

Self-Priming Centrifugal Pump

GS-M_A type

Instruction Manual

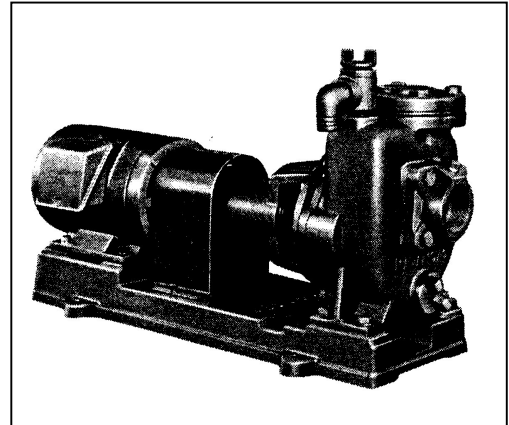
No. 87100220

Thank you for purchasing the Kawamoto self-priming centrifugal pump. The methods for using this product in an optimum condition for a long time are explained in this manual. Please read this manual thoroughly before using the pump.

Inspection

..... First, check the delivered pump.

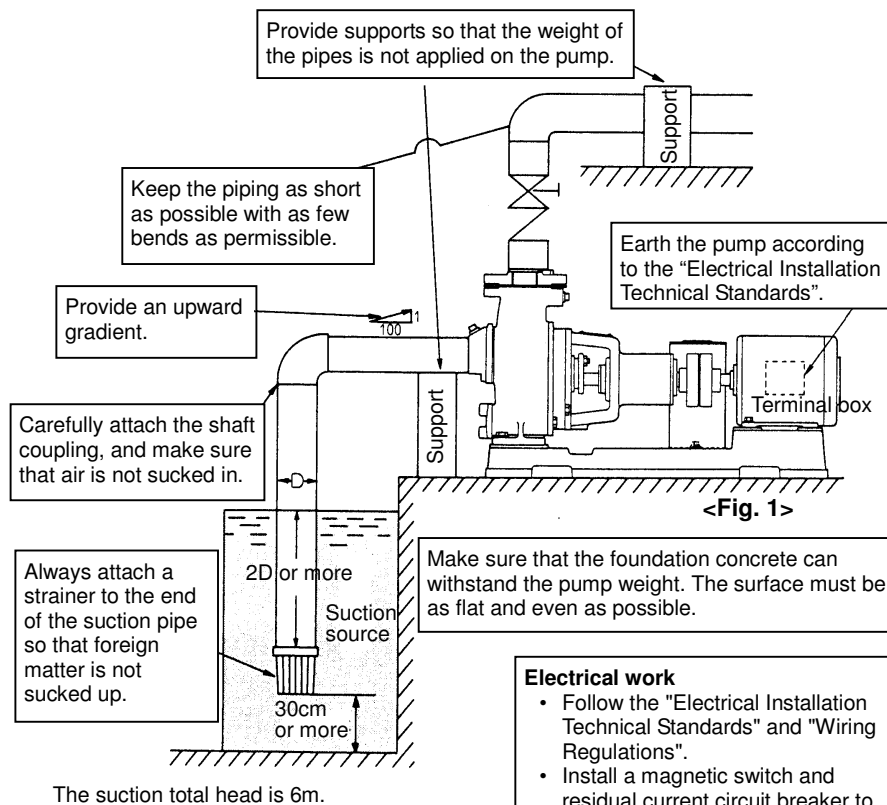
- (1) Has the ordered model been delivered? Check the type, bore, discharge flow rate, total head, required power, etc.
- (2) Have any parts been damaged, or have any bolts or nuts loosened during delivery?
- (3) Are all accessories enclosed?
Strainer (1), Instruction Manual (1)
* Quantities are shown in parentheses.
Anchor bolts/nuts (4)



Installation and Piping

<Direct-coupling type>

Select a well-ventilated cool place where the pump will not be subject to rain water or direct sunlight, and where it can be installed and disassembled easily.



Electrical work

- Follow the "Electrical Installation Technical Standards" and "Wiring Regulations".
- Install a magnetic switch and residual current circuit breaker to protect the motor.

Installing the pump unit

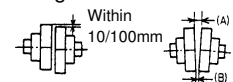
1. Attach the anchor bolts to the base. Insert the bolts into the designated positions on the base beforehand, attach the nuts completely to the nut head, and then lower into the bolt holes.

TM

2. Set the pump horizontally. Insert metal wedges or shims under the base to ensure that the pump is horizontal.

TM

3. Confirm the shaft center. The shaft center could deviate slightly due to impact during delivery, so always check the shaft center deviation before installing.



$$(A) - (B) = \text{within } 10/100\text{mm}$$

If the shaft center is deviated more than the above values, the shaft center must be aligned.

TM

4. Fix the anchor bolts. Fill in mortar, and after it has completely hardened, evenly tighten the anchor bolts. Check the shaft center once again.

<Solo type>

Select the drive mechanism's V-pulley diameter according to the pump speed (refer to the nameplate).

• Relational expression of pulley and speed

$$\frac{D_2}{D_1} = \frac{N_1}{N_2}$$

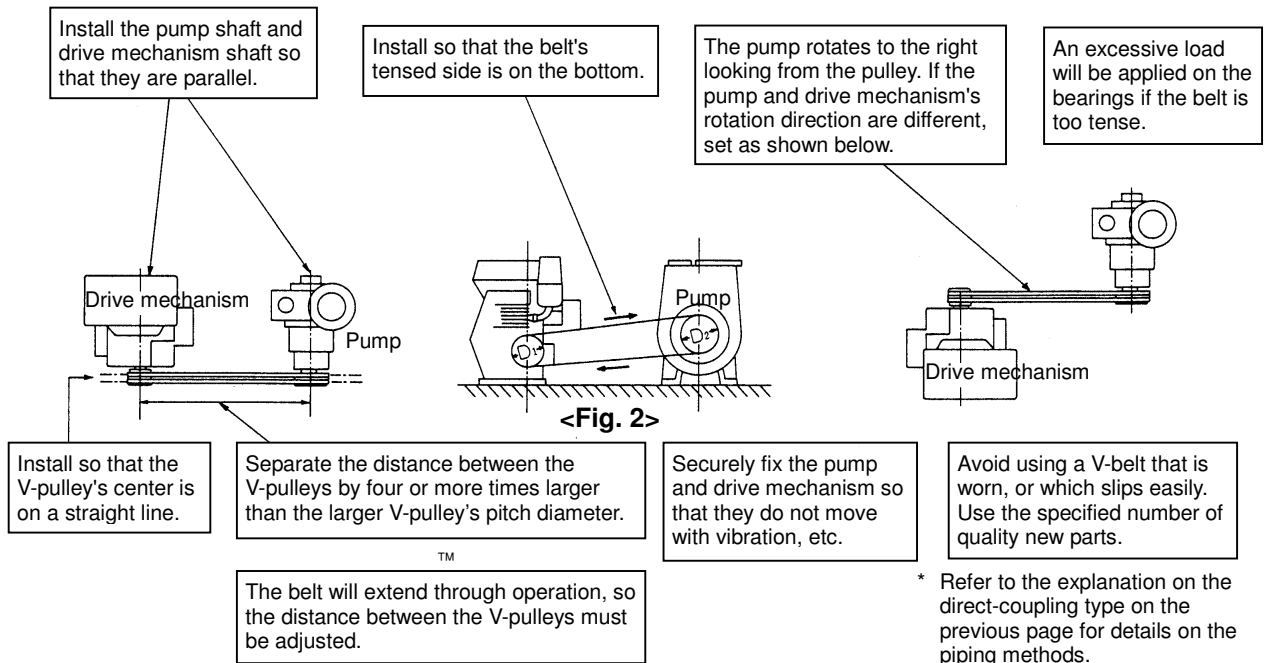
D_1 = Pump pulley pitch diameter (mm)
 D_2 = Drive mechanism pulley pitch diameter (mm)
 N_1 = Pump speed (r.p.m.)
 N_2 = Drive mechanism rated speed (r.p.m.)

• Use the V-pulley shown below.

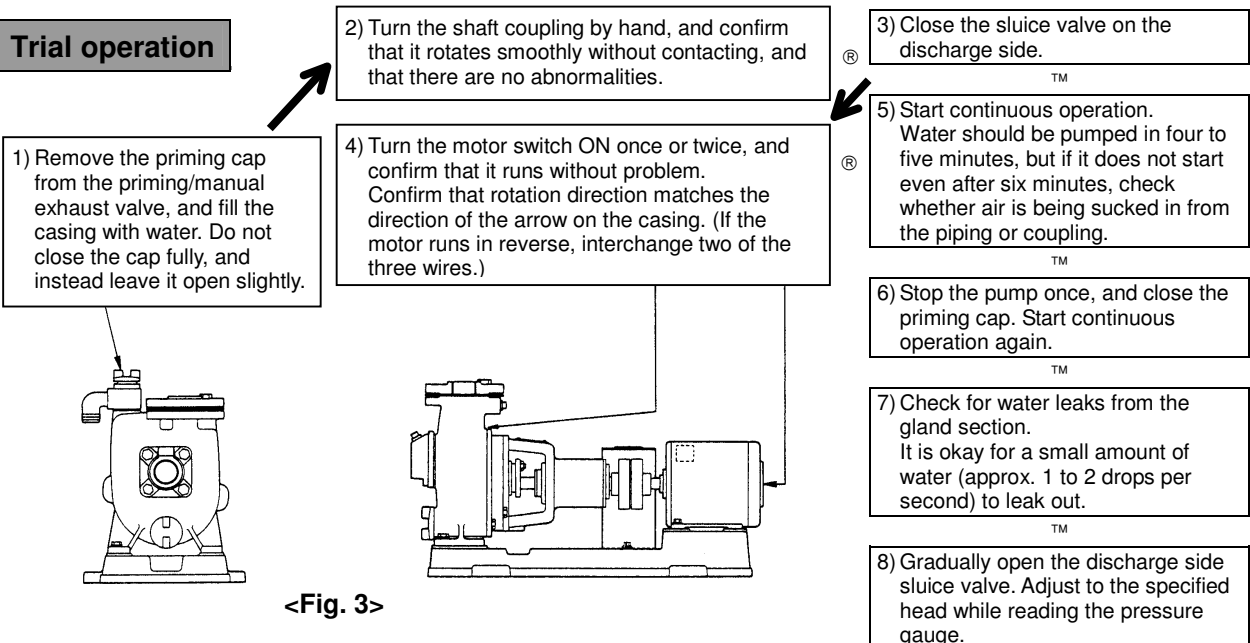
Type	V-pulley	Type	V-pulley
GMS-40-A	3½A2	GHS-65-A	125A2
GHS-40-A	3½A2	GMS-80-A	80A2
GMS-50-A	3½A2	GHS-80-A	125B2
GHS-50-A	80A2	GHS-100-A	125B2
GMS-65-A	80A2		

* The V-pulley is an optional accessory.

• Setting methods



Trial operation



Maintenance and Inspection

Daily control	<ul style="list-style-type: none"> • Close the pressure gauge and vacuum gauge cocks when not measuring. • Do not run the pump for a long time in a state deviated from the planned point. (The pump life will shorten.) • Do not run the pump for a long time in the dry state or with the discharge side sluice valve closed. (The inside of the pump could burn.)
When operation is stopped	<ul style="list-style-type: none"> • Close the discharge valve before stopping the motor. • If the power fails during operation, turn the motor's switch OFF immediately and close the discharge valve.
Inspection	<ul style="list-style-type: none"> * Check the following items once a week. 1) Pressure gauge/vacuum gauge : Is the specified pressure value indicated? Is the indicator fluctuating vigorously? 2) Is water leaking from the pump or pipes, etc.? 3) Is there any abnormal vibration or noise? Is the bearing temperature correct?
When stopping operation for a long time	<ul style="list-style-type: none"> • Remove the pump's drain cap, and drain out all water from the pump.
Cold climate measures	<ul style="list-style-type: none"> • Pump : House the pump in a wood box lined with insulation material. • Piping : Wrap insulation material around the pipes, or lay them deep in the ground. (approx. 30cm in Tokyo or Osaka areas) • Remove all water from the pump's drain cap.
Gland packing	<p>Always keep spare gland packing on stock. (This is a consumable part, and must be replaced once/year under normal use, and every six months when the pump is used frequently.)</p> <p>If the gland packing is tightened too far, or if it is unevenly tightened, the shaft seal could overheat and drastically reduce the packing life.</p>

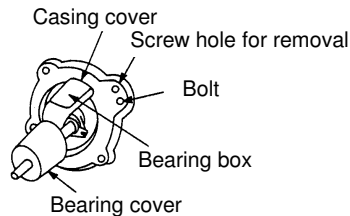
Dimensions and quantity of inserted packing

Type	Packing dimensions	Qty.	Type	Packing dimensions	Qty.
GS-40	ø20 × 32 × 6	4	GS-80	ø20 × 32 × 6	4
GS-50	ø20 × 32 × 6	4		ø25 × 32 × 6	4
GS-65	ø20 × 32 × 6	4	GS-100	ø25 × 32 × 6	4
	ø25 × 38 × 6	4			

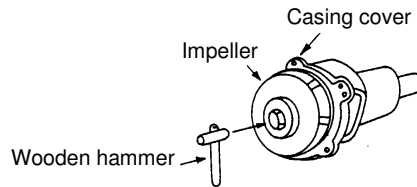
Disassembly and Assembly

- 1) Casing cover Remove the bolt installing the casing cover and casing, and insert bolts into the screw hole for removing the bearings. When the bolts are tightened evenly, the bearings will come off with the impeller. <Fig. 4>
- 2) Impeller..... Lift up the impeller washer's jaws, and remove the nut. The impeller will come off. (If the impeller cannot be removed because of rust, remove the bearing cover, and lightly tap the shaft with a wooden hammer as shown in <Fig. 5>. Use of a metal hammer is prohibited.)
- 3) Main shaft..... Remove the packing pressure, and pull out the gland packing. When the ball-bearing cover is removed, the shaft will come off with the ball-bearings.

* Before assembling, clean each section, and then assemble following the disassembly procedures in reverse.



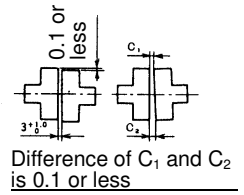
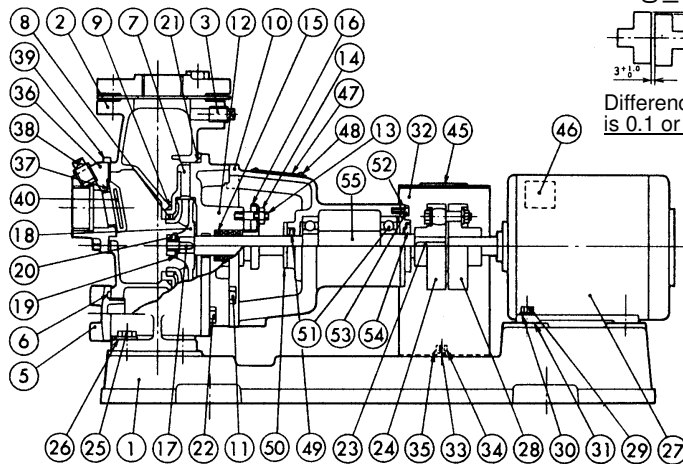
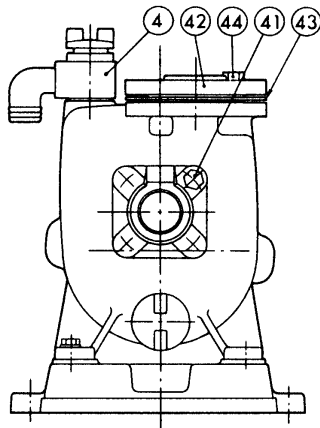
<Fig. 4>



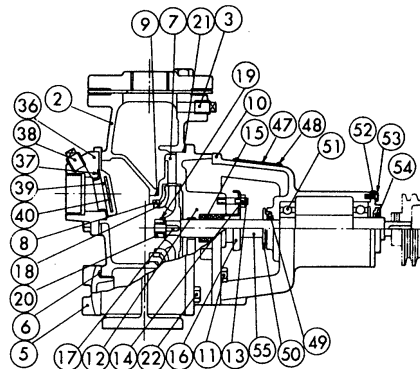
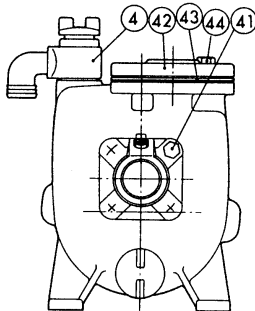
<Fig. 5>

Kawamoto GS-M type self-priming centrifugal pump structural drawing

<Direct-coupling type>



<Solo type>



No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Bed	FC		30	Spring washer	SUS304	
2	Casing	FC		31	Square shim	SUS301 or SGP	
3	Plug	SWCH10K	3/8	32	Shaft coupling guard	SPCC	
4	Cap	-	For priming (1"x3/4)	33	Bolt	SUS304	
5	Cap	SCS13	For draining (1")	34	Spring washer	SUS304	
6	O-ring	Rubber (NR)		35	Flat washer	SUS304	
7	Guide vane	Resin		36	Square flange with valve seat	FC	
8	Liner ring	SCS13		37	Flange valve seat	SUS304	
9	O-ring	Rubber (NR)		38	Plug	SWCH10K	3/8
10	Bearing box	-		39	Square packing with valve seat	Rubber (NR)	
11	Bolt	SUS304		40	Core metal	SS34P	
12	Casing cover	FC		41	Bolt	SUS304	
13	Stud bolt	C3604		42	Flange	FC	
14	Nut	C3604		43	Flange packing	Rubber (NR)	
15	Gland packing	-		44	Bolt	SUS304	
16	Packing pressure	SUS304CP		45	Caution label	Flexible PVC	
17	Key	SUS304		46	Caution label	Flexible PVC	
18	Impeller	FC		47	Name plate	A1100P-H24	
19	Impeller washer	SUS304		48	Drive screw	SWRM10	
20	Nut	SUS304		49	Deflector	Rubber (NR)	
21	O-ring	Rubber (NBR)		50	Deflector	Rubber (NR)	
22	Bolt	SUS304		51	Ball-bearing	-	
23	Key	SUS304		52	Bearing cover	FC	
24	Shaft coupling	FC	With bushing hole	53	Bolt	SUS304	
25	Bolt	SUS304		54	Deflector	Rubber (NR)	
26	Spring washer	SUS304		55	Main shaft	SUS304 + S35C	
27	3-phase motor	-	Drip-proof structure				
28	Shaft coupling	FC	With bolt				
29	Bolt	SUS304					

Troubleshooting

Unexpected trouble could occur. However, it is important to take appropriate measures immediately when an abnormal condition is found. If the cause of the trouble is not clear, contact your dealer or designated service center. Notice the pump type, serial No. and trouble (fault) state making an inquiry.

Troubleshooting

Fault	Cause	Countermeasures
Does not start	Motor fault	Contact your dealer
	The pump does not rotate Jammed with foreign matter	If the shaft cannot be turned by hand, foreign matter may be jamming it, or rust may have formed (Disassemble and repair)
Water is not sucked up after starting (even after self-priming time)	Faulty pump installation position	If the suction height is too high, or if the horizontal length is too long, change it.
	Air leak	Check whether there is an abnormality at the suction piping or pump seal.
	Insufficient priming	Fill the casing with sufficient water.
	Reverse rotation direction	Interchange two of the three motor connection wires.
	Blocked water path	Remove foreign matter from the impeller, return port and priming pipe (including valve and strainer).
	Suction/discharge side sluice valve closed	Open the sluice valve when starting.
The specified water rate or specified pressure is not attained	Air leak	Tighten each section, and check the seal sections
	Clogging caused by foreign matter	Remove foreign matter from the impeller and priming pipe.
	Reverse rotation direction	Interchange two of the three motor connection wires.
	Suction height is too high	Check whether the water level has dropped
The specified water rate or specified pressure is not attained	Push-up height is too high	Check the actual discharge head
	Part wear	Replace any parts which are worn, etc., from years of use
Abnormal noise	Operation deviated from specifications	Avoid using at levels deviated from the specified water rate and pressure.
	Suction height too high	Check the water level.
	Clogging caused by foreign matter	Check the impeller and priming/discharge pipes.
	Bearing fault	Check for water leaks and wear
	Rotating section contacts	Repairs required
	Faulty installation	Check the installation state
High levels of vibration	Faulty installation	Check the installation state
	Bent shaft	Repairs required
	Bearing fault	Check for damage and wear
	Abnormal impeller	Remove any foreign matter; check the balance
Overload, abnormal heating of motor, noise, etc.	Operation deviated from specifications	Use the pump at the specified water rate and pressure
	Rotating section contacts	Repairs required
	Improper fluid quality	Check the viscosity and specific gravity, etc. (including corrosiveness)

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