

Trouble	Cause	Remedy
Does not start. Starts, but immediately stops.	(1) Power failure (2) Large discrepancy between power source and voltage (3) Significant drop in voltage (4) Motor phase malfunction (5) Electric circuit connection faulty (6) Faulty connection of control circuit  (7) Fuse blown (8) Faulty magnetic switch (9) Water is not at level indicated by Float (10) Float is not in appropriate level (11) Float ineffective (12) Short circuit breaker is functioning (13) Foreign matter clogging pump (14) Motor burned out (15) Motor bearing broken	(1)~(3) Contact electric power company and devise counter-measures  (4) Inspect electric circuit (5) Correct wiring (6) Inspect connections and magnetic switch (7) Replace with correct type of fuse (8) Replace with correct one (9) Raise water level (10) Adjust the position of float (11) Repair or replace (12) Repair location of short circuit (13) Remove foreign matter (14) Repair or replace (15) Repair or replace
Operates, but stops after a while.	(1) Prolonged dry operation has activated motor protector and caused pump to stop (2) High liquid temperature has activated motor protector and caused pump to stop (3) Reverse rotation <b>! WARNING !</b>	(1) Raise stop water level (2) Lower liquid temperature (3) Correct rotation
- Does not pump. Inadequate volume. - Air volume is less - Oxygen transfer rate is low	(1) Reverse rotation (2) Significant drop in voltage (3) Operating a 60Hz pump on 50Hz (4) Discharge nozzle is clogged (5) Too deep submerged (6) Low operating water level causes air suction (7) Leaking from air piping (8) Clogging of air piping (9) Foreign matter in suction inlet (10) Foreign matter clogging pump (11) Worn impeller	(1) Correct rotation (see Operation) (2) Contact electric power company and devise counter-measures (3) Check nameplate (4) Clean it (5) Recalculate and adjust (6) Raise water level or lower pump (7) Inspect, repair (8) Remove foreign matter (9) Remove foreign matter (10) Remove foreign matter (11) Replace impeller
Over current	(1) Unbalanced current and voltage (2) Significant voltage drop (3) Motor phase malfunction (4) Operating 50Hz pump on 60Hz (5) Reverse rotation <b>! WARNING !</b> (6) Low head. Excessive volume of water (7) Foreign matter clogging pump (8) Motor bearing is worn or damaged	(1) Contact electric power company and devise counter-measure (2) Contact electric power company and devise counter-measure (3) Inspect connections and magnetic switch (4) Check nameplate (5) Correct rotation (see Operation2) (6) Replace pump with low head pump (7) Remove foreign matter (8) Replace bearing
Pump vibrates; excessive operating noise.	(1) Reverse rotation (2) Pump clogged with foreign matter (3) Piping resonates (4) Gate valve on air pump is closed too far	(1) Correct rotation (2) Disassemble and remove foreign matter (3) Improve piping or add on silencer (4) Open gate valve



**Submersible Jet Pumps(Aerator)**  
**EFJ & TOS-EFJ Series Instruction Manual**

EFJ- Standard Version



TOS-EFJ- Guide rail device



**Introduction**

Check the following points upon receipt of your pump and aerator set:

- Is the pump exactly what you ordered? Check nameplate. It is especially important that you check whether the pump is to be used with 50 or 60 Hz.
- Has any damage occurred during shipment? Are any bolts or nuts loose?
- Have all necessary accessories been supplied? (For a list of standard accessories see Construction.)

We recommend that you keep a spare pump on hand in case of emergencies. Keep this instruction manual in a place for future reference.

**Specifications**

Check the nameplate for your pump's head (HEAD), discharge volume (CAPACITY), speed (SPEED), motor voltage and current. (Refer to instruction manuals of CV or JB)

The specifications of aerator set are noted in the chart below.

Model	Type	Diffuser Outlet	MTRL	Pump Model	Air Pipe		PH range	Slide guide
		mm	JIS		HP range	mm		
EFJ	Standard	80	FC200	EFJ	1/2~ 1	25A	6~9	N/A
					2 ~ 5	37A		
TOS-EFJ	Guide rail device	80	FC200	EFJ	1/2~ 1	25A	6~9	FC200
					2 ~ 5	37A		
EFSJ	Standard	80	SUS316	EFSJ	1/2~ 1	25A	3~11	N/A
					2 ~ 5	37A		
TUS-EFSJ	Guide rail device	80	SUS316	EFSJ	1/2~ 1	25A	3~11	SUS316
					2 ~ 5	37A		

Standard accessories —

- TOS-EFJ — galvanized chain 4M and shackle
- TUS-EFSJ — Stainless chain 4M and shackle



## Installation

1. Check the following before beginning installation.

Insulation resistance measurement:

With the motor and cable (excluding the power supply cable) immersed in water, use a Megger to measure the insulation resistance between ground and each phase of the motor, and again between each phase of the motor. The Megger should indicate an insulation resistance of not less than 20mega ohms. While making the measurement, keep the power supply cable off the ground.

We recommend that an auxiliary pump be kept on hand in case of emergency.

### 2. Installation-

Standard type (EFJ / EFSJ)– Refer to Fig-1

- (1) **! WARNING :** Under no circumstances should cable be pulled while the pump is being transported or installed.  
Attach a chain or rope to the grip and install the pump.
- (2) This pump must not be installed on its side or operated a dry condition. Ensure that it is installed upright on a secure base.
- (3) Install the pump at a location in the tank where there is the least turbulence.
- (4) If there is a flow of liquid inside the tank, support the air piping where appropriate. **!**
- (5) If necessary install the silencer to preventing airborne noise.

Guide rail device type (TOS-EFJ & TUS-EFSJ) – Refer to Fig-2

- (1) Lift the pump using a chain fall or hoist and insert sliding portion of guide rail device. elbow into guide rail or insert sliding portion of guide rail device. flange or sliding guide into guide pipe
- (2) Keep the support rope or a chain vertical, lower the pump gradually and set on Q.D.C. body. To confirm setting, lift the pump body about 5 cm and lower again two to three times. Ensure that support chain or rope and cables do not interfere with operation. This now completes the installation.
- (3) During installation, proceed very carefully and take every precaution to prevent the unit and the pump from being dropped. Pump should not be inclined in excess of values shown in the table at right when raising or lowering.
- (4) **! WARNING :** When lifting or lowering the pump, the motor cable should never be pulled. Proceed carefully so that this cable is not cut or in any way damaged.

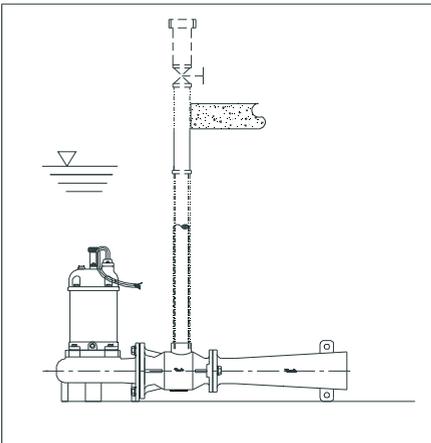


Fig-1

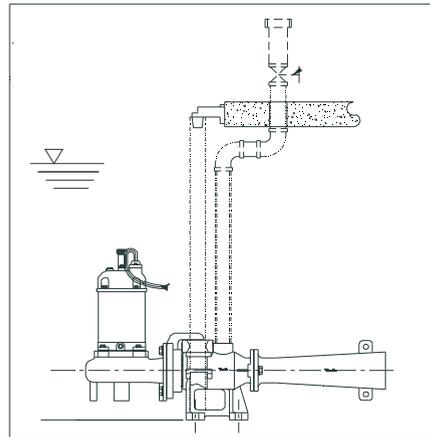


Fig-2

## Operation

1. Before starting the pump

- (1) After completing installation, measure the insulation resistance again as described in Installation.
- (2) Check water level.  
If the pump is operated continuously for an extended period of time in a dry condition or at the lowest water level, the motor protector will be activated. Constant repetition of this action will shorten pump service life. Do not start the pump again in such a situation until after the motor has completely cooled.

2. Test operation ?

- (1) Turn the operating switch on and off a couple of times to check for normal pump start.
- (2) Next, check direction of rotation. If discharge volume is low or unusual sounds are heard when the pump is operating, rotation has been reversed. When this happens, reverse two of the wires.

## Maintenance

Check air volume, output, voltage, current and other specifications. Unusual readings may indicate. Refer to Troubleshooting and correct as soon as possible.

1. Parts that will need to be replaced

Replace the appropriate part when the following conditions are apparent.

Replaceable part	Mechanical seal	Oil filler plug gasket	Lubricating oil	O-ring
Replacement guide	Whenever oil in mechanical seal chamber is clouded	Whenever oil is replaced or inspected	Whenever clouded or dirty	Whenever pump is overhauled
Frequency	Annually	A half yearly	A half yearly	Annually

Note: above replacement schedule is based on normal operating conditions.

Motoroutput	0.4kw	0.75kw	1.5kw	2.2kw	3.7kw
Part					
Mechanical seal	12ψ		19.875(3/4)ψ		25ψ
Oil seal	16ψx 26ψx 5 t		18ψx 28ψx 6 t		25ψx 44ψx 7 t
Oil filler plug gasket	(Inner diameter) x (outer diameter) x (thickness) = 8.5ψx 13ψx 0.8 t PE washer				
Lubricating oil (turbine oil #32)	100 cc	150 cc	425 cc	550 cc	