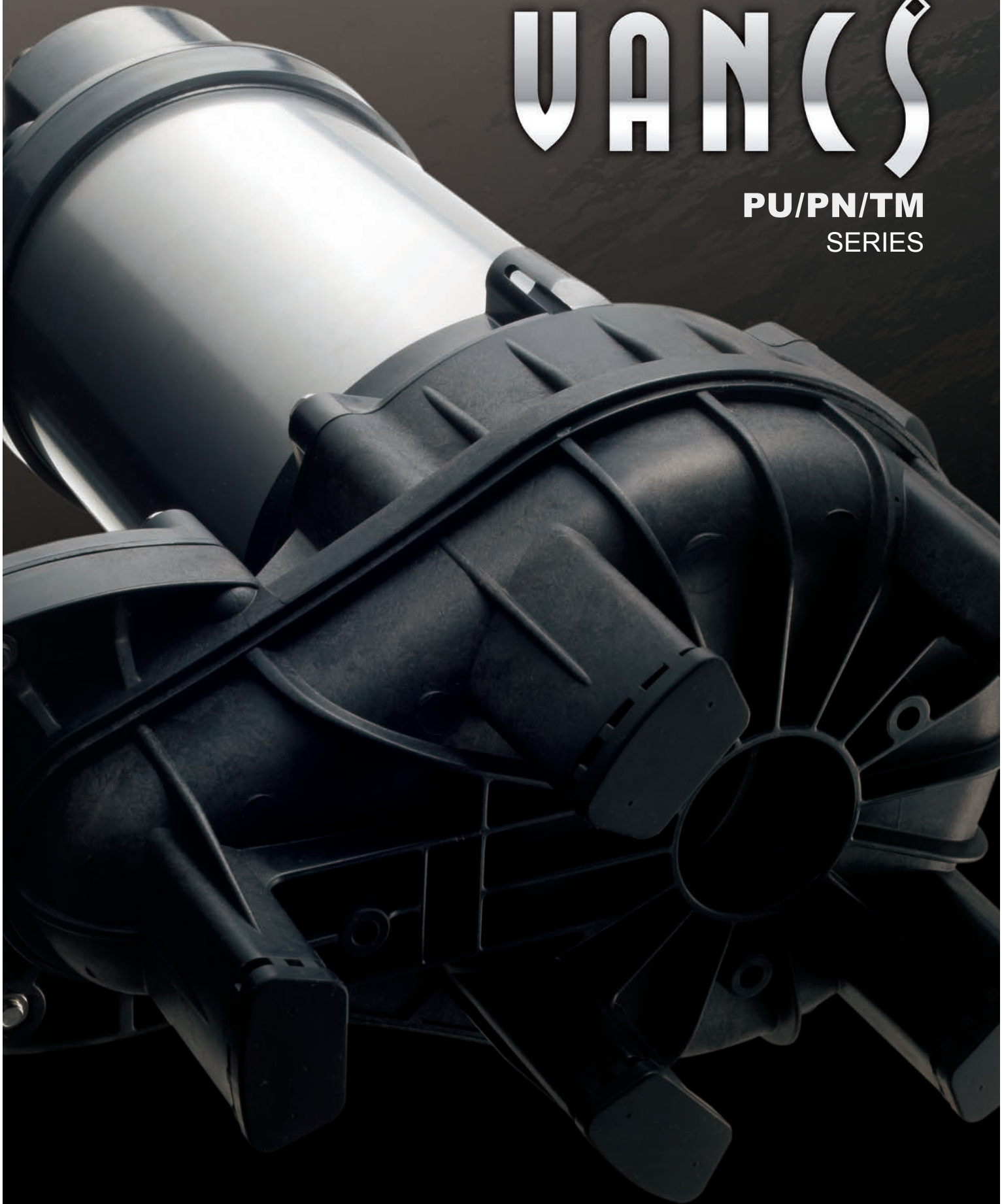


Submersible Resin Made Pumps

VANCS

**PU/PN/TM
SERIES**



VANCS

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



PU

Submersible Sewage Pumps
Vortex

PN

Submersible Wastewater Pumps
Vortex

TM

Submersible Seawater Pumps
Vortex



Approved: RCM

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

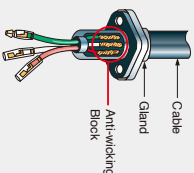
40 PU A 2 .25 S

Discharge bore in millimeters	40	PU	A	2	.25	S
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						

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.

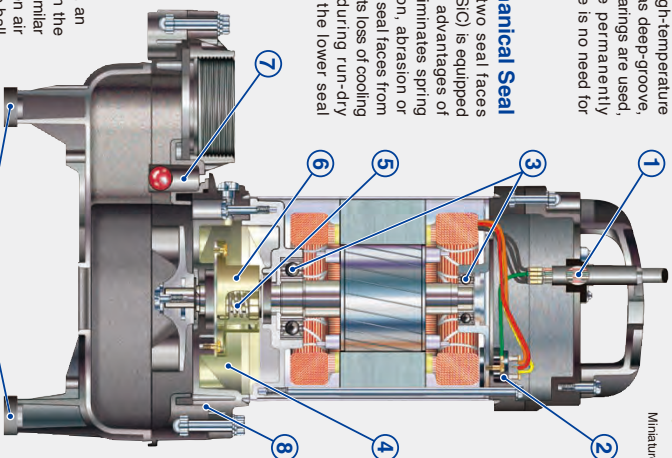


3. Bearings

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.

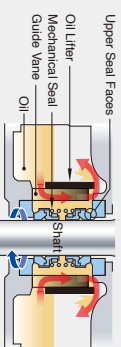


4. Lubricating Oil

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

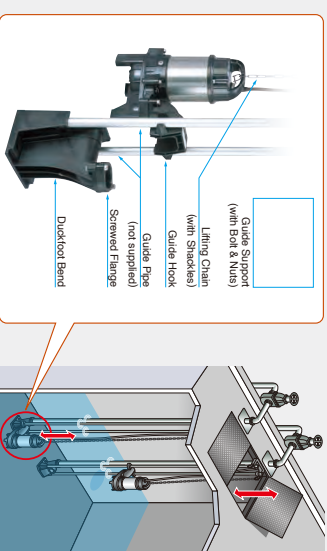
A rubber foot is fitted on each stand of the pumps from 1.5 to 3.7kW. This prevents scratching of floor surface.

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.

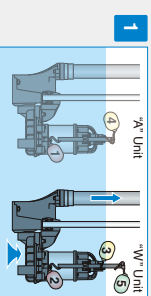
The TOK is available in all motor output ranges of the PU and PN series.



AUTOMATIC & AUTO-ALTERNATION MODEL

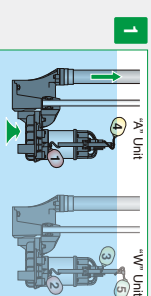
How the Auto-alternation Model Works

Primary Operation



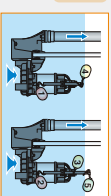
Water level rises and turns the Float #2 up. The Float #2 is activated but the pump does not start. When water level rises to Float #3 and the float is activated, the "W" unit starts.

Secondary Operation



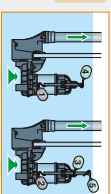
The next time the water level rises, Float #1 on the "A" unit is activated but the unit does not start until Float #4 is activated.

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.

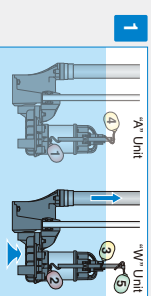


Auto-alternation Model

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 "A". Refer to model selection for availability and model numbers of the PU and PN series.

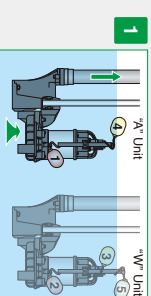
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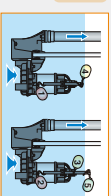
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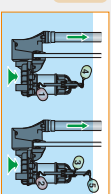
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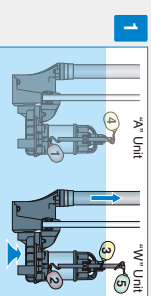


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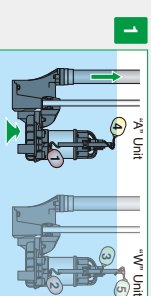
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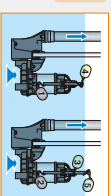
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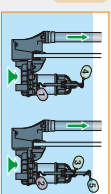
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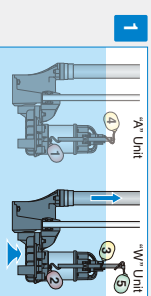


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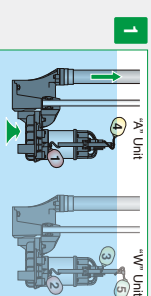
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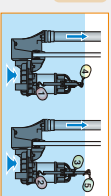
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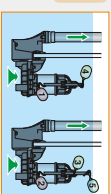
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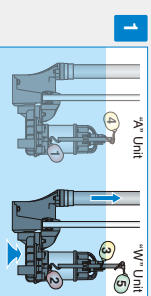


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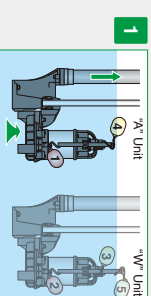
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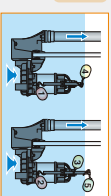
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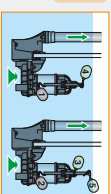
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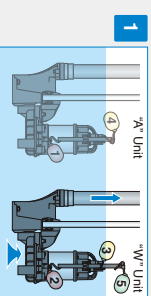


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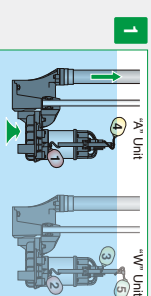
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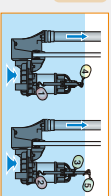
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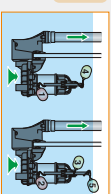
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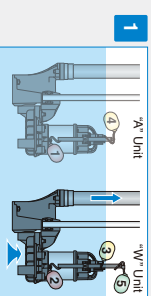


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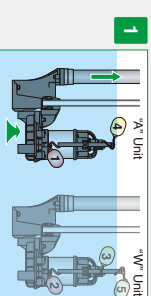
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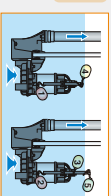
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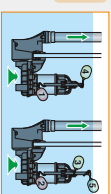
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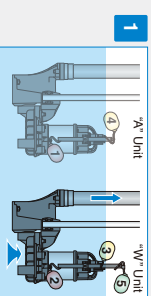


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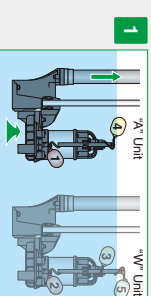
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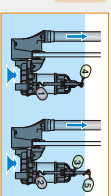
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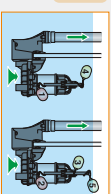
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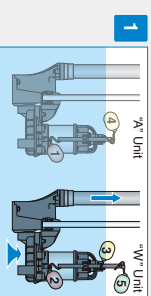


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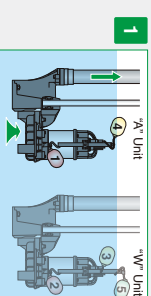
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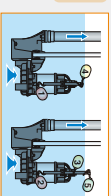
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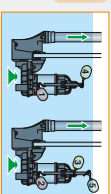
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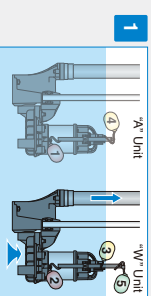


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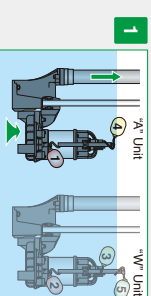
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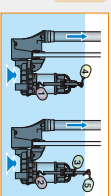
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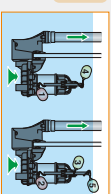
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Unusual Increase of Inflow



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Unusual Increase of Inflow



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PU

The PU-series is a vortex pump designed for handling raw sewage, wastewater, industrial and commercial sump pump applications. The solid handling design provides practically unchokable operation in sewage pumping. Since the pump is made of special resin and stainless steel, it's corrosion-resistant and lightweight.



Major Components & Specifications

Discharge Bore	mm	40	50	80
Pumping Fluid	Type of Fluid	Sewage, Wastewater, and Water carrying Solid Matters		
Pump	Fluid Temperature	0 to 40°C		
	Impeller	Vortex		
	Structure Shaft Seal	Double Mechanical Seal (with Oil Lifter)		
	Bearing	Double-shielded Ball Bearing		
	Impeller	Glass-fiber Reinforced Resin		
Materials	Casing	Glass-fiber Reinforced Resin		
	Shaft seal	Silicon Carbide		
Motor	Type, Pole	Dry-Type Submersible Induction Motor, 2-pole		
	Insulation	Class E		
	Phase	Single-phase (with "S") Three-phase		
	Starting Method	Capacitor Run (single-phase only) Direct on Line		
	Protection Device (Built-in)	Circle Thermal Protector Miniature Thermal Protector (40PU2.25S & 50PU2.4S only)		
Lubricant	Frame	304 Stainless Steel		
	Materials	420 Stainless Steel (0.15kW only) 304 Stainless Steel		
Discharge Connection		Threaded Oval Flange		

Guide Rail Fitting

TOK Application Table	
Model	Applicable Motor Output
TOK4-P	0.15 to 0.75kW
TOK2-65	1.5kW
TOK2-65T	2.2 to 3.7kW

Accessories

- Duckfoot Bend
- Guide Hook
- Guide Support with Bolts & Nuts
- Lifting Chain with Shackles (4m for TOK4-P, 5m for TOK2-65 / 65T)

Applications

- Draining sewage from factory, residence, hotel, restaurant, etc.
- Pumping rainwater and springwater at a place where foreign objects are likely to run into the water
- Transferring wastewater between the tanks at small-scale treatment facility
- Circulating water in waterscape garden (e.g. waterfall, fountain, koi pond, etc.)

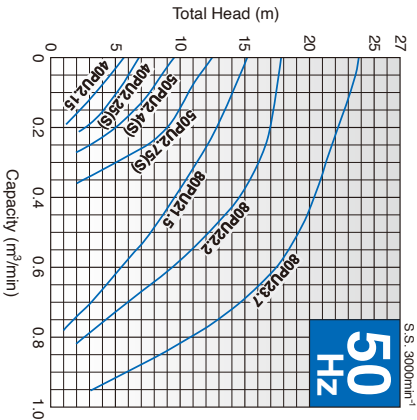
Cable Cables

Single-phase		
Model	240V Cores x Outer Dia. mm ² mm	Length m
40PU2.25S	3 x 1.0 9.0	10
50PU2.4S	3 x 1.0 9.0	
50PU2.75S	3 x 1.0 9.0	
		H07RN-F w/ Plug

Three-phase		
Model	415V Cores x Outer Dia. mm ² mm	Length m
40PU2.15	4 x 1.25 11.1	6 or 10
40PU2.25	4 x 1.25 11.1	
50PU2.4	4 x 1.25 11.1	
50PU2.75	4 x 1.25 11.1	
80PU21.5	4 x 1.25 11.1	
80PU22.2	4 x 1.25 11.1	
80PU23.7	4 x 2.0 11.8	PVC (H07VV-F equiv.)

Performance Curves

Standard, Automatic and Auto-alternation models have the identical performance.



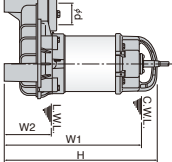
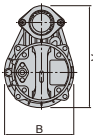
Model Selection

Discharge Bore mm	Model			Motor Output kW	Phase	Starting Method	Solids Passage mm	Dry Weight kg	
	Standard	Automatic	Auto-alternation					Standard	Auto & Auto-alternation
40	40PU2.15	40PUA2.15	—	0.15	Three	D.O.L.	35	5.6	6.3
40	40PU2.25S	40PUA2.25S	40PUW2.25S	0.25	Single	Capacitor Run	35	7.1	7.8
40	40PU2.25	40PUA2.25	40PUW2.25	0.25	Three	D.O.L.	35	6.1	6.8
50	50PU2.4S	50PUA2.4S	—	0.4	Single	Capacitor Run	35	7.1	7.8
50	50PU2.4	50PUA2.4	50PUW2.4	0.4	Three	D.O.L.	35	7.0	7.7
50	50PU2.75S	50PUA2.75S	—	0.75	Single	Capacitor Run	35	8.9	9.5
50	50PU2.75	50PUA2.75	50PUW2.75	0.75	Three	D.O.L.	35	8.3	9.0
80	80PU21.5	80PUA21.5	80PUW21.5	1.5	Three	D.O.L.	46	16.0	16.9
80	80PU22.2	80PUA22.2	80PUW22.2	2.2	Three	D.O.L.	46	22.0	23.0
80	80PU23.7	80PUA23.7	80PUW23.7	3.7	Three	D.O.L.	46	27.0	28.0

• Weights excluding cable

Dimensions

Model	d	A	B	H	W1	W2
40PU2.15	40	225	154	377	340	105
40PU2.25S	40	226	162	360	325	110
40PU2.25	40	226	162	349	310	110
50PU2.4S	50	226	162	360	325	110
50PU2.4	50	226	162	360	325	110
50PU2.75S	50	226	162	380	345	110
50PU2.75	50	226	162	374	335	110
80PU21.5	80	295	196	475	430	150
80PU22.2	80	311	212	583	520	155
80PU23.7	80	311	212	618	555	155



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