

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.

And if you use an air motor, furthermore please read the manuals of air mixer and air motor which attached separately.

2. STANDARD SPECIFICATIONS	3
3. CHECK THE FOLLOWING MATTERS	6
4. PLEASE BE AWARE OF THE FOLLOWING THINGS	7
5. APPEARANCE AND NAMES OF MAIN PARTS	7
6. INSTALLATION	8
-1. Check the followings prior to installation	8
-2. Procedures	8
-3. Mounting angle and eccentric angle	11
7. PREPARATION FOR OPERATING	12
-1. Check the body of the mixer	12
-2. Check the liquid level position in the tank	13
-3. Electrical wiring	14
-4. Rotation direction	15
8. OPERATING SUGGESTIONS	15

-2. Assembly 22

-1. Before unpacking 25

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.

△ WARN I NG	This label shows that it may cause serious injury or death when you
ZIN WARN ING	ignore the instruction.
A CAUTION	This label shows that it may cause harm, or it may cause only physical
△CAUTION	loss or damage when you ignore the instruction.

2. STANDARD SPECIFICATIONS

●Standard specification of A710, A730, A740

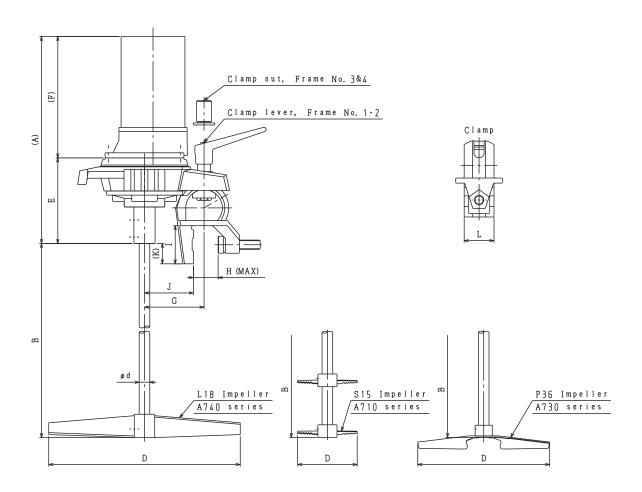
				Moto	r	Impeller					0verall															
Mode I		Frame No.	Power (kW)	Pole (P)	Phase, Voltage (V)	Frequency (Hz)	Rotation Speed (min ⁻¹)	Туре	Diameter (mm)	Stages (stage)	shaft length (mm)															
	-0. 065A		0.065		1φ、100				90/80		600															
	-0. 1A	1	0. 1		1ψ, 100				100/90		800															
A710	-0. 1B		0.1	4	3φ, 200		1450/1750		100/ 00		000															
7770	-0. 2A	2	0. 2	'	1φ、100		1100/1700		120/110		1000															
	-0. 2B		0. 2			50/60		S15	120/ 110	2																
	-0. 4B	3	0. 4			23, 22			135/120	_	1250															
A715				6	3ϕ \downarrow 200		950/1150		155/140		1500															
A710	−0. 75B	4	0. 75	4			1450/1750																			
A715				6			950/1150		175/160		1750															
A710	-1.5B		1.5	4			1450/1750																			
	-0. 06A	3 1 -	1								0.06		1φ、100				150									
	-0. 06B			0.00		3φ, 200				100		600														
	-0. 09A				•	,	'	·	•	-		•		•		-	0. 09		1φ、100			180				
A730	-0. 09B		0.00		4	3φ, 200	50/60	0~420	P36		1															
	-0. 2A	3																0. 2	·	1φ、100	33, 33	3 .23		220		
	-0. 2B								220		1250															
	-0. 4B		0. 4		3φ, 200)			270																	
	-0. 75B	4C	0. 75						310		1500															
	-0. 1A		0. 1		1φ、100				300																	
	-0. 1B	2A	J. 1		3φ, 200					1000																
A740	-0. 2A	∠A	0. 2	4	1φ、100	50/60	150/180	L18		1	1000															
77,70	-0. 2B		V. Z	*		30, 00	190/180	210		_ '																
	-0. 4B	4B	0. 4		3φ, 200				400		1250															
	-0. 75B	4C	0. 75		SUS304 and				450		1700															

^{*} The standard materials for shaft are SUS304 and SUS316.

^{*} The standard materials for impeller P36 and L18 are SUS304 and SUS316. For S15, SUS316 only.

^{*} A710 series are the successors to A610 series, A730 series are to A630, A740 series are to A640.

[%] The motors of A730-0.06A and 0.09A (1 Φ , 100V) contain a condenser.



●Standard dimension table of A710, A730, A740

	F====	Dimension (mm)						Approx.									
Model	Frame No.	Motor (kW)	(4)	В	B-MAX	φ	ı)	E	(F)	G	Н	I	J	(K)	L	mass
	NO.	(NII)	(A)	D	(0P)	d	50Hz	60Hz		(F)	u	(MAX)	1	5	(N)	_	(kg)
		0. 065A	(269)	560	960	13	90	80	87	(182)	85	28	48	70	(48)	40	10
	1	0. 1A	(269)	760	960	13	100	90	87	(182)	85	28	48	70	(48)	40	10
		0. 1B	(260)	760	960	13	100	90	87	(173)	85	28	48	70	(48)	40	10
A710	2	0. 2A	(307)	950	1200	16	120	110	102	(205)	105	32	55	85	(56)	45	14
ATIO	2	0. 2B	(277)	950	1200	16	120	110	102	(175)	105	32	55	85	(56)	45	14
	3	0. 4B	(381)	1190	1440	20	135	120	151	(230)	120	39	65	100	(37)	52	18
	4	0. 75B	(445)	1425	1675	25	155	140	185	(260)	140	48	80	120	(38)	75	32
		1. 5B	(487)	1675	1925	25	175	160	185	(302)	140	48	80	120	(38)	75	41
	1	0. 06A	(411)	560	960	13	1!	50	95	(316)	85	28	48	70	(48)	40	15
		0. 06B	(309)	560	960	13	1!	50	95	(214)	85	28	48	70	(48)	40	15
	'	0. 09A	(411)	560	960	13	18	80	95	(316)	85	28	48	70	(48)	40	15
A730		0. 09B	(402)	560	960	13	18	80	95	(307)	85	28	48	70	(48)	40	14
N/00		0. 2A	(552)	1190	1440	20	2:	20	151	(401)	120	39	65	100	(37)	52	32
	3	0. 2B	(533)	1190	1440	20	2:	20	151	(382)	120	39	65	100	(37)	52	29
		0. 4B	(504)	1190	1440	20	2	70	151	(353)	120	39	65	100	(37)	52	29
	4C	0. 75B	(605)	1425	1675	25	3	10	185	(420)	140	58	90	115	(48)	125	52
		0. 1A	(359)	950	1200	16	30	00	115	(244)	105	32	55	85	(56)	45	16
	24	0. 1B	(298)	950	1200	16	30	00	115	(183)	105	32	55	85	(56)	45	13
A740	2A	0. 2A	(379)	950	1200	16	3!	50	115	(264)	105	32	55	85	(56)	45	18
A140		0. 2B	(323)	950	1200	16	3!	50	115	(208)	105	32	55	85	(56)	45	15
	4B	0. 4B	(440)	1190	1440	20	40	00	200	(240)	140	48	80	120	(38)	52	24
	4C	0. 75B	(489)	1675	1925	25	4	50	202	(287)	140	58	90	115	(48)	125	36

^{*} Dimension A and F in the table above depend on the specification of the motor, reducer or variable-speed driver.

The approximate mass of a mixer shows the total weight which includes the motor, reducer or variable-speed driver, the mixing shaft, and the impellers.

^{*} The standard coating color for these mixers is N5.5 of Munsell color system. The coating colors for motor, reducer and variable-speed driver are their manufacturer's standard color.

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 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 affairs above, immediately contact us or the agent.

Type and size of the standard tools for A710, A730, A740

Model	Power	Frame	Hex wrench		
	(kW)	No.	(Width across flat)		
	-0.065	1	3mm , 6mm		
A710	-0.1	1	omm , omm		
ATIO	-0.2	2	4mm , 8mm		
	-0.4	3	4mm , 10mm		
A715	-0.4				
A710	-0.75	4	5mm , 12mm		
A715	-0.75	4	5mm , 12mm		
A710	-1.5				
	-0.06	1			
	-0.09		3mm , 6mm		
A730	-0.2	0	3mm , 4mm , 10mm		
	-0.4	3	4mm , 10mm		
	-0.75	4C	4mm , 5mm , 12mm		
	-0.1	ο Δ	0		
A 77.4 O	-0.2	2A	4mm , 8mm		
A740	-0.4	4B	4mm , 5mm , 12mm		
	-0.75	4C	5mm , 12mm		

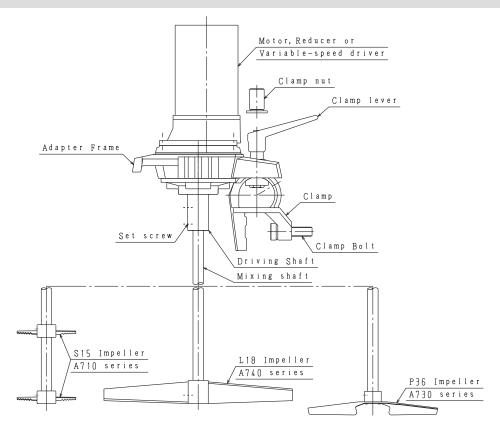
4. PLEASE BE AWARE OF THE FOLLOWING THINGS

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



AWARNING

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 sling or lift the mixer using handle only.

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

Make sure that you have tightened the clamp bolt, the clamp nut, and set screws for the impeller and the 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.

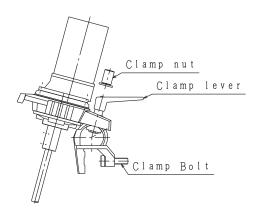
-2. Procedures

ACAUTION

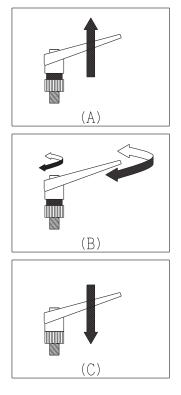
Do not sling the drive shaft with rope, and do not hold it in your hands. The shaft may be bent and it will be the cause of tank damage.

- (1) Mounting of the main body of the mixer

 Mount the clamp of the mixer on the rim of a tank or
 on a mixer stand, and then tighten the clamp bolt with
 a hex wrench to fix the mixer firmly. Please use the
 hex wrench supplied with the mixer.
- *As a guide, the tightening force for the clamp bolt could be about 20 kg with the supplied wrench. If you use any other wrench than the supplied one, the clamp may be broken by an excessive tightening.

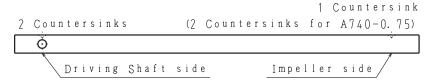


- (2) After the mixer is fixed, the clamp lever should be tightened as follows, or the clamp nut should be tightened with the hex wrench supplied.
- (A) Lift the clamp lever up to unlock it.
- (B) With the lever lifted, adjust the eccentric and mounting angles of mixer to the best position. Then, release it to relock.
- (C) Tighten the clamp lever firmly.

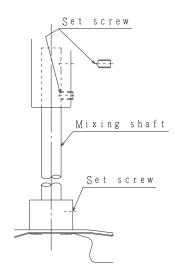


- (3) Installation of the mixing shaft and the impeller
- (A) On each ends of the mixing shaft, there are countersinks.

One side which has only 1 countersink mark is for the impeller. And the other side which has 2 countersink marks is for the drive shaft.



- (B) The countersink mark on the impeller installing side is only 1 (2 marks for A740-0.75 only). Check the position of the countersink marks. And then insert the impeller boss to the shaft and tighten set screws firmly with the hex wrench supplied. Be careful not to put the impeller upside down.
- The standard impeller of A710 is 2 stages. There is a countersink mark at lower side only. The upper side impeller should be set at the appropriate position considering mixing purpose, tank size, etc.



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

(C) Prior to installation of the mixing shaft, remove all of the set screws on the drive shaft. Then, insert the mixing shaft into the drive shaft in a way that you can see all of the countersink marks from the screw holes on the drive shaft. After that, tighten the set screws one by one with the hex wrench.

A CAUTION

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

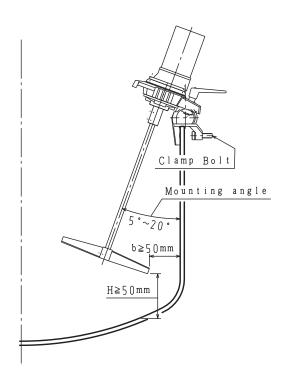
Pay much attention so that powder or mote is not put into the insert hole (for mixing shaft) of drive shaft. In the worst case, the mixing shaft would not be pulled out from drive shaft.

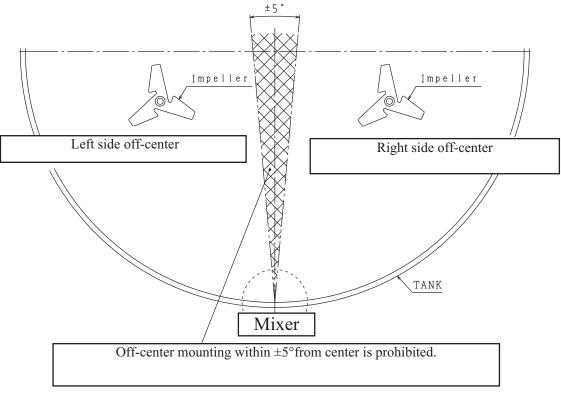
- (D) If the mixing shaft and the impeller are not tightened up enough, they may be dropped during operation. Make sure that you have fixed the set screws firmly just on the countersink marks.
- (E) After installation, remove the fan cover of the motor, and rotate the fan by hand to check if the mixing shaft does not have a 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.

-3. Mounting angle and eccentric angle

Loosen the clamp lever or nut, and adjust the mounting angle of the mixer to $5\sim20^{\circ}$. Also, check and adjust the clearance between the impeller and the tank wall.

Then, adjust the eccentric angle to $10\sim20^\circ$ to the right or to the left from the center of the tank. When you finish adjusting these angles, retighten the clamp lever or nut firmly to fix it.





Left side off-center

Swirling flow is the main flow if mounting the mixer off-center on the left side. This is used for high-viscous liquid and dissolve powder.

Right side off-center

Up and down flow is the main flow if mounting the mixer off-center on the right side. This is generally used.

• Position limitation of vertical inclined mounting

#Mixing efficiency will becomes significantly poor, if mounting the mixer within $\pm 5^{\circ}$ from the center under the conditions of a round tank, no-baffle and low viscosity fluid. Furthermore, this will lead to increased vibration, which will adversely affect the main unit. However, good mixing can be obtained if baffles are installed inside the tank. Please feel free to contact us for details.

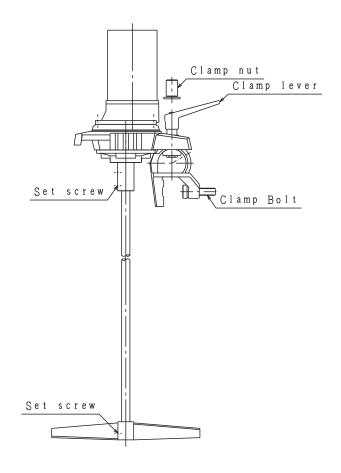
7. PREPARATION FOR OPERATING

-1. Check the body of the mixer

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

If the eccentric angle or mounting angle is changed, the tightening for the clamp lever or nut is not enough, so retighten them firmly.

(3) Make sure that the impeller is not set upside down.



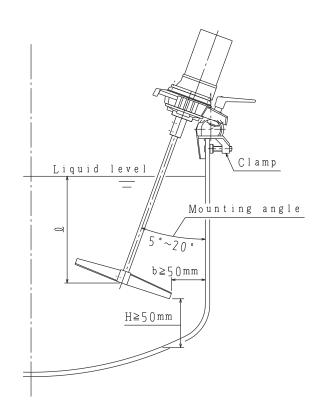
-2. Check the liquid level position in the tank

ACAUTION

Clamp may get corroded if it is soaked into liquid.

Decide the liquid volume considering liquid level rising during mixing.

- (1) Pay much attention to the liquid level not to soak the clamp into liquid. Decide the liquid volume considering liquid level rising during mixing.
- (2) Dimension & (distance between the impeller and the liquid level) has to be according to the table below.
- (3) Dimension H (distance between the impeller and the bottom of the tank) and dimension b (distance between the impeller and the tank wall) must be at least 50 mm.



Dimension & (Impeller-Liquid level)

%A710	2.0d or more
A730	1.5d or more
A740	0.5d or more

d=Impeller diameter [mm]

※ In case of A710, dimension
② is from the upper impeller to liquid level.

A CAUTION

You can operate the mixer with small clearances for dimension H and b, but the mixing is not efficient, and that may cause a shaft vibration. In addition, if the impeller is too close to the bottom or the wall of the tank, the impeller may beat the tank bottom or wall, and the mixer may be broken.

-3. Electrical wiring

AWARNING

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.

ACAUTION

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 or reducer manufacturers and type,
 - please choose breakers and magnetic switches of adequate size.
- (2) Connect the wires as below. The power cords shall be cabtire cable or cabtire cord, and the cords whose cross section area is 2.0 mm² or more are recommended.

Wire connection for A710, A730, A740

Model	1 φ (100V)	3 φ (200V)
	0.065~0.2kW	0.1~1.5kW
A710	R-Yellow-Black	R-U
A710	S-Red-Blue	s-v
	• Read the explanation attached on motor.	T-W
	0.06~0.2kW	0.06~0.75kW
A730	• Refer to the manual (of Ring-cone	R-U
※ 1	variable speed driver) supplied with	s-w
	mixer.	T-V
	0.1~0.2kW	0.1~0.75kW
A740	R-U1-Z1	R-U
※ 2	S-Z2-U2	S-V
	• Read the explanation attached on motor.	T-W

- ※1 : Ring-cone is a registered trademark of NIDEC-SHIMPO CORPORATION.
- ※2: In case of Nissei reducer of single phase motor, since the wiring depends on the type of motor, please connect wires so that the impellers rotate clockwise as viewed from above.

-4. 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.

ACAUTION

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 operate the mixer holding it by hands even for a short time.

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

Definitions of the operations mentioned above are as follows.

■Operation that liquid level passes over impeller position ※Prohibited in principle

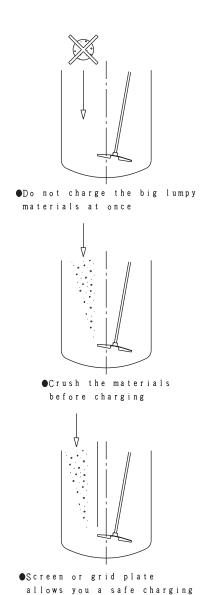
It means the operation within ten minutes from the stable condition which does not generate suction vortices constantly (minimum liquid level in drawing) to the condition that the lowest impeller is exposed completely in the air (or opposite procedures) when liquid is drained or charged during mixing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

If the operation mentioned above is continued for ten minutes or more, the operation is called "Aeration (unstable condition that generates suction vortices 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 such operation within ten minutes.

- (1) The distance between the impeller and the liquid level has to be according to Dimension ℓ on P13.
- (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 or shaft. When you charge lumpy materials (more than 3 cm³), please crush them before charging. If the materials have large volume, protect the impeller by using a screen or a grid plate not to damage the impeller.
- (4) When the vibration becomes bigger than usual, immediately stop operating. Then rotate the shaft 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: Ambient temperature +45°C, MAX 90°C)
 - (Allowable temperature of driver: Ambient temperature +45°C, MAX90°C)
 - (Allowable temperature of bearing: Ambient temperature $+40^{\circ}$ C, MAX75 $^{\circ}$ C)
- If you have these troubles mentioned above, please refer to the chapter "10, TROUBLESHOOTING" to take an adequate counter-measure.



⚠ 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 part of the mixer)
 - ① Make sure that there is no abnormal sound, vibration, high temperature comparing to the test running at installation.
 - 2) Make sure that all bolts are tightened properly.
- (2) Motor, reducer or variable-speed driver
 - 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.
 - (Regarding maintenance and inspection for reducer and variable-speed driver, please refer to the manufacturer's manual supplied with our mixer.)
- (3) Bearings

All the bearings used for this mixer are the sealed bearings, so you do not need to grease in principle. However, you need to inspect once in every $1\sim1.5$ year. (See the Bearing list below.)

(4) Shafts

- ① Make sure periodically that you do not use the mixing shaft with bend. You would better clean up the mixing shaft inserting hole of the drive shaft at regular intervals. If powder materials or mote is put into the hole, you may not be able to pull the mixing shaft out.
- ②If you keep using the mixer with its shaft bent, the bend gets larger and the impeller may damage the mixing tank. Please be careful enough.
- ③ If you find an abnormality with the shaft, please repair it or replace it with a new one. Then, investigate the cause.

Bearing list

Model	Bearing		
A710 - 0.065 & 0.1 / A730 - 0.06 & 0.09	6005ZZ		
A710-0.2 / A740-0.1 & 0.2	6006ZZ		
A710-0.4 / $A730-0.2 & 0.4$	6008ZZ		
A710-0.75&1.5 / A730-0.75 /	601077		
A740 - 0.4 & 0.75 6010ZZ			

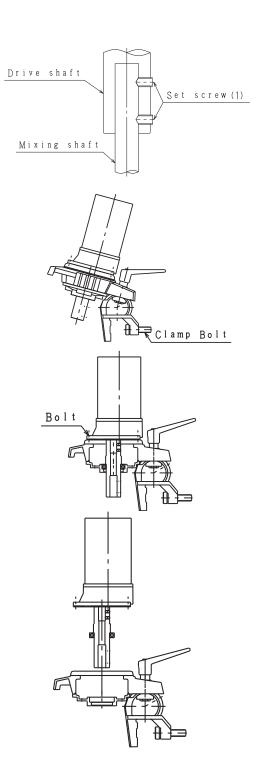
-1. Disassembly

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.

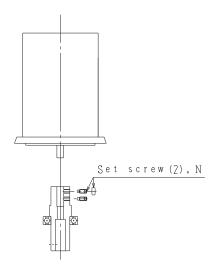
Please see the figure on page 21 to understand the mixer structure before work.

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.
- (3) Loosen the clamp bolt with hex wrench supplied and dismount the mixer. Do not put a rope around the drive shaft to lift up the mixer.
- (4) Remove the hex headed bolts on the motor flange. And then, to remove the motor ,reducer or variable-speed driver from the frame, tap the frame alternately from side to side with a plastic (or wooden) hammer.



- (5) Loosen the set screws (2) and nut to pull out the drive shaft. These parts are the consumable parts.
- ※ Since the consumable parts is supplied as an assembled unit, you do not need to disassemble the unit further more.



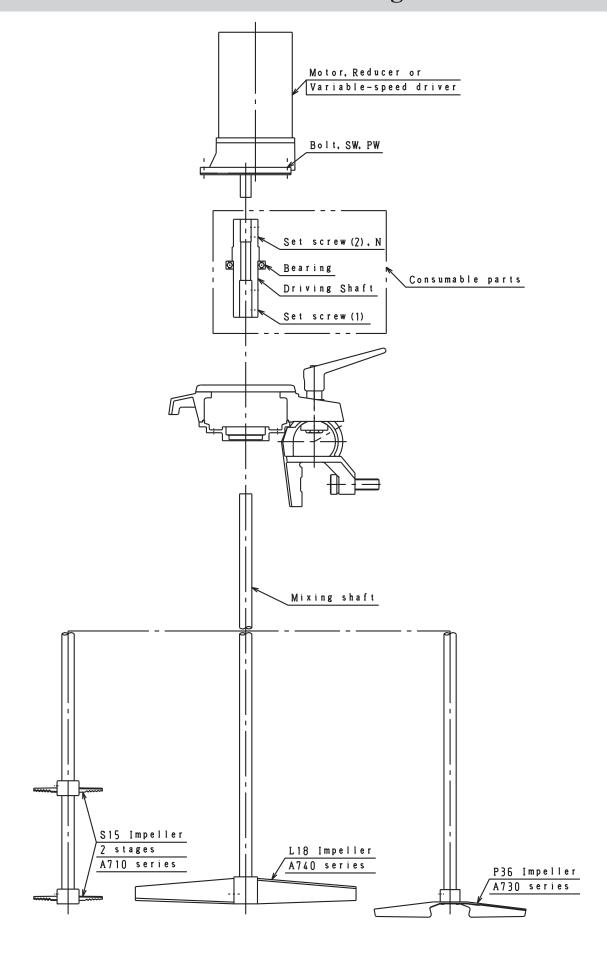
This is the end of the disassembly. Please disassemble only the section that you need to replace except at overhaul.

♦ Lifetime of consumable parts

Consumable parts(bearing, set screw, etc.) ——about 3 years

* See the figure on Page 20 about the composition of the consumable parts.

Structural drawing



Consumable parts list A710, A730, A740

		Consumable parts(Drive shaft, bearing. Set screw)				
Model		Danie e	% Set screw, (N)			
		Bearing	(1)	(2)		
	-0.065	6005ZZ		M6		
A710	-0.1	000322	M6	WO		
ATTO	-0.2	6006ZZ	IN O	M8		
	-0.4	6008ZZ		MO		
A715	-0.4		M8			
A710	-0.75	6010ZZ	INI O	M10		
A715	-0.75	001022	M10	WIO		
A710	-1.5		WITO			
	-0.06	000577		МС		
	-0.09	6005ZZ	M 6	M6		
A730	-0.2	000077		но.		
	-0.4	6008ZZ	MO	M8		
	-0.75	6010ZZ	M8	M10		
	-0.1	600677	MC			
4740	-0.2	6006ZZ	M6	M8		
A740	-0.4	601077	M8			
	-0.75	6010ZZ	M10	M10		

^{*}Nut is attached only to Set screw(2).

^{*}The Consumable parts will be supplied as a unit (drive unit) that bearings are set to the drive shaft.

-2. Assembly

(1) Assembly procedure is the reverse of disassembly procedure.

Put the motor, reducer or variable-speed driver upside down on a stable place and insert the shaft of motor, reducer or variable-speed driver into the drive shaft hole adjusting the position of set screw tip to the key groove of motor drive shaft.

Put a wooden block on the drive shaft and tap it with a plastic (or wooden) hammer.

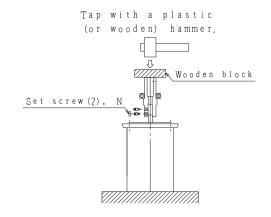
At this time the concentricity between the shaft of motor, reducer or variable-speed driver and drive shaft should be watched.

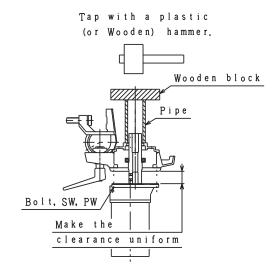
After the motor or driver shaft is completely set, tighten the set screws (2) and fix the following set screw with nut.

Frame no. 1&2: Set screw on motor side. Frame no. 3&4: Set screw on far side from motor.

(2) Prepare a metal pipe and attach it to the frame as the figure. Tap the wooden block on the pipe lightly with plastic (or wooden) hammer and assemble frame and drive unit so that the clearance between frame and motor is uniform.

Confirm certainly that there is no clearance at any jointing portion and the bolts are tightened firmly.





- When you tap parts with a plastic (or wooden) hammer, be careful not to damage the bearing, etc.
- * The assemble work can get easier 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	① The shaft was damaged during transportation, and	•Modify the bent of the shaft.
	used as is.	
	② Shaft was stored in a bad condition.	
	③ The shaft was slung with rope.	
Bad installation	① Poor tightening for the clamp.	•Retighten the clamp bolt.
		•Correct the mounting angle and
		the eccentric angle.
Bad assembling	① The jointing parts are not fitted each other.	•Reassemble.
	② Improper installation of the impeller.	
Rotation range	① The mixer is operated in the critical number range	• Avoid the critical number
	by variable-speed driving.	range.
Improper use	① Empty operation or operation that liquid level	•Stop these operations.
	passes over impeller position was done.	
	②Installing position or liquid level is improper.	•Redesign the tank or change the
		mixer mounting position.
Bad influence	① Solid material hit the impeller and the shaft when	•Put solid materials in a
from materials to	the materials were put into the tank.	finely-chopped state.
be agitated		•Install a screen or a grid plate
		in the tank.
	② A foreign material hit and deformed the impeller.	•Remove the foreign material
		and repair the deformity.
	③ The impeller got unbalanced because of adhesion	•Remove the scale, etc.
	of scale or fibrous materials.	
	4 A part of the impeller was dropped down by	•Replace the impeller.
	corrosion of the process liquid.	

2. Mixer vibration

CAUSE	DEATAIL	MEASURES
Bad installation	① Poor tightening for the clamp.	•Retighten the clamp bolt.
	② Poor tightening for the clamp nut or lever.	•Retighten the clamp nut or
		lever.
Strength poverty	① Strength poverty of the stand, lug, or shell of the	•Reinforce the tank.
	tank.	•Reinforce the mounting stand
	② Strength poverty of the mixer mounting area	and the area where the mixer
	(nozzle flange, beam).	is mounted.
Manufacturing	① Misalignment of the jointing portion of the motor	•Reassemble.
defect	and gear case.	

3. Abnormal temperature rising

CAUSE	DETAIL	MEASURES
Overload	①Overload caused by seizing of the bearing and	•Replace the parts.
	the sliding parts.	
	②Mischoice of the impeller diameter and the	•Reselect and change the
	rotating speed.(Information poverty of liquid	specification.
	spec.)	
	③ The actual process liquid is different from the	
	design specification.(The liquid spec. was	
	changed.)	
Improper power	①Imbalance, a lack of phase, and decrease of the	• Adjust the supplied power.
supply	supply voltage.	
Improper	① High ambient temperature.	• Change the motor specification.
atmosphere	② Poor cooling caused by thin air at high altitude.	•Lower the temperature to 40°C or
		less
		•Improve the cooling performance.
Improper use	① Continuous driving by a non-inverter motor at	•Replace the motor.
	low-frequency range.	

4. Abnormal sound

CAUSE	DETAIL	MEASURES
Parts damage	① Damage of the reducer, variable-speed	•Replace the parts.
	driver and the bearings.	
Parts vibration and	① The clamp bolt or nut is loosened.	•Retighten the bolts.
interference	② The mounting stand vibrates.	•Reinforce or repair the stand.
Improper tuning	① Nonmatching of the inverter and the	•Retune the setting of the inverter.
	motor or the reducer.	

5. Failure to start

CAUSE	DETAIL	MEASURES
Improper power supply	① Imbalance, a lack of phase, and	• Adjust the supplied power.
	decrease of the supply voltage.	
	2 The inverter or the magnetic switch is	•Reset the inverter or magnetic
	at stop mode (alarm).	switch.
Parts seizing	① The motor, reducer or variable-speed	•Replace the parts.
	driver is seized.	
Bad assembling	② Poor tightening for the set screws or	•Reassemble.
	their loosening.	

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 horizontally laid down. 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 abnormity 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 1 year from the shipping date (except air motor). 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 distributing agent.

13. CONTACT INFORMATION

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■Chubu Sales Service Center

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♦ You could request for maintenance on our website.

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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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