

## Hicera pumps

Preventing clogging and sticking with valveless construction

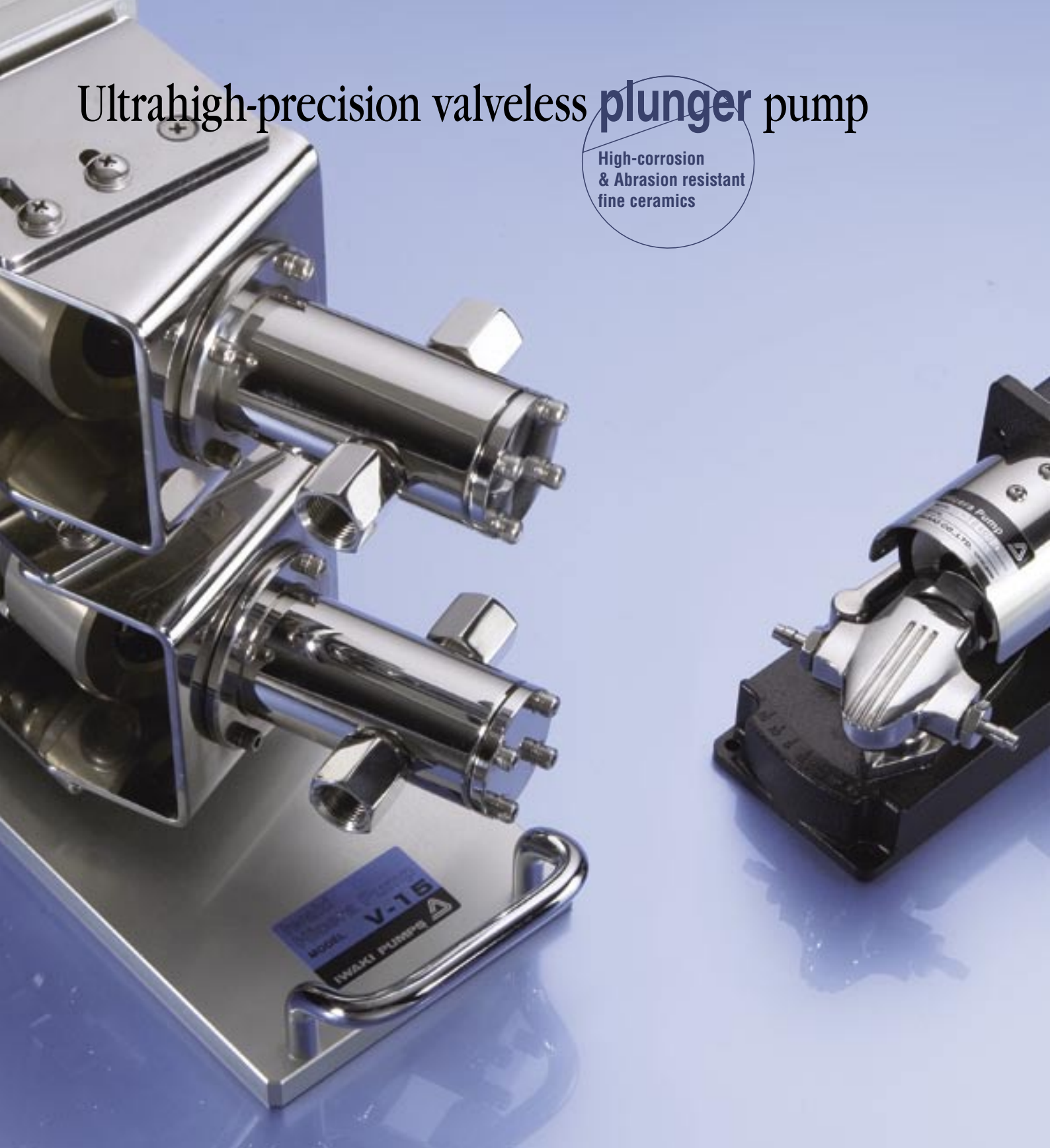


Hicera is compact metering pump which employs a plunger/cylinder made by fine ceramic. The valve-less construction eliminates any clogging and jamming which is happen on conventional pump.



# Ultrahigh-precision valveless **plunger** pump

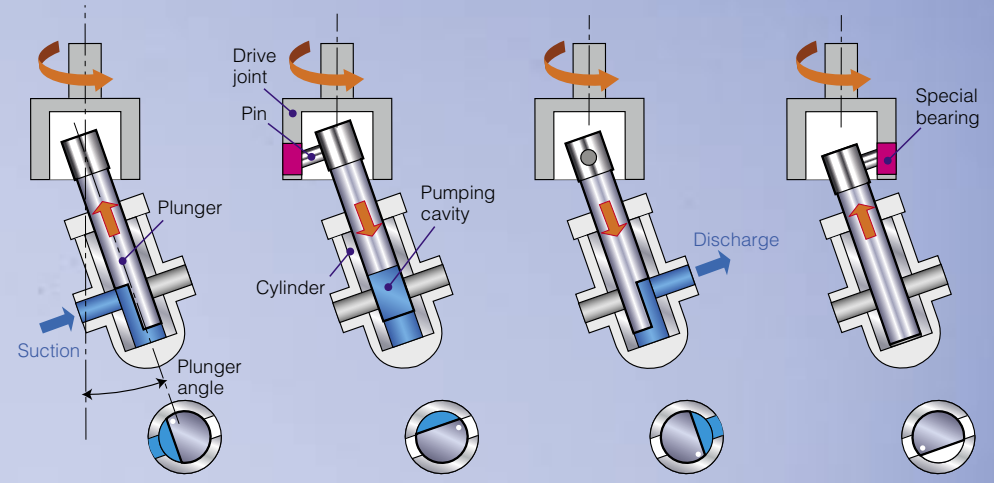
High-corrosion  
& Abrasion resistant  
fine ceramics



An Iwaki Hicera pump is a compact metering pump using a fine ceramic plunger. A unique valveless structure eliminates the clogging and jamming from which conventional metering pumps suffer. Precision micron -machining on the main parts ensures high discharge accuracy. The Iwaki Hicera pump is versatile and suitable for micro chemical feeding as well as high viscosity liquid feeding.



## Mechanism of ultrahigh precision



**Suction process**      **Suction process completion**      **Discharge process**      **Discharge process completion**

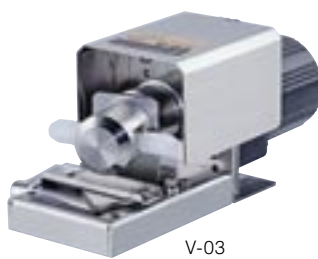
Liquid is sucked into the cylinder as the pumping cavity faces the inlet and the plunger retracts.

The inlet closes when the pumping cavity passes over the inlet.

Liquid is discharged out of the cylinder as the pumping cavity faces the outlet and the plunger advances.

The outlet closes when the pumping cavity passes over the outlet.

The plunger is connected to the drive joint via a special bearing. The plunger angle determines how far the plunger moves in the cylinder as the driving joint rotates. The plunger both reciprocates and rotates in the cylinder and performs a pumping action via the pumping cavity on the plunger end. This unique structure eliminates the valve system normally found on other pumps.



V-03



V-05

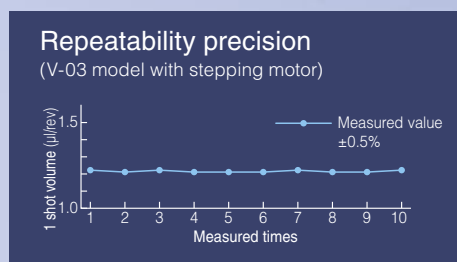


V-10



### ±0.5% Ultrahigh-precision dosing

Capable of ultrahigh precision dosing at a micro discharge capacity. Discharge capacity can be simply adjusted by changing the pump head angle.



NOTE: When using stepping motor, ±0.5% of repeatability is achieved. Please contact us.

### Max. 20000 mPa·s High viscous liquid transfer

A unique valveless structure abrasion resistant SiC is able to handle abrasive and high speed sedimentation slurry.

NOTE: When handling 500 mPa·s or more, discharge accuracy may reduced. If handling liquid contains slurry, it is necessary to check property of liquid.

### Discharge into a vacuum & suction from high pressure sources

Capable of direct dosing into a vacuum (negative pressure) without the need for electromagnetic valves. A constant flow is always maintained even if suction/discharge pressures fluctuate.

### High controllability - Elimination of back-flow

The use of the stepping motor has enhanced the pump controllability. The suck back function eliminates back-flow and assists accurate dosing.

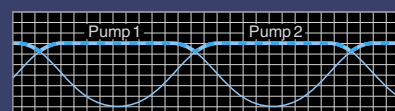
### Compact design - Most suitable for built-in application

The compact and light Hicera pumps can be installed in both vertical and horizontal orientations, offering ideal suitability for built-in applications. The reversible motor direction can reverse flow without changing pipework.

### Dual pump head - Low pulsation type is available.

Low pulsation dosing is possible without the need for air chambers or accumulators. A special mechanism drive unit (PAT. PEND.) features high transmission efficiency. Pulse reduction is achieved by using a composite waveform action.

#### Discharge wave of duplex model



High transmission efficiency driving mechanism (Pat. Pend) is employed to efficiently combine the discharge volume of two pump heads resulting in low pulsation.



V-03

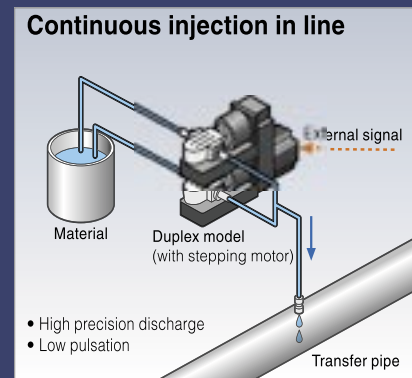
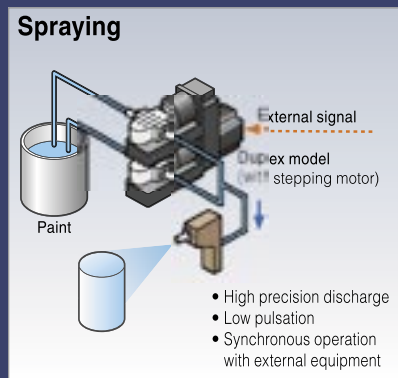
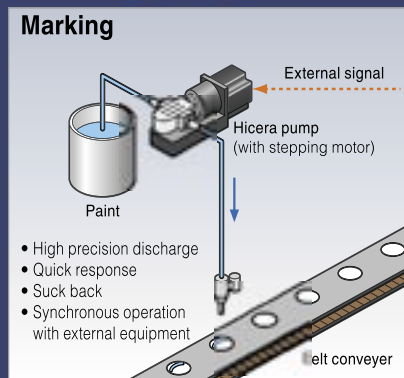
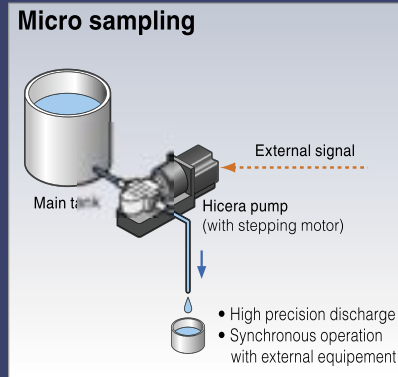
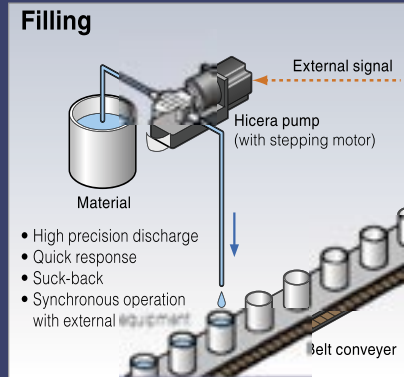


V-05



V-10

**Example of application** Hicera pump is ideal for:



**Other application**

- Medical equipment : Dialyzer • Blood analyzer
- Cleaning equipment : Injection of detergent & rinsing chemical
- Fuel cell : Injection of pure water
- Food industry : Injection of food additives • Injection of flavor liquid • Sampling
- Paper mill : Injection of chemical • Injection of dyestuff
- Capacitor manufacturing : Injection of phosphoric liquid



V-15



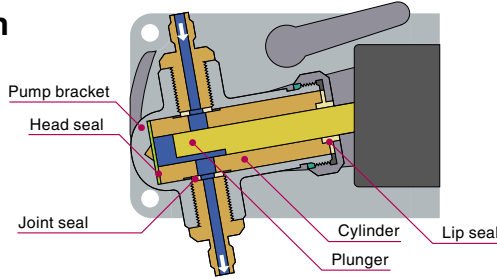
V-15 · Duplex model

# Model identification

V - 05 S C A 4 - P

- Plunger diameter**  
03: Ø3 mm  
05: Ø5 mm  
10: Ø10 mm  
15: Ø15 mm
- Material**  
Symbol: Plunger material / Cylinder material / Applicable mode  
Z: ZrO<sub>2</sub> / Al<sub>2</sub>O<sub>3</sub> / V-03-05  
S: SiC / SiC / V-05-10-15  
A: Al<sub>2</sub>O<sub>3</sub> / Al<sub>2</sub>O<sub>3</sub> / V-10-15
- Motor specification**  
C: Induction motor (standard)  
D: DC motor  
P: Stepping motor  
S: Other motor
- Gear ratio**  
A: 1/150  
B: 1/75  
C: 1/30  
D: 1/15  
E: 1/7.5  
F: 1/5  
G: 1/3  
S: Others
- Power voltage**  
4: AC115V single phase  
5: AC220 / 240V single phase  
6: DC12V  
7: DC24V  
0: Others
- Special version code**  
P: With cleaning port  
F: With AC cooling fan  
S: Stainless steel plunger (SUS316)<sup>(NOTE)</sup>  
T: Other tube joint than standard one  
X: Other speciality  
Note: Only for V-05, 10

# Construction and material



Model	V-03	V-05	V-10	V-15
Pump bracket	SUS304	SCS14		SUS304
Plunger	ZrO <sub>2</sub>	SiC, ZrO <sub>2</sub> SUS316 <sup>(NOTE)</sup>	SiC, Al <sub>2</sub> O <sub>3</sub> SUS316 <sup>(NOTE)</sup>	SiC, Al <sub>2</sub> O <sub>3</sub>
Cylinder	Al <sub>2</sub> O <sub>3</sub>	SiC, Al <sub>2</sub> O <sub>3</sub>	SiC, Al <sub>2</sub> O <sub>3</sub>	SiC, Al <sub>2</sub> O <sub>3</sub>
Head seal	PTFE			
Joint seal	PTFE			
Lip seal	PTFE			

Note: Plunger material SUS316 (cylinder material Al<sub>2</sub>O<sub>3</sub>) is made to order.

# Specifications (50/60Hz)

Model	Gear ratio	No. of revolution rpm	Max. discharge capacity mL/min	Max. discharge pressure MPa	Tube joint mm	Standard motor	Mass kg
V-03ZCA4	1/150	9 / 11	0.3 / 0.4	0.3	Ø3 PP made Tube fitting	Induction motor 6W	2.3
V-03ZCB4	1/75	19 / 23	0.7 / 0.9				
V-03ZCC4	1/30	48 / 58	1.9 / 2.3				
V-03ZCD4	1/15	96 / 115	3.8 / 4.6				
V-03ZCE4	1/7.5	192 / 231	7.7 / 9.3				
V-03ZCF4	1/5	284 / 342	11.7 / 14.1				
V-03ZCG4	1/3	477 / 576	20.0 / 24.0	0.7	Ø6 Stainless steel made hose joint type	Induction motor 15W	2.3
V-05□CA4	1/150	9 / 11	1.6 / 1.9				
V-05□CB4	1/75	19 / 23	3.3 / 4.0				
V-05□CC4	1/30	48 / 58	8.0 / 10				
V-05□CD4	1/15	96 / 116	16 / 20				
V-05□CE4	1/7.5	193 / 232	33 / 40				
V-05□CF4	1/5	290 / 348	51 / 61	0.6	Ø10 Stainless steel made hose joint type	Induction motor 25W	3.0
V-05□CG4	1/3	483 / 580	85 / 102				
V-10□CA4	1/150	9 / 11	6.0 / 7.0				
V-10□CB4	1/75	19 / 23	13 / 16				
V-10□CC4	1/30	48 / 58	33 / 40				
V-10□CD4	1/15	96 / 116	67 / 81				
V-10□CE4	1/7.5	193 / 232	135 / 163	0.3	Ø13 Stainless steel made hose joint type	Induction motor 40W	8.0
V-10□CF4	1/5	290 / 348	203 / 245				
V-10□CG4	1/3	483 / 580	338 / 409				
V-15□CA4	1/150	9 / 11	26 / 31				
V-15□CB4	1/75	19 / 23	55 / 66				
V-15□CC4	1/30	48 / 58	139 / 168				
V-15□CD4	1/15	96 / 116	278 / 336	0.2			Approx. dimension: W155xH153xD334
V-15□CE4	1/7.5	193 / 232	559 / 673				
V-15□CF4	1/5	290 / 348	841 / 1009				
V-15□CG4	1/3	483 / 580	1400 / 1682				

- In □ of model code is put Z: ZrO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> or S:SiC/SiC or A: Al<sub>2</sub>O<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub>. • Performance value in above table is based on pumping clear water at ambient temperature.
- Discharge capacity per revolution: Approx. 0.04 mL/rev for V-03 (15 degree of swing angle), approx. 0.17 mL/rev for V-05, approx. 0.7 mL/rev for V-10, approx. 2.9 mL/rev for V-15 (20 degree of swing angle).
- Suction ability of pump is 4 meters but it depends on pumped liquid. • Be sure to clean pump inside when crystallized liquid or adhesive liquid is pumped. • Ask us for detailed outline dimension.
- Pump with cleaning port is recommended for these liquids. • Other than standard induction motor, other type of motor such as synchronous motor, DC motor, stepping motor or explosion-proof motor is available. Ask us for details.

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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.