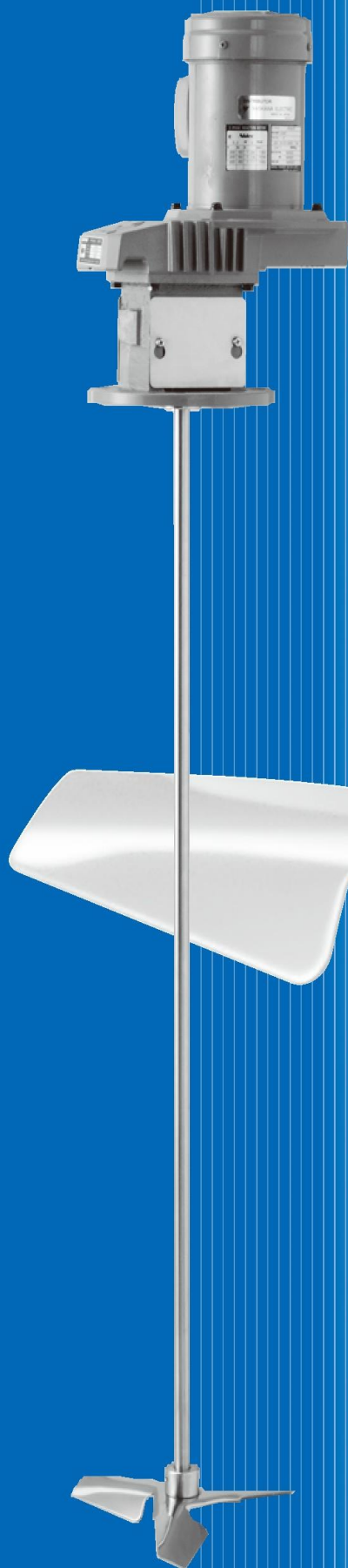


**SATAKE**  
MultiMix



# SATAKE MULTI A MIXER



## INSTRUCTION MANUAL MULTI A MIXER

■ AT-G (Medium-speed type)

## FOREWORD

Thank you very much for purchasing our product.

This mixer should be handled, used properly and also should be inspected periodically so that you can use this product for many years, safely and effectively.

This instruction manual contains much important information. Please read it carefully before use.



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## 1, SAFETY CONCERNS

This instruction manual contains some regulations and guidelines to be carefully observed to save you (users), other people around you, and also your properties. Please read this manual carefully, and use the product properly. And make sure that you keep this book close to you so that at any time you can clear up any questions and doubts.

- ◇ Following 2 alert labels explain the level of harm and damage which may be caused when you ignore the instructions on these labels and use the product in an improper way.

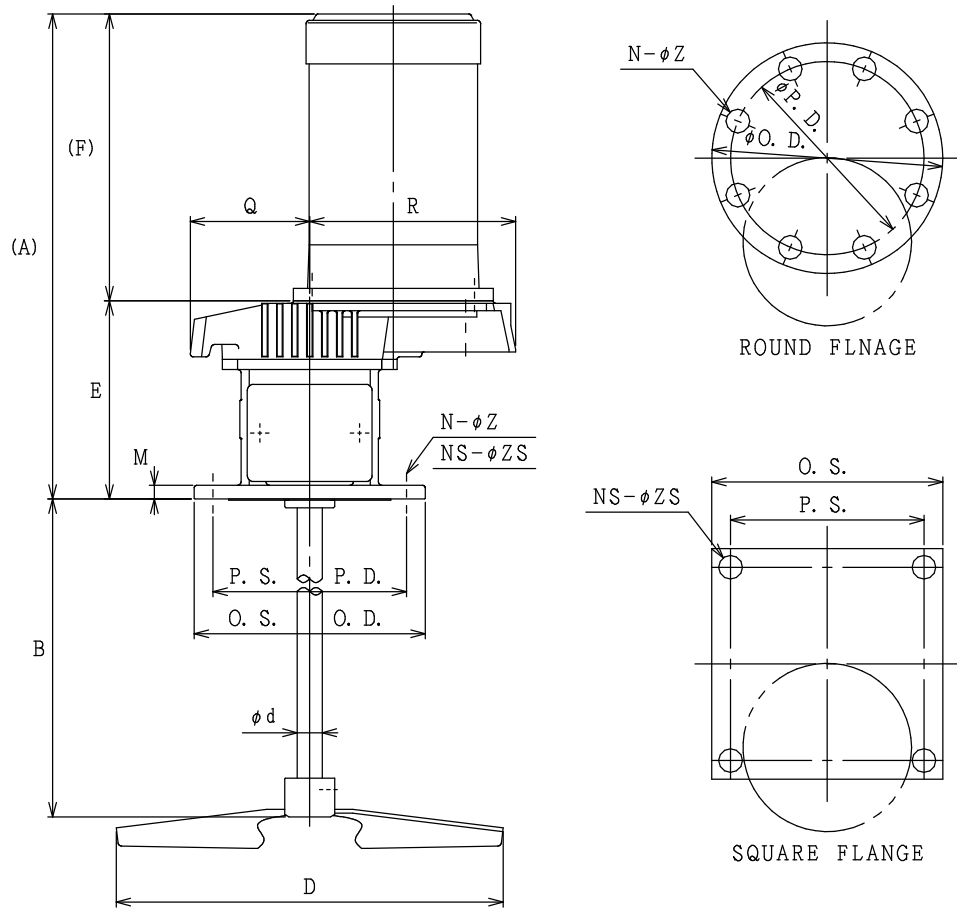
 <b>WARNING</b>	<b>This label shows that it may cause some injury or death when you ignore the instruction.</b>
 <b>CAUTION</b>	<b>This label shows that it may cause harm, or it may cause only physical loss or damage when you ignore the instruction.</b>

## 2, STANDARD SPECIFICATIONS

### ●Standard specifications of AT-G (Medium-speed type)

Model	Frame No.	Motor			Impeller				Overall shaft length (mm)		
		Power (kW)	Poles (P)	Phase, Voltage (V)	Frequency (Hz)	Rotation speed (min <sup>-1</sup> )	Diameter (mm)	Stages (stage)			
AT14-G□□-0.065A	1	0.065	4	1 phase • 100	50	300	150	1	689		
					60	360					
AT14-G□□-0.1A		0.1	4	1 phase • 100	50	300	220	1		889	
					60	360					
AT14-G□□-0.1B		0.1	4	3 phase • 200	50	300	220	1			889
					60	360					
AT24-G□□-0.2A	2	0.2	4	1 phase • 100	50	300	270	1	1109		
					60	360					
AT24-G□□-0.2B		0.2	4	3 phase • 200	50	300	270	1		1109	
					60	360					
AT34-G□□-0.4B	3	0.4	4	3 phase • 200	50	300	310	1	1399		
					60	360					
AT46-G□□-0.4B	4	0.4	6	3 phase • 200	50	200	350	1	1626		
					60	240					
AT44-G□□-0.75B		0.75	4	3 phase • 200	50	300	350	1		1626	
					60	360					
AT56-G□□-0.75B	5	0.75	6	3 phase • 200	50	200	400	1	1856		
					60	240					
AT54-G□□-1.5B		1.5	4	3 phase • 200	50	300	400	1		1856	
					60	360					

※ The standard materials for the shafts and the impellers are SUS304 and SUS316.



●Standard dimension table

Model	Frame No.	Motor (kW)	Dimension(mm)															Approx. mass (kg)	
			(A)	B	B-MAX (Option)	$\phi d$	D	E	(F)	M	NS- $\phi ZS$	O.S.	P.S.	N- $\phi Z$	O.D.	P.D.	Q		R
AT-G	1	0.065A	(317)	600	1050	13	150	135	(182)	12	4-15	165	130	8-15	185	150	86	134	14
		0.1A	(317)	800	1050	13	220	135	(182)	12	4-15	165	130	8-15	185	150	86	134	14
		0.1B	(308)	800	1050	13	220	135	(173)	12	4-15	165	130	8-15	185	150	86	134	14
	2	0.2A	(365)	1000	1250	16	270	160	(205)	12	4-15	165	130	8-15	185	150	96	165	19
		0.2B	(335)	1000	1250	16	270	160	(175)	12	4-15	165	130	8-15	185	150	96	165	19
	3	0.4B	(421)	1300	1500	20	310	191	(230)	12	4-19	190	155	8-19	210	175	112	183	25
	4	0.75B	(500)	1500	1750	25	350	240	(260)	16	4-23	230	190	8-23	250	210	125	215	40
5	1.5B	(578)	1700	1850	30	400	276	(302)	16	4-23	250	210	8-23	280	240	147	245	60	

- ※ Dimension A and F in the table above depend on the specification of the motor.
- ※ The approximate mass of a mixer shows the total weight which includes the motor, the mixing shaft, and the impellers.
- ※ The standard coating color for this mixer is N5.5 of Munsell color system. The coating colors for the motor and reducer are their manufacturer's standard colors.

### 3, CHECK THE FOLLOWING MATTERS

- (1) The main body and the accessories are packed in a cardboard box. The mixing shaft is put in a cardboard tube.
  - (2) In the cardboard box, there are the main body, the impeller, and a plastic bag which contains some tools and the warranty certificate of the mixer.
  - (3) Is it the same mixer as you ordered? Are there all of the accessories? Are their sizes are correct? Please see the name plate of the main body to check if the model is the same one as you ordered.
  - (4) Are there no damage on the mixer and the accessories?
- ※ If you find any problem concerning affaires above, immediately contact us or the agent.

**Type and size of the tools in kit**

Frame No.	Model	Power (kW)	Hex wrench (Width across flat)	
1	AT-14	0.065	3mm	(5mm)
		0.1		
2	AT-24	0.2	4mm	(5mm)
3	AT-34	0.4		
4	AT-46	0.4	5mm	(6mm)
	AT-44	0.75		
5	AT-56	0.75		
	AT-54	1.5		

- ※ Hex wrenches of the sizes enclosed in parentheses are supplied only for the gland packing type mixers.

### 4, PLEASE BE AWARE OF THE FOLLOWING THINGS

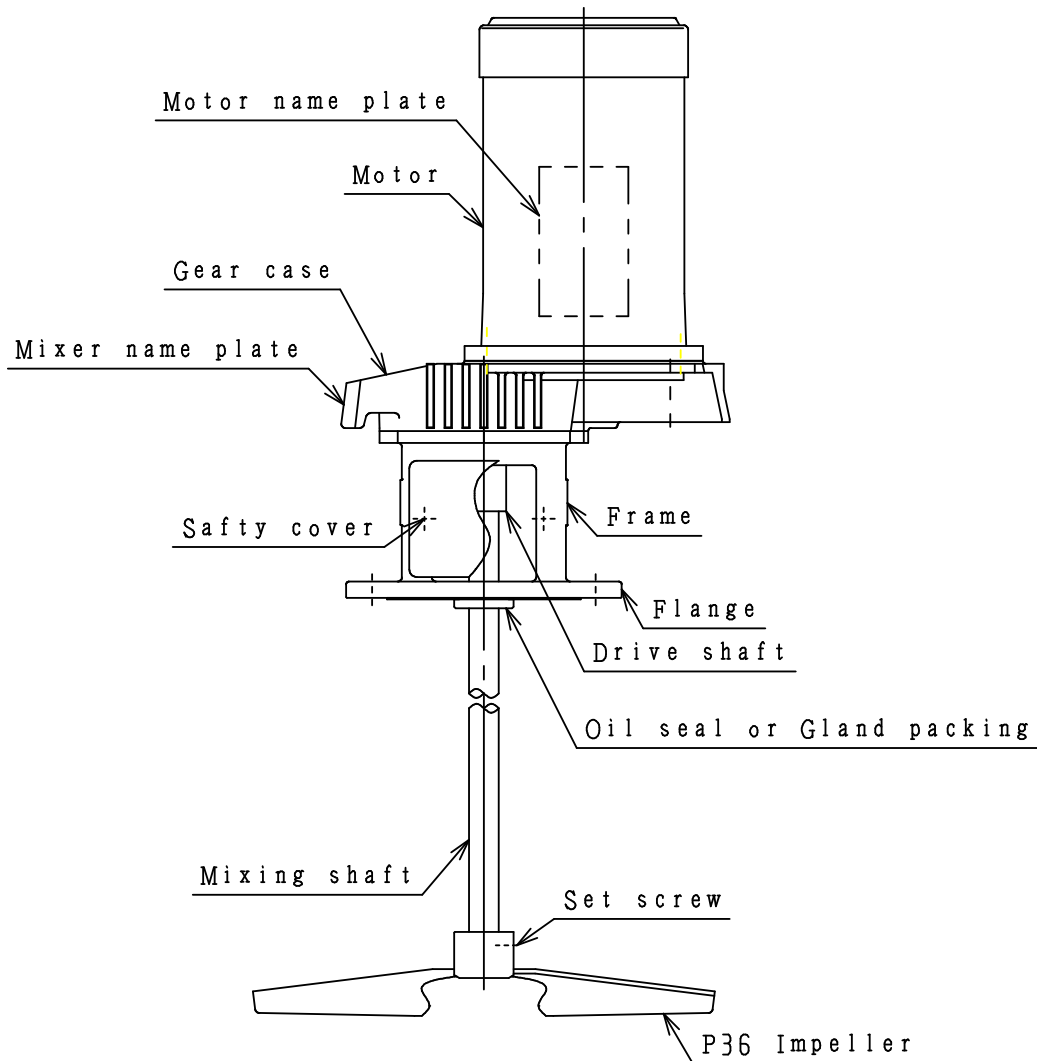
This product is manufactured under a strict quality control system, and we guarantee the normal and proper operation for 1 year. However, any accident caused in the following situations is not included in the warranty.

- (1) When you use the mixer in a different way from its catalogue or the ordered specification.
  - e.c. The liquid specification (concentration, temperature, specific gravity or viscosity) is different from what you have informed of.
  - e.c. The volumes of liquid, mixing time or operating conditions have been changed.
- (2) When you use the mixer in an improper way which is against this manual.
- (3) When you make any man-caused mistake: dropping, pouring water, etc.
 

And when natural disasters are happened: earthquake, storm and flood, thunderbolt, etc.

- (4) When the mixer is broken by abnormal vibration caused by strength poverty of a tank or improper installation environment. The disadvantages caused by this kind of troubles are also not included in the warranty.
- (5) When secondary disadvantages (both human cost and economic loss) occur by using the mixer, for example, the property change of the process liquids.
- (6) Opportunity loss caused by troubles of the mixer.

## 5, APPEARANCE AND NAMES OF MAIN PARTS



**⚠ WARNING**

**Wear safeguards or protectors (helmet, safety belts, etc.) during installation.**

**⚠ CAUTION**

**Pay attention not to drop the mixer during installation. (Make sure that you have a secure foothold.)**

**Avoid hand-carry and use a hoist and carts when you move or install the mixer.**

**Do not install the mixer in corrosive or explosive gas atmospheres, vapor atmosphere, dusty areas, and poor ventilated areas. (Ambient temperature: 40°C or less, Humidity: 85%RH or less, unless otherwise specified.)**

**Make sure that you have tightened the flange bolt, the flange nut, and set screws for the impeller and drive shaft, and check if they are not loosened periodically.**

**-1. Check the followings prior to installation**

- (1) Installation process should be carried out by specialists for machine installation who have learned safety education and machine installing.
- (2) Make sure that the tank itself is firmly fixed and stable. If you operate the mixer in an unstable tank, the shaft may be bent by a resonance phenomenon.
- (3) Levelness of the mounting nozzle

The mixer should be mounted on a tank so that the surface of the mounting flange is on the level. If it's not leveled off, that may cause shaft deflection especially when the mixing shaft is long. Refer to the table below for the levelness.

Rotation speed (min <sup>-1</sup> )	Length of the shaft from the flange down (mm)	Allowable nozzle levelness
150 or less	Less than 1500	Within 3mm/m
	1500 or more	Within 2mm/m
More than 150 and less than 400	Less than 1500	Within 2mm/m
	1500 or more	Within 1.5mm/m
400 or more	Less than 1500	Within 1.5mm/m
	1500 or more	Within 1mm/m

**(4) Strength of Mixer mounting part**

In consideration of vibration during operation, please check the strength and reinforcement of mounting part such as ribs. Also, please confirm that no distortion occurs in the levelness of the nozzle flange surface during rib welding. If the mounting part is made of channel materials, please check if they are integrated in parallel crosses.

Deflection amount  $\delta$  by dynamic load for a mounting structure which is made of channel materials shall be equal to or less than 0.5mm/m or not exceed 3 mm.



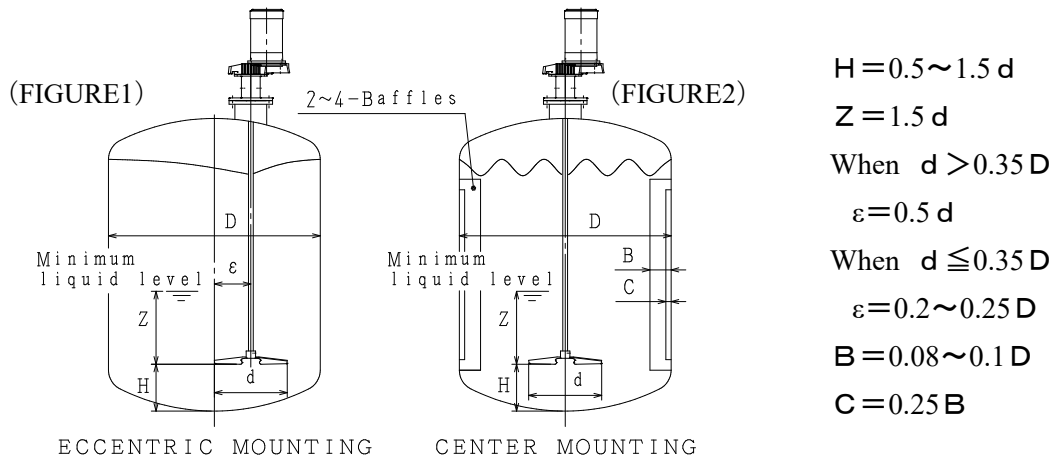
(Dynamic load is equal to twice static load.)

#### (4) Mounting position

Mounting position is one of the important factors of the efficient mixing in the optimum conditions. You need to decide where you mount the mixer considering the model of your mixer, object of mixing, shape of the tank you use, and specification of the process liquids, etc.

##### ① Cylindrical tank

In case of middle or high Reynolds number (low viscosity liquid) operation by center positioned mounting, you should install 2~4 pieces of baffles radially and equiangularly as the figures below.



##### ② Rectangular tank

When you use this type of tank, you don't need to install any baffle even if you mount the mixer at the center of the tank. However, if you process a high viscosity liquid or slurry which contains solids in it, you'd better chamfer or roundly chamfer the bottom periphery of the tank to avoid accumulation.

## -2. Procedures

### ⚠ CAUTION

**Do not sling the drive shaft with rope, and do not hold it in your hands. The shaft may be bent and it will be the cause of tank damage.**

- (1) Put the impeller and the mixing shaft into the tank. If the tank nozzle is large enough to put the mixing shaft with the impeller attached, put them into the tank as is.
- (2) Hoist the body of the mixer vertically, and insert the mixing shaft which has already been in the tank into the drive shaft in the direction indicated in Figure3 and 4.  
Checking the countersink marks on the mixing shaft, tighten all the set screws of the drive shafts with the supplied hex wrench.

※If you use a gasket for your mixer, set it between the mixer and nozzle flange in advance.

Set the mixing shaft as the following procedures.

※In the case the set screws (2 or 3 pcs.) are placed in tandem, see Figure 3.

(a) Loosen the hex socket set screws (b),(c), and remove (a). Then insert the mixing shaft into the drive shaft, and align the countersink mark (A) with (a).

(There are 2 types of mixers, one has 2 set screws, (a) and (b), and the other has 3 set screws, (a), (b), and (c).)

(b) Keeping the position, tighten the set screws (b) and (c) with the hex wrench in kit. Then tighten the set screw (a) on the countersink mark (A).

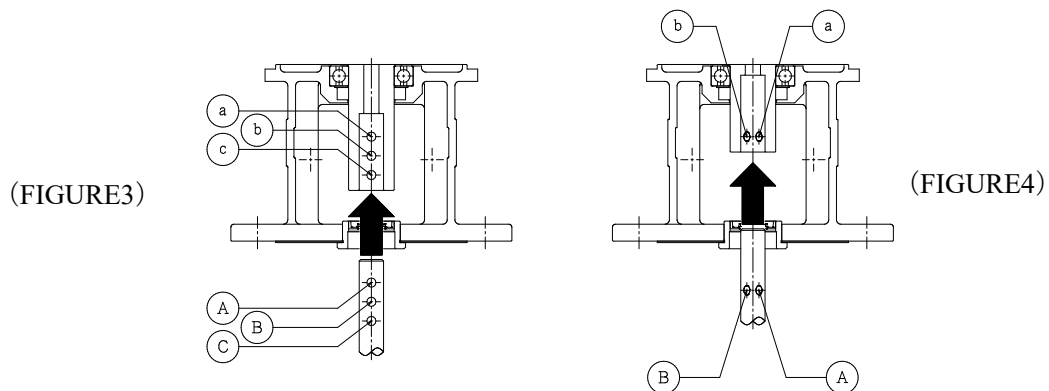
(c) Tighten 3~4 times each of the set screws (a), (b), (c) till their tips bite into the countersink marks.

※In the case the set screws (2 pcs.) are abreast each other, see Figure 4.

(d) Remove the hex socket set screws (a) and (b). Then insert the mixing shaft to the drive shaft, and align the countersink marks (A) and (B) with (a) and (b).

(e) Keeping the position, tighten the set screws (a) and (b) with the supplied hex wrench.

(f) Tighten 3~4 times the set screws (a) and (b) till their tips bite into the countersink marks.



(3) Put the mixer down quietly and vertically on the tank nozzle, and fix it with the flange bolts.

(4) After installation, remove the fan cover of the motor, and rotate the fan by hand to check if the mixing shaft does not have an abnormal deflection. If you keep operating a mixer ignoring even a small deflection, it may get gradually bigger and can cause shaft bending. When you find any abnormality like shaft bending, please contact us.

(5) Finally, get into the tank and attach the impeller to the mixing shaft. There is a countersink mark on the mixing shaft, so check the mark and tighten the set screw firmly with the hex wrench in kit.

At this time, be careful not to put the impeller upside down.

※Pay attention not to give an excessive force on the shaft while you tighten the set screw of the impeller.

### ⚠ CAUTION

If you tighten the set screws at wrong positions, the shafts may be damaged and not be able to be pulled out.

Pay much attention so that powder or mote is not put into the insert hole (for the mixing shaft) of the drive shaft. In the worst case, the mixing shaft would not be pulled out from drive shaft.

## 7, PREPARATION FOR OPERATING

### -1. Check the body of the mixer

- (1) Make sure that each bolt, nut, screw is tightened properly, and that you have not left any tools or other things in the tank.
- (2) Jiggle the frame of mixer and check if there is no chatter caused by looseness of the flange bolts. If you hear any clatter, retighten these bolts.
- (3) Make sure that the impeller is not set upside down.

### -2. Electrical wiring

#### **WARNING**

**Wiring works should be carried out using good wiring instruments by a qualified person. Since live-wire operations are very dangerous, please disconnect and lock out before working.**

**Power cord should be connected steadily by using solderless terminals or something. To prevent accidents caused by electric shock, the motor and inverter should be grounded. The motor has an earth screw in terminal box or around motor fan cover, so it should be connected.**

#### **CAUTION**

**This product does not have any overload protective devices. So, please provide the devices (thermal relay, fuse, non-fuse breaker, etc.) on the power side line. In addition, we recommend you to provide safety devices such as a breaker, ammeter, and emergency stop device to all of your mixers.**

- (1) Breaker and magnetic switch

Since full-load current (amperage rating) depends on motor manufacturers and type, please choose breakers and magnetic switches of adequate size.

- (2) Connect the wires as below.

#### Wire connection for AT-G

MODEL	1Phase (100V)	3Phase (200V)
AT-G	0.065~0.2kW	0.1~1.5kW
	R – Red – Black	R – U
	S – Yellow – Blue	S – W
		T – V

The power cords shall be cable or cord, and the cords whose cross section area is 2.0 mm<sup>2</sup> or more are recommended.

### -3. Rotation direction

After the electric wiring, make sure to check the rotation direction of the mixer.

As written on the name plate of the main body, the rotation direction is clockwise as viewed from above. When you start operating the mixer to check the direction, please stop it immediately (within 1~2 seconds after start). If the rotation direction is different from mentioned above, reconnect the wires correctly. When you reconnect the wires, confirm if the shaft has stopped completely.

## 8, OPERATING SUGGESTIONS

### WARNING

**Never touch the rotating parts during operation. That may cause much damage to your body.**

### CAUTION

**Operation that liquid level passes over impeller position and empty operation are forbidden. If you operate the mixer in those ways, the shaft may be bent and the impeller, the mixing shaft, or even the mixing tank may be damaged. You would better provide interlocks to stop operation when the liquid level comes to the minimum.**

**Do not splash and pour water on the motor and the main body directly.**

Definitions of the operations mentioned above are below.

#### **■ Operation that liquid level passes over impeller position    ✖ Prohibited in principle**

It means the operation within ten minutes from the stable condition which does not generate suction vortices constantly (minimum liquid level in drawing) to the condition that the lowest impeller is exposed completely in the air (or opposite procedures) when liquid is drained or charged during mixing operation.

If the operation mentioned above is continued for ten minutes or more, the operation is called “Aeration (unstable condition that generates suction constantly and that impeller hits the liquid severely).” The aeration causes shaft bending etc. and therefore, pay attention for that. (Confirm that there is no shaft-end deflection and bolt loosening.)

#### **■ Empty operation    ✖ Prohibited in principle**

It means that the lowest impeller rotates in air, for example, the operation that liquid level passes over impeller position. In empty operation, there is no damping effect by liquid, and that may cause shaft bending. Stop the operation within ten minutes.

- (1) The distance between the impeller and the liquid level has to be 1.5 times or more of the impeller diameter.
- (2) Make sure that the motor load current is within the rated current. If the motor is overloaded, immediately stop operating, and inform us of the operating condition and the current situation, etc.

- (3) When you charge liquids or solid materials into the mixing tank during operation, charge them little by little not to shock the impeller. When you charge lumpy materials (more than 3 cm<sup>3</sup>), please crush them before charging. If the materials have large volume, protect the impeller by using a screen or a grille plate not to damage the impeller.
  - (4) When the vibration becomes bigger than usual, immediately stop operating. Then rotate the mixer by hands to check if there is no abnormal shaft deflection or loosening of bolts.
  - (5) When your mixer gets abnormal high temperature or abnormal sound, stop operating immediately, and investigate the cause.  
 (Allowable temperature of motor: atmosphere temperature +45°C, MAX 90°C)  
 (Allowable temperature of gear section: atmosphere temperature +40°C, MAX75°C)
- ※ If you have these troubles mentioned above, please refer to the chapter “10, TROUBLESHOOTING” to take an adequate counter-measure.

## 9, MAINTENANCE AND INSPECTION

### **WARNING**

**When you do maintenance or inspection of the mixer, please turn the power off prior to these works. Be careful not to turn the switch on carelessly. We recommend you to put a panel showing “Do not supply electric power” around the switch.**

- (1) Routine maintenance check (for every parts of the mixer)
  - ① Make sure that there is no abnormal sound, vibrations, high temperature comparing to the test running at installation.
  - ② Make sure that all bolts are tightened properly.
- (2) Motor
  - ① Make sure that the process liquid is not changed from the original process specification.
  - ② Make sure that there is no abnormal high temperature caused by overload.
- (3) Shaft sealing
  - ① If you use the oil seal for your mixer, please grease periodically not to operate in dry condition so that you can extend the lifetime of it. And please inspect it once in every 1~1.5 year and replace it if needed.
  - ② If you use the gland packing, you don't need to grease it. However, please inspect it once in every 3~6 months whether the leakage get worse. The frequency of inspection depends on the operating condition. If the leakage quantity is big, please retighten the gland packing. Do not tighten up at once, but tighten it gradually avoiding uneven tightening.

※ Oil seal and gland packing cannot keep the air tightness and the pressure tightness. If you need to keep them, please order a mixer of mechanical seal type.
- (4) Bearings
 

All the bearings used for this mixer are the sealed bearings, so you do not need to lubricate them in principle. However, you need to inspect once in every 1~1.5 year depending on the condition or the atmosphere. (See the Bearing list below.)

(5) Gear

You do not need to lubricate the gear since it is made of engineering plastic which can be used without lubricant.

However, you need to check the gear sounds once in every 1~1.5 year depending on the atmosphere, temperature, etc.

(6) Shafts

①Make sure periodically that you don't use the mixing shaft with bend. You would better clean up the mixing shaft inserting hole of the drive shaft at regular intervals.

②If you keep using the mixer with its shaft bent, the bentness gets larger and the shaft tip (the impeller) may damage the mixing tank. Please be careful enough.

③If you find an abnormality with the shaft, please repair it or replace it with a new one. Then, investigate the cause.

**Bearing List**

Model	Power (kW)	Bearing	
		(1)	(2)
AT-14	0.065	6201ZZ	6005ZZ
	0.1		
AT-24	0.2	6203ZZ	6006ZZ
AT-34	0.4	6204ZZ	6008ZZ
AT-46	0.4	6305ZZ	6010ZZ
AT-44	0.75		
AT-56	0.75	6306ZZ	6011ZZ
AT-54	1.5		

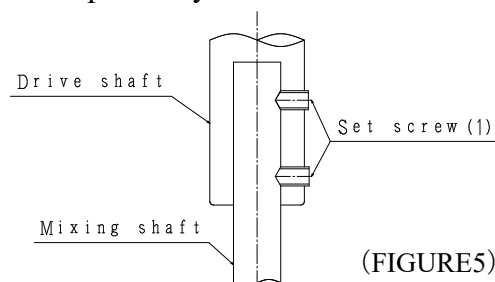
**-1. Disassembly**

Please follow the procedures below to assemble and disassemble the mixer when a trouble is found through regular inspection or routine check, or when the lifetime of some parts has passed and they need to be replaced.

Please see the figure on page 16 to understand the mixer structure before work.

Since some of the consumable parts are not available in the market, please inform us of the following data of your mixer and order the parts prior to disassembly: Model, Serial number, Rotating speed, Electric frequency. The data is on the name plate of your mixer.

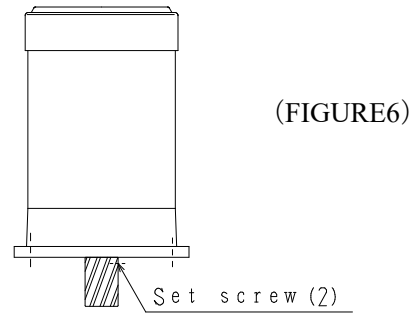
- (1) Turn the power off and disconnect the wires from the motor.
- (2) Loosen the set screws (1) to pull out the mixing shaft from the drive shaft. (Figure5)



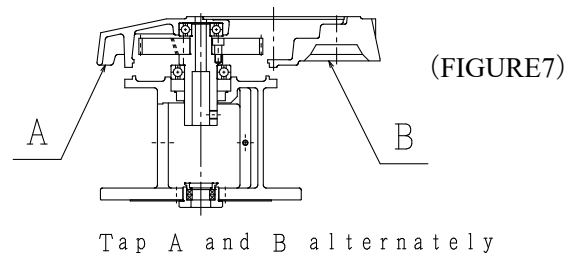
(3) Dismount the mixer from the mixing tank, and move it to a place safety and easy to work. During this process, do not sling the drive shaft with rope.

(4) Remove the bolts to dismount the motor.

(5) Loosen the set screw (2) to pull out the pinion.  
These parts are the consumable parts ②.  
(Figure6)

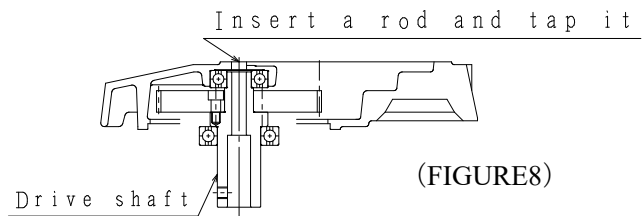


(6) Remove the gear case set bolts. Then tap the gear case lightly with a plastic (or wooden) hammer to separate the gear case from the frame. (Figure7)

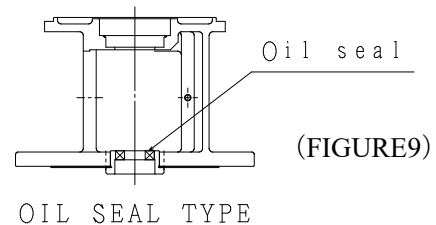


※ When you tap the gear case, tap A and B alternately avoiding tapping the same place many times, and lift it little by little.

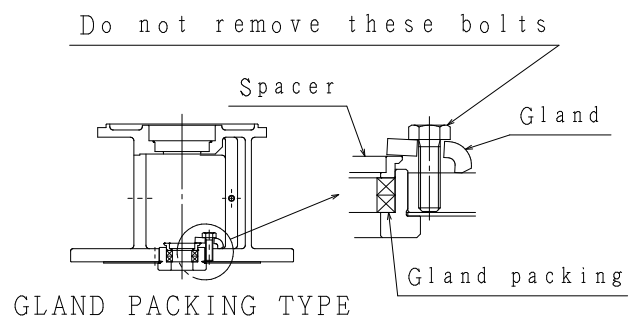
(7) Put a rod into the hole on the gear case and tap it to remove the drive unit. (Figure8)



※The consumable parts ① will be supplied as an assembled unit, so you don't need to disassemble the drive unit any more.



(8) If your mixer is oil seal type, remove the oil seal.(Figure9) And if you use a gland packing type mixer, remove the gland from the stuffing box to put the gland packing out.(Figure10)



(9) Check and replace the consumable parts and any broken parts.

This is the end of the disassembly. Please disassemble only the section that you need to replace except at overhaul.

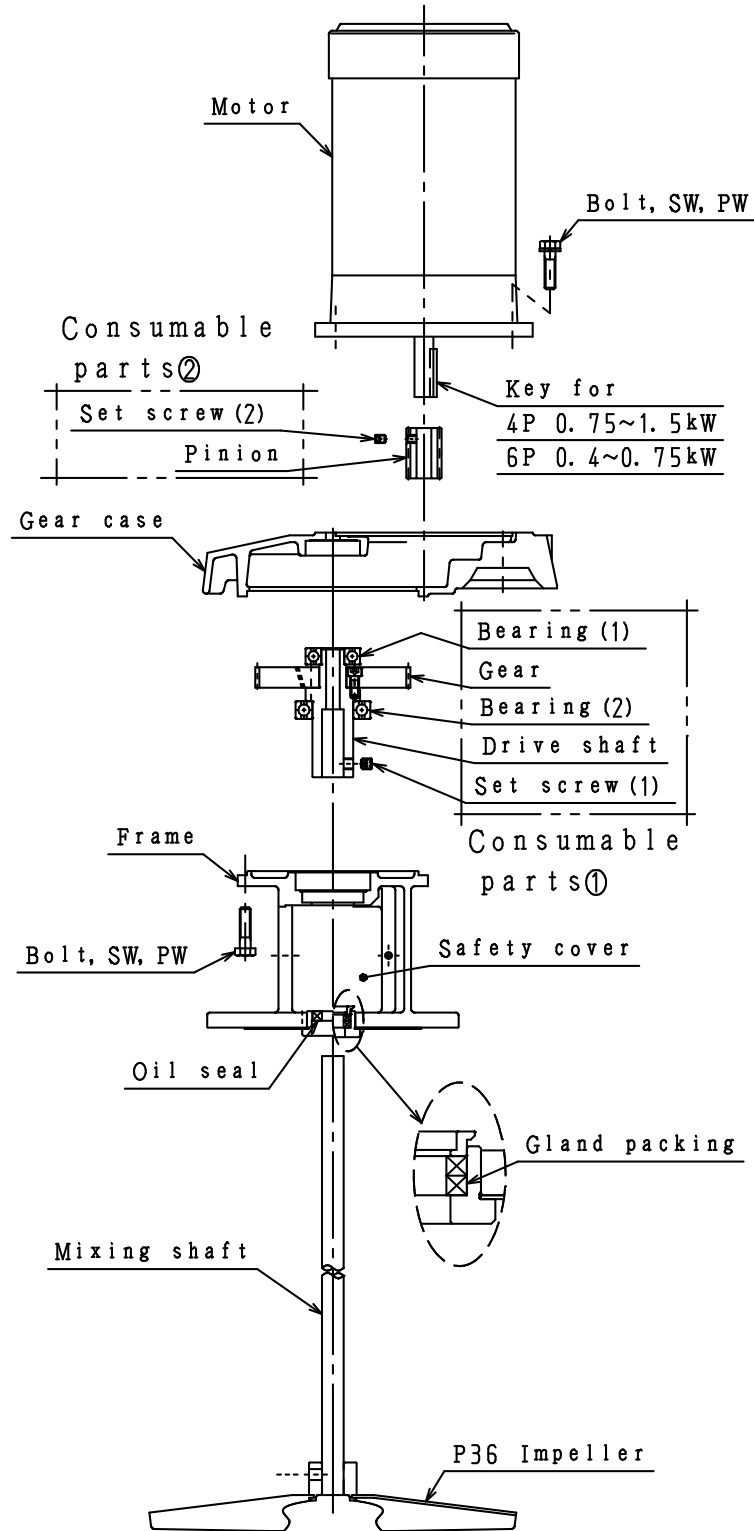
※Replace the consumable parts ① and ② at the same time.

※See the “Structural drawing” about the composition of the consumable parts ① and ②.

◇Lifetime of consumable parts

- (1) Consumable parts ① (gear, bearing, etc.) ————— about 3 years  
 Consumable parts ② (pinion, etc.) ————— about 3 years  
 (2) Sealing parts (oil seal, gland packing, etc.) ————— about 1 year

## Structural drawing





### Consumable parts list

Model	Power(kW)	Oil seal type (NBR)	Gland packing type (V#8132)	Parts ①	Parts ②	Key
				Drive shaft& Gear (Drive unit)	Pinion	
AT-14	0.065	VC13285	□4.8×φ13×φ23	6201ZZ/6005ZZ	Set screw(2)	None
	0.1			Set screw(1)	M6	
AT-24	0.2	VC16305	□4.8×φ16×φ26	6203ZZ/6006ZZ	Set screw(2)	None
				Set screw(1)	M6	
				M8		
AT-34	0.4	VC20356	□5.9×φ20×φ32	6204ZZ/6008ZZ	Set screw(2)	None
				Set screw(1)	M6	
				M8		
AT-46	0.4	VC25405	□7.9×φ25×φ41	6305ZZ/6010ZZ	Set screw(2)	Necessary
AT-44	0.75			Set screw(1)	M6	
				M10		
AT-56	0.75	VC30456	□7.9×φ30×φ46	6306ZZ/6011ZZ	Set screw(2)	Necessary
AT-54	1.5			Set screw(1)	M8	
				M10		

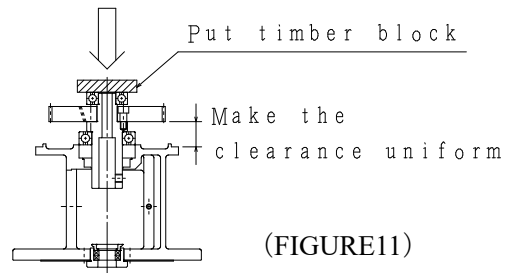
※ The Consumable parts ① will be supplied as a unit (drive unit) that a gear and bearings are set to the drive shaft.

## -2. Assembly

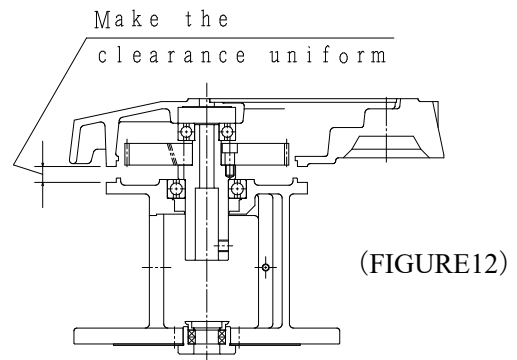
(1) Assembly procedure is the reverse of disassembly procedure. First, set the oil seal or gland packing in.

(2) Put the consumable parts ① on the frame to make the peripheral clearance between the frame and drive unit uniform. Then put a timber block on the drive shaft, and hit it lightly with a plastic (or wooden) hammer to set it in. (Figure11)

Tap with plastic  
(or wooden) hammer

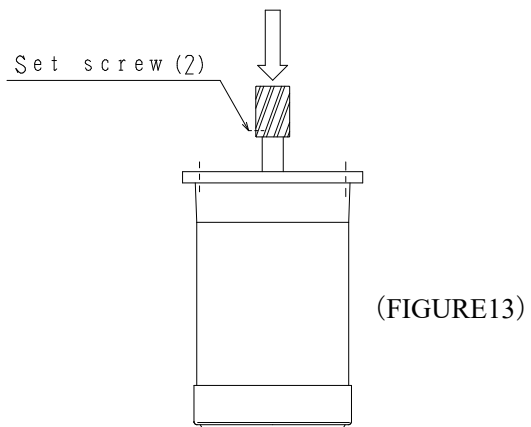


(3) Put the gear case on the bearing of the consumable parts ①, and tap the gear case to set it in till the clearance is filled. (Figure12) Then, tighten up the gear case and frame with bolts and washers.



(4) Set the motor on a stable place, and insert the motor shaft into the pinion (consumable parts ②) completely by tapping with a plastic (or wooden) hammer. (If your mixer is equal to or bigger than the frame number 4, do not forget to use a key.) After that, tighten the set screw (2) surely. (Figure13)

Tap with plastic  
(or wooden) hammer



(5) Put the motor on the gear case, and then set it with bolts and washers. This is the end of the assembly.

- ※ The consumable parts ① and ② should be replaced at the same time.
- ※ When you tap parts with a plastic (or wooden) hammer, be careful not to damage the bearing, etc.
- ※ The parts can be easily assembled if you put a quite small dollop of grease to the housing of bearings.
- ※ Please read the chapter “6, INSTALLATION” to install the mixer that has already been assembled.

## 10, TROUBLESHOOTING

### 1. Shaft deflection

CAUSE	DETAIL	MEASURES
Shaft bending	<ul style="list-style-type: none"> <li>①The shaft was damaged during transportation, and used as is.</li> <li>②Shaft was stored in a bad condition.</li> <li>③The shaft was slung with rope.</li> </ul>	<ul style="list-style-type: none"> <li>●Modify the bent of the shaft.</li> </ul>
Bad installation	<ul style="list-style-type: none"> <li>①Poor tightening for the flange bolt and nut.</li> <li>②The flange is not horizontal. (The shaft position is out of the vertical.)</li> </ul>	<ul style="list-style-type: none"> <li>●Retighten the flange bolt and nut.</li> <li>●Correct the tank nozzle</li> </ul>
Bad assembling	<ul style="list-style-type: none"> <li>①The jointing parts are not fitted each other.</li> <li>②Improper installation of the impeller.</li> </ul>	<ul style="list-style-type: none"> <li>●Reassemble</li> </ul>
Rotation range	<ul style="list-style-type: none"> <li>①The mixer is operated in the critical number range by variable-speed driving.</li> </ul>	<ul style="list-style-type: none"> <li>●Avoid the critical number range.</li> </ul>
Improper use	<ul style="list-style-type: none"> <li>①Empty operation or operation that liquid level passes over impeller position was done.</li> <li>②Installing position or liquid level is improper.</li> </ul>	<ul style="list-style-type: none"> <li>●Stop these operations.</li> <li>●Remodel the tank or change the mixer mounting position.</li> </ul>
Bad influence from materials to be mixed	<ul style="list-style-type: none"> <li>①Solid materials hit the impeller and shaft when the materials are put into the tank.</li> <li>②A foreign material hit and deformed the impeller.</li> <li>③The impeller got unbalanced because of adhesion of scale or fibrous materials.</li> <li>④A part of the impeller was dropped down by corrosion of the process liquid.</li> </ul>	<ul style="list-style-type: none"> <li>●Put solid materials in a finely-chopped state.</li> <li>●Install a screen or a grid plate in the tank.</li> <li>●Remove the foreign material and repair the deformity.</li> <li>●Remove the scale, etc.</li> <li>●Replace the impeller.</li> </ul>

### 2. Mixer vibration

CAUSE	DEATAIL	MEASURES
Bad installation	<ul style="list-style-type: none"> <li>①Poor tightening for the flange bolts and nuts.</li> </ul>	<ul style="list-style-type: none"> <li>●Retighten the bolts and nuts.</li> </ul>
Strength poverty	<ul style="list-style-type: none"> <li>①Strength poverty of the stand, lug, or shell of the tank.</li> <li>②Strength poverty of the mixer mounting area (nozzle flange, beam).</li> </ul>	<ul style="list-style-type: none"> <li>●Reinforce the tank.</li> <li>●Reinforce the mounting area of the tank.</li> </ul>
Manufacturing defect	<ul style="list-style-type: none"> <li>①Misalignment of the jointing portion of the motor and gear case.</li> </ul>	<ul style="list-style-type: none"> <li>●Reassemble.</li> </ul>

### 3. Abnormal temperature rising

CAUSE	DETAIL	MEASURES
Overload	<ul style="list-style-type: none"> <li>①Overload caused by seizing of the bearing or sliding parts.</li> <li>②Mischoice of the impeller diameter and the rotating speed. (Information poverty of liquid spec.)</li> <li>③The actual process liquid is different from the designed specification. (The liquid spec. was changed.)</li> </ul>	<ul style="list-style-type: none"> <li>●Replace the parts.</li> <li>●Reselect and change the specification.</li> </ul>
Improper power supply	<ul style="list-style-type: none"> <li>①Imbalance, a lack of phase, and decrease of the supply voltage.</li> </ul>	<ul style="list-style-type: none"> <li>●Adjust the supplied power.</li> </ul>
Improper atmosphere	<ul style="list-style-type: none"> <li>①High ambient temperature.</li> <li>②Poor cooling caused by thin air at high altitude.</li> </ul>	<ul style="list-style-type: none"> <li>●Change the motor specification.</li> <li>●Lower the temperature to 40°C or less</li> <li>●Improve the cooling performance.</li> </ul>
Improper use	<ul style="list-style-type: none"> <li>①Continuous driving by a non-inverter motor at low-frequency range.</li> </ul>	<ul style="list-style-type: none"> <li>●Replace the motor.</li> </ul>

### 4. Abnormal sound

CAUSE	DETAIL	MEASURES
Parts damage	<ul style="list-style-type: none"> <li>①Damage of the gear and the bearings.</li> </ul>	<ul style="list-style-type: none"> <li>●Replace the parts.</li> </ul>
Parts vibration and interference	<ul style="list-style-type: none"> <li>①The flange bolts are loosened.</li> <li>②The mounting area vibrates.</li> </ul>	<ul style="list-style-type: none"> <li>●Retighten the bolts.</li> <li>●Reinforce or repair the mounting area.</li> </ul>
Poor lubrication	<ul style="list-style-type: none"> <li>①Gland packing or oil seal are dried (hear high frequency sounds.)</li> </ul>	<ul style="list-style-type: none"> <li>●Grease a little.</li> </ul>
Friction	<ul style="list-style-type: none"> <li>①Too much tightening of the gland packing.</li> </ul>	<ul style="list-style-type: none"> <li>●Keep the moderate tightening force.</li> </ul>
Improper tuning	<ul style="list-style-type: none"> <li>①Nonmatching of the inverter and the motor.</li> </ul>	<ul style="list-style-type: none"> <li>●Retune the setting of the inverter.</li> </ul>

### 5. Failure to start

CAUSE	DETAIL	MEASURES
Improper power supply	<ul style="list-style-type: none"> <li>①Imbalance, a lack of phase, and decrease of the supply voltage.</li> <li>②The inverter or the magnetic switch is at Stop mode (alarm).</li> </ul>	<ul style="list-style-type: none"> <li>●Adjust the supplied power.</li> <li>●Reset the inverter or magnetic switch.</li> </ul>
Parts seizing	<ul style="list-style-type: none"> <li>①The motor is seized.</li> </ul>	<ul style="list-style-type: none"> <li>●Replace the parts.</li> </ul>
Bad assembling	<ul style="list-style-type: none"> <li>①Poor tightening for the set screws or their loosening.</li> </ul>	<ul style="list-style-type: none"> <li>●Reassemble.</li> </ul>

### 6. Other troubles

CAUSE	DETAIL	MEASURES
Seal leakage	<ul style="list-style-type: none"> <li>①The seal was subjected to pressure (counter pressure).</li> <li>②The oil seal was used under dry condition.</li> <li>③Mistake in installation (wrong orientations or dimensions)</li> </ul>	<ul style="list-style-type: none"> <li>●Put the normal pressure.</li> <li>●Grease a little.</li> <li>●Reassemble properly.</li> </ul>

## 11, STORAGE

### **-1. Before unpacking**

#### (1) Storage area

Store the mixer indoor ventilated place, and keep away from direct sunlight, dusty, humid, chemical atmospheres, and rapid temperature change. When you store the mixer outdoor, in addition to the above points, keep away from rain and use dustproof cover.

#### (2) Do not store the mixer upside down.

### **-2. After unpacking**

(1) In principle, the main body of the mixer should be stored keeping it upright. Once in 3 months, rotate the drive shaft more than 10 rounds by hand. If you cannot rotate it by hand, remove the fan cover of the motor and turn the fan by hand.

(2) Use dust and rust proofing covers. The mixing shaft and impeller have to be laid down on a stable place not to be subjected to an excessive external force.

(3) Store the mixer indoor ventilated place, and keep away from direct sunlight, dusty, humid, chemical atmospheres, and rapid temperature change.

(4) Handle the rubber or resin-lined shaft and impeller carefully not to hit, scratch or bend them.

## 12, AFTER-SALE SERVICE AND WARRANTY

### ☆If you have an abnormality during operation...

Please check the chapter “10, TROUBLESHOOTING” first, and if you still cannot resolve the trouble, then please contact us or our agent.

### We need the following information

- ① Information printed on the name plate: Product name, Serial number, Model, Manufactured date.
- ② Condition of the mixer in detail as much as possible including the situation before and after the trouble: Date and time of occurrence of the trouble, Situation and condition, Degree of damage, Probable cause, Operating hours, Operating condition, Degree of urgency.
- ③ Sales agent or sales staff (that you purchased from).
- ④ Information of you: Contact information, Name of a person who is in charge of the mixer, Means of transportation to you, etc.

### ☆Warranty

#### Warranty period

The warranty period is for 1 year from the shipping date. However, an after-sale service may be nonfree in several cases. Please read this instruction manual carefully.

#### When the warranty period has already ended...

If the product can be fixed and if you request that, we can offer a paid repair on demand.

### ☆After-sale service

When you have any question and unclear point, when you want to repair the mixer, or when you request consumable parts to replace, please contact us or our agent.

### 13, CONTACT INFORMATION

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◇ You could request for maintenance on our website.

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Mail [info@satake.co.jp](mailto:info@satake.co.jp)

To improve the quality, this product, including parts and accessories may be changed in whole or part without notice. Please be forewarned. Thank you.



————— We are dedicated to manufacture products that satisfy our customers and are safe to use. —————

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