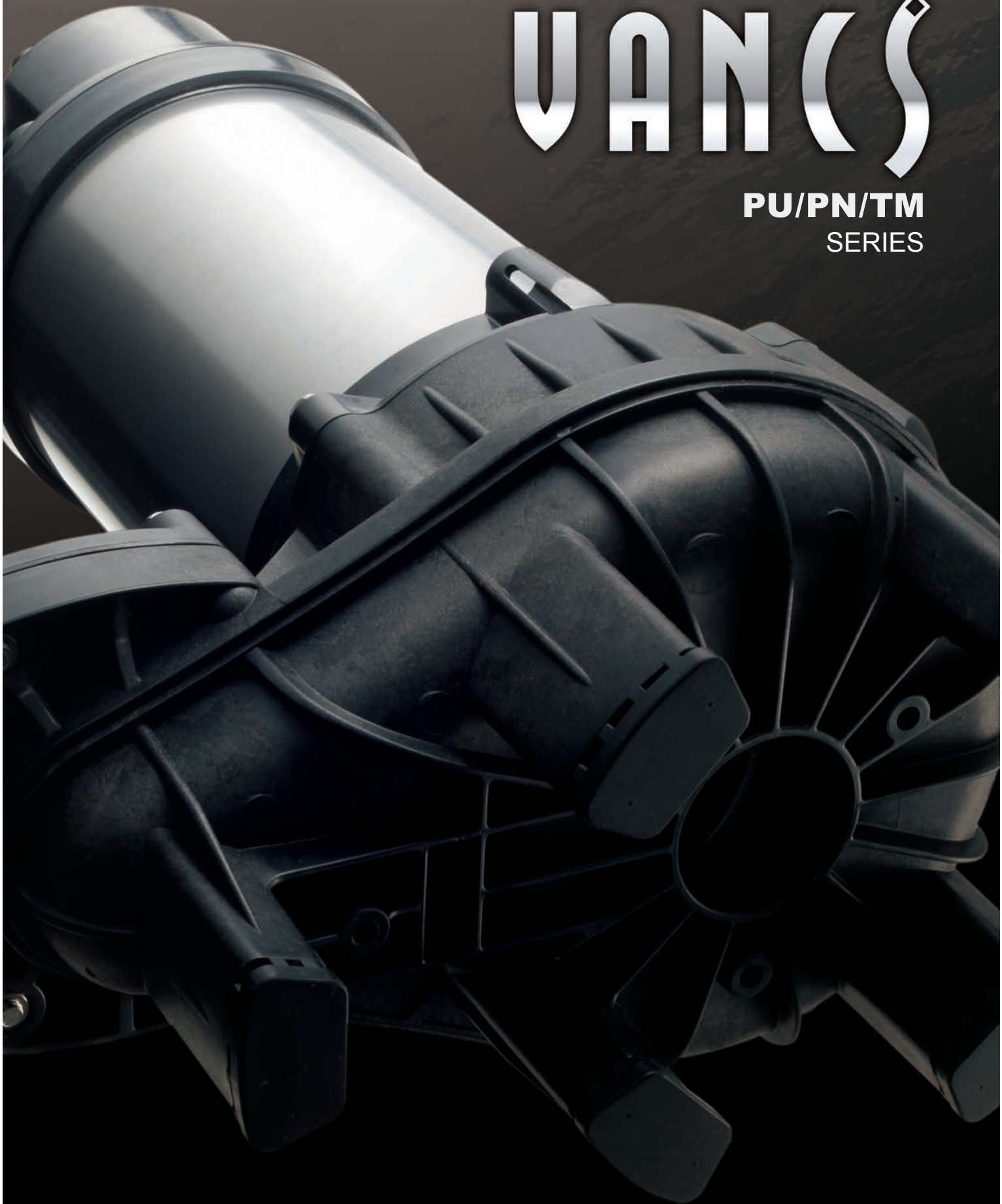


Submersible Resin Made Pumps

VANCS

**PU/PN/TM
SERIES**



VANCS

Lightweight, Durable and Corrosion-resistant:
Tsurumi Submersible Resin Made Pumps!



The VANCS-series from Tsurumi features compact, lightweight submersible pumps made of resin, stainless steel and titanium. They are easy to handle, durable and tough against corrosion, owing to carefully selected part-specific resins that deliver higher levels of durability and anti-corrosion performance than what can be attained with simple resin pumps.

The VANCS-series pumps are versatile line pumps that can be used to drain sewage, wastewater, rainwater and seawater. Moreover, because of their compact size, they can be easily installed in tight spaces including inside of septic tanks, small-sized wastewater treatment plants and kitchen wastewater traps in homes and office buildings. Additionally, since they use food grade liquid paraffin as a lubricating oil, the pumps are safe and fish-friendly, which opens the door to their use for water circulation, waterfalls and other water features in camp/koi ponds and fish farms. And, this is but a small sample of the wide-ranging applications of the VANCS-series pumps.

The VANCS-series comes in a diverse lineup of discharge bores ranging from 40 to 80 mm and motor outputs of 0.15 to 3.7 kW, as well as a number of models that not only run on single- or three-phase motors but also offer automatic and auto-alternation operation. Plus, the pumps are compatible with Tsurumi's guide rail fitting device that facilitates installation and maintenance.

Though compact in size, the VANCS-series pumps come loaded with a host of time-tested and proven original technologies including an anti-wicking cable, motor protector, dual inside mechanical seals with silicone carbide face and Oil Lifter.

As a pioneer of the resin pump, Tsurumi has dedicated years of research to improving pump durability and maintainability, and perfecting designs for continuous duty. The end result is a vast and deep selection of reliable, durable and sound quality products that users can trust.

TYPE OF IMPELLER

Vortex



The vortex impeller is adopted in every series except for the PSF-series. Rotation of the impeller produces a whirling, centrifugal action between the impeller and the pump casing, and it moves the fluid through the pump. Being coupled with a wide pump casing, wastewater containing solid matters can be pumped out without obstruction.

MODEL NUMBER DESIGNATION

40 PU A 2 .25 S

Discharge bore in millimeters				
Name of the series				
Operation sub code				
None : None automatic operation				
A : Automatic operation				
W : Auto-alternation operation				
Rated motor output in kilowatts				
Number of poles of the motor				
Phase				
None : Three-phase				
S : Single-phase				

PU

Submersible Sewage Pumps
Vortex



PN

Submersible Wastewater Pumps
Vortex



TM

Submersible Seawater Pumps
Vortex

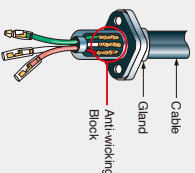


Approved: RCM

Practical Design Providing Excellent Corrosion Resistance and Durability

1. Anti-wicking Cable Entry

Every cabbyr cable has an anti-wicking block at the cable entry section on the pump. This mechanism is such that a part of each conductor is stripped back and the part is sealed by molded rubber or epoxy potting which has flowed in between each strand of the conductor. This unique feature prevents wicking along the strand of the conductor itself.



2. Motor Protector

A built-in thermal motor protection device reacts to the excessive heat caused by overcurrent or run-dry conditions. It not only cuts off the motor circuit automatically but also resets by itself. When the motor cools down to a safe operating temperature, the motor restarts.

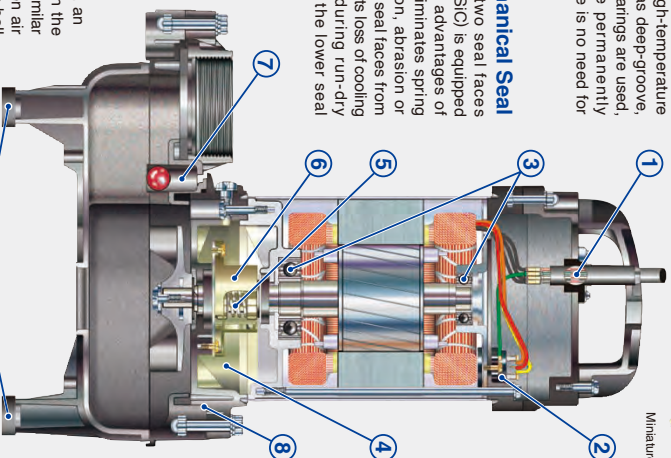


3. Bearings

High-grade bearings for high-temperature operation are used. Also, as deep-groove, double-shielded C3 ball bearings are used, and as the bearings are permanently lubricated by grease, there is no need for injection of lubricating oil.

5. Dual Inside Mechanical Seal

A mechanical seal with two seal faces containing silicon carbide (SiC) is equipped with the oil chamber. The advantages of the seal are two-fold, it eliminates spring failure caused by corrosion, abrasion or fouling which prevents the seal faces from closing properly, and prevents loss of cooling to the lower seal faces during run-dry conditions which causes the lower seal faces to fail.

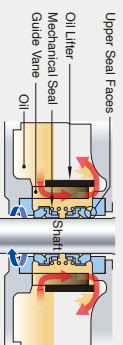


4. Lubricating Oil

Liquid paraffin is used in every VANCOS series pump. It is a highly-refined pure oil generally used in the industries of cosmetic, pharmaceutical, and food processing equipment, etc. The use of this oil widens the applications of the pumps to decorative materials, fishponds, and aquaculture, etc.

6. Oil Lifter

The Oil Lifter was developed as a lubricating device for the mechanical seal. Utilizing the centrifugal force of the shaft seal, the Oil Lifter forcibly supplies lubricating oil to the mechanical seal and continues to supply the oil to the upper seal faces even if lubricant falls below the rated volume. This amazingly simple device is not only reliably lubricates and cools down, but also retains the stable shaft seal effect and extends the inspection term.



8. Back Pull-out Design

Unfastening the bolts between the oil casing and the upper pump casing allows the body to be separated into the pump section and the motor section with the impeller left in position. This facilitates easier inspections of the main portions. The pump section can be disassembled/reassembled using a cross slot screwdriver (excluding 0.15kW).



9. Rubber Foot

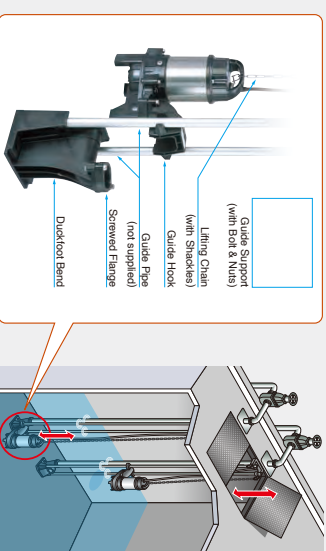
A rubber foot is fitted on each stand of the pumps from 1.5 to 3.7kW. This prevents scratching of floor surface.

TOK GUIDE RAIL FITTING SYSTEM

The TOK guide rail fitting system connects the pump to and from the piping easily just by lowering and hoisting the pump, allowing easy maintenance and inspection without the need to enter the sump.

Made of high-quality resin, the TOK is designed for lightweight, small to middle sized pumps. Rubber bellows attached to the guide hook are inverted to the duckfoot bend when the pump starts operating, and it seals by the pumping pressure. This eliminates leakage at the seal even if a lightweight pump is used in combination with the TOK.

The TOK is available in all motor output ranges of the PU and PN series.



AUTOMATIC & AUTO-ALTERNATION MODEL

Automatic Model

The float type automatic model has an integral control circuit and two float switches that operate at a low voltage. It operates automatically in response to the change in water levels.

This model can be identified by the suffix "A" and is available in all motor output ranges of the PU, PN, and TM series.



Auto-alternation Model

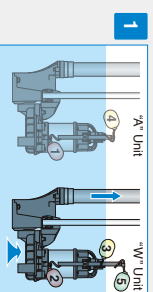
The auto-alternation model is used along with an automatic model. The combinational use of these two pumps enables each pump to operate alternately without control panel.

The auto-alternation model has three floats and can be identified by the suffix "W". Refer to model selection for availability and model numbers of the PU and PN series.



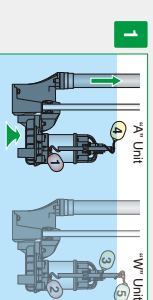
How the Auto-alternation Model Works

Primary Operation



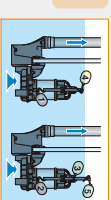
Water level rises and turns the Float #2 up. The Float #2 is activated but the pump does not start. When water level rises to Float #3 and the float is activated, the "W" unit starts.

Secondary Operation



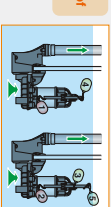
The next time the water level rises, Float #1 on the "A" unit is activated but the unit does not start until Float #4 is activated.

Unusual Increase of Inflow



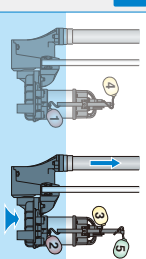
If inflow exceeds the capacity of "W" unit and the water level rises to Float #4, "A" unit starts.

Unusual Increase of Inflow



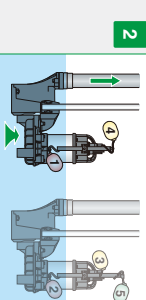
If inflow exceeds the capacity of "A" unit and the water level rises to Float #5, "W" unit starts.

2



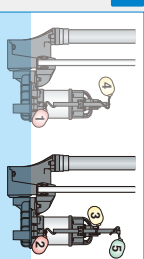
The "W" unit is discharging water (Water level falls).

2



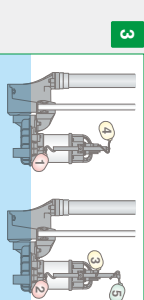
The "A" unit is discharging water (Water level falls).

3



When water level falls to Float #2, the float is activated, and the "W" unit stops. The alternating circuitry deactivates the "W" unit for the next level rise.

3



When water level falls and Float #1 is activated, the "A" unit stops. At the same time, "W" unit becomes ready for operation for the next level rise.

Submersible Seawater Pumps

TM

The TM-series is a semi-vortex pump, which is constructed of titanium and special resin. Titanium has a superb corrosion resistance against seawater. Being all wetted metal parts made of titanium, the pump is suitable for the intake, transfer, and drainage of seawater.



Major Components & Specifications

Discharge Bore	mm	40	50	80
	Type of Fluid	Seawater		
Pumping Fluid	Fluid Temperature	0 to 40°C		
Pump	Structure	Double Mechanical Seal (with Oil Litter)		
	Impeller	Vortex		
	Shaft Seal	Double-shielded Ball Bearing		
	Bearing	Glass-fiber Reinforced Resin		
	Impeller	Glass-fiber Reinforced Resin		
	Materials	Glass-fiber Reinforced Resin		
	Casing	Silicon Carbide		
	Shaft seal	Dry-type Submersible Induction Motor, 2-pole		
Motor	Type, Pole	Class E		
	Insulation	Single-phase (built-in, "S")		
	Phase	Three-phase		
	Starting Method	Capacitor Run (single-phase only)		
	Starting Method	Direct on Line		
	Protection Device (Built-in)	Circle Thermal Protector		
	Protection Device (Built-in)	Miniature Thermal Protector (40TM2.25S & 50TM2.4S only)		
	Lubricant	Liquid Paraffin (ISO VG32)		
	Frame	Titanium		
	Materials	Titanium		
Discharge Connection	Shaft	Threaded Oval Flange		

Corrosion Tests (in Seawater / 6 months)

Material	Stepped Shaft	Shaft Tap
Titanium		
304 Stainless Steel		

Applications

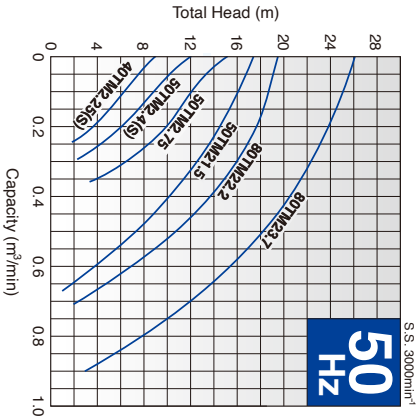
- Pumping seawater from bilge and pit of vessel
- Supplying seawater to aquarium
- Circulating seawater in breeding pond

CableTyre Cables

Single-phase				
Model	240V		Length m	Material
	Cores x mm ²	Outer Dia. mm		
40TM2.25S	3 x 1.0	9.0	10	H07RN-F w/ Plug
50TM2.4S	3 x 1.0	9.0		
Three-phase				
Model	415V		Length m	Material
	Cores x mm ²	Outer Dia. mm		
40TM2.25	4 x 1.25	11.1		PVC (H07VV-F equiv.)
50TM2.4	4 x 1.25	11.1	6	
50TM2.75	4 x 1.25	11.1	or	
50TM2.15	4 x 1.25	11.1	10	
80TM2.2	4 x 1.25	11.1		
80TM23.7	4 x 2.0	11.8		

Performance Curves

Standard and Automatic models have the identical performance.



Model Selection

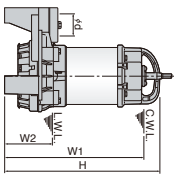
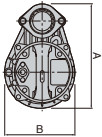
Discharge Bore mm	Model		Motor Output kW	Phase	Starting Method	Saddle Passage mm	Dry Weight kg	
	Standard	Automatic					Standard	Auto & Auto-alternation
40	40TM2.25S	40TM2.25S	0.25	Single	Capacitor Run	10	6.7	7.2
40	40TM2.25	40TM2.25	0.25	Three	D.O.L.	10	5.7	6.2
50	50TM2.4S	50TM2.4S	0.4	Single	Capacitor Run	10	6.7	7.2
50	50TM2.4	50TM2.4	0.4	Three	D.O.L.	10	6.6	7.1
50	50TM2.75	50TM2.75	0.75	Three	D.O.L.	10	7.8	8.4
50	50TM2.15	50TM2.15	1.5	Three	D.O.L.	20	14.9	15.6
80	80TM22.2	80TM22.2	2.2	Three	D.O.L.	20	21.0	22.0
80	80TM23.7	80TM23.7	3.7	Three	D.O.L.	20	28.0	27.0

• Weights excluding cable

Dimensions

Model	d	A	B	H	W1	W2
40TM2.25S	40	236	162	360	325	110
40TM2.25	40	236	162	349	310	110
50TM2.4S	50	236	162	360	325	110
50TM2.4	50	236	162	360	325	110
50TM2.75	50	236	162	374	335	110
50TM2.15	50	236	162	374	335	110
80TM22.2	80	236	162	435	390	110
80TM22.2	80	311	212	559	500	130
80TM23.7	80	311	212	594	535	130

Unit: mm



C.W.L.: Continuous Running Water Level
L.W.L.: Lowest Running Water Level



Product images and specifications may differ from actual products due to improvements. The OO series and model OO are indicated with our series/model codes in this catalog.

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