burning.
- Please contact our sales department for inquiry.

ACCESSORIES

Chemical pump's accessories

Select proper accessories to operate your chemical pumps at full capacity in a safe way.

. Example of installing the chemical pump's accessories.

- Relief Valve
- Back-pressure Valve
- Anti-siphonage Valve
- Air Chamber
- Foot Valve
- Y-shaped Strainer
- Check Valve
- Sight Glass
- Degassing Joint
- Connecting Parts
- Pump Support

Example of installing the chemical pump's accessories.

Air Chamber

It is highly advisable to add an air chamber. Utilizing the compressibility of air, the air chamber converts the pulsating flow of the pump into almost continuous stream. This can prevent acceleration resistance, over-feeding phenomenon, piping vibrations and other adverse effects and prolong the service life of the diaphragm and the pump itself. Air must be replenished.

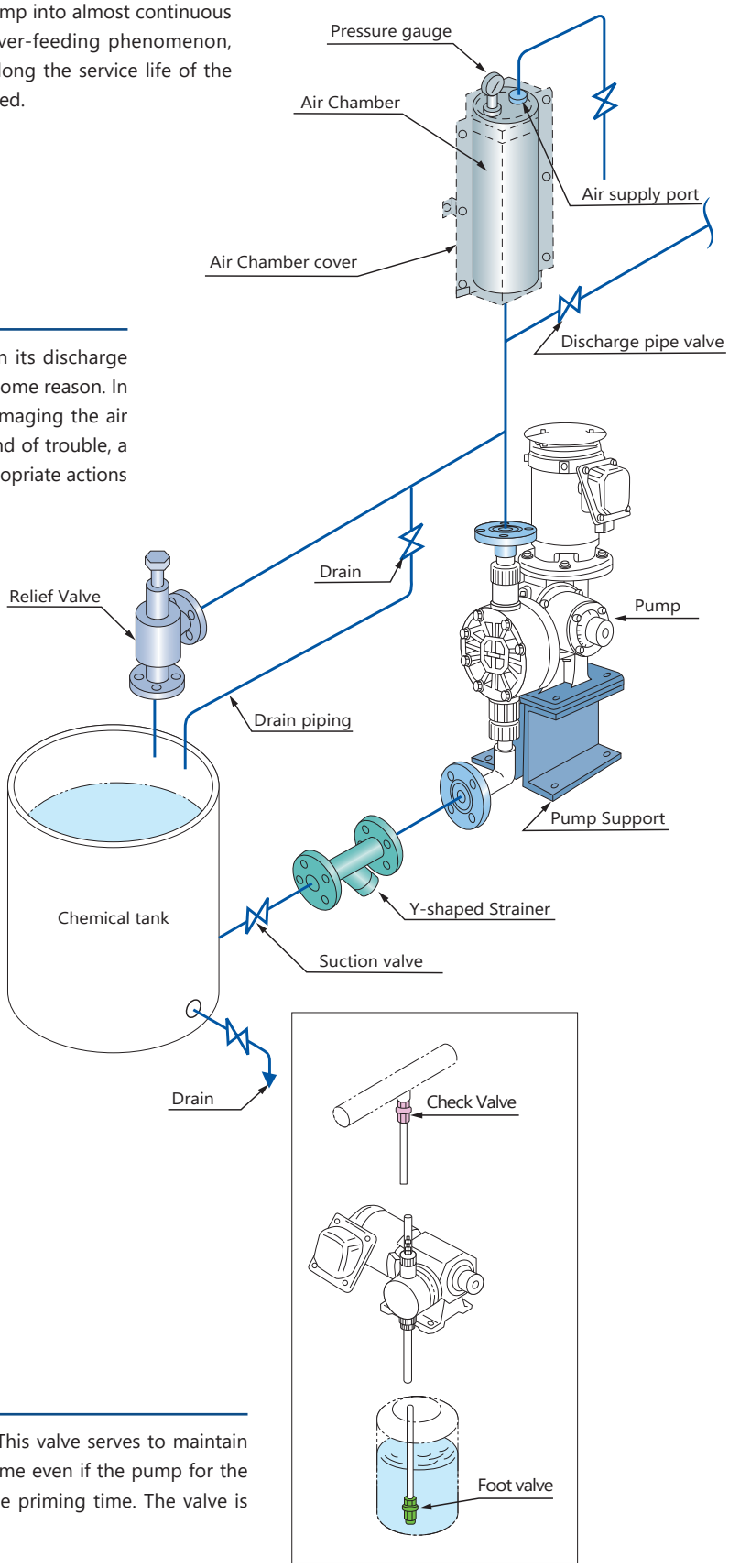
Relief Valve

Before starting the pump, you might forget to open its discharge pipe valve or the discharge pipe may be blocked for some reason. In such a case, a shut-off operation results, thereby damaging the air chamber, pump and pipes. Designed to avoid this kind of trouble, a relief valve opens itself at a preset pressure. Take appropriate actions against the potential rick of frozen liquid.

Notes) Setting position
When returning the chemical to the chemical tank, install the relief valve higher than liquid level of the tank. The discharge outlet of relief valve shall be open atmosphere, because the setting pressure of relief valve may be decreased due to the secondary-side pressure.

Y-shaped strainer

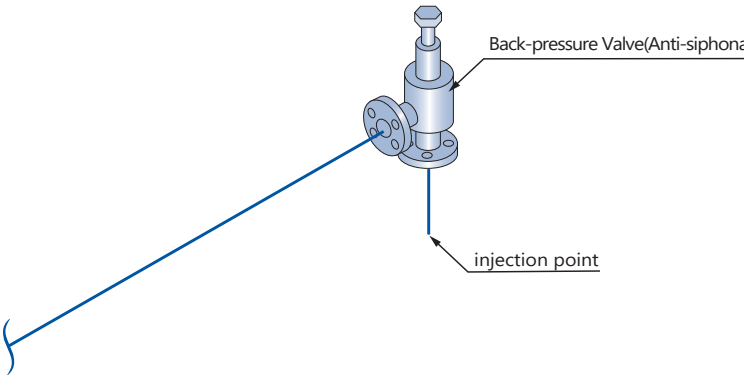
Dust, dirt, scales and other foreign matters unavoidably get into the fluid going into the pump. Such matters may be stuck in the valve sheet and other components or even damage them, resulting in poor fixed feed rate accuracy. It is therefore indispensable to add a strainer at the pump's suction side. The Y-shaped strainer is highly recommendable because its filter mesh is easy to take in and out.



Foot valve

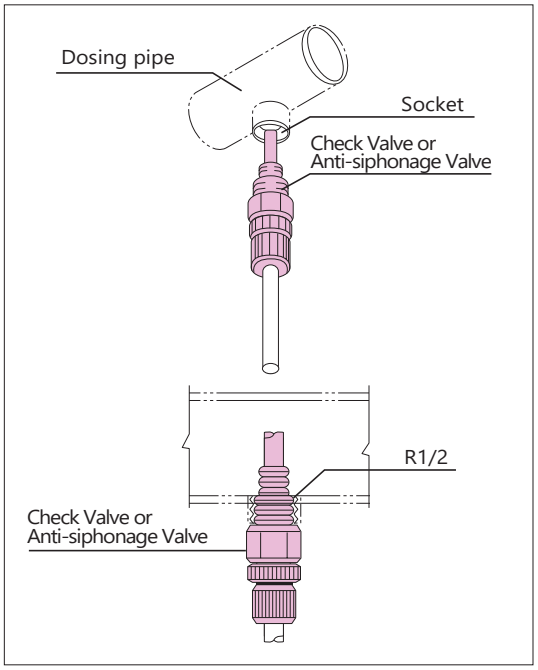
A foot valve is installed at the pump's suction side. This valve serves to maintain the fluid in the suction pipe for a certain period of time even if the pump for the self-suctorial pipe is shut down. This can shorten the priming time. The valve is also equipped with a net to keep off dust and dirt.

Disassemble the pump's accessories and wash them off foreign deposits with fresh wateror the like at regular interval.



Back-pressure Valve

Too small a differential pressure between the pump's suction and discharge sides causes a pulsating flow in the piping and then over-feeding phenomenon. A back-pressure valve is intended to prevent this phenomenon. With a back-pressure being applied at the discharge side, the pump's check ball is kept tight, which stabilizes the discharge rate.

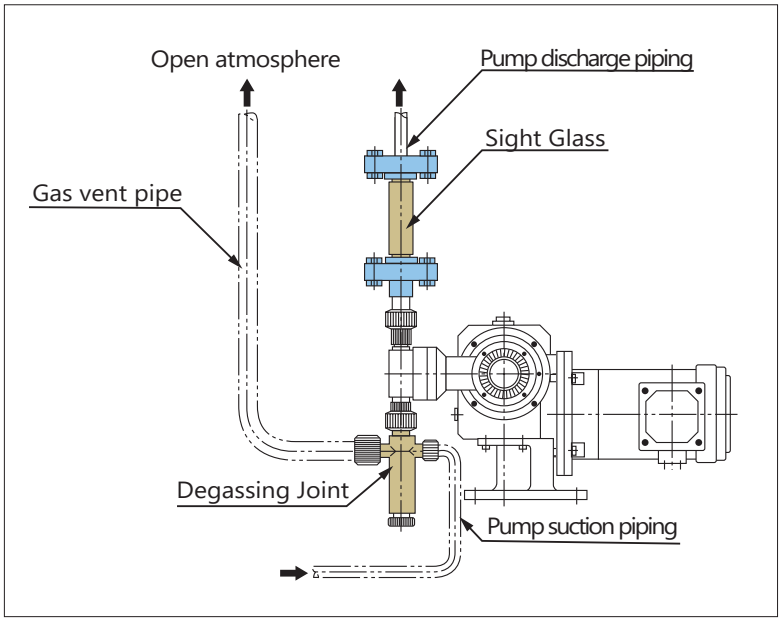


Anti-siphonage Valve

If the pump's discharge side is lower in pressure than its suction side, the fluid discharges itself. An anti-siphonage valve is provided against such natural discharging.

Check Valve

A check valve is used to prevent the backward flow when the pump is shut down.



Degassing Joint

Air coming into the suction pipe or gases generated from sodium hypochlorite, hydrochloric acid, and similar chemicals may cause the so-called gas lock, making discharging impossible.
The degassing joint is installed at the pump's suction side and used to separate the air and gases from the suction pipe and to feed the chemical alone into the pump.
The pump's suction side is under boost pressure to keep it free from the air and gases. The gas vent pipe should be positioned above the liquid level of the chemical tank and open to the atmosphere.

Sight Glass

Mounted at the pump's discharge side, the sight glass serves to monitor the discharge action and to avoid non-injection and other troubles.

After completing the actual installation of the metering pump as well as the necessary piping (hose connecting), check the maximum piping loss and the maximum acceleration resistance as well as check for an over-feeding, siphon and cavitation phenomena to ensure that the metering pump operates at its maximum performance.

Relief Valve, Back-pressure Valve and Anti-siphonage Valve

■Valve code explanation

B	D	N	—	60	—	V	V	F	—	V	4
(a)	(b)	(c)				(a)	(b)	(c)		(a)	(b)
①				②		③				④	

①:Model

(a)	R: Relief Valve, B: Back-pressure Valve, S: Anti-siphonage Valve
(b)	D: Diaphragm type, B: Ball type, C: Cone type
(c)	N: Molded type, S: Straight type

②:External dimensions

45	φ45mm
60	φ60mm
80	φ80mm
100	φ100mm
120	φ120mm
140	φ140mm

③:Material

a: Body lower part	
V	PVC
4	SUS 304
6	SUS 316
9	SUS 316L
Z	Others

b: Body upper part	
V	PVC
4	SUS 304
6	SUS 316
9	SUS 316L
Z	Others

c: Diaphragm	
F	FKM
N	Hypalon
Z	Others

④:Connection

a: Connection		b: Nominal diameter(mm)
F	JIS10K flange	15/20/25/40/50/65
A	ANSI 150Lb flange	15/20/25/40/50/65
U	Union joint	13
V	Bladed soft PVC hose	4/6(Inner diameter)
P	Polyethylene hose	4/6(Inner diameter)
Z	Others	-

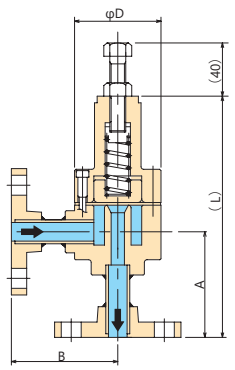
Name	Model	Outside diameter φ(mm)	Max. flow rate (ℓ/min)	Material: Body	Material: Diaphragm	Setting pressure range (MPaG)	Installation angle	Connection H: Hose, F: Flange (JIS 10K) Rc: Female screw R: Male screw	Applicable pumps	Weight PVC/SUS Approx. (kg)	External dimensions
Relief Valve Back-pressure Valve Anti-siphonage Valve	RDN BDN SDN	60	4	PVC or SUS	FKM or Hypalon	0.06 ∫ 0.5	90°	F15A or F20A	100W・200W・1～130V・3G～350G・Y・4R・1L・2L	1.0 / 3.5	Figure-A
	RD BD SD	80	10					F20A or F25A	500W・500G・700G・6R・9R・6L	1.4 / 7.0	
		100	25					F25A or F40A	1000W・1500W・14R～22R・9L・13L・17L	2.0 / 10	
		120	40					F40A or F50A	27R・34R・D-32R	3.0 / 16	
		140	80					F50A or F65A	D-44R～D-68R	4.6 / 22	
Relief Valve Back-pressure Valve Anti-siphonage Valve	RDS BDS SDS	60	4			0.06 ∫ 0.5	180°	F15A or F20A	100W・200W・1～130V・3G～350G・Y・4R・1L・2L	1.0/3.5	Figure-B
		80	7					F20A or F25A	500W・200G～700G,4R・6R,1L～6L	1.4/7.0	
Anti-siphonage Valve	SCN	45	1.2			0.06 ∫ 0.1	90°	Liquid inlet: V or Pφ4,φ6 U13, F15 Liquid outlet: R3/8・1/2	100W・1～80V・3G～100G・Y	0.4/—	Figure-C

Notes
1) Setting pressure depend on types: Initial blow-off pressure for Relief Valve, Blow-off pressure for Back-pressure Valve, Shut-off pressure for Anti-siphonage Valve
2) Ambient temperature: 0 to 40℃, Liquid temperature: 0 to 50℃
3) Set the pressure respectively for the double head type pumps.

■Dimensions

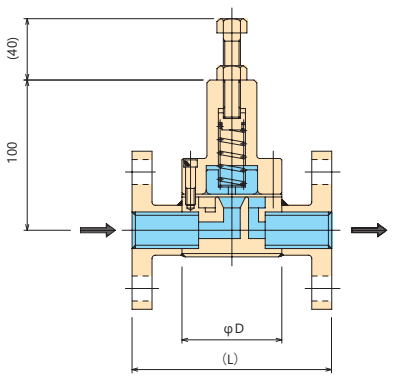
(unit：mm)

Figure-A



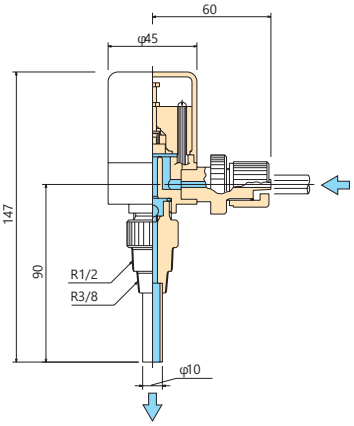
Diameter of body	A	B	D	(L)
60	80		60	180
80	95		80	220
100	110		100	245
120	135		120	290
140	140		140	310

Figure-B



Diameter of body	D	(L)
60	60	120
80	80	160

Figure-C



Air Chamber

PVC specification
(with SUS cover)

SUS specifications

■Air Chamber code explanation

A	B	3	4	—	VP	—	N	—	3/4
❶					❷		❸		❹

❶ : Model
AB is with baffle plates,
A is without baffle plate.

❷ : Material

VP	PVC ordinary pipe	6	SUS 316
VT	PVC thick pipe	9	SUS 316L
4	SUS 304	Z	Others

❸ : Connection
F: Flange (JIS 10K), N: Rc female screw

❹ : Nominal diameter

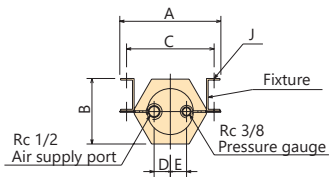
Notes) For the material of an air chamber, use SUS (stainless steel) so far as that material is well resistant against your solution.
The resin-made air chamber is unavoidably affected by ultraviolet rays and liquid chemicals after a long time of use.
It is recommended to replace the air chamber with new one every 3 years or so for added safety. And be sure to mount an air chamber cover for a resin-made air chamber.

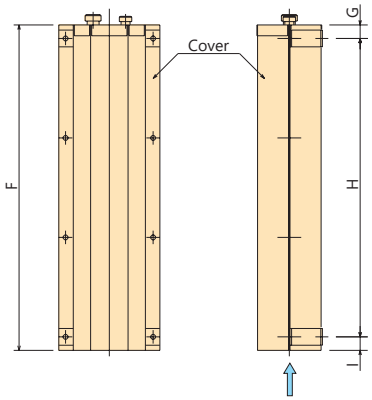
Model	Dimensions φ×L(mm)	Volume (R)	Materials / With-standing pressure (MPaG)	Connection		Applicable pump model
				For SUS spec. (Flange JIS 10K)	Others (Female screw)	
A 22	2B×200	0.4	PVC/0.5 VT/0.7 SUS/1.0	15A	Rc1/2	3G～12G・2Y・6Y・1～25V
AB 32	3B×200	1				30G～100G・10Y～120Y・50～130V
AB 34	3B×400	2		20A	Rc3/4	100W・200W・4R・1L・2L・200G・350G
AB 44	4B×400	3		25A	Rc1	500W・6R・9R・3L・6L・500G・700G
AB 46	4B×600	4.5		40A	Rc1½	1000W・1500W・14R・16R・D-32R・9L・13L
AB 66	6B×600	10				22R・27R・D-44R・D-54R・17L
AB 86	8B×600	18		50A or 65A	Rc2 or Rc2½	34R・D-68R

■Dimensions

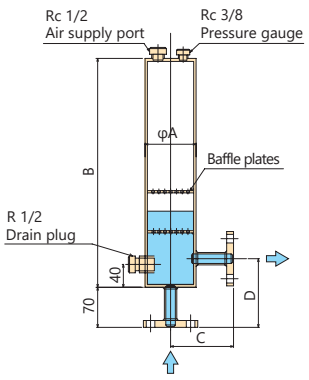
（unit：mm）

PVC spec





SUS spec



SUS specifications

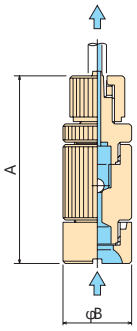
Model	A	B	C	D	Weight Approx.(kg)
AB 32	3B	200	110	120	4.6
AB 34		400		130	5.4
AB 44	4B		135	135	9.2
AB 46		600			13
AB 66	6B		150	150	20
AB 86	8B		170	180	30

PVC spec

Model	A	B	C	D	E	F	G	H	I	J	Weight Approx.(kg Air Chamber	Cover
A 22	122	68	100	(1Rc 3/8)		215	108	107		φ9 2 hole	0.5	1.1
AB 32	158	97	135	22	22						1.0	1.4
AB 34						425	213	212			1.5	2.4
AB 44	187	122	164	30	30						2.3	2.8
AB 46											2.8	4.2
AB 66	243	173	220	40	40	630	26	579	25	φ9 4 hole	5.5	5.8
AB 86	302	224	280								8.4	7.0

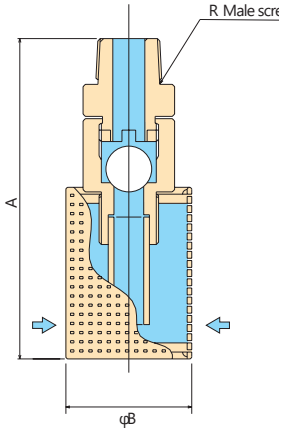
Foot Valve

（unit：mm）



Model	Size	A	B	Dia.	Weight approx. (g)
FV-4	4	81	30	Hoseφ4×6,φ4×9	60
FV-6	6			Hoseφ6×9,φ6×11	
FV-13	13	72	30	Male screw R 3/8	70
FV-15	15	90	33	Male screw R 1/2	80

Material Body：PVC
Check ball：Ceramics(FV-4 , FV-6)
PTFE(FV-13 , FV-15)



Model	Size	A	B	R Male screw	Weight approx. (g)
FVS-15	15	140	55	1/2	140
FVS-20	20			3/4	

Material：PVC (w/ strainer)
Check ball PTFE

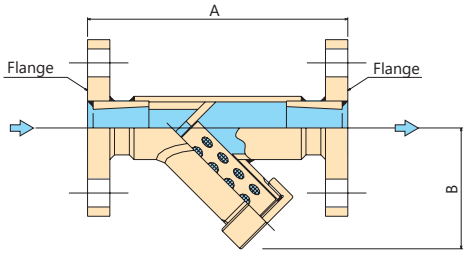
Note)

At the self-suctorial head spec., be sure to add a foot valve to the suction pipe. Install the suction-side foot valve upright a little above the bottom inside the tank in order not to suck in sediment.

Y-shaped Strainer

（unit：mm）

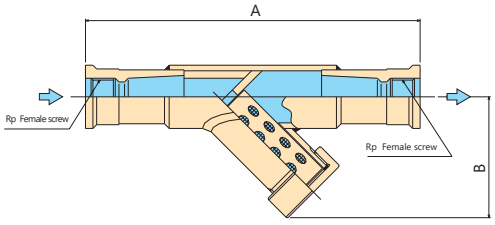
Flange type



Model	Size	A	B	Mesh	Flange	Weight approx. (g)
YF-15	15	140	65	20	15A	350
YF-20	20	160	70		20A	550

Material: PVC

Screw type



Model	Size	A	B	Mesh	Rc Female screw	Weight approx. (g)
YS-15	15	180	65	20	1/2	150
YS-20	20	200	67		3/4	250
YS-25	25	225	105		1	600

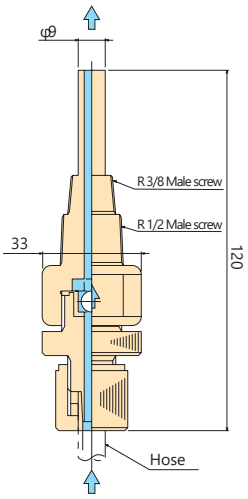
Material: PVC

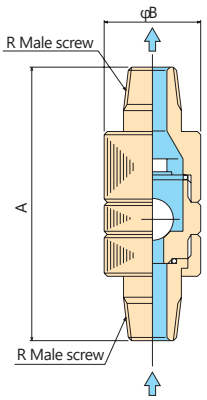
Check Valve

(unit：mm)

Model	Size	Hose	Weight approx. (g)
CV-4	4	4×6	60
		4×9	
CV-6	6	6×9	
		6×11	

Material Body：PVC
Check ball：Ceramics(CV-4)
PTFE(CV-6)





Model	Size	A	B	R Male screw	Weight approx. (g)
CV-15	15	106	40	1/2	150
CV-20	20	127	50	3/4	200
CV-25	25	178	60	1	400

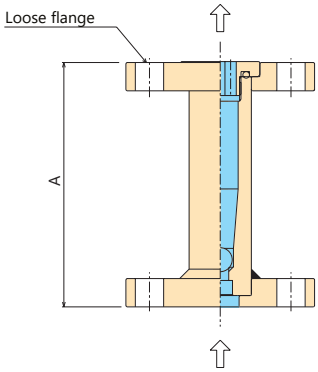
Material: Body：PVC
Check ball：PTFE

Note)

When the check valve is to stand at the injection point, install it upright from below in order to improve the sealing effect with the ball weight of the check valve and the injection side pressure.

Sight glass

(unit：mm)



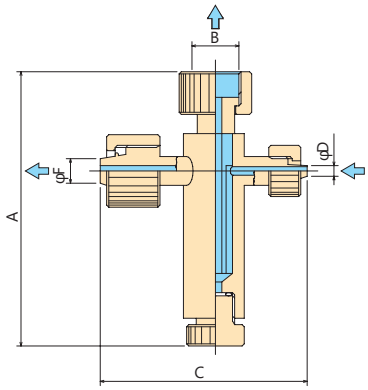
Model	A	Flange (JIS 10K)	Flow rate (L/min)	Weight approx. (g)
SGF-15N	100	15A	0.01～1.6	300
SGF-20N	130	20A	1.2～4.0	380
SGF-25N	130	25A	4.0～7.0	530

Material: Body PVC / Clear PVC
Check ball PTFE

Notes)
1) The flow rates are for your reference.
2) If the pressure of pump's discharging point is lower than that of suction side, be sure to install a Back-pressure Valve.

Degassing Joint

(unit：mm)



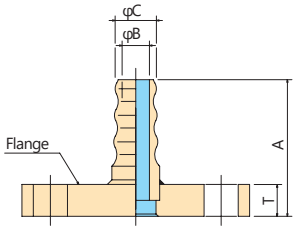
Model	A	B	C	Hose dia. φD×φF	Weight approx. (g)
DJ- Y	122	M24	95	6×12	150
DJ-GX	84	M16	100		90
DJ- M		M20			100

Material: Clear PVC

Welded Bamboo Flange

（unit：mm）

Material: PVC

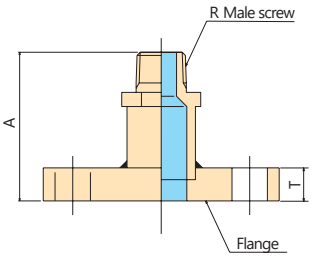


Model	A	B	C	T	Flange (JIS 10K)	Weight approx. (g)
BF-1515	65	10	15	13	15A	140
BF-1915		12	19			
BF-1920				15	20A	180
BF-2520		15	25			
BF-2525					25A	280
BF-3225	67	20	32			

Welded Valve Socket Flange

（unit：mm）

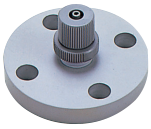
Material: PVC



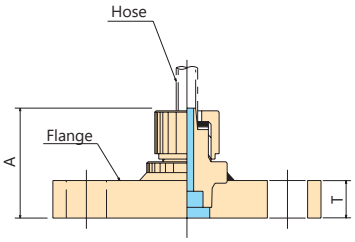
Model	A	T	R Male screw	Flange (JIS 10K)	Weight approx. (g)
VF-1515	63	13	1/2	15A	180
VF-1520		15		20A	
VF-2020	71		3/4		
VF-2025				25A	300
VF-2525	80		1		
VF-2540		17		40A	400
VF-4040	100		1½		

Hose Flange

（unit：mm）



Material: PVC

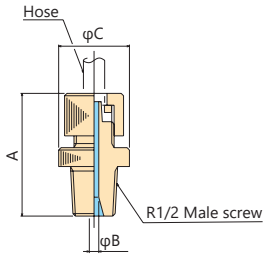


Model	A	T	Hose	Flange (JIS 10K)	Weight approx. (g)
HF-4615	58	13	4×6	15A	160
HF-4915			4×9		
HF-6915			6×9		
HF-6115			6×11		
HF-4620	63	15	4×6	20A	200
HF-4920			4×9		
HF-6920			6×9		
HF-6120			6×11		

Hose Joint

（unit：mm）

Material: PVC

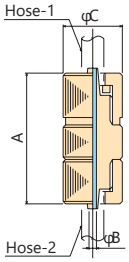


Model	A	B	C	Hose	Weight approx. (g)
HJ-46	52	3	30	4×6	30
HJ-49				4×9	
HJ-69		5		6×9	
HJ-61				6×11	

Two-way Hose Joint

（unit：mm）

Material: PVC
（PE hose: 4×6,6×9
PVC hose：4×9,6×11）

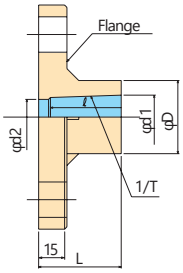


Model	A	B	C	Hose1	Hose2	Weight approx. (g)
2HJ-44	53	3	24	4× 6 4× 9	4× 6 4× 9	40
2HJ-46					6× 9 6×11	
2HJ-66		5		6× 9 6×11		

Special TS Flange

（unit：mm）

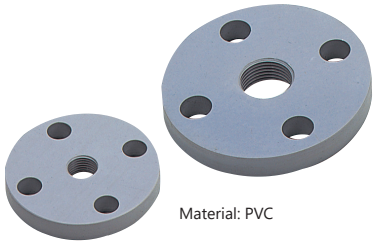
Material: PVC



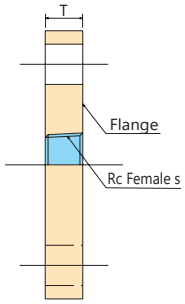
Model	D	d_1	d_2	L	ℓ	1/T	Flange (JIS 10K)	Weight approx. (g)
TS-1315	31	18.6	15	35	30	1/30	15A	150
TS-1320	35.5	18.4	15	40	34	1/30	20A	170
TS-2025	42.5	26.6	20	46	40	1/34	25A	300

Screw Flange

（unit：mm）



Material: PVC

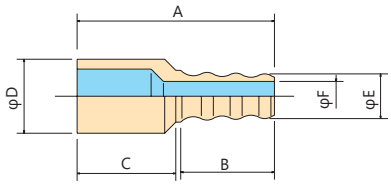


Model	T	Rc Female screw	Flange (JIS 10K)	Weight approx. (g)
SF-1313	13	3/8	13A	110
SF-1513		1/2		
SF-1315		3/8	15A	
SF-1515		1/2		
SF-1520	15		20A	160
SF-2020		3/4		
SF-2025	18		25A	240
SF-2525		1		

Bamboo Joint (for pipe)

（unit：mm）

Material: PVC

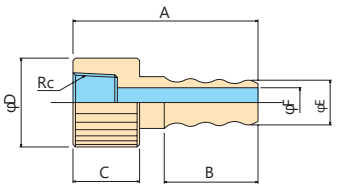


Model	A	B	C	D	E	F	Applicable VP pipe	Weight approx. (g)
JP-1513	80	37	40	30	15	10	13	25
JP-1515							15	
JP-1915					19	12		30
JP-1920	85			34			20	45
JP-2520					25	15		
JP-2525			42	40			25	50

Bamboo Joint (for female screw)

（unit：mm）

Material: PVC

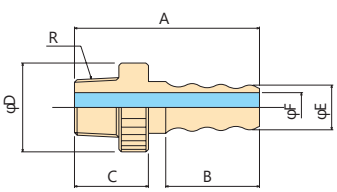


Model	A	B	C	D	E	F	Rc Female screw	Weight approx. (g)
JF-1513	70	37	25	25	15	10	3/8	25
JF-1515				30			1/2	
JF-1915					19	12		30
JF-1920	73		27	36			3/4	45
JF-2520	75		30		25	15		50

Bamboo Joint (for male screw)

（unit：mm）

Material: PVC

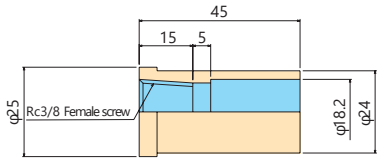


Model	A	B	C	D	E	F	R Male screw	Weight approx. (g)
JM-1513	73	37	28	26	15	10	3/8	20
JM-1515				30			1/2	
JM-1915			29		19	12		25
JM-1920	75		30	35			3/4	40
JM-2520					25	15		45
JM-2525	85		40	40		17	1	50

Special Water Plug Socket

（unit：mm）

Material: PVC
Weight: Approx. 15kg

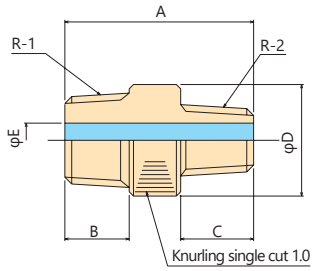


Rc 3/8 Female screw
Model: SW-3

Nipple

（unit：mm）

Material: PVC

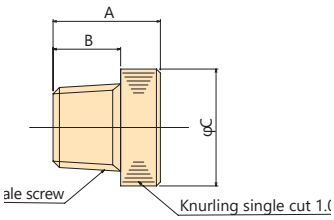


Model	R-1×R-2 Male screw	A	B	C	D	E	Weight approx. (g)
NP-33	3/8×3/8	42	15	15	26	8	25
NP-43	1/2×3/8	44	17				
NP-44	1/2×1/2	46		17	27	10	
NP-64	3/4×1/2	53	20		35		40
NP-66	3/4×3/4	55		20		15	
NP-86	1×3/4				40		45
NP-88	1×1					23	

Bull plug

（unit：mm）

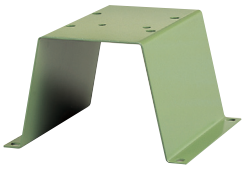
Material: PVC

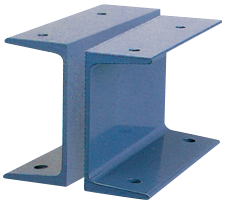


Model	Male screw	A	B	C	Weight approx. (g)
BP-3	3/8	24	15	22	10
BP-4	1/2	27	17		20
BP-6	3/4	32	20	35	30
BP-8	1	40	25	40	60

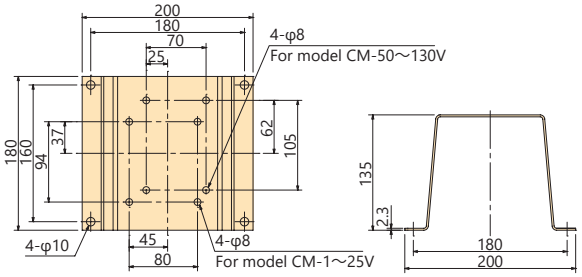
Pump Support

（unit：mm）



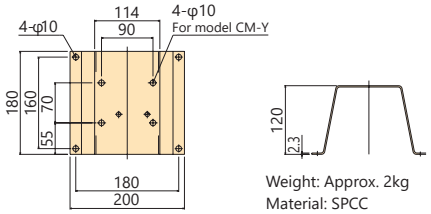


PS-V：For model CM-V (Color：Munsell 7.5GY 5/4.5)



Weight: Approx. 2kg
Material: SPCC

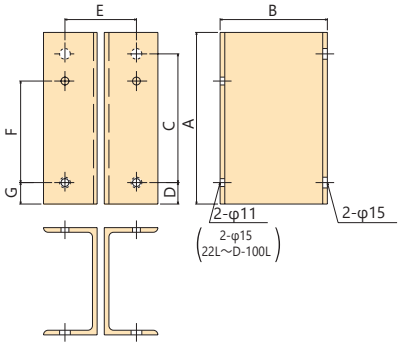
PS-X：For model CM-Y (Color：Munsell 7.5GY 5/4.5))



Weight: Approx. 2kg
Material: SPCC

PS-G･L1～L2：For model CM-G･R･L

(Color：(PS-G) Munsell 2.5PB 5/2、(PS-L1～L3) Munsell 2.5PB 2.5/7)



Model	Applicable pump model	A	B	C	D	E	F	G	Weight approx. (g)
PS-G	3G～700G	240	150	180	30	100	142	30	9
PS-L1	4R･6R･1L～3L	300	100	240		90	70	90	9.2
PS-L2	9R～D-68R･6L～17L	400	150	300	50	170	210	43	15

TS

CHEMICAL PUMP TS series

Chemical transfer magnetic pump

Wide selection from small to large capacity

- TSN
- TSM
- TSP
- TS
- TSL

Features of TS series

TSN

- Various models to cover 11 to 120L/min of discharge rate.

TS

- Simple structure and long life.
- General-purpose small capacity magnetic pumps for transferring chemicals from 10 to 100L/min.

TSM

- 9 models to cover 50 to 600L/min of discharge rate.

TSL

- 3 types and 7 models to cover 100 to 1600L/min of discharge rate.
- General-purpose medium to large capacity magnetic pumps.

TSP

- Self-priming magnetic pumps.
- 0.75/1.5/2.2kW, 450L/min max. of discharge rate.

⚠ Handling precautions

- Use our magnetic pumps within the following fluid and ambient temperature.

Model series	TSN/TS/TSM-P•E/TSP	TSM-C,TSL
Fluid temperature	0～80℃	0～90℃
Ambient temperature	0～40℃	

Re. 1) Fluid shall not be freeze and condense.
Re. 2) Resistible fluid temperature range depends on specific chemicals.
Re. 3) The above temperature is based on clear water. Allowable fluid temperature depends on specific chemicals.
Re. 4) Please contact us for use of the model TSP with 60℃ of fluid temperature.

- Do not operate magnetic pumps with slurry.

It is prohibited to transfer slurry by magnetic pumps in principle.

- Do not race magnetic pumps.

Bearings in magnetic pumps are cooled and helped smooth by fluid to be used. Pump racing may cause temperature rise that may make crack and damage of the bearing parts. If trial operation is required for revolving direction check or other purpose, pour small quantity (a glass) of water into the pump before starting operation. Once you race a magnetic pump, immediately stop the operation, naturally cool the pump without pouring water, and leave one hour at least before restarting.

- Our magnetic pumps cannot suck fluid by itself (except for the model TSP).

Use magnetic pumps with press-in piping for suction line.
Try to select the most suitable diameter of piping and make the length as short as possible in order to prevent cavitation.

Magnetic Pumps Performance Comparison

This table is to show graphically the maximum discharge rate and maximum head respectively.
Refer to the performance curve of each model for the specific performance at the using condition.
For performance confirmation by liquid specific gravity, request respective expected performance curves.

■TSN series

		Max. discharge rate [L/min]	Max. head [m]	Applicable fluid specific gravity
TSN-2P	50Hz	11	1.5	1.1 max
	60Hz	12	2.1	
TSN-3P/V	50Hz	16	2.7	
	60Hz	19	3.4	
TSN-4P/V	50Hz	27	3.1	
	60Hz	32	4.3	
TSN-4PH	50Hz	13	5	
	60Hz	14	6.5	
TSN-5P/V	50Hz	33	3.8	
	60Hz	38	5.4	
TSN-5PH	50Hz	15	8	
	60Hz	15	10	
TSN-6P/V	50Hz	45	4.6	
	60Hz	52	6.5	
TSN-6PH	50Hz	22	10	
	60Hz	22	13.5	
TSN-6PL	50Hz	60	5.6	
	60Hz	70	8.2	
TSN-7P/V	50Hz	80	9.5	
	60Hz	100	13	
TSN-7PH/VH	50Hz	40	14	
	60Hz	43	20	
TSN-8P/V	50Hz	100	8.6	
	60Hz	120	11.6	

■TS series

		Max. discharge rate [L/min]	Max. head [m]	Applicable fluid specific gravity
TS-71P/V	50Hz	80	9.5	1.1 max
	60Hz	90	13	
TS-71PH/VH	50Hz	40	14	1.0 max
	60Hz	40	20	
TS-81P/V	50Hz	90	11.5	1.1～1.9
	60Hz	100	11.2	

■TSM series

		Max. discharge rate [L/min]	Max. head [m]	Applicable fluid specific gravity
TSM-100P/E	50Hz	150	13.2	1.0～1.5 Standard：1.0
	60Hz	150	13.2	
TSM-201P/E	50Hz	200	11.8	1.1～1.5
	60Hz	200	11.6	
TSM-110P/E	50Hz	150	20.4	1.0～1.9 Standard：1.0
	60Hz	150	20.4	
TSM-211P/E	50Hz	300	17.7	1.1～1.5
	60Hz	300	17.9	
TSM-221P/E/C	50Hz	400	21.8	1.0～1.9
	60Hz	400	22.3	
TSM-231P/E/C	50Hz	450	27.5	1.0～1.9
	60Hz	450	29.2	
TSM-241P/E/C	50Hz	450	36.5	1.1～1.9
	60Hz	400	40.2	
TSM-251P/E/C	50Hz	800	25.3	1.1～1.9
	60Hz	800	25.2	
TSM-261P/E	50Hz	600	18	1.1～1.9
	60Hz	600	18	

■TSL series

		Max. discharge rate [L/min]	Max. head [m]	Applicable fluid specific gravity
TSL-55MM	50Hz	600	44	1.1～1.9
	60Hz	600	44	
TSL-75MM	50Hz	600	52	
	60Hz	600	52	
TSL-55MS	50Hz	800	34	
	60Hz	800	34	
TSL-75MS	50Hz	800	42	
	60Hz	800	42	
TSML-110LS	50Hz	1600	38	
	60Hz	1600	38	
TSML-150LS	50Hz	1600	48	
	60Hz	1600	48	
TSML-185LS	50Hz	1600	54	
	60Hz	1600	54	

■TSP series

		Max. discharge rate [L/min]	Max. head [m]	Applicable fluid specific gravity
TSP-21P	50Hz	300	14.5	1.1～1.5 Standard：1.1
	60Hz	300	14.5	
TSP-22P	50Hz	400	19	
	60Hz	400	19	
TSP-23P	50Hz	450	20.5	
	60Hz	450	20.5	

TSN

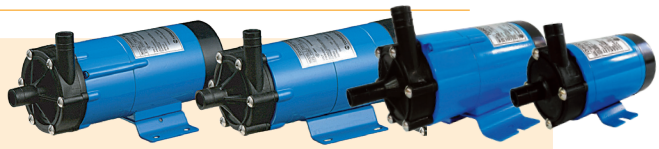
motor
6w~250w

Compact-type magnetic pumps


TSN-8P TSN-7P TSN-6P

features

- Faithful to the foundation, trustworthy and long-life design.
- Various line-ups for various needs.

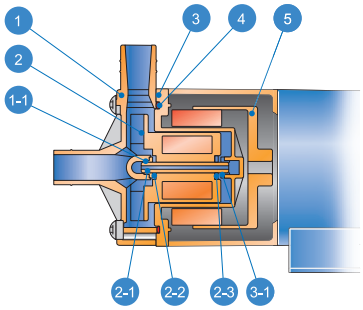

TSN-5P TSN-4P TSN-3P TSN-2P

Model and specifications

Model	Hose connection diameter		Thread connection diameter		Frequency (Hz)	Max. discharge rate (ℓ/min)	Max. head (m)	Standard specifications		Motor				Weight (kg)
	Suction (mm)	Discharge (mm)	Suction/ Discharge (in.)	Union (mm)				Discharge rate (ℓ/min)	Head (m)	Rated output (W)	Power consumption (W)	Phase (φ)	Voltage (V)	
2P	14	14	—	—	50	11	1.5	5	1	6	11	1	100 or 200	0.9
					60	12	2.1	8			14			
3P/3V			G3/4"	16	50	16	2.7	8	1.5	15	22			1.6
					60	19	3.4	12			30/27			
4P/4V	18	18			50	27	3.1	17	2	25	35			2.0
					60	32	4.3	22			50			
4PH	17	17			50	13	5	7	4		35			2.1
					60	14	6.5	10			50			
5P/5V	20	20			50	33	3.8	16	2.5	45	50			3.4
					60	38	5.4	25			70			
5PH	17	17			50	15	8	5	7		50			3.5
					60	15	10	5	8		70			
6P/6V	20	20			50	45	4.6	22	4	70	105			3.9
					60	52	6.5	34			140			
6PH	20	20			50	22	10	10	8		110/105			4.0
					60	22	13.5	10	12		150/140			
6PL-10	26	26	G1"	20	50	60	5.6	40	4	110	130/115			7.1
					60	70	8.2	55			190/175			
6PL-30					50	60	5.6	40			130	3	200	
					60	70	8.2	55			190			
7P/7V			G1" or 25A JIS 10KF		50	80	9.5	50	7.5	150	210	1	100 or 200	6.8
					60	100	13	50	10	170	310/305			
7P/7V-30					50	80	9.5	50	7.5	150	210	3	200	
					60	100	13	50	10	170	305			
7PH/7VH	20	20	G3/4"	16	50	40	14	20	12	160	260	1	100 or 200	7.8
					60	43	20	30		190	360			
7PH/7VH-30					50	40	14	20		160	260	3	200	
					60	43	20	30		190	360			
8P/8V	26	26	G1" or 25A JIS 10KF	20	50	100	8.6	50	7	250	290	1	100 or 200	8.7
					60	120	11.6	70	8		400			
8P/8V-30					50	100	8.6	50	7		290	3	200	
					60	120	11.6	70	8		400			
8P/8V-15					50		11.5				395	1	100 or 200	
8P/8V-35												3	200	

* Union and flange connection shall be optionally applicable.
* Fluid specific gravity shall be 1.1 maximum.
* Indication of minimum discharge rate is approx. 10% of maximum discharge rate at 0m head.
* Since the motor is not explosion-proof type, the pump cannot be used under explosive, flammable, corrosive-gas, dusty atmosphere.
* Prevent the pump from being splashed by fluid such as water for installation, since the pump is indoor spec.

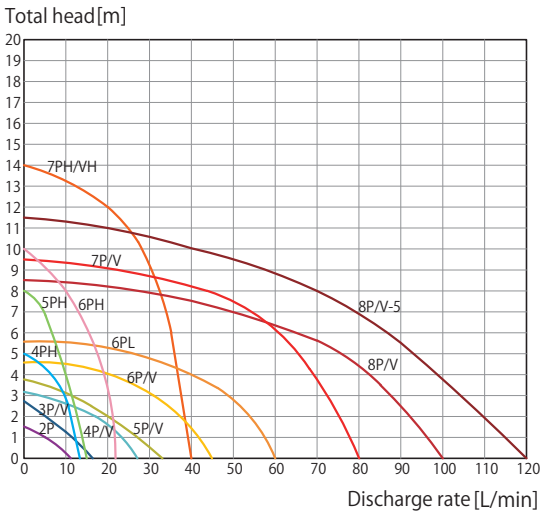
Liquid-end parts specifications



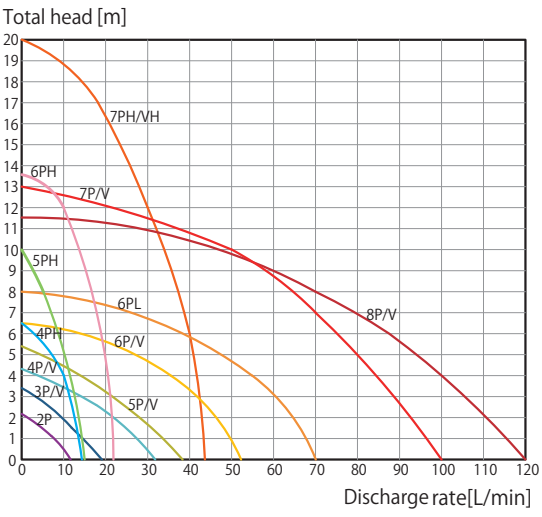
Part name \ Combination		TSN-P	TSN-V
1	Front Casing	Glass Fiber Reinforced Polypropylene	Carbon Fiber Reinforced PVDF
1-1	Front Bearing	PTFE	
2	Impeller (Magnetic Can)	Glass Fiber Reinforced Polypropylene	Carbon Fiber Reinforced PVDF
2-1	Spindle	Alumina Ceramics	
2-2	Front Thrust	Alumina Ceramics	
2-3	Rear Thrust	Alumina Ceramics	
3	Rear Casing	Glass Fiber Reinforced Polypropylene	Carbon Fiber Reinforced PVDF
3-1	Rear Bearing	PTFE	
4	O-ring	FKM / EPDM	
5	Drive Magnet	—	

■Performance Curve

50HZ



60HZ



■Model Code Explanation

TSN — 6 P L — H — 3 0 — 2 — P

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①:Series

2～8

②:Material Indication

P	Glass Fiber Reinforced Polypropylene
V	Carbon Fiber Reinforced PVDF (except for 2P)

③:Specification Indication

NIL	Standard
H	Higher head and smaller discharge rate (only for 4PH to 7PH)
L	Lower head and larger discharge rate (only for 6PL)

④:Connection

H	Hose
T	Thread / Union
F	Flange (only for 7P/V and 8P/V as option)

⑤:Phase

1	Single-phase
3	Three-phase

⑥:Frequency

0	Common to 50/60Hz
5	Exclusive to 50Hz

⑦:Voltage

1	100V
2	200V
9	Others

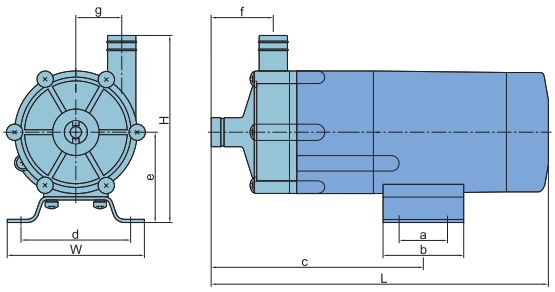
* Indoor type

⑧ : 100V outlet plug

Nil	Withoyt
P	With

■Dimensions

（unit：mm）



Model	W	H	L	a	b	c	d	e	f	g
2P-H	74	83	130	—	30	74	60	36	31	17
3P-H·3V-H	95	115	183	—	50	120	68	56	42	23
3P-T·3V-T	95	115	180	—	50	117	68	56	39	23
4P-H·4V-H	85	116	209	30	50	132	68	56	39	29
4P-T·4V-T	85	117	205	30	50	127	68	56	34	29
4PH-H/T	85	126	211	30	50	134	68	56	40	40
5P-H/T·5V-H/T	120	130	250	40	64	167	100	60	48	30
5PH-H/T	120	134	235	40	64	151	100	64	40	40
6P-H/T·6V-H/T	120	130	250	42	64	170	100	60	48	30
6PH-H/T	120	151	237	40	64	157	100	60	39	45
6PL-H/T	120	162	275	45	75	187	100	66	57	43
7P-H·7V-T	142	161	267	70	96	177	108	66	56	44
7P-T·7V-HT	142	156	264	70	96	174	108	66	53	44
7PH-H/T·7VH-H/T	142	166	252	70	96	163	108	66	41	48
8P-H/T·8V-H/T	156	174	322	70	100	196	110	74	66	44

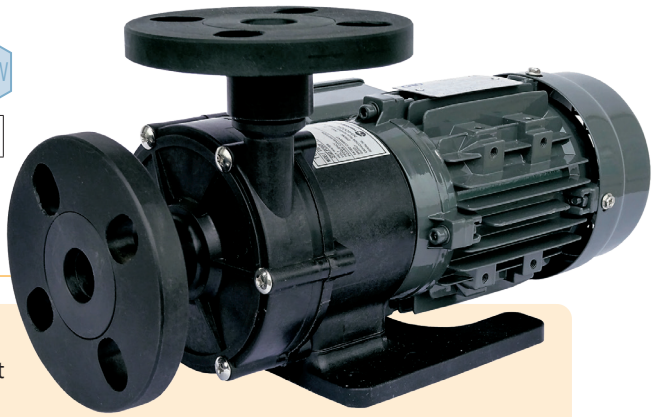
▼Inform us of the following items when you place an order for TSN series.

Model	Chemical to be used	Required performance	Power source	Connection	Others
TSN-OOP/V	Name, concentration, emperature, specific gravity	Om×OOOL/min	OOOV、Oφ、OOHz	Hose, Thread, Union, Flange	Remark

TS

motor
0.18kW~0.25kW

General-purpose small capacity | Magnetic pumps



features

- Simple structure and long life.
- Resin bracket and pump base realizing light weight and high resistance to erosion.
- Two kinds of liquid-end material, GFR-PP (Glass Fiber Reinforced Polypropylene) and CFR-PVDF (Carbon Fiber Reinforced PVDF), the most suitable for transferring wide-range chemicals.
- Connections selectable from hose, thread, JIS 10K flange 20A and 25A.
- New arrival of high-head type (for fluid specific gravity 1.0 only).

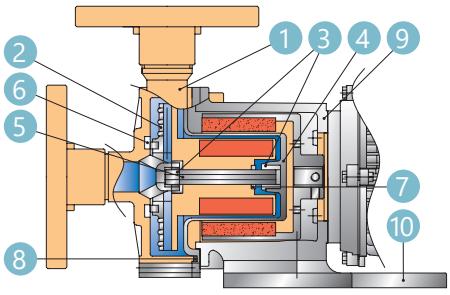
■Model and specifications

50Hz/60Hz

Model	Connection diameter (Suction x Discharge)			Head (m)	Discharge rate (ℓ/min)	Motor output (W)	Weight (kg)
	Hose (O.D.) (mm)	Thread (inch)	Flange (A)				
TS-71P/V	26×26	G1"×G1"	25(20)×25(20)	6/8	60	180	7
TS-81P/V	26×26	G1"×G1"	25(20)×25(20)	5.5/7.5	80	250	8
TS-71PH/71VH	20×20	G3/4"×G3/4"	—	12	20/30	180	7

* Indication of minimum discharge rate is approx. 10% of maximum discharge rate at 0m head.
* Flange connection is 20A or 25A.

■Liquid-end parts specifications

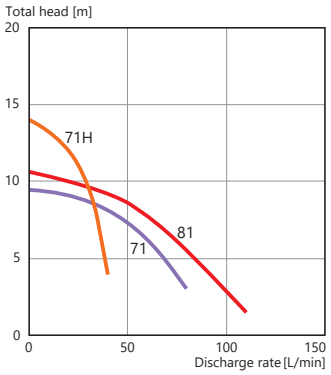


Part name \ Combination		TS-P/PH	TS-V/VH
1	Front Casing	Glass Fiber Reinforced Polypropylene	Carbon Fiber Reinforced PVDF
2	Impeller (Magnetic Can)	Glass Fiber Reinforced Polypropylene	Carbon Fiber Reinforced PVDF
3	Bearing	PTFE	
4	Rear Casing	Glass Fiber Reinforced Polypropylene	Carbon Fiber Reinforced PVDF
5	Shaft	Alumina Ceramics	
6	Front Thrust	Alumina Ceramics	
7	Rear Thrust	Alumina Ceramics	
8	O-ring	FKM/EPDM/Aflas®	
9	Bracket	Glass Fiber Reinforced Polypropylene	
10	Base	Glass Fiber Reinforced Polypropylene	

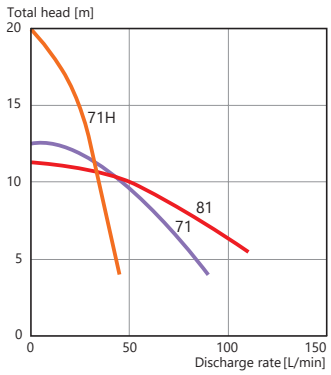
* Please feel free to contact us for the other material combination.
* Aflas® is a registered trademark of AGC Inc.

■Performance Curve

50HZ



60HZ



* The above tables are curves at fluid specific gravity 1.1. (Fluid specific gravity 1.0 for TS-71H.)

■Model Code Explanation

TS — 71 ❶ P ❷ — R V ❸❹ — F20 ❺ 6 ❻ 1 ❼ — T2 ❽

❶ : Series

71	180W
81	250W

❷ : Main material*1

P	Glass Fiber Reinforced Polypropylene
V	Carbon Fiber Reinforced PVDF

❸ : Liquid-end parts material*2

R	PTFE / Ceramics

❹ : O-ring material

V	FKM
E	EPDM
A	Aflas®*6
Z	Others

❺ : Connection

F20	20A flange
F25	25A flange
H	Hose
T	Thread

❻ : Frequency

5	50Hz
6	60Hz

❼ : Fluid specific gravity*3

0	1.0 max. (for 71PH/VH only)
1	1.1 max.
2	1.2 max.
3	1.3 max.
5	1.5 max.
9	1.9 max.
Z	Others*4

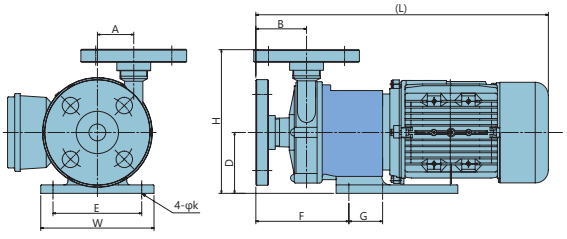
❽ : Motor voltage*5

T2	200V 50Hz, 200/220 60Hz
T4	380/400/415V 50Hz, 380/400/440V 60Hz

*1) "H" added to high-head type TS-71 after P/V.
*2) Refer to material table.
*3) TS-71PH/VH are exclusive for fluid specific gravity 1.0, TS-71P/V are standardly for fluid specific gravity 1.1 max., please contact us for other fluid specific gravities.
*4) Please specify or contact us for other fluid specific gravities.
*5) Standard motors are indicated as "T2" or "T4".
*6) Aflas® is a registered trademark of AGC Inc.
* Please order optional "Union set" for union connection.

■Dimensions

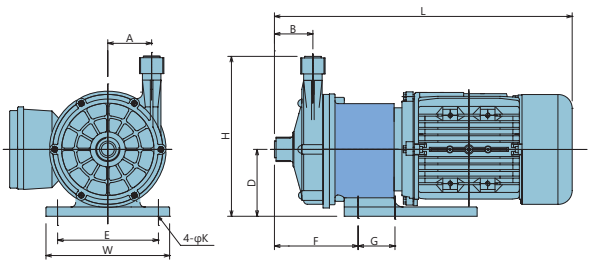
（unit：mm）



TS-71P/V、TS-81P/V（Flange connection）

Model	H	L	W	A	B	D	E	F	G	k
TS-71-T	162	343	134	44	53	72	105	98	40	7
TS-71-F	170	352			60			110		
TS-81-T	175	370	156		66	75	110	120	70	9
TS-81-F	182	375			70			122		
TS-71H-T	175	320	134	48	42	72	105	86	40	7

* This table is for flange and thread connection. Please contact us for hose connection.
* Dimensions and performances are subject to change without prior notice.



TS-71PH/71VH（Thread connection）

▼Inform us of the following items when you place an order for TS series.

Model	Chemical to be used	Required performance	Power source	Connection	Others
TS-○○P/V	Name, concentration, temperature, specific gravity	○m×○○○L/min	○○○V、○φ、○○Hz	Hose, Thread, Union, Flange	Remark

TSM

motor
0.4kW~3.7kW

General-purpose medium capacity Magnetic pumps

TSM-P/E

features

- Two kinds of main material, GFR-PP (Glass Fiber Reinforced Polypropylene) and CFR-ETFE (Carbon Fiber Reinforced ETFE) in high corrosion resistance. Three more materials combinations selectable to wide-range chemicals.
- Resin bracket realizing light weight and high resistance to erosion. (FCD bracket for TSM-C)
- TSM-C is durable with FCD cover.

TSM-C

■Model and specifications

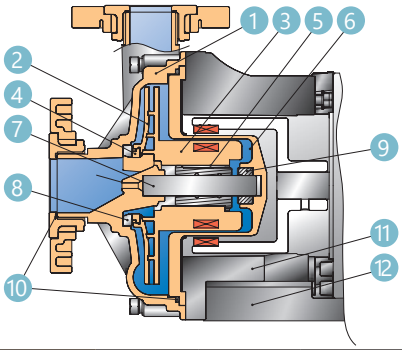
50Hz/60Hz

Model	Connection diameter (Suction x Discharge) (A)	Head (m)	Discharge rate (ℓ/min)	Motor output (kW)	Weight (P・E/C) (kg)
TSM-100 P・E	25×25	12	50	0.4	13.5
TSM-110 P・E	25×25	20	50	0.75	21
TSM-201 P・E/C	40×40(25)*	8	130	0.4	13.5 / 22.7
TSM-211 P・E/C	40×40	12	180	0.75	21 / 30.4
TSM-221 P・E/C	50×40	16	260	1.5	29.5 / 44.7
TSM-231 P・E/C	50×40	22	300	2.2	35 / 50.1
TSM-241 P・E/C	50×40	32	300	3.7	43 / 62.3
TSM-251 P・E/C	65×50	22	500	3.7	43 / 63.4
TSM-261 P・E	65×50	14	480	2.2	36

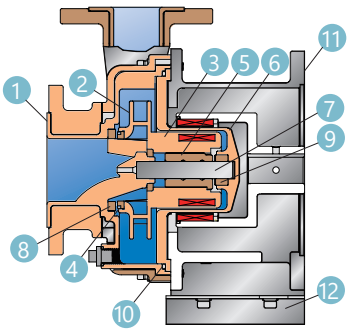
* Indication of minimum discharge rate is approx. 10% of maximum discharge rate at 0m head.
* Discharge connection diameter is 25A for TSM-201C.

■Liquid-end parts specifications

P/E type



C type

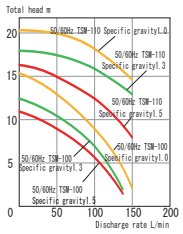


	Part name \ Combination	TSM-P			TSM-E			TSM-C		
		C	R	S	C	R	S	C	R	S
1	Front Casing	Glass Fiber Reinforced Polypropylene			Carbon Fiber Reinforced ETFE			Carbon Fiber Reinforced ETFE w/ FCD Cover		
2	Impeller	Glass Fiber Reinforced Polypropylene			Carbon Fiber Reinforced ETFE			Carbon Fiber Reinforced ETFE		
3	Magnetic Can	Polypropylene			Carbon Fiber Reinforced ETFE			Carbon Fiber Reinforced ETFE		
4	Mouth Ring	PTFE			PTFE		SiC	PTFE		SiC
5	Bearing	Carbon	PTFE	SiC	Carbon	PTFE	SiC	Carbon	PTFE	SiC
6	Rear Casing	Glass Fiber Reinforced Polypropylene			Carbon Fiber Reinforced ETFE			Carbon Fiber Reinforced ETFE		
7	Shaft	High Purity Ceramics			High Purity Ceramics		SiC	High Purity Ceramics		SiC
8	Front Thrust	High Purity Ceramics			High Purity Ceramics		SiC	High Purity Ceramics		SiC
9	Rear Thrust	High Purity Ceramics			High Purity Ceramics		SiC	High Purity Ceramics		SiC
10	O-ring	FKM/EPDM/Aflas®								
11	Bracket	Glass Fiber Reinforced Polypropylene			Glass Fiber Reinforced Polypropylene			FCD		
12	Base *	SUS/Glass Fiber Reinforced Polypropylene			SUS/Glass Fiber Reinforced Polypropylene			SUS304		

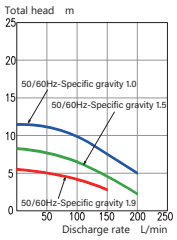
* Base material: Glass Fiber Reinforced Polypropylene for TSM-241/251P/E, SUS304 for the others.
* Aflas® is a registered trademark of AGC Inc.

■Performance Curve

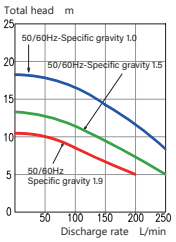
TSM-100/110



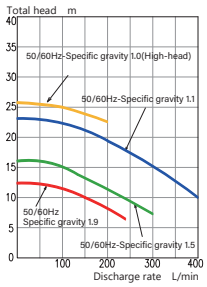
TSM-201



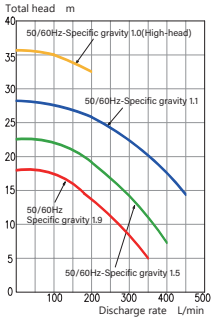
TSM-211



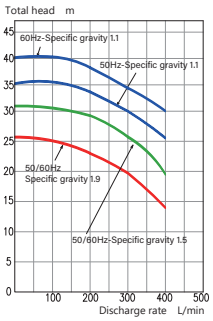
TSM-221



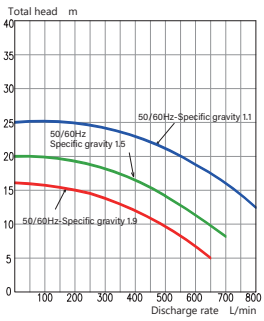
TSM-231



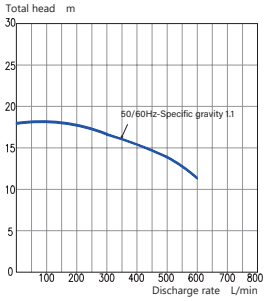
TSM-241



TSM-251



TSM-261



■Model Code Explanation

TSM — 211 ❶ | P ❷ — R ❸ V ❹ 6 ❺ 1 ❻ — T2 ❼

❶:Series*1

100	Connection diameter 25A x 25A / 0.4kW
110	Connection diameter 25A x 25A / 0.75kW
201	Connection diameter 40A x 40A (25A) / 0.4kW
211	Connection diameter 40A x 40A / 0.75kW
221	Connection diameter 50A x 40A / 1.5kW
231	Connection diameter 50A x 40A / 2.2kW
241	Connection diameter 50A x 40A / 3.7kW
251	Connection diameter 65A x 50A / 3.7kW
261	Connection diameter 65A x 50A / 2.2kW

❷:Main material

P	Glass Fiber Reinforced Polypropylene
E	Carbon Fiber Reinforced ETFE
C	Carbon Fiber Reinforced ETFE w/ FCD Cover

❸:Liquid-end parts material*2

C	High Density Carbon / High Purity Ceramics
R	PTFE / High Purity Ceramics
S	SiC / SiC

❹:O-ring material

V	FKM
E	EPDM
A	Aflas®*6
Z	Others

❺: Frequency

5	50Hz
6	60Hz

❻:Fluid specific gravity

0	1.0 max.
1	1.1 max.
2	1.2 max.
3	1.3 max.
5	1.5 max.
9	1.9 max.
Z	Others*3

❼:Motor*4

1:Type

T	Tohkemy standard
E	Increased-safety type (eG3)
D	Explosion-proof type (d2G4)
Z	Other special type

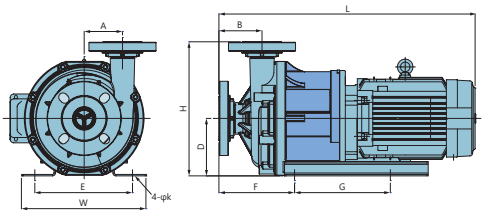
2:Motor voltage

2	200V-50/60Hz 220V-60Hz
4	400V-50/60Hz 440V-60Hz
6	Others*5

*1) (25A) for TSM-C.
*2) Refer to material table.
*3) Please specify or contact us for other fluid specific gravities.
*4) Standard motors are indicated as "T2" or "T4".
*5) Please specify or contact us for other voltages.
*6) Aflas® is a registered trademark of AGC Inc.

■Dimensions

（unit：mm）



Model	H	L	W	A	B	D	E	F	G	k
TSM-100	255	463	160	65	90	115	130	163	130	12
TSM-110		485						171		
TSM-201	225	458	140	54	87	95	110	150	98	
TSM-211	257	500	160	72	105	115	130	187	130	
TSM-221	280	535	260	80	90	120	204	159	200	14
TSM-231		558								
TSM-241	322	577	250			162	220	147	300	
TSM-251	331	584			92			153		
TSM-261		572								

* Dimension "L" is for Tohkemy standard motor installed.

▼Inform us of the following items when you place an order for TSM series.

Model	Chemical to be used	Required performance	Power source	Others
TSM-○○P/E/C	Name, concentration, temperature, specific gravity	○m×○○○L/min	○○○V、○φ、○○Hz	Remark

TSL

motor
5.5kW~18.5kW

Medium to large capacity high-head Magnetic pumps

features

- Two kinds of main material, ETFE and SiC.
- High corrosion resistance and most suitable for transferring wide-range chemicals.

TSL-55/75MM

Medium capacity, medium to high head magnetic pumps, equipped with 5.5/7.5kW motor to cover 100 to 600L/min of discharge rate and 20 to 50m head.

TSL-55/75MS

Medium to large capacity, medium head magnetic pumps, equipped with 5.5/7.5kW motor to cover 100 to 800L/min of discharge rate and 20 to 50m head.

TSL-110/150/185LS

Large capacity, medium head reliable magnetic pumps, selectable from 11 to 18.5kW motor having large capacity from 500 to 1600L/min of discharge rate and 20 to 50m head.

Model and specifications

TSL-MM

50Hz/60Hz

Model	Connection diameter (Suction x Discharge) (A)	Head (m)	Discharge rate (L/min)	Motor output (kW)	Weight (kg)
TSL-55MM	50×40	41	300	5.5	120
TSL-75MM	50×40	49	300	7.5	127

TSL-MS

50Hz/60Hz

Model	Connection diameter (Suction x Discharge) (A)	Head (m)	Discharge rate (L/min)	Motor output (kW)	Weight (kg)
TSL-55MS	65×50	31	500	5.5	125
TSL-75MS	65×50	31/39	500	7.5	130

TSL-LS

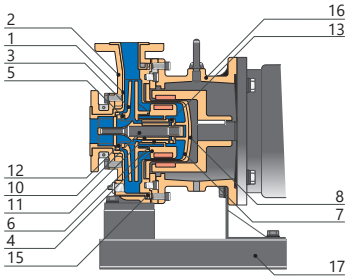
50Hz/60Hz

Model	Connection diameter (Suction x Discharge) (A)	Head (m)	Discharge rate (L/min)	Motor output (kW)	Weight (kg)
TSL-110LS	80×65	34	1000	11	229
TSL-150LS	80×65	34/45	1000	15	247
TSL-185LS	80×65	34/53	1000	18.5	260

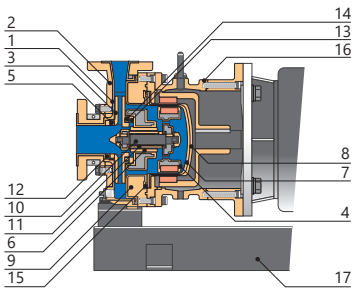
* Indication of minimum discharge rate is approx. 10% of maximum discharge rate at 0m head.

Liquid-end parts specifications

TSL-MM/MS



TSL-LS

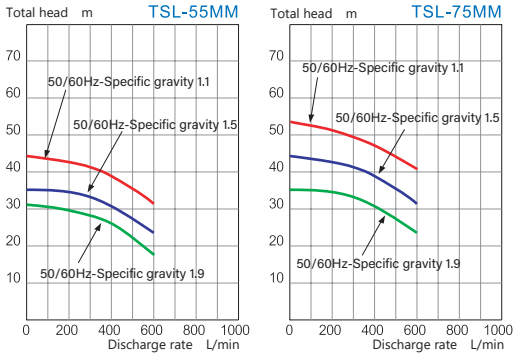


	Part name \ Combination	TSL-MM・MS	TSL-LS
1	Front Casing	Carbon Fiber Reinforced ETFE	
2	Front Casing Cover	FCD	
3	Impeller	Carbon Fiber Reinforced ETFE	
4	Magnetic Can	Natural ETFE	
5	Mouth Ring	SiC	
6	Bearing	SiC	
7	Rear Casing	Carbon Fiber Reinforced ETFE	
8	Rear Casing Cover	Specially-reinforced Resin	
9	Bearing Plate	—	FC + Carbon Fiber Reinforced ETFE
10	Shaft	SiC	ETFE+SUS303
11	Shaft Sleeve	—	SiC
12	Front Thrust	SiC	
13	Rear Thrust	SiC	
14	Rear Ring	—	SiC
15	O-ring	FKM/EPDM/Aflas®	
16	Bracket	Cast Iron	
17	Base	SUS304	

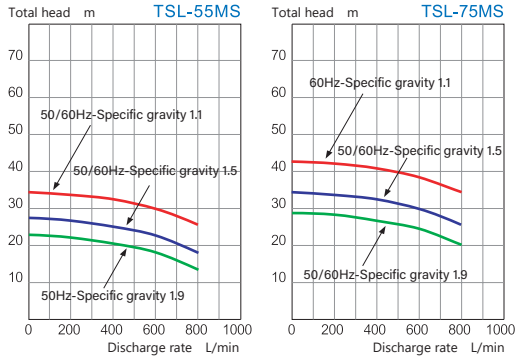
* Aflas® is a registered trademark of AGC Inc.

■Performance Curve

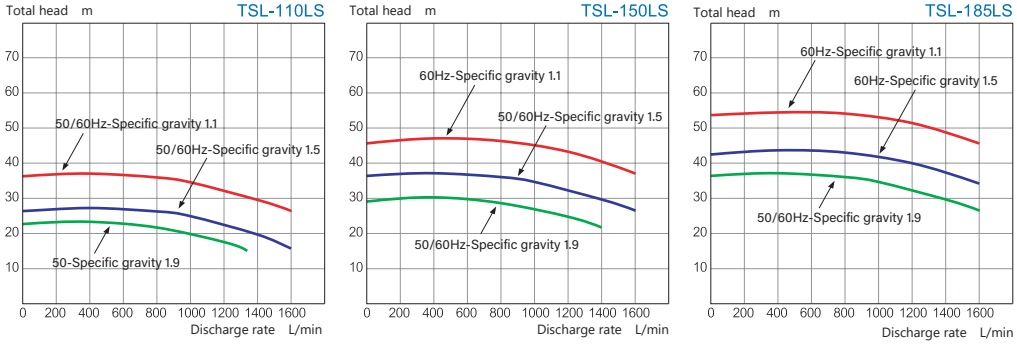
TSL-MM



TSL-MS



TSL-LS



■Model Code Explanation

TSL — 55 MM — S V 6 1 — T2

① ② ③ ④ ⑤ ⑥ ⑦

①: Motor output

55	5.5kW	75	7.5kW	110	11kW
150	15kW	185	18.5kW		

②: Series*1

MM	Connection diameter 50A x 40A / 5.5kW, 7.5kW
MS	Connection diameter 65A x 50A / 5.5kW, 7.5kW
LS	Connection diameter 80A x 65A / 11kW, 15kW, 18.5kW

③: Liquid-end parts material

S	SiC / SiC

④: O-ring material

V	FKM
E	EPDM
A	Aflas®*5
Z	Others

⑤: Frequency

5	50Hz
6	60Hz

⑥: Fluid specific gravity

0	1.0 max.
1	1.1 max.
2	1.2 max.
3	1.3 max.
5	1.5 max.
9	1.9 max.
Z	Others*2

⑦: Motor*3

1:Type

T	Tohkemy standard
E	Increased-safety type (eG3)
D	Explosion-proof type (d2G4)
Z	Other special type

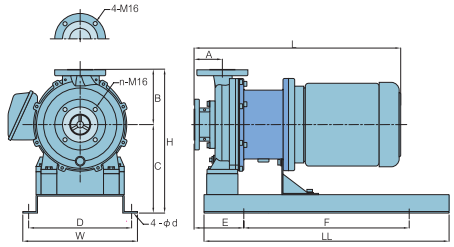
2:Motor voltage

2	200V-50/60Hz 220V-60Hz
4	400V-50/60Hz 440V-60Hz
6	Others*4

*1) Refer to material table.
*2) Please specify or contact us for other fluid specific gravities.
*3) Standard motors are indicated as "T2" or "T4".
*4) Please specify or contact us for other voltages.
*5) Aflas® is a registered trademark of AGC Inc.

■Dimensions

（unit：mm）



Model	A	B	C	D	E	F	H	L	LL	W	d	n
TSL-55/75MM	80	180	280	320	150	540	460	700	800	360	18	4
TSL-55/75MS	80	160	252	320	150	540	412	707	800	360	18	
TSL-110/150LS	100	180	300	350	190	600	480	919	900	390	20	8
-185LS								963				

* Dimension "L" is for Tohkemy standard motor installed.

▼Inform us of the following items when you place an order for TSL series.

Model	Chemical to be used	Required performance	Power source	Others
TSL-○○MM/MS/LS	Name, concentration, temperature, specific gravity	○m×○○○L/min	○○○V、○φ、○○Hz	Remark

TSP

motor
0.75kW~2.2kW

Medium capacity | Self-priming magnetic pumps

features

- General-purpose self-priming magnetic pumps, durable for abnormal operation.
- Two kinds of main material, GFR-PP (Glass Fiber Reinforced Polypropylene) and PTFE.
- Resin bracket realizing light weight and high resistance to erosion compared with former model.

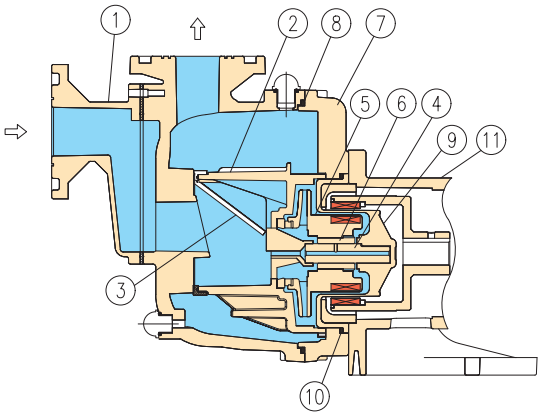
Most applicable to self-priming operation for pumping up from a sump pit and tank, extracting from a tanker, etc.

Model and specifications

Model	Connection diameter (Suction x Discharge) (A)	Head (m)	Discharge rate (L/min)	Motor output (kW)	Weight (kg)
TSP-21P	40×40	12	150	0.75	25
TSP-22P	40×40	16	200	1.5	35
TSP-23P	50×50	18	200	2.2	40

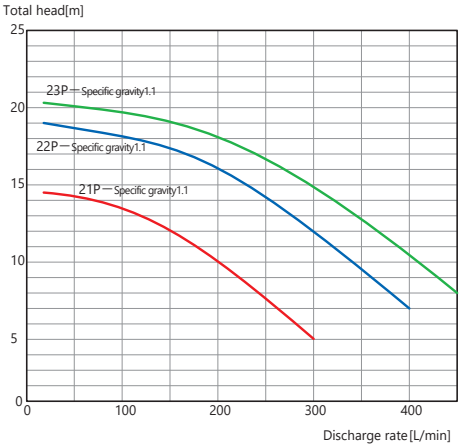
* Indication of minimum discharge rate is approx. 10% of maximum discharge rate at 0m head.
* Adjust the self-priming height at 3m maximum. (Fluid specific gravity 1.1 at normal temperature)
* Applicable self-priming height must be changed for fluid having high temperature and high specific gravity.

Liquid-end parts specifications



Part name \ Combination		TSP
1	Outer Casing	Glass Fiber Reinforced Polypropylene
2	Inner Casing	Glass Fiber Reinforced Polypropylene
3	Check Valve	FKM/EPDM
4	Shaft	High Purity Ceramics
5	Impeller (Magnetic Can)	Polypropylene
6	Bearing	PTFE
7	Casing Cover	Glass Fiber Reinforced Polypropylene
8	O-ring for Casing Cover	FKM/EPDM
9	Rear Casing	Glass Fiber Reinforced Polypropylene
10	O-ring for Rear Casing	FKM/EPDM
11	Bracket	Glass Fiber Reinforced Polypropylene

■Performance Curve



■Model Code Explanation

TSP — 21P — R V — 6 1 — T2

❶ ❷ ❸ ❹ ❺ ❻

❶ : Series*1

21P	Connection diameter 40A x 40A / 0.75kW
22P	Connection diameter 40A x 40A / 1.5kW
23P	Connection diameter 50A x 50A / 2.2kW

❷ : Bearing material

R	PTFE

❸ : O-ring material

V	FKM
E	EPDM

❹ : Frequency

5	50Hz
6	60Hz

❺ : Fluid specific gravity

1	1.1 max.
2	1.2 max.
3	1.3 max.
5	1.5 max.
Z	Others*2

❻ : Motor*3

1:Type

T	Tohkemy standard
E	Increased-safety type (eG3)
D	Explosion-proof type (d2G4)
Z	Other special type

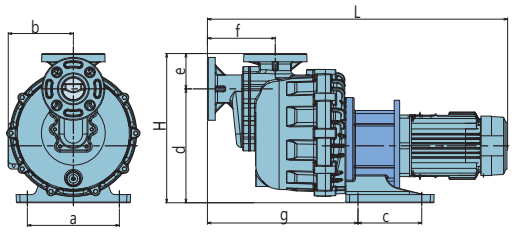
2:Motor voltage

2	200V-50/60Hz 220V-60Hz
4	400V-50/60Hz 440V-60Hz
6	Others*4

*1) Refer to material table.
*2) Please specify or contact us for other fluid specific gravities.
*3) Standard motors are indicated as "T2" or "T4".
*4) Please specify or contact us for other voltages.

■Dimensions

（unit：mm）

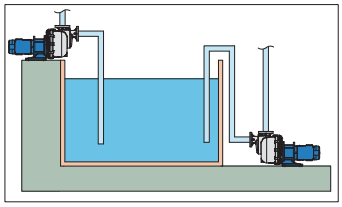


Model	a	b	c	d	e	f	g	H	L
TSP-21P	200	143	140	250	78	150	330	328	660
TSP-22P	200	154	140	250	78	150	330	328	695
TSP-23P	200	154	140	250	78	150	330	328	695

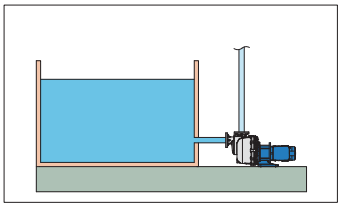
■Notes for installation

This pump can be used for both self-priming and non-self-priming installation.
Adjust the self-priming height at 3m maximum. (Fluid specific gravity 1.1 at normal temperature)
Applicable self-priming height must be changed for fluid having high temperature and high specific gravity.

■Self-priming installation



■Non-self-priming installation(press-in installation)



▼Inform us of the following items when you place an order for TSL series.

Model	Chemical to be used	Required performance	Power source	Others
TSP-○○P	Name, concentration, temperature, specific gravity	○m×○○○L/min	○○○V、○φ、○○Hz	Remark

EOCR

Dry-run protector for magnetic pumps

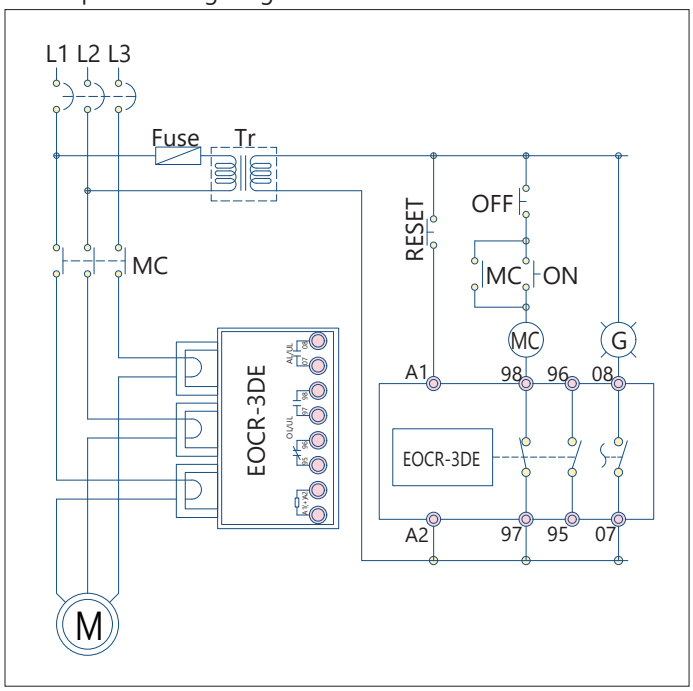
features

- It protects racing (dry-run) by monitoring load current of all three-phase during operation of magnetic pumps.
- Automatically indicating the load current alternatively every 5 minutes during operation.
- Free power source from 100 to 250V for control.
- Applicable to inverter control from 20 to 400Hz.
- Simple installation with the built-in CT.

Common Specifications

Measuring current range	0.5～60 A
Starting delay time	1 to 200 seconds
Operating delay time	1 to 30 seconds
Reset	Manual / Control power source shut-off
Operating characteristic	Instant
Ambient temperature	-20～60℃
Installation	35mm DN rail
Control power source	100～250V
Power consumption	3W max.

Example of Wiring Diagram



To shut at 95-96 and open at 97-98 when tripped.
Use the alarm output terminals 95-96 for alarm indication.
The output terminals 07-08 are shut after starting operation and opened when tripped.

MOK

CHEMICAL PUMP MOK series

Vertical type self-priming pump

- MOK-S-PP
- MOK-S-P

Features

- MOK-S-PP / MOK-S-P
  Two kinds of main material,PP and PVC resins in high corrosion resistance.
- Special seals to prevent liquid leakage.

⚠ Handling precautions

- Do not operate the pump if liquid remains in the pump casing. It may cause failure and accident such as heating deformation, liquid leakage, etc.
  - Shut-off operation of suction and discharge valves.
  - Improper self-priming operation with air entrainment and others.
  - Cavitation blocked in a strainer, pipes, etc.
- Operate the pump equipped with CSS (Centrifugal Seal System) at 40Hz or higher frequency when inverter is used.
- Use the pump with 4m or lower press-in head.

■Magnetic Pumps Performance Comparison

This table is to show graphically the maximum discharge rate and maximum head respectively.
Refer to the performance curve of each model for the specific performance at the using condition.

MOK-S-PP series		Max. discharge rate [L/min]	Max. head [m]	Applicable fluid specific gravity
251S-PP	50Hz	95	9.4	1.1 max
	60Hz	100	10	
252S-PP	50Hz	115	11	
	60Hz	120	12	
401S-PP	50Hz	150	9	
402S-PP	50Hz	180	11	
	60Hz	200	13	
502S-PP	50Hz	230	12	
503S-PP	50Hz	250	14	
	60Hz	280	15.2	
653S-PP	50Hz	325	15.5	
655S-PP	60Hz	440	19.5	
805S-PP	50Hz	450	20	
	60Hz	450	20	
807S-PP	60Hz	600	27	

MOK-S-P series		Max. discharge rate [L/min]	Max. head [m]	Applicable fluid specific gravity
251S-P	50Hz	100	9.4	1.1 max
	60Hz	120	11	
401S-P	50Hz	180	10	
402S-P	60Hz	250	14	
502S-P	50Hz	270	13	
503S-P	60Hz	300	17.5	
653S-P	50Hz	350	16	
655S-P	60Hz	480	21.5	
805S-P	50Hz	500	20	
807S-P	60Hz	650	26	
1007S-P	50Hz	700	24.5	
10010S-P	60Hz	775	31.5	
403S-PH	50/60Hz	150	17	
505S-PH	50/60Hz	200	23.5	
507S-PH	50/60Hz	350	31.5	
6510S-PH	50/60Hz	400	31.5	

MOK-S-PP

motor
0.75kW~5.5kW

PP-made vertical type self-priming centrifugal pumps

features

- Resin material for liquid-end parts, high resistance to chemicals.
- Cutting and matching from PP thick plates.
- High resistance to heat and osmosis, good detachability.
- Most suitable for electroless cupper plating and electroless gold plating.
- Special CSS (Centrifugal Seal System)
  - The sealing part is noncontact state and free from deterioration, wearing and heat generation. In addition, it is not affected by slurry and liquid to be used.
  - The sealing impeller forms fluid seal to protect liquid leakage during operation. The CSS prevents liquid leakage under suspension.
- This pump can be used for both self-priming and non-self-priming installation. The special CSS prevents liquid leakage.

Model and specifications

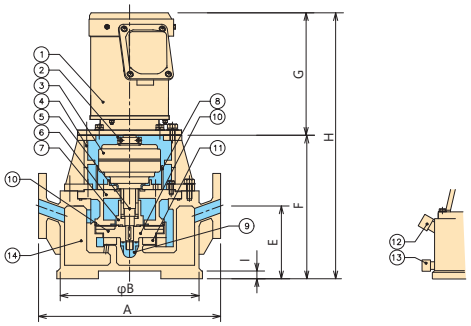
50Hz

Model	Connection diameter (mm)	Head (m)	Discharge rate (L/min)	Motor output (kW)	Weight (kg)
MOK-251S-PP MOK-252S-PP	25A×25A	5	80	0.75	31
		5.5	100	1.5	39
MOK-401S-PP MOK-402S-PP	40A×40A	5	140	0.75	44
		6	150	1.5	54
MOK-502S-PP MOK-503S-PP	50A×50A	7	200	1.5	54
		8	230	2.2	55
MOK-653S-PP	65A×65A	10	300	2.2	64
MOK-805S-PP	80A×80A	13.5	380	3.7	87

60Hz

Model	Connection diameter (mm)	Head (m)	Discharge rate (L/min)	Motor output (kW)	Weight (kg)
MOK-251S-PP MOK-252S-PP	25A×25A	6	85	0.75	31
		8	85	1.5	39
MOK-402S-PP	40A×40A	7	185	1.5	54
MOK-503S-PP	50A×50A	8	250	2.2	55
MOK-655S-PP	65A×65A	10	400	3.7	86
MOK-805S-PP MOK-807S-PP	80A×80A	12	400	3.7	87
		13	500	5.5	100

Liquid-end parts specifications

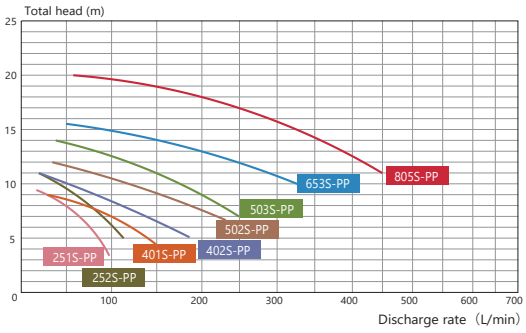


Part name \ Combination	MOK-S-PP
1 Motor	-
2 Separation Color	S45C
3 CSS	-
4 Motor Stand	FC200
5 Pump Shaft	SUS304
6 Back Casing	PP
7 Shaft Sleeve	GFR-PP
8 Sealing Cover	PMMA
9 Impeller Nut	GFR-PP
10 Impeller	PP
11 Scroll Chamber	PP
12 Pouring Cap	PP
13 Drain Cap	PP
14 Casing	PP

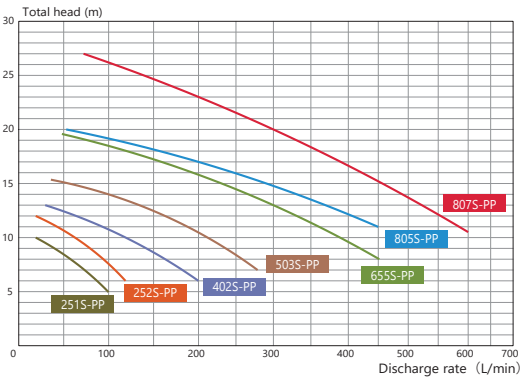
* Max. operating temperature: 75℃

■Performance Curve

50Hz



60Hz



■Model Code Explanation

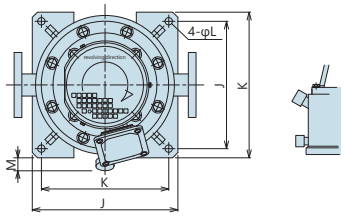
MOK — ① ② ③ — ④

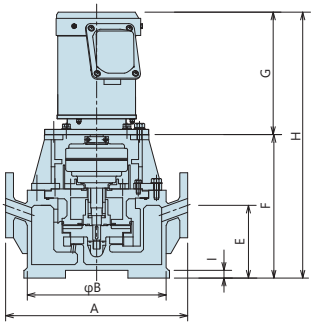
①：Connection diameter		②：Motor output	
25	25A	1	0.75kW
40	40A	2	1.5kW
50	50A	3	2.2kW
65	65A	5	3.7kW
80	80A	7	5.5kW

③：Type		④：Liquid-end material	
S	Self-priming	PP	Polypropylene

■Dimensions

（unit：mm）



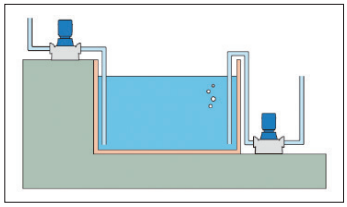


Model	A	B	φC	E	F	G	H	I	J	K	φL
MOK-251S-PP	420	320	163	140	298	233	531	28	325	245	15
MOK-252S-PP			187			275	573				
MOK-401S-PP	500	380	163	170	326	233	559	38	390	305	15
MOK-402S-PP			187			275	601				
MOK-502,503S-PP	500	380	187	170	326	275	601	38	390	305	15
MOK-653S-PP	560	445	187	220	347	275	637	48	460	360	15
MOK-655S-PP			202		354	326	724				
MOK-805S-PP	560	445	202	220	354	326	724	48	460	360	15
MOK-807S-PP			243		334	370	733				

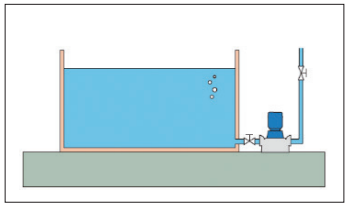
■Installing Precautions

This pump can be used for both self-priming and non-self-priming installation.
The special CSS prevents liquid leakage.
Use the pump with 4m or lower press-in head.

■Self-priming installation



■Non-self-priming installation(press-in installation)



▼Inform us of the following items when you place an order for MOK-S-PP series.

Model	Chemical to be used	Required performance	Power source	Others
MOK-S-○○PP	Name, concentration, temperature, specific gravity	○m×○○○L/min	○○○V、○φ、○○Hz	Remark

MOK-S-P

motor
0.75kW~7.5kW

PVC-made vertical type self-priming centrifugal pumps

features

- Resin material for liquid-end parts, high resistance to chemicals.
- This pump can keep water for self-priming in the pump casing. It is no need to pour water for operation without initial operation.
- The sealing part is noncontact state and free from deterioration, wearing and heat generation. In addition, it is not affected by slurry and liquid to be used.
- The sealing impeller forms fluid seal to protect liquid leakage during operation. The CSS prevents liquid leakage under suspension.

Model and specifications

50Hz

Model	Connection diameter (mm)	Head (m)	Discharge rate (L/min)	Motor output (kW)	Weight (kg)
MOK-251S-P	25A×25A	5	80	0.75	35
MOK-401S-P	40A×40A	6	145	0.75	41
MOK-502S-P	50A×50A	7	230	1.5	47
MOK-653S-P	65A×65A	10	320	2.2	61
MOK-805S-P	80A×80A	12	420	3.7	86
MOK-1007S-P	100A×100A	16	520	5.5	135

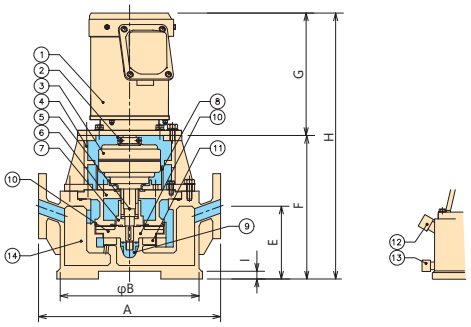
60Hz

Model	Connection diameter (mm)	Head (m)	Discharge rate (L/min)	Motor output (kW)	Weight (kg)
MOK-251S-P	25A×25A	7	85	0.75	35
MOK-402S-P	40A×40A	7	200	1.5	47
MOK-503S-P	50A×50A	10	240	2.2	49
MOK-655S-P	65A×65A	12	400	3.7	86
MOK-807S-P	80A×80A	14	500	5.5	103
MOK-10010S-P	100A×100A	18	620	7.5	140

50Hz, 60Hz

Model	Connection diameter (mm)	Head (m)	Discharge rate (L/min)	Motor output (kW)	Weight (kg)
MOK-403S-PH	40A×40A	16	140	2.2	49
MOK-505S-PH	50A×50A	20	170	3.7	82
MOK-507S-PH	50A×50A	21	310	5.5	100
MOK-6510S-PH	65A×65A	26	320	7.5	117

Liquid-end parts specifications

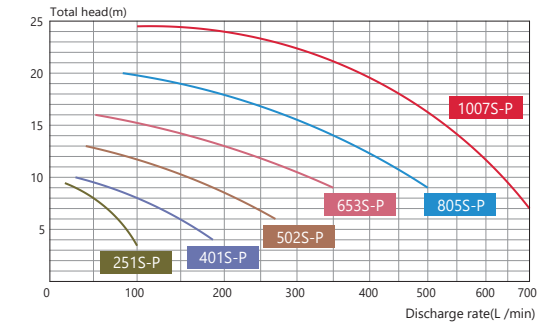


Part name \ Combination		MOK-S-P
1	Motor	-
2	Separation Color	S45C
3	CSS	-
4	Motor Stand	FC200
5	Pump Shaft	SUS304
6	Back Casing	HT-PVC
7	Shaft Sleeve	GFR-PP
8	Sealing Cover	PMMA
9	Impeller Nut	GFR-PP
10	Impeller	HT-PVC
11	Scroll Chamber	PVC
12	Pouring Cap	PVC
13	Drain Cap	PVC
14	Casing	PVC

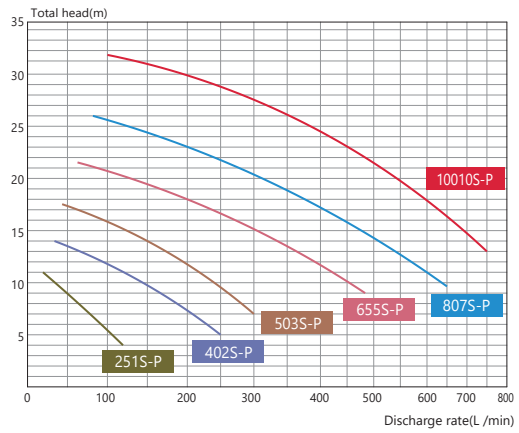
* Max. operating temperature: 50℃

■Performance Curve

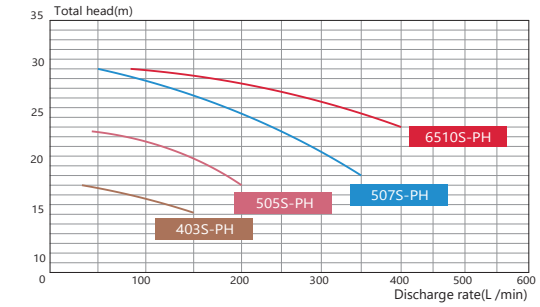
50Hz



60Hz



50Hz, 60Hz



■Model Code Explanation

MOK — 40 ❶ 3 ❷ S ❸ — P ❹ H ❺

❶:Connection diameter

25	25A
40	40A
50	50A
65	65A
80	80A
100	100A

❷:Motor output

1	0.75kW
2	1.5kW
3	2.2kW
5	3.7kW
7	5.5kW
10	7.5kW

❸:Type

S	Self-priming

❹:Liquid-end material

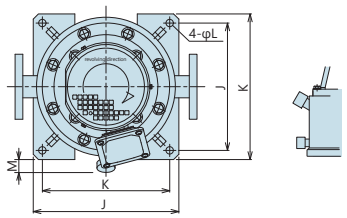
P	PVC

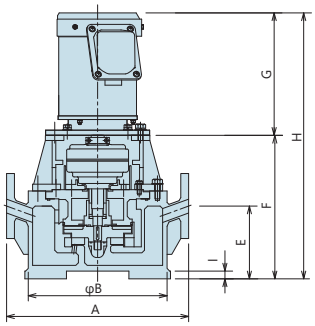
❺:Additional code

NIL	Standard
H	High-head

■Dimensions

（unit：mm）





Model	A	B	φC	E	F	G	H	I	J	K	φL	M
MOK-251S-P	350	267	163	140	267	233	500	15	280	245	14	60
MOK-252S-P			187			275	542					
MOK-401S-P	440	318	163	170	297	233	530	15	340	305	14	60
MOK-402S-P			187			275	572					
MOK-502,503S-P	440	318	187	170	297	275	572	15	340	305	14	60
MOK-653S-P	560	420	187	220	357	275	632	20	400	360	14	80
MOK-655S-P			202		364	326	690					
MOK-657S-P			243		344	370	714					
MOK-805S-P	560	420	202	220	364	326	690	20	400	360	14	80
MOK-807S-P			243		344	370	714					
MOK-1007S-P	660	470	243	330	465	370	835	30	485	440	15	100
MOK-10010S-P			243			370	835					
MOK-403S-PH	440	318	187	170	297	275	572	15	340	305	14	60
MOK-505S-PH	490	370	202	220	364	326	690	20	365	325	14	80
MOK-507S-PH			243		344	370	714					
MOK-6510S-PH	560	420	243	220	354	370	724	25	400	360	14	100

▼Inform us of the following items when you place an order for MOK-S-P series.

Model	Chemical to be used	Required performance	Power source	Others
MOK-S-○○P	Name, concentration, temperature, specific gravity	○m×○○○L/min	○○○V、○φ、○○Hz	Remark

TCP

CHEMICAL PUMP TCP series

Sanitary pumps for fluid transfer

Small capacity all-stainless pumps

Use of TCP series

● TCP

・Transferring for beverage production lines.

・Cleaning and sterilization for food and beverage plants,

■Performance Comparison

This table is to show graphically the maximum discharge rate and maximum head respectively.
Refer to the performance curve of each model for the specific performance at the using condition.

TCP series		Max. discharge rate [L/min]	Max. head[m]	Applicable fluid specific gravity
TCP-002	50/60Hz	100	5	1.1 max
TCP-004	50/60Hz	140	8	
TCP-007	50/60Hz	200	12	
TCP-015	50/60Hz	250	18	

⚠ Handling precautions

●Use our sanitary pumps within the following fluid and ambient temperature.

Model series	TCP
Fluid temperature	0～100℃
Ambient temperature	0～40℃

Re. 1) Fluid shall not be freeze and condense.
Re. 2) Resistible fluid temperature range depends on specific chemicals. Select the pump in consideration of corrosion resistance and cavitation occurring.

●Do not operate sanitary pumps with slurry.

It is prohibited to transfer slurry by sanitary pumps in principle.

●Do not race sanitary pumps.

Mechanical seal bearings of pump shaft in sanitary pumps are cooled and helped smooth by fluid to be used. Pump racing may cause temperature rise that may make crack and damage of the mechanical seal. If trial operation is required for revolving direction check or other purpose, pour a half quantity of water into the pump before starting operation.

●Our sanitary pumps cannot suck fluid by itself.

Use sanitary pumps with press-in piping for suction line.
Try to select the most suitable diameter of piping and make the length as short as possible in order to prevent cavitation.

TCP

motor
0.2kW~1.5kW

Sanitary pumps

features

- The motor, liquid-end parts, and base are all made of stainless steel.
- Simple structure and easy to clean.
- Continuous operating temperature 100℃, CIP cleaning*1 is also supported.
- It is possible to connect the liquid-end parts with clamps and wing bolts, disassemble with a simple spanner.

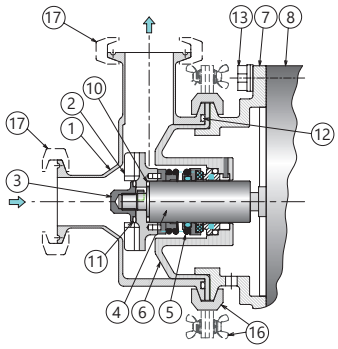
*1 CIP cleaning: System that safely and automatically cleans with simple operation without disassembling equipment.

■Model and specifications

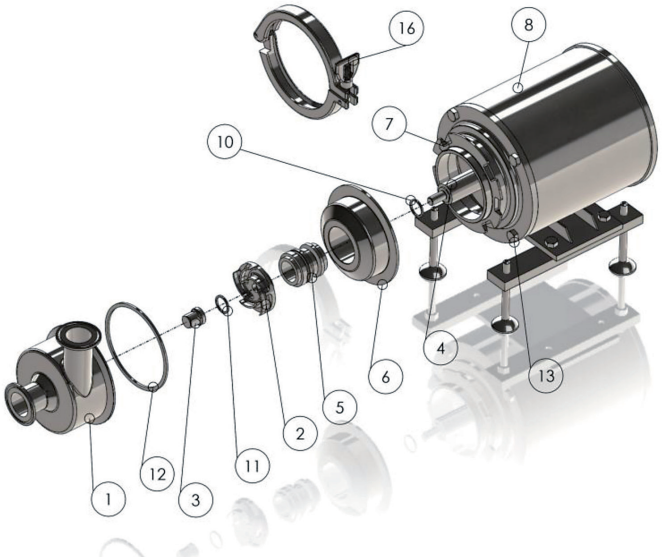
Model	Ferrule connection diameter	Standard specification point	Head (m)	Discharge rate (L/min)	Motor output (kW)	Weight (kg)
TCP-002	1.25S	50L/min×3m	5	100	0.2	17
TCP-004	1.25S	90L/min×5m	8	140	0.4	18
TCP-007	Suction 2.0S x Discharge 1.5S	120L/min×9m	12	200	0.75	31
TCP-015	Suction 2.0S x Discharge 1.5S	150L/min×11m	18	250	1.5	33

Notes
* This pump is not self-priming type. Use the pump with press-in piping for suction line.
* Allowable fluid specific gravity 1.1 max.

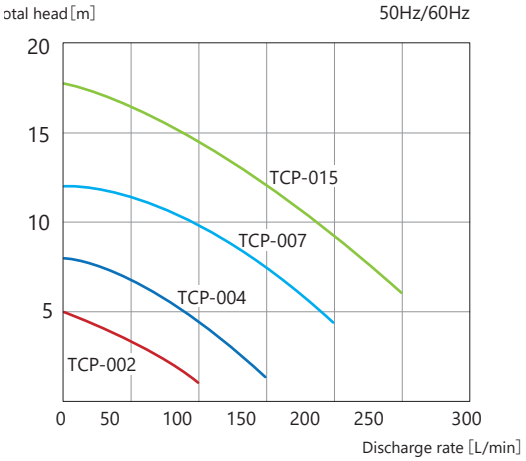
■Liquid-end parts specifications



	Part name \ Combination	TCP
1	Casing	SCS13(SUS304)/SCS14(SUS316)
2	Impeller	SCS13(SUS304)/SCS14(SUS316)
3	Impeller Nut	SUS304/SUS316
4	Shaft	SUS304/SUS316
5	Mechanical Seal	SUS/SiC
6	Liquid-end Cover	SCS13(SUS304)/SCS14(SUS316)
7	Bracket	SUS304/SUS316
8	Motor	SUS
10	O-ring	PTFE
11	O-ring	PTFE
12	O-ring	EPDM
13	Hexagonal Bolts	SUS304/SUS316
16	Clamp 4.0S/ Fixing with wing bolts for TCP-007/015	SUS304/SUS316



■Performance Curve



■Model Code Explanation

TCP — 002 (1) — 4 (2) E (3) — D (4) — T (5) 2 (6) 6 (7)

(1) : Series

002	0.2kW
004	0.4kW
007	0.75kW
015	1.5kW

(2) : Liquid-end material

4	SCS13 (Standard SUS304)
6	SCS14 (SUS316)

(3) : Liquid-end finish

NIL	Standard buffing
E	Electrolytic polishing

(4) : Drain plug

NIL	w/o drain plug
D	w/ drain plug

(5) : Motor*1

T	Standard

(6) : Motor voltage

2	200V
4	400V

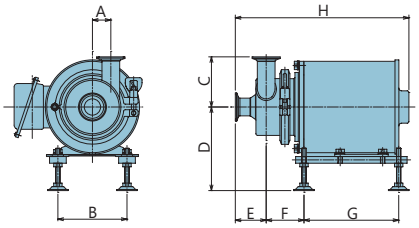
(7) : Frequency

5	50Hz
6	60Hz

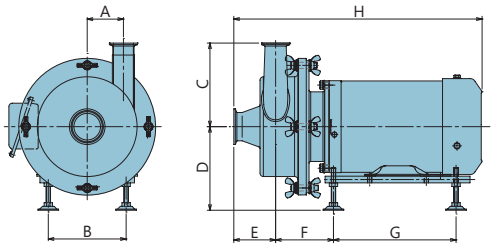
*1) Three-phase, 2P, class F, IP65

■Dimensions

(unit : mm)



TCP-002/004



TCP-007/015

Model	A	B	C	D	E	F	G	H
TCP-002/004	33	124	90	(160)	55.4	67.8	170	(315)/(360)
TCP-007/015	65	140	150	(160)	75	104/118	220	(446)/(460)

▼Inform us of the following items when you place an order for TCP series.

Model	Chemical to be used	Required performance	Power source	Others
TCP-○○○-4/6	Name, concentration, temperature, specific gravity	○m×○○○L/min	○○○V、○φ、○○Hz	Remark

CHEMICAL TANK & ACCESSORIES

PVC-100

TXS-100

・PVC tanks
・PE tanks
・Small agitators (TFN)
・Level switches (TL)

● PVC tanks (Polyvinyl Chloride resin tanks)

Applicable pump model

PVC-50
PVC-100
PVC-200
PVC-300
PVC-500

CM-V, CM-Y,
CM-G, MP-L
or ProMinent electromagnetic
diaphragm metering pumps
(Beta and gamma)

● Small capacity PE tanks (Polyethylene resin tanks)

Applicable pump model

TXS- 25：MP-L
TXS- 50：CM-V, MP-L
TXS-100：CM-V, MP-L

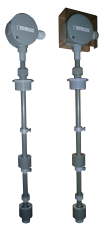
or ProMinent electromagnetic
diaphragm metering pumps
(Beta and gamma)

● Small-size agitators (TFN)

Suitable for 50 to 200L tank capacity

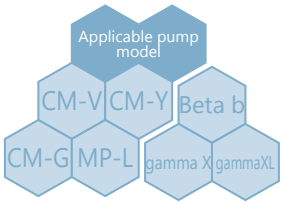
● Level switches (TL)

Made of PVC, high resistance to chemicals
Float type level switches



We are pleased to manufacture various chemical tanks on request.

PVC tank



It is possible to install ProMinent "Beta b", "gamma X", "gamma XL".
Refer to our homepages for detailed performance of pumps.

features

All the models are made of Rigid Polyvinyl Chloride Plates to ensure stability and performance.

The outer-internal ribbed construction provide for ruggedness.

The tank may be installed on a pump mount, agitator base, flange, level switch base, reinforcement, etc. depending on operating conditions.

■Model and specifications

Model	Material	Dimensions (mm)	Capacity (L)	Standard accessories	Weight (kg)	Applicable pump model
PVC-50	PVC	□372×H460	50	Chemical filler port (w/ lid) Level gauge Drain plug Pump mount (for 1 unit)	approx. 8	CM-V CM-Y CM-G (PVC-100 or above) MP-L ProMinent electromagnetic diaphragm pump (Beta and gamma)
PVC-100		□450×H610	100		approx. 14	
PVC-200		□499×H950	200		approx. 23	
PVC-300		□600×H950	300		approx. 35	
PVC-500		□760×H1010	500		approx. 54	

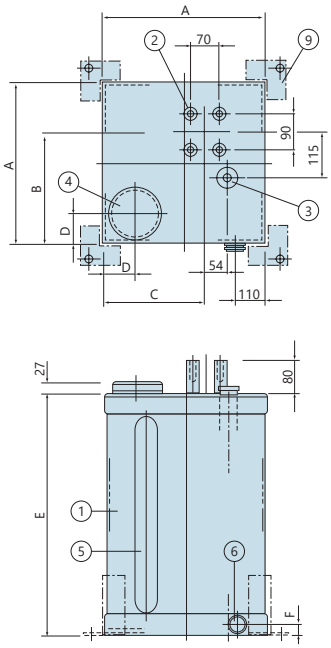
Other customized tanks are also available on request.

Note)
Install the chemical tank in a place with ambient temperature and liquid temperature of 0 to 40℃ where it is not exposed to direct sunlight.
Applicable liquid specific gravity 1.2 max., specially manufacturing for liquid specific gravity 1.67 max.

We are pleased to manufacture other chemical tanks on request. Please contact us.

■Dimensions　w/ pump mount (standard)

（unit：mm）



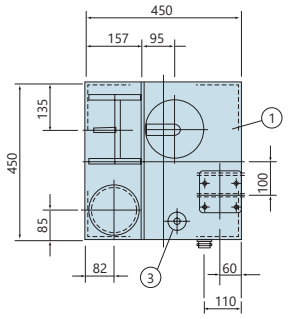
Tank capacity	A	B	C	D	E	F
50ℓ	372	280	200	85	460	30
100ℓ	450	315	250		610	
200ℓ	499	350	300	100	950	31
300ℓ	600	390	330			
500ℓ	760	445	360	165	1010	32

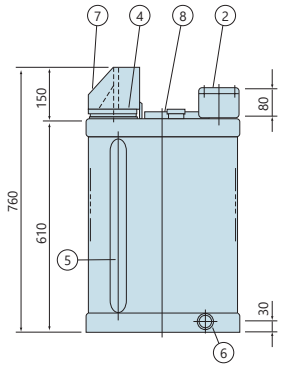
Part No.	Name	Material	Q'ty	Notes
1	Chemical Tank	PVC	1	
2	Pump Mount	PVC	1	
3	Hose Guide	PVC	1	I.D. φ38
4	Chemical Filler Port	PVC	1	I.D. φ125
5	Level Gauge	PVC	1	(Clear PVC)
6	Drain Plug	PVC	1	R 3/4
7	Agitator Base	PVC	1	Only for tank w/ agitator base
8	Agitator Port	PVC	1	
9	Tank Fixture	SS or SUS304	4	Option SS: Silver color

■Dimensions　w/ pump mount + agitator base (semi-standard)

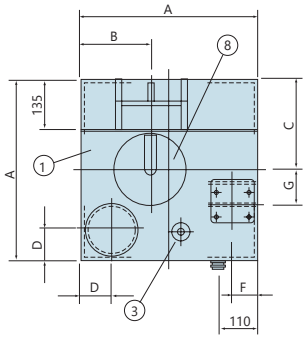
（unit：mm）

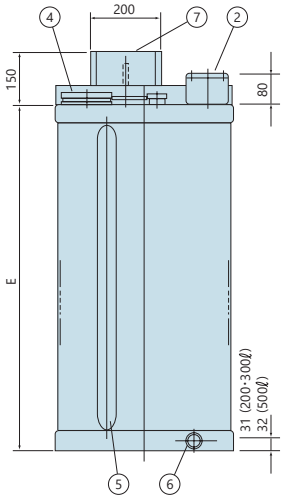
100ℓ





200ℓ～500ℓ



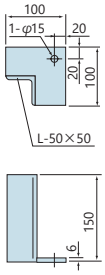


200-500L outline dimension table

Tank capacity	A	B	C	D	E	F	G
200ℓ	499	200	230	100	950	60	100
300ℓ	600	250					
500ℓ	760	380	260	165	1010	80	150

Tank fixture(Option)

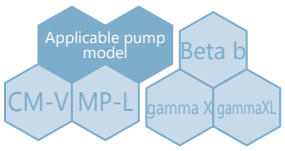
Standard material SS
Material SUS304 available



▼Inform us of the following items when you place an order for PVC series.

Model	Chemical to be used	Optional items		
		Pump	Level switch	Agitator
PVC-○○	Name, concentration, temperature, specific gravity	CM- ○○	Standard: TL, others	Standard: TFN, others

PE tank



It is possible to install ProMinent "Beta b", "gamma X", "gamma XL".
Refer to our homepages for detailed performance of pumps.

features

All the models are made of Polyethylene to ensure rigidity and shock resistance.TXS series are composed of 3 models TXS-25, 50 and 100, possible to complete a compact unit with electromagnetic metering pump(s) of Tohkemy and ProMinent.

Improved user-friendliness

1) Standardly equipped with level gauge.
2) Two pumps can be installed (on TXS-50/100).
3) The capacity has been increased by 20% compared to the former models, making replenishment convenient. [e.g. It is possible to fill 3 x 18L container in TXS-50.}
4) Standardly equipped with a level switch seat and liquid return port, no post-processing is required.
5) Fixed seats included. (3 for TXS-25, 4 for TXS-50/100)

Improved safety

1) Black lid with high resistance.
2) Attaching a padlock to the rid prevents the lid from opening easily.
3) By tilting the back, liquid does not spill on the front (pump).

Option

1) Front cover
2) Padlock
3) Level gauge w/ valve
4) Operation panel*1
5) Level switch*2

*1 Please contact us for the specification of operation panel.
*2 Selectable from the model TL on the page 68.


Front cover (option)


padlock (option)


Level switch FS (option)

Model	Material	Operating temperature	Contact rating	Applicable tank model
FS-30	PP/PVC or PVDF/PVC	0~40℃	Max. voltage AC300V Max. current 0.5A	TXS-25
FS-60				TXS-50
FS-120				TXS-100

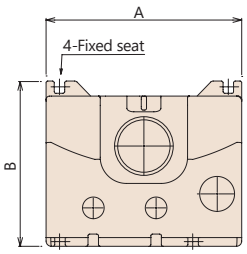
* It is recommendable to use FS together with a floatless relay, sequencer, etc. with low voltage (24V or lower) for safety.

■Model and specifications

Model	Material	Capacity (L)	Weight (kg)	Applicable pump model
TXS-25	PE	30	approx.7	MP-L and CM-1 to 25V* ProMinent Beta and gamma * CM-V can be installed on TXS-50/100 only.
TXS-50		60	approx.12	
TXS-100		120	approx.18	

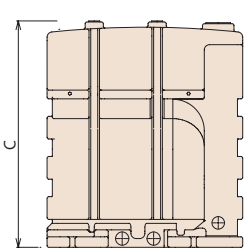
* Install the chemical tank in a place with ambient temperature and liquid temperature of 0 to 40℃ where it is not exposed to direct sunlight.
Applicable liquid specific gravity 1.3 max.
* Hydrochloric acid cannot be used for this tank.

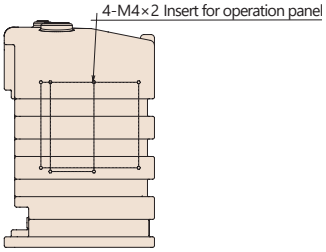
■Dimensions



(mm)

Model	A	B	C
TXS-25	430	465	(515)
TXS-50	560	465	(670)
TXS-100	560	575	(805)

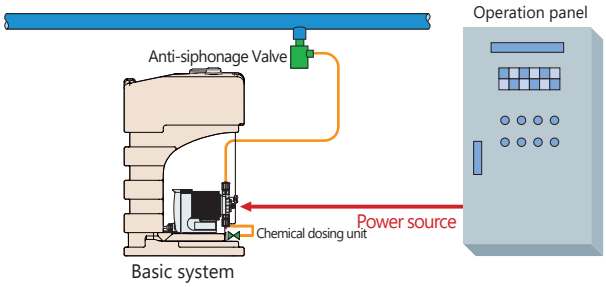




■System flow of chemical dosing unit by use of electromagnetic diaphragm metering pumps

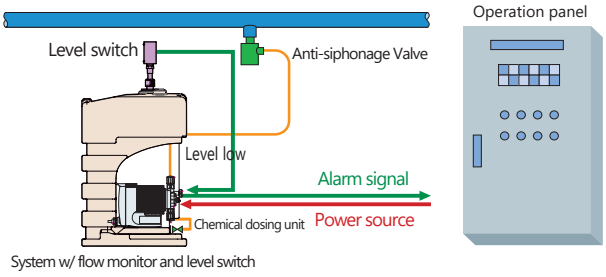
Basic system

This is the most basic system for dosing chemicals simply by supplying power using electromagnetic diaphragm metering pump.



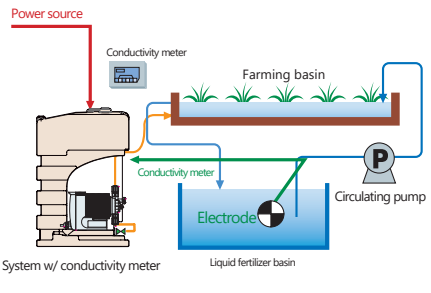
System with flow monitor and level switch

This system adds an optional flow monitor to the applicable electromagnetic diaphragm metering pump that can be directly connected to the level switch to detect defective discharge of chemicals.
The specification to stop the pump when the tank level is low can be selected, and an alarm signal can be output to the outside when the tank level is low and/or the chemical discharge is poor.



System with conductivity meter

This system adds an optional conductivity meter built in a panel attached to the side of tank. The electromagnetic diaphragm metering pump is controlled by the conductivity meter in the system, most applicable for supplying liquid fertilizer in hydroponics.
In addition to the conductivity meter, a 24-hour cycle time switch can be built into the panel. In the cooling tower system, the blow valve is controlled by the conductivity meter, and the pump is turned on and off by the time switch for chemical dosing



▼Inform us of the following items when you place an order for TXS series.

Model	Pump model	Chemical to be used	Power source	Optional items
TXS- ○○	(e.g.) MP-L○○○	Name, concentration, temperature, specific gravity	○○○V、○φ、○○Hz	Front cover, Level switch, Operation panel, Conductivity meter

* Please contact us for the optional front cover to protect the pump. (option)
* Please contact us for the specifications of operation panel, TXS w/ conductivity meter.
* Applicable pump model: MP-L, CM-V, ProMinent Beta and gamma. Please instruct us the name and quantity.

TFN

motor 60W

Small-size agitators

features

- Standard lineup of SUS304 and rubber lining for both impellers and shafts
- Selectable from two types, medium-speed and low-speed rotation.
- Excellent agitating effect by the impeller shape that can be selected according to the rotation speed

■Model and specifications

Model	Motor (W)	Reduction ratio	Impeller					Max. agitating capacity (m^3)		Weighta pprox. (kg)
			Speed (rpm)		Type and stage		Diameter φD	Diluted liquid	Medium viscosity	
			50Hz	60Hz						
TFN-5	60	1:5	300	360	3-blade propeller x 1 stage		120	0.1	—	8
							160	0.2	—	8
TFN-20		1:20	75	90	2-blade pitched paddle	1 stage	250	—	0.1	9
						2 stages		—	0.2	10

*Max. agitating capacity (L) is reference only, varies according to agitation purpose, tank shape, agitation time and liquid properties.

■Common specifications

Motor	Standard	Three-phase, 4P, class B, 50Hx (200/220V), 60Hz (200/220/230V), TEFC indoor flange type
	Semi-standard	Three-phase, 4P, class B, 50Hx (380/400/415/440V), 60Hz (380/400/415/440V), TEFC indoor flange type
Reducer		Spur-gear multi-stage combination
Color		Astero silver for motor and reducer, Silver for body
Standard liquid-end material		SUS304 / SUS304 + rubber lining
Standard accessories		* Mounting bolts (w/ washers) M12 x 35L 4 sets, * Hexagonal wrench 2.5, 4.0, * Instruction manual

■Model Code Explanation

TFN — ❶5 — ❷P1 — ❸2 — ❹4 — ❺

❶:Reduction ratio

5	1:5
20	1:20

❷:Impeller

P1	3-blade propeller (φ120) x 1 stage
P2	3-blade propeller (φ160) x 1 stage
D1	2-blade paddle (φ250) x 1 stage
D2	2-blade paddle (φ250) x 2 stages

❸:Motor(voltage, phase, pole, insulation class)

2	200/220V, three-phase,4P, class B
4	400/440V, three-phase,4P, class B

❹:Liquid-end material

4	SUS304
4L	SUS304 + rubber lining

❺:Option

NIL	w/ standard oil seal
O	w/ cover for outdoor use
S	Anti-rust specification

* Incase of 4) Liquid-end material is "4L", 5) Option shall be "S".

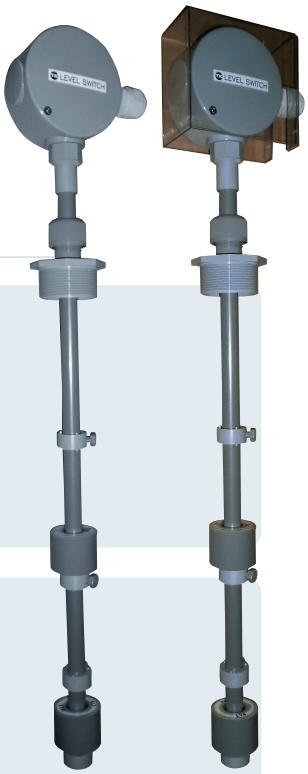
■Dimensions

(unit : mm)

Model	φD
TFN-5-P1	120
TFN-5-P2	160
TFN-20-D1	250
TFN-20-D2	

TL

Level switch



features

- It can be attached to the top of chemical tank to check the chemical solution level.
- Prevent non-dosing of chemical solution by notifying when to replenish the chemical solution. (prevention of running out chemical solution)
- Prevention of pump dry run.
- There are variety mounting methods with reasonable cost.
- Made of PVC, high chemical resistance.

Principle

A magnet is built in the float and the reed switch is secured in the guide pipe. As the float with a magnet inside goes up and down, the reed switch turns on and off. This system is effective in providing alarms and controlling motors, solenoid valves, etc.

* When controlling motors, solenoid valves, etc. by use of TL, connect and control them through electromagnetic switches and/or auxiliary relays.

■Model and specifications

Model	Operation	Mounting method	Construction	Cable outer diameter (mm)	Float	Guide pipe outer diameter	Contact configuration	Allowance pressure	Operating temperature (℃)	Applications	Weight (L=1,200)
TL-1	No-voltage contact (100V、0.3A)*1	Connector union(G2) (or flange)	Drip-proof type*2	9.1～10.5	φ48 x 40L	φ18	Up to 5 points	0.1MPaG	0～50	Multi-purpose	Approx. 1kg

*1) It is recommendable to use TL with low voltage of 30V or lower.

*2) Cover for outdoor use (option)

Material	PVC (Connector union, Cover for outdoor use, Float, Guide pipe, Float stopper)

■Contact configuration

No. of contacts / Model	1	2	3
(Terminal No.)	① ②	① ② ③ ④	① ② ③ ④
TL-1	SW1	SW2 SW1	SW3 SW2 SW1
(Operation method)	HC: ON when level up, HO: OFF when level up, LC: ON when level down, LO: OFF when revel down * The standard setting is all LC. The above methods can be also selected separately.		

■Model Code Explanation

TL — ❶ ❷ — ❸ / ❹ — ❺

❶ : Operation method

1	No-voltage contact

❷ : Mounting method

U	2B male screw
F2	50A F JIS 10K(12t)
F3	65A F JIS 10K(12t)
FZ	Others

❸ : No. of contacts

1	1
2	2
3	3

❹ : Option

0	w/ cover for outdoor use
NIL	w/o cover

❺ : Tank

50	For our 50L PVC tank
100	For our 100L PVC tank
200	For our 200L PVC tank
300	For our 300L PVC tank
500	For our 500L PVC tank

● Handling precautions for chemical pump equipment

⚠ Handling precautions for chemical pump equipment ⚠

Be sure to wear working clothes, protective gloves and goggles, safety boots, helmet, etc. for operation and maintenance, and be careful to prevent chemical from scattering.

□Diaphragm type chemical metering pumps CM/MP-L series

- Mount a relief valve in the chemical metering piping to prevent shut-off operation resulting from blockage in the pipes, operation without valve opening, etc.
- Attach a pressure gauge in the discharge piping line to prevent the abnormal pressure increase by checking the discharge pressure.
- Mount an air chamber to prevent the piping vibration to protect the pump.
  Periodically replenish air into the air chamber.
- Understand the characteristics of chemical to be used, and be careful to crystallization and freezing of the solution.
- Connecting hoses are consumables. Pay attention to the deterioration and breaking.
  Consider the replacement earlier.
- Consider the installation place of pump to prevent exposure to sunshine, wind and rain.
- Do not touch the motor while it is running. It becomes hot and you may get burnt.
- Use the pump within 0 to 40℃ of ambient temperature and 0 to 50℃ of fluid temperature (in case of clear water).
  ※It should be free from freezing and condensation. Use the pump under the condition of suitable temperature considering corrosion resistance of the liquid-end parts.
- It is not suitable for transferring fluid containing slurry.
  If the slurry concentration is within 0 to 10%, select the suitable model from CM-G/R/L.

□Magnetic pumps TSN/TS/TSM/TSL/TSP/MOK series, Centrifugal pumps MOK series, Sanitary pumps TCP series

- Our magnetic and sanitary pumps cannot suck fluid by itself.
  Use magnetic pumps with press-in piping for suction line. (except for the model TSP/MOK)
- Do not race pumps. Open the valve in the suction line before trial operation to start under the condition that fluid is surely in the pump. If fluid does not come into the pump by opening the valve in the suction line, extract air from the pump on demand.
- Shut-off operation may cause failure. Adjust the valve to discharge fluid at 10% or more of maximum discharge rate. Provide circulating line for fluid return on demand.
- Consider the installation place of pump to prevent exposure to sunshine, wind and rain.
- Do not touch the motor while it is running. It becomes hot and you may get burnt.
- Use the pump within 0 to 40℃ of ambient temperature and specified fluid temperature mentioned in the page 40 and 59.
  ※It should be free from freezing and condensation. Use the pump under the condition of suitable temperature considering corrosion resistance of the liquid-end parts.
- It is not suitable for transferring high-viscous fluid and fluid containing slurry.

□Chemical tanks PVC/PE tanks

- Consider the installation place of tank to prevent exposure to sunshine, wind and rain.
- Install the tank on a flat place free from projection so that the base can support all the tank bottom level.
- Check and confirm the allowable liquid specific gravity not to fill solution being higher than the allowable specific gravity.
- Use the tank within 0 to 40℃ of ambient temperature and fluid temperature.
- Be sure to check and confirm that heat of dilution should not be more than 40 ℃ in the tank, for diluting chemical in the tank.
- If you notice anything abnormal such as aged deterioration or others, immediately stop using the tank and contact our distributor or us.

Warranty and service regulations

We would like to regulate the warranty and service for the products (hereinafter called as Applicable product) to be sold by us Tohkemy as follows.
It is subject to applying to the special conditions that would be separately agreed on the sales contract respectively.

1. Warranty period
Warranty period of the Applicable product shall be one year from the date of shipment from our factories and/or subcontractor's factories.

2. Scope of warranty
1) If during the warranty period the Applicable product fails or gets damaged while using under proper conditions, Tohkemy will repair the product or replace the affected part(s) free of charge.
2) If we dispatch our technical staff to the designated site on your request, you will be charged for dispatching fee.
3) The warranty liability is our responsibility to repair our product or replace the affected part(s) on basis of these articles, and the warranty scope shall be within the contracted amount with you for the Applicable product in all cases.
4) We would basically ask you to bear the costs for returning the Applicable product to us and/or the disassembling and assembling work. If the failure or damage is due to our defects found after inspection, Tohkemy will bear the returning fee.
5) If the Applicable product fails or gets damaged for any of the following reasons, Tohkemy will repair the product or replace the affected or consumable part(s). You will be charged for parts and labor.
   5-1) Failure or damage due to the user's poor handling, misuse or wrong storage.
   5-2) Consumable part(s) such as packing, gasket, bearing, diaphragm, etc.
   5-3) Failure or damage due to use of any part(s) other than Tohkemy genuine parts or specified by Tohkemy.
   5-4) Failure or damage due to repaired or tampered by other person(s) than Tohkemy or the appointed person(s).
   5-5) Failure or damage resulting from external factors being other than the Applicable product.
   5-6) Failure or damage due to falling, transportation, etc. after starting operation.
   5-7) Failure or damage due to fire, earthquake and other natural disasters.
6) These warranty and service regulations are basically applicable to the use in Japan.

3. Limitations of liability
In no event shall Tohkemy be liable for any warranty, unlawful act including product liability, etc. if it comes under the following events.
1) Warranty scope shall be within the contract amount with you for the Applicable product in all cases.
2) Tohkemy shall not compensate the customer for losses resulting from any trouble of failure due to the deterioration or the use of an improper liquid.
3) The materials specified by Tohkemy in the contract are those we recommend. Tohkemy shall not guarantee that they won't corrode.
The customer and Tohkemy will discuss to judge on a failure or damage.
If both cannot agree to each other, we will entrust the judgement to a proper third-party organization.

4. Dispatching fee of our technical staff
If we dispatch our technical staff for technical assistance, commissioning, repair, fault diagnosis and other technical investigation on your request, you will be charged for dispatching fee as follows.
1) Technical fees: Depend on the working items and days (including the traveling days).
   * In case of working more than eight (8) hours per day, on holiday and in the midnight, you will be charged additionally.
2) Transportation expenses: Actual expenses
   (to the designated site by means of transportation with the most suitable time)
3) Accommodation expenses: Actual expenses (by use of reasonable accommodation)

https://www.tohkemy.co.jp/english/

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