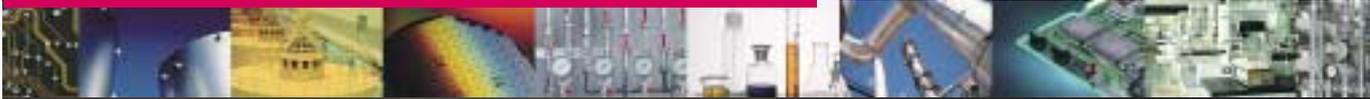


## Hicera pumps V series



# Preventing clogging and sticking with valveless

The Iwaki Hicera pump series comprises compact metering pumps that employ a plunger made of fine ceramic. Its unique construction of no suction or discharge valves, makes it possible to completely do away with troubles such as clogging or sticking that are common in conventional pumps. The V series has excellent resistance to chemicals and wear, as well as has high discharge accuracy, making it possible to use chemical solutions more widely in applications which require even discharge of small amounts of viscous or slurry-like solutions.



V-05



V-10

## High discharge accuracy

The main components such as the plunger and cylinder are processed with high precision of micron order, so it is possible to obtain high discharge accuracy. (Discharge accuracy :  $\pm 1\%$ ) By changing the angle of the pump head it is possible to freely adjust the discharge amount between 0 and maximum discharge.

## Excellent corrosion resistance

Materials such as silicon carbide (SiC), fluorocarbon polymers (PTFE) and stainless steel (SCS14) with excellent resistance to corrosion are used for parts that come in contact with the fluid. This makes it possible to use the pumps for handling a wide range of chemicals.

## Dispense into a vacuum condition and removal from a high-pressure condition

Since there are no suction and discharge valves, it is possible to directly dispense a constant amount of fluid in a vacuum (negative pressure) without using a solenoid. Constant-volume dispensing is also possible if suction side is pressurized.

## Capable of handling slurries and highly viscous fluids

The unique valveless construction and the excellent resistance to wear of SiC, it is possible to handle slurries with fast precipitation speed as well as abrasive slurries. Also, the pumps are capable of smoothly pumping highly viscous fluids up to a maximum viscosity of 20,000 mPa·s.

Note: The discharge accuracy drops for viscous fluids with a viscosity of 500 mPa·s or greater. Contact this company for details.

## Operating principle



The plunger moves in and out as it rotates. As the cut-out section on the end of the plunger rotates, the suction and discharge ports are alternately opened and closed such that fluid is taken in and discharged.

# construction

## Construction

### Motor

The standard motor is an AC induction motor, however it is also possible to install other motors such as a synchronous motor, DC motor, stepping motor or explosion-proof motor.

### Cylinder



Like the plunger, the cylinder is processed with high precision. The cylinder is made of SiC or alumina ceramic (Al<sub>2</sub>O<sub>3</sub>).

### Plunger



The plunger is processed with high precision on a micron order making high-precision discharge possible. The plunger is made of SiC, alumina ceramic (Al<sub>2</sub>O<sub>3</sub>), or Zirconia (ZrO<sub>2</sub>).

### Joint seal

### Head seal

### Tube joint

In addition to SUS316 (standard), PTFE, PP, and POM are also available.



There is also an adapter for tube joints corresponding to a R1/4 thread. Contact us for details.

### Pump bracket



### Back seal

### Lip seal

### Locking lever

This lever secures the pump head. This lever is loosened when adjusting the discharge amount in order to change the angle of the pump head.

### Valveless construction

There are no suction or discharge valves. The unique and simple construction does away with clogging and sticking.

### Compact design

The pump is compact, light weight and suitable for being installed either vertically or horizontally. Moreover, by reversing the direction of motor rotation it is possible to reverse the IN/OUT direction.

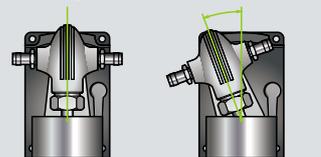
### Easy disassembly, assembly and cleaning

The construction is simple with few components, so disassembly, assembly and cleaning can be performed easily.

### Discharge adjustment mechanism

The amount of discharge is adjusted by adjusting the stroke length. By changing the angle of the pump head, it is possible to freely adjust the discharge between 0 and maximum.

Note : If the swing angle is 0 degrees, fluid is not fed through the pump.



0-degree angle:  
Zero stroke length

20-degree angle:  
Maximum stroke length

## Pump identification

**V - 05** **S** **C** **A** **5** - **P**  
1 2 3 4 5 6

<b>1</b> Plunger diameter	<b>05</b> : ø5 mm, <b>10</b> : ø10 mm
<b>2</b> Material	Code Plunger material Cylinder material Corresponding pump
	<b>Z</b> : ZrO <sub>2</sub> Al <sub>2</sub> O <sub>3</sub> V-05
	<b>S</b> : SiC SiC V-05, V-10
	<b>A</b> : Al <sub>2</sub> O <sub>3</sub> Al <sub>2</sub> O <sub>3</sub> V-10
	<b>M</b> : Fine grade Al <sub>2</sub> O <sub>3</sub> Fine grade Al <sub>2</sub> O <sub>3</sub> V-10
<b>3</b> Motor specifications	<b>C</b> : Induction motor, <b>S</b> : Other motor
<b>4</b> Reduction ratio	<b>A</b> : 1/150, <b>B</b> : 1/75, <b>C</b> : 1/30, <b>D</b> : 1/15, <b>E</b> : 1/7.5, <b>F</b> : 1/5, <b>G</b> : 1/3, <b>S</b> : Other
<b>5</b> Power-supply voltage	<b>4</b> : 115 V AC single phase, <b>5</b> : 220/230 V AC single phase, <b>0</b> : Other
<b>6</b> Special Symbols	<b>P</b> : With w/cleaning port, <b>J</b> : Plastic bracket type, <b>X</b> : Other

## Materials

Model	V-05	V-10
<b>Pump bracket</b>	SCS14	
<b>Plunger</b>	SiC, ZrO <sub>2</sub>	SiC, Al <sub>2</sub> O <sub>3</sub>
<b>Cylinder</b>	SiC, Al <sub>2</sub> O <sub>3</sub>	SiC, Al <sub>2</sub> O <sub>3</sub>
<b>Head seal</b>	PTFE	
<b>Back seal</b>	PTFE	
<b>Joint seal</b>	PTFE	
<b>Lip seal</b>	PTFE	

## Standard specifications

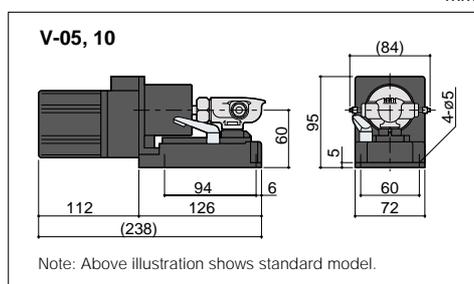
50/60Hz

Model	Reduction ratio	Rotation speed rpm	Capacity mL/min	Max. pressure MPa	Tube joint outer diameter mm	Standard motor	Weight kg
V-05 □CA	1/150	9 / 11	1.6 / 1.9	0.7	6 mm stainless volute type There is also a 4 mm, 7.5 mm, 10 mm, and 12 mm size. It is also possible to make the joint out of PP, PTFE, or POM.	Induction motor 115V, 220/230V AC, 15W single phase	2.3
V-05 □CB	1/75	19 / 23	3.3 / 4.0				
V-05 □CC	1/30	48 / 58	8.0 / 10				
V-05 □CD	1/15	96 / 116	16 / 20				
V-05 □CE	1/7.5	193 / 232	33 / 40				
V-05 □CF	1/5	290 / 348	51 / 61				
V-05 □CG	1/3	483 / 580	85 / 102				
V-10 □CA	1/150	9 / 11	6.0 / 7.0				
V-10 □CB	1/75	19 / 23	13 / 16				
V-10 □CC	1/30	48 / 58	33 / 40				
V-10 □CD	1/15	96 / 116	67 / 81				
V-10 □CE	1/7.5	193 / 232	135 / 163				
V-10 □CF	1/5	290 / 348	203 / 245	0.4			
V-10 □CG	1/3	483 / 580	338 / 409	0.3			

- Z: ZrO<sub>2</sub> / Al<sub>2</sub>O<sub>3</sub>, S: SiC / SiC, M: Fine grade Al<sub>2</sub>O<sub>3</sub> / Fine grade Al<sub>2</sub>O<sub>3</sub> are entered in the blank space for the model.
- The table above are test performances for normal temperature pure water.
- The discharge amounts for one revolution are: 0.17 mL/rev for V-05 and 0.7 mL/rev for V-10 (swing angle, 20 deg.).
- The suction lift capability of the pump is 4 meters, however, this varies depending on the fluid being pumped.
- Be sure to clean the inside of the pump after moving crystalline fluids or fluids that adhere easily to the pump. Also, it is recommended that a pump with a w/cleaning port (option) be used.
- The standard motor is an induction motor, however it is also possible to install other motors such as a synchronous motor, DC motor, stepping motor or explosion-proof motor. Contact us for details.

## Dimensions

mm



## Major Applications

- Medical equipment: Dialyser
- Cleaning machinery: Soap and rinse dispensing
- Food Handling Machinery: Dispensing fixed amounts of food additives, filling soup, stock, etc., dispensing flavoring fluid, dispensing germicides
- Batteries: Dispensing fixed amounts of gel-like fluids
- Capacitors: Dispensing phosphoric acid solution
- Waste-water treatment facilities: Dispensing of coagulant and hydrated lime

## Special Order Products

Stainless bracket type  
w / cleaning port



Plastic bracket type



Stainless bracket type  
(for OEM application)

