IWAKI PUMPS

IWAKI Hicera Pump

V series

Instruction Manual

⚠Read this manual before use of product

Thank you for selecting an Iwaki V Series Hicera Pump. This instruction manual deals with *"Safety instructions"*, *"Outline"*, *"Installation"*, *"Operation"* and *"Maintenance"* sections. Please read through this manual carefully to ensure the optimum performance, safety and service of your pump.

Contents

Important instructions ····· **1**

Safety instructions ····· **2**

Outline
1. Unpacking & Inspection ····· 6
2. Product outline ····· 6
3. Model code ····· 7
4. Specification ····· 8

Installation
1. Before installation ····· 10
2. Installation/Piping/Wiring ····· 12

Operation
1. Operation ····· 15

Maintenance
1. Disassembly & Assembly ····· 18
2. Troubleshooting ····· 24
3. Dimensions ····· 25
4. Wear parts ····· 27

This instruction manual should be kept on hand by the end user for quick reference.

Contact us or your nearest dealer if you have any questions.

Important instruction

For the Safe and Correct Handling of the Pump

- "Safety Instruction" section deals with important details about handling of the product. Before use, read this section carefully for the prevention of personal injury or property damage.
- Observe the instructions accompanied with "WARNING" or "CAUTION" in this manual. These instructions are very important for protecting users from dangerous situations.
- The symbols on this instruction manual have the following meanings:

⚠ **WARNING**	**Nonobservance or misapplication of "Warning" sections could lead to a serious accident which may result in death.**
⚠ **CAUTION**	**Nonobservance or misapplication of "Caution" sections could lead to a personal injury or property damage.**

Types of Symbols

⚠ Indicates that "Warning" or "Caution" must be exercised. Inside this triangle, a concrete and practical image provided as a warning or caution message is depicted.

⊘ Indicates a prohibited action or procedure. Inside or near this circle, a concrete and practical image of the activity to be avoided is depicted.

❗ Indicates an important action or procedure which must be performed or carried out without fail. Failure to follow the instructions herein can lead to malfunction or damage to the pump.

⚠ Export restrictions

Technical information contained in this instruction manual might be treated as controlled technology in your countries, due to agreements in international regime for export control. Please be reminded that export license/permission could be required when this manual is provided, due to export control regulations of your country.

Safety instruction

⚠WARNING

- **Turn off power before work**

  Risk of electrical shock. Be sure to turn off power to stop the pump and related devices before service is performed. Prevent others from restoring power during service.


Electrical shock

- **Stop operation**

  If you notice any abnormal or dangerous conditions, suspend operation immediately and inspect/solve problems.


Requirement

- **Do not use the pump in any condition other than its intended purpose**

  The use of the pump in any conditions other than those clearly specified may result in failure or injury. Use this product in specified conditions only.


Prohibited

- **Do not modify the pump**

  Alterations to the pump carry a high degree of risk. It is not the manufacturer's responsibility for any failure or injury resulting from alterations to the pump.


Do not remodel

- **Use specified power only**

  Do not apply power other than that specified on the nameplate. Otherwise, failure, fire or electrical shock may result. Ensure the pump is properly grounded.


Requirement

- **Wear protective clothing**

  Always wear protective clothing such as an eye protection, chemical resistant gloves, a mask and a face shield during disassembly, assembly or maintenance work. The specific solution will dictate the degree of protection. Refer to SDS precautions from the solution supplier.


Wear protectors

- **Do not damage the power cable**

  Do not pull, knot, or crush the power cable. Damage to the power cable could lead to a fire or electrical shock if cut or broken.


Caution

Safety instruction

⚠CAUTION

- **Qualified personnel only**

  The pump should be handled or operated by qualified personnel with a full understanding of the pump. Any person not familiar with the product should not take part in the operation or maintenance of the pump.



- **Do not run pump dry**

  Do not run the pump dry for more than 3 minutes (even during degassing). Otherwise, frictional heat may build up and cause the plunger to seize in the cylinder. Optimize your system to eliminate any possibility of dry running.



- **Do not close the suction or discharge line during operation**

  Operating the pump with a closed suction or discharge line can cause abnormal pressure buildup, resulting in damage to the pump, piping, and system components.



- **Keep electric parts and wiring dry**

  Risk of fire or electric shock. Install the pump where it can be kept dry.



- **Ventilation**

  Fumes or vapours can be hazardous with certain solutions. Ensure proper ventilation at the operation site.



- **Do not install/store the pump:**
  - In a flammable atmosphere.
  - In a dusty/humid environment.
  - Where ambient temperature can exceed 0-40ºC.
  - In direct sunlight or wind & rain.



- **Spill precautions**

  Ensure protection and containment of solution in the event of plumbing or pump damage (secondary containment).



- **Do not use the pump in a wet location**

  The pump is not waterproof. Use of the pump in wet or extremely humid locations could lead to electric shock or short circuit.



Safety instruction

⚠CAUTION

- **Grounding**

  Risk of electric shock! Always properly ground the pump. Conform to local electric codes.



- **Install a GFCI (earth leakage breaker)**

  An electrical failure of the pump may adversely affect other devices on the same line. Purchase and install a GFCI (earth leakage breaker) separately.



- **Preventative maintenance**

  Follow instructions in this manual for replacement of wear parts. Do not disassemble the pump beyond the extent of the instructions.



- **Do not use a damaged pump**

  Use of a damaged pump could lead to an electric shock or death.



- **Disposal of a used pump**

  Dispose of any used or damaged pump in accordance with local rules and regulations. If necessary, consult a licensed industrial waste disposal company.



- **Electromagnetic precautions**

  This product is not protected against electromagnetic fields. Take appropriate measures as necessary.



- **Install a relief valve**

  If the discharge line's pressure rating cannot withstand the maximum possible pressure, install a relief valve to depressurize the line. The relief valve set pressure must not exceed the discharge line's maximum allowable pressure.



- **Do not touch the pump or pipe with bare hands**

  Risk of burns. The surface temperature of the pump or piping becomes very high during and immediately after operation.



Outline

1. Unpacking & Inspection 6

2. Product outline..... 6

3. Model code..... 7

4. Specification 8

Outline

1. Unpacking & Inspection

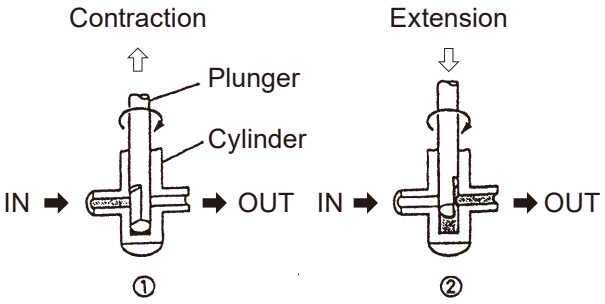
On unpacking the product, check the following points. If you find any problems, contact your nearest distributor.

1. Check the information on nameplate (model code, flow rate, head and voltage) to see if the product is delivered as per order.

2. Check for transit damage, deformation and loose bolts.

2. Product outline

The Hicera pump is a metering pump with ceramic wet ends such as a plunger, a cylinder and other related parts.
The plunger reciprocates and rotates in the cylinder where liquid is taken in from a suction line and then delivered to a discharge line.



1. The rotating plunger contracts to take in liquid into the cylinder from a suction line as the duct on the plunger passes the inlet.

2. The rotating plunger extends to let out liquid from the cylinder to a discharge line as the duct on the plunger passes the outlet.

⇨: Plunger reciprocation
→: Plunger rotation
➡: Flow direction

3. Model code

V - 05SLP 1 A 1 - X

a b c d e

a. Plunger diameter, Wet end materials, Flushing port

Code	Plunger dia (mm)	Plunger/Sylinder material	Pump head material	Flushing port	Applicable pumps
05SL	ø5	SiC/SiC	SCS14	——	V-05
05SLP	ø5	SiC/SiC	SCS14	Equipped	V-05
10AL	ø10	AL2O3/AL2O3	SCS14	——	V-10
10ALP	ø10	AL2O3/AL2O3	SCS14	Equipped	V-10
10SL	ø10	SiC/SiC	SCS14	——	V-10
10SLP	ø10	SiC/SiC	SCS14	Equipped	V-10
15AS	ø15	AL2O3/AL2O3	SUS304	——	V-15
15ASP	ø15	AL2O3/AL2O3	SUS304	Equipped	V-15
15SS	ø15	SiC/SiC	SUS304	——	V-15
15SSP	ø15	SiC/SiC	SUS304	Equipped	V-15

Pump head material code L: SCS14 (Lost-wax casting) for the V-05, 10
S: SUS304(machining) for the V-15

b. Joint

1: ø6mm SUS tube joint (V-05/-10)

2: ø10mm SUS tube joint (V-05/-10)

3: ø13mm SUS joint (V-15)

4: Rc1/4" SUS female thread joint (V-05/-10)

5: Rc3/8" SUS female thread joint (V-15)

6: Other joints

c. Induction motor speed reduction ratio

A: 1/150 **B:** 1/75 **C:** 1/30 **D:** 1/15 **E:** 1/7.5 **F:** 1/5 **G:** 1/3

d. Power voltage

1: 100VAC single-phase motor

2: 200VAC single-phase motor

3: 200VAC three-phase motor

4: 100-115VAC single-phase motor

5: 220-230VAC single-phase motor

0: Other motors

e. Special version code

X: Custom design (Contact us for detail)

4. Specification

50/60Hz

Model	Gear ratio	Speed (rpm)	Max. flow (mL/min)	Max.press. (MPa)	Tube joint (mm)	Standard motor	Mass (kg)
V-05SL1A5	1/150	9/11	1.6/1.9	0.7	ø6 SUS tube joint	Induction motor 100VAC 15W	2.3
V-05SL1B5	1/75	19/23	3.3/4.0				
V-10□L1A5	1/150	9/11	6.0/7.0				
V-10□L1B5	1/75	19/23	13/16				
V-10□L1C5	1/30	48/58	33/40				
V-10□L1D5	1/15	96/116	67/81				
V-10□L2E5	1/7.5	193/232	135/163	0.6	ø10 SUS tube joint	Induction motor 100VAC 25W	3.0
V-10□L2F5	1/5	290/348	203/245	0.4			
V-10□L2G5	1/3	483/580	338/409	0.3			
V-15□S3E5	1/7.5	193/232	559/673	0.5	ø13 SUS tube joint	Induction motor 100VAC 40W	8.0
V-15□S3F5	1/5	290/348	841/1009	0.3			
V-15□S3G5	1/3	483/580	1400/1682	0.2			

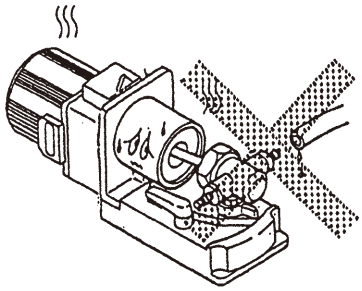
- Either A: AL_2O_3/AL_2O_3 or S: SiC/SiC comes in □:
- Performance values in the above table are based on pumping clean water at ambient temperature.
- The revolution per minute is based on use of clean water and varies with liquid characteristics.
- Discharge capacity per revolution when the pump head is at an angle of 20º.
  Approx. 0.17 mL/rev for V-05
  Approx. 0.7 mL/rev for V-10
  Approx. 2.9 mL/rev for V-15
- The maximum suction lift with clean water is 4 meters and varies with liquid characteristics.
- Flush out crystallizing or adhesive liquid from the pump head after operation. Use of the pumps with flushing ports is recommended.

Installation

1. Before installation ····· 10

2. Installation/Piping/Wiring ····· 12

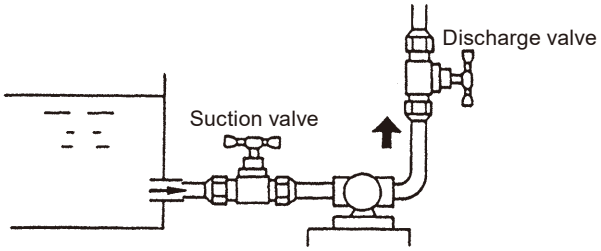
Installation



1. Before installation

1. Do not run pump dry (except for the start-up dry running to fill the pump head with liquid.)

Friction heat builds up in the pump head during dry running and the plunger seizes in the cylinder.

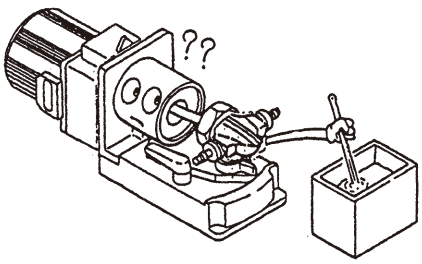


2. Do not close valves

Closed-discharge operation causes a sharp pressure rise and may result in pump failure or motor burning out. Be sure to open a suction line and a discharge line before operation.

3. Degassing

Fully open a discharge line and set the pump head angle to 20° (the maximum stroke length). Run the pump in this condition to expel air from the pump and tubing.

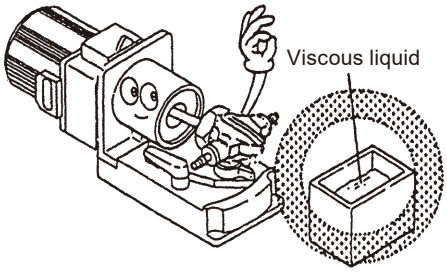


4. Temperature influence

A flow rate, liquid viscosity, vapour pressure and corrosion resistance changes with liquid temperature.

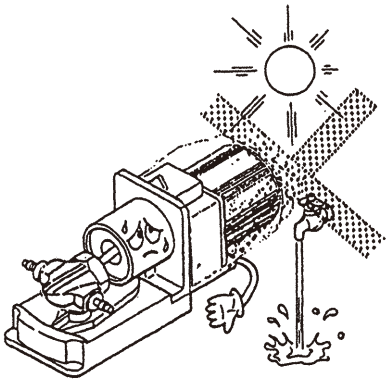
⚠CAUTION

The allowable liquid temperature range is 0-80ºC. Apply heat-resistant grease to the motor bearing or use a cooling fan to cool down motor temperature when liquid temperature exceeds 65ºC.



5. Viscous liquid

The pump is capable of handling liquid up to 20,000 cP, but then keep pump rotation speed lower as viscosity gets higher, especially when liquid viscosity is 500 cP or more. Contact us for detail.



6. Precipitation or Crystallization

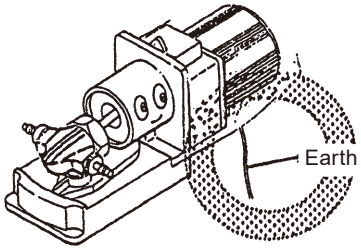
Flush out liquid that has property of precipitation or crystallization from the pump head.

⚠CAUTION

If the pump is left before flushing, the plunger may be stuck in the cylinder. In this case the pump does not start to run.

7. Operating conditions

Do not cover the motor tight. Avoid areas where ambient temperature exceeds 40°C or ambient humidity exceeds 85% RH. Do not wet the pump, or an electrical leak or a fire may result.

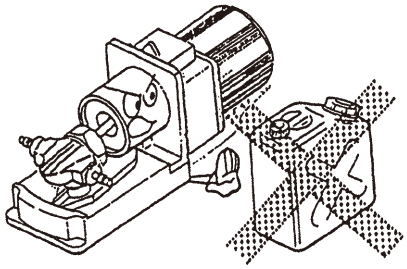


8. Earthing

Be sure to earth the pump. Install an earth leakage breaker as necessary.

⚠CAUTION

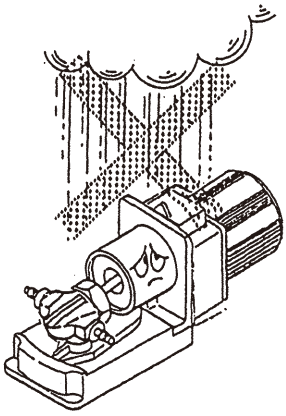
If an earth leakage breaker has worked to open a circuit, turn off a main power-supply switch. Always determine a root cause and solve problems before resuming operation.



9. Take preventative measures for fire and dust

⚠CAUTION

Do not place a dangerous or a flammable substance near the pump. Protect the motor from dust.



2. Installation/Piping/Wiring

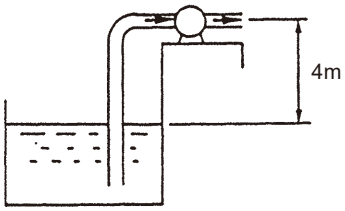
■ Installation

1. Select an installation location where is convenient for maintenance. Ambient temperature should not exceed 40°C or falls below 0°C. Observe the maximum ambient humidity of 85%RH. Do not install the pump out of doors.

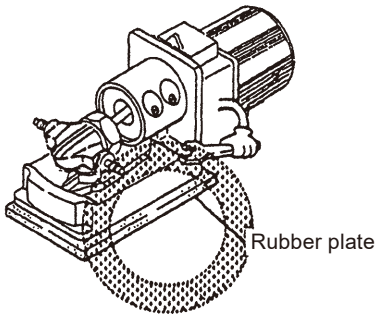
⚠CAUTION

When installing the pump, be careful not to impact the pump. A strong impact may adversely affect pump performance.

The pump can be mounted either vertically or horizontally. A flow direction can be reversed by inverting motor rotation.

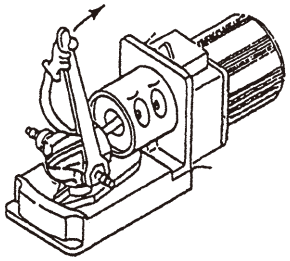


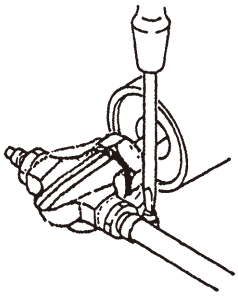
2. The maximum *suction lift is 4 meters based on operation with clean water and changes according to liquid characteristics.*



3. Fix the pump with M5 screws. Place a rubber plate beneath the pump base to reduce noise or oscillation as necessary.

Installation



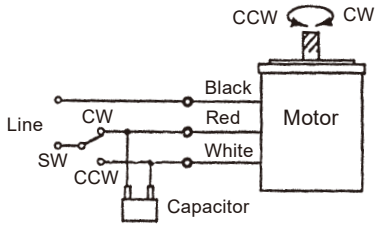


■ Plumbing

1. Have tubing length shortest with the minimum number of bends in order to reduce pipe resistance.

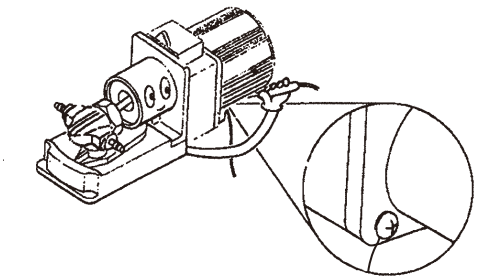
2. The inlet and outlet ports should be completely sealed for the prevention of air ingress into a flow line. Especially, an imperfect suction line connection entrains air and reduces performance.

3. Select tubes in accordance with an inlet and an outlet bore.
A tube should be resistant to both the specified pressure and the specified liquid.



■ Wiring

Check power-supply voltage and the rated voltage of the pump motor before wiring. Observe an applicable electric code.



■ Earthing

Remove one of fitting screws on the motor mounting flange and the paint under the screw for connecting an earth wire.

Operation

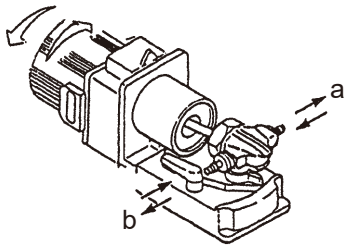
1. Operation 15

1. Operation

Do not run pump dry or run it with a discharge valve or a suction valve closed.

■ Starting process

Operate the pump according to the following procedure after installation, tubing and wiring of pump.

No.	Points to be checked	Procedure
1	Tubing, wiring and voltage	● See "■ **Plumbing**" and "■ **Wiring**" sections. ● Check the spec label to see if the power supply voltage is correct.
2	A discharge and a suction line.	● Fully open both suction and discharge valves.
3	Rotational direction	● Check if the direction of rotation is correct. Prime the pump and run the motor for just a moment to check a flow direction.  ● Counter clockwise (CCW) CCW rotation seen from the motor end. Liquid flows in the direction of "a". ● Clockwise (CW) CW rotation seen from the motor end. Liquid flows in the direction of "b".
4	Starting	● Run the pump for a while and check liquid flows without a hitch. Upon finding abnormality, turn off power and solve the cause of abnormality. Refer to "Troubleshooting" section.
5	Operation	● Make sure air has been expelled from the pump and a tubing system completely. If not, an accurate flow rate can not be obtained. Angle the pump head to 20º and run the pump until air is expelled completely. After air is all eliminated, adjust discharge pressure to a specified level. ● Flow rate can be adjusted from 0 to the maximum by changing the pump head angle.
6	Points to be checked during operation	● Do not allow foreign matters to enter the pump. Foreign matters may cause the plunger to be locked or damaged, hindering a liquid circulation.

Install a dampener to reduce pulsation as necessary. Contact for us for detail.

■ Stoppage

No.	Points to be checked	Procedure
1	Wet ends	● Flush the pump head with clean water after operation with sticky or settling liquid. Dismantle the pump head for cleaning as necessary.
2	Before a long period of stoppage	● Drain liquid from the pump head and dismantle it for cleaning before a long period of stoppage.

■ Daily inspection

See the following check items in operation. On detection of abnormality, stop operation immediately. Take measures referring to the item "Trouble shooting".

No.	States	Points to be checked	How to check
1	Pumping	• If liquid is pumped.	Flow meter or visual inspection
		• If discharge pressure/ suction pressure is normal.	Check specification.
2	Noise and vibration	• If abnormal noise or vibration occurs. They are signs of abnormal operation.	Visual or audio inspection
		• Place a rubber plate beneath the pump base to reduce noise or oscillation as necessary.	
3	Air ingress from pump head joints and a suction line	• If leakage occurs.	Visual inspection
		• If pumped liquid includes air bubbles, check lines for leakage and retighten as necessary.	
4	High surface temperature of the pump and the motor	• Pump surface temperature gets higher along with liquid temperature.	Touch or use a thermometer
		• Motor surface temperature should be 40ºC higher than ambient temperature, or below.	

Maintenance

1. Disassembly & Assembly..... 18

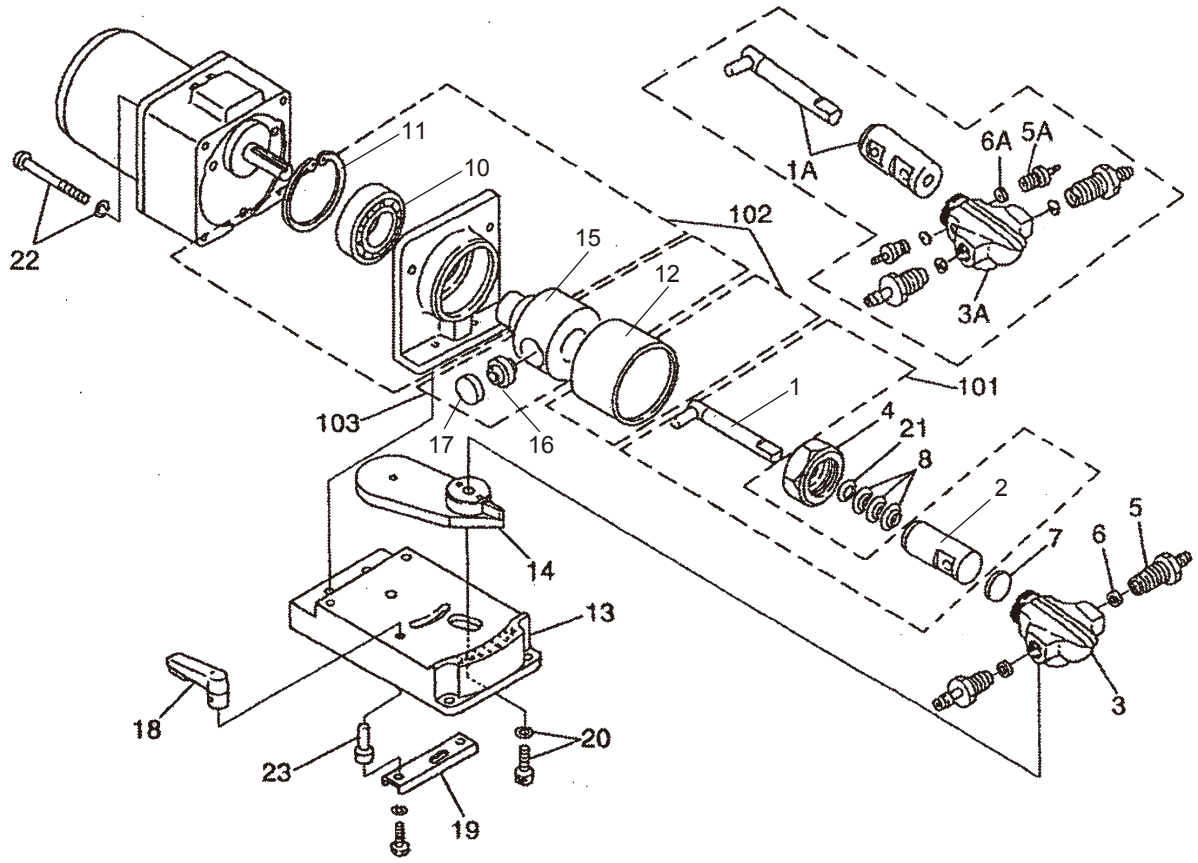
2. Troubleshooting 24

3. Dimensions..... 25

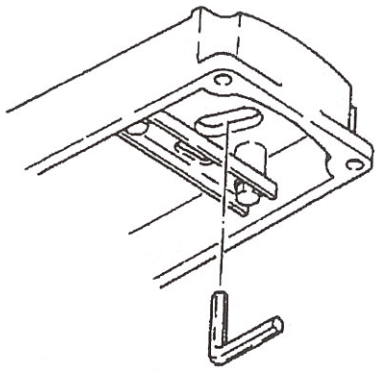
4. Wear parts..... 27

1. Disassembly & Assembly

■ Exploded view (V-05/-10)



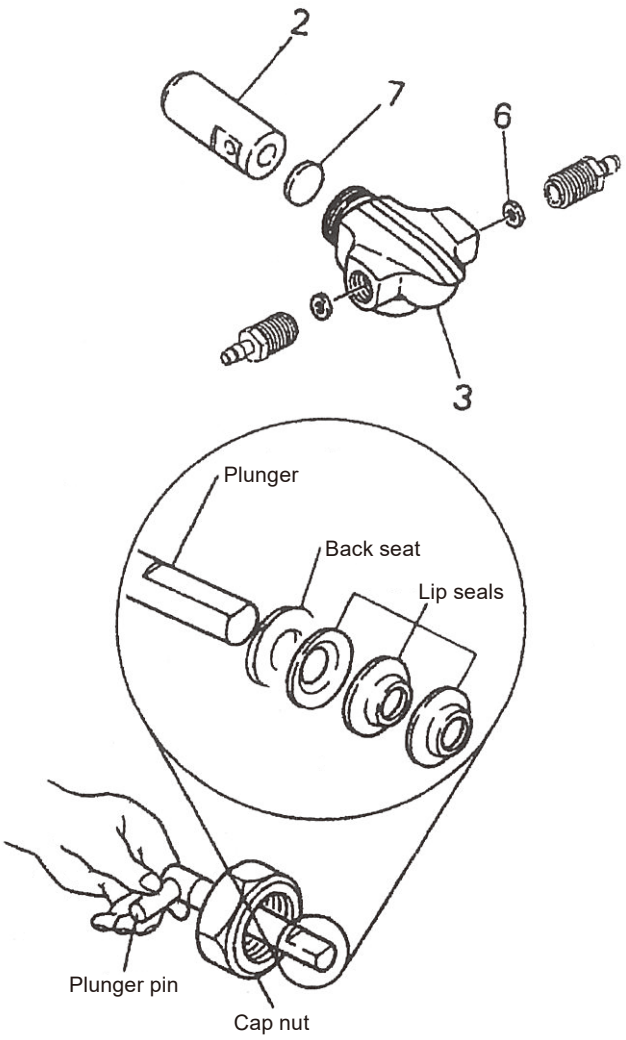
No.	Part names	Q'ty	Remarks	No.	Part names	Q'ty	Remarks
1	Plunger	1	Al_2O_3/SiC	14	Mounting plate	1	
2	Cylinder	1	Al_2O_3/SiC	15	Drive joint	1	AL
3	Pump head	1	SCS14	16	Spherical bearing	1	
4	Cap nut	1	SUS303	17	Cap	1	
5	Tube joint	2	SUS316	18	Lock lever	1	Zn
6	Joint seal	2	PTFE	19	Lock bar	1	
7	Head seal	1	PTFE	20	Hex. sock head bolt (with sw)	1	SUS304
8	Lip seal	3	PTFE	21	Back seat	1	PTFE
9	Bearing case	1	AC4C	50	Induction motor	1	
10	Bearing	1	6004ZZ	101	Plunger ass'y	1	
11	Stop ring	1		102	Bearing case ass'y	1	
12	Joint cover	1	AL	103	Drive joint ass'y	1	
13	Base	1					



■ Dismantlement (V-05/-10)

Follow the procedure below to take apart the pump head.

1. *Remove tube connections from the pump head.*
   Be careful not to get wet with chemical liquid. Wipe chemicals off immediately when your hand or component parts get wet.
2. *Remove the base (13) from a foundation.*
3. *Release the lock lever (18) and direct the pump head to 10º position.*
4. *Loosen the hex sock head bolt (20) via the hole beneath the base (13) and unfix the connection between the pump head (3) and the mounting plate (14).*
5. *Take out the pump head (3) from the drive joint ass'y (103) with the cylinder and plunger (1) in it.*
6. *Remove the cap nut (4) from the pump head and pull out the cylinder (2) with the plunger (1) in it.*
7. *Pull out the plunger (1) by rotating it in the cylinder (2).*
8. *Pull out the lip seals (8) by rotating them slowly on the plunger.*
   Be careful not to damage lip seals. Clean all parts thoroughly after dismantlement.

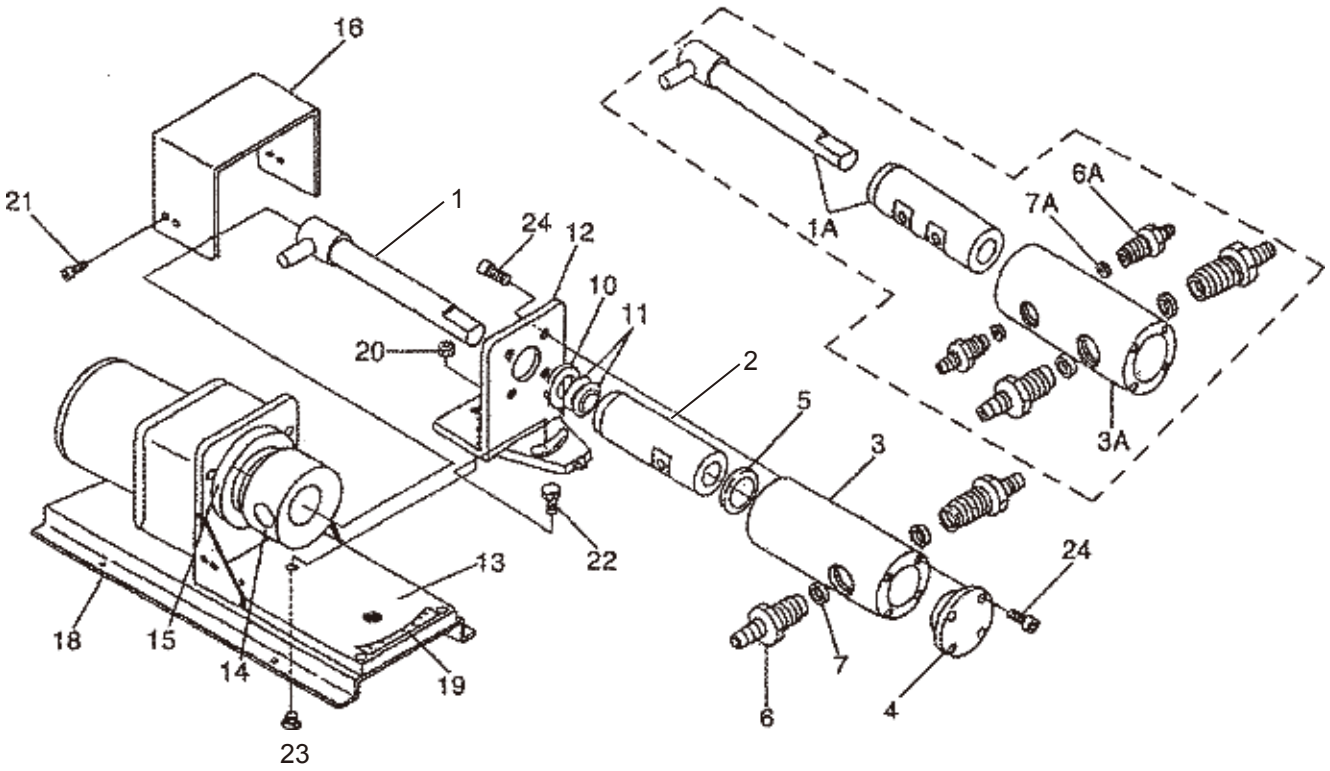


■ Assembly (V-05/-10)

Follow the procedure below to put together the pump head.

1. *Insert the head seal (7) first and then the cylinder (2) into the pump head (3).*
   Make sure the flow paths of the cylinder lie directory beneath those of the pump head. The head seal of the V-05 has mounting direction. Always direct its concave side to the cylinder (2).
2. *Fit the joint seals (6) into the tube joints (5) and then screw these joints into the pump head (3) to softly hold the cylinder.*
3. *First slide the cap nut (4), then the back seat and the lip seals (8) onto the plunger (1) as far as they will go. Softly rotate the lip seals on the plunger when sliding them onto it. See the enlarged photo on the left for the mounting direction of the lip seals.*
   Do not bend or scratch the lip seals. Degrease and clean the plunger with benzine or thinner after this process.
4. *Hold the plunger pin and pass the plunger (1) through the cylinder (2), rotating it from side to side.*
5. *Tighten the cap nut (4) to the pump head by a torque in between **20 and 30kgf•cm**.*
6. *Tighten the tube joints to the pump head by **15kgf•cm**.*
   Do not tighten the tube joints too much, or they deform the cylinder and prevent the rotation of the plunger.
7. *Pull out the plunger end from the pump head and fit the plunger pin into the spherical bearing in the drive joint ass'y (103).*
   Adjust the direction of the spherical bearing as necessary. Always grease the plunger pin to keep good lubrication performance.
8. *Place the pump head onto the mounting plate (14) and direct the pump head to 10º position. Fix the connection between the pump head (3) and the mounting plate (14) with a spring washer and the hex socket head bolt (20) via the hole beneath the base (13).*

■ Exploded view (V-15)



No.	Part names	Q'ty	Remarks	No	Part names	Q'ty	Remarks
1	Plunger ass'y	1	Al_2O_3/SiC	14	Drive joint ass'y	1	
2	Cylinder	1	Al_2O_3/SiC	15	Bearing case ass'y	1	
3	Pump head	1	SUS304	16	Drive joint cover	1	SUS304
4	Head cover	1	SUS304	18	Pump base	1	SPCC
5	Head seal	1	PTFE	19	Angle scale	1	PE
6	Tube joint	2	SUS316	20	Nut (with pw/sw)	1	SUS304
7	Joint seal	2	PTFE	21	Hex. sock head bolt (with sw)	4	SUS304
10	Seal stopper	1	PTFE	22	Hex. sock head bolt (with sw)	1	SUS304
11	Lip seal	2	PTFE	23	Pump frame mounting screw	1	SUS304
12	Pump frame	1	SPCC	24	Pumphead mounting screw (with pw/sw)	8	SUS304
13	Motor frame	1	SPCC				

■ Dismantlement (V-15)

Follow the procedure below to take apart the pump head.

1. Remove all tube connections from the pump head.
Be careful not to get wet with chemical liquid. Wipe chemicals off immediately when your hand or component parts get wet.

2. Remove the pump base (18) from a foundation.

3. Unscrew the pump frame mounting screw (23) and the hex socket head bolt (22) to separate the pump frame (12) from the motor frame (13).

4. Unhook the plunger ass'y (1) from the drive joint ass'y (14).

5. Pull out the plunger ass'y (1) by rotating it in the cylinder (2).
Do not roughly withdraw the ass'y, or lip seals may be damaged.

6. Remove four pumphead mounting screws (24) on the pump frame (12) to separate the pump head (3).

7. Unscrew and take away all the tube joints (6) from the pump head (3).

8. Unscrew and remove all the four head cover mounting screws to detach the head cover (4) from the pump head (3).

9. Withdraw the cylinder (2) from the pump head (3).
Clean all parts thoroughly after dismantlement.

10. Pull out the lip seals (11) and seal stopper (10) by rotating them slowly on the plunger.
Do not bend or scratch the lip seals. Clean all parts thoroughly after dismantlement.

■ Assembly (V-15)

Follow the procedure below to put together the pump head.

1. *Insert the plunger ass'y (1) into the pump frame (12). And then slide the seal stopper (10) down onto the plunger ass'y as far as it will go.*
2. *Slide two lip seals (11) down onto the plunger ass'y as far as they will go, rotating each of them slowly, to align them back to back.*
   Do not bend or scratch the lip seals. Degrease and clean the plunger with benzine or thinner after this process.
3. *Hold the plunger pin and pass the plunger (1) through the cylinder (2), rotating it from side to side. And then fit the cylinder into the pump head (3), making sure the cylinder flow paths lie directory beneath those of the pump head.*
4. *Fix the pump head with the pump frame (12) with the pumphead mounting screws.*
5. *Fit the joint seals (7) into the tube joints (6) and then screw these joints into the pump head (3) to softly hold the cylinder.*
6. *Place the head seal (5) on the top of the cylinder, on its concave side, and fasten the head cover (4) to the pump head (3) by* ***15kgf•cm****.*
   Do not tighten the head cover too much, or it deforms the cylinder and prevent the rotation of the plunger.
7. *Tighten the tube joints (6) to the pump head by* ***15kgf•cm****.*
   Do not tighten the tube joints too much, or it deforms the cylinder and prevent the rotation of the plunger.
8. *Pull out the plunger end from the pump head and fit the plunger pin into the spherical bearing in the drive joint ass'y (14).*
   Adjust the direction of the spherical bearing as necessary. Always grease the plunger pin to keep good lubrication performance, or seizing or noise may result.
9. *Place the pump head onto the pump base (18). Fix the pump frame (12) with the pump frame mounting frame (23) plus the nut (20) and the hex socket head bolt (22). Do not fasten the bolt too much before adjusting the pump head angle to a specified point. The range of the pump head angle is in between 0 and 20º.*

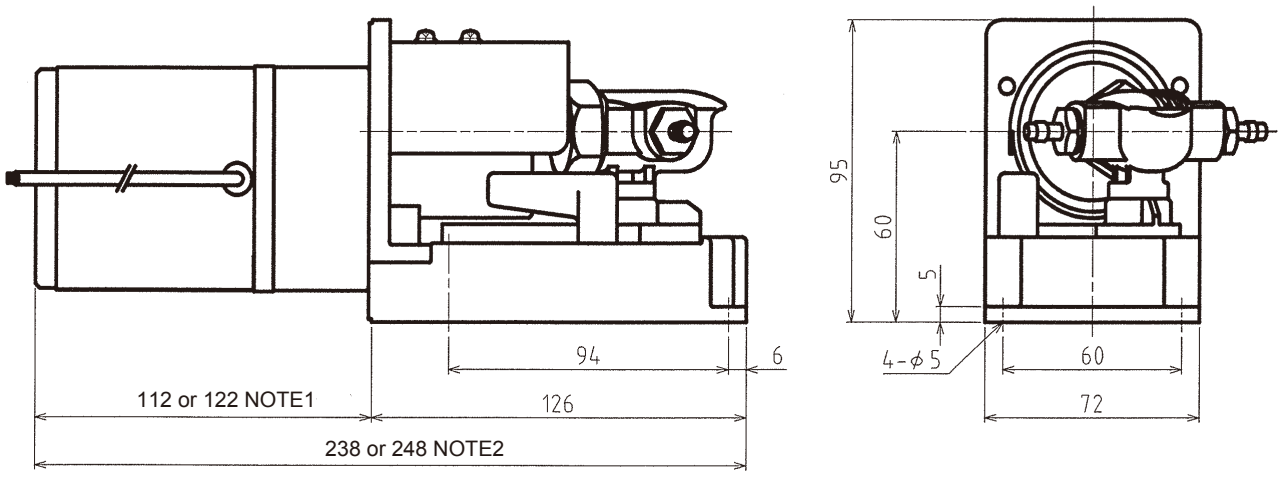
2. Troubleshooting

Problem	Cause	Countermeasures
The pump does not start to run.	Power is not supplied.	Supply power.
	Wrong wiring or disconnection	Correct wiring.
	Motor failure (winding disconnection or capacitor failure)	Replace motor.
	*Plunger seizing due to crystallization	Take apart the pump head and clean wet ends.
	High specific gravity or high viscosity	Use an applicable pump model.
The pump does not deliver liquid during operation.	Dry running	Replace both the plunger and cylinder.
	A suction and a discharge line is closed during operation.	Open both the suction and discharge lines.
	A supply tank is empty.	Replenish the supply tank.
	The motor is rotating the other way around.	Correct wiring.
A flow rate is too small.	Air ingress through a tube joint.	Keep tube joints air-tight.
	Pump rotation speed is too low.	Increase a rotation speed.
	A lip seal is crushed.	Replace as necessary.
	A suction line is crushed.	Replace as necessary.
Significant vibration or noise	Motor failure (winding disconnection or capacitor failure)	Replace motor.
	Dry running	Replace both the plunger and cylinder.
	Discharge pressure is too high.	Reduce discharge pressure.
	A suction and a discharge line is closed during operation.	Open both the suction and discharge lines.
	Air ingress through a tube joint.	Keep tube joints air-tight.
	Development of cavitation	Reduce a motor rpm, liquid temperature, and tubing resistance.
	*A supply tank is empty.	Replenish the supply tank.
	*Anchor bolts are loose.	Fasten anchor bolts.
	Sympathetic vibration with the pump and other parts of system	Place an anti-vibration rubber beneath the pump.
Liquid leaks.	A lip seal is crushed.	Replace as necessary.
Pump stops.	Wrong wiring or disconnection	Correct wiring.
	Motor failure (winding disconnection or capacitor failure)	Replace motor.
	Clogging due to foreign matters	Remove foreign matters. Replace parts if damaged.

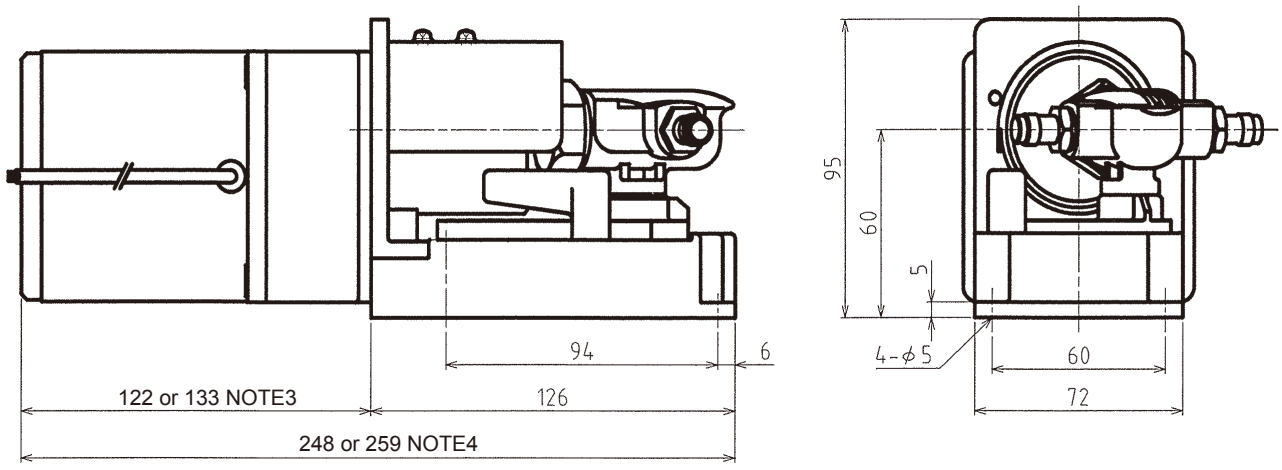
* means major failure cases.

3. Dimensions

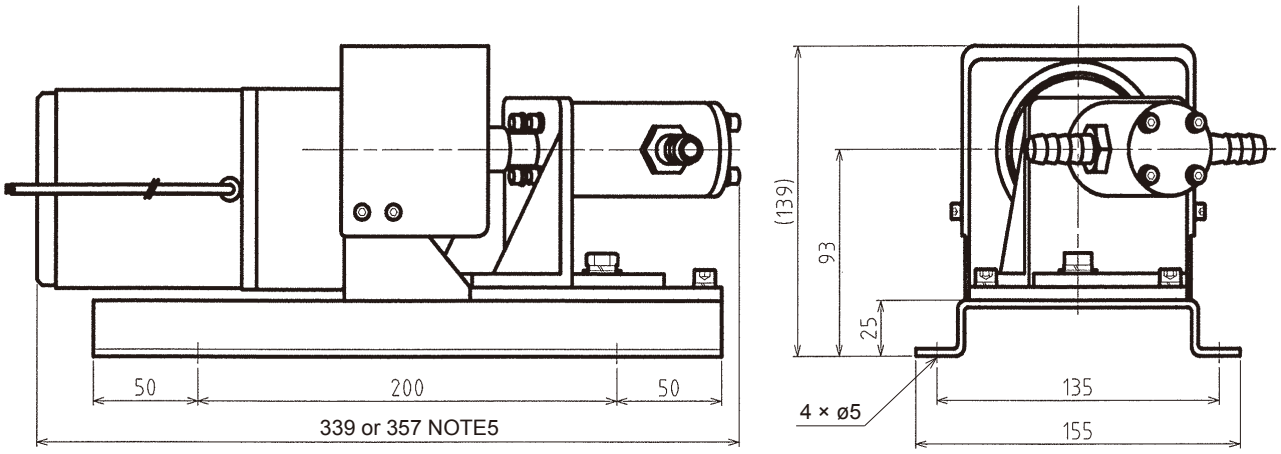
V-05/-10 (15W induction motor)



V-05/-10 (25W induction motor)



V-15



NOTE1: 112mm for the gear ratio of 1/3-1/15
122mm for the gear ratio of 1/30-1/150

NOTE2: 238mm for the gear ratio of 1/3-1/15
248mm for the gear ratio of 1/30-1/150

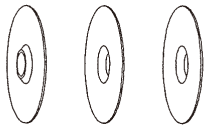
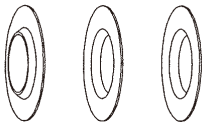
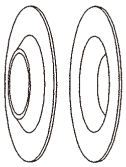
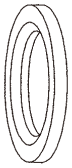
NOTE3: 122mm for the gear ratio of 1/3-1/15
133mm for the gear ratio of 1/30-1/150

NOTE4: 248mm for the gear ratio of 1/3-1/15
259mm for the gear ratio of 1/30-1/150

NOTE5: 339mm for the gear ratio of 1/3-1/15
357mm for the gear ratio of 1/30-1/150

4. Wear parts

Replace wear parts according to the estimated service life as shown below.

V-05	Parts	Lip seal	Joint seal	Head seal	Back seat
					
	Life	2000hr	Each maintenance	Each maintenance	Each maintenance
	Q'ty	3	2	1	1
V-10	Parts	Lip seal	Joint seal	Head seal	Back seat
					
	Life	2000hr	Each maintenance	Each maintenance	Each maintenance
	Q'ty	3	2	1	1
V-15	Parts	Lip seal	Joint seal	Head seal	Seal stopper
					
	Life	2000hr	Each maintenance	Each maintenance	When deteriorated
	Q'ty	2	2	1	1

Estimated service lives are calculated based on pumping clean water at ambient temperature and 0.3MPa, and change with liquid pressure, liquid temperature and liquid characteristics.

https://www.iwakipumps.jp
IWAKI CO.,LTD. 6-6 Kanda-Sudacho 2-chome Chiyoda-ku Tokyo 101-8558 Japan
TEL: +81 3 3254 2935 FAX: +81 3 3252 8892

European Headquarter / IWAKI Europe GmbH
TEL: +49 2154 9254 0 FAX: +49 2154 9254 48
Germany / IWAKI Europe GmbH
TEL: +49 2154 9254 50 FAX: +49 2154 9254 55
The Netherlands / IWAKI Europe GmbH (Netherlands Branch)
TEL: +31 74 2420011 FAX: +49 2154 9254 48
Italy / IWAKI Europe GmbH (Italy Branch)
TEL: +39 0445 561219 FAX: +39 0445 569088
Spain / IWAKI Europe GmbH (Spain Branch)
TEL/FAX: +34 934 741 638
Poland / IWAKI Europe GmbH (East Europe Branch)
TEL: +48 12 347 0755 FAX: +48 12 347 0900
Denmark / IWAKI Nordic A/S
TEL: +45 48 242345
Finland / IWAKI Suomi Oy
TEL: +358 10 201 0490
Norway / IWAKI Norge AS
TEL: +47 23 38 49 00
Sweden / IWAKI Sverige AB
TEL: +46 8 511 72900
Belgium / IWAKI Belgium N.V.
TEL: +32 13 670200 FAX: +32 13 672030
France / IWAKI France S.A.
TEL: +33 1 69 63 33 70 FAX: +33 1 64 49 92 73
U.S.A. / IWAKI America Inc.
TEL: +1 508 429 1440 FAX: +1 508 429 1386
Brazil / IWAKI Do Brasil Comercio De Bombas Hidraulicas LTDA.
TEL/FAX: +55 19 3244 5900
China (Shanghai) / IWAKI Pumps (Shanghai) Co., Ltd.
TEL: +86 21 6272 7502 FAX: +86 21 6272 6929
China (Hong Kong) / IWAKI Pumps Co., Ltd.
TEL: +852 2607 1168 FAX: +852 2607 1000
China (Guangzhou) / GFTZ IWAKI Engineering & Trading Co., Ltd.
TEL: +86 20 84350603 FAX: +86 20 84359181
China (Shenzhen) / IWAKI Pumps (Shenzhen) Co., Ltd.
TEL: +86 0755 8656 3696
Singapore / IWAKI Singapore Pte Ltd.
TEL: +65 6316 2028 FAX: +65 6316 3221
Indonesia / IWAKI Singapore Pte Ltd. (Indonesia Office)
TEL: +62 21 6906606 FAX: +62 21 6906612
Malaysia / IWAKIm SDN. BHD.
TEL: +60 3 7803 8807 FAX: +60 3 7803 4800
Korea / IWAKI Korea Co., Ltd.
TEL: +82 2 6238 4800 FAX: +82 2 6238 4801
Taiwan / IWAKI Pumps Taiwan Co., Ltd.
TEL: +886 2 8227 6900 FAX: +886 2 8227 6818
Thailand / IWAKI (Thailand) Co., Ltd.
TEL: +66 2 322 2471 FAX: +66 2 322 2477
Australia / IWAKI Pumps Australia Pty Ltd.
TEL: +61 2 9899 2411 FAX: +61 2 9899 2421

T607-2 '26/10