

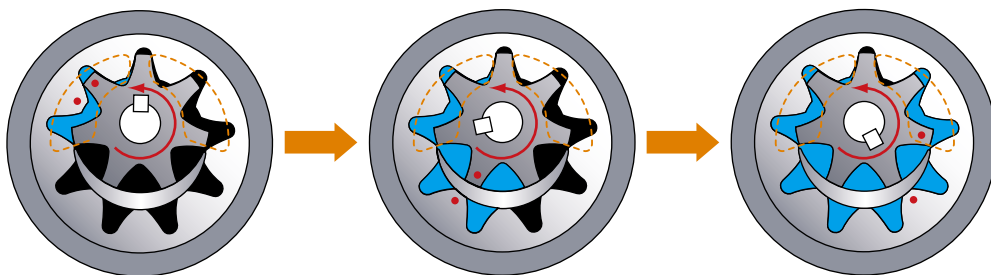
**Highly Corrosion-Resistant  
Sealless Gear Pump**



# Highly Corrosion-Resistant Sealless Gear Pump

Iwaki's Chemical Gear Pump GM-V is an internal gear pump made of highly corrosion-resistant materials. During pump operation, liquid does not come into contact with any of the pump's metallic parts. A magnet drive mechanism ensures that no liquid solution leaks from the pump. Thus, the GM-V safely handles most corrosive liquid chemicals, including acids and alkalis. Since the GM-V is pulsation-free and features precise discharge output, this pump is ideally suited to metering injection without pulsation.

## Operating principle



A pinion (drive gear) coupled with a shaft supported by two bearings meshes with an internal gear (driven gear) whose periphery is supported by a strong bearing. Liquid is transferred by a change in the capacity of this meshed portion.

In the suction process, the gears are disengaged and a space defined by the two gears and the casing expands. The liquid is drawn into the space by the negative pressure generated.

In the discharge process, their teeth begin to mesh and space defined by the two gears and the casing is reduced to force out the liquid.

## GM-V is useful in the following cases

- **Low flow rate and high pressure applications with chemical solutions**  
Automatic injection of coagulant at a constant mixing ratio.
- **Pulsation-free metering, injection and transfer of chemical solutions**  
Metering of paper-making dye and sodium hypochlorite.
- **Easy control of process factors such as flow rate and pressure**  
Low-cost, reliable control of rpm levels.
- **No need for pulsation dampener or accumulator**  
Simple piping without pulsation is possible.
- **Bypass piping using a large-flow rate centrifugal pump**  
No losses due to bypassing.
- **Excellent corrosion resistance against acids and alkalis**  
Unlike general-purpose gear pumps, the GM-V's metallic components never come into contact with liquids and are acid and alkali resistant.
- **Designed to make diaphragms unnecessary**  
GM-V pumps do not employ any seals or diaphragms.
- **Self-priming**  
Self-priming up to 1 meter in height (when wet) is possible.



### Sealless, highly corrosion-resistant design

All pump components in contact with the liquid are made of PVC, silicon carbide and fluorine resin, all of which are resistant to most acids and alkalis. The pump uses no seals, which eliminates the risk of leaks.



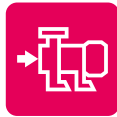
### High-durability ceramic gears

The GM-V's ceramic gears are highly resistant to abrasion, galling and seizure, ensuring reliable high-speed operation.



### Pulsation-free and precise discharge control

The GM-V causes no pulsation of liquid in high-speed operation. Discharge is proportional to the pump's rpm speed, which can be precisely controlled by an inverter (frequency converter), thereby allowing liquid metering, transfer and other treatments.



### Low flow rate, high discharge head and self-priming

The GM-V's low flow rate and high head specification make it suitable for many chemical-injection processes. Self-priming up to 1 meter in height is possible.

Note : Self-priming height varies depending on the liquid's properties and temperature as well as the piping configuration. Please contact your distributor for details on self-priming applications.



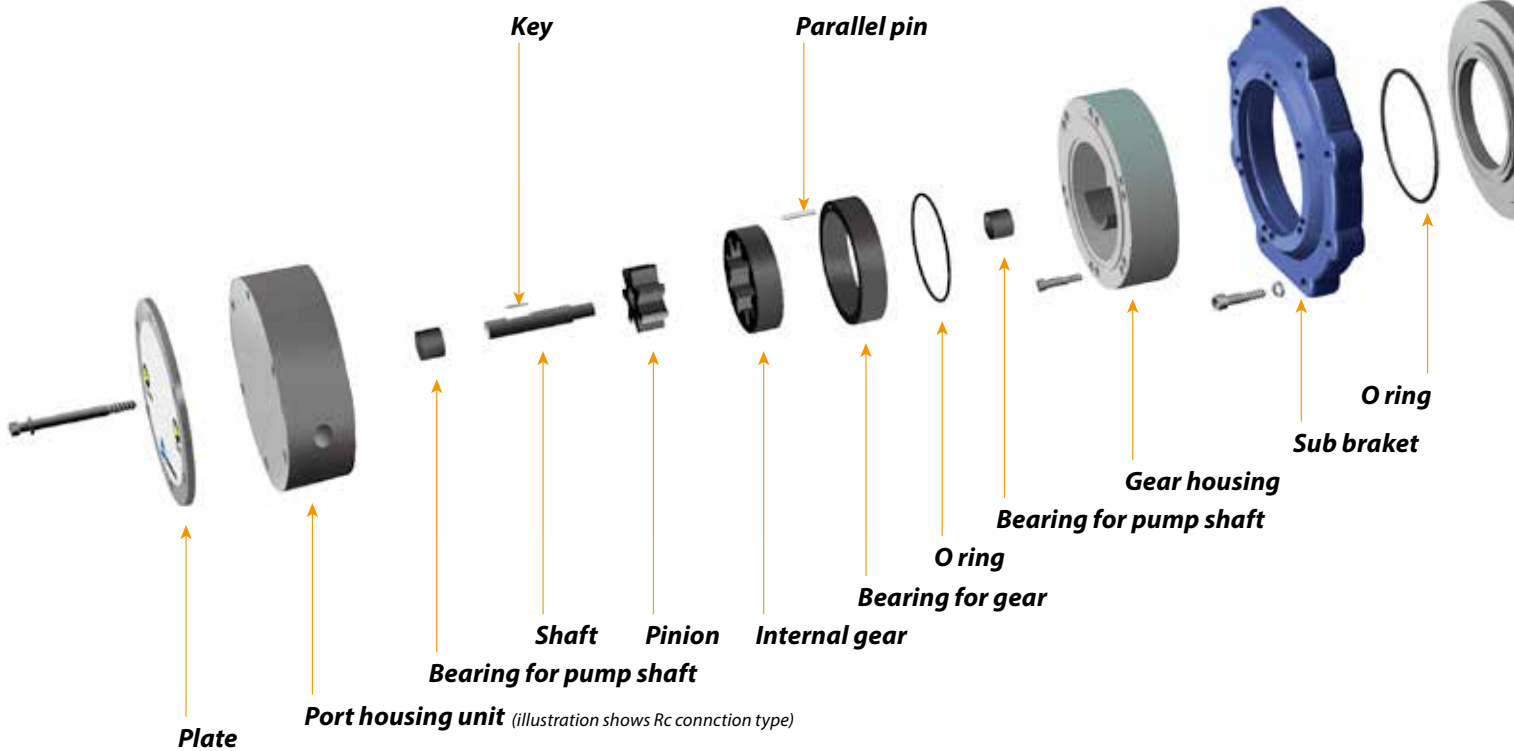
### Lightweight and compact

The GM-V's pump is close coupled to its motor, eliminating the need for intermediate coupling and making the assembly both lightweight and compact. The GM-V's space-saving design makes it suitable for built-in pump systems.



GM-25V Flange type

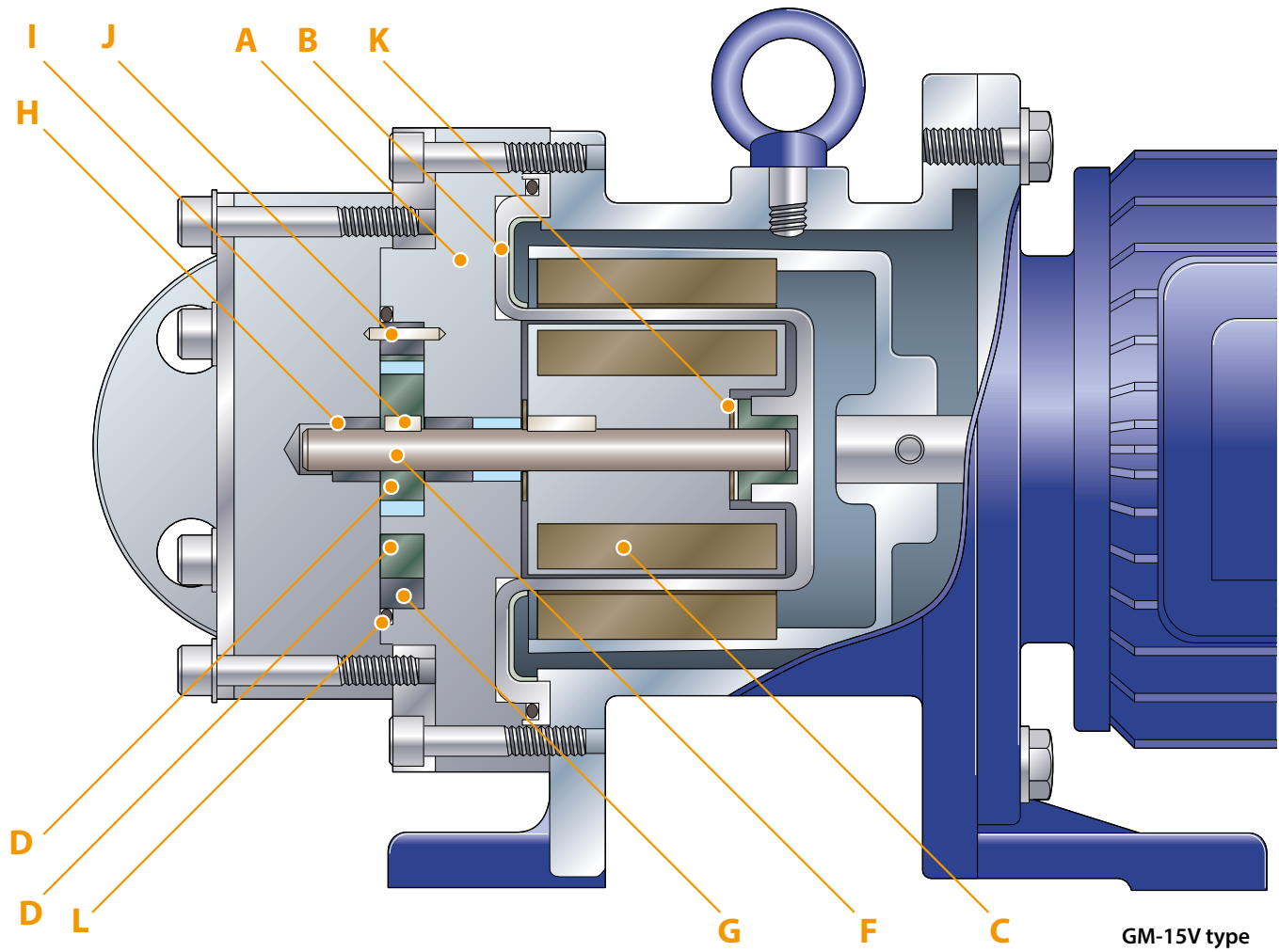
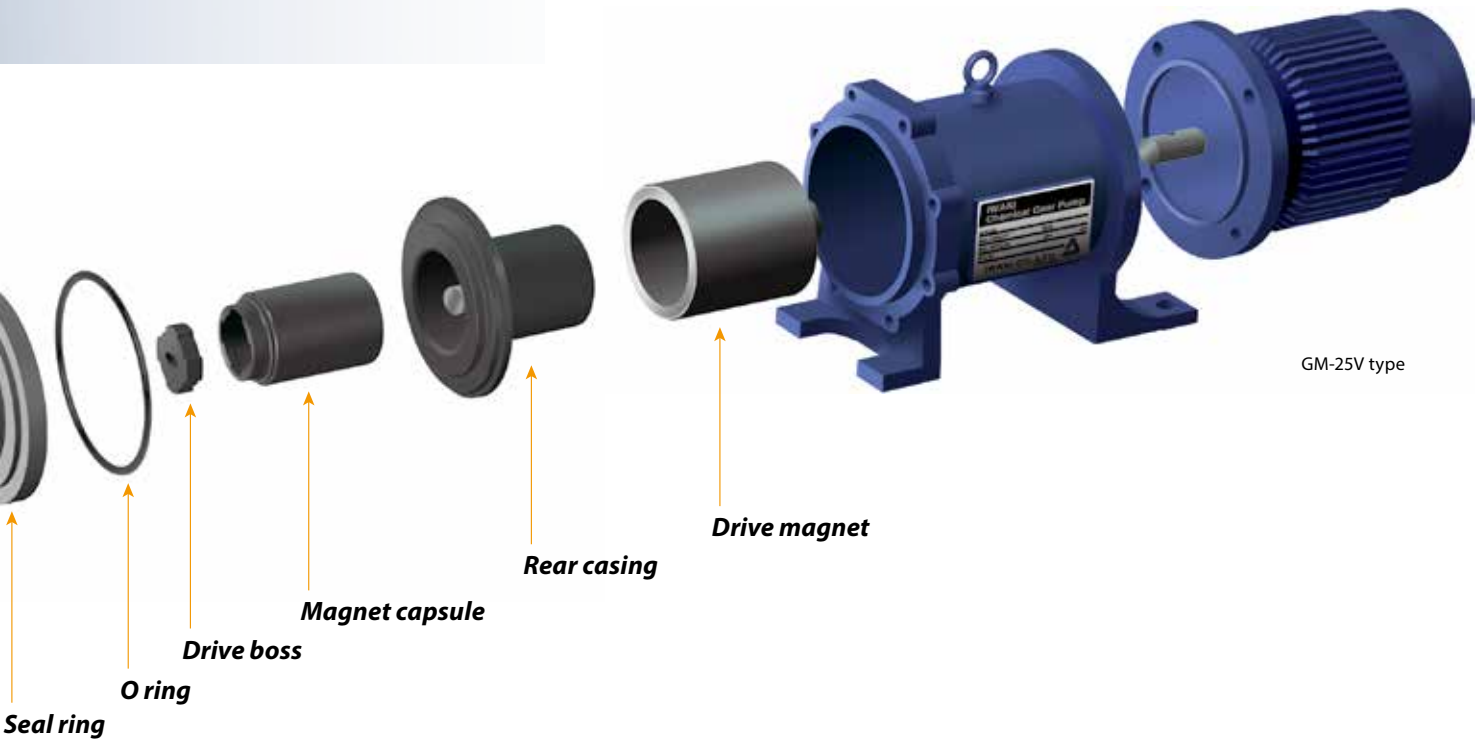
# Highly reliable drive mechanisms



## Wet end materials

Parts	GM-15	GM-25
<b>A</b> Housing (Pump body)	PVC	
<b>B</b> Rear casing	CFRETFE	
<b>C</b> Magnet capsule	PVC	CFRETFE
<b>D</b> Pinion / Internl gear	SiC	
<b>E</b> Spindle(GM-25V type)	-	Alumina ceramic or SiC
<b>F</b> Shaft <sup>Note</sup>	Si3N4(Silicon nitride)	
<b>G</b> Bearing for gear	SiC or Carbon	
<b>H</b> Bearing for pump shaft	SiC or Carbon	
<b>I</b> Key	PVC	
<b>J</b> Parallel pin	Alumina ceramic	
<b>K</b> Spacer(GM-15V type)	Fluorine resin with filler	-
<b>L</b> O-ring	FKM or EPDM	

- With carbon fiber filling
- Keys are custom-ordered, and PPS is also available.
- Note: Be sure to use SiC (special order) for the shaft when transferring the connection.



## Pump identification

**GM - 15 V K C V - 04 F C - S**  
 1 2 3 4 5 6 7 8 9

**1** Pump size  
 (Discharge per revolution)  
**15** : 3.3 mL/rev  
**25** : 12.8 mL/rev

**2** Material of body  
**V** : PVC

**3** Material of gears  
**K** : SiC

**4** Material of bearings  
**C** : Carbon  
**K** : SiC

**5** Sealing material of O-ring  
**V** : FKM  
**E** : EPDM

**6** Motor output  
**04** : 0.4 kW  
**07** : 0.75 kW

**7** Type of motor  
**F** : Inverter motor

**8** Motor specifications  
**B** : Explosion proof, outdoor type  
**C** : Totally enclosed fan cooled, outdoor type

**9** Special specifications  
**No symbol** : □  
**I** : IEC motor specification  
 (PT connection is employed for piping.)  
**S** : Special specification

## Specifications

Models	Discharge per revolution mL/rev	60Hz		Max. Discharge pressure MPa	Connections	Motor kW
		Max. Capacity L/min	Max. Speed min <sup>-1</sup>			
<b>GM-15V</b> <b>04F</b>	3.3	5.9	1800	0.5	JIS10K15A or Rc 3/8	0.4(0.37)
<b>GM-25V</b> <b>07F</b>	12.8	23.0	1800	0.5	JIS10K20A or Rc 3/4	0.75

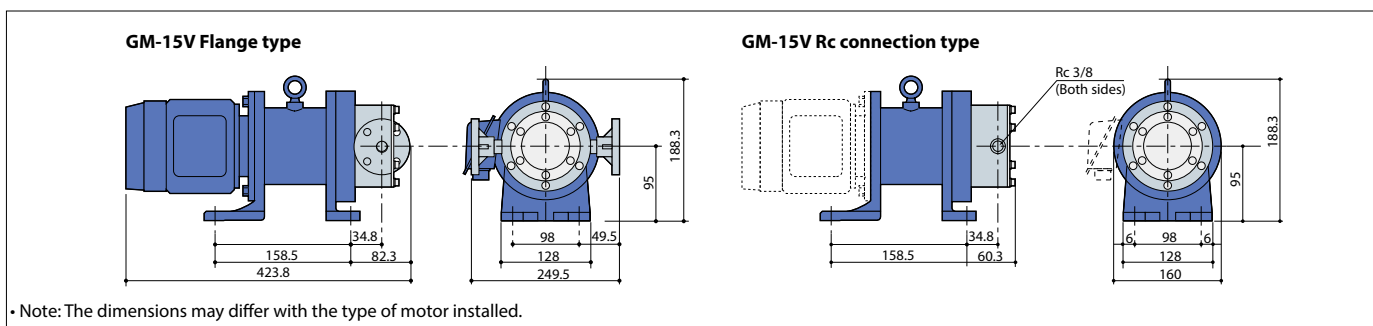
- Conditions of liquid to be handled : Temperature = 0 to 50°C / Viscosity = 0.5 to 50 mPa · S / No slurry can be handled
- Maximum capacity is achieved at lowest pressure.
- For a GM-15V to handle a liquid with viscosity of 3 mPa · S or less, the maximum capacity is as follows : 0.28 MPa at 60 Hz for viscosity between 0.5 and 1 mPa · S  
0.35 MPa at 60 Hz for viscosity between 1 and 3 mPa · S

## Standard pumps

Models	Inverter frequency Hz	Speed min <sup>-1</sup>	Viscosity mPa·s	Capacity L/min					
				Discharge pressure MPa					
				0	0.1	0.2	0.3	0.4	0.5
<b>GM-15VK</b> □□- <b>04F</b> □	6 to 60	180 to 1800	0.5	0.6 to 5.9	0.05 to 3.9	0.05 to 1.9	-	-	-
			1		0.05 to 4.5	0.05 to 3.1	0.05 to 1.7	0.05 to 0.3	-
			3		0.05 to 5.1	0.05 to 4.3	0.05 to 3.5	0.05 to 2.7	0.05 to 1.9
			50		0.4 to 5.7	0.2 to 5.5	0.05 to 5.3	0.05 to 5.1	0.05 to 4.9
<b>GM-25VK</b> □□- <b>07F</b> □	6 to 60	180 to 1800	0.5	2.3 to 23.0	0.1 to 19.6	0.1 to 16.2	0.1 to 12.8	0.1 to 9.4	0.1 to 6.0
			1		0.1 to 20.6	0.1 to 18.2	0.1 to 15.8	0.1 to 13.4	0.1 to 11.0
			3		0.9 to 21.6	0.1 to 20.2	0.1 to 18.8	0.1 to 17.4	0.1 to 16.0
			50		2.0 to 22.7	1.7 to 22.3	1.3 to 22.0	1.0 to 21.6	0.6 to 21.3

- The flow-rate values given in the above table are for a liquid temperature of 20°C.
- Flow rate varies with liquid temperature. For more details, please ask us.
- To protect pump install strainer and safety valve. 100 mesh strainer is recommended.
- Provided the pump is primed no minimum flow requirement.

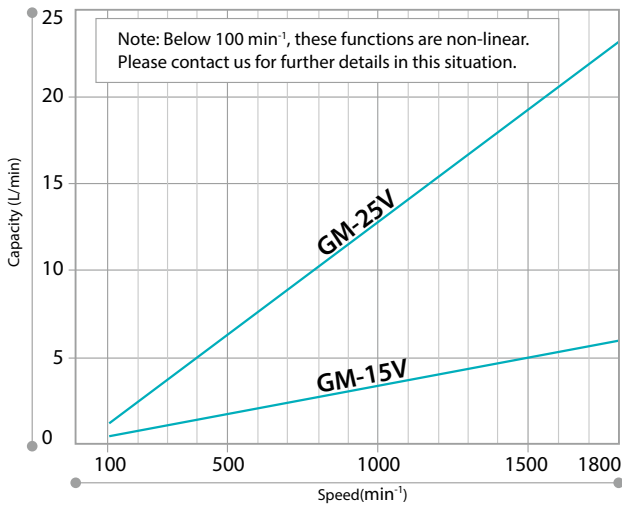
## Dimensions (mm)



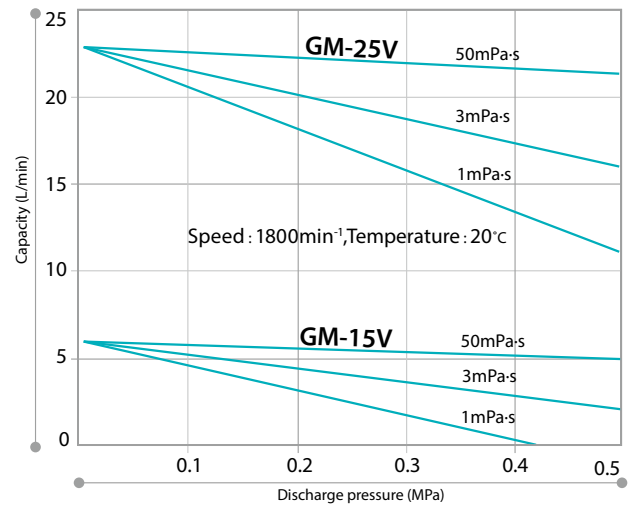
• Note: The dimensions may differ with the type of motor installed.

Performance curves

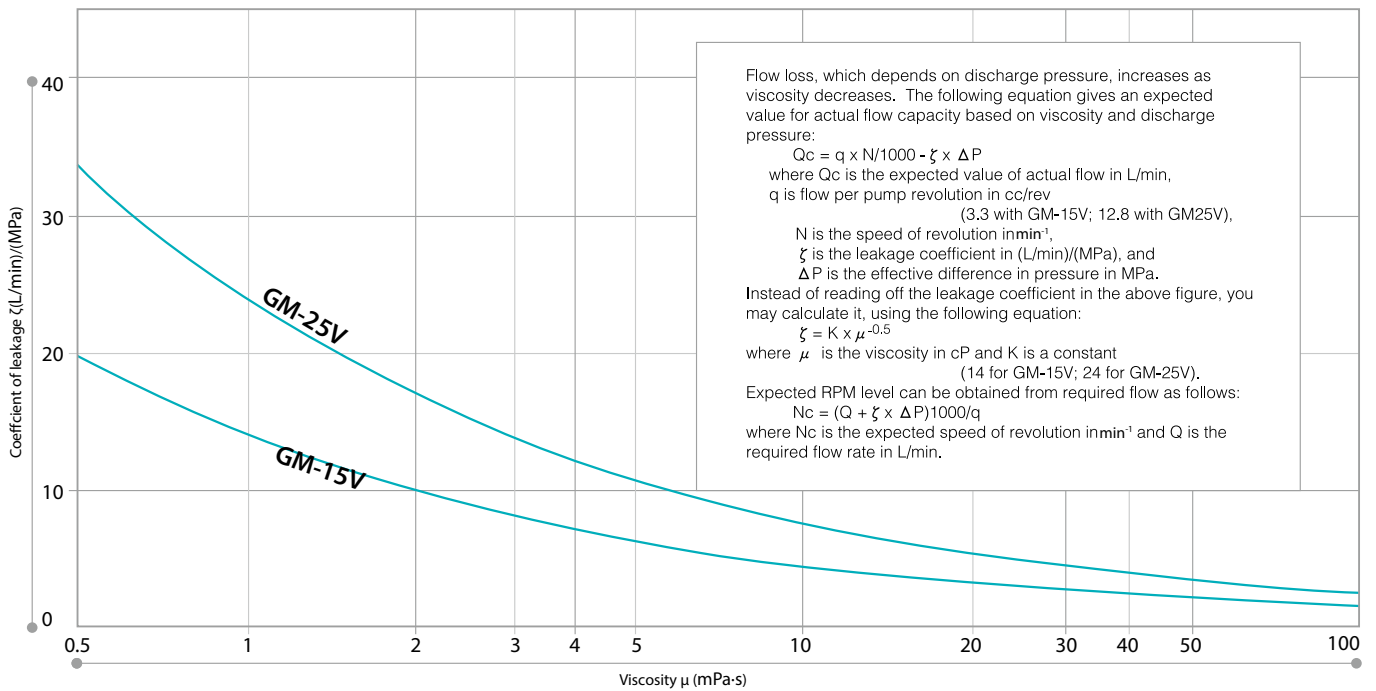
Capacity / Speed



Discharge pressure / Capacity

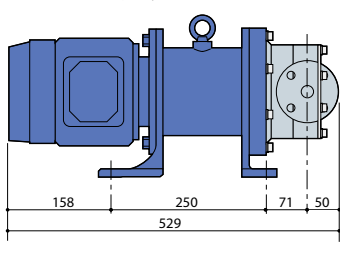


Viscosity-Leakage coefficient graph

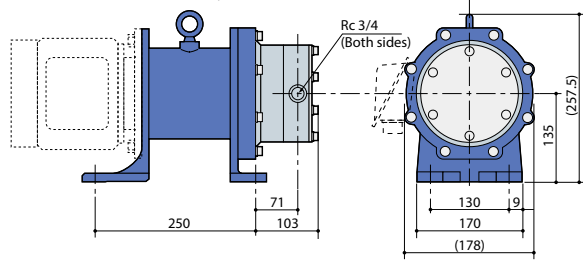


- Since the catalog values are theoretical values derived from the results obtained using our test equipment, they may not be satisfied depending on the environment and conditions, and we do not guarantee the values.
- Since PVC is used as the material of the pump body, changes in air temperature and liquid temperature, frictional heat on the gear sliding surface, uneven tightening of bolts, tilted mounting, etc. The performance may fluctuate due to expansion/contraction/change of the housing. Therefore, there is no fixed-quantity injection capability of the pump alone. Be sure to introduce a pulseless dosing system when pulseless dosing is required.

GM-25V Flange type



GM-25V Rc connection type





# Fine ceramic have led to exciting innovations.

The Iwaki G series chemical pump is the first internal gear pump designed for chemical process applications, in which gears of fine ceramic (SiC and Silicon nitride) are used. Without detracting from any of the advantages of conventional internal gear pumps abrasion resistance, chemical resistance, low-viscosity characteristics and sealing characteristics have been remarkably improved. In addition to the gland packing/mechanical seal type (Model GX), magnetic drive sealless type (Model GM) are available as standard products for an expanded range of uses. The G series is an advanced gear pump, capable of dealing with a wide range of industrial processes which continue to increase in sophistication.



## Specifications

- Max. discharge capacity : 35.2/42.5 L/min
- Max. discharge pressure : 1.0 MPa(GX type)/0.7MPa(GM type)
- Main materials : SiC/SUS316
- Liquid temp. range : 0 to 150°C(GX type)/0 to 80°C(GM type)
- Viscous liquid : 0.5 to 10000mPa · S(GX type)

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			Thailand : IWAKI (Thailand) Co., Ltd.	TEL: (66)2 322 2471	FAX: 2 322 2477

**Caution for safety use:** Before use of pump, read instruction manual carefully to use the product correctly. Actual pumps may differ from the photos. Specifications and dimensions are subject to change without prior notice. For further details please contact us.

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