



TSW

**Minimal Vibration and Low Noise
Submersible Roots Blower**
Operation and Maintenance Manual

ALVEST GROUP

1 Matters that should be aware of before installation:

- ❖ Please check if the specifications (including the type of roots blower, outlet diameter, nominal output frequency, number of phases, voltage rating, current rating, pressure, wind output) appear on the tag match your specifications.
- ❖ Please check if the product had any damages during transport or shipping (especially if there is any loosening of the screws, bolts and nuts).
- ❖ Regarding the accessories, please check if the types and numbers of them have been correctly provided.
- ❖ Please notice that the submersible blower will have to operate in the direction illustrated.
- ❖ Please note sufficient power must be supplied for the submersible blower, otherwise the blower may not start. Make sure the power supply is sufficient.

2 Matters that should be aware of during installation:

- ❖ Please make sure the frequency and voltage of the power source that you will use match those appear on the tag.
- ❖ Voltage provided will have to be within $\pm 10\%$ of the nominal voltage.
- ❖ Please do not extend power cable for no reason. Doing so may cause a voltage drop that exceeds the permissible range. (Do not submerge the cable connection, to prevent electrical leakage.)
- ❖ When moving the submersible blower, do not pull on the power cable, to prevent damaging the insulation and causing electrical leakage.
- ❖ Use grounding cable properly.
- ❖ An earth leakage circuit breaker should be installed to prevent electric shock. It is also recommended to install a non-fuse-breaker to ensure longer service life of the submersible blower.
- ❖ The submersible blower shall be located in flowing, clean water and kept away from mud or sand. (Water quality range: PH6.5~9.0; water temperature: below 30°C)
- ❖ The pipe connected to the blower discharge should have the same diameter as that of the outlet. If such pipe has a diameter smaller than that of the outlet, the air pressure will increase and the capacity will decrease in the pipe as well as the power consumption will increase.
- ❖ Piping and fittings connected underwater shall be properly protected to prevent water leakage into the blower.

3 Matters that should be aware of during operation:

- ❖ First, turn on the power switch.
- ❖ Check if air is sucked into the air inlet. If air enters the inlet in a direction opposing the correct direction, the roots blower must be turned off immediately and correction must be made.
- ❖ The air pressure at the outlet and the current consumption of the motor should be maintained within the allowed ranges. If either exceeds the corresponding range, please find out the reason(s) before turning the roots blower back on again.
- ❖ Please check if there are any abnormal vibrations and noises coming out from the vertical type roots blower.
- ❖ Rusting, corrosion and jamming may occur to the rotor blade of the blower if the roots blower is unused for a long time. In such case, the roots blower should be turned on for 30 minutes per week; the roots blower should be turned on for 30 minutes each day if the roots blower is placed in a surrounding with high humidity.

4 Pay special attention to any change of the voltage, pressure, or insulation resistance of the submersible blower since the external appearance of the blower is not visible to check its operation.

♦Daily check:

- *Whether the air pressure varies by a large value
- *The submersible blower shall be completely submerged in the flowing water, with the water temperature maintained under 32°C.
- *Check if the current consumption is normal
- *Check if any abnormal noises coming out from the roots blower

♦Periodic checks:

Duration	Port to be Checked	Checking method	What to be checked	How to Handle
for every three months	Insulation resistance	500 V testing	Insulation limit (required to be above 1MΩ)	Change back-check
for every six months	One-way valve	Port to be checked	The valve can not operate normally	To be maintained
for every year	Safety Valve	Port to be checked	The safety valve does not operate when pressure exceeds the nominal pressure valve by 7%	The safety valve should be opened up before maintenance may be carried out on it
	and the chain used for hoisting up	visual inspection for rust and corrosion	Corrade	To be maintained
for every two year	Lubricant of the gear box	Remove all oil plugs		Renewal
	Decorate	Eye apparel	check for damage or worn paint	Decorate
	Oil seal	Disassemble	Abrade	Renewal
	O type ring	Disassemble	Deformation	Renewal
	Vibration Isolator	Disassemble	Deformation	Renewal

The submersible blower shall be completely submerged in the flowing water, with the water temperature maintained under 32°C.

♦How to change the lubricant of the gear box:

Remove the plug and drain out all the old, existing lubricant.
After all the old lubricant is drained out, add a little new lubricant -- after new lubricant starts to flow out from the hole on the bottom side, place the plug back on and add the new lubricant into it.

Notice: If the washer of the plug is damaged, it must be replaced.

Installation Diagram

